EXHIBIT 18

62 Page No. TITLE Powder Development — XP-100 DATE 9/22/92

46321 Book No. PURPOSE Work Item Discussion with Remington

Meeting Time: 9:30 on 9/22/92

Present: Bill Barber, Dave Kenney, John Rose, Lee Bowers

① Recoil/Recoil Tunnel must be reduced well, may need to provide an insert or some other means of ensuring a common chamber between Remington and Barber.

② If possible Extractor (as detailed on page 59) will contain pressure compatible to 40,000 psi but be designed to have an 80,000.

③ Scope Mounting System (as detailed on page 61) must be designed. Need to study scope of damage to shim and scope mount under pressure of 80-90 kpsi on all surfaces.

④ Need to develop capability to produce a 24" Barrel Version, for testing out all dimensions area.

EXPERIMENTER [signature] DATE 9/22/92

WITNESSED BY [signature] DATE 9-24-92

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KINZER V. REMINGTON

EXHIBIT 20

1-22-93

REV. 01/20/93

R&D TASK ASSIGNMENTS

MODEL	PROGRAM	RESPONSIBILITY
O/U	DESIGN/DEVELOP 12 GA FIELD GUN	ROWLANDS/BAUMAN
O/U	DESIGN/DEVELOP TARGET GUN	ROWLANDS/BAUMAN
870	LENGTHEN ACTION BAR LOCK	BAUMAN
870RIOT	REVISE CHAMBER FINISH SPEC.	BAUMAN
870	20GA LW LOCKING BLOCK INTERFERENCE	BAUMAN
SG	UPDATE RECEIVER MARKING DRAWINGS	BAUMAN
522	DESIGN/DEVELOP .22 AUTOLOADER	FINDLAY
541-T	DESIGN/DEVELOP HEAVY BBL VERSION	FINDLAY
11-87SC	RESOLVE LOOSE FORE END	FINDLAY
11-87	GAS SYSTEM IMPROVEMENT	FINDLAY
CF	IMPLEMENT SR RIFLING	FINDLAY
700-SS	DEVELOP CANADIAN 7.62mm, RANGER RIFLE	FINDLAY
7400	RESOLVE OPERATING HANDLE ASSEMBLY	KEENEY
7400	TEST MIM HANDLE	KEENEY
NBAR	DESIGN/DEVELOP BOLT ACTION CF RIFLE	KEENEY
XP-100	DESIGN/DEVELOP WOOD STOCKED, 1993 UPGRADE	KEENEY
700	ECM RIFLING EVALUATION	KEENEY
O/U	DESIGN/DEVELOP LIGHTWEIGHT BBL CONTOUR	POWERS
SG	EVAL. FOR COMPLAINTS: 870, 11-87	POWERS
SG	DESIGN/DEVELOP DETACHABLE PAD	POWERS
SG	DESIGN/DEVELOP 20GA RIFLED BARREL	POWERS
870P	DESIGN/DEVELOP TO MEET MIL SPEC 3443E	POWERS
870	DESIGN/DEVELOP NAVY VERSION	POWERS
11-87	DESIGN/DEVELOP LW EURO VERSION	POWERS
O/U	DESIGN BARREL SPACER	POWERS
11-87	RESOLVE LOW FIRING PIN INDENT	POWERS
870	RESOLVE LATCH RIGHT & LEFT ISSUES	RONKAINEN
700	DESIGN/DEV. DETACH. MAGAZINE BOX	RONKAINEN
SP-10	RESOLVE FUNCTIONAL PROBLEMS	ROWLANDS
SP-10	ADD 23" VR RC W/TURKEY TUBE	ROWLANDS
CFR	BASIC RESEARCH - RELEASE MECHANISMS	WARREN
700	TRANSMIT VS IN 7mm REM MAG & .300 WIN MAG, 25-06 REM. AND .270 WIN.	WARREN ——→ COMPLETE JAN 6

DRAWING PACKAGE WAS READY FOR TRANSMITTAL ON DEC., '92
IT WAS TRANSMITTED ON JAN., 1993

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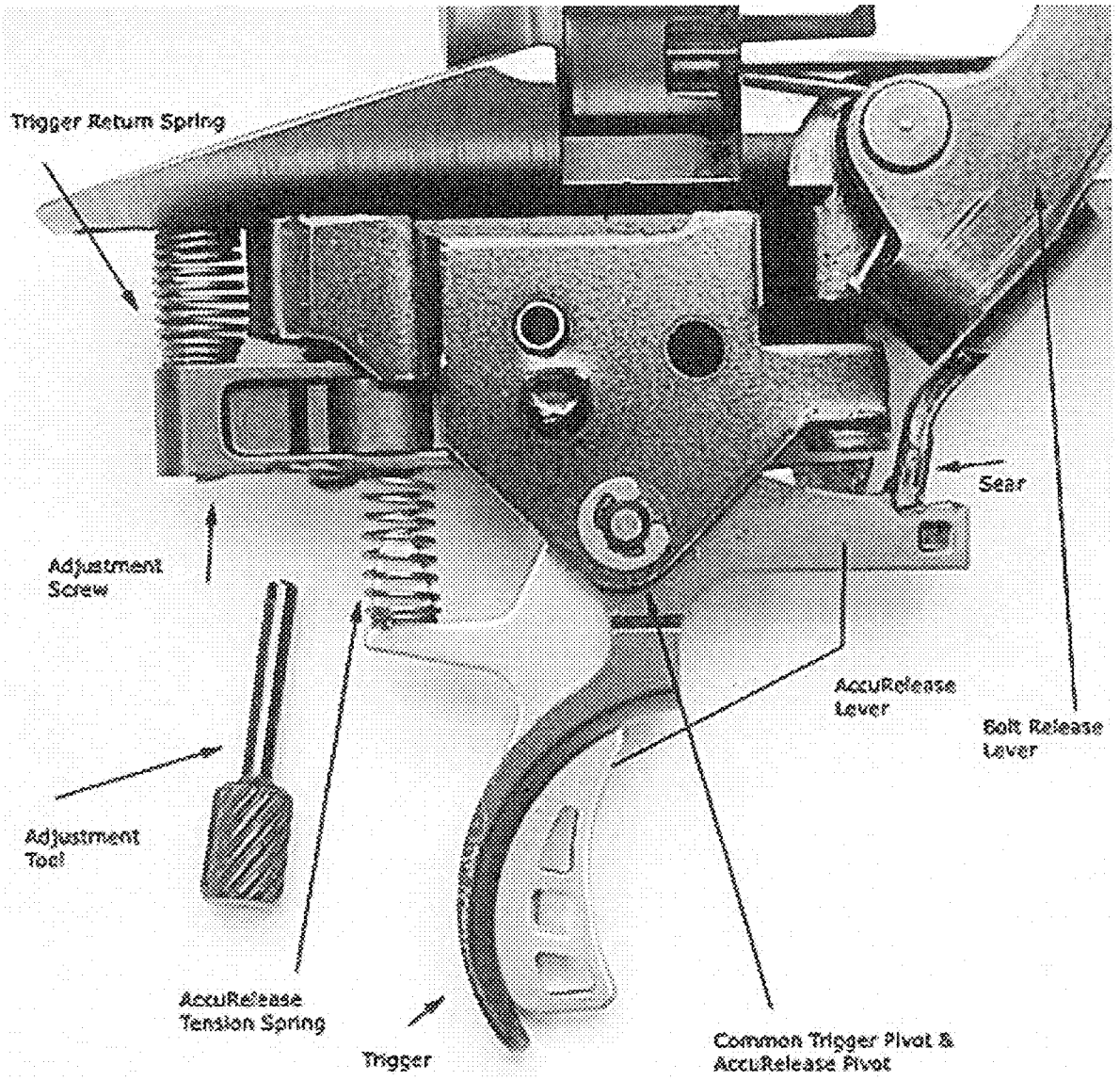
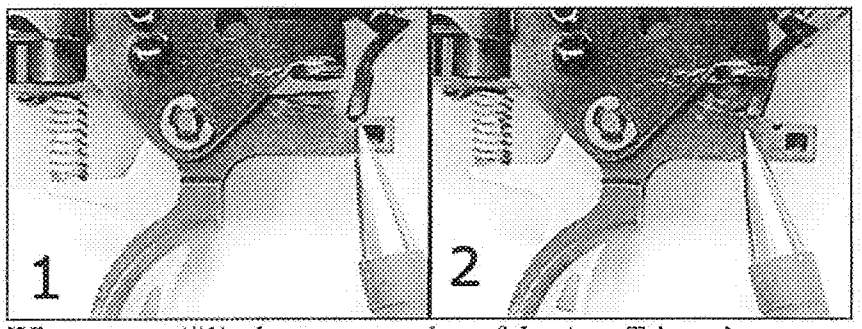
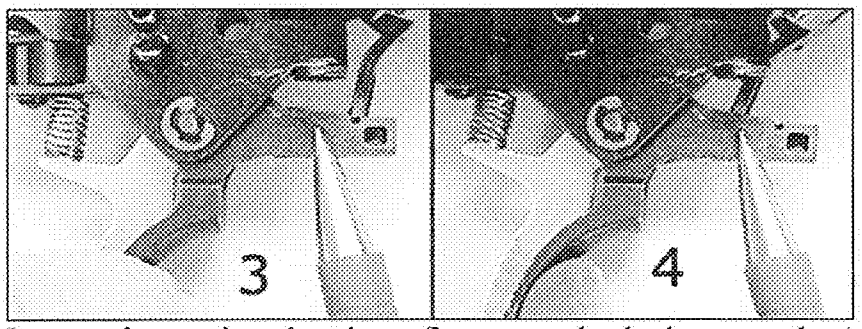
Inside Savage's Accutrigger

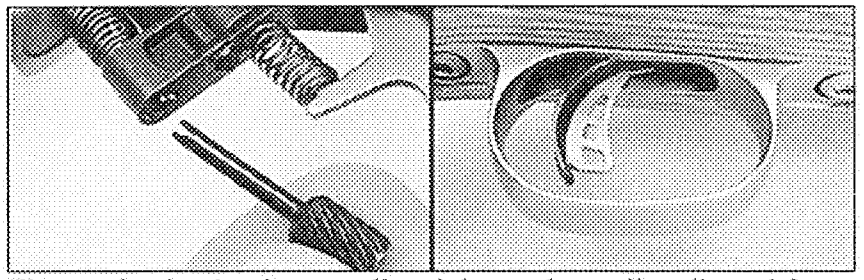




When at rest (#1), the top extension of the AccuTrigger's AccuRelease lever is positioned behind the sear. Should anything cause the sear to jar off (#2), the AccuRelease lever blocks the sear and prevents firing.



In normal operation, the trigger finger completely depresses the AccuRelease lever (#3), allowing the sear to move completely to the rear (#4) to fire the rifle.

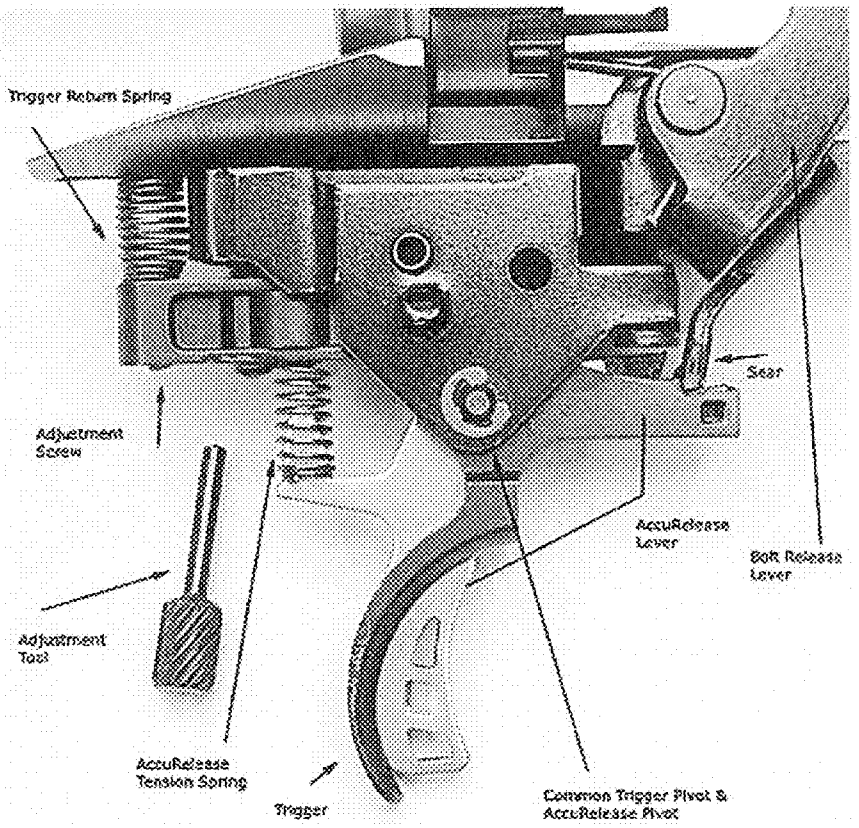


The mechanism's trigger pull weight can be easily adjusted from six to 1.5 pounds by removing the stock and tightening or loosening the trigger return spring (L). The AccuTrigger's built-in AccuRelease lever (R) ensures complete safety at even the lightest pull weight.

Innovative, Remarkable, Reliable. . .Getting Inside Savage's Accutrigger

by Dick Metcalf • September 23, 2010 •

Our Technical Editor thinks this new adjustable trigger system will forever change shooters' expectations of standard-production rifle triggers.
By Dick Metcalf



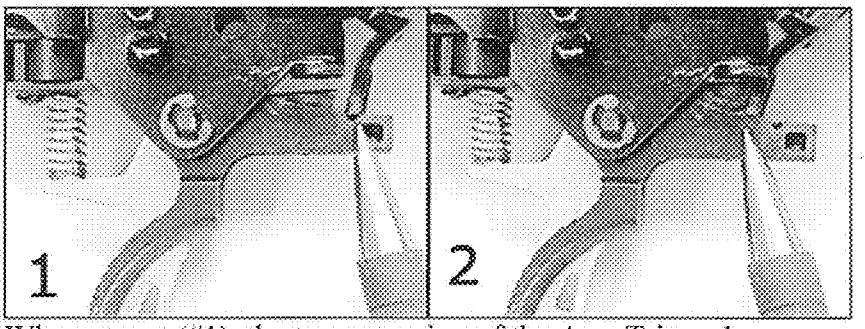
Savage Arms has long been known for manufacturing extremely accurate, extremely reliable, and extremely economical bolt-action centerfire rifles. Now it has introduced a revolutionary trigger design that will forever change the way shooters expect triggers to function on store-bought guns. The new Savage AccuTriggerTM is absolutely crisp and creep-free. It is easily user-adjustable from 6.0 to 1.5 pounds. And it is absolutely safe. It won't fire if dropped or bumped at the lightest setting or even if you throw it from the top of a 20-foot forklift down onto a concrete floor--which is exactly what Savage Arms owner and CEO Ron Coburn did in the factory to prove to himself it worked when his engineering team showed him their finished prototype.

Think about all that for a minute: An ordinary, production-grade rifle with a trigger that breaks competition-grade crisp and clean at only 1.5 pounds and priced at Savage's traditional moderate level.

The AccuTrigger project got started several years ago when Coburn decided he wanted Savage rifles to have the same reputation for out-of-the-box trigger precision as they already had for out-of-the-box accuracy. A lifelong serious hunter, Coburn was as frustrated as every other rifle shooter in the world by the liability constraints that inhibit the availability of top-quality, adjustable trigger mechanisms on regular-production hunting rifles. Most factory-production firearms triggers today have very heavy pulls. No secret why: No manufacturer can afford the legal risk of producing firearms with light or adjustable triggers that might accidentally discharge. Of course, some factory rifle triggers do have screws to adjust sear engagement pressure or trigger travel/overtravel; on others a gunsmith can polish component interfaces to reduce sear engagement or smooth the creep. However, unskilled adjustments to a factory trigger can create an unsafe condition and will usually void the factory warranty, and many riflemakers who sell rifles with triggers that are mechanically capable of adjustment factory-seal all the adjustment mechanisms with glue or epoxy so that any tampering is irrevocably evident.

To Coburn that was unsatisfactory. He called Savage design and industrial engineers Scott Warburton and Bob Gancarz into his office and gave them a simple mission: design a perfectly crisp, creep-free trigger for Savage rifles. Sometime later they came back and showed him a new mechanism. He tried it and smiled. "That's really good," he said. "Now make it user-adjustable, from six pounds down to a pound and a half." They looked at each other and headed back to their workshop, thinking: "Wish he'd mentioned that before." A few more months went by, and they were back with a perfectly crisp, creep-free trigger mechanism that was fully adjustable with a single screw. "That's really good," Coburn said. "Now go make it so it's absolutely safe and won't jar off no matter what." This time they left his office thinking: "Really, really wish he'd mentioned that before." For the next several months the project kept Warburton and Gancarz awake at night and spoiled their concentration while bass-fishing or watching football on weekends. But they finally came back with a mechanism unlike anything ever done in a rifle before and put it in Coburn's hand. He worked it, felt it, smiled once again, and then threw it off the top of a 20-foot-high forklift with the manual safety off. It didn't fire! Coburn shook hands with his engineers and said, "If I'd told you at the outset everything I wanted, you'd have thought I was crazy."

Now the AccuTrigger is in production, and it's an interesting historical note that the two guys who invented what is perhaps the most innovative rifle trigger action in history came to Savage from previous jobs in the revolver engineering departments of Colt and Smith & Wesson. Reminds me of the days in the 19th century when men like Horace Smith, Daniel Wesson, Oliver Winchester, and Eli Whitney all knew and worked with and for each other at various times. The great tradition of American arms making continues.

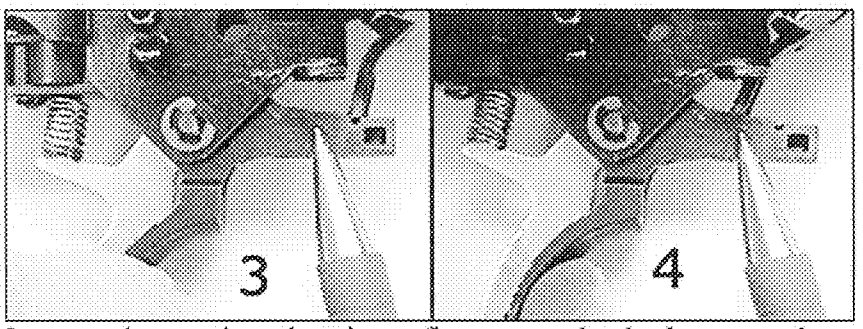


When at rest (#1), the top extension of the AccuTrigger's AccuRelease lever is positioned behind the sear. Should anything cause the sear to jar off (#2), the AccuRelease lever blocks the sear and prevents firing.

HOW THE ACCUTRIGGER WORKS

To understand the innovative simplicity of the AccuTrigger and how it operates, look closely at the accompanying sequence of photographs and illustrations. First you'll notice that the trigger and the sear levers are notably longer than those found on conventional trigger mechanisms with their engagement point out on their ends. This allows for more leverage (technical term: longer force-moment arms) than with shorter parts with less tension required for reliable, crisp engagement. (Think about a seesaw; a long lever is easier to operate.) With the sear engaging a simple sharp, shallow notch in the extreme end of the trigger, only a miniscule trigger movement is required for an instant, sharp, clean release.

The next essential element is the long silver-colored AccuRelease lever mounted within the trigger body and sharing the trigger's pivot point in the housing. When at rest, the forward upper end of the AccuRelease is positioned directly behind the sear, where it will block the sear should any external force cause it to jar out of the trigger notch. In normal operation, the trigger finger will first take up and depress the AccuRelease lever so that its forward tip drops out of the path of the sear, allowing the sear to move fully backward when released by the trigger at whatever weight you have adjusted the trigger pull to be.

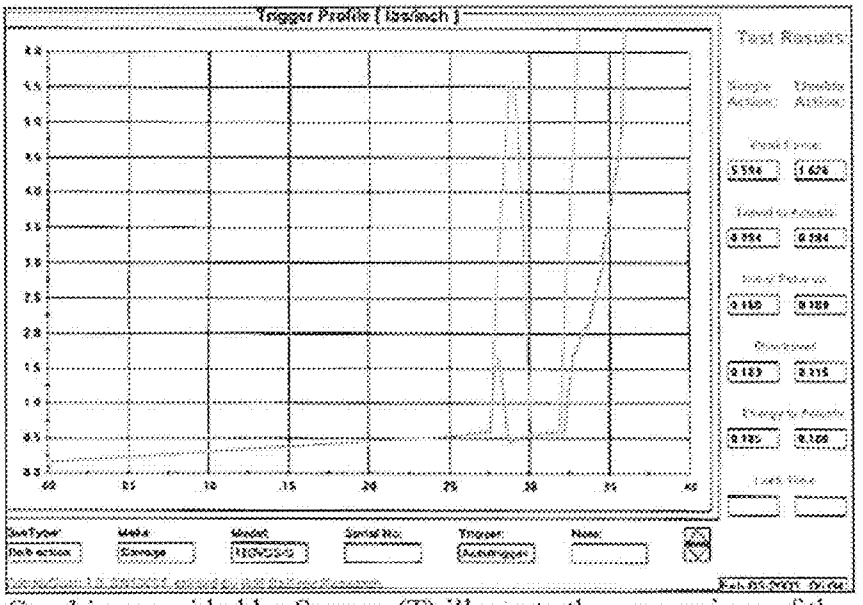


In normal operation, the trigger finger completely depresses the AccuRelease lever (#3), allowing the sear to move completely to the rear (#4) to fire the rifle.

Several shooters who have seen AccuTrigger-equipped rifles only from the outside have commented that the system reminds them of a Glock pistol's "Safe-Action." And in broad conceptual terms there is indeed a similarity as both systems involve a trigger-housed lever that prevents firing until it is depressed as the trigger is squeezed. But the actual design and mechanical operating principles are utterly different.

To adjust the AccuTrigger pull weight, simply remove the two pillar-bedding stock screws, lift off the stock, and insert the tool suppli
ed with the rifle into the bottom of the trigger return spring, engaging the spring-tail with the slot on the tool. For a heavier pull, turn the tool clockwise. Maximum trigger pull (nominally six pounds) comes when the spring "clicks" when rotated. For a lighter pull, turn the tool counter-clockwise. Minimum pull (nominally 1.5 pounds) is at the point when the large coil contacts the top surface of the trigger and you detect resistance. If you try to force the spring beyond these limits, you won't create any danger, but you'll destroy the spring and the pull will feel lousy.

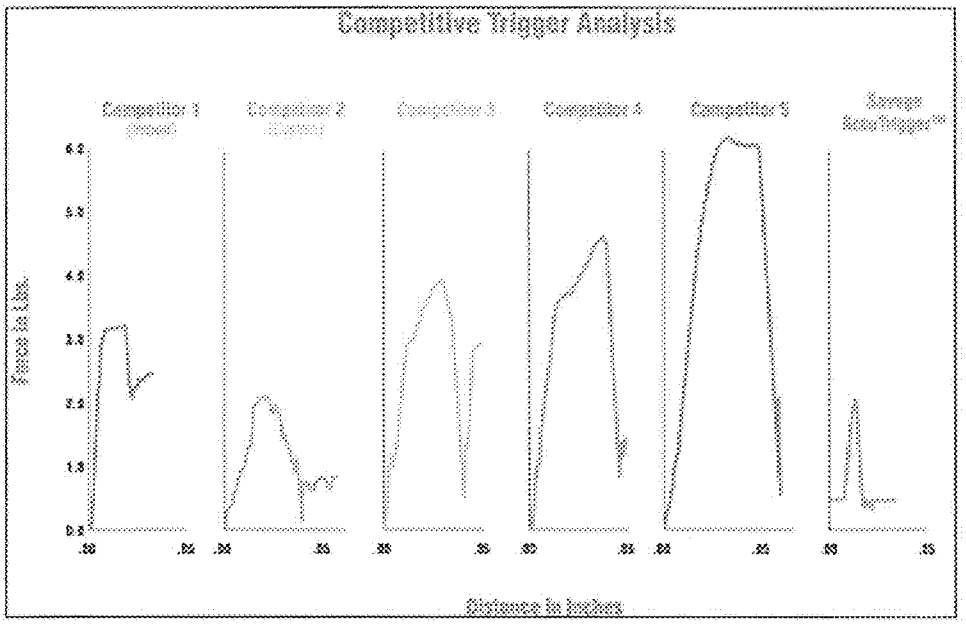
Incidentally, as part of the AccuTrigger project, Savage also redesigned the manual safety mechanism for its bolt-action rifles; the newly designed ambidextrous teardrop safety on the center rear of the receiver provides much better acquisition of the safety button and operates much more smoothly and quietly than the previous design. It is a three-position safety, which locks both the trigger/sear interface and the bolt in the full-rear position, locks the trigger/sear but allows the bolt to be operated for unloading while in the center position, and is in firing mode when all the way forward.



Graphics provided by Savage (T) illustrate the comparison of the AccuTrigger trigger pull profile and other gunmakers' trigger pull profiles.

While developing the AccuTrigger, Savage employed Dvorak Instrument's sophisticated TriggerScan analysis computer software to observe the operation of the mechanism and to compare objective measurements of the new system with triggers of other makes and models of rifles. According to Savage's published results (shown in the accompanying graphics provided by Savage), these comparisons confirmed that there is a graphic and repeatable difference between the AccuTrigger and all other triggers tested. The new Savage system demonstrates a lighter trigger pull than all the other major brands (including top-of-the-line imported brands and custom aftermarket triggers). The AccuTrigger was much smoother and crisper and broke cleaner with less creep than any other factory-built trigger tested.

I have used the same computerized trigger/action TriggerScan instrumentation and software for several years and independently repeated the same testing procedure as described by Savage. My results verify all of Savage's claims and, if anything, indicate Savage is being conservative. In the accompanying graphic from my analysis, overlaid tracings of the trigger operation of a Savage Model 12BVSS-S .22-250 both at the maximum setting and the minimum setting are not only equally sharp and creep-free, they are exactly co-terminous up to the point of break. In other words, when adjusting from six pounds to 1.5 pounds, there was absolutely no measurable change in the trigger position, travel, pull, or feel--except for much lighter weight. It's truly a remarkable engineering achievement.



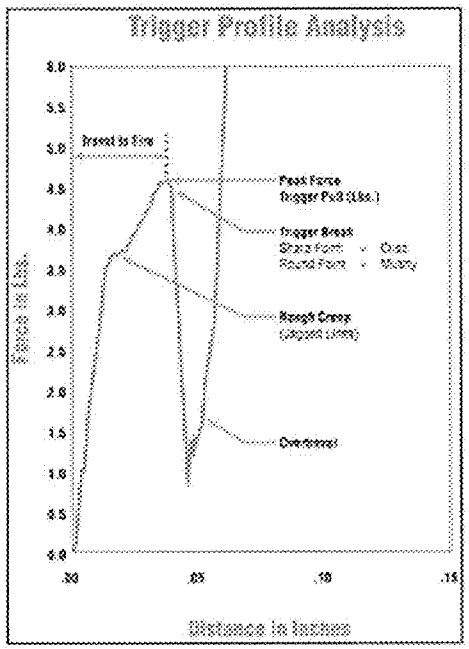
Coburn notes, "Sooner or later, everyone that inspects the AccuTrigger asks how I ever got our corporate attorney's blessing. The truth is, I didn't bother to ask. The AccuTrigger is what shooters have been asking for--an infinitely adjustable trigger that will suit their own personal taste while still being completely safe."

COMES AS STANDARD EQUIPMENT

For 2003 the new AccuTrigger is standard equipment on all Savage centerfire bolt-action

Varmint models, Law Enforcement models, and heavy-barrel long-range rifles, including Savage's "Package Series" versions of those models pre-equipped with high-quality Leupold and Burris variable scopes. AccuTrigger models replace previous models, which are no longer cataloged. I emphasize that the AccuTrigger is a standard factory-issue item not a custom or aftermarket accessory, and it will also be incorporated into various models in Savage's conventional hunting rifle lines as quickly as production allows–perhaps as early as this autumn. The company is certainly not being slow about it. The production schedule calls for 3500 AccuTrigger units a month beginning last January 1st.

Okay, an obvious question: How much does the new AccuTrigger add to a Savage rifle's cost? Savage says about $35. For example, the manufacturer's suggested retail price in 2002 for a pre-AccuTrigger, top-of-the-line stainless-steel, fluted barrel, laminated-stock Savage Model 12BVSS varmint rifle was $616. The same model in 2003, with AccuTrigger, is priced at $675. That's $59 more, but the other $24 part of the difference is normal annual price increase. That's a real bargain compared to any other maker's standard-production rifle prices, especially considering that the cost of a custom-match-adjustable aftermarket trigger for a Savage rifle (or any rifle), plus precision gunsmith installation, would run several hundred additional dollars.

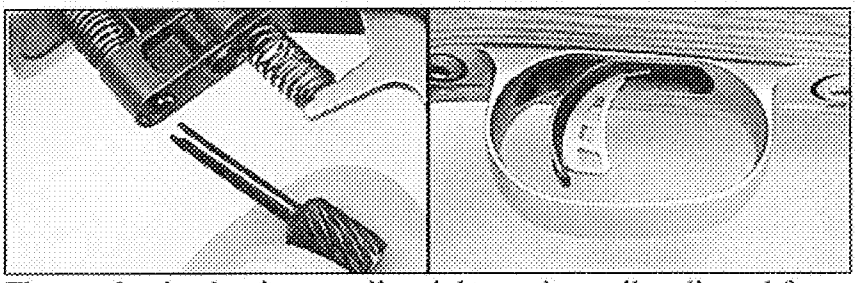


And to answer the second question that leaps into a previous Savage owner's mind when he first tries the feel of an AccuTrigger-equipped gun–no. The AccuTrigger is not retrofittable. The rear and bottom areas of the receiver are milled somewhat differently for the AccuTrigger module and its accompanying new manual safety mechanism than for the previous Savage trigger and safety mechanism. So you won't be able to buy an aftermarket AccuTrigger package and install it on the Savage rifle you already own.

Having said this, however, I will also report that I recently spent a day at the Savage factory–where, under the expert guidance of the Savage engineering and production staff, I hand-built and assembled a .22-250 Model 12BVSS-S stainless/laminated AccuTrigger Varmint model. I closely observed the differences between the AccuTrigger receiver millings and the standard Savage receiver design, and it is my (admittedly nonmachinist's) opinion that a professionally equipped gunsmith/machinist's shop could in fact reconfigure an existing Savage receiver to install an AccuTrigger mechanism. But that'll happen only if Savage decides to sell the triggers to gunsmiths (which is doubtful at this point) and then only if the gunsmith's customer was willing to pay nearly as much as the price of a brand-new AccuTrigger gun just to put the new trigger on an old rifle.

I've been shooting and working with the AccuTrigger since the spring of 2002 when Coburn first sent me the heavy-barrel Model 10FP-LE1 Law-Enforcement model in .308 shown in the

accompanying photograph with a prototype trigger mechanism. Equipped with one of Springfield Inc.'s big tactical scopes, it shoots one-hole groups at 100 yards with factory ammunition, and the absolutely crisp minimum-setting trigger will make it a must-have for law enforcement special operations teams who must make hair-splitting instant-takeup shots with lives at stake. My new Model 12BVSS-S .22-250 Varmint prints 5/8-inch groups at 200 meters with factory am
munition, and the precision trigger is the answer to a predator-hunter's prayer for long-distance shots at varmints.



The mechanism's trigger pull weight can be easily adjusted from six to 1.5 pounds by removing the stock and tightening or loosening the trigger return spring (L). The AccuTrigger's built-in AccuRelease lever (R) ensures complete safety at even the lightest pull weight.

My only problem with the whole thing is–now I'm spoiled. I want an AccuTrigger on every rifle I own.

EXHIBIT 21

REMINGTON ARMS COMPANY, INC.
ILION, NEW YORK

CONFIDENTIAL

March 8, 1993

TO:	PITTSBURGH	ILION	WILMINGTON
	B. R. BROWN	J. F. WINSKE	A. W. WHEATON
	R. F. RIESMEYER	E. S. RENSI	V. M. ROMANO
		J. M. FLOYD	J. M. BUNTING
	LONOKE	S. J. ORF	J. R. BALIO
	P. EL OTTO	R. A. JACKSON	J. M. DWYER
	R. S. TOULSON	D. P. CHRISTIE	J. H. CHISNALL
	J. R. PRUITT	K. D. GREEN	
	C. P. BIRCH		
	T. C. DOUGLAS		

FROM: K. W. SOUDY

FEBRUARY PROGRESS REPORT
RESEARCH & DEVELOPMENT
FIREARMS/AMMUNITION

REPORTS OF INDIVIDUAL ENGINEERS ARE ATTACHED. DISTRIBUTE TO YOUR ORGANIZATIONS AS YOU DEEM APPROPRIATE. WHILE DISTRIBUTING AND DISPOSING OF THIS REPORT, RECIPIENTS ARE REMINDED OF THE PROPRIETARY NATURE OF THE CONTENTS.

FIREARMS HIGHLIGHTS

THE PEERLESS O/U TRIAL AND PILOT RUN COMMENCED 2/26/93. TESTING IS UNDERWAY.

THE XP-100 TRIAL AND PILOT TEST HAS BEEN DELAYED DUE TO SIGHT MISALIGNMENT AND STOCK FINISH PROBLEMS.

EFFECTIVE MARCH 1st, BILL WARREN HAS BEEN INSTRUCTED TO DIRECT HIS EFFORTS AROUND BASIC RESEARCH OF RELEASE MECHANISMS TOWARD A NEW FIRE CONTROL FOR THE NBAR.

AN INITIAL COLD FORGING TEST OF THE NBAR BARREL/RECEIVER WAS MODERATELY SUCCESSFUL. A SECOND TEST WITH LARGER DIAMETER BLANKS WAS CONDUCTED AND ACHIEVED 90% FILL. FURTHER ANALYSIS SHOWED LONGITUDINAL CRACKING ON INSIDE SURFACES. WARM/HOT FORGING AND DIFFERENT MATERIAL SELECTIONS ARE BEING CONSIDERED TO ELIMINATE CRACKING.

AMMO HIGHLIGHTS

A 10,000 ROUND TRIAL & PILOT RUN OF 12 GA PREMIER COPPER SOLID WAS PRODUCED USING SABOTS FROM THE EXPERIMENTAL MOLD. 5-SHOT, 100 YARD GROUPS AVERAGED SLIGHTLY UNDER 3 INCHES. THE PRODUCTION SABOT MOLD HAS BEEN APPROVED AND AN INITIAL PRODUCTION RUN OF PRODUCT IS SCHEDULED FOR MARCH 29th.

INITIAL DESIGN OF 20 GA PREMIER COPPER SOLID IS COMPLETE. PROTOTYPICAL SLUGS AND SABOTS ARE BEING PRODUCED ON THE R&D SCREW MACHINE.

INVESTIGATION HAS BEGUN ON THE QUALITY AND CONSISTENCY OF OUR PRESENT PRIMER MIXES. SEE MARCH 2, 1992 MEMO FROM F. G. LOPATA (LAST REPORT IN YOUR PACKET).

EXHIBIT 22

USE THIS AS FORMAT 1 PAGE ONLY

WIDE AUDIENCE ⇒ • SPELLING, GRAMMAR COUNTS
• REDUCE USE OF ACRONYMS

To: Richard Jackson
From: David Findlay
Subject: Progress Report (10-27-93)

M/870 - M/1187 12/20 Ga. Cantilever Scope Mount Redesign

Samples of the two piece cantilever design were shown at the Writer's Seminar and marketing requested some design changes to improve the eye relief, cantilever height, and scope fit. These modifications have been detailed and parts have been sent out for alteration. Design acceptance testing (strength, accuracy, and endurance testing) will commence upon receipt of the altered cantilevers.

M/870 - M/11-87 Synthetic Stock and Fore End

Computer surface modeling and detail drawings of the M/11-87 stock, M/11-87 fore end, M/870 fore end, and M/870 Police fore end are complete. Molds for these components are out for re-quote and the drawings have been turned over to the CAD group for transmittal and parts list changes.

M/870 Synthetic Trigger Plate

Sample parts in four different materials were received from Dave Foss on October 28. These components will be now undergo evaluation and measurements. Testing will include live firing endurance, dry cycle, impact, and environmental.

M/522 Viper Improvements

Test firing of molded synthetic magazine boxes, in 4 different materials, resulted in encouraging functional performance, but unacceptable endurance life. A redesign of the lip geometry, magazine side, and gating of the mold has been completed to improve endurance life. Upon completion of the alteration of the magazine tooling, due in early November, re-testing with all 4 potential candidate plastics will resume. Research is also investigating the possibility of reducing the trigger pull. Approaches being investigated include surface coatings, a new primary sear design, firing pin spring modification, and a re-designed disconnector.

M/541 Improvements

Work has been initiated to incorporate several design improvements based on customer requests and complaints. The first of these is a metal magazine box. Testing of a sample MIM metal magazine box had a 0% malfunction rate through 2000+ rounds. Five additional samples will be built and tested. A second improvement is the utilization of two takedown screws rather than the current single screw design to enhance the bedding of the rifle. Third, a change to the barrel attachment design is being investigated also to improve accuracy. Currently, the barrel is pinned to the receiver. A threaded joint is being investigated.

cc. R. Orf

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Barber - B 0000xx

BARBER - 1.30.130000018

SCHEDULE A

DESCRIPTION OF SERVICE
1993
REMINGTON ARMS COMPANY, INC.

ENTITY PROVIDING SERVICE: CONSOL, Inc., Executive Offices

SERVICE TO BE PERFORMED: Executive Services

PREPARER: R. F. Riesmeyer, Manager Administration & Services

DATE EFFECTIVE: 1/1/93

SERVICE OWNERSHIP

PROVIDER: Consol, Inc.
B. R. Brown, President

RECIPIENT: Remington Arms Co., Inc.
S. G. Greco, Controller

DESCRIPTION OF SERVICE:

- General administration and senior management services for the Chief Executive Officer and administrative staff.
- Management services for overall legal and product liability direction, environmental efforts, product services, corporate and [illegible]es, and contract administration of wood gun stock production.
- Provide strategic direction.
- Provide aviation services for executive and administrative functions.
- Interface with executive management levels within DuPont.

KEY CUSTOMER SATISFACTION FACTORS:

- Prompt response to issues and timely direction.

METHOD OF COST ALLOCATION:

- Remington will be charged partial cost for executive management services based on anticipated time and performance.
- Remington will be charged fully allocated cost for administrative management.

BASIS OF COST ALLOCATION:

- Salary, benefits, travel costs, prorated portion of executive aviation, and any ancillary costs (training, etc.) necessary to perform the function.
- Remington costs will be determined annually based on relative percentage of prior year activity.

COST OF SERVICE: $300,000/year.

Agreed: J. J. Bartos
J. J. Bartos, Consol

B. C. Curley
B. C. Curley, Remington

DEL 001097

IRES 0047309 1

Confidential Material
Protected by Court Order
Bureau - Remington

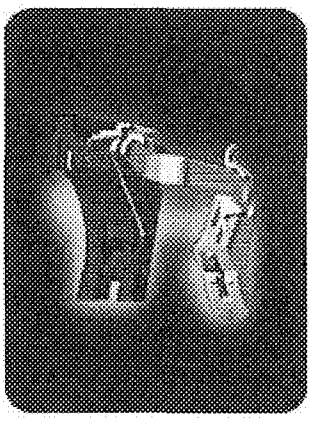
About 80 years before the magical Glock trigger, Iver Johnson added a safety lever to the triggers of his revolvers.

Safety

Glock pistols are designed with three independent safety mechanisms to prevent accidental discharge. The system, designated "Safe Action" by Glock, consists of an external integrated trigger safety[36] and two automatic internal safeties: a firing pin safety[37] and a drop safety.[38] The external safety is a small inner lever contained in the trigger. Pressing the lever activates the trigger bar and sheet metal connector. The firing pin safety is a solid hardened steel pin that, in the secured state, blocks the firing pin channel (disabling the firing pin in its longitudinal axis). It is pushed upward to release the firing pin for firing only when the trigger is actuated and the safety is pushed up through the backward movement of the trigger bar. The drop safety guides the trigger bar in a ramp that is released only when direct rearward pressure is applied to the trigger. The three safety mechanisms are automatically disengaged one after the other when the trigger is squeezed, and are automatically reactivated when the trigger is released.[12][39] This passive safety system omits the manipulation of traditional on-off levers, hammers or other external safeties as found in many other handgun designs.

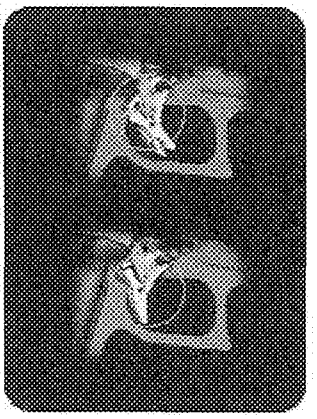
TRIGGER SYSTEM

The "Safe Action" system is a partly tensioned firing pin lock, which is moved further back by the trigger bar when the trigger is pulled.
When the trigger is pulled, 3 safety features are automatically deactivated one after another. When doing so, the trigger bar is deflected downward by the connector and the firing pin is released under full load. When the trigger is released, all three safety features re-engage and the GLOCK pistol is automatically secured again.



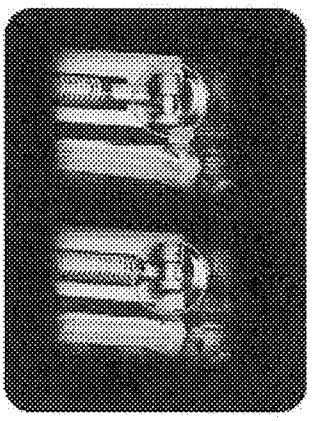
TRIGGER SAFETY

As the first of the three GLOCK "Safe Action" safety features, the trigger safety prevents inadvertent firing by lateral forces on the trigger. Releasing the trigger will automatically reactivate the safety.



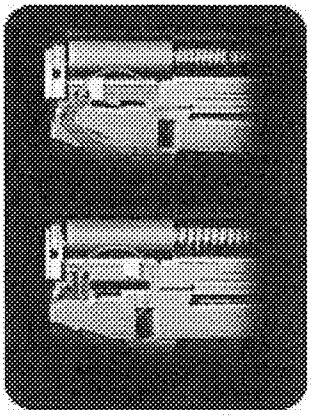
FIRING PIN SAFETY

The GLOCK firing pin safety is a solid hardened steel pin which, in the secured state, blocks the firing pin channel, rendering the igniting of a chambered cartridge by the firing pin impossible. The firing pin safety is only pushed upward to release the firing pin for firing when the trigger is pulled and the safety is pushed up through the backward movement of the trigger bar. Releasing the trigger will automatically reactivate the firing pin safety.



DROP SAFETY

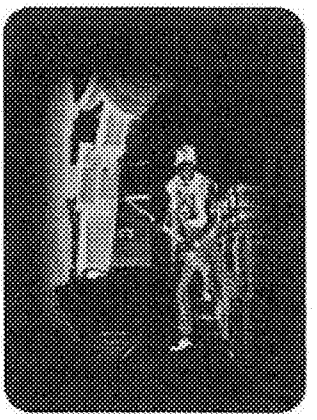
In the line of duty it may happen that a loaded pistol is dropped on the floor. Contrary to conventional pistols, the GLOCK drop safety prevents unintentional firing of a shot through hard impact. When the trigger is pulled, the trigger bar is guided in a precision safety ramp. The trigger bar is deflected from this ramp only in the moment the shot is triggered.



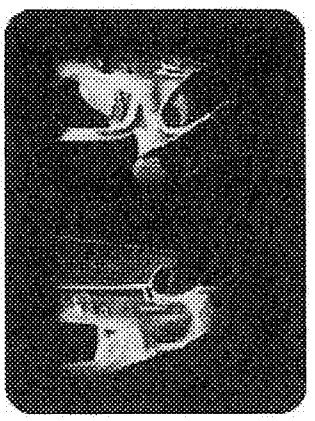
PSYCHOLOGY

Every use of a firearm exposes users to tremendous psychological strain. Learned patterns are easily forgotten in such borderline situations and complex operating elements become a deadly trap. GLOCK offers the best solution to this problem: "Safe Action"!

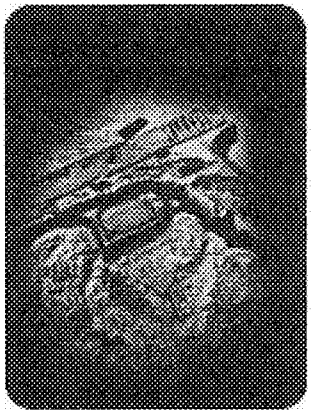
One operating element - one rule. Finger away from the trigger, three pistol safeties are active. Pull the trigger, the safeties are deactivated and the pistol is fired. Consequently the user can fully concentrate on his tactical tasks in the decisive moment.



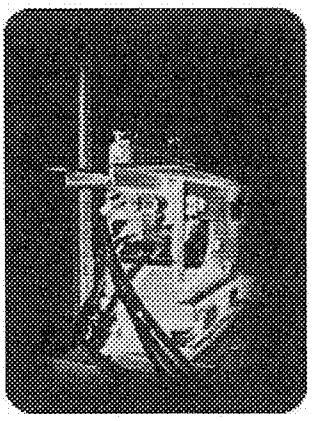
LEFT HAND USERS
An important factor in the development of the GLOCK pistol was its suitability for left and right-handed users alike. The special design of the operating elements, allows the index finger and thumb of left-handed persons to assume the leading role for operation. The configuration of the operating elements for left and right-handed users also reduces the possibility of inadvertent firing.



TORTURE TEST
Salt water, sludge, sand, merciless heat or arctic temperatures. What other pistol will come to terms with the most hostile environmental and operating conditions that are all in a day's work for a GLOCK pistol.
For professionals throughout the world, working under tough and dangerous conditions, the GLOCK pistol is the weapon of choice. They know that there is not a more robust and reliable pistol.



QUALITY
GLOCK pistols have been designed to operate without compromise in extreme conditions by police, military and special units. Thanks to industry leading digital quality assurance continuously integrated in the production process, tolerances are excluded and reliable operational safety is achieved. Naturally, GLOCK is also certified according to ISO9001.



United States Patent [19]

Glock

[11] Patent Number: 4,539,889

[45] Date of Patent: Sep. 10, 1985

[54] AUTOMATIC PISTOL WITH COUNTERACTING SPRING CONTROL MECHANISM

[76] Inventor: Gaston Glock, Siebenbürger Strasse 16-12, A-1220 Vienna, Austria

[21] Appl. No.: 456,086

[22] PCT Filed: Apr. 29, 1982

[86] PCT No.: PCT/AT82/00015

§ 371 Date: Dec. 30, 1982

§ 102(e) Date: Dec. 30, 1982

[87] PCT Pub. No.: WO82/03910

PCT Pub. Date: Nov. 11, 1982

[30] Foreign Application Priority Data

Apr. 30, 1981 [AT] Austria 1944/81

[51] Int. Cl.³ F41C 5/00

[52] U.S. Cl. 89/147

[58] Field of Search 89/147

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Primary Examiner—Peter A. Nelson

[57] ABSTRACT

An automatic pistol comprises a frame, a barrel slidable on the frame and having a cartridge-receiving rear end, a breech slidable on the frame and engageable over the rear end of the barrel to form a cartridge chamber, and firing mechanism including a firing element and a firing pin operatively linked thereto. The element is movable on the breech toward and away from the barrel between a rear position in which the firing pin is out of the cartridge chamber and a front position with the firing pin projecting forward into the cartridge chamber for firing a cartridge in the chamber when the firing element moves from the rear to the front position. A spring is braced against the element and urges same into the front position. A trigger is movable on the frame between an actuated and an unactuated position. An abutment engageable with the firing element in an intermediate position thereof between its front and rear positions is displaceable backward on the frame. A link is connected between the trigger and the abutment for displacing same backward into the rear position from the intermediate position on displacement of the trigger from the unactuated to the actuated position and for displacing the abutment out of operative engagement with the firing element on displacement of the trigger into the actuated position for displacement of the firing element by the spring means into the front position. Thus the starting position of the abutment for the firing bolt or hammer is at an intermediate location in the travel path of same.

11 Claims, 39 Drawing Figures

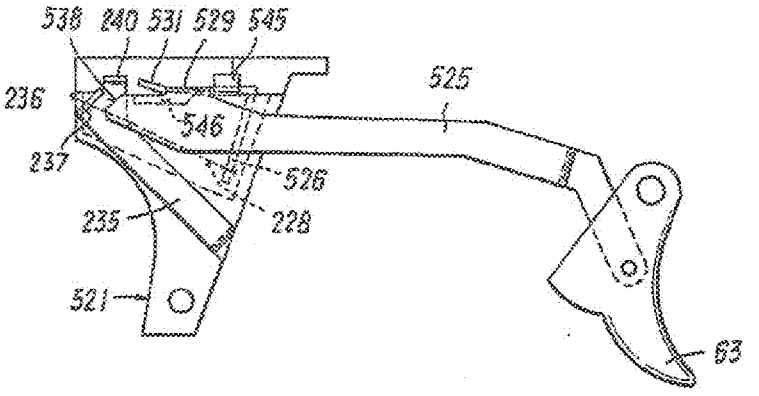


FIG. 1

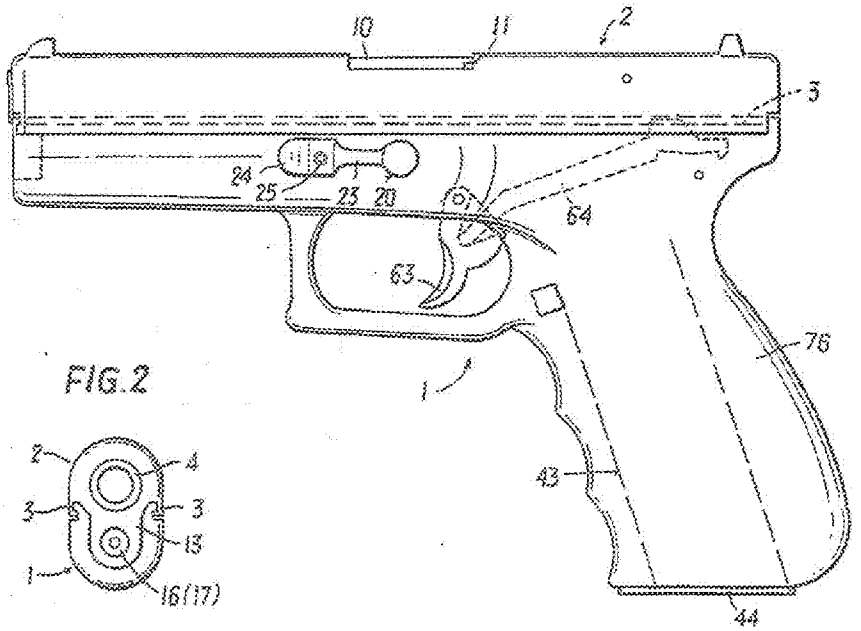


FIG. 2

FIG. 3

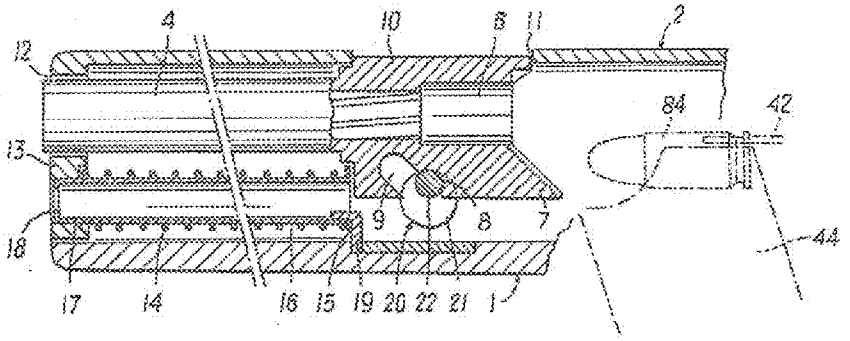


FIG. 4

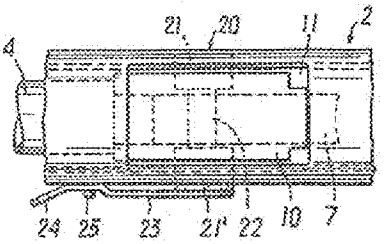


FIG. 5

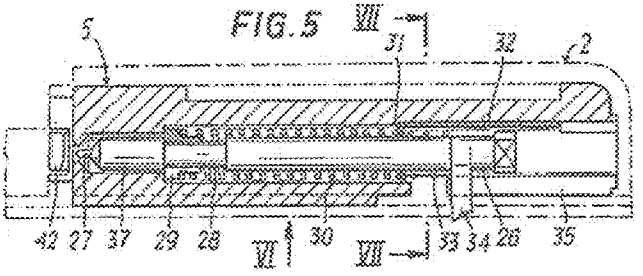


FIG. 7

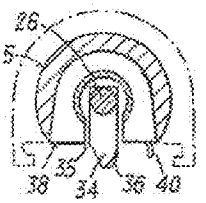


FIG. 6

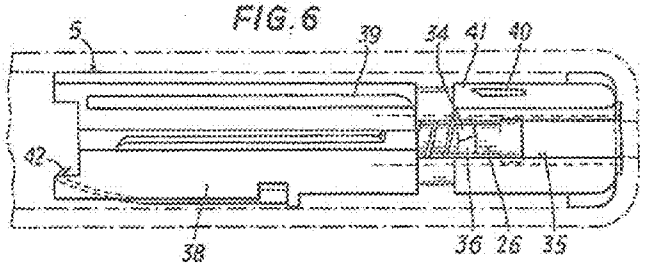


FIG. 30

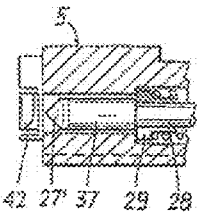


FIG. 8

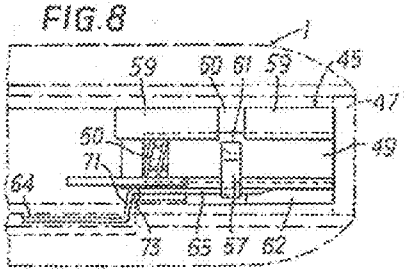


FIG. 31

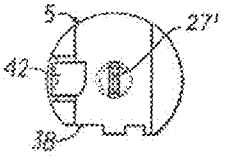


FIG. 10

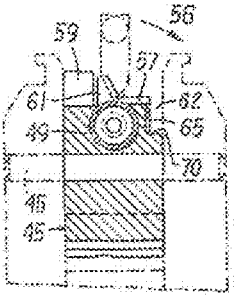


FIG. 9

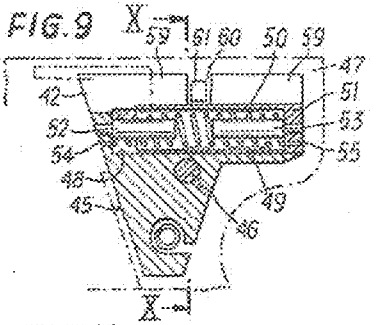


FIG. 12

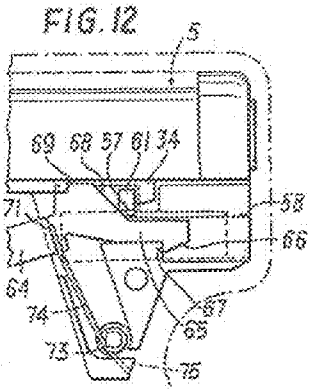


FIG. 11

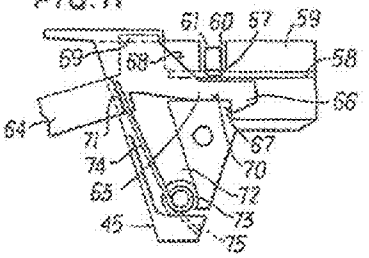


FIG. 13

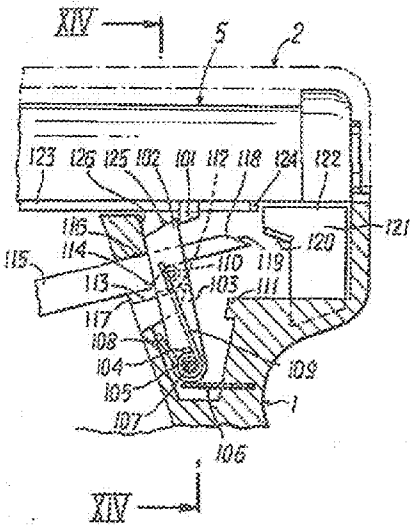


FIG. 14

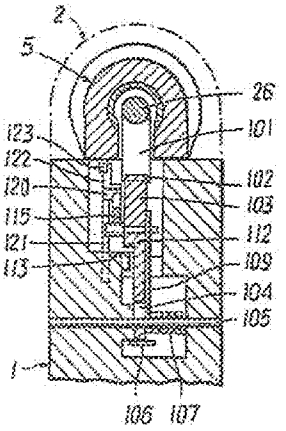


FIG. 15

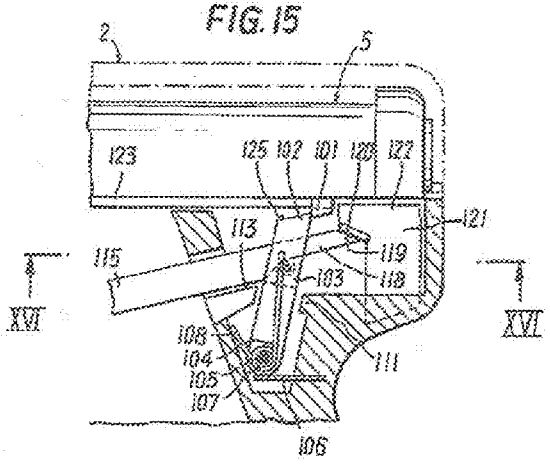


FIG. 16

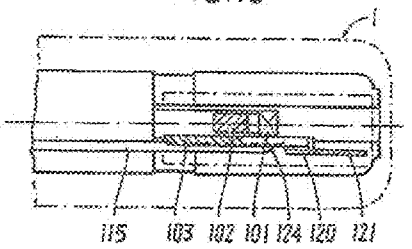
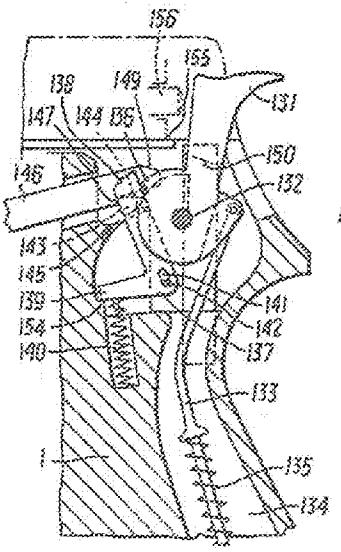


FIG.17



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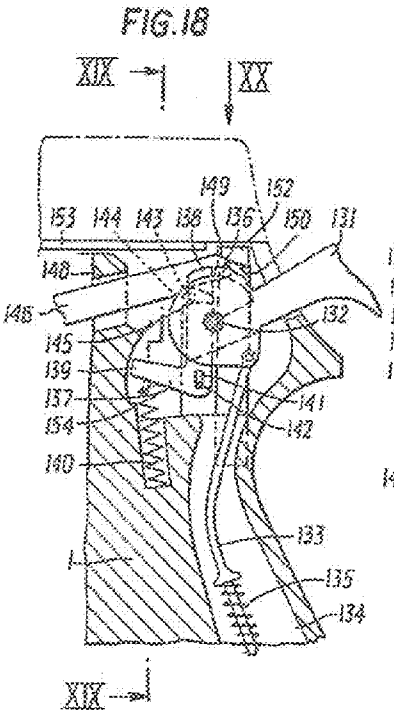

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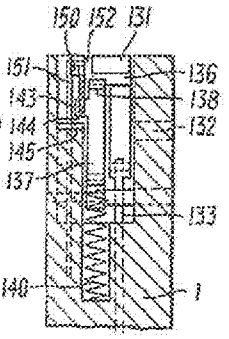
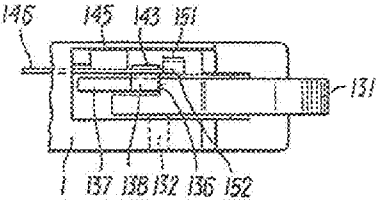


FIG.20



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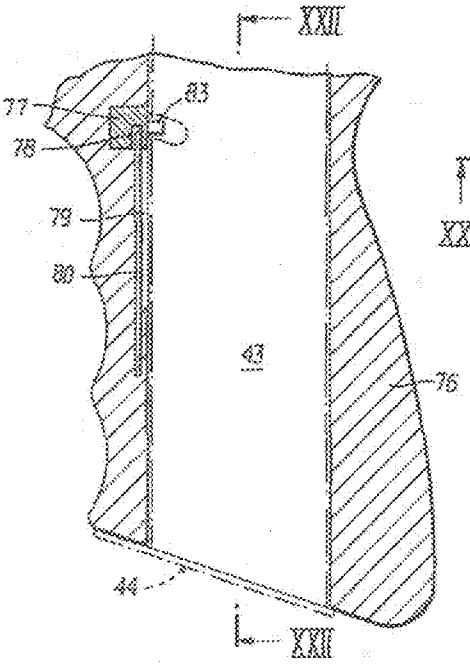

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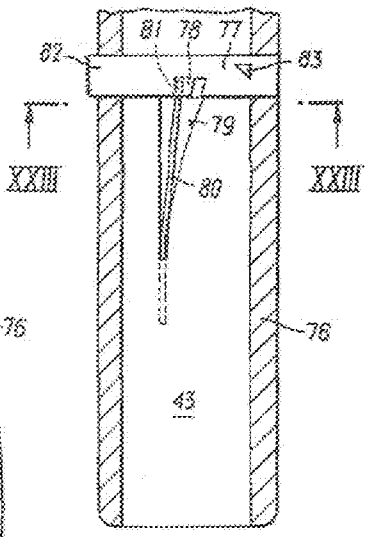

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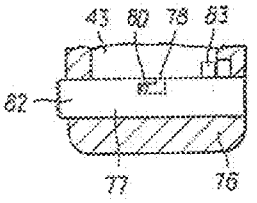

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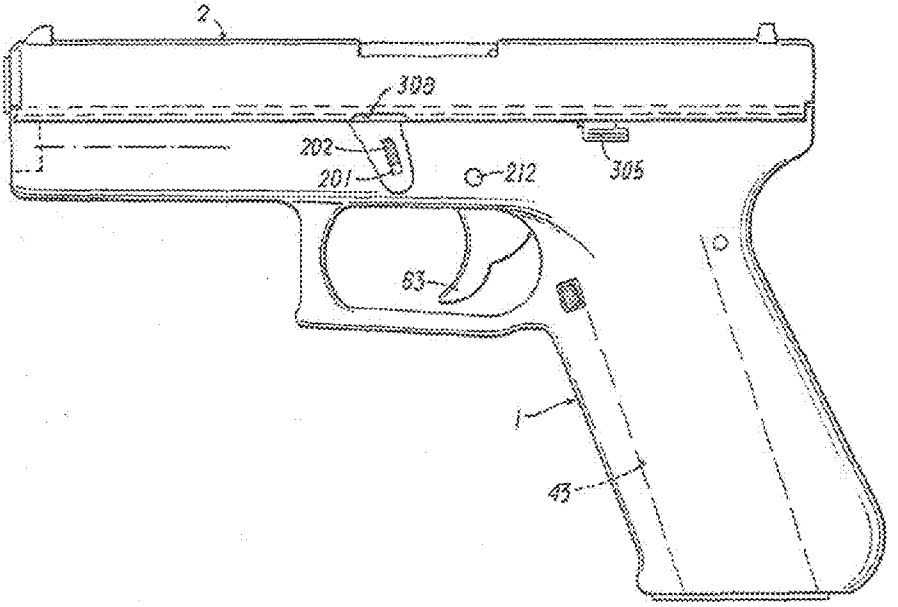

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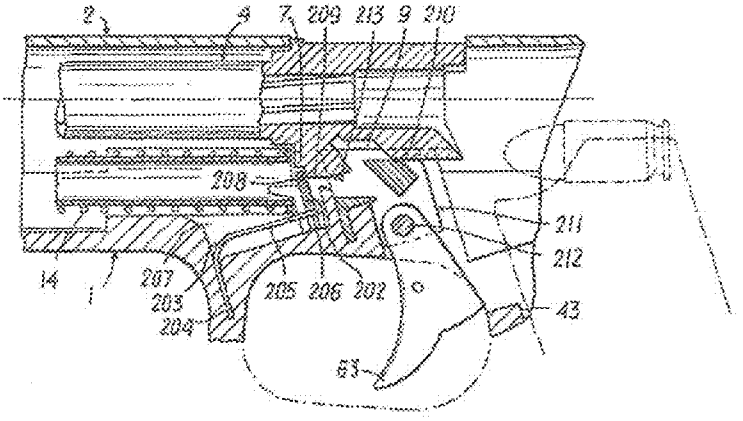

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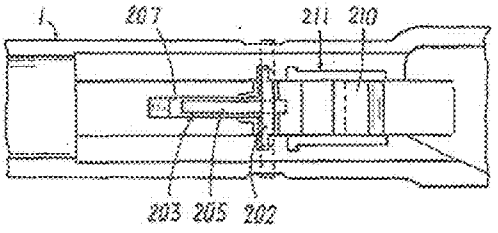


FIG. 27

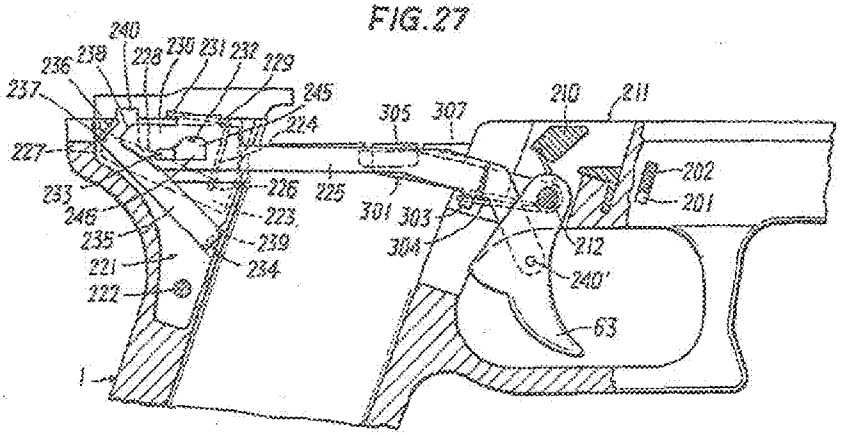


FIG. 28

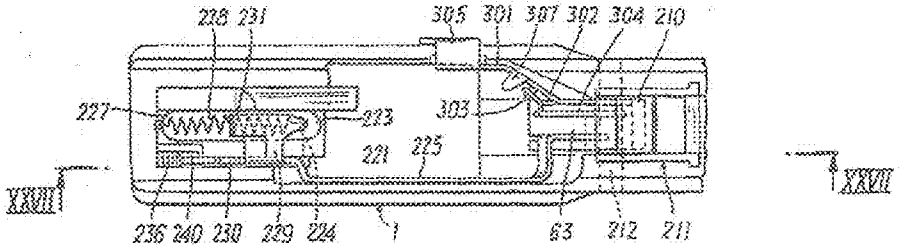
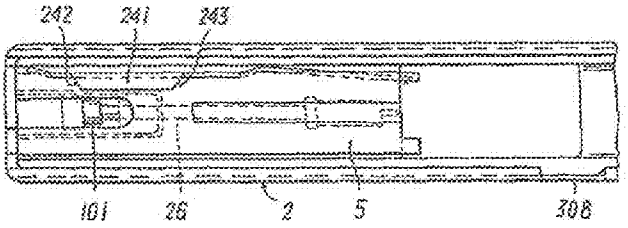


FIG. 29



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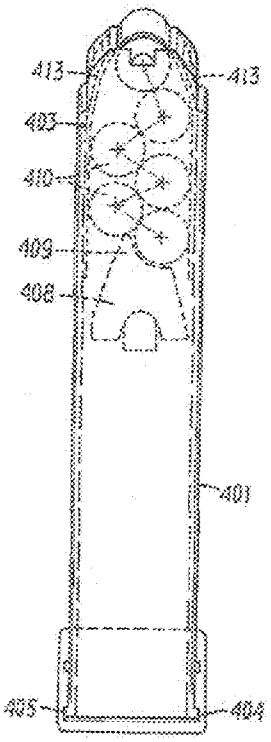

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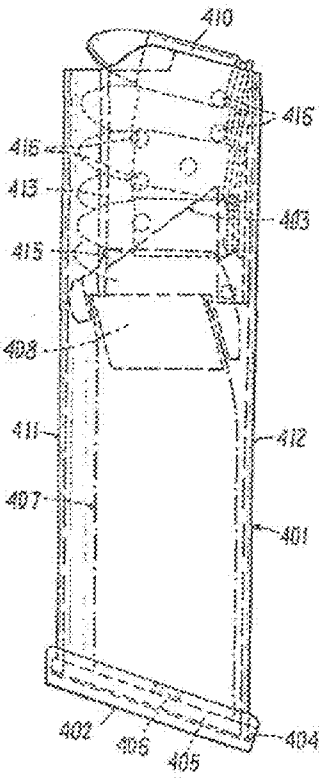

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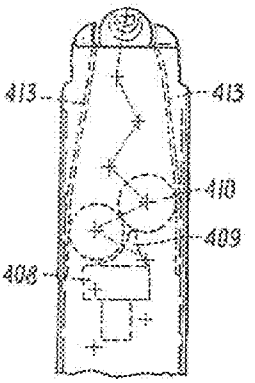

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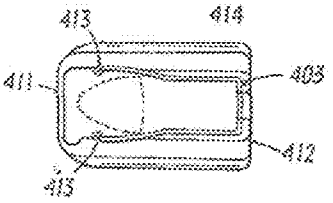

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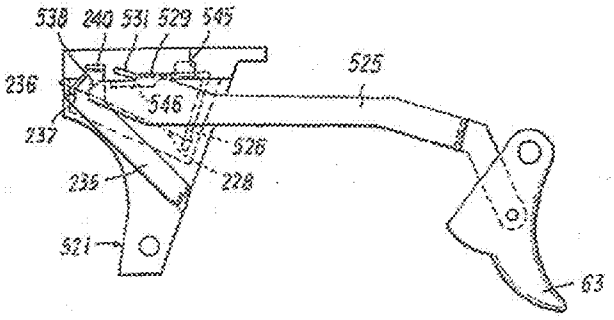

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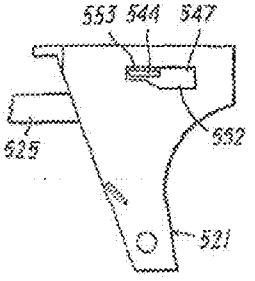

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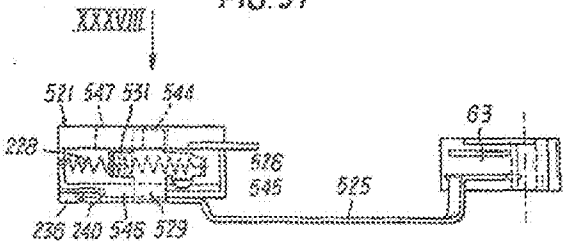
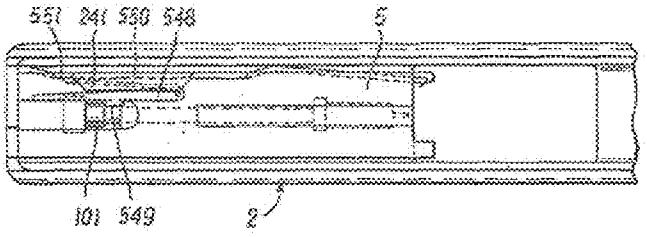


FIG. 39



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AUTOMATIC PISTOL WITH COUNTERACTING SPRING CONTROL MECHANISM

FIELD OF THE INVENTION

The present invention relates to a pistol. More particularly this invention concerns an automatic pistol of the type which automatically ejects the spent casing and chambers a new cartridge after each shot.

BACKGROUND OF THE INVENTION

A standard automatic pistol has a frame provided with a firing mechanism and carrying a slide comprising the barrel and breech slidable on the frame. A recoil spring is braced between the frame and slide and the breech is provided with a firing bolt operable by a firing-bolt spring or a hammer loaded by a hammer spring. The firing mechanism has an abutment guided generally parallel to and extending into the path of the firing bolt or the hammer. This abutment is connected via a link with the trigger so that on actuation of same it is movable in a direction loading the firing bolt or hammer.

Such pistols are relatively complicated to use. To chamber a cartridge it is necessary to pull back and then push forward the slide. Similarly when the clip is empty the slide must be pulled back, a new clip inserted, then the slide released and moved forward to chamber the cartridge. All these actions must be carried out against heavy spring forces and in only one sequence, so that such a pistol can only be entrusted to experienced hands.

The shooter cannot often tell whether the pistol is on or off safety, especially after a pause in shooting. Thus it is possible for a shot to be attempted while the safety is on, or for a shot to be loosed inadvertently by someone thinking it is on when it is not.

Trigger-type automatics have a trigger that is cocked by the slide when a cartridge is chambered. In order to carry the loaded pistol with safety the hammer must be uncocked. Subsequent shooting necessitates manually cocking the hammer by means of the trigger. This procedure requires that quite some force be exerted, necessitating a long trigger stroke without any noticeable critical point. The pistol is off safety after the shot, and subsequent shots only require limited force on and a limited stroke of the trigger, so that the danger of an unintentional shot is great. For safety against jarring and dropping, a particular latch for the firing bolt is provided that is released on operation of the trigger before the hammer strikes the firing bolt.

In addition pistols are known with a separate safety lever which is actuated by the three fingers surrounding the pistol grip. It is, however, difficult to move these three fingers independently of the trigger finger so that mistakes in handling happen. In addition with such a pistol whenever it is solidly gripped it is off safety, so that unintentional shots can happen.

Common to the known pistols is that the firing mechanism holds the firing element, that is the firing bolt or the hammer, in its cocked position and in this position the pistol is off safety and cocked so it is sensitive to jarring or dropping.

Another problem with the known automatic pistols is that removal of the barrel for servicing of the gun is fairly difficult, necessitating tools. In view of the need to maintain such complicated mechanisms carefully, such difficulty is extremely disadvantageous.

Yet another disadvantage of the known automatic pistols is that after the last shot in a clip the slide returns forward on the empty chamber. To chamber a new cartridge it is necessary to pull back the slide, insert the new clip, then advance the slide. Obviously in the type of situation where a pistol is used such extra handling is very disadvantageous.

OBJECTS OF THE INVENTION

It is therefore an object of the present invention to provide an improved pistol.

Another object is the provision of such an improved pistol which overcomes the above-given disadvantages.

Yet another object is to provide an easy-to-use but very safe automatic pistol which can be produced at low cost.

SUMMARY OF THE INVENTION

These objects are attained according to the instant invention in a pistol comprising, as is known, a frame, a barrel slidable on the frame and having a cartridge-receiving rear end, a breech slidable on the frame and engageable over the rear end of the barrel to form a cartridge chamber, and firing means including a firing element and a firing pin operatively linked thereto. The element is movable on the breech toward and away from the barrel between a rear position in which the firing pin is out of the cartridge chamber and a front position with the firing pin projecting forward into the cartridge chamber for firing a cartridge in the chamber when the firing element moves from the rear to the front position. Spring means operatively engages the element and urges same into the front position. A trigger is movable on the frame between an actuated and an unactuated position. An abutment engageable with the firing element in an intermediate position thereof between its front and rear positions is displaceable backward on the frame. Link means is connected between the trigger and the abutment for displacing same backward into the rear position from the intermediate position on displacement of the trigger from the unactuated to the actuated position and for displacing the abutment out of operative engagement with the firing element on displacement of the trigger into the actuated position for displacement of the firing element by the spring means into the front position.

Thus the starting position of the abutment for the firing bolt or hammer is at an intermediate location in the travel path of same. In this manner the firing mechanism can be such that the trigger force is substantially less than with the known pistols. Preferably the starting position of the firing bolt is in a noncritical region of its travel path or that of the hammer, in one in which the force of the partially loaded firing-bolt spring or hammer spring is insufficient to fire a shot.

According to this invention the spring means includes a relatively strong firing spring braced against the firing element and urging same into the front position and a relatively weak spring braced against the firing element and urging same into the back position. The trigger or cocking force is the difference between these spring forces and can be set at a hair trigger or a relatively stiff novice level. In other words the pistol is always uncocked or at least partially uncocked. The cocking for each shot is effected by the trigger and is assisted by a spring, so that the condition of the pistol is the same before the first shot as it is before the subsequent shots.

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According to another feature of this invention the firing means includes a guide holding the abutment in operative engagement with the firing element on displacement of the trigger from the unactuated to the actuated position. In addition when the element is in the intermediate position the abutment prevents any displacement of the firing element relative to the abutment. Accidental discharge of the pistol therefore is impossible.

In accordance with another invention feature the abutment is displaceable laterally relative to the firing element between a position in the path of same and engageable therewith and a position out of the path and unengageable therewith, the link means displacing the abutment into the out-of-path position on displacement of the trigger into the actuated position. This movement of the abutment which frees the firing element—firing bolt or hammer—in a direction perpendicular to the one in which this element moves to fire the cartridge means that if the pistol is jarred, as for example by being dropped, it is virtually impossible for the necessary forces to be exerted on the mechanism to fire the pistol.

The abutment can, according to this invention, be rotatable between the in-path and the out-of-path positions. More particularly when the firing element is a longitudinally displaceable bolt and the abutment has a sleeve carried thereon, the firing means includes a torsion spring urging the abutment into the in-path position. The abutment is an arm projecting from the sleeve and the breech is formed with a guide holding the abutment in operative engagement with the firing element on displacement of the trigger from the unactuated to the actuated position. In addition in such an arrangement the link means includes a trigger slide displaceable parallel to and transversely of the path of travel of the firing bolt and having a spring urging it into engagement with the abutment.

The abutment can be a lever having one pivoted end and an opposite end engageable in the path of the firing element and deflectable either thereby out of the path thereof to free the firing element for firing. More particularly when the abutment is such a lever it can have one end engaging in the path of the firing element and another end formed with a slot. The frame has a pivot pin traversing the slot and the firing mechanism comprises a spring urging the one end away from the pivot pin. Once again the displacement direction for the link is transverse, that is crosses, that of the firing bolt so the pistol is very jar-resistant.

In accordance with this invention the firing element can also be a hammer pivotal on the frame, in which case the firing mechanism includes a firing bolt carrying the firing pin and engageable with the hammer and the spring means and abutment are engageable with the hammer. The abutment can be a two-arm lever blockingly engageable with the hammer and laterally deflectable out of engagement therewith. It can also be a longitudinally slidable trigger slide such as used in the triggerless pistol according to this invention.

In a particularly simple construction according to this invention the firing element is a firing bolt carrying the firing pin and a firing-bolt nose and the abutment is directly engageable with the nose. Furthermore the link means includes a trigger slide and an inclined surface on the frame engageable with the trigger slide in the actuated position of the trigger. This link means includes a spring urging the slide into engagement with the inclined surface.

To eliminate the problem of firing-pin breakage which plagues automatic pistols, the firing pin is lance-shaped and the breech is formed with an elongated throughgoing slot through which the lance-shaped pin engages. More particularly the firing pin has a flattened triangular tip lying in the pistol plane, so it is very strong in this direction, which is the same as the shell-ejection direction.

The pistol according to this invention has latch means for releasably securing the barrel to the frame. This means includes a projection on the barrel movable along a path on sliding of the barrel and breech on the frame, a frame abutment on the frame and normally in the path, and means for moving the frame abutment out of engagement with the barrel projection. The frame abutment can be an eccentric pivotal into and out of the in-path position, or can be a slide displaceable parallel to the clip hole in the frame. Either arrangement makes removal of the slide relatively easy.

In addition the pistol of this invention has a clip removably engageable with the frame and holding a supply of cartridges displaceable by the breech into the chamber, and safety means engageable between the clip and the link means for permitting the abutment to move out of engagement with the firing element only when at least one cartridge remains in the clip. To this end the clip has a cartridge follower and the safety means includes an element on the frame engageable through the clip with the follower. Thus when the last shot is fired the slide will not return forward, so that a new clip can be inserted with automatic chambering of the first cartridge.

The pistol according to this invention is set up so that the abutment cannot catch the firing element and recock and fire it when the trigger is held back. Instead the trigger must be released between shots to move the link forward into its forward position where it can engage the abutment. In other words the abutment and link can only engage one another when the firing element is in the intermediate position and the link is in the trigger-unactuated position.

With the pistol of this invention releasing and firing are done with the same element. Thus the condition of the pistol is the same before the first shot as it is before the subsequent shots. This is attained when the guide which establishes the path of the abutment during the loading motion blocks projection of the abutment into the travel path of the firing bolt or hammer. The pistol is therefore always uncocked or partially uncocked.

Handling of the pistol according to the instant invention is therefore as simple as possible. The pistol is ready after chambering of the cartridge in the barrel for shooting at any time and is nonetheless completely safe from unintentional shots. Similarly in this condition the pistol is fully drop- and jar-resistant. As a result of the unchanging trigger force accuracy is increased. Simple and safe handling of the pistol is ensured even for the unpracticed user.

As a result of the small number of parts and the possible fitting of the firing mechanism into a small space the frame can be of one piece, preferably of a synthetic resin, so that the overall weight is substantially less than that of comparable known pistols. In addition manufacture is simplified and made inexpensive. In fact the entire frame can be a synthetic-resin casting made with a simple two-piece mold, and the various elements like the firing element and guide for the slide can be formed by metallic inserts.

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DESCRIPTION OF THE DRAWING

The above and other features and advantages will become more readily apparent from the following, reference being made to the accompanying drawing in which:

FIG. 1 is a side view of a pistol according to the present invention;

FIG. 2 is a front end view of the pistol of FIG. 1;

FIG. 3 is a large-scale longitudinal section through a detail of the pistol of FIG. 1;

FIG. 4 is a top view of a detail of FIG. 1;

FIG. 5 is a longitudinal section through the breech of the pistol of FIG. 1;

FIG. 6 is a top view of the breech of FIG. 5;

FIG. 7 is a section taken along line VII—VII of FIG. 5

FIG. 8 is a top view of the rear portion of the firing mechanism;

FIG. 9 is a longitudinal section through the mechanism of FIG. 8;

FIG. 10 is a section taken along line X—X of FIG. 9;

FIG. 11 is a side view of the firing mechanism in the uncocked position;

FIG. 12 is a side view of the firing mechanism in the ready-to-fire position;

FIG. 13 is a longitudinal section like FIG. 9 through a second embodiment of the firing mechanism, in the uncocked position;

FIG. 14 is a section taken along line XIV—XIV of FIG. 13;

FIG. 15 is a section like FIG. 13 but in the cocked position;

FIG. 16 is a section taken along line XVI—XVI of FIG. 15;

FIG. 17 is a longitudinal section like FIG. 9 through a third embodiment of the firing mechanism, in the uncocked position;

FIG. 18 is a section like FIG. 17 but in the cocked position;

FIG. 19 is a section taken along line XIX—XIX of FIG. 18;

FIG. 20 is a top view taken in the direction of arrow XX of FIG. 18;

FIG. 21 is a large-scale longitudinal section through a detail of FIG. 1;

FIG. 22 is a section taken along line XXII—XXII of FIG. 21;

FIG. 23 is a section taken along line XXIII—XXIII of FIG. 22;

FIG. 24 is a side view of another pistol according to the present invention;

FIG. 25 is a large-scale longitudinal section through a detail of the pistol of FIG. 1;

FIG. 26 is a top view of the detail of FIG. 25;

FIG. 27 is a large-scale longitudinal section through the firing mechanism of the pistol of FIG. 24;

FIG. 28 is a top view of the detail of FIG. 27, line XXVII—XXVII being the section plane for FIG. 27;

FIG. 29 is a bottom view of the slide of the pistol of FIG. 24;

FIG. 30 (same sheet as FIGS. 8–12) is a longitudinal section through a firing-pin assembly according to this invention;

FIG. 31 (same sheet as FIGS. 8–12) is a front end view of the assembly of FIG. 30;

FIG. 32 is a side view of the clip for the pistol of FIG. 1;

FIGS. 33, 34, and 35 are respectively back end, partial front, nd top views of the clip of FIG. 32;

FIG. 36 is a side view of yet another firing mechanism according to the invention;

FIG. 37 is a top view of the structure of FIG. 36;

FIG. 38 is a view in the direction of arrow XXXVIII—XXXVIII of a detail of FIG. 37; and

FIG. 39 is a bottom view of a slide that works with the mechanism of FIGS. 36–38.

SPECIFIC DESCRIPTION

As seen in FIGS. 1–12 the pistol in general is comprised of a frame 1 and a slide 2 which is displaceable on the frame 1 by means of a tongue-and-groove guide 3. The barrel 4 and breech 5 are mounted on the slide 2. The barrel 4 has a breech block 6 and a downwardly projecting extension 7 in which a recess 8 is formed from which a forwardly upwardly inclined groove 9 extends. The barrel 4 has an upwardly directed projection 10 extending into a window 11 of the slide 2 so that the barrel 4 and breech 5 are locked together for joint movement along the axis A of the barrel 4. The barrel 4 projects with play through an opening 12 at the front end of the slide 2 so that it is only held in the region of its breech block 6.

The slide 2 has an end wall 13 which serves as rest for a recoil spring 14. The other rest is formed by the rim 15 of a sleeve 16 that is surrounded with play by the recoil spring 14. The front end 17 of the sleeve 16 is received with play in a bore 18 of the end wall 13. The sleeve 16 is fixed axially by a bracket 19 which has a flange fitted in a slot of the frame 1.

Also mounted in the frame 1 is an eccentric 20 formed of a pair of disks 21 and 21' rotatable in a bore of the frame 1 and connected together by a stem 22. The disk 21' projects out of the frame 1 and carries a spring lever 23 whose free end 24 can snap over a pin 25. When thus engaged over the pin 25 rotation of the eccentric 20 is impeded.

The breech 5 is mounted axially unmovably in the slide 2. It only has centering surfaces which correspond to complementary surfaces of the barrel 4. As seen in FIGS. 5–7, a firing bolt 26 generally centered on the barrel axis A is slidable in the breech 5 and carries at its front end a firing pin 27. This firing bolt 26 has a section 28 of small diameter straddled by a spring rest 29 against which the firing-bolt spring 30 is braced and which bears with its other end against a shoulder 31 of a spring tube 32 which is downwardly open and which flatly abuts the breech 5 with its rear end. A weak return spring 33 mounted in the tube 32 bears in one direction against the shoulder 31 of the spring tube and in the other direction on a nose 34 of the firing bolt 26, which nose 34 projects with its tip down out of and is guided in a slot 35 of the breech 5. The nose 34 is formed with an inclined surface 36. The position of the firing bolt 26 is determined by engagement of its section 37 on the spring rest 29.

Ridges 39 and 40 are provided spaced one behind the other on the underside 38 of the breech 5 so that a gap 41 is formed. The outer flank of the ridge 39 and the inner flank of the ridge 40 lie substantially in a plane. In addition the breech 5 has an extractor hook 42.

Behind a magazine hole 43 for the cartridge clip 44 (see FIG. 1), the frame 1 has a guide 45 fixed in place by a pin 46 as seen in FIGS. 8–12. The guide 45 extends to the rear end wall 47 of the frame 1 and is formed with a bore 48 whose axis is parallel to the bolt/barrel axis A.

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This bore 48 receives a stop sleeve 49 which contains a stop spring 5 which is braced between the floor of the bore 48 and the end wall 51 of the stop sleeve 49. A pin 52 in the floor of the bore 48 and a pin 53 in the end wall 51 of the stop sleeve 49 guide it. The spring 50 is received with radial play in the sleeve 49. The wire ends 54 and 55 of the spring 50 are bent axially and are received in little bores respectively in the floor of the bore 48 and in the end wall 51. The stop spring 50 is not only axially, but also angularly loaded since the stop sleeve 49 is is turned a few times when it is mounted to torsionally or angularly load the spring 50. In this manner the sleeve 49 is urged clockwise according to arrow 56 (FIG. 10). To prevent such rotation it has an arm 57 which bears against the upper edge surface 58 of the guide 45. The guide 45 further has a shoulder 59 which is interrupted by a slot 60. The width of the slot 60 is such that an abutment 61 on the sleeve 49 can engage in it.

The guide 45 is provided with a longitudinally open recess 62 in which is slidable a trigger slide 64 connected to the trigger 63. This trigger slide 64 occupies only a portion of the recess 62 and has an arm 65 engaging underneath the arm 57 as shown in FIG. 12. The arm 65 terminates in a hook 66 which coacts with a step 67 on the guide 45. Furthermore the slide 64 has a cam surface 68 which ends at a guide edge 69. The slide 64 is thus on one side guided by the floor 70 of the recess 62 and on the other side with the edge 69 on the underside 38 of the breech 5 so that it can move substantially only parallel to the axis A of the firing bolt 26. It is provided with a bend 71 on which bears the long leg 74 of a hairpin spring 73 received in an elongated cutout 72 of the guide 45 and having a short leg engaged in a slot 75 of the frame 1. The spring is constructed such that the long leg 74 urges the trigger slide 64 forward and the arm 65 toward the spring sleeve 49.

As seen in FIGS. 21–23, inside the grip 76 of the frame 1 is formed with a square-section passage transverse to the hole 43 for the cartridge clip 44 and receiving a slide 77 having a downwardly open bayonet guide 78. Near this slide 77 the hole 43 is formed with a wedge-shaped recess 79 into which a bore opens that receives a spring wire 80 that engages with its free end 81 in the bayonet guide 78. In addition the slide 77 projects with its end 82 out of the grip 76 so that it can be shifted against the force of the spring 80. It carries a wedge nose 83 which engages in a groove of the clip 44.

FIGS. 8 to 11 show the pistol uncocked. In order to chamber the first cartridge 84 in the barrel 4, the slide 2 is slid back against the force of the recoil spring 14. The stem 22 of the eccentric 20 engages in the groove 9, swings the barrel 4 down, and holds it against axial movement relative to the slide 2 once it reaches the base of the groove 9. This action pulls the projection 10 of the barrel 4 out of the window 11 so that the slide 2 with the breech 5 can move further back. Meanwhile the nose 34 of the firing bolt 26 carries back the abutment 61 as can be understood from a comparison of FIGS. 7 and 10. The nose 34 is prevented from rotating by the groove 35, as is the abutment 61 which lies on the front part of the shoulder 59. Once the abutment 61 and the stop sleeve 49 have moved back sufficiently, while unloading the stop spring 50, the abutment 61 can move angularly into the slot 60. Thus the cam surface 36 of the nose 34 pushes the abutment 61 against the torsional force of the stop spring 50 into the slot 60 so that this nose 34 can move back past the abutment 61. As soon as the nose 34 passes the abutment 61, it is turned by the spring 50 back into the position of FIG. 10. The sleeve 49 engages with its end wall 51 against the rear end wall 47 of the frame 1 and is solidly positioned here by the axially effective force of the stop spring 50.

When the slide 2 is returned somewhat forward, the nose 34 of the firing bolt 26 engages forward against the abutment 61. The force of the firing-bolt spring 30 overcomes that of the stop spring 50 so that the nose 34 slides the abutment 61 and the sleeve 49 forward until the end of same engages the floor of the bore 48 in the guide 45. Further advance of the slide 2 is impeded as the abutment 61 holds the nose 34 and the firing bolt 26, thereby partially tensioning the firing-bolt spring 30. Simultaneously the breech block 6 is closed by the breech 5 and moved forward with the barrel 4. This lifts the rear portion of the barrel 4 from the stem 22 so the projection 10 engages again in the window 11 of the slide 2 and the barrel 4 and breech 5 are locked together. During this action, as is known, the extractor finger 42 engages the lip of the casing of a shell in the block 6, pulls it axially backward therefrom, and flips this spent casing out the window 20 as same comes level with the extracted casing.

Pulling the trigger 63 moves the trigger slide 64 back so the cam surface 68 engages under the arm 57 and urges it up. Since the abutment 61 lies on the front shoulder 59 further movement of the trigger 63 moves the arm 57, the sleeve 49, the abutment 61 and the firing-bolt nose 34 entrained thereby back while unloading the stop spring 50 and loading the firing-bolt spring 30. Thus it is only necessary to bring a force to bear on the trigger 63 equal to the difference between the forces of the springs 30 and 50 to move these elements of the mechanism. By choosing appropriate spring forces the pressure for the trigger 63 can be set at any desired level.

As soon as the abutment 61 reaches the slot 60 the cam surface 68 of the trigger slide 64 raises the arm 57 and swings the abutment 61 into this slot 60. This frees the nose 34 and the firing bolt 26 is propelled forward by the force of the spring 30, overcoming the spring force of the weak return spring 33. The firing pin 27 strikes as a result of the kinetic energy of the firing bolt 26 with the necessary force on the primer of the cartridge, exploding it. As soon as the shot has left the barrel 4, the powder gases drive the slide 2 in the above-described manner back, with the rail 39 on the underside 38 of the breech 5 engaging the guide edge 69 of the trigger slide 64 and moving it outward against the force of the hairpin spring 73.

Meanwhile the arm 57 disengages the cam surface 68 and returns with the abutment 61, which moves out of the slot 60 under the force of its stop spring 50, into the starting position in which the arm 57 lies on the surface 58 of the guide 45. If the slide 2 is moved by the recoil spring 14 forward again, the nose 34 entrains the abutment 61 until the sleeve 49 engages with its end surface on the base of the bore 48. Further advance of the slide partially compresses the firing-bolt spring 30 again. Since the trigger slide 64 does not yet engage the arm 57 it is prevented from shooting automatically when the trigger 63 remains depressed. Only when the trigger 63 is released does the guide edge 69 slide along the rail 40 forward to be pressed by the spring 73 into the gap 41 between the ridges 39 and 40 so the arm 65 of the trigger slide 64 engages under the arm 57. Simultaneously the return spring 33 slides the firing bolt 26 until it lies

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with its front section 37 on the spring rest 38, whereupon the firing pin 27 is withdrawn into the breech 5. Now the pistol is again ready to fire.

If the spring arm 23 is pulled out of the catch 25 it can rotate the eccentric 20 through 180°. The stem 22 disengages the barrel 4 and the entire slide 2 can be pulled off the front. The recoil spring 14 meanwhile remains compressed since the shoulder 15 of the sleeve 16 bears on the projection 7 of the barrel 4. The slide 2 can therefore be shifted without exerting substantial force.

FIGS. 13 to 16 show a further embodiment of the firing mechanism according to this invention. Otherwise the pistol is identical to that shown in FIGS. 1 to 12 with identical reference numerals referring to identical structure.

A nose 101 formed unitarily with the firing bolt 26 projects down and toward the front from the breech 5. This firing bolt 26 is mounted in the breech 5 which is fitted jointly with the barrel 4 in the slide 2. Engaged in the path of the nose 101 is the abutment end 102 of a lever 103 which is formed on its other end with a slot 104 that is traversed by a pivot pin 105, the lever 103 therefore being limitedly displaceable transverse to the breech 5 in the frame 1. A spring 106 fixed in the frame 1 presses with its free end against the pivoted end of the lever 103 so that the outer end of the slot 104 bears on the pivot pin 105, that is so that the lever 103 is moved up on the pin 105 toward the slide 5. A hairpin spring 107 carried on the pin 105 has a short leg 108 anchored in the frame 1 and a long leg 109 bearing on a pin 110 which is fixed on the lever 103. This spring 108 therefore urges the lever clockwise toward a position lying on a stop 111 in the frame 1 (FIG. 15).

The lever 103 has a shoulder 112 which coacts with a shoulder 113 of the frame 1. The shoulder 113 is so long that it only moves clear of the shoulder 112 when the lever 103 is in its rear end position (FIG. 15) lying against the stop 111. Before reaching this end position the shoulders 112 and 113 prevent a shifting of the lever 103 against the force of the spring 106 and a simultaneous sliding of the slot 104 along the pin 105.

The pin 110 of the lever 103 is engaged by an edge 114 of the trigger slide 115 which passes through a hole 117 in the frame 1. It extends with its arm 118 beyond the pin 110 and its end surface 119 coacts with another surface 120 formed by a bent-over end of a leaf spring 121 that is fixed in the frame 1. Above the surface 120 the leaf spring 121 is provided with a control edge 122 which coacts with a ridge 123 on the underside of the breech 5. The end surface 124 of the ridge 123 is inclined as seen in FIG. 16.

In the uncocked position of the pistol the lever 103 is urged by the spring 107 against the stop 111. If the slide 2 is shifted back in order to chamber the first cartridge from the clip, the nose 101 slides over the end surface 125 of the lever 103 and moves it down against the force of the spring 106. As a result the lever 103 can be passed by the nose 101. Forward shifting of the slide 2 causes this firing-bolt nose 101 to again entrain the lever 103 whose end 102 extends into its path until the lever 103 engages against a stop 126, assuming the position of FIG. 13. In this position the nose 101 and the firing bolt 26 are prevented from moving forward any further. Further forward sliding of the slide 2 compresses the firing-bolt spring 30 partially. The pistol is ready to shoot in this condition.

When the trigger slide 115 is pushed back by the trigger, it slides on the surface 116 of the frame 1 and its edge 114 pushes the pin 110, the lever 103, and the nose 101 back also. This fully loads the firing-bolt spring 30. When the lever 103 reaches its rear end position and engages the abutment 111 the end surface 119 of the trigger slide 115 engages the surface 120 and moves the trigger slide 115 down against the force of the spring 106 so that it moves away from the surface 116 and the pin 110 as well as the lever 103 move down. This moves the free lever end 102 out of the path of the nose 101, freeing it, so that the firing bolt 26 is propelled forward under the force of the fully compressed firing-bolt spring 30 and fires the cartridge.

When the slide 2 is then driven back by gases from the shot the inclined surface 124 of the ridge 123 on the breech 5 pushes the leaf spring out (FIG. 14). The control edge 122 of the spring 121 thus lies against the ridge 123 until the slide 2 returns to its full-forward position. Deflection of the spring 121 makes the surface 120 slide off the end surface 119 of the trigger slide 115 and the spring 106 lifts the lever 103 and with it the arm 118 of the trigger slide 115. The ridge 123 frees the control edge 122 when the breech 5 moves into the full-forward position, but the spring 121 cannot return to its original position because the arm 118 lies at the same level as the head where the surface 120 is. Only when the trigger is released and the trigger slide 115 slides forward is the leaf spring 121 released and takes its illustrated rest position. The trigger slide 115 need not be in its full-forward position shown in FIG. 13 for the pistol to be ready to fire; the surfaces 119 and 120 need merely by separated. This embodiment of the firing mechanism allows rapid fire in that a shot following another shot can be made without complete release and depression of the trigger. Nonetheless some forward return of the trigger is essential for a second shot so the pistol does not fire automatically.

In this arrangement also the mechanism can be mounted in a block, such as the guide 45, in the frame 1.

Instead of a sliding of the lever 103 in its longitudinal direction the lever can also be moved laterally out of the path of the firing-bolt nose 101. Such an arrangement is not illustrated, because it is basically a combination of the two described embodiments.

FIGS. 17 to 20 show a part of a pistol that is provided with a hammer 131 that on shooting is pivoted by the force of a spring 135 on a pivot pin 133 and engages a firing bolt 26 which fires the cartridge. Even in this type of pistol it is possible to use the principles of the instant invention.

The hammer 131 is pivotal in the frame 1 about a pivot pin 132 and the rod 133 is pivoted on the hammer 131. This rod 133 is arranged in a cutout 134 of the frame 1 and is braced against the hammer compression spring 135. The hammer 131 has a lateral shoulder 136 on which a two-arm lever 137 engages with its one arm 138. Its other arm 139 is braced against an abutment spring 140 which is received in a bore of the frame 1. The two-arm lever 137 has in its center between its two arms a slot 141 that is traversed by a pivot pin 142 and about which the lever 137 is pivotal. Furthermore, the lever 137 is provided with a lateral projection 143 which forms a shoulder 148 that faces a shoulder 146 of the frame 1. The trigger slide 146 engages with a shoulder 147 on the projection 143 and extends through an opening 148 in the frame 1. Its free end is provided with an inclined surface 149 that coacts with a surface 150 formed by the bend of a leaf spring 151 whose end surface 152 acts as a control edge that coacts with a

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ridge 153 of the breech 5. The leaf spring 151 is anchored with its lower end in the frame 1. In addition a stop 154 is formed in the frame 1 to limit the forward pivot motion of the lever 137.

FIG. 17 shows the firing mechanism in the uncocked condition. To cock it the trigger slide 146 is moved back by means of the trigger so that it pivots the projection 143 of the lever 137 back by means of the shoulder 147. The free end of the lever 137 serving as stop lies meanwhile on the step 136 of the hammer 131 and pivots it clockwise against force of the hammer spring 135. As soon as the inclined surface 149 of the trigger slide 146 reaches the surface 150 (FIG. 18) the trigger slide 146 swings down, whereupon the lever 137 is shifted down against the force of the abutment spring 140 in the slot 141 and its abutment end frees the shoulder 136 of the hammer. The hammer is snapped forward by the hammer spring 134 to strike the protruding rear end 156 of the firing bolt 26, which in turn is propelled forward to fire the cartridge.

After the shot the gases drive the slide 2 with the breech 5 back so that the inclined end face of the ridge 153 runs against the control surface 152 of the leaf spring 151 to pivot same outward (FIG. 19). As a result the surfaces 149 and 150 disengage each other and the stop spring 140 slides the lever 137 together with the trigger slide 146 up so that the end of same comes to lie next to the bend of the spring 151. Simultaneously as the slide reverses direction and follows the breech 5 a rear edge 155 of the breech 5 engages the hammer 131 and pivots it back counterclockwise against the force of its spring 135. The hammer 131 entrains with its shoulder 136 the abutment end 138 of the lever 137 until this lies on the stop 154. In this position the hammer 131 is a sufficiently safe distance behind the rear end 156 of the firing bolt 26. As soon as the trigger is released, the trigger slide 146 moves forward so that the firing mechanism again assumes the position of FIG. 17. Thus the pistol cannot make automatic fire, that is a separate actuation of the trigger is need for each shot.

FIG. 24 shows a pistol in side view in which disassembly is effected by a slide catch 202 which takes the place of the eccentric 20 of FIG. 1. The frame 1 has a slot 201 in which the catch 202 is shiftable and urged upward by a leaf spring 203 having has a short arm 204 fitted into the frame 1 and a long arm 205 engaged in a groove 206 of the catch 202. Since this spring arm 205 is arranged in a slot 207 in the frame 1, the catch 202 is also prevented from moving longitudinally of itself, that is transversely of the central plane of the pistol.

The catch 202 is formed in its central region near the upper edge with a groove 208 in which a ridge 209 of the projection 7 of the barrel 4 can engage. This projection 7 in turn has an inclined groove 9 which coacts with a strut 210 of an anchor piece 211 fitted into the frame 1 and secured therein by a pin 212 which also serves as pivot for the trigger 63.

The groove 207, the groove receiving the spring arm 204, the slot 201, and the recess for holding the support piece 211 are inclined to the barrel axis A and preferably are parallel to the hole 43 for the cartridge clip 44 so that shaping of the core for the manufacture of these grooves and recesses can be quite easy. It is therefore possible to make the frame 1 in one piece of a synthetic resin in a mold whose halves are separated in a direction parallel to the oblique hole 43 and the parallel grooves mentioned above.

The function of the strut 210 corresponds to that of the stem 22 of the eccentric 20 of FIGS. 1 to 4. In order to pull the slide 2 with the barrel 4 and recoil spring 14 off the front of the frame 1, the slide 2 must be pulled back a little so that the ridge 209 of the projection 7 moves out of the groove 208 of the catch 202. Then the slide 2 is moved down against the force of the spring 203 so as to free the barrel 4 and slide 2 for unimpeded forward movement on the frame 1. On replacing the slide 2 on the frame 1 a wedge surface 213 runs over the upper edge of the catch 202 and pushes it down against the force of the spring 203. Once the projection 7 has passed the catch 202, the ridge 209 is moved by the spring 14 up and latches in the groove 208 of the slide 2, whereupon mutual tongue-and-groove locking is ensured.

This type of barrel locking can also be used in other types of pistols.

FIGS. 27 to 29 show another trigger mechanism which is very simple. A block 221 is fitted in the frame 1 and is held in place therein by a pin 222. It has in the region of the longitudinal central plane of the pistol a cavity 223 in which a bent arm 224 of the trigger slide 225 engages. Stretched between a lower end 226 of the trigger slide 225 and the rear wall 227 of the cavity 223 is a tension spring 228 which pulls the trigger slide 225 up and back.

The arm 224 of the trigger slide 225 is connected by a web 229 with a plate-like end 230 of the trigger slide 225. This web 229 has a backwardly projecting part 231 that forms an abutment for the firing bolt 26. The plate 230 is formed with a polygonal recess 232 which is traversed by a projection 233 of the block 221. Near this projection 233 the block 221 has a groove 234 which extends upward and back and in which a leaf spring 235 is fitted which has an outwardly directed edge 236 which forms a control surface 237 for an inclined end surface 238 of the trigger slide 225. The other end of the leaf spring 235 is bent in the opposite direction from the edge 236 and is fitted in a groove 239 of the block 221. Near the edge 236 is a control edge 240 which is arranged in the path of a control ridge 241 on the underside of the slide 2 and formed on its ends with two cam or wedge surfaces 242 and 243. The front end of the trigger slide 225 is pivoted on a pin 240' on the trigger 63.

In the uncocked condition of the pistol the spring 228 urges the trigger slide 227 into its back position with th inclined surface 238 lying on the control surface 237 so that the projection 233 is in the upper part 245 of the recess 232. In this position of the slide 225 the abutment 231 lies underneath the path of the nose 101 of the bolt 26.

To chamber the first cartridge, the slide 2 is pulled back so that the control edge 240 is moved inward by the wedge surface 242 of the guide 241 on the slide 2 and the inclined surface 238 of the trigger slide 225 and the control surface 237 of the leaf spring 235 disengage each other. As a result the spring 228 can pivot the trigger slide 225 up so that the projection 233 comes to lie in the lower region 246 of the recess 232 of the plate 230. Meanwhile the end of the trigger slide 225 has laterally run past the edge 236 so that the surfaces 237 and 238 are out of alignment with each other and therefore without mutual effect. In this position the abutment 231 moves into the path of the nose 101 of the firing bolt 26 so that as the slide 2 is moved forward the nose 101 engages the abutment 231 and moves the trigger slide

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228 forward until the projection 233 assumes the position in the recess 232 shown in FIG. 27. The pistol is now cocked.

On pulling the trigger at first the slide 225 is guided by the projection 233 and the spring 228 against the force of the bolt spring 30, which is hereby loaded, and slides back until the surfaces 237 and 238 engage each other. In this position the projection 233 has reached the broad part of the recess 232 so that the trigger slide 225 can swing down as the inclined surface 238 slides on the control surface 237. The abutment 231 then frees the nose 101 of the firing bolt 26 and the shot is fired.

On backward displacement of the slide as a result of the recoil the wedge surface 242 moves the control edge 240 inward so that the above-described interaction can repeat itself. The position of the control ridge 241 ensures that the wedge surface 242 of the control edge 240 is only freed when the barrel 4 and breech 5 are locked together. If for any reason the slide 2 has not moved fully forward the ridge 241 holds the leaf spring 235 in its inwardly bent position in which pulling of the trigger 63 is ineffective because the inclined surface 238 cannot engage the control surface 237 so that the trigger slide 225 does not swing down and the abutment 231 cannot free the firing-bolt nose 101.

A device can also be provided to ensure quick preparation to fire on changing the cartridge clip, whose construction is described in detail below with reference to FIGS. 33–35. To this end a lever shown generally at 301 is provided which is pivoted on the axle pin 212 of the trigger 63 and received in a laterally open recess 302 of the trigger 63. The lever 301 is provided on its underside with a hook 303 in which is hooked the end of a hairpin spring 304 which surrounds the pin 212 partially and is caught in a groove of the web 218. This spring 304 tries to pivot the lever 301 into a lower end position in which a handle 308 lies in a recess of the frame 1. In addition the lever 301 has on its upper side a nose 307 which engages in the path of a slide that is backed up by a spring in the clip as will be described below and which urges the cartridges upward. When the last cartridge of the clip is inserted into the barrel 4 the slide of the clip engages the nose 307 of the lever and tries to pivot same up. Such pivoting of the lever 301 is prevented by the lower edge of the slide 2. After firing the cartridge the lever 301 enters into a recess 309 (FIG. 29) on the lower edge of the slide 2 when this is in its end position. The lever 301 latches the slide 2 against moving forward. Swinging of the lever 301 on the pin 212 (FIG. 24) maintains this latching even when the clip is removed and replaced with a new clip. As soon as the handle 308 of the lever 301 is swung down, the slide 2 is moved by the force of the recoil spring 14 forward and pushes the first cartridge of the new clip into the barrel 4. Thus it is no longer necessary to pull back the slide after changing the cartridge clip.

With the known pistols and center-fire cartridges it is possible to break off or damage the firing pin on the firing bolt when this pin does not pull back into the end of the breech 5 quickly enough. As shown in FIGS. 30 and 31 according to the invention the firing pin 27' is pointed and lance-shaped, that is it is not of cylindrical shape as is standard, but is of rectangular section with a substantially greater vertical dimension in the pistol plane than transverse dimension. The pin 27' can engage through an elongated cutout lying on the longitudinal middle plane of the pistol at the breech end. When a spent shell is ejected or a new cartridge is chambered, before the pin 27' engages fully in the cutout in the end of the breech 5, the firing pin is not damaged but is pushed back by the shell or cartridge. By means of the elongated shape of the cutout according to this invention pistols with drop barrels do not develop the otherwise normal brass-chip deposits.

Lance-shaped according to this invention means any shape which varies from the round section and cylindrical shape of the known firing pins and which has a generally flat shape. Preferre is a triangular shape which is obtained, for example, from a pyramid with spherically rounded points that is formed on opposite sides with symmetrical shoulders so that the remaining parabolic flanks can be made planar, slightly convex, or concave.

The cartridge clip shown in FIGS. 32 to 38 has an elongated and generally parallelepipedal synthetic-resin body 401, a base 402 inclined obliquely to the body 401, and a metal insert 403 inside the body 401. The metal insert 403 has holes 416 that flare inward so that the insert can be well anchored in the synthetic-resin body 401 of the clip. The base 402 has grooves 404 that fit on ridges 405 on the lower end of the clip body 401, with a latch 406 blocking unintentional sliding-off of the base 402. A spring 407 is braced at one end on the base 402 and at the other end on a follower slide 408 so as to urge same upward. Shoulders 409 at one end of the follower 408 support the cartridges 410 in the lower portion of the body 401 with their axes perpendicular to a front wall 411 and a rear wall 412 of the body 401. In the upper portion of the body 401 the insert 403 forms, in the region of the slugs, guides 413 that narrow considerably upward and that push the tips of the cartridges 410 together toward the central plane of the clip, which coincides with that of the pistol when the clip is in place in the well 43 thereof, so that the cartridges 410 align and finally assume a position generally parallel to the clip base 402. Portions 414 of the metal insert 403 at the back of the cartridges 410 converge first toward the end of the clip so that as shown in FIG. 33 the backs of the cartridges 410 remain longer in their original staggered positions. This can be seen by a comparison of the dot-dash zig-zag lines of FIGS. 33 and 34.

As a result of the construction according to the invention two considerable advantages are obtained. The position of the cartridge backs ensures a solid contact between them and the back wall 412 of the clip so that friction is reduced as is the resistance to displacement. Catching on the back wall is impossible. The second advantage is that the contact between the cartridges 410 as they are aligned in the upper section of the clip changes. It moves from line contact to point contact so that in the upper part of the clip there is no wedging-together of the cartridges 410.

The front end 418 of the shoulder 409 of the slide 408 can coact with the lever 301 of FIG. 28 so that this part comes to lie on the projection 307 when the last cartridge 410 is chambered.

FIGS. 36 to 39 show a variant of the firing mechanism of FIGS. 27 to 29, in which the guide is not in the trigger slide but in the frame 1 or in a block 521 set into the frame 1. The block 521 is of a synthetic resin and has a leaf spring 235 whose end 236 forms a control surface 237 which coacts with an inclined surface 538 of the trigger slide 525. Similarly the control edge 240 coacts with the ridge 241 of the slide 2. The trigger slide 525 has a web 529 which carries on one side the abutment 531 and on the other side the beat-over part 526. In

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addition it is provided with a wing-like projection 544 and has a control edge 545.

A recess 546 on one side and on the other side a recess 547 serve as a guide in the block 221 in which the wing 544 engages. The underside of the breech 5 is provided with a simple pivotal lever 548 which has a projection 549 extending into the path of the firing-bolt nose 101. This lever 548 is braced against a leaf spring 550 which is braced with its free end 551 on the breech 5 and which lies underneath the ridge 241 so as to pivot the lever 548 such that the projection 549 is in the path of the firing-bolt nose 101.

The operation of this firing mechanism corresponds mainly with that of the mechanism shown in FIGS. 27 to 39. The abutment spring 228 draws the trigger slide 525 back so that its inclined surface 538 slides down along the control surface 538 and the web 529 enters the recess 546 and the wing 544 enters the lower region 552 of the hole 547. In this position the abutment 531 is below and out of the path of the firing-bolt nose 101. Meanwhile the control edge 545 is below the lever 548 so that it takes the position of FIG. 39 in which the firing bolt is locked.

When the slide 2 is moved back the ridge 241 pushes the spring 238 toward the center so that the control surface 237 is guided by the inclined surface 538 and the trigger slide 525 is freed. The abutment spring 228 draws this slide 525 up and back while the abutment 531 and the control edge 545 are drawn into the path of the firing-bolt nose 101.

When the slide 2 is moved forward the firing-bolt nose 101 entrains the abutment 531 and the slide 525 as well as the trigger 63. Meanwhile the web 529 moves out of the recess 546 and the wing 544 engages in the narrow region 553 of the hole 547. As soon as the wing 544 gets to the end of the hole 547, the abutment 531 is held solidly by the firing-bolt nose 101. The narrow section 553 of the hole 547 holds the abutment 531 tightly.

Pulling the trigger moves the slide 525 back and the abutment 531 pushes back the firing-bolt nose 101 while further compressing the firing-bolt spring 30. As soon as the inclined surface 538 engages the control surface 237 further movement of the slide 525 pushes it down so that the web 529 engages in the recess 546 and the wing 544 in the wide region of the hole 547. As a result the abutment 531 releases the firing-bolt nose 101 and the shot is fired.

Moving the slide 525 moves the control edge 545 back into the region of the projection 549 and pushes the lever 548 to the side so that the projection 549 moves out of the path of the firing-bolt nose 101 and does not impede forward travel of the firing bolt.

Since the additional safety catch 548, 549 is on the breech 5, jarring and inertial forces cannot open it. To fire it is therefore necessary to actuate the trigger 63.

The invention is not limited to the described and shown embodiments. Its parts can be combined in other than the shown manner. It is common to the described embodiments that the abutment for the firing bolt or hammer moves in two directions that are not parallel to each other. It is therefore possible to use the abutment for securing as well as for releasing the firing bolt which not only reduces the stroke of the trigger but also substantially reduces the number of parts. This double movement can also be split up between the abutment and firing bolt or hammer.

The provision of an abutment spring whose effect is opposite to that of the firing-bolt spring means that only the difference between these forces need be overcome by force on the trigger to shoot.

In addition to these basic advantages the pistol according to this invention has several advantages. The rest position, for example, of the trigger is established by abutments 67 and 233 in the guide 45 or block 221, respectively, so that no particular stops for the trigger are needed. This eliminates expensive adjustment procedures. Since the parts necessary for the release and latching of the firing bolt can fit in a limited space it is possible make the guide 45 or the block 221 relatively small. This leaves room in the frame 1 behind the hole for the cartridge clip. As a result it is possible to have the grip near the axis A of the barrel 4 so that on firing there is little torsion on the hand. The pistol kicks up less so it shoots more accurately.

With the new pistol it is possible to form the spaces for mounting the trigger, trigger slide, and guides in the frame 1 by molding in such a manner that the frame 1 is easily demolded. The same applies for the clip hole and the passage for the clip-safety slide. As a result the frame 1 can be made in one piece.

The guides for the slide in the frame 1 are made of metal. To do this it is sufficient to mount two guide rails which are imbedded in the frame 1 in the resin. They have the tongue and groove construction of FIG. 2.

Particularities of the described features can be used independently of each other in pistols of known construction without losing the described advantages.

I claim:

1. A pistol comprising:

a frame;

a barrel slidable on the frame and having a cartridge-receiving rear end;

a breech slidable on the frame and engageable over the rear end of the barrel to form a cartridge chamber;

firing means including a firing element and a firing pin operatively linked thereto, the element being movable on the breech toward and away from the barrel between a rear position in which the firing pin is out of the cartridge chamber and a front position with the firing pin projecting forward into the cartridge chamber for firing a cartridge in the chamber when the firing element moves from the rear to the front position and through an intermediate position between the front and rear positions;

spring means operatively engaged with the element and including a relatively strong firing spring braced against the firing element and urging same into the front position with a relatively strong force and a relatively weak spring braced against the firing pin and urging same into the rear position, the strong spring being sufficiently loaded in the rear position of the firing element to move same into the front position but insufficiently loaded in the intermediate position to move the firing element into the front position;

a trigger movable on the frame between an actuated and an unactuated position;

an abutment engageable with the firing element in the intermediate position and displaceable backward on the frame; and

link means connected between the trigger and the abutment for displacing same backward into the rear position from the intermediate position on

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displacement of the trigger from the unactuated to the actuated position and for displacing the abutment out of operative engagement with the firing element on displacement of the trigger into the actuated position for displacement of the firing element by the spring means into the front position and subsequent return at least to the intermediate position.

3. The pistol defined in claim 1 wherein the firing element is a firing bolt carrying the firing pin and a firing-bolt nose and the abutment is directly engageable with the nose.

3. The pistol defined in claim 1 wherein the link means includes a trigger slide and an inclined surface on the frame engageable with the trigger slide in the actuated position of the trigger, the link means including a spring urging the slide into engagement with the inclined surface.

4. The pistol defined in claim 1 wherein the firing means includes a guide holding the abutment in operative engagement with the firing element on displacement of the trigger from the unactuated to the actuated position.

5. The pistol defined in claim 1 wherein when the element is in the intermediate position the abutment prevents any displacement of the firing element relative to the abutment.

6. The pistol defined in claim 5 wherein the abutment is displaceable laterally relative to the firing element between a position in the path of same and engageable therewith and a position out of the path and unengageable therewith, the link means displacing the abutment into the out-of-path position on displacement of the trigger into the actuated position.

7. The pistol defined in claim 1 wherein the firing pin is lance-shaped and the breech is formed with an elongated throughgoing slot through which the lance-shaped pin engages.

8. The pistol defined in claim 1, further comprising latch means for releasably securing the barrel to the frame, the latch means including:

a projection on the barrel movable along a path on sliding of the barrel and breech on the frame;

a frame abutment on the frame and normally in the path, and

means for moving the frame abutment out of engagement with the barrel projection.

9. The pistol defined in claim 1, further comprising:

a clip removably engageable with the frame and holding a supply of cartridges displaceable by the breech into the chamber; and

safety means engageable between the clip and the link means for permitting the abutment to move out of engagement with the firing element only when at least one cartridge remains in the clip.

10. The pistol defined in claim 9 wherein the safety means includes a cartridge follower in the clip and an element on the frame engageable through the clip with the follower.

11. The pistol defined in claim 1 wherein the breech and barrel are limitedly displaceable relative to each other and the pistol is an automatic pistol.

* * * * *

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~~Barber-b 2pgs~~

~~Barber-b 4pgs~~

Barber-b 6 pgs

File - New Lock Action Rifles

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington 870 pump

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

February 25, 1985

TO: J.W. Boxer
R.S. Murphy

FROM: K.L. Calkins

RE: "Devil's Advocate" Report on NSAR Project

Here is a list of my observations, comments and questions concerning the NSAR project. I have grouped the items into general categories, however some items may fall into more than one category.

Design related:

- Pulling the trigger on the current design causes a clockwise rotation at the sear, meaning the firing pin head engagement surface is forced upward against the firing pin head. This motion means that in order for the sear to move, we must overcome the force of the firing pin spring, moving the firing pin assembly rearward. Though the distance the firing pin assembly moves is small, it is still necessary to overcome the spring and associated frictional forces. I believe this condition is a contributor to the relatively stiff trigger pulls the prototype guns exhibit. In the M/700 design, the sear does not move against the firing pin head when the trigger is pulled.

- My force analysis indicates that the trigger pull is more sensitive to different coefficients of friction than it is to the sear/trigger engagement angle. Friction is relatively uncontrollable in this situation, especially when the gun is out in the field. This design is also basically non-adjustable, so there is little way to compensate for frictional forces.

- The fact that the firecontrol is not adjustable will discourage some shooters from buying the gun.

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Design related: - cont'd.

* It will be much easier for people to tamper with the sear/ trigger engagement surfaces because they are readily accessible when the stock is removed. If our goal is to make our guns more "foolproof" or "tamperproof," then we are not accomplishing this by giving people easy access to key engagement surfaces.

* By eliminating the "chins" of material from the receiver underneath the sear and trigger pin holes, it is possible for the drill to break through the bottom of the receiver. In best case now there will be only .022 of material there. This will look visually bad, cause sharp burrs and could weaken the support of the bolt lock and bolt stop. Breaking through could cause the drill to skew, thereby throwing off the hole. Or the pin may tend to wobble or come loose.

Other kinds of scope mounts won't work with our built-in mounts. This may discourage some potential buyers who either have mounts and don't want to buy another set, or don't want to buy Remington mounts.

The flat bottom and sides of the receiver and the shape of the firecontrol area's components may present a problem if owners want to glass bed their rifle. I understand this is a problem with the Ruger M/77 which has a flat-bottomed receiver. Once the bedding material has hardened it is reportedly difficult to remove the barreled action because of the receiver's shape. If this is the case with our rifle, it may deter some buyers.

The current design does not have a positive detent on the safety.

Prototype related:

* One of the prototypes has a sear spring so weak it cannot even support the sear's weight.

* On at least one prototype the trigger engagement surface of the sear has been altered. This affects the position of the sear and trigger and the engagement between the sear and firing pin head. This makes for an entirely different set of conditions than what was designed.

* There is no list of specific modifications made to the parts of each gun. There is no way of knowing what has been altered on each gun or to what extent.

* The guns were assembled without a drawing for certain parts. Examples would be the safety connecting rod and the safety spring. Without a drawing, there is no guarantee that the parts are the same for each gun. This is another variable added in.

Prototype related - cont'd.

* None of the guns have all-wood stocks. The cobbled-up stocks have already cracked at proof. I suspect these stocks may adversely affect the testing. Also, the guns need to be tested in wooden stocks to see how the wood itself holds up.

* None of the guns have all of the design in them. None have bolt locks or detachable magazine boxes. Absence of these things will have an impact on the testing. I can't give any evaluation of them, either, because no prototype has them.

Testing related:

* There is no provision in the testing outline for any kind of debris test. I think a debris test would be valuable. Perhaps we should have a test along the lines of some of the tests performed for court cases. There are at least two areas I think should be looked at; between the receiver and the top of the sear, to see what happens if something lodges there, and between the sear and trigger in the safety rotor area.

* In some areas the testing outline states how many of the guns will be tested. However, for the blanked primer, dry cycle, trick, environmental, drop/jar-off, and ultimate strength tests there is no indication of how many guns are to be tested. I believe these tests should be performed on more than just a one gun sample.

* No mention was made in the test outline of taking headspace after proof. This should be done as a matter of standard procedure.

* The test outline makes no mention of what conditions the guns will be in when trigger pull and safety on/off force tests are performed. It should be stated whether the guns are to be dry or oiled, and if oiled, then what with. Lubrication could make a big difference in these tests.

* I question the validity of the trigger pull test since all of the rifles have been "tuned" by hand to work well. They have been modified in ways that a production rifle wouldn't.

* I question the validity of the safety on/off force test for the same reasons stated above. The triggers and sears have been lapped to help keep the safety rotors from binding. I doubt this would occur on production. Also, none of the guns have bolt locks or safety detents, both of which would affect the safety on/off force. Forces measured without these components wouldn't be accurate or representative of the complete design.

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Testing related - cont'd.

* The live load/unload test makes mention of the detachable box magazine, yet we have no detachable box magazine. This test won't be valid unless the detachable box magazines that the design calls for are used. The test outline is also vague as to whether one magazine should be used for each set of 50 rounds or if several are to be used. This should be clarified.

* I question the value of a field cycle test or an endurance test when all the components of the design aren't in the guns. We need to test the complete design, including bolt locks, detachable box magazines and wooden stocks. Endurance testing a stock cobbled up with "devcon" won't tell us how a wooden stock will perform.

* The test outline should be clarified with respect to the dry cycle test with a trigger "ear" broken. It should state where the ear is broken and how. Whether one ear or both are broken and whether the test is to be run with the ears broken in different places.

* I believe the trick test of the rifle (to get it to fire off safe or to get the safety to "hang") is likely to be invalid or at least inclusive for several reasons. None of the guns have all the fire control components. All lack bolt locks and safety detents and all lack final designs for the connecting rod and the safety spring. All of the rifles have been hand fit and all are likely to be different for this reason. As mentioned before, the trigger and sears have been lapped to help prevent the safety rotor from binding. This would seem to defeat the purpose of a trick test to see if the gun will "hang" safe in the mid (or any other) position.

* The test outline doesn't specify what kind of oil or how much is to be used on the firecontrol for the environmental test. We should also consider running the test with different lubricants and with no lubricant. I question the validity of this test also for reasons I have mentioned before such as guns not having all of the firecontrol components.

* I question the validity of the jar off/drop test for reasons I've mentioned before. The guns lack several components. They are hand tuned and the stocks are not all wood. For this test, we might also consider making up prototypes to max. and min. specifications.

The next category consists of situations or conditions that could pose problems if they occur. The situations can be created without much bother.

What-ifs:

* There are two I've already mentioned as part of the debris test - What if debris lodged in the gap between the receiver and the top of the sear and what if debris got in around the safety rotor between the trigger and sear?

* What if the safety spring gets tangled around the safety connecting rod? Could it happen at assembly? Does it pose a problem?

* What if someone removes the trigger spring entirely? The location of the center of mass is such that the part will want to rotate clockwise, in the direction that would cause the gun to fire.

* What if someone removes the gun from the stock and accidentally drops it? With the exposed components, is it more fragile that the current M/700? Should we be concerned about it?

Conclusions:

The current situation of the NBAR project seems to indicate a lack of planning, foresight and control. The design was to have been frozen but wasn't, is still in a state of constant change and is not complete. The prototypes couldn't be assembled as designed, and had to be hand-worked. There are no all wooden stocks for the prototypes to be tested with.

Despite a lack of key components and a completed design, testing is proceeding. Without these items, the testing will probably have to be repeated later, increasing testing time and cost. If the purpose of testing is to prove out the design, then shouldn't all the components of the design be there when it's tested? And shouldn't the guns be assembled as closely as possible to production techniques without hours of hand tuning? The Model Seven should have taught us that not testing the whole design at the same time can be costly.

Recommendations:

I believe a complete reevaluation of the NBAR project is necessary. Items that need to be reviewed include:

* Design Goals - What are we trying to accomplish with this program? Will this gun meet the needs of the marketplace? Can the design problems be solved?

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Recommendations - cont'd.

* Prototypes - Are the current prototypes representative of design? Will testing these prototypes tell us what we need to know about the design? What can we do to insure that we will get good prototypes in the future?

* Testing - Is the current test outline adequate? What can we do to improve it? Will some tests have to be repeated? What can we learn from the testing we've done?

* General - What is our current situation? Where are we going from here? Are we still on schedule? Can the schedule be met?

* Other areas to look at - fabrication, assembly, costs, contingencies.

KLC:eps

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EXHIBIT 27

July 1, 1993

TO: R.W. Soucy
FROM: W.A. Warren, Jr.

PROGRESS REPORT June 1993

M700 VS. Long Action "Sendero Special"

Samples for the second Trial and Pilot test (these are the requested .300 Win. Mag.) were obtained by the Test Lab on 6-30-93. A minor design improvement to the magazine follower, the need for which was identified in the first T&P, was transmitted the week of 6-8-93.

I estimate my work on the 1993 version as now more than 99% complete and will follow-up any technical issues thru successful 300 Win. Mag. T&P testing.

1994 Modification: fluted barrel (PI-2 5-18-93)

This adds six cut longitudinal flutes in the barrel. The purpose of these is to reduce weight and enhance appearance. This will be done on the "Sendero Special" in a way that maintains the ultimate strength of the current Magnum barrel; flute depth will not extend below the current Magnum profile. Maximum weight reduction can be obtained by "contouring" flute depth (reducing the depth of cut as it extends toward the receiver) using an existing vertical spindle CNC mill with workpiece rotation. ATC Rifle Engineering is making up a catalog sample to this specification with the new crown.

BASIC RESEARCH-RELEASE MECHANISMS

Measurement Apparatus: All but one of the major or long lead time purchased components have arrived. The force transducer system was due June 8. Vendor has now indicated delivery will be July 9.

Status:	Percent complete
o specifying and purchasing major components	80
o purchasing, designing and fabricating small components	10
o learning the operation and setup of the force transducer	0
o " " " " " " displacement "	5
o linking above to the Tektronics transient data capture device	10
o learning the programming and operation of the motor-driven motion control system	5
o integrating the components and debugging their operation	0

NBAR: I have completed study of a two-volume reference on analysis of bolt action rifle actions. This has also been a useful source for identifying patents dealing with bolt action fire controls. I have requested copies of several of these for review.

DESIGN-RELATED

On an ongoing basis, I am assisting M. Keeney with his NBAR process-design integration program.

SAFETY

R&D safety committee: 17 hours. Current committee members have recommended that the one year term of service be shortened. The benefit will be to provide a more equal balance between new ideas and energy vs. experience. I have been asked to propose a charter for this committee.

TRAINING

This month I have completed taking 24 hours of classroom instruction on Geometric Dimensioning and Tolerancing.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130000052

END

EXHIBIT 28

August 5, 1993

TO: R.A. Jackson
FROM: W.A. Warren, Jr.

PROGRESS REPORT July 1993

M700 VS. Long Action "Sendero Special" (1993 "Shot Show Special")
This project is complete. The second trial s Pilot sample was accepted by the Lab. on 7-26-93. Accuracy specs. have been revised to reflect use by the long-range big game hunter. After hand-chamfering the muzzle, 10 of 10 rifles, in .300 Win. Mag., accuracy tested in the gallery, shot within 2":

1994 Modification: Fluted barrel (#1-3 5-18-93)
This will be a regular catalog offering beginning in 1994. The six longitudinal flutes in the barrel reduce the weight by approx. one-half pound and provide a distinctive appearance. This will be done on the "Sendero Special" in a way that maintains the ultimate strength of the current Magnum barrel; flute depth will not extend below the current Magnum profile. Rifle Engineering is making up a catalog photograph sample to this specification with the new crown.
To be done: provide drawing(s) of flute geometry and radial relocation of current barrel rollmark.

BASIC RESEARCH-RELEASE MECHANISMS
Measurement Apparatus: All of the major or long lead time purchased components have arrived. The force transducer system was due June 8. It was delivered July 12.

Status:	Percent complete
o specifying and purchasing major components	95
No change in following:	
o purchasing, designing and fabricating small components	10
o learning the operation and setup of the force transducer	0
o " " " " " " displacement "	5
o linking above to the Tektronics transient data capture device	10
o learning the programming and operation of the motor-driven motion control system	5
o integrating the components and debugging their operation	0

NBAR:
Competitive patents have been received and are being reviewed.

DESIGN-RELATED
On an ongoing basis, I am assisting M. Keeney with his NBAR process-design integration program.

SAFETY
R&D safety committee: 10 hours. The committee recommendation to shorten the one year term of service was accepted. A brief draft charter proposal will be completed for review by mid-August.

TRAVEL
Four-day trip to Houston, TX to discuss liability concerns with Remington legal counsel.

MISC
I provided learning materials and written suggestions to promote needed changes within the ongoing Marketing Quality Audit Program.

VACATION

EXHIBIT 29

TO: E.A. Jackson
FROM: W.A. Warren, Jr.

August 30, 1993

PROGRESS REPORT August 1993

M700 VS. "Sendero Special"

I investigated two nonconforming conditions-found during Lab. accuracy shooting-and started corrective actions: o front sling swivel stud hitting barrel. We provided Final Assembly with Production aids and instructions to use them. Also, stock vendor will correct (probably shorter stud); o floor plate opens. Condition was due to substandard job knowledge/workmanship on floorplate latch adjustment. We provided examples and information to help the foreman take corrective action. Both conditions were on rifles built by the same new final assembler. This product was submitted to R&D Lab. before gallery testing.

1994 Modification: As of 8-6-93, barrel will not be fluted. Instead, flutes will be added to the new VS SS.

1994 VS SS (FI-2 8-6-93) Non-magnum calibers only, so flute depth has been increased to mimic the regular barrel countour. Marketing and Litigation Support have agreed to using the shorter XP100-style barrel rollmark. It will be located much nearer to both the breech and to the top of the barrel. This permits significantly longer flutes. Marked drawings were provided for CV detailing on 8-24-93. Detailing has not yet begun due to urgent work on the O/U fire control. Engineering just completed a photo. sample to this design.

BASIC RESEARCH-RELEASE MECHANISMS

Measurement Apparatus: Changes are indicated where the previous month's value appears in parentheses.

Status:	Percent complete
o purchasing major components	95
o purchasing, designing and fabricating small components	10
o learning the operation and setup of the force transducer	0
o " " " " " " displacement "	20(5)
o linking above to the Tektronics transient data capture device	10
o learning the programming and operation of the motor-driven motion control system	5
o integrating the components and debugging their operation	0

NBAR:

We have just received a sample of a Ruger target rifle with a new two-stage adjustable trigger. We are checking the patent coverage.

DESIGN-RELATED

On an ongoing basis, I am assisting R. Keeney with his NBAR process-design integration program.

SAFETY

R&D safety committee: I have completed six months as chairman. A requested draft-form charter proposing improvements to this group was submitted 8-6-93 for Tech. Staff review.

TRAVEL FOLLOW-UP

We have not yet received the information produced at last month's trip to Houston, TX.

END

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

TO: R.A. Jackson
FROM: W.A. Warren, Jr. WAW

August 30, 1993

PROGRESS REPORT August 1993

M700 VS. "Sendero Special"

I investigated two nonconforming conditions-found during Lab. accuracy shooting-and started corrective actions: o front sling swivel stud hitting barrel. We provided Final Assembly with Production aids and instructions to use them. Also, stock vendor will correct (probably shorter stud); o floor plate opens. Condition was due to substandard job knowledge/workmanship on floorplate latch adjustment. We provided examples and information to help the foreman take corrective action. Both conditions were on rifles built by the same new final assembler. This product was submitted to R&D Lab. before gallery testing.

1994 Modification: As of 8-6-93, barrel will not be fluted. Instead, flutes will be added to the new VS SS.

1994 VS SS (PI-2 8-6-93) Non-magnum calibers only, so flute depth has been increased to mimic the regular barrel countour. Marketing and Litigation Support have agreed to using the shorter XP100-style barrel rollmark. It will be located much nearer to both the breech and to the top of the barrel. This permits significantly longer flutes. Marked drawings were provided for CV detailing on 8-24-93. Detailing has not yet begun due to urgent work on the O/U fire control. Engineering just completed a photo. sample to this design.

BASIC RESEARCH-RELEASE MECHANISMS

Measurement Apparatus: Changes are indicated where the previous month's value appears in parentheses.

Status:	Percent complete
o purchasing major components	95
o purchasing, designing and fabricating small components	10
o learning the operation and setup of the force transducer	0
o " " " " " " displacement "	20(5)
o linking above to the Tektronics transient data capture device	10
o learning the programming and operation of the motor-driven motion control system	5
o integrating the components and debugging their operation	0

NBAR:

We have just received a sample of a Ruger target rifle with a new two-stage adjustable trigger. We are checking the patent coverage.

DESIGN-RELATED

On an ongoing basis, I am assisting M. Keeney with his NBAR process-design integration program.

SAFETY

R&D safety committee: I have completed six months as chairman. A requested draft-form charter proposing improvements to this group was submitted 8-6-93 for Tech. Staff review.

TRAVEL FOLLOW-UP

We have not yet received the information produced at last month's trip to Houston, TX.

END

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

EXHIBIT 30

TO: R.A. Jackson
FROM: W.A. Warren, Jr.

September 29, 1993

PROGRESS REPORT September, 1993

M700 VS. "Sendero Special"

Rifle Eng. and the R&D Lab. have completed additional follow-up to quality-of-workmanship issues raised last month. All remaining rifles were disassembled and inspected. Examples of specific opportunities for improvement were reviewed with the shift foreman for corrective action with the one (new) assembler who built all of them.

I made others aware of "when produced" questions on field reports of sub-standard quality on R-S stocks and additional processing steps likely to result from substituting a McMillan for an R-S stock.

FLUTED BARRELS

1994 VS SS (PI-2 8-6-93) Flute depth mimics the regular barrel contour. Flute dimensional calculations were completed on AUTOCAD. Marked drawings to implement this are complete. These have been provided to make samples during the "Engineering run" window on the Monarch VMC. Due to urgent work on the Peerless, a CV detailer is not yet available to complete/update model drawings.

SPECIAL ORDER FOR "BICKS" (jobber)

o VS and VS Sendero This is a limited run. barrels. Both will be fluted the same-to mimic magnum profile. This provides a common appearance. Only the magnum will be marked "SENDERO". Calculations were completed on AUTOCAD. Marked drawings have been recently provided to run samples on the Monarch VMC.

o BDL These will be fluted to mimic the "Mountain Rifle" contour. Flutes will be narrower, shallower and shorter than on the VS versions. Information necessary to run samples is 15% complete. My current top priority is to complete this information for the sample run on the Monarch.

BASIC RESEARCH-RELEASE MECHANISMS

Measurement Apparatus: Changes are indicated where the previous month's value appears in parentheses.

Status:	Percent complete
o purchasing major components	95
o purchasing, designing and fabricating small components	15(10)
o learning the operation and setup of the force transducer	10(0)
o " " " " " " displacement "	60(20)
o linking above to the Tektronics transient data capture device	10
o learning the programming and operation of the motor-driven motion control system	5
o integrating the components and debugging their operation	0

DESIGN-RELATED

On an ongoing basis, I am assisting M. Keeney with his NBAR process-design integration program.

SAFETY

R&D safety committee: Members of the Tech Staff have accepted my charter proposing improvements. I have agreed to act as Resource to the new group-if they so request. Their first Safety Meeting went very well. The committee members showed much initiative in obtaining and presenting additional timely information and promoting audience participation.

TRAVEL FOLLOW-UP

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

We still have not received the information produced during July's trip to Houston, TX.

END

EXHIBIT 31

To: R.A. Jackson
From: W.A. Warren, Jr.
Subject: Progress Report 10-29-93

M700 Varmint Synthetic Stainless Steel (VS SF)

This package is 95% complete. It will be submitted for transmittal early the week of 11-1-93. The barrel will be fluted by CNC machining.

M700 Specials: VS, VS Sendero and BDL with fluted barrels

These three currently-unique products will be made as a limited run for a large jobber. The VS barrel is now being detailed. The complete package is expected to be ready for transmittal late the week of 11-8-93.

AutoCad was used extensively to develop and refine the flute geometry. These rifles are being documented as "Engineered" back-order-specials; with new drawings and part numbers for unique components/assemblies. Both VS's will have 26"barrels. Fluting on the BDL version will be revised (from the original sample) to provide a more uniform appearance after the barrel polishing operation.

Measurement Apparatus for Release Mechanisms

There was no change from last month. Priority was given to work necessary to provide dimensions for the fluted barrel samples (above) in time for the Engineering use of the Monarch Machining center.

Following completion of the M700 Special Products, this will be my top priority.

NBAR Fire Control

Effective 10-12-93, another engineer has been assigned primary responsibility to develop the design.

I assisted with this transition by presenting an overview of my research to date and the information/knowledge resources utilized; patents, patent analyses, books, magazine articles and surveys. Additional work was summarized in the form of prioritized listings of concepts, features and performance criteria for the new design. This listing was developed from the points of view of the Customer, Marketing, Production, Product Engineering and Legal considerations. The purpose is to provide a framework with which to identify and reconcile the various expectations.

Miscellaneous

A small sample has been received of a proposed revision to the M700 (long) investment cast magazine follower. This change is intended to reduce the amount of labor-intensive hand polishing required. This is also a carry-over in the transition to a new vendor. Future work: testing of larger sample and drawing changes.

I helped a new engineer to better understand our Process

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Capability Quality requirements as they apply to the specifications and run-off of a new machine.

END

US006553706B1

(12) **United States Patent**
Gancarz et al.

(10) **Patent No.: US 6,553,706 B1**
(45) **Date of Patent: Apr. 29, 2003**

(54) **SEAR AND STEP TRIGGER ASSEMBLY HAVING A SECONDARY SEAR BLOCK**

(76) Inventors: **Robert M. Gancarz**, 98 Szetela Dr., Chicopee, MA (US) 01013; **Scott Warburton**, 1628 Center St., Ludlow, MA (US) 01056

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/878,600**

(22) Filed: **Jun. 11, 2001**

(51) **Int. Cl.**[7] **F41A 3/00**
(52) **U.S. Cl.** **42/69.02**; 42/70.01
(58) **Field of Search** 42/69.01, 69.02, 42/69.03, 1.04, 1.05

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(List continued on next page.)

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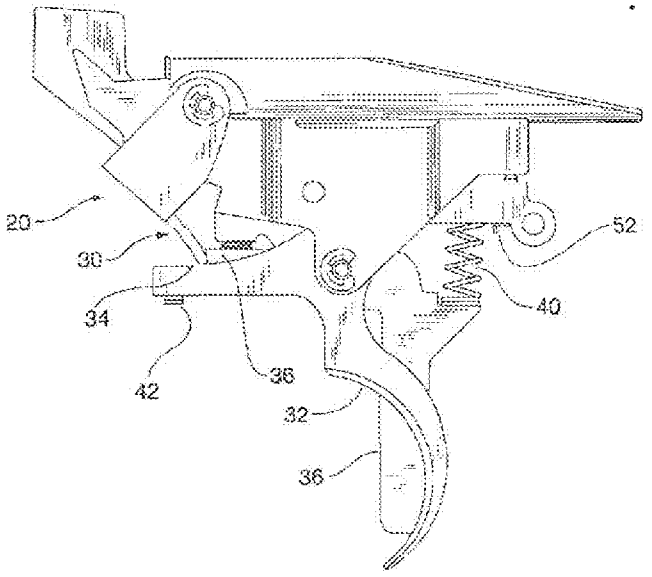
Primary Examiner—Charles T. Jordan
Assistant Examiner—Denise J Buckley
(74) *Attorney, Agent, or Firm*—MacCord Mason PLLC

(57) **ABSTRACT**

An improved firearm having a low creep, safety trigger. The firearm includes a frame, a barrel attached to the frame, a firing mechanism, a step having an adjustable step height, an over travel stop, and a sear and step trigger assembly with a secondary sear block. The secondary sear block is selectively movable between a first blocking position and a second non-blocking position.

32 Claims, 6 Drawing Sheets



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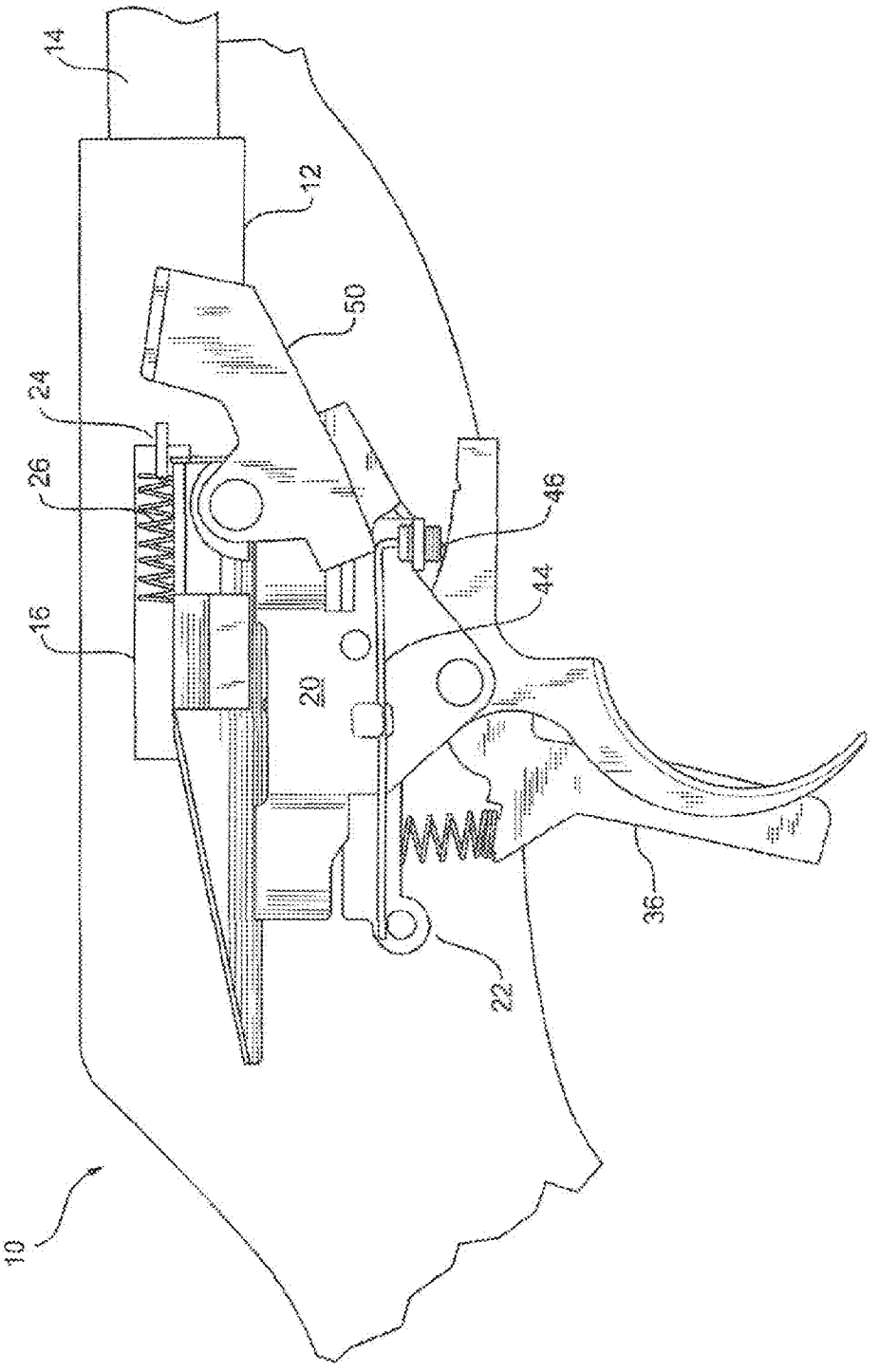

FIG. 1

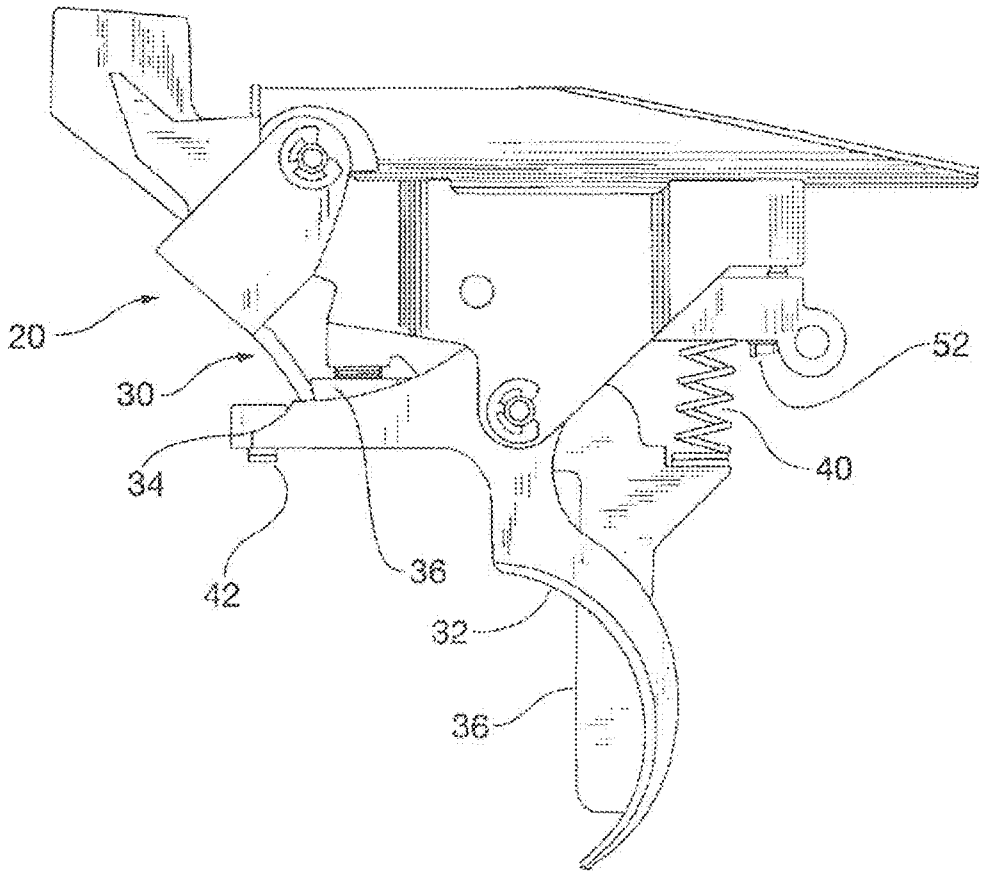

FIG. 2A

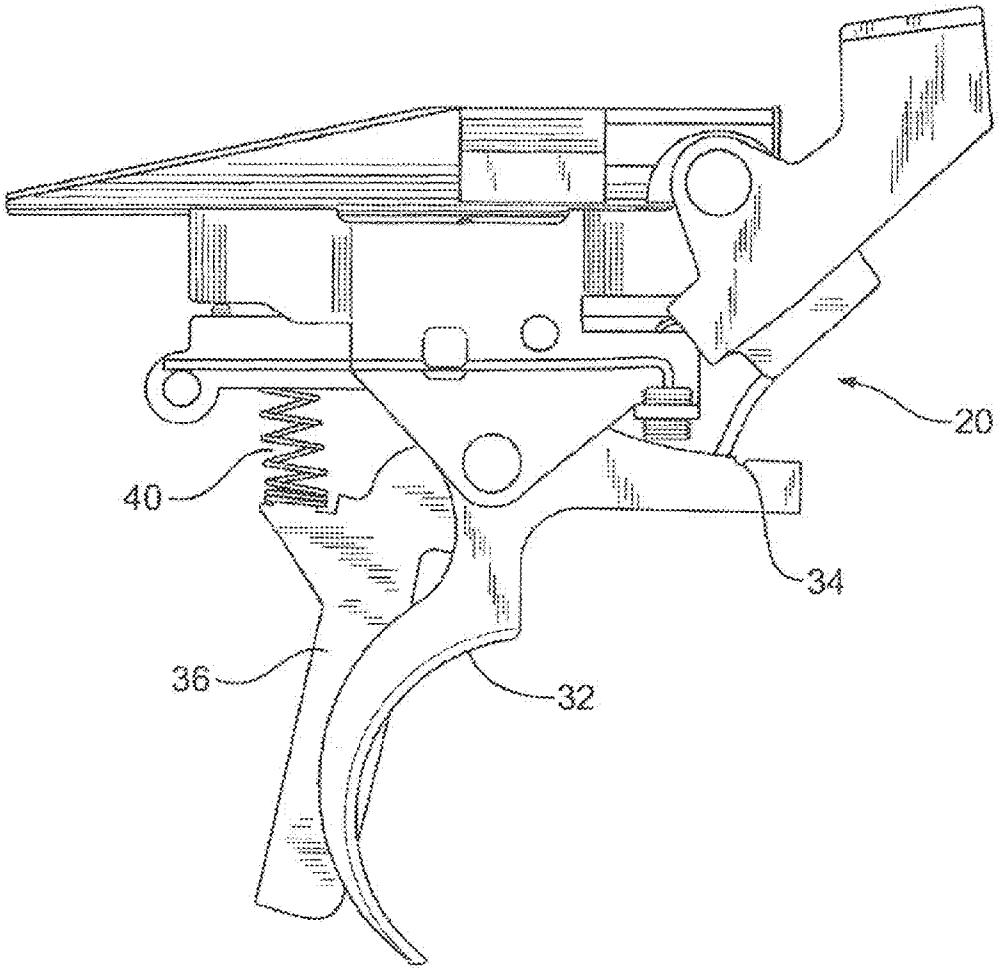

FIG. 2B

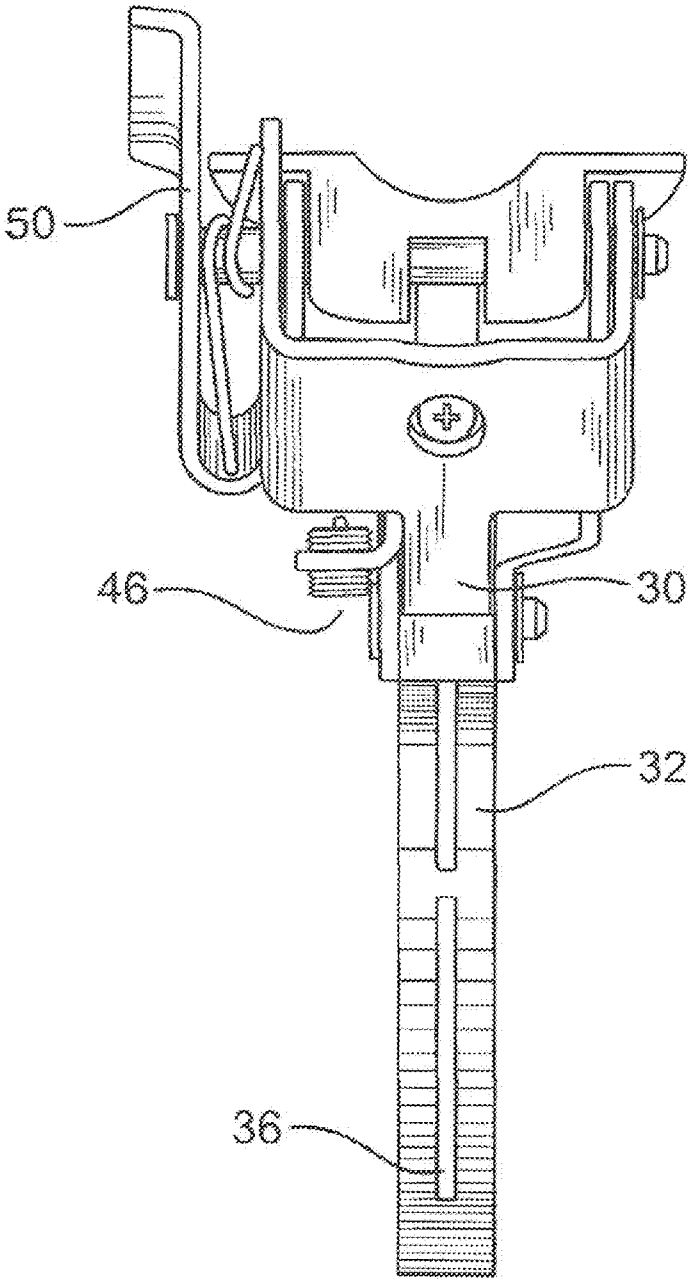

FIG. 3

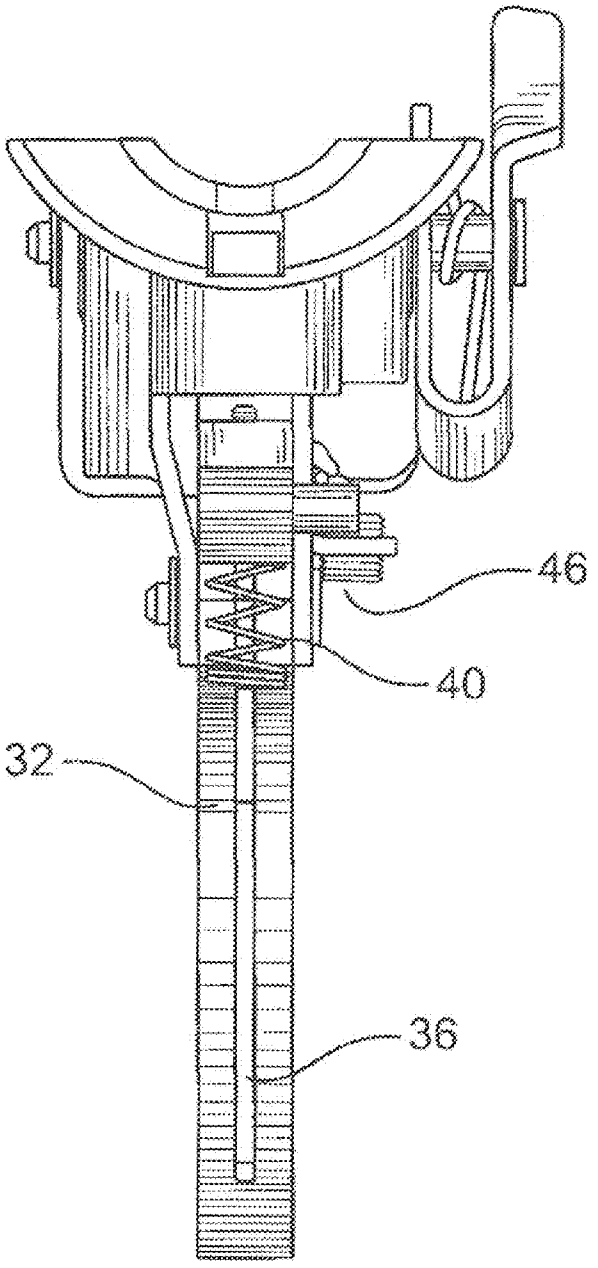

FIG. 4

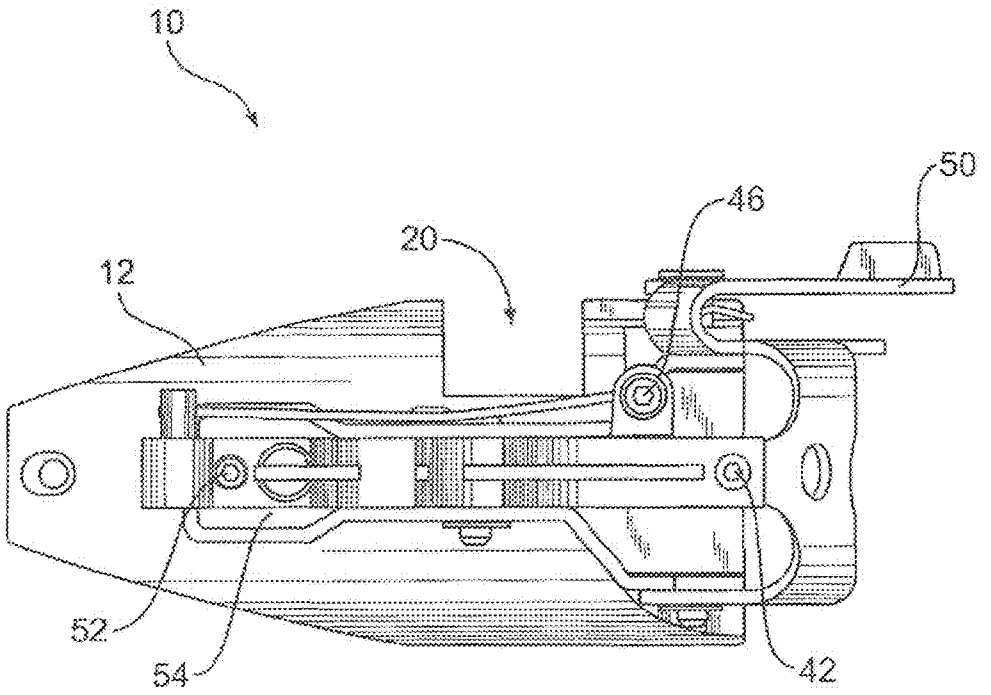

FIG. 5

BARBER - 1.30.130000073

SEAR AND STEP TRIGGER ASSEMBLY HAVING A SECONDARY SEAR BLOCK

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is directed to a firearm having an improved trigger, and more particularly, to an improved low creep, safety trigger.

2. Description of the Prior Art

Triggers for firearms must strike a compromise between ease of use and safety. Competition triggers eliminate or reduce trigger creep by reducing the amount of sear engagement. In addition, the "feel" of the trigger may be improved by polishing the area between the trigger step and the sear engagement. However, polishing does not reduce the amount of trigger creep, just the "feel" of the trigger creep. On the other hand, a reduction in the amount of sear engagement results in a perceived better trigger pull. For example, a trigger having about 0.015 inches of engagement would be considered by most shooters to be a better trigger than a trigger having about 0.025 inches of engagement.

Most commercial triggers do not have an adjustment screw for reducing the amount of sear engagement and the shooter either must be satisfied with the factory setting or have the trigger re-worked by a qualified gunsmith. Competition rifles, however, often do have trigger adjustments. Some competitors may reduce the amount of trigger pull to under a pound of trigger pull.

Generally, having a sear and step engagement of greater than about 0.020 inches results in a safe, but extremely heavy trigger. Reducing the sear and step engagement to about 0.016 inches results in a low trigger creep, but the firearm could accidentally discharge if jarred or dropped or if the safety is not engaged.

Thus, there is a need for a firearm having a low creep, safety trigger that is operable to stop the sear even in the event that the safety has not been engaged while, at the same time, providing improved trigger pull. Accordingly, the present invention is operable to stop the sear, thereby catching the firing pin before it protrudes from the bolt face and well before the firing pin reaches the rear primer of the cartridge.

SUMMARY OF THE INVENTIOPN

The present invention is directed to an improved firearm having a low creep, safety trigger. The firearm includes a frame, a barrel attached to the frame, a firing mechanism; a step having an adjustable step height, an over travel stop, and a sear and step trigger assembly with a secondary sear block. The secondary sear block is selectively movable between a first blocking position and a second non-blocking position.

The over travel stop may be located between the trigger and the frame. Also, the over travel stop may be located between the rear of the trigger and the safety. Preferably, the over travel stop is an adjustment screw, and further includes a trigger stop and safety. In addition, both the trigger stop and the safety may be an adjustable screw.

The frame may be a bolt-action receiver, and the firing mechanism may include a firing pin and a firing pin actuator. Preferably, the firing pin actuator is a spring. The secondary sear block may be coaxial with the trigger, and preferably, the secondary sear block is nested within the trigger and is finger actuated. Additionally, the secondary sear block may include a biasing means for maintaining the secondary sear block in the block position. An inner lock may be provided between the secondary sear block and the sear.

The firearm also may include a cocking indicator. A trigger return spring may be provided, and preferably, an adjustment screw is included between the trigger return spring and the trigger.

Accordingly, one aspect of the present invention is to provide an improved firearm including a frame, a barrel attached to the frame, a firing mechanism; and a sear and step trigger assembly with a secondary sear block selectively movable between a first blocking position and a second non-blocking position.

Another aspect of the present invention is to provide an improved firearm having a frame, a barrel and a firing mechanism, the improvement including a sear and step trigger assembly includes a sear, a trigger, a step having an adjustable step height, and a secondary sear block selectively movable between a first blocking position and a second non-blocking position.

Still another aspect of the present invention is to provide an improved firearm including a frame, a barrel attached to the frame, a firing mechanism, a step having an adjustable step height, a sear and step trigger assembly with a secondary sear block selectively movable between a first blocking position and a second non-blocking position, and an over travel stop.

These and other aspects of the present invention will become apparent to those skilled in the art after a reading of the following description of the preferred embodiment when considered with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation view of a firearm having a low creep, safety trigger assembly, constructed according to the present invention;

FIG. 2A is a view of the opposite side of the trigger assembly shown in FIG. 1, illustrating the secondary sear block in a blocking position to prevent firing;

FIG. 2B is a side view of the trigger assembly shown in FIG. 1 illustrating the secondary sear block in a non-blocking position to permit firing;

FIG. 3 is a front elevation view of the trigger assembly shown in FIG. 1 illustrating the "nesting" of the secondary sear block within the trigger;

FIG. 4 is a rear elevation view of the trigger assembly shown in FIG. 1 illustrating the secondary sear return spring; and

FIG. 5 is a bottom view of the trigger assembly shown in FIG. 1 illustrating the over travel trigger/safety and trigger return spring stop's adjustment locations.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the following description, like reference characters designate like or corresponding parts throughout the several views. Also in the following description, it is to be understood that such terms as "forward," "rearward," "left," "right," "upwardly," "downwardly," and the like are words of convenience and are not to be construed as limiting terms.

Turning to FIG. 1, there is shown a side elevation view of a firearm, generally designated 10, having a low creep, safety trigger assembly constructed according to the present invention. Firearm 10 is of a conventional design having a

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frame **12**, a barrel **14**, a firing mechanism **16**, and a trigger assembly **20**. In the preferred embodiment, the firearm may further include an over travel stop **22** which further improves the perceived "feel" of the trigger pull by the shooter.

As shown in FIG. **1**, the firearm frame of the present invention is preferably a bolt-action receiver connected to barrel **14**. Likewise, firing mechanism **16** is generally conventional in design and includes a firing pin **24** and a firing pin actuator **26** which may be a conventional spring.

Turning to FIG. **2A**, there is shown an enlarged view of the trigger assembly shown in FIG. **1** illustrating the secondary sear block in place. As can be seen, sear **30** engages a portion of trigger **32** having a step **34**. The secondary sear block **36** extends upward adjacent to sear **30** and step **34**. The secondary sear block **36** is selectively movable between a first blocking position (shown in FIG. **2A**), and a second non-blocking position (shown in FIG. **2B**).

As best seen in FIGS. **3** and **4**, the secondary sear block **36** in the preferred embodiment is coaxial with the trigger **32**, and in the most preferred embodiment, the secondary sear block **36** is nested within the trigger **32**. Spring **40** biases the secondary sear block **36** in its blocked position which, when the shooter depresses the trigger, is moved out of its blocked position before the trigger itself is engaged and the sear released.

As best seen back in FIG. **1**, the trigger may further include a trigger return spring **44** and an adjustment screw **46**, which returns the trigger and trigger step back into position to re-receive the sear **30** when the gun is re-cocked. Also, in the preferred embodiment, a portion of the sear includes a cocking indicator **50** which extends adjacent to the frame **12** to indicate the firing mechanism **16** is in a cocked position.

Turning now to FIG. **5**, there is shown a bottom view of the trigger assembly shown in FIG. **1** illustrating the over travel stop **22**, which is located between the trigger and frame and, in the preferred embodiment, between the rear of trigger and the safety. In the preferred embodiment, the over travel stop **22** is an adjustment screw **52**. Also in the preferred embodiment, the over travel stop **22** may further include a trigger stop and safety which also may be an adjustable screw **52**. The adjustment screw on the trigger stop and safety **54** engages the safety when the safety is in its forward position and blocks any movement of the trigger.

As best seen in FIGS. **2** and **5**, the trigger assembly in the most preferred embodiment also includes an adjustment screw **42** extending through the trigger **32** adjacent and perpendicular to step **34**, which reduces the amount of engagement between the distal end of sear **30** and step **34**. This adjustment may allow the contact point between the distal end of sear **30** and step **34** to be reduced to less than about 0.020 inches, and preferably less than about 0.015 inches.

In operation, the distal end of the sear **30** engages the step **34** on the trigger **32** when the firearm is cocked. The secondary sear block **36** extends above the trigger **32** in a blocking position. If the safety is off and the firearm is jarred sufficiently to disengage the sear **30** from the step **34**, the upward extending secondary sear block **36** blocks the sear **30**. The sear **30** in turn blocks the trigger from pivoting sufficiently to actuate the firing mechanism **16**. Therefore, the secondary sear block **36** prevents the cocked firearm from accidentally firing even when the safety is off.

To intentionally fire the firearm, the firearm is cocked and the safety is removed. A person then depresses the portion of the secondary sear block **36** protruding above the hook portion of the trigger **32** with the shooter's trigger finger by a simple squeezing motion. Before the person's finger engages the hook portion of the trigger **32**, the upwardly extending portion of the secondary sear block **36** drops from its blocking position into a non-blocking position. As the shooter continues to squeeze the trigger, the resultant pivoting motion of the trigger causes the distal end of the sear **30** to disengage from the step **34**. Because the secondary sear block **36** is no longer in a blocking position, as the shooter continues to squeeze, the trigger is able to continue through its full firing motion. When the trigger is squeezed sufficiently to actuate the firing mechanism, the firearm is discharged. The over travel stop **22** limits the further motion of the trigger **32**. When the shooter releases the trigger, the trigger return spring **44** and spring **40** bias the trigger **32** and secondary sear block **36** toward a pre-cocked position.

We claim:

1. An improved firearm, said firearm including:

(a) a frame;

(b) a barrel attached to the frame;

(c) a firing mechanism; and

(d) a sear and step trigger assembly having a trigger and a secondary sear block, said secondary sear block selectively movable between a first blocking position and a second non-blocking position, wherein said secondary sear block is finger actuated next to said finger portion of the trigger.

2. The apparatus according to claim **1**, further including an over travel stop.

3. The apparatus according to claim **2**, wherein said over travel stop is located between said trigger and said frame.

4. The apparatus according to claim **3**, wherein said over travel stop is located rearward said trigger.

5. The apparatus according to claim **4**, wherein said over travel stop is an adjustment screw.

6. The over travel stop according to claim **2**, further including a trigger stop and safety.

7. The apparatus according to claim **6**, wherein said trigger stop and safety is an adjustment screw.

8. The apparatus according to claim **1**, wherein said frame is a bolt-action receiver.

9. The apparatus according to claim **1**, wherein said firing mechanism includes a firing pin and a firing pin actuator.

10. The apparatus according to claim **9**, wherein said firing pin actuator is a spring.

11. An improved firearm having a frame, a barrel and a firing mechanism, the improvement comprising a sear and step trigger assembly with a secondary sear block, said sear and step trigger assembly comprising:

(a) a sear;

(b) a trigger;

(c) a step having an adjustable step height; and

(d) a secondary sear block selectively movable between a first blocking position and a second non-blocking position, wherein said secondary sear block is finger actuated next to said finger portion of the trigger.

12. The apparatus according to claim **11**, wherein said secondary sear block is coaxial with said trigger.

13. The apparatus according to claim **12**, wherein said secondary sear block is nested within said trigger.

14. The apparatus according to claim **11**, further including biasing means for maintaining said secondary sear block in the block position.

15. The apparatus according to claim **11**, further including a cocking indicator.

BARBER - 1.30.130000074

16. The apparatus according to claim 11, further including a trigger return spring.

17. The apparatus according to claim 16, further including an adjustment screw between said trigger return spring and said trigger.

18. An improved firearm, said firearm including:

(a) a frame;

(b) a barrel attached to said frame;

(c) a firing mechanism;

(d) a step having an adjustable step height;

(e) a sear and step trigger assembly having a trigger and a secondary sear block, said secondary sear block selectively movable between a first blocking position and a second non-blocking position, wherein said secondary sear block is finger actuated next to said finger portion of the; trigger and

(f) an over travel stop.

19. The apparatus according to claim 18, wherein said over travel stop is located between said trigger and said frame.

20. The apparatus according to claim 19, wherein said over travel stop is located rearward said trigger.

21. The apparatus according to claim 20, wherein said over travel stop is an adjustment screw.

22. The over travel stop according to claim 19, further including a trigger stop and safety.

23. The apparatus according to claim 22, wherein said trigger stop and safety is an adjustment screw.

24. The apparatus according to claim 18, wherein said frame is a bolt-action receiver.

25. The apparatus according to claim 18, wherein said firing mechanism includes a firing pin and a firing pin actuator.

26. The apparatus according to claim 25, wherein said firing pin actuator is a spring.

27. The apparatus according to claim 18, wherein said secondary sear block is coaxial with said trigger.

28. The apparatus according to claim 27, wherein said secondary sear block is nested within said trigger.

29. The apparatus according to claim 18, further including biasing means for maintaining said secondary sear block in the block position.

30. The apparatus according to claim 18 further including a cocking indicator.

31. The apparatus according to claim 18, further including a trigger return spring.

32. The apparatus according to claim 31, further including an adjustment screw between said trigger return spring and said trigger.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,553,706 B1
DATED : April 29, 2003
INVENTOR(S) : Gancarz et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 4,
Lines 19-28,
Claim 1 should read:

1. An improved firearm, said firearm including:
(a) a frame;
(b) a barrel attached to the frame;
(c) a firing mechanism; and
(d) a sear and step trigger assembly having a trigger and a secondary sear block, said trigger and said secondary sear block having a common pivot point, said secondary sear block selectively movable between a first blocking position and a second non-blocking position, wherein said secondary sear block is finger actuated next to the finger portion of said trigger.

Lines 48-58,

11. An improved firearm having a frame, a barrel and a firing mechanism, the improvement comprising a sear and step trigger assembly with a secondary sear block, said sear and step trigger assembly comprising:
(a) a sear;
(b) a trigger;
(c) a step having an adjustable step height; and
(d) a secondary sear block, said trigger and said secondary sear block having a common pivot point, said secondary sear block selectively movable between a first blocking position and a second non-blocking position, wherein said secondary sear block is finger actuated next to the finger portion of said trigger.

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,553,706 B1
DATED : April 29, 2003
INVENTOR(S) : Gancarz et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

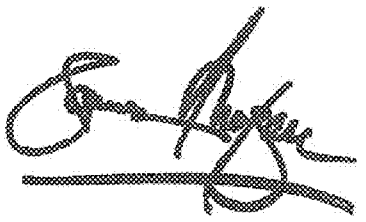
Column 5,
Lines 22-23,

Claim 20 should read:

20. An improved firearm, said firearm including:
(a) a frame;
(b) a barrel attached to said frame;
(c) a firing mechanism;
(d) a stop having an adjustable stop height;
(e) a sear and step trigger assembly having a trigger and a secondary sear block, said trigger and said secondary sear block having a common pivot point, said secondary sear block selectively movable between a first blocking position and a second non-blocking position, wherein said secondary sear block is finger actuated next to the finger portion of said trigger; and
(f) an over travel stop.

Signed and Sealed this

Second Day of September, 2003



JAMES E. ROGAN
Director of the United States Patent and Trademark Office

EXHIBIT 32

	NEAR	EXPRESS RIFLE
RECOIL PAD COLOR	BLACK	BLACK
CHEEKPIECE	YES	YES
WOOD FINISH	SATIN	-
SYNTHETIC STOCK FINISH	SMOOTH TEXTURE	ROUGH TEXTURE
SYNTHETIC STOCK COLOR	BLACK/CAMO	BLACK
STOCK/ACTION BOLT TYPE allen head	HEX	HEX
LEFT HAND ACTION (12%)	YES	NO
SHORT ACTION AVAILABLE	YES	NO
CARBINE AVAILABLE	YES	NO
BBL LENGTH OF CARBINE	20"	-
CUSTOM/IMPROVED BEDDING	YES	-
IMPROVED FIT & FINISH	YES	-

CONSIDERATIONS MOST IMPORTANT TO THE PURCHASE OF A BOLT ACTION BIG GAME RIFLE (PRIORITIZED).

1. ACCURATE
2. RELIABLE
3. STRONG
4. HANDSOME
5. AVAILABILITY OF CALIBERS
6. FIT/FEEL, HANDLING

ROGER 77 IS BEST LOOKING RIFLE (SEXY)

"IF ITS SHINY, THEY'LL PICK IT UP."

IMPROVE AESTHETIC QUALITIES OF OUR PRODUCT.

EXHIBIT 40

"TAMPER RESISTANT"
OR
DISINCENTIVE TO
ATTEMPT ADJUSTMENT
OR MODIFICATION.

RELEASE HOUSING 8.12.92

CAN THIS INTERACT WITH .907 BOLT DIA TO GUIDE THE BOLT RADIALLY DURING PORTION OF LONGITUDINAL STROKE WHERE REDUCED DIA OF BOLT REARWARD OF LUGS IS NOT GUIDED BY A BOLT STOP. MUST ADD

D - 93715 TG. ASS'Y NO BAR

D - EXP 1111 NO BAR EXT.

D - 93724 SCOPE MT BASE

D - 102870 SCOPE RING ASS'Y

DATA BASE DWG LIST OF NO BAR

LOOKED 8 8-93 WAW

A SAFETY

DESIREABLE:

F → S

MECHANISM/FORCE TO ENGAGEMENT (OF TRIGGER AND SEAR) RATHER THAN MERELY ALLOWING/RELYING ON SPRING FORCE TO ESTABLISH/MAINTAIN ENGAGEMENT.

4-15-93

EXHIBIT 40

"TAMPER RESISTANT"
OR
DISINCENTIVE TO
ATTEMPT ADJUSTMENT
OR MODIFICATION.

RELEASE HOUSING 8.12.92

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NOT IN ARCHIVE FILE D - 93715 TR. ASS'Y NO BAR

D - EXP 1111 NO BAR EXT.

NOT IN ARCHIVE FILE D - 93724 SCOPE MT BASE

D - 102870 SCOPE RING ASS'Y

DATA BASE DWG LIST OF NO BAR

LOOKED @ 8-93 WAW

A SAFETY

DESIREABLE:

F → S

MECHANISM CAN FORCE THE ENGAGEMENT (OF TRIGGER AND SEAR) RATHER THAN MERELY ALLOWING / RELYING ON SPRING FORCE TO ESTABLISH / MAINTAIN ENGAGEMENT.

4-15-93

DS Patents

United States Patent [19]

Glock

[11] Patent Number: 4,825,744

[45] Date of Patent: May 2, 1989

[54] AUTOMATIC PISTOL

[76] Inventor: Gaston Glock, Siebenbürger Strasse 16-12, A-1220 Vienna, Austria

[21] Appl. No.: 227,514

[22] Filed: Aug. 2, 1988

Related U.S. Application Data

[63] Continuation of Ser. No. 773,352, Sep. 6, 1985, abandoned, which is a continuation of Ser. No. 456,036, filed as PCT AT82/00015 on Apr. 29, 1982, published as WO82/03910 on Nov. 11, 1982, Pat. No. 4,539,889.

[30] Foreign Application Priority Data

Apr. 30, 1981 [AT] Austria 1946/81

[51] Int. Cl.[4] F41C 19/14

[52] U.S. Cl. 89/148; 89/147

[58] Field of Search 42/65, 69.01, 69.02; 89/145, 147

[56] References Cited

U.S. PATENT DOCUMENTS

3,857,325 12/1974 Thomas 89/147

4,539,889 9/1985 Glock 89/147

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605729 11/1934 Fed. Rep. of Germany .

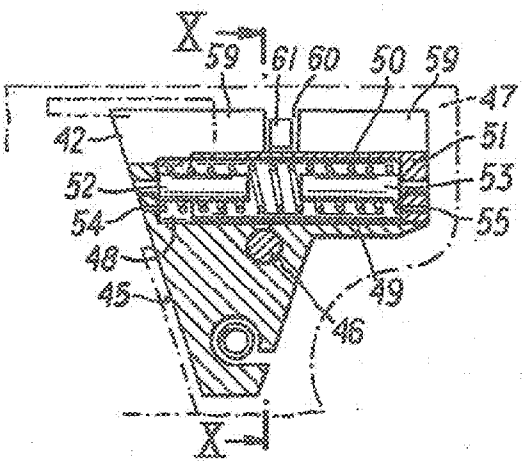
Primary Examiner—Stephen C. Bentley

Attorney, Agent, or Firm—Toren, McGeady & Associates

[57] ABSTRACT

A pistol has a frame, a barrel slidable on the frame and having a cartridge-receiving rear end, and a breech slidable on the frame and engageable over the rear end of the barrel to form a cartridge chamber. A standard slide carries the barrel and breech. A firing element and a firing pin operatively linked thereto are movable on the breech toward and away from the barrel between a rear position in which the firing pin is out of the cartridge chamber and a front position with the firing pin projecting forward into the cartridge chamber for firing a cartridge in the chamber when the firing element moves from the rear to the front position. A relatively strong firing spring braced against the firing element urges same into the front position and a relatively weak spring braced against the firing element urges same into the rear position. A trigger movable on the frame between an actuated and an unactuated position and an abutment engageable with the firing element and displaceable backward on the frame are linked together so as to displace the firing element back into the rear position on displacement of the trigger from the unactuated to the actuated position and to displace the abutment out of operative engagement with the firing element on displacement of the trigger into the actuated position for displacement of the firing element by the springs into the front position.

9 Claims, 5 Drawing Sheets



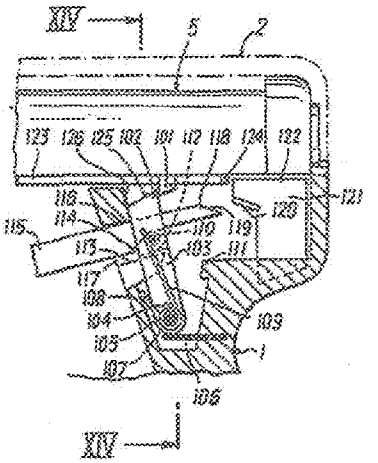


FIG. 1

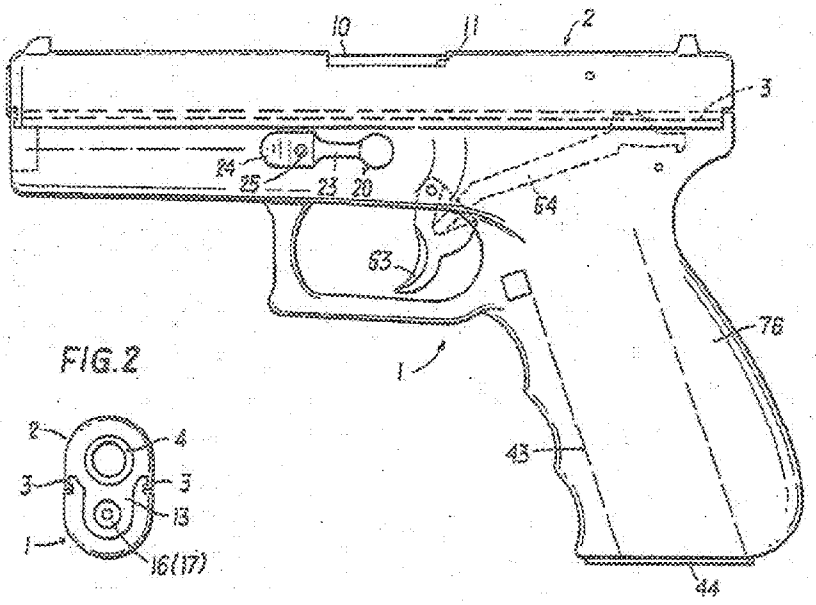


FIG. 2

FIG. 3

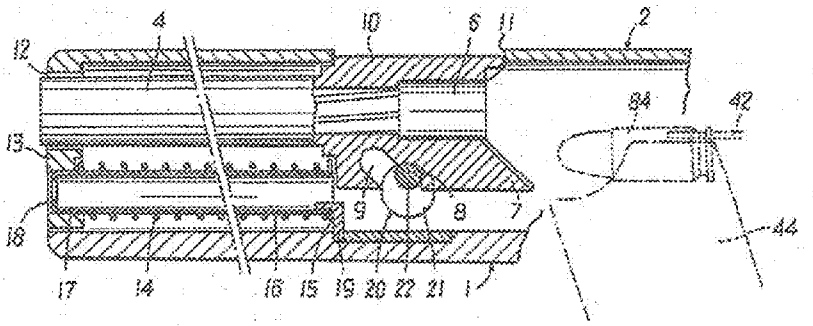


FIG. 4

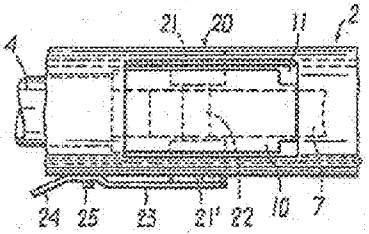


FIG. 5

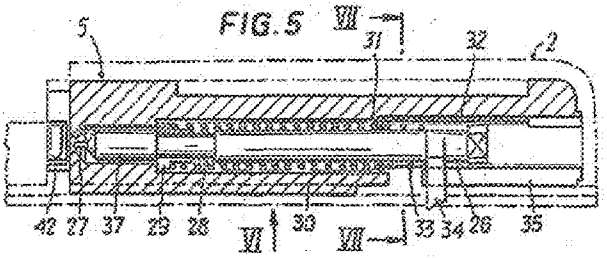


FIG. 7

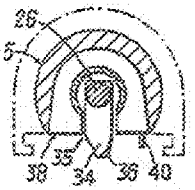


FIG. 6

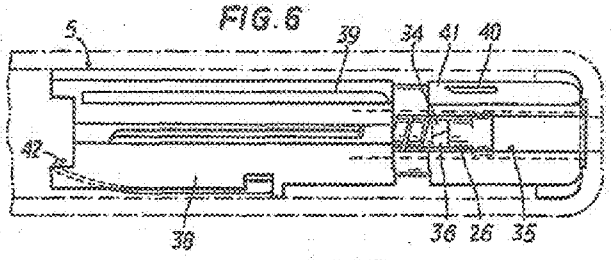


FIG. 30

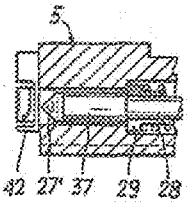


FIG. 8

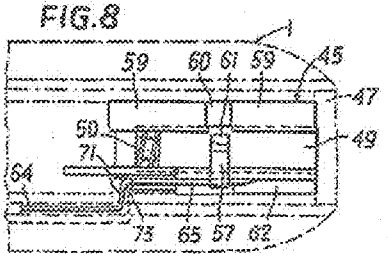


FIG. 31

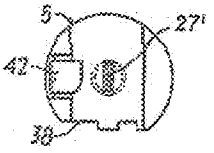


FIG. 10

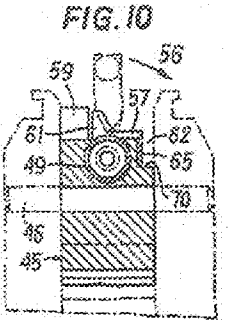


FIG. 9

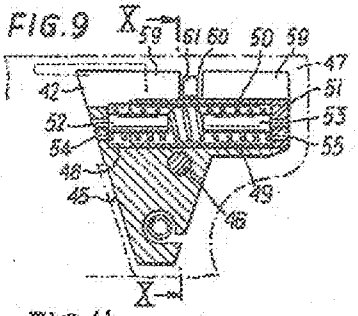


FIG. 12

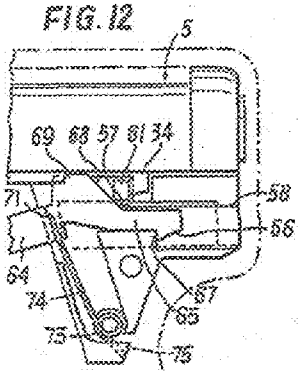


FIG. 11

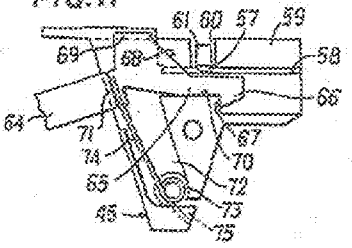


FIG. 13

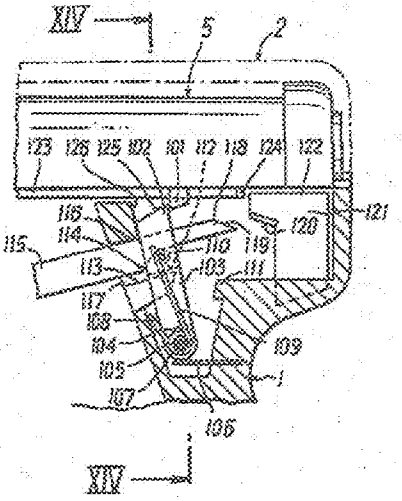


FIG. 14

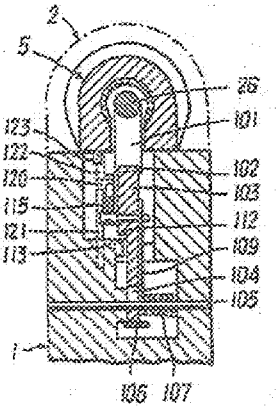


FIG. 15

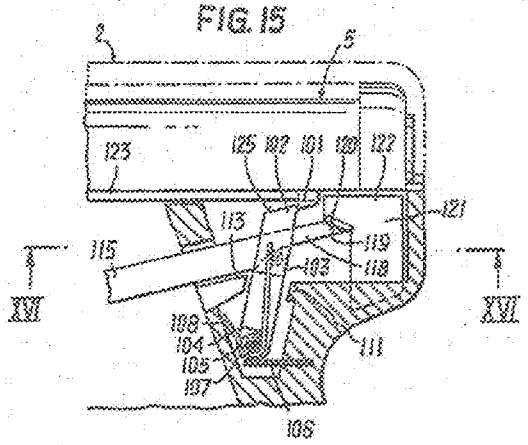


FIG. 16

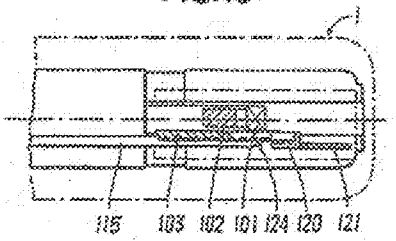


FIG. 17

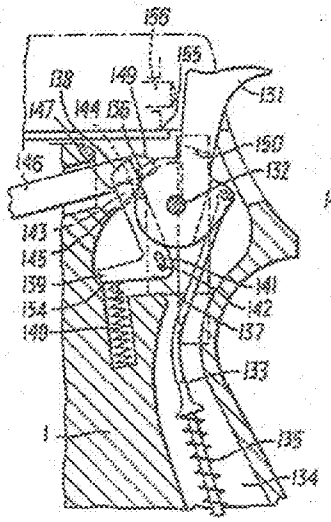


FIG. 18

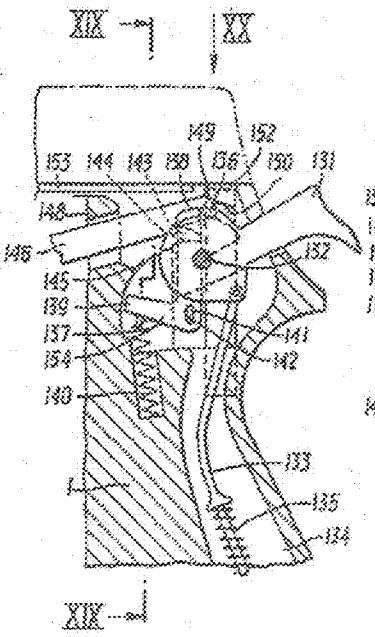


FIG. 19

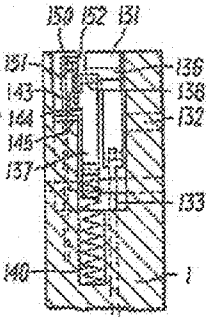


FIG. 20

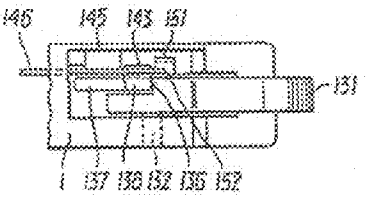


FIG. 21

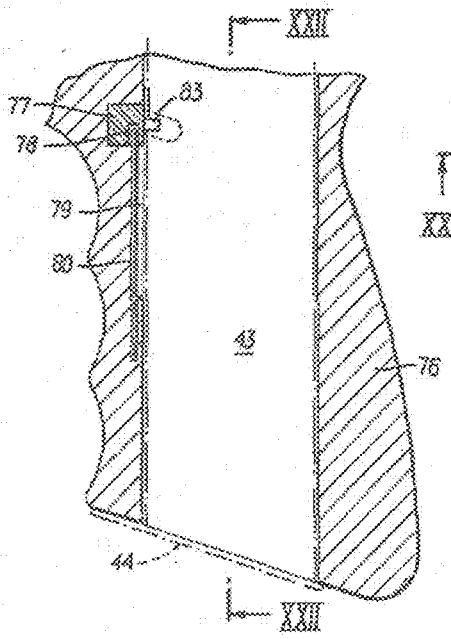


FIG. 22

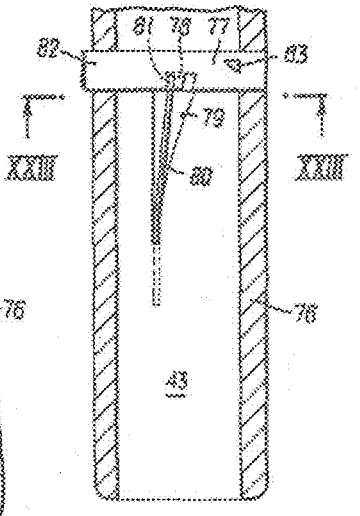


FIG. 23

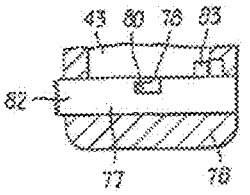


FIG. 24

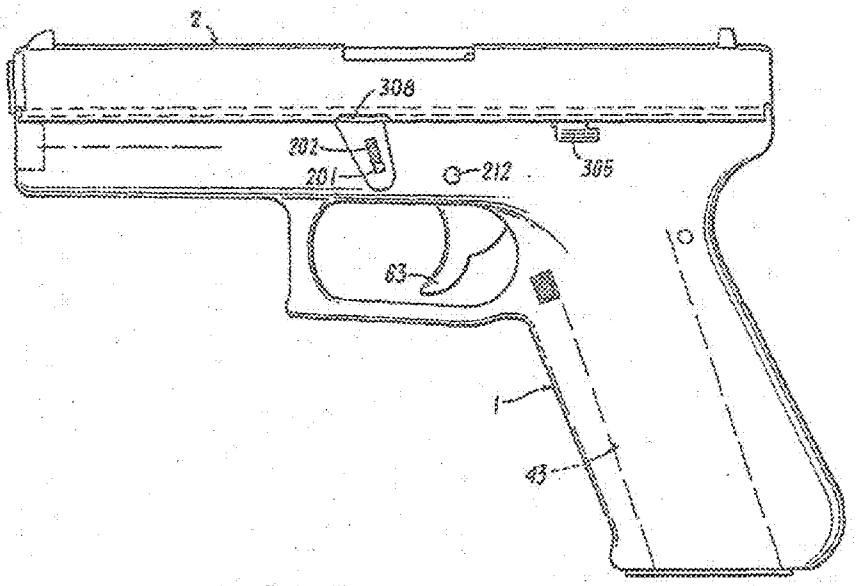


FIG. 25

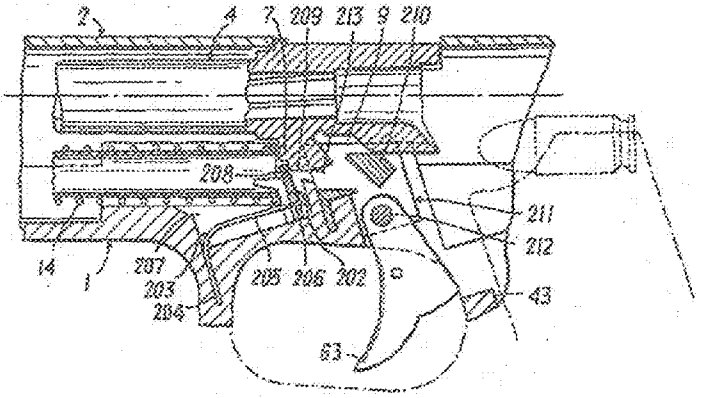


FIG. 26

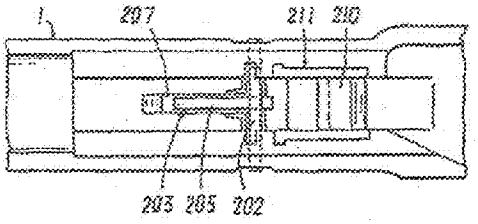


FIG. 27

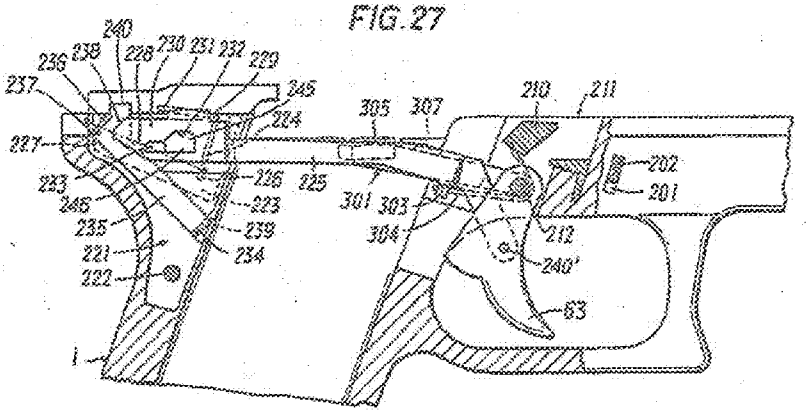


FIG. 28

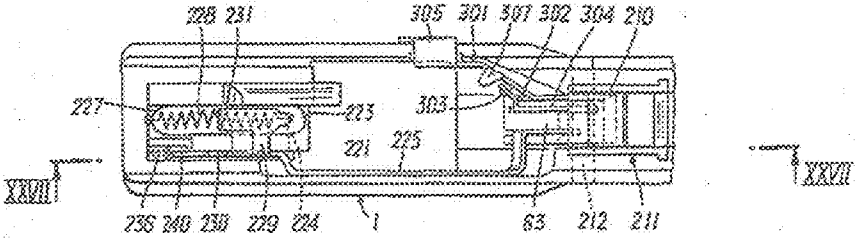


FIG. 29

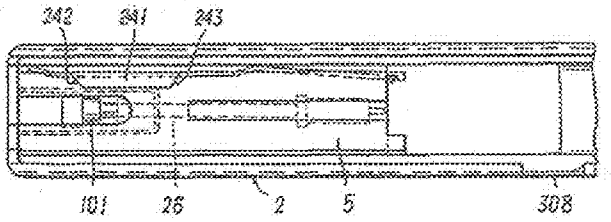


FIG. 33

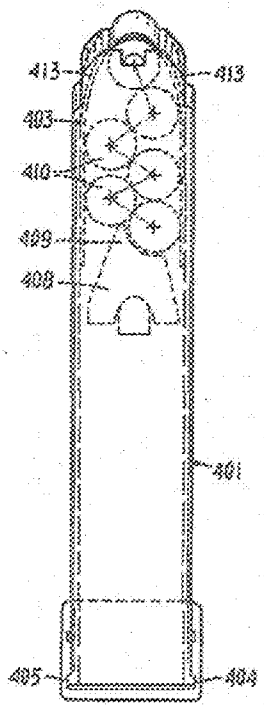


FIG. 32

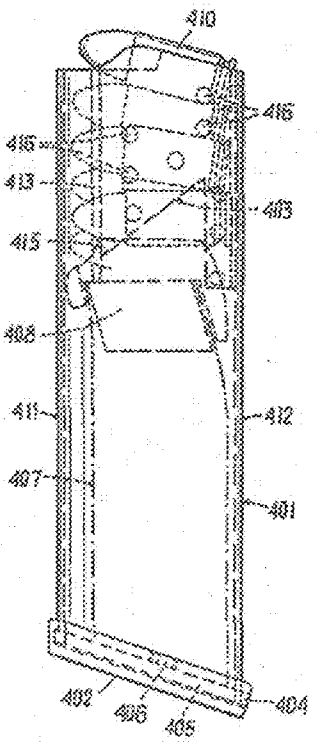


FIG. 34

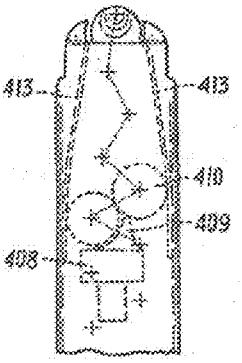


FIG. 35

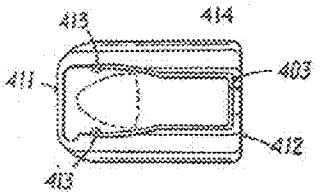


FIG. 36

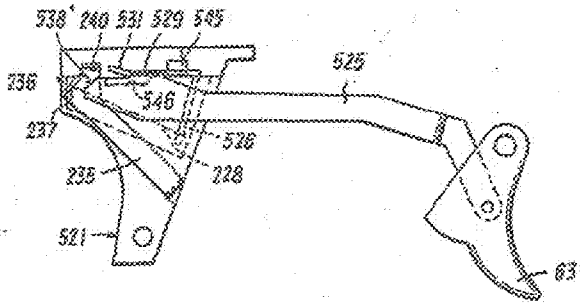


FIG. 38

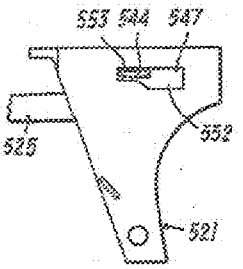


FIG. 37

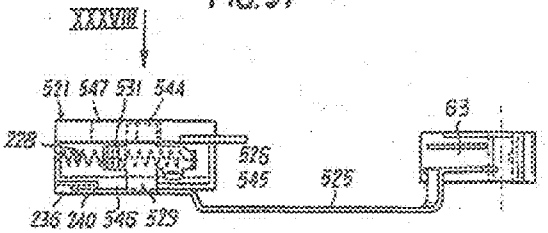
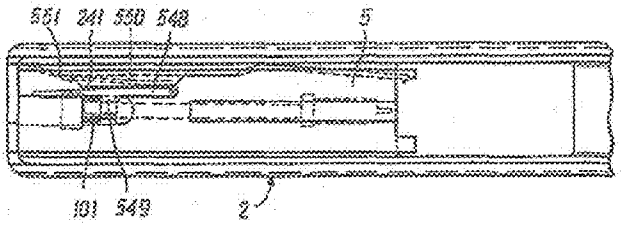


FIG. 39



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AUTOMATIC PISTOL

CROSS-REFERENCE TO RELATED APPLICATION

This is a continuation of application Ser. No. 773,352, filed Sept. 6, 1985, now abandoned, which is in turn a continuation of Ser. No. 456,056, filed as PCT AT82/00015 on Apr. 29, 1982, published as WO82/03910 on Nov. 11, 1982, now U.S. Pat. No. 4,539,889.

This application is related to my copending application Ser. No. 456,056 filed Dec. 30, 1982.

FIELD OF THE INVENTION

The present invention relates to a pistol. More particularly this invention concerns an automatic pistol of the type which automatically ejects the spent casing and chambers a new cartridge after each shot.

BACKGROUND OF THE INVENTION

A standard automatic pistol has a frame provided with a firing mechanism and carrying a slide comprising the barrel and breech block slidable on the frame. A recoil spring is braced between the frame and slide and the breech block is provided with a firing pin operable by a firing-pin spring or a hammer loaded by a hammer spring. The firing mechanism has an abutment guided generally parallel to and extending into the path of the firing pin or the hammer. This abutment is connected via a link with the trigger so that on actuation of same it is movable in a direction loading the firing pin or hammer.

Such pistols are relatively complicated to use. To chamber a cartridge it is necessary to pull back and then push forward the slide. Similarly when the cartridge clip is empty, the slide must be pulled back, a new clip inserted, then the slide released and moved forward to chamber the cartridge. All these actions must be carried out against heavy spring forces and in only one sequence, so that such a pistol can only be entrusted to experienced hands.

The shooter cannot often tell whether the pistol is on or off safety, especially after a pause in shooting. Thus it is possible for a shot to be attempted while the safety is on, or for a shot to be loosed inadvertently by someone thinking it is on when it is not.

Trigger-type automatics have a trigger that is cocked by the slide when a cartridge is chambered. In order to carry the loaded pistol with safety, the hammer must be uncocked. Subsequent shooting necessitates manually cocking the hammer by means of the trigger. This procedure requires that quite some force be exerted, necessitating a long trigger stroke without any noticeable critical point. The pistol is off safety after the shot, and subsequent shots only require limited force on and a limited stroke of the trigger, so that the danger of an unintentional shot is great. For safety against jarring and dropping, a particular latch for the firing pin is provided that is released on operation of the trigger before the hammer strikes the firing pin.

In addition, pistols are known with a separate safety lever which is actuated by the three fingers surrounding the pistol grip. It is, however, difficult to move these three fingers independently of the trigger finger so that mistakes in handling happen. In addition, with such a pistol whenever it is solidly gripped it is off safety, so that unintentional shots can be fired.

The known pistols have in common that the firing mechanism holds the firing element, that is, the firing pin or the hammer, in its cocked position and in this position the pistol is off safety and cocked so it is sensitive to jarring or dropping.

Another problem with the known automatic pistols is that removal of the barrel for servicing of the gun is fairly difficult, necessitating tools. In view of the need to maintain such complicated mechanisms carefully, such difficulty is extremely disadvantageous.

Yet another disadvantage of the known automatic pistols is that after the last shot in a clip the slide returns forward on the empty chamber. To chamber a new cartridge it is necessary to pull back the slide, insert the new clip, then advance the slide. In a situation where a pistol is used, such extra handling is very disadvantageous.

OBJECTS OF THE INVENTION

It is therefore an object of the present invention to provide an improved pistol.

Another object is the provision of such an improved pistol which overcomes the above-given disadvantages.

Yet another object is to provide an easy-to-use but very safe automatic pistol which can be produced at low cost.

SUMMARY OF THE INVENTION

A pistol according to the invention has a frame, a barrel slidable on the frame and having a cartridge-receiving rear end, and a breech block slidable on the frame and engageable over the rear end of the barrel to form a cartridge chamber. A standard slide carries the barrel and breech block. A firing element and a firing pin operatively linked thereto are movable on the breech block toward and away from the barrel between a rear position in which the firing pin is out of the cartridge chamber and a front position with the firing pin projecting forward into the cartridge chamber for firing a cartridge in the chamber when the firing element moves from the rear to the front position. A relatively strong firing spring braced against the firing element urges same into the front position and a relatively weak spring braced against the firing element urges same into the rear position. A trigger movable on the frame between an actuated and an unactuated position and an abutment engageable with the firing element and displaceable backward on the frame are linked together so as to displace the firing element back into the rear position on displacement of the trigger from the unactuated to the actuated position and to displace the abutment out of operative engagement with the firing element on displacement of the trigger into the actuated position for displacement of the firing element by the springs into the front position.

According to another feature of this invention, the abutment is engageable with the firing element in an intermediate position thereof in the unactuated position of the trigger and the linkage displaces the firing element backward from the intermediate position into the rear position by means of the abutment on displacement of the trigger from the unactuated to the actuated position.

Thus, the starting position of the abutment for the firing bolt or hammer is at an intermediate location in the travel path of same. In this manner, the firing mechanism can be such that the trigger force is substantially less than with the known pistols. Preferably, the starting position of the firing pin is in a noncritical region of its

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travel path or that of the hammer, in which region the force of the partially loaded firing-pin spring or hammer spring is insufficient to fire a shot.

According to this invention, the spring means includes a relatively strong firing spring braced against the firing element and urging same into the front position and a relatively weak spring braced against the firing element and urging same into the back position. The trigger or cocking force is the difference between these spring forces and can be set at a hair trigger or a relatively stiff novice level. In other words, the pistol is always uncocked or at least partially uncocked. The cocking for each shot is effected by the trigger and is assisted by a spring, so that the condition of the pistol is the same before the first shot as it is before the subsequent shots.

According to another feature of this invention, the firing means includes a guide holding the abutment in operative engagement with the firing element on displacement of the trigger from the unactuated to the actuated position. In addition, when the element is in the intermediate position the abutment prevents any displacement of the firing element relative to the abutment. Accidental discharge of the pistol therefore is impossible.

In accordance with another feature of the invention the abutment is displaceable laterally relative to the firing element between a position in the path of same and engageable therewith and a position out of the path and unengageable therewith, the link means displacing the abutment into the out-of-path position on displacement of the trigger into the actuated position. This movement of the abutment which frees the firing element—firing pin or hammer—in a direction perpendicular to one in which this element moves to fire the cartridge means that if the pistol is jarred, as for example by being dropped, it is virtually impossible for the necessary forces to be exerted on the mechanism to fire the pistol.

The abutment can, according to this invention, be rotatable between the in-path and the out-of-path positions. More particularly when the firing element is a longitudinally displaceable bolt and the abutment has a sleeve carried thereon, the firing means includes a torsion spring urging the abutment into the in-path position. The abutment is an arm projecting from the sleeve and the breech block is formed with a guide holding the abutment in operative engagement with the firing element on displacement of the trigger from the unactuated to the actuated position. In addition, in such an arrangement, the link means includes a trigger slide displaceable parallel to and transversely of the path of travel of the firing pin and having a spring urging it into engagement with the abutment.

The abutment can be a lever having one pivoted end and an opposite end engageable in the path of the firing element and deflectable thereby out of the path thereof to free the firing element for firing. More particularly, when the abutment is such a lever it can have one end engaging in the path of the firing element and another end formed with a slot. The frame has a pivot pin traversing the slot and the firing mechanism comprises a spring urging the one end away from the pivot pin. Once again, the displacement direction for the link is transverse of the firing pin. Therefore, the pistol is very jar-resistant.

In accordance with this invention, the firing element can also be a hammer pivotal on the frame, in which case the firing mechanism includes a firing pin carrying the firing pin tip and engageable with the hammer and the spring means and abutment are engageable with the hammer. The abutment can be a two-arm lever blockingly engageable with the hammer and laterally deflectable out of engagement therewith. It can also be a longitudinally slidable trigger slide.

In a particularly simple construction according to this invention, the firing element is a firing bolt carrying the firing pin tip and a firing-pin nose and the abutment is directly engageable with the nose. Furthermore, the link means includes a trigger slide and an inclined surface on the frame engageable with the trigger slide in the actuated position of the trigger. This link means includes a spring urging the slide into engagement with the inclined surface.

To eliminate the problem of firing-pin tip breakage which plagues automatic pistols, the firing pin tip is lance-shaped and the breech block is formed with an elongated throughgoing slot through which the lance-shaped pin tip engages. More particularly, the firing pin has a flattened triangular tip lying in the pistol plane, so it is very strong in this direction, which is the same as the shell-ejection direction.

The pistol according to this invention has latch means for releasably securing the barrel to the frame. This means includes a projection on the barrel movable along a path on sliding of the barrel and breech block on the frame, a frame abutment on the frame and normally in the path, and means for moving the frame abutment out of engagement with the barrel projection. The frame abutment can be an eccentric pivotal into and out of the in-path position, or can be a slide displaceable parallel to the clip hole in the frame. Either arrangement makes removal of the slide relatively easy.

In addition, the pistol of this invention has a clip removably engageable with the frame and holding a supply of cartridges displaceable by the breech into the chamber, and safety means engageable between the clip and the link means for permitting the abutment to move out of engagement with the firing element only when at least one cartridge remains in the clip. To this end, the clip has a cartridge follower and the safety means includes an element on the frame engageable through the clip with the follower. Thus, when the last shot is fired, the slide will not return forward, so that a new clip can be inserted with automatic chambering of the first cartridge.

The pistol according to this invention is set up so that the abutment cannot catch the firing element and recock and fire it when the trigger is held back. Instead the trigger must be released between shots to move the link forward into its forward position where it can engage the abutment. In other words, the abutment and link can only engage one another when the firing element is in the intermediate position and the link is in the trigger-unactuated position.

With the pistol of this invention, releasing and firing are done with the same element. Thus, the condition of the pistol is the same before the first shot as it is before the subsequent shots. This is attained when the guide which establishes the path of the abutment during the loading motion blocks projection of the abutment into the travel path of the firing pin or hammer. The pistol is therefore always uncocked or partially uncocked.

Handling of the pistol according to the instant invention is therefore as simple as possible. The pistol is ready after chambering of the cartridge in the barrel for shoot-

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ing at any time and is nonetheless completely safe from unintentional shots. Similarly in this condition the pistol is fully drop- and jar-resistant. As a result of the unchanging trigger force, accuracy is increased. Simple and safe handling of the pistol is ensured even for the unpracticed user.

As a result of the small number of parts and the possible fitting of the firing mechanism into a small space, the frame can be of one piece, preferably of a synthetic resin, so that the overall weight is substantially less than that of comparable known pistols. In addition, manufacture is simplified and made inexpensive. In fact, the entire frame can be a synthetic-resin casting made with a simple two-piece mold, and the various elements like the firing element and guide for the slide can be formed by metallic inserts.

DESCRIPTION OF THE DRAWING

The above and other features and advantages will become more readily apparent from the following, reference being made to the accompanying drawing in which:

FIG. 1 is a side view of a pistol according to the present invention;

FIG. 2 is a front end view of the pistol of FIG. 1;

FIG. 3 is a large-scale longitudinal section through a detail of the pistol of FIG. 1;

FIG. 4 is a top view of a detail of FIG. 1;

FIG. 5 is a longitudinal section through the breech of the pistol of FIG. 1;

FIG. 6 is a top view of the breech of FIG. 5;

FIG. 7 is a section taken along line VII—VII of FIG. 5;

FIG. 8 is a top view of the rear portion of the firing mechanism;

FIG. 9 is a longitudinal section through the mechanism of FIG. 8;

FIG. 10 is a section taken along line X—X of FIG. 9;

FIG. 11 is a side view of the firing mechanism in the uncocked position;

FIG. 12 is a side view of the firing mechanism in the ready-to-fire position;

FIG. 13 is a longitudinal section like FIG. 9 through a second embodiment of the firing mechanism, in the uncocked position;

FIG. 14 is a section taken along line XIV—XIV of FIG. 13;

FIG. 15 is a section like FIG. 13 but in the cocked position;

FIG. 16 is a section taken along line XVI—XVI of FIG. 15;

FIG. 17 is a longitudinal section like FIG. 9 through a third embodiment of the firing mechanism, in the uncocked position;

FIG. 18 is a section like FIG. 17 but in the cocked position;

FIG. 19 is a section taken along line XIX—XIX of FIG. 18;

FIG. 20 is a top view taken in the direction of arrow XX of FIG. 18;

FIG. 21 is a large-scale longitudinal section through a detail of FIG. 1;

FIG. 22 is a section taken along line XXII—XXII of FIG. 21;

FIG. 23 is a section taken along line XXIII—XXIII of FIG. 22;

FIG. 24 is a side view of another pistol according to the present invention;

FIG. 25 is a large-scale longitudinal section through a detail of the pistol of FIG. 24;

FIG. 26 is a top view of the detail of FIG. 25;

FIG. 27 is a large-scale longitudinal section through the firing mechanism of the pistol of FIG. 24;

FIG. 28 is a top view of the detail of FIG. 27, line XXVII—XXVII being the section plane for FIG. 27;

FIG. 29 is a bottom view of the slide of the pistol of FIG. 24;

FIG. 30 (same sheet as FIGS. 5–12) is a longitudinal section through a firing-pin assembly according to this invention;

FIG. 31 (same sheet as FIGS. 5–12) is a front end view of the assembly of FIG. 30;

FIG. 32 is a side view of the clip for the pistol of FIG. 3;

FIGS. 33, 34, and 35 are respectively back end, partial front, and top views of the clip of FIG. 32;

FIG. 36 is a side view of yet another firing mechanism according to the invention;

FIG. 37 is a top view of the structure of FIG. 36;

FIG. 38 is a view in the direction of arrow XXXVIII—XXXVIII of a detail of FIG. 37; and

FIG. 39 is a bottom view of a slide that works with the mechanism of FIGS. 36–38.

SPECIFIC DESCRIPTION

As seen in FIGS. 1–12, the pistol in general is comprised of a frame 1 and a slide 2 which is displaceable on the frame 1 by means of a tongue-and-groove guide 3. The barrel 4 and breech block 5 are mounted on the slide 2. The barrel 4 has a breech block chamber 6 and a downwardly projecting extension 7 in which a recess 8 is formed from which a forwardly upwardly inclined groove 9 extends. The barrel 4 has an upwardly directed projection 10 extending into a window 11 of the slide 2 so that the barrel 4 and breech block 5 are locked together for joint movement along the axis A of the barrel 4. The barrel 4 projects with play through an opening 12 at the front end of the slide 2 so that it is only held in the region of its breech block chamber 6.

The slide 2 has an end wall 13 which serves as rest for a recoil spring 14. The other rest is formed by the rim 15 of a sleeve 16 that is surrounded with play by the recoil spring 14. The front end 17 of the sleeve 16 is received with play in a bore 18 of the end wall 13. The sleeve 16 is fixed axially by a bracket 19 which has a flange fitted in a slot of the frame 1.

Also mounted in the frame 1 is an eccentric 20 formed of a pair of disks 21 and 21' rotatable in a bore of the frame 1 and connected together by a stem 22. The disk 21' projects out of the frame 1 and carries a spring lever 23 whose free end 24 can snap over a pin 25. When thus engaged over the pin 25, rotation of the eccentric 20 is impeded.

The breech block 5 is mounted axially unmovably in the slide 2. It only has centering surfaces which correspond to complementary surfaces of the barrel 4. As seen in FIGS. 5–7, a firing pin 26 generally centered on the barrel axis A is slidable in the breech block 5 and carries at its front end a firing pin tip 27. This firing bolt 26 has a section 28 of small diameter straddled by a spring rest 29 against which the firing-pin spring 30 is braced and which bears with its other end against a shoulder 31 of a spring tube 32 which is downwardly open and which flatly abuts the breech block 5 with its rear end. A weak return spring 33 mounted in the tube 32 bears in one direction against the shoulder 31 of the

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spring tube and in the other direction on a nose 34 of the firing pin 26, which nose 34 projects with its tip down out of and is guided in a slot 35 of the breech block 5. The nose 34 is formed with an inclined surface 36. The position of the firing bolt 26 is determined by engagement of its section 37 on the spring rest 29.

Ridges 39 and 40 are provided spaced one behind the other on the underside 38 of the breech block 5 so that a gap 41 is formed. The outer flank of the ridge 39 and the inner flank of the ridge 40 lie substantially in a plane. In addition, the breech block 5 has an extractor hook 42.

Behind a magazine hole 43 for the cartridge clip 44 (see FIG. 1), the frame 1 has a guide 45 fixed in place by a pin 46 as seen in FIGS. 8–12. The guide 45 extends to the rear end wall 47 of the frame 1 and is formed with a bore 48 whose axis is parallel to the bolt/barrel axis A. This bore 48 receives a stop sleeve 49 which contains a stop spring 50 which is braced between the floor of the bore 48 and the end wall 51 of the stop sleeve 49. This stop spring 50 is considerably weaker than the firing spring 30 that is oppositely braced against it as will become apparent hereinbelow. A pin 52 in the floor of the bore 48 and a pin 53 in the end wall 51 of the stop sleeve 49 guide it. The spring 50 is received with radial play in the sleeve 49. The wire ends 54 and 55 of the spring 50 are bent axially and are received in little bores respectively in the floor of the bore 48 and in the end wall 51. The stop spring 50 is not only axially, but also angularly loaded since the stop sleeve 49 is is turned a few times when it is mounted to torsionally or angularly load the spring 50. In this manner, the sleeve 49 is urged clockwise according to arrow 56 (FIG. 10). To prevent such rotation it has an arm 57 which bears against the upper edge surface 58 of the guide 45. The guide 45 further has a shoulder 59 which is interrupted by a slot 60. The width of the slot 60 is such that an abutment 61 on the sleeve 49 can engage in it.

The guide 45 is provided with a longitudinally open recess 62 in which is slidable a trigger slide 64 connected to the trigger 63. This trigger slide 64 occupies only a portion of the recess 62 and has an arm 65 engaging underneath the arm 57 as shown in FIG. 12. The arm 65 terminates in a hook 66 which coacts with a step 67 on the guide 45. Furthermore, the slide 64 has a cam surface 68 which ends at a guide edge 69. The slide 64 is thus on one side guided by the floor 70 of the recess 62 and on the other side with the edge 69 on the underside 38 of the breech block 5 so that it can move substantially only parallel to the axis A of the firing pin 26. It is provided with a bend 71 on which bears the long leg 74 of a hairpin spring 73 received in an elongated cutout 72 of the guide 45 and having a short leg engaged in a slot 75 of the frame 1. The spring is constructed such that the long leg 74 urges the trigger slide 64 forward and the arm 65 toward the spring sleeve 49.

As seen in FIGS. 21–23, inside the grip 76 of the frame 1 is formed with a square-section passage transverse to the hole 43 for the cartridge clip 44 and receiving a slide 77 having a downwardly open bayonet guide 78. Near this slide 77 the hole 43 is formed with a wedge-shaped recess 79 into which a bore opens that receives a spring wire 80 that engages with its free end 81 in the bayonet guide 78. In addition, the slide 77 projects with its end 82 out of the grip 76 so that it can be shifted against the force of the spring 80. It carries a wedge nose 83 which engages in a groove of the clip 44.

FIGS. 8 to 11 show the pistol uncocked. In order to chamber the first cartridge 84 in the barrel 4, the slide 2 is slid back against the force of the recoil spring 14. The stem 22 of the eccentric 20 engages in the groove 9, swings the barrel 4 down, and holds it against axial movement relative to the slide 2 once it reaches the base of the groove 9. This action pulls the projection 10 of the barrel 4 out of the window 11 so that the slide 2 with the breech block 5 can move further back. Meanwhile the nose 34 of the firing bolt 26 carries back the abutment 61 as can be understood from a comparison of FIGS. 7 and 10. The nose 34 is prevented from rotating by the groove 35, as is the abutment 61 which lies on the front part of the shoulder 59. Once the abutment 61 and the stop sleeve 49 have moved back sufficiently, while unloading the stop spring 50, the abutment 61 can move angularly into the slot 60. Thus, the cam surface 36 of the nose 34 pushes the abutment 61 against the torsional force of the stop spring 50 into the slot 60 so that this nose 34 can move back past the abutment 61. As soon as the nose 34 passes the abutment 61, it is turned by the spring 50 back into the position of FIG. 10. The sleeve 49 engages with its end wall 51 against the rear end wall 47 of the frame 1 and is solidly positioned here by the axially effective force of the stop spring 50.

When the slide 2 is returned somewhat forward, the nose 34 of the firing pin 26 engages forward against the abutment 61. The force of the firing-pin spring 30 overcomes that of the stop spring 50 so that the nose 34 slides the abutment 61 and the sleeve 49 forward until the end of same engages the floor of the bore 48 in the guide 45. Further advance of the slide 2 is impeded as the abutment 61 holds the nose 34 and the firing pin 26, thereby partially tensioning the firing-pin spring 30. Simultaneously, the breech block 6 is closed by the breech block 5 and moved forward with the barrel 4. This lifts the rear portion of the barrel 4 from the stem 22 so the projection 10 engages again in the window 11 of the slide 2 and the barrel 4 and breech block 5 are locked together. During this action, as is known, the extractor finger 42 engages the lip of the casing of a shell in the chamber 6, pulls it axially backward therefrom, and flips this spent casing out the window 20 as same comes level with the extracted casing.

Pulling the trigger 63 moves the trigger slide 64 back so the cam surface 68 engages under the arm 57 and urges it up. Since the abutment 61 lies on the front shoulder 59, further movement of the trigger 63 moves the arm 57, the sleeve 49, the abutment 61 and the firing-pin nose 34 entrained thereby back while unloading the stop spring 50 and loading the firing-pin spring 30. Thus, it is only necessary to bring a force to bear on the trigger 63 equal to the difference between the forces of the springs 30 and 50 to move these elements of the mechanism. By choosing appropriate spring forces, the pressure for the trigger 63 can be set at any desired level.

As soon as the abutment 61 reaches the slot 60, the cam surface 68 of the trigger slide 64 raises the arm 57 and swings the abutment 61 into this slot 60. This frees the nose 34 and the firing pin 26 is propelled forward by the force of the spring 30, overcoming the spring force of the weak return spring 33. The firing pin tip 27 strikes as a result of the kinetic energy of the firing tip 26 with the necessary force on the primer of the cartridge, exploding it. As soon as the shot has left the barrel 4, the powder gases drive the slide 2 in the above-described manner back, with the rail 39 on the underside 38 of the breech block 5 engaging the guide edge 69 of the trigger

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slide 64 and moving it outward against the force of the hairpin spring 73.

Meanwhile the arm 57 disengages the cam surface 68 and returns with the abutment 61, which moves out of the slot 60 under the force of its stop spring 59, into the starting position in which the arm 57 lies on the surface 58 of the guide 48. If the slide 2 is moved by the recoil spring 14 forward again, the nose 34 entrains the abutment 61 until the sleeve 49 engages with its end surface on the base of the bore 48. Further advance of the slide partially compresses the firing-pin spring 30 again. Since the trigger slide 64 does not yet engage the arm 57, it is prevented from shooting automatically when the trigger 63 remains depressed. Only when the trigger 63 is released does the guide edge 69 slide along the rail 40 forward to be pressed by the spring 73 into the gap 41 between the ridges 39 and 40 so the arm 68 of the trigger slide 64 engages under the arm 57. Simultaneously, the return spring 33 slides the firing pin 26 until it lies with its front section 37 on the spring rest 29, whereupon the firing pin tip 27 is withdrawn into the breech block 5. Now the pistol is again ready to fire.

If the spring arm 23 is pulled out of the catch 25 it can rotate the eccentric 30 through 180°. The stem 22 disengages the barrel 4 and the entire slide 2 can be pulled off toward the front. The recoil spring 14 meanwhile remains compressed since the shoulder 15 of the sleeve 16 bears on the projection 7 of the barrel 4. The slide 2 can therefore be shifted without exerting substantial force.

FIGS. 13 to 16 show a further embodiment of the firing mechanism according to this invention. Otherwise the pistol is identical to that shown in FIGS. 1 to 12 with identical reference numerals referring to identical structure.

A nose 101 formed unitarily with the firing pin 26 projects down and toward the front from the breech 5. This firing pin 26 is mounted in the breech block 5 which is fitted jointly with the barrel 4 in the slide 2. Engaged in the path of the nose 101 is the abutment end 102 of a lever 103 which is formed on its other end with a slot 104 that is traversed by a pivot pin 105, the lever 103 therefore being limitedly displaceable transverse to the breech block 5 in the frame 1. A spring 106 fixed in the frame 1 presses with its free end against the pivoted end of the lever 103 so that the outer end of the slot 104 bears on the pivot pin 105, that is so that the lever 103 is moved up on the pin 105 towards the slide 2. A hairpin spring 107 carried on the pin 105 has a short leg 108 anchored in the frame 1 and a long leg 109 bearing on a pin 110 which is fixed on the lever 103. This spring 107 therefore urges the lever clockwise toward a position lying on a stop 111 in the frame 1 (FIG. 15).

The lever 103 has a shoulder 112 which coacts with a shoulder 113 of the frame 1. The shoulder 113 is so long that it only moves clear of the shoulder 112 when the lever 103 is in its rear end position, (FIG. 15) lying against the stop 111. Before reaching this end position the shoulders 112 and 113 prevent a shifting of the lever 103 against the force of the spring 106 and a simultaneous sliding of the slot 104 along the pin 105.

The pin 110 of the lever 103 is engaged by an edge 114 of the trigger slide 115 which passes through a hole 117 ion the frame 1. It extends with its arm 118 beyond the pin 110 and its end surface 119 coacts with another surface 120 formed by a bent-over end of a leaf spring 121 that is fixed in the frame 1. Above the surface 120, the leaf spring 121 is provided with a control edge 122 which coacts with a ridge 123 on the underside of the breech block 5. The end surface 124 of the ridge 123 is included as seen in FIG. 16.

In the uncocked position of the pistol the lever 103 is urged by the spring 107 against the stop 111. If the slide 2 is shifted back in order to chamber the first cartridge from the clip, the nose 101 slides over the end surface 125 of the lever 103 and moves it down against the force of the spring 106. As a result, the lever 103 can be passed by the nose 101. Forward shifting of the slide 2 causes this firing-pin nose 101 to again entrain the lever 103 whose end 102 extends into its path until the lever 103 engages against a stop 126, assuming the position, of FIG. 13. In this position the nose 101 and the firing pin 26 are prevented from moving forward any further. Further forward sliding of the slide 2 compresses the firing-pin spring 30 partially. The pistol is ready to shoot in this condition.

When the trigger slide 115 is pushed back by the trigger, it slides on the surface 116 of the frame 1 and its edge 114 pushes the pin 110, the lever 103, and the nose 101 back also. This fully loads the firing-pin spring 30. When the lever 103 reaches its rear end position and engages the abutment 111, the end surface 119 of the trigger slide 115 engages the surface 120 and moves the trigger slide 115 down against the force of the spring 106 so that it moves away from the surface 116, and the pin 110 as well as the lever 103 move down. This moves the free lever end 102 out of the path of the nose 101, freeing it, so that the firing pin 26 is propelled forward under the force of the fully compressed firing-pin spring 30 and fires the cartridge.

When the slide 2 is then driven back by gases from the shot, the inclined surface 124 of the ridge 123 on the breech block 5 pushes the leaf spring out (FIG. 14). The control edge 122 of the spring 121 thus lies against the ridge 123 until the slide 2 returns to its full-forward position. Deflection of the spring 121 makes the surface 120 slide off the end surface 119 of the trigger slide 115 and the spring 106 lifts the lever 103 and with it the arm 118 of the trigger slide 115. The ridge 123 frees the control edge 122 when the breech block 5 moves into the full-forward position, but the spring 121 cannot return to its original position because the arm 118 lies at the same level as the bend where the surface 120 is. Only when the trigger is released and the trigger slide 115 slides forward is the leaf spring 121 released and takes its illustrated rest position. The trigger slide 115 need not be in its full-forward position shown in FIG. 13 for the pistol to be ready to fire; the surfaces 119 and 120 need merely be separated. This embodiment of the firing mechanism allows rapid fire in that a shot following another shot can be made without complete release and depression of the trigger. Nonetheless, some forward return of the trigger is essential for a second shot so the pistol does not fire automatically.

In this arrangement also the mechanism can be mounted in a block, such as the guide 48, in the frame 1.

Instead of a sliding of the level 103 in its longitudinal direction, the lever can also be moved laterally out of the path of the firing-pin nose 101. Such an arrangement is not illustrated, because it is basically a combination of the two described embodiments.

FIGS. 17 to 20 show a part of a pistol that is provided with a hammer 131 that on shooting is pivoted by the force of a spring 135 on a pivot pin 132 and engages a firing pin 26 which fires the cartridge. Even in this type of pistol it is possible to use the principles of the instant invention.

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The hammer 131 is pivotal in the frame 1 about a pivot pin 132 and the rod 133 is pivoted on the hammer 131. This rod 133 is arranged in a cutout 134 of the frame 1 and is braced against the hammer compression spring 135. The hammer 131 has a lateral shoulder 136 on which a two-arm lever 137 engages with its one arm 138. Its other arm 139 is braced against an abutment spring 140 which is received in a bore of the frame 1. The two-arm lever 137 has in its center between its two arms a slot 141 that is traversed by a pivot pin 142 and about which the lever 137 is pivotal. Furthermore, the level 137 is provided with a lateral projection 143 which forms a shoulder 144 that faces a shoulder 145 of the frame 1. The trigger slide 146 engages with a shoulder 147 on the projection 143 and extends through an opening 148 in the frame 1. Its free end is provided with an inclined surface 149 that coacts with a surface 150 formed by the bend of a leaf spring 151 whose end surface 152 acts as a control edge that coacts with a ridge 153 of the breech 5. The leaf spring 151 is anchored with its lower end in the frame 1. In addition a stop 154 is formed in the frame 1 to limit the forward pivot motion of the lever 137.

FIG. 17 shows the firing mechanism in the uncocked condition. To cock it the trigger slide 146 is moved back by means of the trigger so that it pivots the projection 143 of the lever 137 back by means of the shoulder 147. The free end of the lever 137 serving as stop lies meanwhile on the step 136 of the hammer 131 and pivots it clockwise against force of the hammer spring 135. As soon as the inclined surface 149 of the trigger slide 146 reaches the surface 150 (FIG. 18) the trigger slide 146 swings down, whereupon the lever 137 is shifted down against the force of the abutment spring 140 in the slot 141 and its abutment end frees the shoulder 136 of the hammer. The hammer is snapped forward by the hammer spring 134 to strike the protruding rear end 156 of the firing pin 26, which in turn is propelled forward to fire the cartridge.

After the shot the gases drive the slide 2 with the breech block 5 back so that the inclined end face of the ridge 153 runs against the control surface 152 of the leaf spring 151 to pivot same outward (FIG. 19). As a result the surfaces 149 and 150 disengage each other and the stop spring 140 slides the lever 137 together with the trigger slide 146 up so that the end of same comes to lie next to the bend of the spring 151. Simultaneously as the slide reverses direction and follows the breech block 5 a rear edge 155 of the breech block 5 engages the hammer 131 and pivots it back counterclockwise against the force of its spring 135. The hammer 131 entrains with its shoulder 136 the abutment end 138 of the lever 137 until this lies on the stop 154. In this position the hammer 131 is a sufficiently safe distance behind the rear end 156 of the firing pin 26. As soon as the trigger is released, the trigger slide 146 moves forward so that the firing mechanism again assumes the position of FIG. 17. Thus the pistol cannot make automatic fire, that is a separate actuation of the trigger is need for each shot.

FIG. 24 shows a pistol in side view in which disassembly is effected by a slide catch 202 which takes the place of the eccentric 20 of FIG. 1. The frame 1 has a slot 201 in which the catch 202 is shiftable and urged upward by a leaf spring 203 having has a short arm 204 fitted into the frame 1 and a long arm 205 engaged in a groove 206 of the catch 202. Since this spring arm 205 is arranged in a slot in the frame 1, the catch 202 is also prevented from moving longitudinally of itself, that is transversely of the central plane of the pistol.

The catch 202 is formed in its central region near the upper edge with a groove 208 in which a ridge 209 of the projection 7 of the barrel 4 can engage. This projection 7 in turn has an inclined groove 9 which coacts with a strut 210 of an anchor piece 211 fitted into the frame 1 and secured therein by a pin 212 which also serves as pivot for the trigger 63.

The groove 207, the groove receiving the spring arm 204, the slot 201, and the recess for holding the support piece 211 are inclined to the barrel axis A and preferably are parallel to the hole 43 for the cartridge clip 44 so that shaping of the core for the manufacture of these grooves and recesses can be quite easy. It is therefore possible to make the frame 1 in one piece of a synthetic resin in a mold whose halves are separated in a direction parallel to the oblique hole 43 and the parallel grooves mentioned above.

The foundation of the strut 210 corresponds to that of the stem 22 of the eccentric 20 of FIGS. 1 to 4. In order to pull the slide 2 with the barrel 4 and recoil spring 14 off the front of the frame 1, the slide 2 must be pulled back a little so that the ridge 209 of the projection 7 moves out of the groove 208 of the catch 202. Then the slide 2 is moved down against the force of the spring 203 so as to free the barrel 4 and slide 2 from the catch 202 for unimpeded forward movement on the frame 1. On replacing the slide 2 on the frame 1 a wedge surface 213 runs over the upper edge of the catch 202 and pushes it down against the force of the spring 203. Once the projection 7 has passed the catch 202, the ridge 209 is moved by the spring 203 up and latches in the groove 208 of the catch 202, whereupon mutual tongue-and-groove locking is assured.

This type of barrel locking can also be used in other types of pistols.

FIGS. 27 to 29 show another trigger mechanism which is very simple. A block 221 is fitted in the frame 1 and is held in place therein by a pin 222. It has in the region of the longitudinal central plane of the pistol a cavity 223 in which a bent arm 224 of the trigger slide 225 engages. Stretched between a lower end 226 of the trigger slide 225 and the rear wall 227 of the cavity 223 is a tension spring 228 which pulls the trigger slide 225 up and back.

The arm 224 of the trigger slide 225 is connected by a web 229 with a plate-like end 230 of the trigger slide 225. This web 229 has a backwardly projecting part 231 that forms an abutment for the firing pin 26. The plate 230 is formed with a polygonal recess 232 which is traversed by a projection 233 of the block 221. Near this projection 233 the block 221 has a groove 234 which extends upward and back and in which a leaf spring 235 is fitted which has an outwardly directed edge 236 which forms a control surface 237 for an inclined end surface 238 of the trigger slide 225. The other end of the leaf spring 235 is bent in the opposite direction from the edge 236 and is fitted in a groove 239 of the block 221. Near the edge 236 is a control edge 240 which is arranged in the path of a control ridge 241 on the underside of the slide 2 and formed on its ends with two cam or wedge surfaces 242 and 243. The front end of the trigger slide 225 is pivoted on a pin 240' on the trigger 63.

In the uncocked condition of the pistol, the spring 228 urges the trigger slide 225 into its back position with the inclined surface 238 lying on the control surface 237 so

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that the projection 233 is in the upper part 245 of the recess 232. In this position of the slide 225, the abutment 231 lies underneath the path of the nose 101 of the pin 26.

To chamber the first cartridge, the slide 2 is pulled back so that the control edge 240 is moved inward by the wedge surface 242 of the guide 241 on the slide 2 and the inclined surface 238 of the trigger slide 225 and the control surface 237 of the leaf spring 228 disengage each other. As a result, the spring 228 can pivot the trigger slide 225 up so that the projection 233 comes to lie in the lower region 246 of the recess 232 of the plate 230. Meanwhile the end of the trigger slide 225 has laterally run past the edge 236 so that the surfaces 237 and 238 are out of alignment with each other and therefore without mutual effect. In this position, the abutment 231 moves into the path of the nose 101 of the firing pin 26 so that, as the slide 2 is moved forward, the nose 101 engages the abutment 231 and moves the trigger slide 225 forward until the projection 233 assumes the position in the recess 232 shown in FIG. 27. The pistol is now cocked.

On pulling the trigger at first the slide 225 is guided by the projection 233 and the spring 228 against the force of the bolt spring 30, which is hereby loaded, and slides back until the surfaces 237 and 238 engage each other. In this position, the projection 233 has reached the broad part of the recess 232 so that the trigger slide 225 can swing down as the inclined surface 238 slides on the control surface 237. The abutment 231 then frees the nose 101 of the firing pin 26 and the shot is fired.

On backward displacement of the slide as a result of the recoil, the wedge surface 242 moves the control edge 240 inward so that the above-described interaction can repeat itself. The position of the control ridge 241 ensures that the wedge surface 242 of the control edge 240 is only freed when the barrel 4 and breech block 5 are locked together. If for any reason the slide 2 has not moved fully forward, the ridge 241 holds the leaf spring 235 in its inwardly bent position in which pulling of the trigger 63 is ineffective because the inclined surface 238 cannot engage the control surface 237 so that the trigger slide 225 does not swing down and the abutment 231 cannot free the firing-bolt nose 101.

A device can also be provided to ensure quick preparation to fire on changing the cartridge clip, whose construction is described in detail below with reference to FIGS. 32–35. To this end, a lever shown generally at 301 is provided which is pivoted on the axle pin 212 of the trigger 63 and received in a laterally open recess 302 of the trigger 63. The lever 301 is provided on its underside with a hook 303 in which is hooked the end of a hairpin spring 304 which surrounds the pin 212 partially and is caught in a groove of the web 210. This spring 304 tries to pivot the lever 301 into a lower end position in which a handle 305 lies in a recess of the frame 1. In addition the lever 301 has on its upper side a nose 307 which engages in the path of a slide that is backed up by a spring in the clip, as will be described below and which urges the cartridge upward. When the last cartridge of the clip is inserted into the barrel 4, the slide of the clip engages the nose 307 of the lever and tries to pivot same up. Such pivoting of the lever 301 is prevented by the lower edge of the slide 2. After firing the cartridge, the lever 301 enters into a recess 308 (FIG. 29) on the lower edge of the slide 2 when this is in its end position. The lever 301 latches the slide 2 against moving forward. Swinging of the lever 301 on the pin 212 (FIG. 28) maintains this latching even when the clip is removed and replaced with a new clip. As soon as the handle 305 of the lever 301 is swung down, the slide 2 is moved by the force of the recoil spring 14 forward and pushes the first cartridge of the new clip into the barrel 4. Thus it is no longer necessary to pull back the slide after changing the cartridge clip.

With the known pistols and center-fire cartridges it is possible to break off or damage the firing pin tip on the firing pin when this pin does not pull back into the end of the breech block 5 quickly enough. As shown in FIGS. 30 and 31, according to the invention, the firing pin tip 27' is pointed and lance-shaped, that is it is not of cylindrical shape as is standard, but is of rectangular section with a substantially greater vertical dimension in the pistol plane than transverse dimension. The pin tip 27' can engage through an elongated cutout lying on the longitudinal middle plane of the pistol at the breech end. When a spent shell is ejected or a new cartridge is chambered, before the pin tip 27' engages fully in the cutout in the end of the breech block 5, the firing pin is not damaged but is pushed back by the shell or cartridge. By means of the elongated shape of the cutout according to this invention pistols with drop barrels do not develop the otherwise normal brass-chip deposits.

Lance-shaped according to this invention means any shape which varies from the round section and cylindrical shape of the known firing pins and which has a generally flat shape. Preferred is a triangular shape which is obtained, for example, from a pyramid with spherically rounded points that is formed on opposite sides with symmetrical shoulders so that the remaining parabolic flanks can be made planar, slightly convex, or concave.

The cartridge clip shown in FIGS. 32 to 35 has an elongated and generally parallelepipedal synthetic-resin body 401, a base 402 inclined obliquely to the body 401, and a metal insert 403 inside the body 401. The metal insert 403 has holes 416 that flare inward so that the insert can be well anchored in the synthetic-resin body 401 of the clip. The base 402 has grooves 404 that fit on ridges 405 on the lower end of the clip body 401, with a latch 406 blocking unintentional sliding-off of the base 402. A spring 407 is braced at one end on the base 402 and at the other end on a follower slide 408 so as to urge same upward. Shoulders 409 at one end of the follower 408 support the cartridges 410 in the lower portion of the body 401 with their axes perpendicular to a front wall 411 and a rear wall 412 of the body 401, in the upper portion of the body 401 the insert 403 forms, in the region of the slugs, guides 413 that narrow considerably upward and that push the tips of the cartridges 410 together toward the central plane of the clip, which coincides with that of the pistol when the clip is in place in the well 43 thereof, so that the cartridges 410 align and finally assume a position generally parallel to the clip base 402. Portions 414 of the metal insert 403 at the back of the cartridges 410 converge first toward the end of the clip so that as shown in FIG. 33 the backs of the cartridges 410 remain longer in their original staggered positions. This can be seen by a comparison of the dot-dash zig-zag lines of FIGS. 33 and 34.

As a result of the construction according to the invention, two considerable advantages are obtained. The position of the cartridge backs ensures a solid contact between them and the back wall 413 of the clip so that friction is reduced as is the resistance to displacement. Catching on the back wall is impossible. The second

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advantage is that the contact between the cartridges 410 as they are aligned in the upper section of the clip changes. It moves from line contact to point contact so that in the upper part of the clip there is no wedging-together of the cartridges 410.

The front end 415 of the shoulder 409 of the slide 408 can coact with the lever 301 of FIG. 28 so that this part comes to lie on the projection 307 when the last cartridge 410 is chambered.

FIGS. 36 to 39 show a variant of the firing mechanism of FIGS. 27 to 29, in which the guide is not in the trigger slide but in the frame 1 or in a block 521 set into the frame 1. The block 521 is of a synthetic resin and has a leaf spring 235 whose end 236 forms a control surface 237 which coacts with an inclined surface 538 of the trigger slide 525. Similarly the control edge 240 coacts with the ridge 241 of the slide 2. The trigger slide 525 has a web 529 which carries on one side the abutment 531 and on the other side the bent-over part 526. In addition it is provided with a wing-like projection 544 and has a control edge 545.

A recess 546 on one side and on the other side a recess 547 serve as a guide in the block 521 in which the wing 544 engages. The underside of the breech 5 is provided with a simple pivotal lever 548 which has a projection 549 extending into the path of the firing-pin nose 101. This lever 548 is braced against a leaf spring 550 which is braced with its free end 551 on the breech block 5 and which lies underneath the ridge 241 so as to pivot the lever 548 such that the projection 549 is in the path of the firing-pin nose 101.

The operation of this firing mechanism corresponds mainly with that of the mechanism shown in FIGS. 27 to 29. The abutment spring 228 draws the trigger slide 525 back so that its inclined surface 538 slides down along the control surface 538 and the web 529 enters the recess 546 and the wing 544 enters the lower region 552 of the hole 547. In this position, the abutment 531 is below and out of the path of the firing-pin nose 101. Meanwhile the control edge 545 is below the lever 548 so that it takes the position of FIG. 39 in which the firing pin is locked.

When the slide 2 is moved back, the ridge 241 pushes the spring 235 toward the center so that the control surface 237 is guided by the inclined surface 538 and the trigger slide 525 is freed. The abutment spring 228 draws this slide 525 up and back while the abutment 531 and the control edge 545 are drawn into the path of the firing-pin nose 101.

When the slide 2 is moved forward, the firing-bolt nose 101 entrains the abutment 531 and the slide 525 as well as the trigger 63. Meanwhile the web 529 moves out of the recess 546 and the wing 544 engages in the narrow region 553 of the recess 547. As soon as the wing 544 gets to the end of the recess 547, the abutment 531 is held solidly by the firing-pin nose 101. The narrow section 553 of the hole 547 holds the abutment 531 tightly.

Pulling the trigger moves the slide 525 back and the abutment 531 pushes back the pin-bolt nose 101 while further compressing the firing-pin spring 30. As soon as the inclined surface 538 engages the control surface 237, further movement of the slide 525 pushes it down so that the web 529 engages in the recess 546 and the wing 544 in the wide region of the pin 547. As a result the abutment 531 releases the firing-pin nose 101 and the shot is fired.

Moving the slide 525 moves the control edge 545 back into the region of the projection 549 and pushes the lever 548 to the side so that the projection 549 moves out of the path of the firing-pin nose 101 and does not impede forward travel of the firing pin.

Since the additional safety catch 548, 549 is on the breech block 5, jarring and inertial forces cannot open it. To fire it is therefore necessary to actuate the trigger 63.

The invention is not limited to the described and shown embodiments. Its parts can be combined in other than the shown manner. It is common to the described embodiments that the abutment for the firing pin or hammer moves in two directions that are not parallel to each other. It is therefore possible to use the abutment for securing as well as for releasing the firing pin which not only reduces the stroke of the trigger but also substantially reduces the number of parts. This double movement can also be split up between the abutment and firing bolt or hammer.

The provision of stop spring whose effect is opposite to that of the firing-pin spring means that only the difference between these forces need be overcome by the force on the trigger to shoot.

In addition to these basic advantages the pistol according to this invention has several advantages. The rest position, for example, of the trigger is established by abutments 67 and 233 in the guide 45 or block 221, respectively, so that no particular stops for the trigger are needed. This eliminates expensive adjustment procedures. Since the parts necessary for the release and latching of the firing bolt can fit in a limited space, it is possible make the guide 45 or the block 221 relatively small. This leaves room in the frame 1 behind the hole for the cartridge clip. As a result, it is possible to have the grip near the axis A of the barrel 4 so that on firing there is little torsion on the hand. The pistol kicks up less so it shoots more accurately.

With the new pistol it is possible to form the spaces for mounting the trigger, trigger slide, and guides in the frame 1 by molding in such a manner that the frame 1 is easily demolded. The same applies for the clip hole and the passage for the clip-safety slide. As a result, the frame 1 can be made in one piece.

The guides for the slide in the frame 1 are made of metal. To do this it is sufficient to mount two guide rails which are imbedded in the frame 1 in the resin. They have the tongue and groove construction of FIG. 2.

Particularities of the described features can be used independently of each other in pistols of known construction without losing the described advantages.

I claim:

1. In a pistol, including

a frame having a longitudinal axis and a barrel mounted in the frame;

a slide mounted on the frame so as to be slidable forwardly toward the barrel into a closed position in which the frame is in contact with the barrel and rearwardly out of a closed position, a recoil spring for biasing the slide into the closed position;

the slide including a breech block, the breech block closing off a cartridge chamber in the closed position of the slide;

a firing pin being mounted longitudinally movable in the breech block and having a nose projecting toward the frame, a firing pin spring for biasing the firing pin, the tension of the firing pin spring being releasable in a direction toward the barrel;

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the frame further including a trigger mechanism with a trigger means and an abutment, the abutment being movable by the trigger means from an initial position initially parallel to the firing pin so that the firing pin nose engages the abutment and is moved and the firing pin spring is tensioned, the abutment being further movable in release direction until the abutment and the nose are disengaged;

the slide defining control means which during firing cause the abutment to be moved from the released position into the path of movement of the nose;

the improvement comprising,

a stop spring having first and second ends, the first end acting on the frame and the second end acting on the trigger means, wherein the stop spring acts on the trigger means in a direction which is opposite the direction of action of the firing pin spring by the nose of the firing pin on the abutment, the tension of the firing pin spring being greater than the tension of the stop spring.

2. The pistol according to claim 1,

wherein the frame further comprises positive guide means serving for maintaining the abutment in the path of motion of the nose of the firing pin at least in a portion of the initial movement of the abutment parallel to the firing pin.

3. The pistol according to claim 1,

wherein the frame comprises abutment guide means for effecting the movement of the abutment in the release direction, and

wherein the control means define a path, a guide edge of the abutment guide means projecting into the path of the control means of the slide whereby, during the recoil of the slide, the control means dislodges the guide edge and thereby frees the abutment from the guide means for movement back into engagement with the firing pin nose.

4. The pistol according to claim 1,

wherein the abutment is a projection on an abutment sleeve which is slidable in a longitudinal direction parallel to the firing pin and rotatable in a bore defined in the frame and is biased in a direction opposite the direction of biasing the firing pin spring by the stop spring;

an arm being attached to the abutment sleeve;

the trigger means being provided with a wedge surface engageable with the arm;

the trigger means being biased by a spring in the direction of the abutment;

the slide having longitudinal median plane; the control means including a forward guide ridge; the side further including a rearward guide ridge;

a guide edge arranged on the trigger means engageable with the rearward guide ridge lying outside of and adjacent the guide edge when the slide is in the closed position;

the distance between the outer surface of the forward guide ridge and the longitudinal median plane of the slide being greater than the distance between the radial end of the arm and the longitudinal median plane of the slide;

and a gap between the forward guide ridge and the rearward guide ridge, the gap being wider than the length of the guide edge.

5. The pistol according to claim 1,

wherein the trigger means comprises a lever having a slot extending in longitudinal direction thereof, a pivot pin attached to the frame extending through the slot, the lever being biased by an additional spring toward the slide;

the lever forming the abutment, the stop spring acting on the lever;

the lever having a shoulder and the frame being provided with a counter shoulder, the counter shoulder supporting the shoulder at least in the initial position of the lever to prevent movement of the lever away from the slide;

the trigger means having an end with a wedge surface;

a leaf spring attached to the frame, the leaf spring being displaceable transversely of the trigger means and having a guide edge engageable by the control means of the slide;

a lever guide attached to the leaf spring and engageable by the wedge surface of the trigger means;

the slide having a longitudinal median plane, wherein the distance in a direction perpendicular to the median plane between the control means and the inner surface of the leaf spring is at least equal to the distance between the outer surface of the trigger means and the inwardly facing edge of the lever guide when the slide is in the closed position.

6. The pistol according to claim 1,

the abutment being rigidly attached to the trigger means;

the trigger means having a recess, a projection attached to the frame projecting into the recess;

the recess having a narrow portion for effecting the movement of the abutment parallel to the firing pin and a wide portion for permitting the movement of the abutment in release direction;

a leaf spring attached to the frame, the leaf spring being displaceable transversely of the trigger means and having a guide edge;

the leaf spring further having a wedge surface, the trigger means having an inclined end surface engageable by the wedge surface of the leaf spring;

the stop spring being inclined relative to the longitudinal axis, so that the trigger means is biased by the stop spring toward the slide;

the guide edge engageable by the control means of the slide.

7. The pistol according to claim 1,

the abutment being rigidly attached to the trigger means;

the frame having a recess, a projection attached to the trigger means projecting into the recess;

the recess having a narrow portion for effecting the movement of the abutment parallel to the firing in and a wide portion for permitting the movement of the abutment in release direction;

a leaf spring attached to the frame, the leaf spring being displaceable transversely of the trigger means and having a guide edge;

the leaf spring further having wedge surface, the trigger means having an inclined end surface engageable by the wedge surface of the leaf spring;

the stop spring being inclined relative to the longitudinal axis, so that the trigger means is biased by the stop spring toward the slide;

the guide edge engageable by the control means of the slide.

8. The pistol according to claim 1, wherein

the slide has a bore extending parallel to the longitudinal axis,

a first stop means in the bore;

the bore receiving the firing pin, the firing pin having a second step means;

a spring rest mounted slidably on the firing pin;

the firing pin spring having first and second ends, the first end resting against the slide, and the second end resting against the spring rest;

the first stop means serving to limit the forward movement of the spring rest;

the second stop means serving to move the spring rest in the rearward direction.

the first stop means and the spring rest are spaced from each other when the abutment is in the initial position.

* * * * *

The New Bolt Action Hunting Rifle Trigger Mechanisms

By Chuck Hawks

The trigger mechanism is the single most important part of any hunting rifle. A good trigger breaks like a glass rod with moderate pressure, minimum over travel and is a joy to use. The trigger is more important to practical accuracy (how accurately a rifle performs in the field) than any other aspect of the rifle. A poor trigger encourages flinching, "flyers" and results in wounded animals.

The trigger mechanisms supplied in commercial bolt action hunting rifles (*not* recycled military arms) from the 1920's until the late 20th Century were traditionally single stage and user adjustable for weight of pull (and sometimes sear engagement and overtravel as well). The trigger mechanisms supplied in Browning, commercial Mauser Model 98, Remington Model 700, Weatherby Mark V and Vanguard, Winchester Model 70 and the original Ruger Model 77 rifles were all of this type and exemplify the breed. These were all very good triggers right out of the box and could be fine-tuned as the shooter's preferences dictated. I have owned and used all of these rifles and their triggers could be easily user adjusted for a clean three pound release, which is my personal preference in a big game hunting rifle.

Some European rifles were available with set triggers, of either single or double trigger type, which could be adjusted for very light release weights when "set." The drawback to this type of trigger is that it requires the shooter to waste time setting the trigger, which is then too light for many hunting scenarios, or pull through the creepy, heavy "un-set" pull. Set triggers are still available on some European models (CZ and Merkel, for example), but have never found much favor with North American hunters and will not be discussed further in this article.

During the 1980's, gun makers began to be bombarded by nuisance lawsuits filed by anti-gun lawyers for conniving clients who managed accidentally to shoot themselves or others with their hunting rifles. Eschewing all personal responsibility for their actions, these bottom feeders blamed their rifle's manufacturer for the incident that they themselves had caused. Unscrupulous lawyers called ordinary hunting rifle triggers "hair triggers," fallaciously argued that they were inherently unsafe and convinced ignorant juries to award large settlements to their undeserving plaintiffs.

As a result, gun company lawyers insisted that the gun manufacturers increase the pull weight of their triggers and seal or remove the user adjustable feature, and most complied. Triggers got creepier and heavier and bullet placement became more difficult, particularly for less experienced hunters, resulting in an increased probability of wounding big game animals. Most lawyer inspired trigger mechanisms were contained within housings intended to prevent user "tampering," and this is also true of the latest new trigger designs that are discussed below.

The writers for publications such as *Guns and Shooting Online* railed against these retrograde triggers, experienced sportsmen were incensed and after years of complaints about the lousy triggers, the gun manufacturers began to get the word that their customers were not happy. Unfortunately, the wishes of those who were paying their hard earned dollars for new rifles were not as important to most manufacturers as the wishes of the lawyers and their fear of lawsuits. (Some companies, including a number of "high end" brands such as Browning, Kimber, Mannlicher, Sako and Weatherby supplied good trigger mechanisms in their hunting rifles, and still do, but they were in the minority.) There the matter rested for years.

Savage AccuTrigger

Savage Arms finally broke the stalemate by introducing their revolutionary AccuTrigger in 2003. This exceptionally clean, crisp trigger is user adjustable down to a pull weight of about 2.5 pounds (or up to six pounds) in Savage centerfire, muzzleloader and rimfire hunting rifles and immediately became the standard of comparison. The Target model AccuTrigger, standard in Savage target rifles, Law Enforcement series rifles and some varmint rifle models, is adjustable down to 1.5 pounds. Savage actually supplies complete trigger adjustment instructions and an adjustment tool with every AccuTrigger equipped rifle.

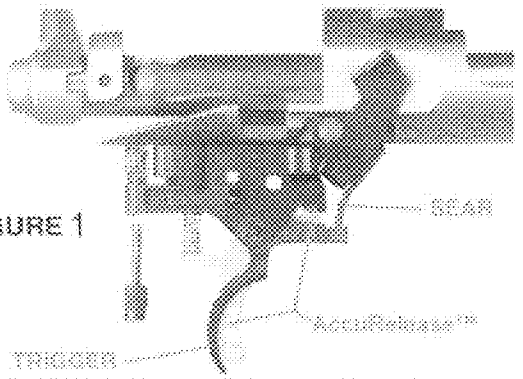


FIGURE 1

Savage AccuTrigger diagram, illustration courtesy of Savage Arms.

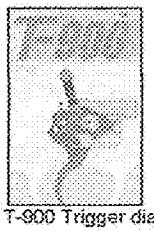
The AccuTrigger is also an exceptionally safe trigger that uses a Glock-like blade to prevent inadvertent trigger movement until deliberately pulled. Finally, there was a modern trigger mechanism designed by shooters for shooters. Savage CEO Ron Coburn later admitted that he brought the AccuTrigger to fruition by not telling his lawyers about the project.

The AccuTrigger was so much better than the lawyer inspired triggers offered by the other "major" gun makers that some sort of response became a commercial necessity. Savage added fuel to the flames by adapting the AccuTrigger to their rimfire rifles, introducing many young shooters to a good trigger for the first time. The AccuTrigger remains the best of all OEM production triggers and the standard of comparison in the industry. Particularly in the rimfire rifle field, no other mass produced trigger comes close.

Savage market share increased at the expense of the other major manufacturers, primarily because of the AccuTrigger. Eventually the other makers had to do something to improve their own triggers--or at least to allow them to advertise that they had.

Marlin T-900 Fire Control System

Marlin was one of the first makers to respond to the AccuTrigger, shortly after Savage extended the AccuTrigger to their rimfire bolt action hunting rifles. Marlin had been the largest US producer of rimfire rifles, until Savage gained that distinction after introducing the rimfire AccuTrigger. The previous Marlin rimfire trigger mechanism was, in a word, terrible, so the T-900 does represent a worthwhile improvement. Most of all, it allows Marlin to *advertise* an improved trigger.



Marlin T-900 Trigger diagram.
Illustration courtesy of Marlin Firearms.

Guns and Shooting Online rifle reviews revealed that the T-900, while an improvement over the trigger previously supplied in Marlin bolt action rimfires, is certainly no threat to the superiority of the AccuTrigger. Although somewhat smoother than the previous Marlin trigger, its pull weight remains far too heavy. The T-900 is clearly a lawyer approved trigger.

Marlin Pro-Fire Trigger

The Pro-Fire Trigger is a rather simple, two lever mechanism (trigger and sear) supplied in the recently introduced Model XL7 centerfire hunting rifle. This trigger uses an AccuTrigger like safety blade and is claimed to be user adjustable down to 2.5 pounds, just like the standard AccuTrigger. If emulation is the sincerest form of flattery, Savage should be flattered by the Marlin Pro-Fire, although internally the Pro-Fire is quite different from the AccuTrigger. The Pro-Fire was developed entirely by Marlin engineers and technicians. Trigger pull weight adjustment, after the stock is removed, is accomplished by loosening a lock nut and turning a set screw at the front of the trigger housing.

The Pro-Fire trigger that I tried at the 2008 SHOT Show was good, but fell short of the crispness that I have come to associate with the AccuTrigger. This may or may not be the norm for production Pro-Fire Triggers; time will tell. Certainly, the Pro-Fire is a good trigger and it represents a big step in the right direction for Marlin.

Ruger LC6 Trigger

The Ruger trigger supplied in the M77 Mark II was a big step backward from the very good trigger mechanism used in the original M77. The Mark II trigger is creepy, heavy and not user adjustable. (It can be lightened by removing the trigger return spring and clipping off *one* link, but that is hardly "user adjustable" by normal standards and the excessive creep remains.) The Ruger M77 is a very popular hunting rifle, and generally deserves to be, but its trigger has been widely and justifiably criticized. The usual solution for M77 Mark II owners is to replace the stock trigger assembly with an aftermarket trigger.

Ruger LC6 Trigger. Illustration courtesy of Sturm, Ruger & Co., Inc.

For years, Ruger refused to budge on the trigger issue, despite all the criticism the Mark II trigger received from practically everyone who owned one, including the reviewers at *Guns and Shooting Online*. However, the pressure from the AccuTrigger and other "improved" triggers made some improvement of the Mark II trigger necessary if the M77 rifle was to remain competitive in the marketplace.

This was accomplished with the introduction of the M77 Hawkeye rifle, which incorporates the LC6 trigger mechanism. The LC6 is derived from the Mark II trigger with some internal and manufacturing improvements. Ruger advertises "smooth, crisp performance right out of the box." *Guns and Shooting Online* reviewed an early Hawkeye rifle and found the trigger to be even worse than the last M77 Mark II we had reviewed, creepy, gritty and heavy. The LC6 triggers that I tried at the 2008 SHOT Show were considerably better than the example in our test rifle. Either they were specially tuned for the SHOT Show or Ruger has improved their quality control. However, the LC6 is not user adjustable, is set for a (too heavy) nominal five pound pull at the factory and remains clearly inferior to the original M77 trigger as well as the Savage AccuTrigger and the new triggers from Browning, Marlin and Winchester. This is a shame, as anyone who has owned an original M77 knows that Ruger is perfectly capable of producing a good, adjustable trigger should they choose to do so.

Remington X-Mark Pro Trigger

The Model 700 was introduced with an excellent trigger. It was light, clean and fully user adjustable. This became the benchmark trigger for American factory built rifles for decades. Because the Model 700 trigger was easily user adjustable, the Company lawyers eventually insisted that this fine trigger be set at the factory with excessive sear engagement and a heavy pull. The adjustment screws were then sealed with goop to prevent user tampering. Scraping off the goop to adjust the trigger voided the warrantee. However, for those adventurous souls who dared to do so, the Remington trigger could still be adjusted for a decent release.

Remington has now introduced the "improved" X-Mark Pro Trigger. This revised version of the Model 700 / Model Seven trigger features highly polished engagement surfaces and tight quality control to mask what is actually a rather heavy factory set pull weight by providing a release with (supposedly) minimum creep. The X-Mark Pro trigger in a Model 700 that we recently reviewed was heavy and included a small amount of gritty take-up before it released with a clean break.

The X-Mark Pro Trigger is advertised as "adjustable for pull weight by a qualified gunsmith," just like the Model 700 "lawyer" trigger it replaces. We have a qualified gunsmith on staff and we found that adjusting this new trigger for a decent release is a hassle. The X-Mark Pro trigger mechanism can be retrofitted to any older Model 700 or Model Seven rifle at a Remington authorized service center, but we recommend against doing so. Clearly, Remington simply needed something to advertise to compete in the new trigger war, and the X-Mark Pro is the result.

Remington Model 798 Trigger

This is not a new trigger mechanism, but in fact a very old one. The 798 rifle is, however, a relatively new model in the Remington line. Remington's commercial Mauser 98 based Model 798 centerfire hunting rifle is supplied with a fully adjustable (pull weight, sear engagement and overtravel) Mauser 98 type trigger mechanism. The 798 Owner's Manual pointedly does not mention this fact and the relevant parts have been excised from the parts diagram, but anyone familiar with the plethora of commercial Mauser 98 hunting rifles produced over the last century (or who has read the *Guns and Shooting Online* review of the Model 798) should have no trouble figuring out how to adjust the Model 798 trigger. Ironically, this old design is the best trigger mechanism available in a Remington hunting rifle today.

Browning X-Bolt Feather Trigger System

Browning rifles have traditionally been supplied with very good triggers, so it is with a feeling of trepidation that I heard that the X-Bolt rifle had a new "improved" trigger mechanism. So often in recent years "improved" triggers have actually been lawyer triggers, inferior to the triggers that they replaced from the shooter's perspective. Thankfully, my fears were ungrounded in the case of the Feather Trigger System.

This fully screw-adjustable, conventional trigger uses a pivoting three lever mechanism with chrome plated engagement surfaces to provide what may be the best trigger found in a Browning bolt action rifle since they were based on FN Mauser actions. The samples that we tried at the 2008 SHOT Show provided a light and clean release that is superior to most of the competition. (It feels much like a Weatherby Mark V trigger.) The Feather Trigger boasts zero take-up, virtually no creep and minimum overtravel. The factory set pull weight is rumored to be 3.5 pounds, but the Feather Trigger can be adjusted for pull weights between for three and five pounds.

Winchester M.O.A. Trigger System

Based on the same triple pivoted lever design principles as the Browning Feather Trigger System and engineered by the same design team, the Winchester M.O.A. trigger is essentially a Feather Trigger adapted to the Model 70 rifle. From its introduction in the 1930's, the Model 70 had an excellent, user adjustable trigger. The old Model 70 trigger, however, required careful manufacturing, fitting and adjustment for top performance. These were sometimes lacking in recent years.

The new M.O.A. trigger mechanism boasts a 2:1 mechanical advantage and the new Model 70 rifle is supplied with a wide trigger blade that minimizes the subjective pull force required to fire the rifle. The examples that we tried at the 2008 SHOT Show were excellent and no doubt easier to manufacture and tune than the old trigger mechanism. The factory set pull weight is specified as 3.75 pounds and the adjustment range as three to five pounds. There are adjustment screws for overtravel and pull weight. If it lives up to its initial promise, the M.O.A. may be the best Model 70 trigger yet, joining the Savage AccuTrigger, Marlin MOA and Browning Feather Trigger at the top of the new crop of trigger mechanisms.

Conclusion

Some of these new triggers represent the solution to a vexing problem, the lawyer inspired triggers of the last 20 years. The benchmark Savage AccuTrigger is at the forefront here. Others, as you have read above, are more advertising sizzle than substance.

The Browning Feather and Winchester M.O.A. triggers are interesting because the A-Bolt and Model 70 triggers that they are replacing were already far better than average. These appear to be honest attempts to make a good product even better. Given the importance of a proper trigger to a good hunting rifle, it is worth pondering the validity of the claims for these new triggers before purchasing your next rifle.

EXHIBIT 41

A BAR FIRE CONTROL
HISTORICAL NOTES
PRIOR ACTIVITY OF
EARLIER A BARS

Copied 3/1963

D - 93715 TR. ASS'Y NO BAR

D - EXP 1111 NO BAR EXT.

D - 93724 SCOPE MT BASE

D - 102870 SCOPE RING ASS'Y

DATA BASE DWL LIST OF NO BAR

LOOKED 8 8-93 WAW

NBAR
9-18-92
WAW

LOOKS LIKE WE DID A "M20 TYPE" SHAR TRIGGER MECHANISM FOR A M700 OR NEW BAR.
CALKINS COMMENTS

WHAT WAS ADVANTAGE(S) OF "SKELETONIZED" M700-STYLE TRIGGER HOUSING ASS'Y? TO RESIST BINDING WITH CONFORMED BOUNDARY, DIRT!

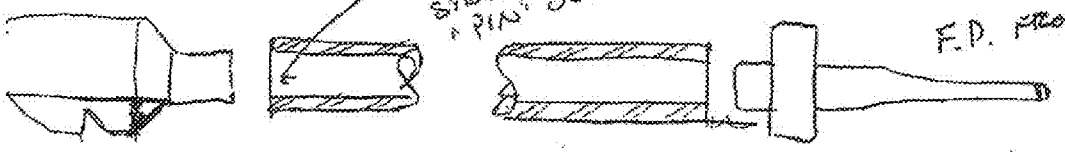
WHAT WAS ADVANTAGE OF "EXPOSED" COMPACT TRIGGER SYSTEM (M-70) DRAWBACK WAS DROP TEST JAR-OFF + USER CAN HEIGHTS
SIMPLE.

CRITERIA:

LOCK TIME
EQUAL TO OR SHORTER THAN M700 W/ COMPARABLE ACTION LENGTH.

BOLT PLUG:
• ABUTMENT TO MAINSPRING
• GUIDES FIRING PIN

HOLLOW TUBULAR FIRING PIN.



HOLLOW VS. SOLID
• EQUAL WT
• EQUAL STRENGTH
• BEARING

• JOIN @ ENDS PERMANENT / REMOVABLE
• DRILL & PIN / WELD + BRAZE)
COULD USE POT F.P. SPRING
INSIDE THIS TUBE?
• BOLT PLUG CONTACT/STOP

VENDOR CONTACTS
D- 93658 SSC TCS
D- 93650 MAGGER NO.

SEPARATE RESPONSES

SEPARATE FOCUS DOUBLE DEPONT / ON NBAR HELD 2-85.

FOCUS PANEL ON NBAR LATE '85

FOCUS PANELS DEC '85

BOLT LOCK ON NEWTON RIFLE
(OTTESONS?) → BUFFALO UNTIL FIRING PIN FELL

LUBRICATION TESTS N' BAR
Before May, 1986

NEW M700 BDL RIFLE
BOLT PLUG 3 POSITION SAFETY
Pete Grizzel. After 10-82

S.H. HAS ONE OF THESE

RESEARCH NOTE BOOKS
N BAR

CIRCA JUNE 1986 BOLT LOCK DESIGN COULD BE LOCKED OUT.

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BARBER - 1.30.130000122

CV MODELING ON NBAR
(PROGRESS LATE 1984)

Benchmark against M700

PROCESSOR CLOCK TIME
BUS LOCK
etc

AMOUNT OF
CONSIDED MOMENT OF ACTUATION
MECHANICAL ADVANTAGE/DISADVANTAGE

8-89 RANDY HAS SOME LAYOUTS ON NBAR
FILE CARTER, K. ROWLANDS REVISING
HW ON NBAR

BOB SMITH
KEITH CALKINS
FRED MARTIN
RANDY MURPHY
TOM BARMAN
KEN ROWLANDS F.C. 8-89
DICK JACKSON
JIM RANKIN/EVEN
ED KLOCK (CV)

ED OWENS
RAY JONES

NBAR STANDARD 4-90 AS TIME PERMITS

EXHIBIT 14

Product Redesign Criteria

New Bolt Action Rifle (NBAR)

Revised 3/14/89

Metalwork

- Detachable Magazine Box
- Improved Firecontrol
  - No Connector
  - Two Trigger Pull Springs (low spring rate)
  - "Sealed Firecontrol"
  - Balanced Trigger
  - Trigger and Sear Block
  - Not Retrofittable to M/700
- Bolt Lock w/override
- Integral Scope Mounts
- New Extractor
- New "Custom Shop" Barrel Contour
  - Mountain Rifle Crown
- M/700 receiver, cosmetically altered

Woodwork

- Improved Bedding System
- New Wood Stock

RSH/TGB
3-14-89

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T & F Testing Apr. 15 91 2 mos.

This is a list of the NBAR features, (that represent our design goals), in order of priority.

- o Detachable Magazine Box
- o Improved Firecontrol
  - No Connector
  - Two Trigger Pull Springs (low spring rate)
  - "Sealed Firecontrol"
  - Balanced Trigger
  - Trigger and Sear Block
  - Not Retrofittable to M/700
- o Bolt Lock w/override
- o Integral Scope Mounts
- o New Extractor
- o New "Custom Shop" Barrel Contour
  - Mountain Rifle Crown
- o Improved Bedding System
- o M/700 receiver, cosmetically altered
- o New Wood Stock

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NBAR Critical Path Schedule

Firecontrol

First Design	Mar.	1	89	2 mos.
Prototype (3)	Apr.	1	89	1 mo.
Engineering Evaluation	June	1	89	2 mos.
Redesign	July	1	89	1 mo.
Quotation & Economics	Aug.	1	89	1 mo.
Prototype (10)				
- Vendor Parts	Feb.	1	90	6 mos.
Test & Redesign	Mar.	15	90	6 wks.
Build 30 Design Accept.	Dec.	15	90	9 mos.
and Trial and Pilot				
T & P Testing	Feb.	15	91	2 mos.

Mag. Box

Assuming Jackson box will feed and we are only designing a latch.

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NBAR Critical Path Schedule

Firecontrol

First Design	June 1 89	2 mos.
Prototype (3)	July 1 89	1 mo.
Engineering Evaluation	Sept 1 89	2 mos.
Redesign	Oct. 1 89	1 mo.
Quotation & Economics	Jan. 1 90	3 mos.
Prototype (10)		
- Vendor Parts	July 1 90	6 mos.
Test & Redesign	Aug. 15 90	6 wks.
Build 30 Design Accept.	May 15 91	9 mos.
and Trial and Pilot		
T & P Testing	July 15 91	2 mos.
Redesign and Reprocess	Jan. 15 91	6 mos.
Produce to Warehouse	4 Q 91	
Introduce to Trade	January 1992	

This is a list of the NBAR features, (that represent our design goals), in order of priority.

- o Detachable Magazine Box
- o Improved Firecontrol
  - No Connector
  - Two Trigger Pull Springs (low spring rate)
  - "Sealed Firecontrol"
  - Balanced Trigger
  - Trigger and Sear Block
  - Not Retrofittable to M/700
- o Bolt Lock w/override
- o Integral Scope Mounts
- o New Extractor
- o New "Custom Shop" Barrel Contour
  - -Mountain Rifle Crown
- o Improved Bedding System
- o M/700 receiver, cosmetically altered
- o New Wood Stock

EXHIBIT 15

CC: A. W. Wheaton

Wilmington, Delaware
February 15, 1991

TO: V. M. ROMANO

FROM: [redacted]

EXECUTIVE SUMMARY
CENTERFIRE BOLT ACTION RIFLE
PRODUCT PLANNING BRIEF

On February 27 a bolt action centerfire rifle meeting was held in Ilion. It's purpose was to obtain a status update on the NBAR project and provide timing of options to enhance the current 700 product line.

Attendees at the meeting were:

Bill Coleman
Hal Hunsen
Jay Bunting
Dick Jackson
Fred Martin
Jim Romkainen

After some discussion it was apparent that efforts have been shelved on the N.B.A.R. project since it's major setback in early 1988.

Current market conditions for this product segment were reviewed. Key points were highlighted as follows:

- On the surface, current information suggests that Remington is losing marketshare in the centerfire bolt action rifle segment.
- It is believed that the core of this market erosion is taking place in magnum and long action calibers.
- There are two primary, all inclusive product features which Remington is lacking and that competition is successfully exploiting.

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I. Stainless steel actions and barrels and corrosion resistant fire control and magazine components.

II. Flush mounted detachable magazine boxes.

- Browning's Stainless Stalker and Hunter A-Bolt rifles have benchmarked the features mentioned above and leveraged Browning's ability to increase marketshare in this product segment.

Should Remington decide to redirect developmental efforts toward another N.S.A.R., best estimates project a minimum two year program would be required before a warehouse position of a new product would be feasible. In addition, projects such as the new autoloading rimfire rifle and the O/U shotgun could be saddled with delays because of the availability of finite resources.

It is clear that the Model 700's product life cycle has approached maturity and that a N.S.A.R. effort is necessary long term to ensure Remington's future success in this market. Concerns were expressed that a short term strategy which upgrades existing products with key features previously covered, would detract from a major new product introduction. (i.e. What would be left to advertise and promote with a entirely new product offering?) Research and Development explained that there are, in fact, many more key opportunities that can be explored in the long term to differentiate and enhance the performance of a new product. One key area which was briefly discussed is a potential signficant improvement in accuracy.

Given this scenario, probing was attempted toward a short term strategy which would make the Model 700 offering more competitive. It was discovered that if work was started immediately both a stainless steel and box magazine product could be available for a 1992 Shot Show introduction. This effort would require little if any capital investment and is doable without sacrificing other major developmental efforts currently underway.

PRODUCT PLAN:

In concept the following proposal is offered for 1992 introduction.

- The Model 700 AS becomes the Model 700 SS. Product enhancements of both stainless steel and detachable magazine boxes are offered in a synthetic stocked product. Initial developmental efforts are with magnum and long action calibers — 338 Win Mag, 300 Weatherby or 300 Win Mag (not both), 7MM Remington Mag, 30-06 Springfield, 280 Remington, 270 Winchester.

- The Model 700 Mountain Rifle is upgraded with a detachable magazine box. All current caliber offerings remain the same.

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Immediate market opportunities for the Model 700 SS would be in Alaska and North America. It is projected that the first year sales of the Model 700 SS would exceed that of the Model 700 AS by a factor of 4X, i.e. approximately 12,000 units. This would represent an additional 9,000 units in sales of which 80% are estimated to be incremental.

Shipments of the Model 700 Mountain Rifle have been declining at an average rate of 28% a year since a shipment peak of 16,000 units in 1986. It is estimated that an upgraded Model 700 Mountain Rifle with a detachable magazine box would boost first year volumes to prior 1986 levels.

Your approval of this product strategy is requested to proceed immediately with project plans for the Model 700 SS and Model 700 MT upgrade.

APPROVAL: INITIAL: DATE:

V. M. ROMANO

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EXHIBIT 33

THIS IS HISTORY

PURPOSE: DIFFERENTIATE NBAR from EXPRESS

SPECIFICATION PROPOSALS
NBAR VS. EXPRESS RIFLE

"economy priced"

	NBAR	EXPRESS RIFLE
BARRELED ACTION MATERIAL	BLUED/MATTE STAINLESS	BLUED CARBON STEEL
SCOPE MOUNTING	INTEGRAL BASE	RECEIVER DRILLED & TAPPED
* SAFETY TYPE	THREE POSITION ON BOLT SHROUD	TWO POSITION ON RECEIVER TANG
BOLT LOCKING LUG TYPE	DUAL OPPOSED	DUAL OPPOSED
LOCKING LUG LOCATION	FRONT OF BOLT	FRONT OF BOLT
BOLT HANDLE	M700 TYPE	M700 TYPE
EXTRACTOR TYPE	PRE 64 M70X	M700 TYPE
EJECTOR TYPE	M700 TYPE	M700 TYPE
BOLT RELEASE	MAUSER TYPE	M700 TYPE
BOLT SHROUD/PLUG	CLOSED AT REAR	OPEN AT REAR
BOLT BODY STYLE	NON FLUTED	NON FLUTED
BOLT BODY FINISH	POLISHED & JEWELED	BLUE/BLACK
BOLT HANDLE KNOB STYLE	CHECKERED SURFACE	SMOOTH SURFACE
MAGAZINE	DETACHABLE	BLIND
OPEN SIGHTS ON BBL	NO	YES
STOCK MATERIAL	WALNUT/SYNTHETIC ATTRACTIVE	SYNTHETIC
STOCK STYLE	CLASSIC	CLASSIC
RECOIL PAD	SOLID	SOLID

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KINZER V. REMINGTON

EXHIBIT 39

NBAR

copied 3/18/93

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• WHY IS 25-06 STILL BEL?
• CAN'T STD US. MAG.
STAINLESS VS. STD STEEL

9.3.92
MARKED
WAW

MARKETING OVERVIEW

THESE ARE CONSTRAINTS TO INNOVATION; NOT REVELATION OF ADDL OPPORTUNITIES

MARKET ENVIRONMENT

The market for centerfire bolt action rifles is estimated to be 434,000 units annually. The major competitors are Browning, Ruger, USRAC and Savage. Rifles produced by these manufacturers represent strong competition for the Model 700.

Browning, Ruger and USRAC compete in the same mid to higher price range as the Model 700. Ruger is believed to have a cost advantage in the production of the Model 77R. The Savage Model 110 is the only true economy bolt action on the market today. Savage is perceived to be gaining market share in all channels of distribution.

The Model 700 volumes have been bolstered over the past few years by the addition of several niche market offerings. Products such as high durability stainless steel rifles, light weight rifles and highly accurate long rang rifles have become increasingly important.

PRODUCT STRATEGY

A new bolt action rifle (NBAR) is being developed to compete in the mid to high price market. It will coexist in this market with the Model 700. NBAR will be designed for performance and manufacturability. It will be offered in a wood stock carbon steel version as well as a stainless synthetic version. (OVER)

The features and benefits of the Model 700 will be difficult to surpass. It will remain in the line while NBAR becomes established. If NBAR is well accepted, there is the possibility the higher priced versions of the Model 700 could eventually be phased out. The Model 700 would then be scaled down to become the Remington entry in the economy market. If NBAR fails to substantially displace the Model 700, the possibility would then exist to position NBAR as the economy market entry. Regardless of the entry, the economy offering must be significantly differentiated from the higher priced product to avoid erosion of the high end market.

NBAR TO SUCCEED MUST OUT FEATURE THE M 700

NEW PRODUCT FORECAST

PRODUCT DESCRIPTION	MSP	1995 FORECAST
NBAR	$393	25,000

JRB 7/24/92

ALTERNATE COMBINATIONS

STOCK	METAL: CARBON	METAL: STAINLESS
WOOD • REG. • LAM	X	
SYNTHETIC • COLOR • FINISH		X

OTHER COMBINATIONS POSSIBLE

~~Barber-b-2pgs~~

~~Barber-b-2pgs~~

~~Barber-b-2pgs~~

Barber-b-2pgs

REMINGTON ARMS COMPANY, INC.

April 24, 1985

N. K. BOYLE
W. H. COLEMAN, II
S. O. KINI
W. H. FORSON, JR.
N. L. GLORIOSO
J. E. PREISER
E. W. RAU

NEW BOLT ACTION RIFLE CONSUMER RESEARCH

Marketing feels the need to have a Model 700 replacement ready for market introduction in light of the product life cycle maturity of this model. No plans currently exist for actually replacing the Model 700, however, an alternative should be available if sales for this model soften.

During mid-February 1985, six (6) group sessions were conducted with men who have hunted within the past year with a bolt action rifle (two in Denver, Col., two in Phoenix, Ariz., and two in Houston, Tex.). The purpose of these sessions was to evaluate numerous functional and cosmetic features which have been identified as candidates for a new bolt action rifle (see the first two pages of the Appendix section for a listing of the test features).

Regardless of what features are finally selected, the new bolt action rifle will truly be a new gun from Research and Process Engineering perspectives because it will contain a flat-bottom receiver (for increased accuracy). Since this feature was considered a "must", it was not directly evaluated from a consumer viewpoint (however, there were a number of respondents in the sessions who spontaneously referred to a flat-bottom receiver in a positive manner). Furthermore, since a flat-bottom receiver can be produced by EMS equipment as easily as our current receiver, it was considered a product improvement without any additional cost.

Discussion of Findings

The findings of these group sessions (as discussed in the attached report by The Gedman Research Group, Inc.) indicate two basic points. First, the current M/700 BDL generates a high degree of consumer acceptance and; second, the bolt action center fire rifle market is highly segmented.

Strong consumer preference for the M/700 BDL stock configuration, round receiver, barrel contour, safety location and bolt handle style strongly indicates the need for a rifle of this design in our line. The findings suggest that the new bolt action rifle should utilize the current M/700 as a springboard, rather than introduce an entirely new model with dubious consumer acceptance.

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As far as market segments are concerned, there are a number of feature variations with sizeable minority preferences. For example, while 35% preferred a round receiver (BDL) with integral mounts, 21% preferred a plain round receiver. Similarly, while 56% preferred a M/700 BDL barrel contour, 44% preferred the mountain rifle contour (hammer marked and plain combined).

Furthermore, one of the big surprises was the degree to which participants in these sessions preferred a box magazine (71%) over a floor plate (29%). This suggests that at least one of our offerings should contain a box magazine.

From a Marketing standpoint, addressing consumer needs with segmented products allows us to offer products which generate high perceived value on the part of the consumer (given that price increases are held at reasonable levels).

A market segmentation approach also compliments the strategic plans we have for the Ilion plant. Specifically, FMS will allow Ilion to efficiently produce guns to meet usually smaller volume segment needs.

Please read the attached report and be prepared to discuss at the Business Team Meeting on Monday, April 29th.

J. H. CHAMBERS

JHC:mf
Attach.

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Barber b 3 pgs

Barber b 3 pgs

Barber b 6 pgs

Barber b 2 pgs

" " 1 PS

December 5, 1988

To: T.C.Douglas

From: R.S.Murphy/T.G.Bauman

Subject: November Monthly Report - NBAR

A meeting was held on October 31 with the old NBAR team, the new NBAR team and legal to get the new players up to speed as well as re-re-re-re-re-re-redefine the NBAR program goals. The insight (hindsight) of the legal representatives present was useful as we outlined the following program goals:

- o Detachable Magazine Box

- o Improved Firecontrol
  - No Connector
  - Two Trigger Pull Springs (low spring rate)
  - "Sealed Firecontrol"
  - Balanced Trigger
  - Trigger and Sear Block
  - Not Retrofittable to M/700

- o Bolt Lock w/override

- o Integral Scope Mounts

- o New Extractor

- o New "Custom Shop" Barrel Contour
  - -Mountain Rifle Crown

- o Improved Bedding System

- o M/700 receiver, cosmetically altered

- o New Wood Stock

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EXHIBIT 16

NBAR PROGRESS

- CONCEPT SKETCHES REVIEWED AND MODIFIED
- REVIEWED NEW CONCEPT SKETCHES AND PROTOTYPE
- REVISIONS TO BE MADE TO PROTOTYPE AS FOLLOWS:
  - MODIFIED BARREL CONTOUR, I.E. TRANSITION FROM BARREL TO CHAMBER.
  - RELIEF CUT AT TOP OF EJECTION PORT
  - CHANGE RADIUS OF FOUND
  - CROWN TRIGGER GUARD AT FRONT OUTSIDE
  - ADD MAGAZINE BOX
  - ADD RECEIVER MARKINGS
  - ADD SAFETY (POSITION & TYPE)
  - MODIFY BOLT HANDLE DESIGN

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BARBER - 1.30.130000145

FIREARMS MARKET OUTLOOK

- CANCELLATIONS ARE BEGINNING TO BE RECEIVED. THE TOTAL FIREARMS ORDER POSITION FELL 6M UNITS LAST WEEK. MOST ACTIVITY IS IN RIFLES. (23 R.F., 14 C.F.)
- FALSE DEMAND IS AN ISSUE WITH EXPRESS AND VIPER PRODUCTS. OPEN ORDERS IN THESE CATEGORIES ARE MOST VULNERABLE.
- DISTRIBUTOR INVENTORY IS A LITTLE HEAVIER THAN NORMAL, HOWEVER, IT IS NOT VIEWED AS UNCOMFORTABLE.
- DEALER INVENTORY IS LEAN, YET, THEY ARE DEMONSTRATING A CAUTIOUS APPROACH TO REORDERS.
- DEALERS HAVE AN OPTIMISTIC OUTLOOK FOR THE FALL BUSINESS, BUT LONGER TERM THE MARKET LOOKS PROBLEMATIC BECAUSE OF POLITICAL AND ECONOMIC TRENDS.
- THE SPORTING CLAYS MARKET IS STILL GOOD, HOWEVER, GROWTH HAS SLOWED DUE TO SATURATION OF PRODUCT IN THE MARKETPLACE.

NEW PRODUCT STATUS VIA TOTAL ORDER POSITION

	YTD ORDER NEW PRODUCTS	TOTAL ORDERS	NEW PRODUCTS % OF TOTAL
SHOTGUNS	22,623	397,701	6%
RIMFIRE	92,167	110,107	84%
CENTERFIRE	39,094	185,109	21%
TOTAL	153,884	692,917	22%

DISTRIBUTION CHANNEL ANALYSIS

	1991 ACT. %	1992 ACT. %	1993 P.O. %	1993 YTD ACT. %	1994 P.O. %
CHAINS	21.5	17.1	18.5	17.6	18.0
DEALERS	14.8	14.1	11.5	12.6	14.5
WHOLESALERS	63.7	68.3	70.0	69.8	67.5

FIREARMS
YEAR TO DATE
FINANCIAL PERFORMANCE
(THRU JULY)

	P.O. $s	REV. 2 $s	CFI $s	ACT. $s	$VAR ACT. VS. P.O.	$VAR REV. 2 VS. ACTUAL	$VAR CFI VS ACTUAL
SALES	117,465	105,423	104,014	103,402	(14,063)	(2,121)	(2,613)
ATOI	12,183	7,106	7,593	6,448	(5,835)	(748)	(1,145)

YEAR END
FINANCIAL PERFORMANCE "PROJECTION"
(OVER THE TOP)

	P.O. $	REV. 2 $	PROJECTED $
SALES	169,796	168,567	165,503*
ATOI	11,300	8,654	8,065

*A FORECASTED REDUCTION OF $3MM IN SALES, RESULTING FROM A PRODUCTION SHORTFALL AND ORDER CANCELLATIONS HAS APPROXIMATELY A $600M NEGATIVE IMPACT ON EARNINGS.

REVIEW
JULY 93 FINANCIAL PERFORMANCE
FIREARMS

	P.O. UNITS	P.O. $'S	REV.2 UNITS	REV.2 $'s	CPI UNITS	CPI $'s	ACTUAL UNITS	ACTUAL $'s
SHOTGUNS	37,078	8,865	31,410	7,640	31,540	7,512	25,441	6,076
RIMFIRE	5,476	608	5,075	621	6,100	709	4,315	466
CENTERFIRE	15,363	5,079	13,262	4,385	15,055	4,939	13,856	4,449
TOTAL FIREARMS	57,917	14,592	50,347	12,649	52,695	13,160	43,612	10,993
XRBLS	3,910	438	4,300	445	4,300	445	3,853	407
ALL FIREARMS		15,031		13,094		13,605		11,400
ATOI		1,323		382		645		(502)*

* $74M LOSS ON REGULAR OPERATIONS; $428M FIXED COST ADJUSTMENT.

EXHIBIT 34

NOTES ON
M84E LIT REVIEW
START, 9-17-82

HIGH PRESSURE ABUSE 2ND QTR 83 TEST
IS THIS TYPE "MAJOR SETBACK (NO FAULT 88 ?

← FULLY ADJUSTABLE
- WITHIN SPEC
- WITHIN SAFE LIMITS

SAAMI DZUS TEST INFO NEEDED

SAFETY ON/OFF FORCES SPEC
WOULD DEPEND ON ERGONOMICS AND
HUMAN MECH ADVANTAGE & STROKE

→ BOLT LOCK WITH OVERRIDE

NOT RETROFITTABLE TO M700

DOA WT-OF-POLL SPRINGS
LOW WT-OF-POLL-SPRING SPRING RATE
"K" LBS/INCH

SEALED FIRE CONTROL
[RESISTANT TO EXTERNAL INFLUENCES
BALANCED TRIGGER

TRIGGER BLOCK AND SEAR BLOCK.

SYSTEMATIC LOOK @ M700 PRODUCTION
PROBLEMS NOW.
- TO CORRECT THEM.

ONLY DISENGAGE BOLT LOCK WHEN IN "S" POSITION ?

→ • TH MUST BE IN S TO OPEN BOLT

• FIRING PIN FAIL DEFEATS BOLT LOCK FOR NORMAL REPEAT SHOTS.
[like the Newton Rifle]

TO LIFT BOLT:

MOVE SAFETY TO "S"

OR

PULL TRIGGER

[ ]

EXHIBIT 35

WAW
9-9-93

SURROUNDING TRIGGER:

CONNECTOR SAME HEIGHT AS TRIGGER

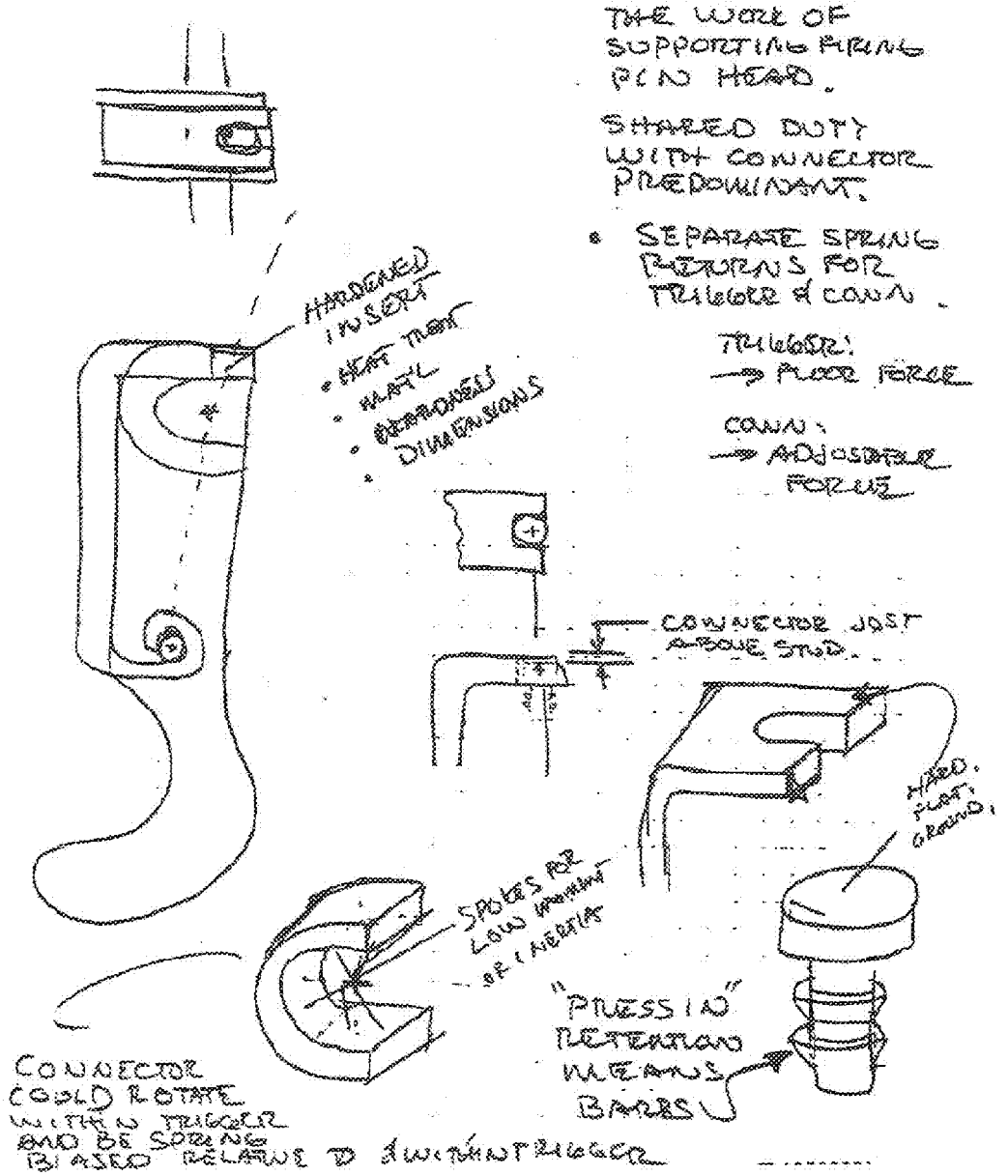
CONCEPT: • IF CONNECTOR DOES NOT RETURN, TRIGGER DOES THE WORK OF SUPPORTING FIRING PIN HEAD.

SHARED DUTY WITH CONNECTOR PREDOMINANT.

• SEPARATE SPRING RETURNS FOR TRIGGER & CONN.

TRIGGER:
→ FIXED FORCE

CONN:
→ ADJUSTABLE FORCE



9-8-93

AD BAR FIRE CONTROL

PROVIDE A MEANS WHEREBY THERE IS A MINIMUM ACCEPTABLE TRIGGER PULL REGARDLESS OF CONDITION OF WT OF PULL ADJUSTMENT MECHANISM.

- DUAL SPRINGS
  - MIN. FLOOR SPRING NOT READILY VISIBLE OR ACCESSIBLE

THIS COULD PROVIDE FOR A VERY LOW K SPRING SYSTEM WHICH WOULD BE ROBUST AGAINST IGNORANT TINKERING.

THE PRIMARY (MINIMUM ASSURED) SPRING COULD FUNCTION ALSO AS SEAR (RETURN) SPRING.

WHAT ABOUT ~~PRECIPITATED~~ FEEDBACK TO TRIGGER AS SEAR MOVES OUT OF ENGAGEMENT WITH F.P. — INCREMENTAL INCREASE IN FORCE OR TRIGGER "SLAP"?

EXHIBIT 46

PRODUCT TEAM 5-13-93

NBAR

R&D reported the two prototypes for the focus panel will be complete by the end of June. This will be done without styling input from the design consultant. R&D stated the design program would be complete two years after the product specifications have been finalized. Final specifications are expected by October 1993.

R&D requested preliminary direction on trigger assembly features. Marketing indicated the desire to offer a trigger that is adjustable by the consumer within a fixed range. Lock time, pre-play and travel should be comparable to the 700. Also, an optional bolt lock would be preferred.

EXHIBIT 47

RIFLE SPECIFICATION PI-4

PROPOSED PRODUCT: NBAR (NEW BOLT ACTION RIFLE) - WOOD STOCK VERSION
PRELIMINARY SPEC. (ALSO SEE NBAR STAINLESS SYNTHETIC SPEC.)

GRADE: "A"
ORIGINAL DATE: 9/13/92
REVISED: 9/25/92

CALIBERS: 222REM, 223REM, 243WIN, 6MM REM
25-06REM, 270WIN, 280REM/7MM-08REM, 308WIN
30-06, 35 WHELEN, 7MMREM MAG, 300 WIN MAG,
300WBY MAG, 338WIN MAG

METAL WORK

FINISH:
BLACK OXIDE: STD
BLACK MATTE:
PARKERIZED:
OTHER:
ADDITIONAL INFORMATION:

* BOLT: TIN or other surface treatments (COLORS)
* LOCKING LUGS ONLY
* INTERIOR OF RECEIVER ONLY
* RIFLE control KEY PARTS

RECEIVER:
SERIAL NUMBER FORMAT: NEW-TBD
ROLL MARK (LEFT SIDE): NEW-TBD
ROLL MARK (RIGHT SIDE): NEW-TBD
ADDITIONAL INFORMATION: ONE PIECE BARREL / RECEIVER IS ACCEPTABLE
SIMPLIFIED INTEGRAL SCOPE MOUNT
* REMOVABLE MODULAR SYSTEM *

LASER-EMBELLISHED / DEDICATED COSMETICS

BARREL:
LENGTH: 21" CALIBERS: 6MM,243,25-06,308,7MM-08
LENGTH: 25" CALIBERS: ALL MAGS & 1/A + 22, 223
SIGHT HOLES: YES SIGHTS: YES
ROLL MARK: CURRENT
ADDITIONAL INFORMATION: WILL LENGTH OF P.E. CHANGE TO MATCH BARREL LENGTH?

POSSIBLE: 4 STOCK VARIATIONS

STOCK & FORE-END

MATERIAL:
SYNTHETIC: MATERIAL:
COLOR:
WALNUT: YES
BIRCH:
SYCAMORE:
OTHER:
GRADE: "A"

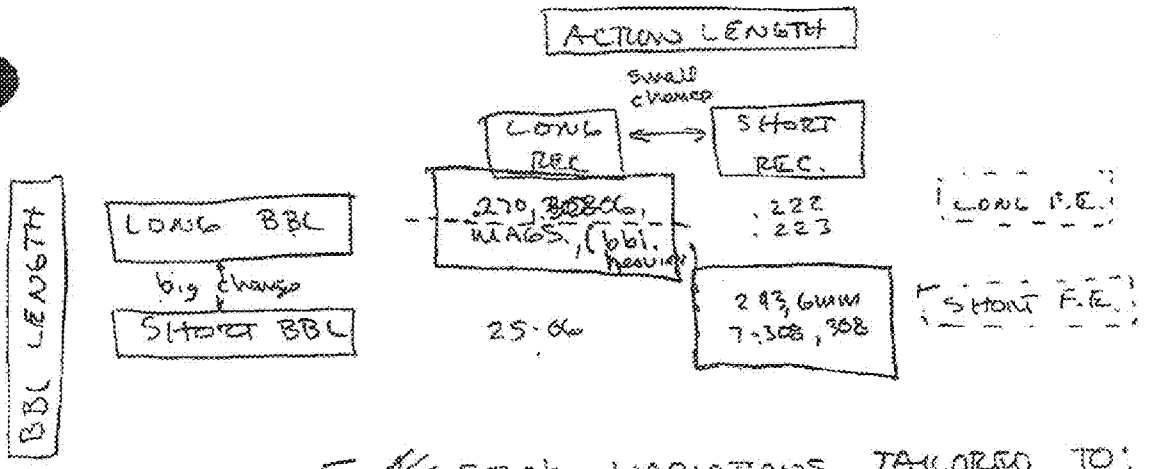
WHY THIS (P CONCEPT IS OPSPACE HIGH END?

CHECKERING:
NONE:
CUSTOM:
CUT: YES
PATTERN: NEW - TBD
OTHER:

8% OF LONG STOCK BLANKS ARE "B" GRADE WOOD ACCEPTABLE TO G. HELMER.

POWDER MUST BE TAN COATED? OVER / INSTEAD OF CHROME PLATING

Page 1



5 STOCK VARIATIONS TAILORED TO:

- BARREL LENGTH (COSMETIC - PROPORTION)
- ACTION LENGTH (FUNCTIONING)
- BBL CONTOUR (+3/4 LB IN MAGS)

ASSUME: F.E. LENGTH VARIES WITH BBL LENGTH TO PROVIDE ADEQUATE ARRAY

1) PUT 25.06 BBL WITH "LONG BBL HUNT" CALIBERS

GO FROM 4 TO 2

COMBINE BBL CONTOUR AND LONG ACTION TO SEMI-MAGNUM.

PROJECT JUSTIFICATION DATA PI-2

DATE: 8/12/92

PROPOSAL: NBAR (NEW BOLT ACTION RIFLE)

REVISED

BRIEF EXPLANATION OF THE PURPOSE OF THIS PROPOSAL:
THIS PRODUCT WILL BE A NEW ENTRY INTO THE MID TO HIGH PRICE CENTERFIRE BOLTACTION MARKET - DESIGNED FOR MANUFACTURABILITY AND PERFORMANCE.

	START UP YEAR	FIRST FULL YEAR	THIRD FULL YEAR
TIMING — QTR / YEAR:	1QTR95		1997
INCREMENTAL VOLUME: * (additional)	15,000		45,000
REPLACEMENT VOLUME: * (detracting from existing)	30,000		
MSP:	$399 est.		
NSP:	$326 est.		

* REPLACEMENT VOLUME DETAIL: 7,000 FROM MODEL 700 BDL & 3,000 FROM MODEL 700SS.

** VOLUME SPLIT IS 70% WOOD, 30% SYNTHETIC.

DOES THIS PROPOSAL CREATE OBSOLETE INVENTORY? NO
EXPLAIN:

LIFE EXPECTANCY OF THIS PRODUCT: 10 YRS. M700 MDLS EXCLUDED FROM 30th YEAR 42nd YEAR

VOLUME GROWTH / DECLINE AFTER THIRD FULL YEAR: LEVEL AT 45,000

COMPETITION:

MANUFACTURER	MODEL	MSP
BROWNING	A-BOLT	$459
RUGER	M/77	$382
USRAC	M/70	$374
SAVAGE	M/110	$351

$393 700 BDL $389

PREPARED BY: PRODUCT MANAGER

REVIEWED BY: DIRECTOR OF MARKETING

IMPLICATIONS TO VIABILITY OF PROJECT? PAYBACK ON QUES 9.7 & QUES 10.0

RIFLE SPECIFICATION PI-4

FINISH:
HIGH GLOSS:
SATIN:
OTHER: SEMI-GLOSS
MATERIAL:

STOCK:
CURRENT:
NEW: YES
RECOIL PAD: YES
BUTT PLATE: NO
GRIP CAP: YES
MONTE CARLO: YES
COMB CUTS: YES
LOP: 13 3/8"
DROP: COMB 1 1/2", HEEL 1 3/8"
ADDITIONAL INFORMATION: SIMILAR IN SHAPE TO THE M/700 BDL
TYPE:
TYPE: LONG STOCK
TYPE: SOLID
TYPE:
TYPE: "B" WOOD
CHEEK PIECE: YES
PALM SWELL: YES
SWIVEL STUD: YES
A NEW CONCEPT MOLDED INTO STOCK - PUSH MOUNTED EXPOSED SYNTHETIC STAINLESS

FORE-END:
CURRENT:
NEW:
F/E TIP OR CAP: YES
FINGER GROOVES:
ADDITIONAL INFORMATION:
TYPE:
TYPE:
TYPE: "B" WOOD

ADDITIONAL ITEMS

SLING: NO STYLE: COLOR:
PACKAGING: STD GREEN BOX
LITERATURE: NEW
ADDITIONAL INFORMATION: OPTIONAL BOLT LOCK, DETACHABLE BOX MAGAZINE
extra magazine
WEIGHT L/A - 6 LBS. MAX (7 3/4 LBS.)
NBAR SHOULD HAVE SIMILAR "LINES" TO THE M/700 BDL
THIS 1 WOULD A DIFFT

SAFETY INITIATIVE:
* complimentary ear plugs
* coupon good for discount on Remington personal protection products
BDL COUNTDOWN FOR MAGAZINES

PREPARED BY: [signature] DATE: 3/28/12
REVIEWED BY: [signature] DATE: 3/28/12

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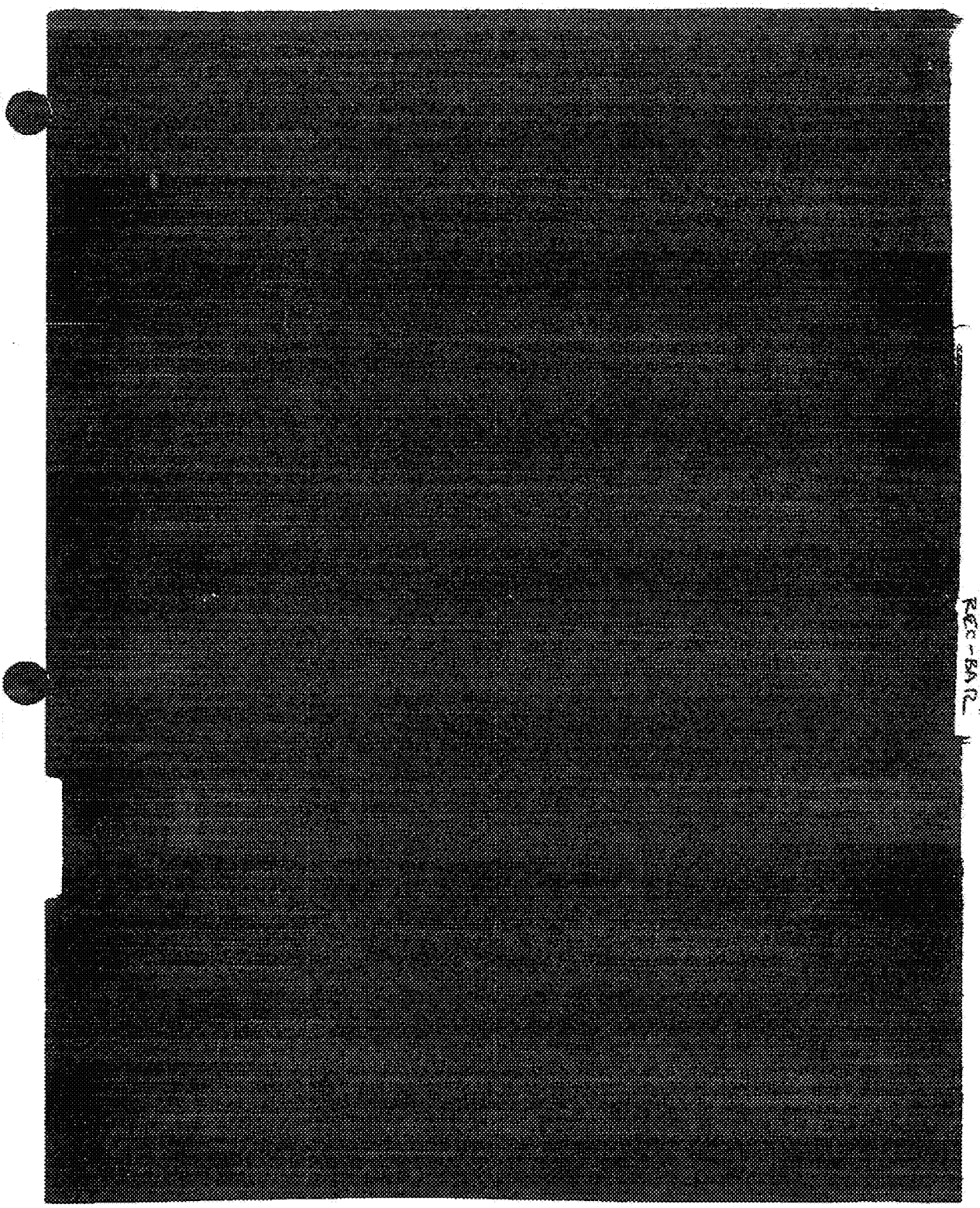
EXHIBIT 48


N BAR

Copied 3/29/93

NJ BAR REC'D
GFM CONSTRAINTS

NBAR SPECIFICATIONS
(Tentative)

	CARBON STEEL/WOOD	STAINLESS STEEL/SYNTHETIC
BARRELED ACTION:		
o Barrel Length:	21" & 24"	-----
o Muzzle:	Recessed Crown	-----
o Locking System:	Tri-Lug (60 deg. Bolt Rot.)	-----
o Receiver:	Short & Long Action	-----
	Right & Left Hand	-----
o Finish:	Satin Finish	-----
	Black Oxide	No
o Open sights:	No	-----
STOCK ASSEMBLY:		
o Material:	Walnut	Synthetic
o Style:	Classic	-----
o Finish:	Satin	-----
o Cheek Piece:	Yes	-----
o Grip Cap:	Black	No
o Fore-end Tip:	Black	No
o Checkering:	Cut	Molded
o Recoil/Bedding Insert:	Yes	-----

ADDITIONAL ITEMS: (Common to both versions)

- o Detachable Magazine Box
- o Optional Bolt Lock
- o Adjustable Trigger Assembly
- o Remington Scope Mount System

MDK 9/14/92

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EXHIBIT 36

A SAFETY

DESIREABLE:

F → S

MECHANISM CAM FORCE THE ENGAGEMENT (OF TRIGGER AND SEAR) RATHER THAN MERELY ALLOWING / RELYING ON SPRING FORCE TO ESTABLISH / MAINTAIN ENGAGEMENT.

4-15-93

EXHIBIT 37

N BAR 8.10.92

KEY CONCEPTS MARKETING

PRODUCTION

DUAL LINE AT INTRODUCTION '95:
M200 & NBAR PRODUCED
CONCURRENTLY FOR FIRST
YR OR 2 OR 3 8-92 J. BUNTING
PHASEOUT M200 BY 1997 INTO LOW
COST BOLT ACTION.

1992	1993	1994	1995	1996	1997
NOW	FIRM CONCEPT		700 TOO INTRO NBAR	700 TO	PHASE OUT INTRO LOW PRICE 200 FAMILY

MARKETING POSITION

NBAR TO BE MED-HIGH
PRICED REPLACEMENT FOR 700 BDL.

8.10.92
(1)
JB, MK, KS, WW

WILL BE ONLY
SINGLE PORT ON NCS;
R/L (HOME) V BT. Determined BOLT HANDLE CUT AND PORT
Dedicated by port & bolt handcut.
BUNK CAN BE CORR? STRAIGHTEN ABOUT CENTER OF BAR/REC
BARREL REC BAR
1995 VOLUMES NCS
3 YR " BONDING TO PROJECT

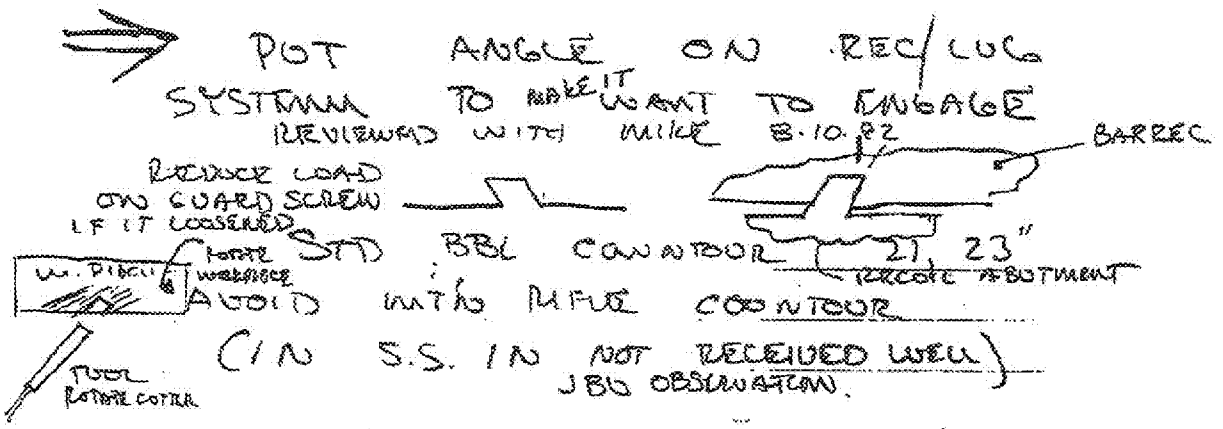
DUAL LINE NBAR/HARDWOOD
FIST TO OR TWO DO LOW PRICE 700 AS LOW
LOW COST PRICE GUN (ADL) TO KEEP ROUND ALIVE.
700 LATER 96 ONLY. NCS IS TO BE A MED/HIGH
REC. FOR 700 BDL.
[Let the market decide preference]
WE CAN DOWNSCALE A TOP
PKG PRODUCT BUT MORE
DIFFICULT TO UPSCALE AN
(WITH LOW-PRICE ENTRY).

EVENTUALLY PHASE OUT 700.
AT LEAST TWO/THREE YEARS
DUAL LINE WITH 700/NBAR.
700'S THEN PHASED OUT BY 1997.

WOOD WEDGE $180 $175 TOTAL (WOOD)
NBAR $25 LESS WEDGE
MOST NBAR COST REDUCTION WILL
BE IN BB/REC WEDGE.

(2)
8·10·92

→ POT ANGLE ON REC/LUG SYSTEMS TO MAKE IT WANT TO ENGAGE
REVIEWED WITH MIKE 8·10·92



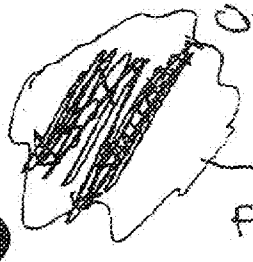
(IN S.S. IN NOT RECEIVED WELL)
JBO OBSERVATION.

MBSR 1 & H&R BASED STD/MAG BBL CONTOUR) ONE SIZE FITS ALL
MAG WILL USE 4100 MAG'L TO PROVIDE ADDL BBL CONTOUR OPTIONS.
BARREC

2. MIKE'S GET COPY
— SATISFACTION SURVEY —
("BEST SATISFIED" M700 BDL)
COPY RECENT RESULTS COMING BACK.

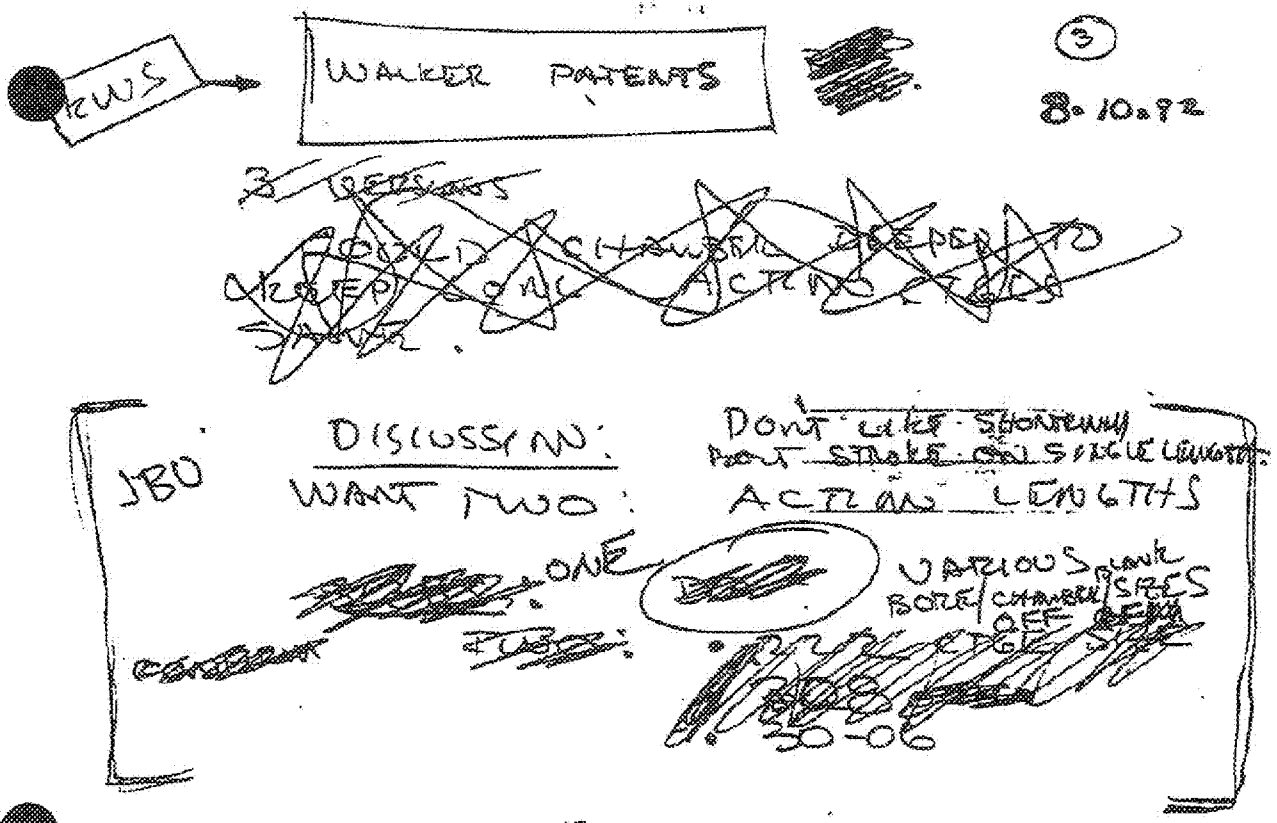
WANT DETACHABLE BOX; DIFF'T FROM M700 SHORT PIECE STEEL SPRING-LOADED BOX EJECTION FROM RIFLE. AKA SAVAGE?

REDUCE DIMENSIONAL BOLT FACE TO BACK OF TANG 8 — 7"



HUTTON: VENTION PLUNGER SEAT (OMIT LONG S.S.C) AKA SAKO

FIRE CONTROL SLOT + MAG. WELL SLOT ADDITIVE
MACHINED FROM



We need something new & diff't for scope bases.
C"/INTEGRAL" — AKA RUGER
NO OPEN SIGHTS ON THE GUN/BBL.
MAKE IT LOOK SEXY.
CLARIFY — NOT AS AN AFTERTHOUGHT.
THIS MEANS OMIT THE PART BETWEEN RECEIVER AND RING
— RING ATTACHES TO RECEIVER —

OUR SYSTEM HAS A → PERCEPTION OF EXTRACTOR PROBLEM. DESIRABLE, BUT NOT MANDATORY, TO REFINE THIS. BY JBO & KWS urging to clarify.

ADDRESS THIS WITH CONSUMER EDUCATION.

(P)

8.10.92

CUSTOMER PERCEPTION OF CLOSED END BOLT PLUG IS BETTER.

THE REM QUALITY/PERFORMANCE CHARACTERISTIC IS TO SHOOTER PROTECTING LEAKING PRIMER EVENT

M700 IS DIFFICULT TO FIELD STRIP — F.P. ASS'T. [COIN SLOT ON F.P. HEAD]

MARKETING WOULD LIKE TO SEE THIS CHANGED. HOW IMPORTANT IS THIS TO OUR CUSTOMER?

YOU WANT A BOLT LOCK MEANS.

YOU WANT TO OPEN BOLT WITH GUN ON SAFE.

ERGONOMIC ISSUES OF EASE OF USE & NO CONFUSION.

→ BOLT RELEASE AWAY FROM IN FRONT OF TRIGGER.
- PREFER ON SIDE OPPOSITE BOLT -

JPB NON-OBJECTION TO GLOCK-TYPE TRIGGER LEVER - SOUND LIKE CONCEPT. LEADING TO CUSTOMER-ADJUSTABLE TRIGGER.

(5)

8.10.92

NO NEED FOR MAG-BOX DISCONNECT SYSTEM.

1992: 85 K INTO REGULAR
117 K INCL. STAINLESS

1995: NBAR 27,000 FIRST YEAR
"ROUGH" ESTIMATE

LET THE EXPRESS C'F' DELAY A YEAR OR SO AFTER INTRODUCING NBAR.

FOR SEN. STOCK MOLDS.

INSERT FOR BOLT HANDLE SLOT AND CHEEKPIECE TO FACILITATE R/LEFT MODELS.
L.H: 12-15% OF BUSINESS.

MARKETING STEERING FOR 8-24-92.
DO GET ARTIST'S RENDERINGS.

- ADVERTISING
- MARKETING ASSISTANCE
- ETC

} 18 PEOPLE OR 80.

(6)

8.10.92

J.Bu USES "3-POSITION SAFETY" DESCRIPTION.

-COPPER BULLETS-

AMMO MADE $1.4 x 10^6$ IN 1991

1992: AMMO WILL MAKE TWICE WHAT GUNS WILL.

$6 x 10^6$ VS. $12 x 10^6$

LOADER USES TEMPORARY HELP, INCLUDING SOPHOMORES: UP TO 50.

BALLO IS OUT @ GRAND AMERICAN.

PERCEPTION OF EASILY ADJUSTABLE FINE CONTROL; IMPORTANT AT HIGH END POINT MATCH BULLET PER R.W.S.

RETROFITTABLE TO 700? 2

EXHIBIT 38

8·10·92

MARKETING RELEASE MECHANISM CONCEPTS

- THEY WANT A BOLT LOCK (LOCK BOLT DOWN IN CARRY SAFE CONDITION)

AND

- THEY WANT TO OPEN/CLOSE BOLT IN A SAFE CONDITION; WITHOUT A PULL OF TRIGGER WILL NOT CAUSE DISCHARGE

~~THEY SAY "3 POSITIONS SAFETY"~~

- THEY WANT TWO BOLT RELEASES AWAY FROM ~~IN FRONT OF TRIGGER~~

EXHIBIT 49

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R2520420

1

GFM RECBAR

WHAT ARE PRESENT OR ROUTINE CONSTRAINTS ON GFM RECBAR GEOMETRY?

WAW
9.30.82

WHAT CAN GFM DO TO PROVIDE AN ANNULAR CROSS SECTION OTHER THAN A CYLINDRICAL LENGTH? WHAT IS PRACTICALLY POSSIBLE

- height, h
- inner radius, R_T
- outer " , R_O
- lead in angle, $\angle_{IN}$
- exit angle, $\angle_{OUT}$

Max ? = f (?)

Minimum = f (?)

Maximum = f (?)

Maximum = f (?)

THIS BOSS COULD BE USED FOR:

OR BOTH TOGETHER
- SUPPORTING AN INTEGRAL SCOPE MOUNT RING.
- BECOMING A RECOIL LUG

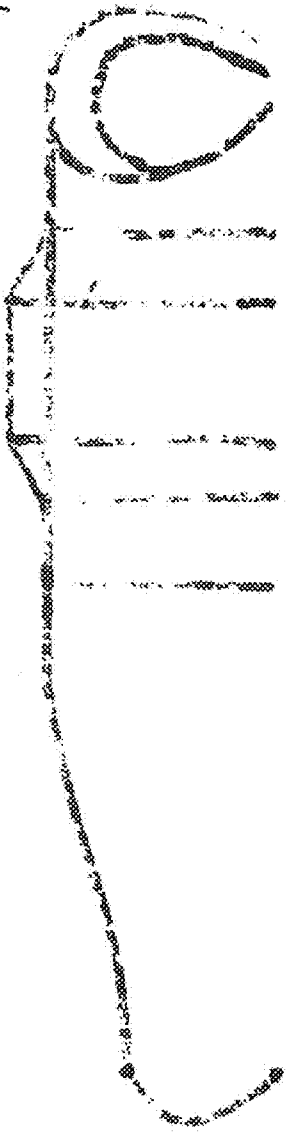


EXHIBIT 50

Jay Bunting
Remington Arms Company • Brandywine Bldg. 6254
(302) 774-8582

9/14/92

John Balin,

Mike Keeney pulled these specifications together for Brown's visit in Elkton on 9/15. I disagree with the drilling and tapping of all bands for sights. Please review and advise me of your position on these specs.

Jay

NE 74

NE - C.E. REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

CHANGE NO.: 20645

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO:

EXPIRATION DATE:

INITIATED DATE: 2-2-73

		APPROVALS	DATE
CONTROL OFFICE BLDG. 16-2			
METHODS & STDS. LEADER	J. POLINKA		2-2-73
PROCESS ENGR. GROUP LEADER	J. BOWER		2/6/73
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	C. PARDEE G. CASALE		2/6 2/6
CHIEF. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	E.E. CREE		
CONTROL OFFICE BLDG. 16-2			
PROCESS RECORDS REVISED			

MODEL NO.: 700 REQUESTED BY:

PART NAME: FINAL ASSEMBLY ENGINEER: C. PARDEE

PART NUMBER:

DESCRIPTION OF CHANGE & REASON: ADD ELEMENT TO FINAL INSPECTION TO CHECK FOR POSSIBLE CONNECTOR - SEAL INTERFERENCE. AT LEAST TWENTY IN 1972, AND FOUR SO FAR IN 1973. CUSTOMER COMPLAINTS INCLUDING ONE PERSONAL INJURY ARE ATTRIBUTED TO THIS INTERFERENCE.

COMPONENT STATUS AS AFFECTED BY CHANGE – CHECK TYPE

☐ USE PRESENT PARTS ☐ HOLD FOR SALVAGE ☐ SCRAP PARTS ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE – PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

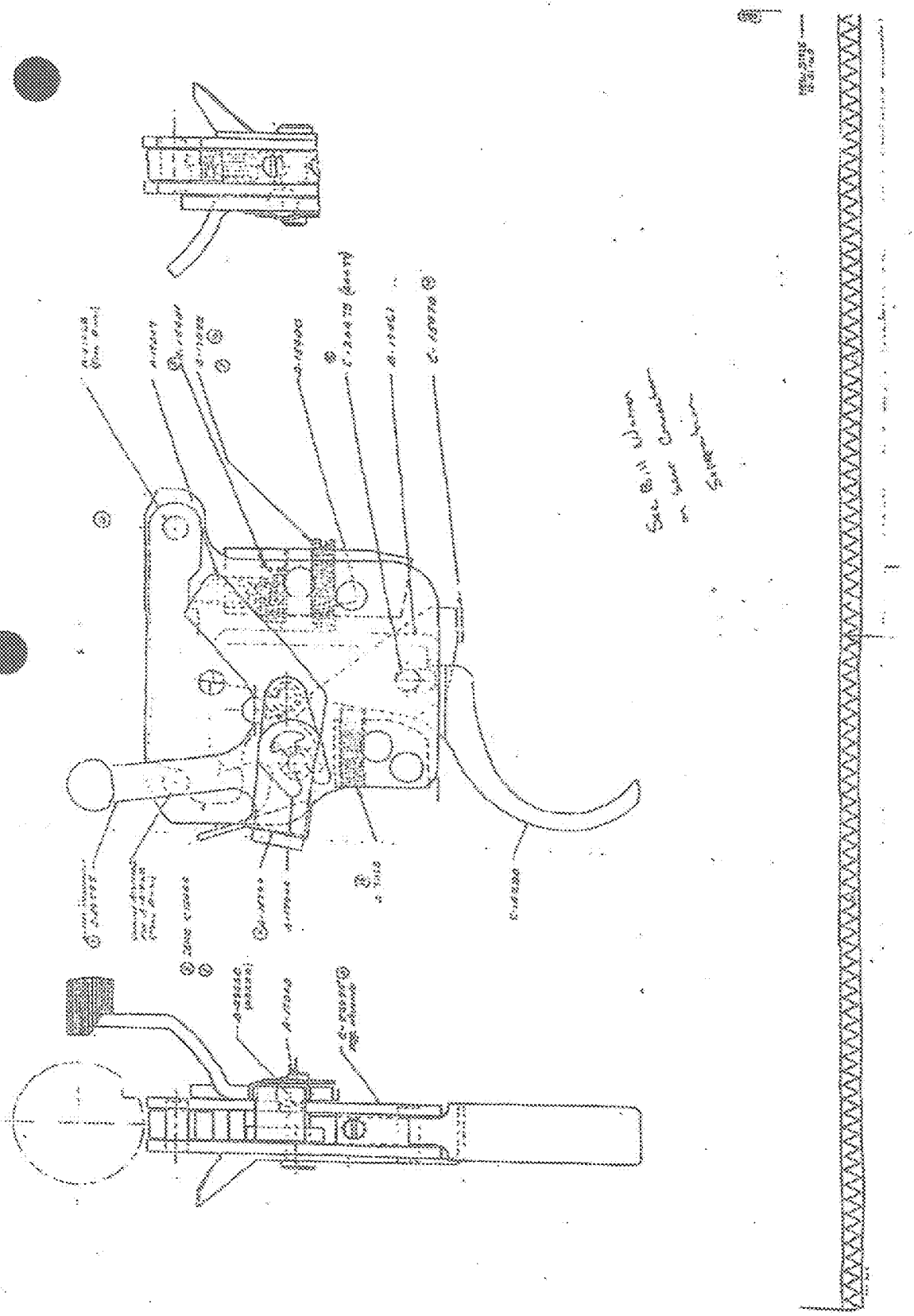
PRODUCT COST – PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		75,000
STD. HRS. PER 100			STD. HRS. PER 100		.1
DOLLARS PER 100			DOLLARS PER 100		1.40
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	105,000
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED

ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN

RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

ARMS

RESEARCH DEPARTMENT PRESENTATION - 1974

Our Arms presentation today involves a combination of product improvement and future development in all areas except rim fire. It is aimed toward an ever increasing program of improvement in product safety, functional performance, endurance and appearance. As we proceed with the presentation you will be exposed to a series of alternatives and recommendations.

Bolt Action - Center Fire (Walker)

M/700
- Product Safety
- 3 position safety
- Appearance
- Other calibers

M/788
- Product Safety
- Bolt handle and firing pin head
- Appearance

Recommendations:

ALEXSICH

AL 0031965

REMINGTON ARMS COMPANY, INC.

INTRA-DEPARTMENTAL CORRESPONDENCE

Post Office Box | Letters

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
December 1, 1975

TO: J. P. LINDE

FROM: D. F. BULLIS

SUBJECT: PROGRESS REPORT

ELECTRON BEAM WELDED EJECTORS:

The latest design ejectors have been machined, heat treated, blasted and put in test for endurance.

M/700 TRIGGER (One Piece):

For test purpose only, a trigger was made by screwing a connector to a M/700 trigger making in effect, a solid one piece trigger. Preliminary tests indicate a one piece trigger may be acceptable.

A new design was drawn up and put in the shop of a trigger which has a back angle on the break away portion of the trigger, sear surface. A formed bar stock blank was also drawn up for cost estimate.

COMPETITION STOCK FINISH :

All stock assembly drawings were altered to contain both a shiny(RKW) and dull (VINYL) finish. A new drawing was required for the fore-end.

3200 RECOIL PADS:

Drawings were altered to show a .140 dia. hole for each screw position of the recoil pads, to eliminate the ragged look which develops from using a screw driver through the pad with no hole.

3200 TRIGGER GUARD REAR PIN HOLE:

A number of trigger guards were made up with the rear pin hole moved forward .010 & .015. They were put on guns at assembly and checked for appearance. It was decided that .015 better covered the gap we were getting behind the bottom tang and the stock. The guard drawing was changed to this effect.

PLAINTIFF'S EXHIBIT 3086

AL 0023392

1 of 2

BARBER - 1.30.130000188

M/582-572

All drawings have been transmitted to the Plant except the "Nylafil" trigger plate.

Nylon 66

A review was made with design consultant (Siro Toffolon) on a number of drawings of roll markings, different names, etc.. His present assignment is to prepare a rendering for a new design stock, and then make a 3D model.

Colors to simulate gold are being looked at for the diamond on the black gun.

Sample scope mounts are now 95% complete and will be ready for review in July.

M/700 Improved Trigger Assembly

Design work has started on one of three planned safety mechanisms for the M/700 rifle. The three designs include three position safety, two position safety with bolt release on bolt plug, and two position safety with bolt release on bolt handle. The three designs will be evaluated from the cost, performance, ease of function and safety standpoints, and the best design will be proposed. All three designs permit the rifle to be unloaded with the safety in the ON SAFE position.

M/870 Competition Trap Gun

The three models to be shown at the July Operations Committee Meeting are in the final stages of fabrication. These models will be tested extensively against the leading competition which are the M/12 Winchester, BT99 Browning, and Perazzi single barrel. A Research cost estimate is being prepared on manufacturing costs of the M/870 Competition.

T

AL 0031964

BARBER - 1.30.130000188

BARBER - 1.30.130000189

New Bolt Action Model Variations - Cont'd.

M/600 Carbine - Cont'd.

Development Program:

Fabricate models with design objectives and options by November 1977.

Evaluation of Options with completion in January 1978:

Research Testing
Marketing Analysis
Economics

Proposed Market Announcement:

January 1979.

Bolt Action Product Improvements

Model 700 Extractor

We have received a number of complaints critical of our cartridge extraction from the marketing focus panels and customer contacts. We feel we have a reliable system but we are going to investigate these soundings and if they are justified find a solution. If not justified we will generate marketing information to demonstrate the performance advantages of our extractor. We will present our findings at the January meeting.

Model 700-600 Fire Control Improvements

We presently offer these two rifles with a fully adjustable fire control which we tell the customer not to adjust because the typical customer does not understand the system well enough to adjust it properly. The adjustment feature increases the cost of the fire controls. These rifles cannot be unloaded with the safety in the "On Safe" position which we believe would be a desirable feature. To overcome these

3 of 11

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Bolt Action Product Improvements - Cont'd.

M/700-600 Fire Control Improvements - Cont'd.

deficiencies we are presently doing a design analysis of the M/700-600 fire controls. We are trying to develop a new fire control with the following features:

1. Trigger externally adjustable for pounds pull within safe limits.
2. Sear engagement and trigger overtravel determined by design (not adjustable by customer).
3. Rifles can be unloaded with the safety in the "On Safe" position.
4. Improved trigger pull characteristics.
5. Reduction of trigger assembly costs.

Development Schedule:

- Prototypes with different design options available for inspection and testing - March 1978.
- Preferred model ready for extensive testing - July 1978
- Design complete - March 1979

SAMPLE

AL 0023568

BARBER - 1.30.130000190

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

J. S. Martin
E.J. Young
D.E. Sullis
G.D. Bailey
F.E. Martin

P. Nasypany
J.W. Brooks
D.R. Lewis

RESEARCH MEETING

November 7, 1978

SUBJECT: BOLT ACTION FIRE CONTROL

Observations

1. "Can" or "Must" condition on unloading a rifle in "ON SAFE" position. Majority feel a "Must".
2. Unload magazine box without cycling thru chamber?
3. Gun must be safe when unloaded!

Further Criteria

1. Bolt handle must be locked down with round chamber and safe on.
2. Rifle must be unloaded with safe on.
3. Trigger feel safely adjustable by customer.

JW Brooks:T
Manual Firearms Design
Ilion Research Division

AL 0016420

36 of 80

REMINGTON ARMS COMPANY
Research Department

c: J.P. McAndrews
E.G. Larson

Bridgeport, Connecticut
November 16, 1978

C.B WORKMAN
M.N WALKER
J.P ~~ERNST~~
H.D ~~ALBAUGH~~ W.R. PURSON

BOLT ACTION FIRE CONTROL - DESIGN REVIEW 11-14-78

* A gauge is being designed to check sear lift. The gauge is expected to be positive and simple enough to be used in the field. Completion of a prototype gauge is scheduled for mid-December.

* The following design requirements for a new fire control for bolt action rifles were tentatively established -

  1. Eliminate the "trick" condition. At this point the best solution appears to be adding a trigger block to the safety cam mechanism. This would prevent the trigger from moving in the "safe" position - eliminating the "fail to reset" possibility.

  2. The new fire control should be retrofittable.

  3. A bolt lock arrangement should be provided. At this point a locking device separate from the fire control appears most desirable.

  4. Adjustment for the trigger pull force should be provided for the user. Access to the adjustment should not require stock removal. Other adjustments - sear-connector engagement - should be eliminated.

* Program

  1. Marketing will conduct consumer tests of the fire control designs now in hand during December and January. These include a three position and a two position safety with an external bolt lock. A sample with the present fire control with the bolt lock removed will be included.

PLAINTIFF'S EXHIBIT 3023

AL 0014774

1 of 2

BARBER - 1.30.130000193

2. Research will complete the design investigation and select a design approach by February 1, 1979.

3. Consideration will be given to introducing the new design in a limited quantity of restyled M/600s in 1980.

* M.H. Walker will prepare a letter with his views on renaming the "safety" mechanism.

E.F. Barrett

EFBarrett:jl

ALEKSICH

AL 0014775

BARBER - 1.30.130000193

DE 24

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

cc: C. B. Workman
T. L. Capelletti
J. R. Snedeker
S. A. Fanelli
J. J. Bednard

June 24, 1981

To: J. S. Martin

From: F. E. Martin

Re: M-700 Fire Control

Test results of April 8, 1981 show that the fire control performance is acceptable. I feel more testing is needed to prove conclusively our system is best.

I will order 30 fire controls fabricated and tested. With proper priority this can be completed by October 1, 1981.

FEM:ws

PLAINTIFF'S EXHIBIT

EXHIBIT 64

IN BAR FRAMEWORK
POINTS OF VIEW
10.15.93

NEXT:

CONSENSUS ON FEATURES

THEN:

STRATEGY TO OBTAIN FEATURES

WHAT

THEN

HOW

CONCERNS TO THE BUSINESS

- LIKELIHOOD OF SUCCESSFUL EXECUTION
- PERFORMANCE PARAMETERS
- CUSTOMER ACCEPTANCE
- TIME OF DEVELOPMENT
- COST OF DEVELOPMENT

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10.22.93
From D.S.F.

M9A1 FIRECONTROL DESIGN OBJECTIVES

"TACTILE FEEL" - ? DON'T UNDERSTAND THE INTENTION HERE.

- USER "FRIENDLY" DESIGN
- IMPROVED "TACTILE FEEL" OF THE TRIGGER
- IMPROVED "TACTILE FEEL" OF THE SAFETY
- CUSTOMER ABLE TO OPEN AND CLOSE BOLT WITH SAFETY "ON"
- BOLT LOCKED DOWN IN A "S" CONDITION
- CUSTOMER ADJUSTABLE TRIGGER PULL FORCE ONLY WITHIN PRESCRIBED LIMITS
- BOLT STOP RELEASE RELOCATED WITH IMPROVED "TACTILE FEEL"
- LEFT HANDED VERSION TO BE DESIGNED
- DESIGN FOR MANUFACTURABILITY PRINCIPLES UTILIZED
- DESIGN FOR ASSEMBLY PRINCIPLES UTILIZED
- "SEALED" DESIGN
- RIFLE WILL NOT FIRE IF TRIGGER PULLED AND HELD AS SAFETY IS MOVED FROM "S" TO "F"
- ROBUST AGAINST IMPACT
- COMPEL TRIGGER TO SUPPORT POSITION IN MOVING SAFETY FROM "F" TO "S"
- "NO LUBRICATION" DESIGN
- ENHANCED CORROSION RESISTANCE

ADDITIONAL DESIGN CRITERIA:

- TWO-POSITION SAFETY
- NOT INTERCHANGEABLE OR RETROFITTABLE WITH M1911
- SHOT AS PRACTICAL TO FACILITATE INTEGRAL DELUGE INTERNAL PROCESSING.
- ROBUST AGAINST TAMPERING
- QUIET OPERATION

COMMENT
SOME USEFUL INFORMATION HAS BEEN LOST IN CONSOLIDATION TO ONE PAGE. BILL W 10.25.93

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

NEAR FIRE CONTROL DESIGN OBJECTIVES

- NON INTERCHANGABLE WITH M/700
- USER "FRIENDLY" DESIGN
- IMPROVED "TACTILE FEEL" OF THE TRIGGER
- IMPROVED "TACTILE FEEL" OF THE SAFETY (TWO POSITION)
- CUSTOMER ABLE TO OPEN AND CLOSE BOLT WITH SAFETY "ON"
- BOLT LOCKED DOWN IN A "S" CONDITION
- CUSTOMER ADJUSTABLE TRIGGER PULL FORCE ONLY WITHIN PRESCRIBED LIMITS
- BOLT STOP RELEASE RELOCATED WITH IMPROVE "TACTILE FEEL"
- LEFT HANDED VERSION TO BE DESIGNED
- DESIGN FOR MANUFACTURABILITY PRINCIPLES UTILISED
- DESIGN FOR ASSEMBLY PRINCIPLES UTILISED
- "SEALED" DESIGN ROBUST AGAINST TAMPERING
- RIFLE WILL NOT FIRE IF TRIGGER PULLED AND HELD AS SAFETY IS MOVED FROM "S" TO "F"
- ROBUST AGAINST IMPACT
- COMPEL TRIGGER TO SUPPORT POSITION IN MOVING SAFETY FROM "F" TO "S"
- "NO LUBRICATION" DESIGN
- ENHANCED CORROSION RESISTANCE

D.S Findlay
11-5-93

EXHIBIT 65

BRIEFING

RELEASE MECHANISM 10-15-13

EXPAND KNOWLEDGE

AVOID DISPARAGING DISCOVERABLE INFO.

ON CURRENT PRODUCTS. NOT: BAD to GOOD

new Product → moving toward perfection

(2) PROVIDE A FORUM TO DISCUSS FEATURES of NEW DESIGN

(1) SHARE SOME INFORMATION WITH YOU FOUND IN MY GENERAL STUDY OF RELEASE MECHANISMS

DEFINE PROBLEM

ASK: WHAT CURRENT IMPERFECTIONS ARE WE TRYING TO OVERCOME? WHAT ARE THE STRENGTHS OF THE CURRENT DESIGN.

– FSR –

DESCRIBE CHARACTERISTICS OF A SOLUTION.

LEADING TO A FRAMEWORK TO GUIDE THE TASK – CHOOSING ALTERNATIVES

OUTSIDE INFORMATION PERFORMANCE REQUIRED

- PRIORITIZED LISTING OF OBJECTIVES TO SATISFY
- DESCRIBE OBJECTIVES ACCORDING TO 5 POINTS OF VIEW: DIFFERENT, SOME IN COMMON, SOME PERHAPS MUTUALLY EXCLUSIVE
  - CUSTOMER
  - MARKETING
  - ENGINEERING
    - DESIGN
    - PROCESSING
  - MANUFACTURING
  - LIABILITY

BEGIN • RECONCILE OBJECTIVES AMONG POINTS OF VIEW. AGREEMENT.

THEN

- DEVELOP STRATEGY(IES) TO MEET OBJECTIVES example: 3 POUND PULL
- SELECT STRATEGIES AND IMPLEMENT

LAST [illegible] CUSTOM [illegible]

OTHER RESOURCES - PRIOR INFORMATION

PATENTS

- PATENT ANALYSIS

AFTE JOURNAL ARTICLES

MAGAZINE ARTICLES

DEFINITIONS:

~~[illegible]~~

- DIRECT ACTION TRIGGER
- OVER-RIDE TRIGGER

RESILIENT TRIGGER

WAY OF M700 CONNECTOR

- IMPERFECT EDGES NOT SQUARE
- TRIGGER STOPS MIN O.T. ACCOMMODATE CLEARANCE SEAR PROB.
- REDUCE HIGH CAMMING FORCE ON HOOK OF SEAR DURING OVERRIDE
- ALLOWS DIRECT MANUAL USE @ TRIGGER DURING SURGERY.

2ND { READ ATTESON ON PURPOSE OF M700 CONNECTOR: 130, 131

ON SAFETY: P 134

FIRST { M700 WEAKNESS: F.S.R. TWO EXPLANATIONS

OTHER OUTSIDE INFO: BRIEFLY not in detail, but make you aware of them.

MAIN TOPIC

EXHIBIT 65a

WAW 10/6

CUSTOMER POINT OF VIEW

HIGH "EASE OF USE"

- QUICK TO FIND
- EASY TO OPERATE
- EASY TO UNDERSTAND
- RELIABLE TO OPERATE

- EASY TO USE WITH 'SCOPE
- CRISP TRIGGER PULL
- MINIMUM CREEP
- HIS OWN PERCEPTION OF "WHAT IS"

MEDIUM

- QUIET OPERATION
- MINIMUM BACKLASH (feedback)
- SINGLE STAGE PULL
- EASILY KNOWN STATUS ("S" OR "F")
- PLEASING APPEARANCE
- ADJUSTABLE FOR WEIGHT OF PULL

LOW

- LOCATION OF SAFETY (CONSISTENT WITH EASE OF USE)
- HOW MECHANISM PREVENTS UNINTENDED FIRING - WHAT IT BLOCKS
- MINIMUM TRIGGER OVER-TRAVEL

10/15/93
WAW

MARKETING POINT OF VIEW

HIGH

- RESPONSIVE TO THEIR ASSESSMENT OF WRITERS' & CUSTOMERS' PERCEPTIONS OF REALITY.
- AVOID MULTIPLE FEATURE OPTIONS WHICH WOULD COMPOUND/CONFUSE SALES / INVENTORIES
- PRESERVE PRODUCTION CAPABILITY TO SATISFY M700 DEMAND
- EASY TO UNDERSTAND AND USE
- USER ABLE TO OPEN [AND CLOSE] BOLT IN A SAFE CONDITION ("3-POSITION SAFETY")
- BOLT LOCKED DOWN IN "S" CONDITION

MEDIUM

- CUSTOMER-ADJUSTABLE TRIGGER PULL FORCE ONLY DOWN TO MINIMUM SATISFACTORY LEVEL
- NOT ADJUSTABLE EXTERNALLY
- BOLT STOP RELEASE AWAY FROM "IN FRONT OF TRIGGER"
- NO SAFETY ON TANG
- LEFT-HAND VERSION (12-15% OF MARKET)

LOW

- FIELD-CONVERTIBLE FOR OPERATION WITH OR WITHOUT BOLT LOCK

NOT

- MAGAZINE-BOX DISCONNECT SYSTEM

R2521318

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KINZER V. REMINGTON

WAW
10.15.93

MANUFACTURING POINT OF VIEW

HIGH

- INTERCHANGEABILITY OF COMPONENTS AT SUB-ASSEMBLY AND FINAL ASSEMBLY.
- SATISFACTORY PERFORMANCE WITH NORMALLY-ACHIEVED TOLERANCES
- ONLY NORMAL TRAINING AND DEXTERITY REQUIRED TO PROCESS

MEDIUM

- READY-TO-ASSEMBLE SUB-ASSEMBLIES AT FINAL ASSEMBLY
- DESIGNED TO PREVENT INCORRECT ASSEMBLY OF COMPONENTS

LOW

- READILY REWORKABLE/SALVAGABLE

10.15.93
WAW

LIABILITY — POINT OF VIEW

HIGH

- AVOID PATENT INFRINGEMENT
- NOT INTERCHANGEABLE OR RETROFITTABLE TO M700
- TWO POSITION "S" & "F"
- SEALED UNIT; REQUIRING NO ORIGINAL OR FIELD LUBRICATION
- ROBUST AGAINST IMPACT - EXCEED SAAMI/ANSI RECCOMENDATIONS BY WIDE MARGIN
- USER OPERATION CONSISTENT WITH PRECEDENT AND CONVENTION.
- ROBUST AGAINST EFFECTS OF TAMPERING/ ADJUSTING
- HIGHLY INTUITIVE OPERATION

MEDIUM

- READILY DEFENSIBLE REASONS FOR DEPARTURE FROM CURRENT DESIGN

2. • CONVERTIBLE & REVERSIBLE BOLT LOCK

2. • INTERLOCK: WILL NOT FIRE IF TRIGGER IS PULLED AND HELD AS SAFETY S → F

10.15.93
WAW

ENGINEERING PROCESS/AS POINT OF VIEW

HIGH

- SHORT RECEIVER
- MACHINES, TOOLING, PROCESSES CONSISTENT WITH EXPECTED VOLUME
- HIGH-YIELD OPERATIONS
- MAINTAIN M200 PRODUCTION CAPACITY

MEDIUM

- DESIGN TO INHIBIT/PREVENT INCORRECT ASSEMBLY OF COMPONENTS
- DESIGN TO PERMIT REWORK/SALVAGE

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

10-15-93
WAW

ENGINEERING DESIGN POINT OF VIEW

HIGH

- SHORT DIMENSIONS PARALLEL TO CL BBL
- AVOID ANY REASON TO PUT FINGER WITHIN TRIGGER GUARD EXCEPT TO INTENTIONALLY FIRE
- EASY TO UNDERSTAND - HIGHLY INTUITIVE OPERATION
- REALITY VS. PERCEPTION RECONCILED THRU ACTUAL TESTING/PERFORMANCE
- PRESERVE ADVANTAGES OF RESILIENT (CONNECTOR) FUNCTION
- DO NOT USE GEAR AS BOLT STOP OR APPLY BOLT STOP IMPACT TO ASSEMBLY
  - REDUCED LOCK TIME
- ACTUATE SAFETY WITH BOLT OPEN

MEDIUM

- QUIET OPERATION
- ENHANCED CORROSION RESISTANCE
- COMPEL TRIGGER TO SUPPORT POSITION IN MOVING SAFETY F → S
- FULL TRIGGER RETRACTION UPON PARTIAL PULL
- MEANS TO PREVENT INCORRECT ASSEMBLY/RE-ASSEMBLY OF COMPONENTS

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

WAW 10/5

CUSTOMER POINT OF VIEW

HIGH "EASE OF USE"

- QUICK TO FIND
- EASY TO OPERATE
- EASY TO UNDERSTAND
- RELIABLE TO OPERATE
- EASY TO USE WITH 'SCOPE
- CRISP TRIGGER PULL
- MINIMUM CREEP
- HIS OWN PERCEPTION OF "WHAT IS"

MEDIUM

- QUIET OPERATION
- MINIMUM BACKLASH (feedback)
- SINGLE STAGE PULL
- EASILY KNOWN STATUS ("S" OR "F")
- PLEASING APPEARANCE
- ADJUSTABLE FOR WEIGHT OF PULL

LOW

- LOCATION OF SAFETY (CONSISTENT WITH EASE OF USE)
- HOW MECHANISM PREVENTS UNINTENDED FIRING - WHAT IT BLOCKS
- MINIMUM TRIGGER OVER-TRAVEL

10·15·93
WAW

MARKETING POINT OF VIEW

HIGH

- RESPONSIVE TO THEIR ASSESSMENT OF WRITERS' & CUSTOMERS' PERCEPTIONS OF REALITY.
- AVOID MULTIPLE FEATURE OPTIONS WHICH WOULD COMPOUND/CONFUSE SALES / INVENTORIES
- PRESERVE PRODUCTION CAPABILITY TO SATISFY M700 DEMAND
- EASY TO UNDERSTAND AND USE
- USER ABLE TO OPEN [AND CLOSE] BOLT IN A SAFE CONDITION ("3-POSITION SAFETY")
- BOLT LOCKED DOWN IN "S" CONDITION

MEDIUM

- CUSTOMER-ADJUSTABLE TRIGGER PULL FORCE ONLY DOWN TO MINIMUM SATISFACTORY LEVEL
- NOT ADJUSTABLE EXTERNALLY
- BOLT STOP RELEASE AWAY FROM "IN FRONT OF TRIGGER"
- NO SAFETY ON TANG
- LEFT-HAND VERSION (12-15% OF MARKET)

LOW

- FIELD-CONVERTIBLE FOR OPERATION WITH OR WITHOUT BOLT LOCK

NOT

- MAGAZINE-BOX DISCONNECT SYSTEM

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130000212

WAW
10.15.93

MANUFACTURING POINT OF VIEW

HIGH

- INTERCHANGEABILITY OF COMPONENTS AT SUB-ASSEMBLY AND FINAL ASSEMBLY.
- SATISFACTORY PERFORMANCE WITH NORMALLY-ACHIEVED TOLERANCES
- ONLY NORMAL TRAINING AND DEXTERITY REQUIRED TO PROCESS

MEDIUM

- READY-TO-ASSEMBLE SUB-ASSEMBLIES AT FINAL ASSEMBLY
- DESIGNED TO PREVENT INCORRECT ASSEMBLY OF COMPONENTS

LOW

- READILY REWORKABLE/SALVAGEABLE

10·15·93
WAW

LIABILITY POINT OF VIEW

HIGH

- AVOID PATENT INFRINGEMENT
- NOT INTERCHANGEABLE OR RETROFITTABLE TO M700
- TWO POSITION "S" & "F"
- SEALED UNIT; REQUIRING NO ORIGINAL OR FIELD LUBRICATION
- ROBUST AGAINST IMPACT - EXCEED SAAMI/ANSI RECCOMENDATIONS BY WIDE MARGIN
- USER OPERATION CONSISTENT WITH PRECEDENT AND CONVENTION.
- ROBUST AGAINST EFFECTS OF TAMPERING/ ADJUSTING
- HIGHLY INTUITIVE OPERATION

MEDIUM

- READILY DEFENSIBLE REASONS FOR DEPARTURE FROM CURRENT DESIGN

?. • CONVERTIBLE & REVERSIBLE BOLT LOCK

?. • INTERLOCKS WILL NOT FIRE IF TRIGGER IS PULLED AND HELD AS SAFETY S → F

10.15.93
WAW

ENGINEERING PROCESSING POINT OF VIEW

HIGH

- SHORT RECEIVER
- MACHINES, TOOLING, PROCESSES CONSISTENT WITH EXPECTED VOLUME
- HIGH-YIELD OPERATIONS
- MAINTAIN M700 PRODUCTION CAPACITY

MEDIUM

- DESIGN TO INHIBIT/PREVENT INCORRECT ASSEMBLY OF COMPONENTS
- DESIGN TO PERMIT REWORK/SALVAGE

10.15.93
WAW

ENGINEERING DESIGN POINT OF VIEW

HIGH

- SHORT DIMENSIONS PARALLEL TO CL BBL
- AVOID ANY REASON TO PUT FINGER WITHIN TRIGGER GUARD EXCEPT TO INTENTIONALLY FIRE
- EASY TO UNDERSTAND - HIGHLY INTUITIVE OPERATION
- REALITY VS. PERCEPTION RECONCILED THRU ACTUAL TESTING/ PERFORMANCE
- PRESERVE ADVANTAGES OF RESILIENT (CONNECTOR) FUNCTION
- DO NOT USE SEAR AS BOLT STOP OR APPLY BOLT STOP IMPACT TO ASSEMBLY
  - REDUCED LOCK TIME
- ACTUATE SAFETY WITH BOLT OPEN

MEDIUM

- QUIET OPERATION
- ENHANCED CORROSION RESISTANCE
- COMPEL TRIGGER TO SUPPORT POSITION IN MOVING SAFETY F→S
- FULL TRIGGER RETRACTION UPON PARTIAL PULL
- MEANS TO PREVENT INCORRECT ASSEMBLY/ RE-ASSEMBLY OF COMPONENTS

WAW 10/6

CUSTOMER POINT OF VIEW

HIGH "EASE OF USE"

- QUICK TO FIND
- EASY TO OPERATE
- EASY TO UNDERSTAND
- RELIABLE TO OPERATE

- EASY TO USE WITH 'SCOPE
- CREEP TRIGGER PULL
- MINIMUM CREEP
- HIS OWN PERCEPTION OF "WHAT IS"

MEDIUM

- QUIET OPERATION
- MINIMUM BACKLASH (feedback)
- SINGLE STAGE PULL
- EASILY KNOWN STATUS ("S" OR "F")
- PLEASING APPEARANCE
- ADJUSTABLE FOR WEIGHT OF PULL

LOW

- LOCATION OF SAFETY (CONSISTENT WITH EASE OF USE)
- HOW MECHANISM PREVENTS UNINTENDED FIRING - WHAT IT LOCKS
- MINIMUM TRIGGER OVER-TRAVEL

10-15-93
WAW

MARKETING POINT OF VIEW

HIGH

- RESPONSIVE TO THEIR ASSESSMENT OF WRITERS' & CUSTOMERS' PERCEPTIONS OF REALITY.
- AVOID MULTIPLE FEATURE OPTIONS WHICH WOULD COMPOUND/CONFUSE SALES / INVENTORIES
- PRESERVE PRODUCTION CAPABILITY TO SATISFY M700 DEMAND
- EASY TO UNDERSTAND AND USE
- USER ABLE TO OPEN [AND CLOSE] BOLT IN A SAFE CONDITION ("3-POSITION SAFETY")
- BOLT LOCKED DOWN IN "S" CONDITION

MEDIUM

- CUSTOMER-ADJUSTABLE TRIGGER PULL FORCE ONLY DOWN TO MINIMUM SATISFACTORY LEVEL
- NOT ADJUSTABLE EXTERNALLY
- BOLT STOP RELEASE AWAY FROM "IN FRONT OF TRIGGER"
- NO SAFETY ON TANG
- LEFT-HAND VERSION (12-15% OF MARKET)

LOW

- FIELD-CONVERTIBLE FOR OPERATION WITH OR WITHOUT BOLT LOCK

NOT

- MAGAZINE-BOX DISCONNECT SYSTEM

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BARBER - 1.30.130000218

WAW 10-15-93

MANUFACTURING POINT OF VIEW

HIGH

- INTERCHANGEABILITY OF COMPONENTS AT SUB-ASSEMBLY AND FINAL ASSEMBLY.
- SATISFACTORY PERFORMANCE WITH ASSEMBLY-ACHIEVED TOLERANCES
- ONLY NORMAL TRAINING AND DEXTERITY REQUIRED TO PROCESS

MEDIUM

- READY-TO-ASSEMBLE SUB-ASSEMBLIES AT FINAL ASSEMBLY
- DESIGNED TO PREVENT INCORRECT ASSEMBLY OF COMPONENTS

LOW

- READILY REWORKABLE/SALVAGABLE

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KINZER V. REMINGTON

10-15-93
WALL

LIABILITY POINT OF VIEW

HIGH

- AVOID PATENT INFRINGEMENT
- NOT INTERCHANGEABLE OR RETROFITTABLE TO M700
- TWO POSITION "S" & "F"
- SEALED UNIT; REQUIRING NO ORIGINAL OR FIELD LUBRICATION
- ROBUST AGAINST IMPACT - EXCEED SAAMI/ANSI RECCOMENDATIONS BY WIDE MARGIN
- USER OPERATION CONSISTENT WITH PRECEDENT AND CONVENTION.
- ROBUST AGAINST EFFECTS OF TAMPERING/ ADJUSTING
- HIGHLY INTUITIVE OPERATION

MEDIUM

- READILY DEFENSIBLE REASONS FOR DEPARTURE FROM CURRENT DESIGN

?. • CONVERTIBLE & REVERSIBLE BOLT LOCK

?. • INTERLOCK: WILL NOT FIRE IF TRIGGER IS PULLED AND HELD AS SAFETY S → F

(1) SAFETY WONT MOVE IF TRIGGER IS HELD OR

OR

(2) SAFETY WILL MOVE BUT TRIGGER MUST THEN BE RELEASED AND PULLED TO CAUSE FIRING.

10.15.93
WAW

ENGINEERING PROCESSING POINT OF VIEW

HIGH

- SHORT RECEIVER
- MACHINES, TOOLING, PROCESSES CONSISTENT WITH EXPECTED VOLUME
- HIGH-YIELD OPERATIONS
- MAINTAIN M200 PRODUCTION CAPACITY

MEDIUM

- DESIGN TO INHIBIT/PREVENT INCORRECT ASSEMBLY OF COMPONENTS
- DESIGN TO PERMIT REWORK/SALVAGE

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BARBER - 1.30.130000221

10·15·93
WAW

ENGINEERING DESIGN POINT OF VIEW

HIGH

- SHORT DIMENSIONS PARALLEL TO CL BBL
- AVOID ANY REASON TO PUT FINGER WITHIN TRIGGER GUARD EXCEPT TO INTENTIONALLY FIRE
- EASY TO UNDERSTAND – HIGHLY INTUITIVE OPERATION
- REALITY VS. PERCEPTION RECONCILED THRU ACTUAL TESTING/PERFORMANCE
- PRESERVE ADVANTAGES OF RESILIENT (CONNECTOR) FUNCTION
- DO NOT USE GEAR AS BOLT STOP OR APPLY BOLT STOP IMPACT TO ASSEMBLY
  - REDUCED LOCK TIME
- ACTUATE SAFETY WITH BOLT OPEN

MEDIUM

- QUIET OPERATION
- ENHANCED CORROSION RESISTANCE
- COMPEL TRIGGER TO SUPPORT POSITION IN MOVING SAFETY F → S
- FULL TRIGGER RETRACTION UPON PARTIAL PULL
- MEANS TO PREVENT INCORRECT ASSEMBLY/RE-ASSEMBLY OF COMPONENTS

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

EXHIBIT 51

08/16/83 13:49 ☎1 315 895 3870 REMINGTON ARMS ☎001/003

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 2

To Jay Barney	From Mike Keeley
Co. Remington	Co.
Dept.	Phone # 315 895-3567
Fax # 382-2244-5776	Fax # 315 895 3622

NBAR SPECIFICATIONS
(Tentative)

A. HIGH GRADE - Carbon Steel/Wood

Barrel/Receiver: (Note: Barrel and Receiver will be Integral)

Material: Chrome-Moly Steel
Barrel Length: 21" and 24" (dependent on cal.)
Barrel Contour: Common for all calibers
Muzzle: Recessed Crown
Rifling: Forged
Locking System: Tri-Lug (60 deg. Bolt Rotation)
Receiver Length: Short and Long Action
Receiver Geometry: Right and Left Hand
Scope Mount: Drilled and Tapped for " Remington Scope Mount System"
Finish: Satin Finish/Black Oxide
Sights: Open Sights not supplied (Barrel to be drilled and tapped for current Remington Rifle Sights)

Bolt Assembly:

Extractor: External Claw System
Ejector: Plunger Style
Bolt Handle: Investment Casting, Laser Welded to Bolt Body
Bolt Plug: Enclosed Firing Pin Head
Finish: Satin Finish/Black Oxide with Jeweling

Stock Assembly:

Material: Walnut
Style: Classic w/ Cheek Piece
Finish: Satin
Recoil Pad: Black/Solid
Fore-end Tip: Black
Grip Cap: Black
Checkering: Cut
Reinforcements: Rivets w/ Black Inserts
Sling Swivels: Supplied w/ Firearm

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KINZER V. REMINGTON

BARBER - 1.30.130000224

Scope Mount System:

Material: M.I.M.
Finish: Satin Finish/Black Oxide
Note: Scope Mount and Ring Base will be an integral component.

Additional Items:

Detachable Magazine Box
Externally Operated Bolt Stop
Optional Bolt Lock
Adjustable Trigger Assembly
Recoil/Bedding Insert to be epoxied into the stock assembly

B. MEDIUM GRADE - Stainless Steel/Synthetic

Note: All specifications are as stated previously except for the following.

Barrel/Receiver:

Material: Stainless Steel
Finish: Satin Finish
No Sights: Barrel not to be drilled and tapped

Bolt Assembly:

Finish: Satin Finish/No Jeweling

Stock Assembly:

Material: Synthetic, Black
Style: Classic w/ Cheek Piece and Beaver Tail Fore-end
Checkering: Molded

Scope Mount System:

Finish: Satin Finish/Nickel Plated

MDK 9/14/92

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KINZER V. REMINGTON

EXHIBIT 17

From: COLEMAWH--ISCDCVM1 Date and time 06/17/91 08:22:49
To: SOUCYKW --ISCDCVM1 K.W.SOUCY, REM., I MUNSONHC--ISCDCVM1 H.C.MUNSON
JACKSORA--ISCDCVM1 R. A. JACKSON; REM

From: William Coleman REM, Ilion NY, 8-2461-318
Subject: JUNE & FOLLOW-UP ITEMS
*** Forwarding note from REM470 --ISCDCVM1 06/13/91 09:28 ***

To: WINSKE3F (PROFS ID COLEMAWH at ISCDCVM1)
From: JAY BUNTING (Sales Link ID 0470)

REPLY FROM JAY BUNTING:
* I BELIEVE WE SHOULD HAVE OUR NAME AND PART NUMBER ON THE 25 ROUND BOX FROM RAMLINE.
* I SUPPORT YOUR POSITION ON KWIK KLIP...BUT STRESS THAT WE NEE A BOX MAGAZINE PRODUCT IN OUR CENTERFIRE BOLT ACTION LINE ASAP. LATEST RESEARCH COMPILED BY THE NSGA SHOWS REMINGTON'S SHARE DROPPING 6PTS 25% SINCE 1989. BIG WINNERS: BROWNING +4%, SAVAGE +3%, RUGER +3% STAINLESS IS A MAJOR ISSUE IN ALL CASES.
* M522 MAGAZINE FOLLOWER -- LETS USE SAME RED AS REST OF GUN, I.E. COCKING INDICATOR ECT . OLDRIDGE OKAYS THIS ON BEHALF OF SALES.
* M90-T ISSUES. WHO IS THE MASTER SCHEDULER? NEED DEDICATED BODY.

ORIGINAL MESSAGE TO JAY BUNTING FROM PROFS USER:
MSG:FROM: COLEMAWH--ISCDCVM1 TO: REM470 --ISCDCVM1 06/10/91 15:57:42
TO: REM313 --ISCDCVM1 A.W.WHEATON REM324 --ISCDCVM1 V. ROMANO, REMINGT
OLDRIDNL--ISCDCVM1 NEIL L. OLDRIDGE REM470 --ISCDCVM1 JAY BUNTING

FROM: WILLIAN COLEMAN REM, ILION NY, 8-2461-318
SUBJECT: JUNE & FOLLOW-UP ITEMS

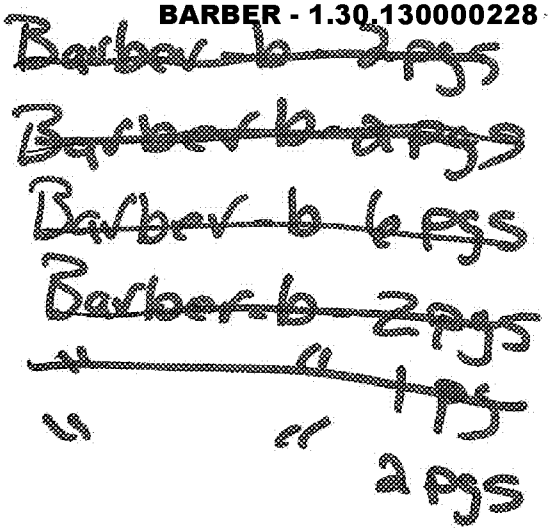
0 M/522 VIPER MAGAZINE BOX: WE CONTACTED RAMLINE AND WILL HAVE THEM IN TO ILION. THEY MAKE A 25 ROUND BOX FOR MARLIN WHICH WE THINK COULD BE MODIFIED FOR M/522. QUESTION: THEY PUT MARLIN'S NAME AND PART NUMBER ON THAT BOX. WOULD WE WANT REMINGTON ON THE BOX &/OR A PART NUMBER??

0 M/700 WITH KWIK KLIP: ELLET BROS SAID THEY DON'T CARRY THIS ANY MORE BECAUSE THEY HAD TOO MANY PROBLEMS WITH THEM. CREEKSIDE SAID THEY COULDN'T GET THEM. APPARENTLY MANY PROBLEMS WITH PROPER INSTALLATION. ALSO SOUNDS LIKE TREXLER HAS MINIMAL CAPACITY. WE WILL CHECK FURTHER. "NOT INVENTED HERE" IS NOT A PROBLEM, HONEVER WE DON'T WANT TO PROMOTE SOMEONE ELSES PRODUCT IF IT IS GOING TO BUY US A LOT OF PROBLEMS.

0 M/522 MAGAZINE FOLLOWER: WHAT COLOR DO YOU WANT. ORIGINALLY WAS GREEN TO INDICATE SAFE WHEN LOOKING IN THE CHAMBER. CHANGED TO BLACK AT NEIL'S REQUEST. RED WOULD PARTIALLY SHOW THRU THE SLOT IN THE MAGAZINE WHEN ONE ROUND OR MORE WAS IN THE BOX. SOME SERIOUS THOUGHT SHOULD GO INTO THIS DECISION AND WE NEED THE ANSWER QUICKLY.

0 M/11-87 SPORTING CLAYS: PLEASE PROVIDE DATA ASAP ON INCREMENTAL SALES FOR TAPER RIB AND NEW STOCK FORMER FOR 1/4 INCH HEEL CHANGE. TAPER COST $94K OVER WIDE RIB AND STOCK FORMER IS $50K.

0 M/90T: DON MAINLAND REALLY NEEDS US TO GIVE HIM SOME BLANKET ORDERS FOR STANDARD CONFIGURATION GUNS TO KEEP PRODUCTION GOING. MADE TO ORDER ORDERS REQUIRE THAT HE RECEIVE MATCHING WOOD FROM FAJEN BEFORE HE CAN FILL THE ORDER. WE ALSO NEED TO SPEED UP THE PROCESS OF GETTING NEW SPECIAL ORDERS TO BOTH COMP. ARMS AND FAJEN SO THEY CAN PLAN AHEAD IF WE HAVE ANY DESIRE TO MEET



January 2, 1989

To: W.C.Douglas

From: B.S.Murphy/T.G.Bauman

Subject: December Monthly Report - NSAR

Little has been done on the NSAR in the previous month save for the development of a schedule outlining an ambitious path forward and some conceptualization of firecontrol, magazine latch and scope mount systems. Tom Bauman's time has been devoted entirely to the SP-10 Mag. and my time has been divided between the Packer and the Single Barrel Trap Gun.

The schedule that we developed follows and is based on a number of assumptions. Among these:

- o Tom Bauman's involvement with the SP-10 Mag. will be "limited" in 1989.
- o My involvement with the Packer and the SBT will not cause any conflicts.
- o The Model Shop and N/C group can supply timely turnaround of prototypes.
- o The Test Lab can supply timely turnaround of required testing.
- o The firecontrol is the critical path item to be developed. This assumes that the untested magazine box designed by Dick Jackson will feed properly.

I described this schedule as ambitious since it presupposes the best case scenario for each of these assumptions. Tom and I will try to adhere to this schedule but it is important that we all realize the potential stumbling blocks.

NSAR Critical Path Schedule

Firecontrol

First Design	Mar. 1 89	2 mos.
Prototype (3)	Apr. 1 89	1 mo.
Engineering Evaluation	June 1 89	2 mos.
Redesign	July 1 89	1 mo.
Quotation & Economics	Oct. 1 89	3 mos.
Prototype (10)		
- Vendor Parts	Apr. 1 90	6 mos.
Test & Redesign	May 15 90	6 mos.
Build 50 Design Accept. and Trial and Pilot	Feb. 15 91	9 mos.
P & P Testing	Apr. 15 91	2 mos.

This is a list of the NSAR features, (that represent our design goals), in order of priority.

R2518494

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KINZER V. REMINGTON

- Detachable Magazine Box
- Improved Firecontrol
  - 90 Connector
  - Two Trigger Pull Springs (low spring rate)
  - "Sealed Firecontrol"
  - Balanced Trigger
  - Trigger and Sear Block
  - Not Retrofittable to M/700
- Bolt Lock w/override
- Integral Scope Mounts
- New Extractor
- New "Custom Shop" Barrel Contour
  - Mountain Rifle Crown
- Improved Bedding System
- M/700 receiver, cosmetically altered
- New Wood Stock

Dale Danner

From: Diaz, Danny
Sent: 04/30/2002 10:41:03 AM
To: Cohen, Anne; dwills@smbtrials.com; Danner, Dale; Schluckebier, David; Norwood, Laura; Keeney, Mike; Jarboe, Brent; James, Will; Stone, Jeff; Norton, Vince
CC:
BCC:
Subject: Friday, May 3, 2002; Meeting Agenda

09:30 - 10:15	BBIS Modifications	Mike Keeney
10:15 - 12:00	Gas Shotgun	G.A.S. Team
12:00 - 01:00	Lunch & Records Retention	Attorneys & R&D Management Team
01:00 - 01:45	M/700 Firecontrol	Jim Ronkainen
01:45 - 03:00	New Bolt Action Rimfire	NBARR Team

Firearms guys, we will stick to lunch at 12:00 and adjust the schedule as necessary. Please be flexible and stay in the building.

Any questions please let me know.

Thanks,
DDD

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WILLIAMS V. REMINGTON

REMINGTON RESEARCH
ORGANIZATION CHART
JANUARY 1, 1987

DIRECTOR - F&FP RESEARCH & DEVELOPMENT DIVISION	R A DARBY
	MARY RYAN
LABORATORY DIRECTOR - REMINGTON	W F COLEMAN, II
	+ BETTY RATHBUN
	+ SUSAN SAUNDERS
SUPERVISOR	T C DOUGLAS
RESEARCH ENGINEER	K C ROWLANDS
ENGINEER	S R FRANZ
ENGINEER	R S MURPHY
ENGINEER	T P POWERS
ENGINEER	J W RONKAINEN (ESD)*
ENGINEER	W A WARREN
DESIGNER	T G BAUMAN
DESIGNER	P E MARTIN
DESIGNER	S R OWENS
DRAFTSMAN	* R SMITESON
RESEARCH SUPERVISOR (SPECIAL ASSIGNMENT)	C E RITCHIE **
SR. DESIGNER (PROCESS DEV)	A BASSCIUK
ENGINEER	G CHETOSKY (ESD) **
CONSULTANT - LITIGATION	W L ERICSON
SR. RESEARCH ENGINEER	J C BUTTON
DESIGNER	J H HENNINGS

* Non/Exempt + Non/Exempt-Excludable (M) Wage Roll

** LEAVING 1ST QUARTER OF 1987

4 of 5

AL 04287

cc. Dave Fear

REMINGTON ARMS COMPANY, INC.

INTEROFFICE COMMUNICATION

TO:

FROM:

DATE: May 14, 1992

SUBJECT: SPORTING GOODS SUPPORT COSTS

The attached exhibit shows by year (1989 through the 1992 Rev 1 estimate) a breakdown of administrative support costs for Sporting Goods. Total support costs have increased from $24.6 million in 1989 to $26.2 million forecasted for the 1992 Rev 1. The $1.6 million increase in cost has been due to a $3.1 million increase of inside/outside legal expense and a $1.0 million increase in system development costs. These cost increases were partially offset by a $2.5 reduction in all other support costs. The decrease in all other support costs was primarily due to a $4.4 million reduction in DUCS/administrative charges from DuPont/Conoco partially offset by the increase in costs associated with the functions acquired from the DuPont staffs.

Excluding legal costs and systems development costs, total support costs as a percent of sales declined from 5.6% in 1989 to 4.6% in 1992 Rev 1. The following table compares 1989 support costs by function with 1992 Rev 1:

	1989	1992 Rev 1	Increase (Decrease) $	Increase (Decrease) %
	$MM			
Sales	355.9	377.6	21.7	6
Finance Function	4.9	4.4	(0.5)	(10)
Human Resources	2.9	3.1	0.2	7
ML&S	3.0	2.2	(0.8)	(27)
Information Systems*	5.4	4.8	(0.6)	(11)
Admin & Services	1.8	1.1	(0.7)	(39)
Customer Services	1.7	1.7	-	
External Affairs	0.1	-	(0.1)	(100)
Subtotal	19.8	17.3	(2.5)	(13)
System Development	-	1.0	1.0	-
Legal	4.8	7.9	3.1	65
TOTAL	24.6	26.2	1.6	6

Support costs for Sporting Goods include the administrative expenses at Wilmington and the plants. Data for the years 1989-1991 was reconstructed based on the 1992 organizational structure and accounting practices, i.e., sales forecasting costs are part of Marketing Department expense in 1992; therefore, these expenses were excluded from the study of administrative costs. System development costs have been highlighted in this study to show the one-time cost of obtaining self-sufficiency.

Based on our experience to date, we should be able to further reduce our administrative costs as we become self-sufficient. Our ability to reduce legal costs will be a key cost reduction factor. Approximately $6.4 million or 80% of our total legal costs are for outside expenses. Product liability expenses account for about 62% of total legal costs.

If you have any questions concerning this analysis, please advise.

RBIS/kg

Attachment

cc:

VERSION A

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

August 29, 1986

TO: W.H. Coleman, II

FROM: W.L. Ericson

Item for Quarterly R & D Report

As you requested, I would suggest the following item for inclusion in the report:

New Products Research continues its substantial efforts in contributing to the defense of product liability litigation. In the past quarter, expert witnesses from Research were instrumental in the successful defense of the Lugo v. Remington (M/788) and Head v. Remington (M/7400) trials. Although the Atchley v. Remington (M/7400) trial terminated with a hung jury, eleven of the twelve members of the jury were convinced that Remington was blameless. Research personnel also exerted great diligence in the defense of the Baughtman v. Remington (M/1100), Lewy v. Remington (M/700) and Simpson v. Remington (M/552) trials. Although these three trials ended with either adverse judgments or settlement payments, the amounts of these unavoidable losses may have been greatly reduced by the efforts of the Remington witnesses.

WL Ericson

WLE:spa

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KINZER V. REMINGTON

File - Quarterly Report VERSION B
(NOT used)

RO-41-8

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

ILION, NEW YORK
SEPTEMBER 2, 1985

TO: W. H. COLEMAN, II

FROM: W. L. ERICSON

Item for Quarterly R & D Report

New Products Research continues its substantial efforts in contributing to the defense of product liability litigation. One senior engineer and one designer devote the bulk of their time to appearing as expert witnesses at trials; to responding to plaintiffs' interrogatories and requests for documents; to developing exhibits and product tests to be used as evidence; and to participating in the development of the technical aspects of Remington's defense strategies. They appeared as defense witnesses in six major trials in the past quarter, ~~including the Lugo (M/788), Reed (M/7400), Atchley (M/7400), Boughtman (M/1100), Lewy (M/700) and Simpson (M/522) trials.~~

New Products Research also affords the facilities and personnel of the Photo and Test Lab for conducting examinations of fireams in litigation, and of the Model Shop for preparing cutaway firearms and other trial exhibits.

W. L. Ericson

WLE:bjr

SHOTGUN PRODUCT DEVELOPMENT - Contd.

* New Generation Autoloading Shotgun

The product development team has been assigned:

- K.C. Rowlands - Technical Leader
- S.R. Franz
- R.S. Murphy
- J.A. Lawrence
- E.W. Yetter

The program objective and potential goals were outlined on July 11. Team assignments have been made towards completing the basic data package by October.

RIFLE PRODUCT DEVELOPMENT

* Model 700 Mountain Rifle

The M/C Shop work on the stock has been stopped pending the receipt of a tool drawing. PE&C is preparing the drawing and is aware of a possible delay.

* New Bolt Action Rifle

A Marketing-Research meeting was held July 17 and a preferred design was selected. Questions remain regarding legal implications of the bolt lock, and customer preferences for the magazine box and bolt handle styling. Marketing will address these questions and supply estimated volumes and pricing.

A review with the business strategy team is expected in August.

* Model 7400 Functional Improvements

Research efforts to improve chambering, extraction, and feeding are continuing. The EDL work request to investigate chamber finish and friction has been approved and work has started. Prototype single lip stamped magazine boxes are in the Test Lab and work on the mold for a synthetic box is progressing.

Research Department

July 1984

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KINZER V. REMINGTON

BARBER - 1.30.130000238

cc: R.E. Fields
C.B. Workman
J.W. Bower
W.L. Tomek
R.L. Sassone
J.R. Snedeker
J.C. Hutton

LIMITED DISTRIBUTION

REMINGTON ARMS COMPANY, INC.

NEW PRODUCTS RESEARCH

MONTHLY PROGRESS REPORT -- JULY, 1984

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KINZER V. REMINGTON

BARBER - 1.30.130000238

cc: G.D. Sietsema
A.A. Pestar
J.M. Kostrubanic
L.W. Baum
S. Shah - Hazen

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

June 26, 1992

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

M E M O R A N D U M

TO: K.W. SOUCY

FROM: F.E. SCHMIDT, JR.

SUBJECT: JUNE MONTHLY REPORT

This month focused on O/U Metallurgical Processing for trial and pilot evaluation. Specifically, all prototype forging, heat treatment, brazing, welding, and stress relief must be debugged by August 1. Trial and pilot manufacturing can then be run in production for qualification testing. To date, our experimental evaluation of 4140 resulfurized steel is on schedule.

Other significant activities are listed below:

- Theory of Constraints - I attended the MVQIC Course on the 'GOAL' on June 17, 1992. Mr. John C. Heiman presented an excellent (A.M) Program; the (P.M) Program on applications was poor because of a lack of focus to a specific case study.

- Plant Assistance - During June, assistance was provided to both Shotgun and Centerfire Teams. The main focus was to audit fire control production operations and electroplating optimization on new products.

- Model Drawings for SS 700 were reviewed and approved including Mylar originals returned from Legal.

General

The June TECH BRIEF on 'Coatings For Tooling' by Gary Vergason of VTI was a key update on an important manufacturing opportunity. Follow-up sessions were held to explore R&D and plant applications.

The July TECH BRIEF is scheduled for July 16th on the subject 'Design Guidelines From Machine To Investment Cost Components', by Gray-Syracuse, Inc.

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KINZER V. REMINGTON

CONFIDENTIAL

cc: G.D. Sietsema
A.A. Pestar
J.M. Kostrubanic

May 5, 1992

M E M O R A N D U M

TO: K.W. SOUCY

FROM: F.E. SCHMIDT, JR.

SUBJECT: APRIL MONTHLY REPORT

This month was focused on trial and pilot analysis of the Marine Magnum shotgun. As a result, the final drawings with plating specification have been validated and released to production. Internal materials processing, inspection, quality control and salt fog procedures have been prepared by G.D. Sietsema and will be approved early May.

Litigation - The metallurgical issues were abandoned in both the Morris v. and Foust v. Remington Cases. In the Foust Case, this resulted in an outright dismissal of all allegations. Shotgun barrel chamber burst cases have all been rescheduled out beyond 1992 by the plaintiffs.

Plant Assistance - Metallurgical assistance this month has focused on three areas: raw materials certification, heat treating procedures and machinability issues. During May, we expect to focus on Model 700 stainless steel optimization.

General - The TECH BRIEF on Plating Technology was held April 14 by Lloyd Ploof of H.H. Quackenbush, Inc. The meeting was very positive with 38 in attendance, including an equal mix of Production, Service and R&D personnel. The May TECH BRIEF will feature Win Welch of Metal Improvement Co., Inc. on Shot Peening Application for Engineering and Cosmetic Finishing.

Two technical papers were submitted to ASM International for the first annual ASM Monograph on Failure Analysis:

- Erosion Failure of Stainless Steel Cost Pump Impeller in Brine, and
- Fatigue Failure of AISI Type 4037 Stud Bolts

Both papers were authored by Sietsema and Schmidt. The main value of the publication to Remington Arms is certification of our professionals for court testimony.

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KINZER V. REMINGTON

cc: G.D. Sietsema
A.A. Pestar
J.M. Kostrubanic
L.W. Baum
S. Shah - Hazen

REMINGTON ARMS COMPANY, INC.
INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

December 5, 1992

M E M O R A N D U M

TO: K.W. SOUCY

FROM: F.E. SCHMIDT, JR.

SUBJECT: NOVEMBER MONTELY REPORT

This month focused on O/U Metallurgical Processing for trial and pilot evaluation. Specifically, final updating of all component hardness and microstructure were examined for each and every O/U part. This information was compared to engineering documents and update notated.

Other significant activities are listed below:

- Attended the International ASM materials congress in Chicago. Many useful ideas for improved heat treat and gun design were identified.

- Bower v Remington firearm exam in Toronto, Canada. Sear notch was severely abused and modified after manufacture leading to the injury.

- Reviewed FM/MIM process records for O/U product and assisted with investment cost product evaluation.

General

The November TSCM BRIEF on 'Advanced Spring Design' was presented by Peck Spring Co., Inc. At present, I am teaching an in-house course, "Metallurgy For The Non-Metallurgist". Twenty eight Ilion personnel have progressed to Lesson 9 out of the 15-week course.

FES:cat

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.
INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

cc: G.D. Sietsema
A.A. Pestar
L.W. Baum
S. Shah - Hazen

March 8, 1993

M E M O R A N D U M

TO: K.W. SOUCY

FROM: F.E. SCHMIDT, JR.

SUBJECT: FEBRUARY MONTHLY REPORT

The major thrust in February continues to be the evaluation of O/U components. As production prototypes are made, the metallurgical processing, process record standards and performance characteristics are measured. Improvements to the O/U Product have been significant and have required extensive revisions to the metallurgical processing.

A major focus on the O/U is to identify a local radiograph test laboratory and reduce turn around on barrel assembly inspections. We have qualified Trutom Limited in Latham, N.Y. with a 3-day turn around on a routine basis.

Other significant activities include:
- Cramer v. Remington case preparation;
- M-BAR bullet analysis;
- Barnes X bullet analysis and prototypes;
- Cole v. Remington case review; and
- Assistance to ATD on metallurgy.

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KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.
INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT

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cc: G.D. Sietsema
A.A. Pestar
L.W. Baum
S. Shah - Hasen

March 8, 1993

M E M O R A N D U M

TO: K.W. SOUCY

FROM: F.E. SCHMIDT, JR.

SUBJECT: FEBRUARY MONTHLY REPORT

The major thrust in February continues to be the evaluation of

Other significant activities include:

- M-BAR bullet analysis;

November 30, 1993

M E M O R A N D U M

TO: E.W. SOUCY

FROM: F.E. SCHMIDT, JR.

SUBJECT: NOVEMBER MONTHLY REPORT

Production Support:

General support to production involved preparation for inventory and routine checks while G.D. Sietsema was on vacation. A materials audit was initiated at the request of Anderson Screw Products (Jamestown, N.Y.) for firing pin head blanks. O/U radiographic barrel braze inspection has continued satisfactorily.

R & D Support:

R & D work this month has included release of the O/U and numerous other individual transmittals. A major effort involved support of the Schoenicke v. Remington trial in anticipation of testifying to metallurgical issues. In addition, R.M. Quackenbush help develop 3 prototype black aluminum finisher for 6160 T-6 cantilever mounts. One completely new finish 'black nickel' will be evaluated.

General Items:

Remington Arms hosted six local high school students for ASM's Materials Society. Plant personnel gave an intensive tour, Fred Supry in the a.m., while Glen Sietsema, Dave Foss and James Hutton hosted the p.m. The metallurgy course is on schedule having completed lesson #7 of 15.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

cc: G.D. Sietsema
A.A. Pestar
J.K. Kostrubanic
L.W. Baum
S. Shah - Hazen

REMINGTON ARMS COMPANY, INC.
INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

July 31, 1992

M E M O R A N D U M

TO: K.W. SOUCY

FROM: F.S. SCHMIDT, JR.

SUBJECT: JULY MONTHLY REPORT

The major effort in July focused on O/U Metallurgical Processing for trial and pilot evaluation. Specifically, cross verification of all pre-production components for uniformity, soundness and hardness values. Trial and pilot manufacturing will then be run in production for qualification testing. To date, our experimental evaluation of 4140 resulfurized steel is on schedule. Twenty five O/U barrel sets were successfully brazed and are undergoing x-ray verification.

Other significant activities are listed below:

* ASTM E30/40 - I represented Remington at the semi-annual committee meeting to develop and improve product liability standards July 21, 1992. We have used these standards at three trials in the last two years to Remington's benefit. A new standard is in draft form for incident reporting.

* NAFE - I attended a one-day seminar in Chicago, July 22, by the National Association of Forensic Engineers. The program was excellent. NAFE is an affinity sub-group of the National Society of Professional Engineers. As a result of the meeting, I plan to apply for peer reviewed senior member status.

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- CARTECH - G.D. Sietsema and I performed a vendor audit July 27 and 28, 1992, in Reading, PA. A trip report has been written on our progress with 5418 and 416R specialty steels.

General

The July TECH BRIEF was held July 21 on the subject 'Design Guidelines From Machine To Investment Cost Components', by Gray-Syracuse, Inc. Remington has specified many 90T and O/U components from investment casting. During the consulting period, several engineers and foremen discussed future opportunities. The August TECH BRIEF is planned around machinability improvements for stainless steel.

FES:cat

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KINZER V. REMINGTON

F

REMINGTON ARMS COMPANY, INC.
ILION, NEW YORK

August 5, 1992

CONFIDENTIAL

TO:

PITTSBURGH	ILION	LONOKE
B. R. BROWN	J. F. WINSKE	P. E. OTTO
R. F. RIESMEYER	E. S. RENSI	R. S. TOULSON
	D. M. HOFMEISTER	J. R. PRUITT
WILMINGTON	R. J. ORF	C. P. BIRCH
A. W. WHEATON	R. A. JACKSON	T. C. DOUGLAS
V. M. ROMANO	D. P. CHRISTIE	
J. M. BUNTING	K. D. GREEN	
J. R. BALIO		
J. M. DWYER		
G. A. FOSTER		

FROM: K. W. SOUCY

JULY PROGRESS REPORT
REMINGTON ARMS RESEARCH & DEVELOPMENT
FIREARMS/AMMUNITION

REPORTS OF INDIVIDUAL ENGINEERS ARE ATTACHED. DISTRIBUTE TO YOUR ORGANIZATIONS AS YOU DEEM APPROPRIATE.

WHILE DISTRIBUTING AND DISPOSING OF THIS REPORT, RECIPIENTS ARE REMINDED OF THE PROPRIETARY NATURE OF THE CONTENTS.

NEW BAR MEETING

10-31-88

- LITIGATION — M/Dec SAME AS MORE ROUND CONE
- MAGAZINE RETENTION —
- 700 FUNCTIONAL IMPROVEMENT PROGRAM
  - F. CONTROL — NEW (LOOK AT M'BARE NOW) 3-5 YR
  - MUSCLE RETENTION
  - BOLT HOLD OPEN — BUTTON ON RIGHT HANDLE
  - BOLT LOCK — LOOK AT COLT - SAUER PATENT EXPIRES 89

DRIVEN CONCEPTS — MODERN — HUMAN FACTORS

- ? MAG. WELL AT EJECT PORT OR TRIG. GUARD
- BOLT LOCK

F. CONTROL 700 — WEAPON TOO TIGHT & TOO CLOSE OUTSIDE OF F. CONTROL TO PREVENT DEBRIS FROM ENTERING + BLOWING INTO ACTUATE FOR PARTS BY REVERSE PARTS

- RECIEVER MAGEN

700 FOUNDATION MAGE - SEMI LOOK AT WEAR

LOOK AT M'BARE M/S & ONE PIECE SEMI

ALSO ADD 2 PC M/DU SEMI (STAINLESS)

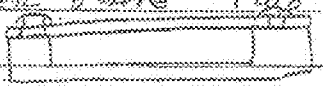
COMPUTER MODEL BUILD — SEMI SCALE PRINT GOOD ON M'BARE

LOOK AT ANGEL ONE PC CONCEPT

- CONNECTOR —

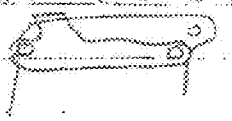
TRIGGER SPRING WEIGHT IS TOO HIGH — HEAVY SPOT NEED A WONDER RATE RATIO BETWEEN FULL OVERTRAVEL TO JUST ENOUGH TO PREVENT TO INSURE RETURN OF TRIGGER TO FULL ENGAGEMENT WHEN RELEASED

- TRIGGER PLATE TOO PIVOT POSITION



MAKES MIM

MAKE SEAR DOWN + LOOSE ON OWN PIVOT



R2518374

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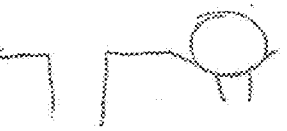
KINZER V. REMINGTON

NEW BARL (2)

- SAFETY — MORE DETENT POSITIVE OFF - ON
  3 # MIN FORCE REQ'D
  SUGG - 2 - 10 #
  GET RID OF BALL



LOCATION OF SAFETY BUTTON IS GOOD ERGONOMICALLY
(RANGE EASE, WRIST

- NO MAGAZINE BUTTON DISCONNECT WANTED FOR BUTTON
- SAUER - LOADED CHAMBER INDICATOR LOCATE
  LEGAL WANTS ONE
  - EJECTOR PLUNGER MODIFICATION (LOADED CHAMBER INDICATOR) OPENING OFF OF
- LOOK AT ALUM MOLDED PLASTIC FIRE CONTROL
- REPLACE - FRONT PANEL PARTS
  OTTOMAN — DETAILS REVIEWED BY ATTORNEY (INDEPENDENT
- CLOSE - CLIP RETAINING - SPRING RETENTION
  - MAG SPEC, F. CENTRAL RETAINING,
  WATCH - TO CHECK W/ ATTORNEY
  - HARDWARE

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KINZER V. REMINGTON

REV. 4-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

CC: J. P. GLAS

BRIDGEPORT, CONNECTICUT

FEBRUARY 8, 1982

REMINGTON ARMS CO.
RECEIVED
FEB 9 1982
FIREARMS RESEARCH DIVISION

TO: C. B. WORKMAN

FROM: W. L. ERICSON

RE: PATENT REVIEW MEETING OF JANUARY 28, 1982

I. Model 1100

Plastic Gas Seals - Several promising designs under current consideration were reviewed. We will follow up by securing further details for the preparation of a patent application.

II. Models XSG-XPG

Firing Pin Block - RA-0232 - U. S. Pat. Appln. No. 121,436. The PTO Examiner has agreed to grant a Patent with claims to a 100% firing pin block in a reciprocating-bolt action.

Magazine Spring Retainer and Cap Detent - RA-0233
U. S. Patent 4,310,982 issued on January 19, 1982.

Gas Regulating Systems. Progress with several alternative designs was reviewed with Jim Martin, Tom Powers and Jack Kast.

Locking System. Jack Kast's new alternative "rocker-locker" design with a vertically-sliding locking block was reviewed, and a preliminary patent search is planned.

Inertia-Operated Carrier Latch. Kevin Calkins is in an early stage of development work on this alternative carrier latch.

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KINZER V. REMINGTON

Redesigned Bolt Handle. We reviewed the possibility of conflict with Ithaca's Patent 4,052,926 - Tollinger, which was discussed in my preliminary opinion of January 26th to Jack Kast and Dave Findlay. You advised that the bolt handle design is in a fluid state; accordingly, we will temporarily postpone further study of this Patent.

Safety Lever. A preliminary patent search revealed no infringement problems, and showed potential patentability in an optional hammer safety. This was discussed in my letter of January 4th to Tom Powers.

III. Models 700 and 7

Bolt Latch - RA-0247. Status of pending Patent Appln. 290,693 is unchanged.

Fire Control with Sear and Trigger Block - A preliminary patent search, reported to Fred Martin January 4th, disclosed no conflicting patents, and suggested that patent protection is potentially available. We will follow up with a view to filing a patent application.

Magazine Box and Latch - Fred Martin demonstrated a removable magazine box purchased from Gene D. Trexler, who owns U. S. Patent 4,237,638 on this design. Fred plans to work out a modified design, and we will pursue this to insure that there will be no conflict with the Trexler patent.

Model 7 Design Specification - Jim and Fred Martin reviewed this with us. Potential features of particular interest to the Patent Division include, in addition to those options listed above; a possible relocation of a safety switch onto the bolt plug; improvements in the trigger adjustment means for increased assurance of safety; new provisions for gas flow from pierced primers; and a new extractor design which may incorporate a claw similar to that of the Model 1911 Colt pistol, but would locate this within the bolt face so that the shroud would continue to be free of weakening extractor cuts.

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KINZER V. REMINGTON

TO: C. B. WORKMAN — FEBRUARY 8, 1982
RE: PATENT REVIEW MEETING OF JAN. 28, 1982 — PAGE -3-

IV. Models 7400-7600

Firing Pin Block - RA-0209. The PTO Examiner has again rejected our claims, based on a hypothetical combination of features selected from the M-16 and Model 742 locking systems. Affidavits are being prepared to demonstrate that the Model 742, like the M-16, does not achieve a firing pin block equivalent to the Model 7400. An interview will be held with the Examiner in an effort to reach agreement on allowable claims.

Rivetless Extractor - RA-0228. Status of pending patent applications unchanged.

V. Industrial Guns - RA-0236, RA-0237, RA-0241. Status of pending patent applications unchanged.

Bill Ericson

WILLIAM L. ERICSON
SENIOR PATENT COUNSEL

WLE/dt

40.01

Does the M16 mark Princes — yes.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

The Mercury Group
http://www.mercgroup.com/

Services: http://www.mercgroup.com/services.html
EXPERTISE
From the seven-word billboard to the 30-minute video advertorial, we're masters at melding news with drama, politics with theatre and public affairs with popular buzz to make your message sing and your story sell.

Crisis Communications: http://www.mercgroup.com/crisiscommunications.html
CRISIS COMMUNICATIONS
Ready for when the unthinkable becomes inescapable? We know the terrain and can help you map a plan to look your best — even if events turn for the worst.

LITIGATION COMMUNICATIONS http://www.mercgroup.com/litigation.html
With public policy increasingly governed by litigation as well as legislation, the court of public opinion can be as decisive as any judge or jury. Mercury Group can make your case in visceral, personal terms that no law or lawyer can ever overrule.

Nonrecurring charges increased $14.4 million for the year ended December 31, 2010, primarily due to $17.4 million in greater restructuring expenses and $2.4 million in purchase accounting adjustments, offset by $6.4 million in lower employee related costs. The impact of a change in accounting principle from LIFO to FIFO is reflected in the 2009 figures.

Nonrecurring charges for the year ended December 31, 2010, consisted primarily of $19.5 million in restructuring and integration charges, $2.4 million related to purchase accounting, $0.8 million in employee related expenses, and $11.9 million in other fees and transaction costs. The $11.9 million in other fees and transaction costs consisted primarily of $3.5 million for the military products division ramp up costs, a $2.4 million charge for the write-off of IPO costs, $2.2 million in legal fees associated with a CNBC broadcast response, $2.0 million associated with contributions to the Remington Outdoor Foundation, and $1.7 million in bank fees.

Interest Expense

Interest expense was $53.0 million and $29.8 million for the years ended December 31, 2010 and 2009, respectively. The $23.2 million increase in interest expense over the prior year period was primarily related to $19.6 million of interest expense related to the PIK Notes issued in April 2010, $18.1 million related to the Opco Notes, and $2.3 million in debt acquisition costs and amortization expense related to the Opco Notes, the ABL Revolver and the PIK Notes borrowings, offset by $16.8 million of interest expense incurred in 2009 related to the debt paid off as a result of the Opco Notes and ABL Revolver borrowings that did not recur in 2010.

Income Tax Provision

Our effective tax rate on continuing operations for the years ended December 31, 2010, 2009, and 2008 was 35.6%, 34.1%, and 42.2% respectively. The difference between the actual effective tax rate and the federal statutory rate of 35% is principally due to state income taxes, permanent differences, and utilization of available tax credits as of December 31, 2010, 2009, and 2008. Of the 2010 percentage related to state income taxes, 5.5% is applicable to unrecognized state tax benefits. Additionally, the difference between the statutory rate and the actual effective tax rate for the year ended December 31, 2008, was primarily related to a permanent difference associated with the impairment of goodwill. Excluding the impact of the goodwill impairment, the effective tax rate would have been 31.3% for this period. The valuation allowance decreased $0.1 million from December 31, 2009 to December 31, 2010 to reduce the deferred tax asset related to certain state tax credits which have expired.

We are subject to ongoing audits by federal and various state tax authorities. Depending on the outcome of these audits, we may be required to pay additional taxes. However, we do not believe that any additional taxes and related interest or penalties would have a material impact on our financial position, results of operations, or cash flows.

Years Ended December 31, 2009 and 2008

Net Sales

The following table compares net sales by reporting segment for each of the periods presented:

	Year Ended December 31,					
	2009	Percentage of Total	2008	Percentage of Total	Increase (Decrease)	Percentage Change
	(dollars in millions)					
Firearms	$508.1	59.9%	$426.6	59.0%	$81.5	19.1%
Ammunition	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
All Other	19.0	2.2	20.0	2.8	(1.0)	(5.0)
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

ANNUAL REPORT

For the fiscal year ended:

December 31, 2010

FREEDOM GROUP

FAMILY OF COMPANIES

FREEDOM GROUP, INC.

(Exact name of company as specified in its charter)

Delaware	26-0174491
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

870 Remington Drive
P.O. Box 1776
Madison, North Carolina 27025-1776
(Address of principal executive offices) (Zip Code)

(336) 548-9700
(Company's telephone number, including area code)

My Turn

By Tommy Milner, President, Remington Arms Co.

The Eleventh Commandment

As posted in this issue of the *Journal*, Remington has recently announced a nationwide product modification campaign on certain "bolt lock" rifles manufactured prior to 1982. Details on the specific offer can be found at Remington's web site at www.Remington.com.

A brief history of the bolt lock feature is in order. First, what is a bolt lock? It is a feature in many rifles manufactured in the 1960s, 1970s and early 1980s. A bolt lock safety prevents the bolt arm from being inadvertently lifted by branches, brush, or any other means unless the safety arm is placed into the fire position.

Picture yourself hunting dangerous game in thick brush and having your bolt handle unknowingly catch on a tree limb and raise itself thereby taking your gun out of battery. Imagine your surprise if, while facing a charging 10-foot brown bear, you shouldered your firearm, pulled the trigger, and your firearm failed to discharge. Bolt lock safeties prevent this scenario by keeping the bolt arm "locked" down. The only way to "unlock" the bolt arm is to knowingly place the safety arm in the fire position.

Remington manufactured bolt lock rifles from approximately 1960 until 1982. Since 1982 many of these guns have found their way into the used gun market and into the hands of consumers who may have never used a bolt lock safety. In several instances, bolt lock Remington rifles were involved in accidental shootings which involved injury or death. All of us at Remington felt the prudent course of action was to offer consumers the chance to have this feature removed from their guns for a nominal fee.

I am very confident that our Modification Program will prevent accidents in the future!

Now, to get to the point of this article, if you accept my premise that far too many people buy far too many firearms without asking a single question about the gun's age, features, mechanical condition, accuracy, or even whether it has been tampered with after it left the factory, how can you help? I believe that you, as hunter safety professionals, with the support of gunsmiths, dealers, and manufacturers, can help prevent needless accidents by adding an eleventh commandment to your hunter education curriculum:

"Thou shall only buy a firearm after it has been examined by a qualified gunsmith."

While not proposing a "certified" program like the auto makers utilize, I do feel that this new "eleventh commandment" would serve us well. Imagine the number of rifles, shotguns, and handguns made in the past 100 years. Then picture the wide number of features which are unique to those guns. Multiply these variables by the number of different owners a gun may have in its life, and you come up with a very large number which results in an increased probability of owning unsafe guns or having unknowledgeable owners.

How can you help? Teach people to educate themselves about their firearms; to seek out local resources like hunter safety professionals or gunsmiths.

I believe that you, as hunter safety professionals, with the support of gunsmiths, dealers, and manufacturers, can help prevent needless accidents by adding an eleventh commandment to your hunter education curriculum: "Thou shalt only buy a firearm after it has been examined by a qualified gunsmith."

What can we accomplish by this? First, it may alert the buyer that aftermarket adjustments to the firearm have been made which may cause the gun to be unsafe. Second, it warns the buyer if mechanical defects exist that may not be apparent. Third, it warns the buyer of guns which have not been well maintained. Fourth, it warns the buyer about firearms which operate poorly either from age or lack of care. Lastly, it gives the gunsmith a chance to teach the buyer about unique characteristics of the gun.

Think about it this way: we would never buy a car, boat, or a house without advice from a knowledgeable expert. So, why would we buy a product like a firearm without the same level of diligence?

Together we can all make a big difference in continuing to make the shooting sports a safe and enjoyable leisure time activity. Thanks for your time and consideration. ✣

BARBER - 1.30.130000256

IMPORTANT SAFETY MESSAGE

FOR OWNERS OF CERTAIN REMINGTON® BOLT-ACTION CENTERFIRE FIREARMS MANUFACTURED BEFORE 1982

The Remington® Arms Company, Inc. is offering a **safety modification program** for certain bolt-action centerfire firearms manufactured prior to 1982, including the Model 700,® Model 600,® 660,® 721,® 722,® 40-X bolt-action rifles (made before March 1982) and Model XP-100 target pistols (made before February 1975). These firearms have a feature known as a bolt-lock that requires the safety to be placed in the "off" position in order to unload the gun. If you participate in this program, your firearm will be modified to eliminate the bolt-lock feature. The operation of your gun will not be otherwise affected.

Why is Remington offering this safety modification program? A "bolt-lock" locks a firearm's bolt in the "down" or "ready-to-fire" position whenever the manual safety is in the "on" or "safe" position. Traditionally, the purpose of the feature was to prevent inadvertent lifting of the bolt while a rifle is being carried in the field. Users of these firearms need to be particularly cautious when unloading, however, because the safety must be in the "off" or "fire" position to raise the bolt and begin the unloading process. Remington is aware of reports that rifles with this feature have accidentally discharged while being unloaded, and whenever a gun fires accidentally, there is a risk of property damage, serious injury or death. This program is for owners of older bolt-action firearms who want to be able to unload their guns with the manual safety in the "on" or "safe" position.

What is the cost of this modification? For all rifles except certain Model 600's, 660's and some Model XP-100 target pistols, you will be charged $20 for cleaning, inspection and removal of the bolt-lock, plus shipping and handling. If you participate in this bolt-lock removal program, you will also receive a transferable coupon good for up to $20 towards the purchase of any Remington safety product, including gun locks, hearing and eye protection, and gun safes.

What about Model 600 and 660 rifles? Most Model 600 and 660 rifles (plus some XP-100's) were recalled and repaired in 1979 for safety reasons related to the trigger assembly. Model 600 and 660 rifles were manufactured (or retrofitted) with bolt-lock features. If your rifle was not retrofitted as part of that recall, the entire trigger assembly will be replaced at no charge. To check whether your Model 600 or 660 rifle, or Model XP-100, was subject to the 1979 recall or repaired as part of it, call Remington toll-free at 877-387-6691 with the serial number of your gun. To learn more about the 1979 safety recall, check our website at www.remington.com.

What to do to have your bolt-lock rifle modified? If you own one of these older rifles and want to participate in this safety program, or if you want assistance in determining whether your bolt-action centerfire gun is equipped with a bolt-lock, call Remington's toll-free consumer hotline at 877-387-6691 or visit our website at www.remington.com.

REMEMBER: Whether or not your rifle has a bolt-lock feature, you must always follow the 10 Commandments of Safety. In particular, always keep the muzzle of your gun pointed in a safe direction, especially when you're loading or unloading. And always unload your gun when not actually in use. Every firearm should be unloaded as soon as you are finished shooting — before taking it into your car, camp or home. Remington wants you to enjoy the shooting sports — safely!

Offer valid through December 31, 2002.

Remington®

870 Remington Drive • Madison, North Carolina 27025-0700 • www.remington.com

Remington Press Release

March 6,2002

Remington offers Safety Modification Program for Certain Pre-1982 Bolt action Firearms.

Madison , NC- Remington Arms Co. Inc., Americans oldest gunmaker, today announced a nationwide Safety Modification Program for certain Remington bolt-action centerfire firearms manufactured before March 1982, with a feature known as a bolt-lock. Prior to March 1982 various Remington bolt-actions centerfire firearms featured a traditional device known as a "bolt-lock," which was favored by many hunters as a way of preventing accidental lifting of the bolt in the field. The Safety Modification Program introduced today by Remington offers consumers the opportunity to have this bolt lock feature removed from certain of these older firearms, allowing the guns to be unloaded when the manual safety is kept in the "on" or "safe" position. No Remington firearms Manufactured after March 1982 has this bolt lock feature, and these more recent models are not affected by the current program. The Company has undertaken this program in part as a response to the tragic death of nine-year old Gus Barber of Belgrade, Montana, who was killed October of 2000 on a family hunting trip when a bolt -lock Model 700 rifle manufactured in the 1970's accidentally discharged while being unloaded. "The Barber family knows it has our deepest sympathy . Remington wants its customers to enjoy the shooting sports safely and we think this program is an appropriate way to help them do so," the company said today." It has been many years since this feature has been included in Remington firearms, and we believe this program will help educate our customers and allow them the opportunity to update their older Remington firearms." Included in this program are Remington model 700,600,660,721,722,40X, and certain XP-100 firearms manufactured before March 1982. Customers who participate will be charged $20.00 to have their guns cleaned and inspected by a

qualified gunsmith and the bolt-lock feature removed. Each participating customer will also receive a transferable $20.00 rebate coupon, good towards the purchase of Remington safety products, such as eye and hearing protection, gun locks and gun safes. The Safety Modification program will be offered through December 31, 2002 The program is set forth in detail on Remington's website at www.remington.com. In addition, the attached notice describing the Safety Modification Program will appear in the April, May, and June issues of such prominent outdoor publications as Field & Stream, Outdoor Life, Bugle, American Rifleman and Sports Afield. Remington has also established a special toll-free number for inquiries, at 877-387-6691 The First Remington rifle was manufactured more than 185 years ago, and throughout its long history, Remington has taken great care in designing and manufacturing high-quality firearms and ammunition, and in educating hunters and other sport enthusiasts in the safe use of those products. In this regard, we urge our customers to consult our website at www.remington.com, and to contact Remington if they have any questions about the safe use of any Remington Product.

[redacted]

[redacted]

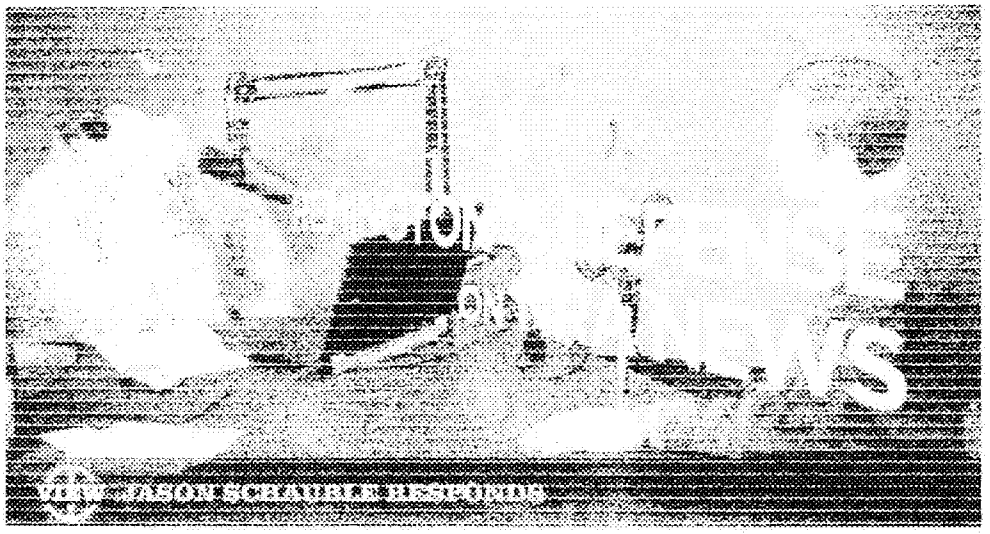
History Brochure Testimonials

Custom Guns Homepage Build your own gun

October 21st, 2010

Remington Responds to CNBC Investigative Report

On October 20th, CNBC broadcast "Remington Under Fire", a story attacking the safety record of Remington model 700 rifles. CNBC's report suggests that the Rem 700 is unsafe because it can discharge merely from moving the safety or lifting the bolt, even if the trigger is not pulled. The show, which aired last night, has already created a big stir in the gun industry. Jason Schauble, VP of Remington Defense Division, responded in an [illegible] interview just hours after the "documentary" aired. Schauble attacked CNBC's "irresponsible programming", stating that the problems trumpeted by CNBC could not be replicated by the manufacturer (or even by plaintiffs' lawyers). [illegible] for the Schauble interview. Schauble argued, "CNBC squarely placed us in their cross-hairs… [with] a loosely strung-together series of data points that relied more on an emotional pull than the facts[.]"



Remington Launches Remington700.TV Website to Defend Product

Remington has challenged CNBC's report, asserting that the Rem 700 has an excellent safety record. Remington also argues that CNBC's "experts" were biased and lacked proper qualifications and knowledge. An official response by Remington states: "CNBC ignored facts and information provided by Remington and instead relied on allegations, misleading anecdotes, and false claims." Remington has also launched a dedicated web-page, [illegible] to counter the CNBC report. On that site Remington states:

For nearly fifty years, the Remington Model 700 rifle has been the preferred choice for millions of hunters, shooting sports enthusiasts and military and law enforcement personnel. Despite emotional reporting of baseless and unproven allegations and plaintiff lawyer assertions, several undisputed facts remain:

• The Model 700 is the most popular, reliable, accurate and trusted bolt-action rifle in the world, with over five million rifles produced and billions of rounds fired over nearly five decades.
• The Model 700 is the firearm of choice for elite shooters from America's military and law enforcement communities, and has been the platform for the United States Marine Corps and the U.S. Army precision sniper weapon systems for over two decades, both of which specifically require the "Walker" trigger mechanism.
• The Model 700, including its trigger mechanism, has been free of any defect since it was first produced and, despite any careless reporting to the contrary, the gun's use by millions of Americans has proven it to be a safe, trusted and reliable rifle.
• Both Remington and experts hired by plaintiff attorneys have conducted testing on guns returned from the field which were alleged to have fired without a trigger pull, and neither has ever been able to duplicate such an event on guns which had been properly maintained and which had not been altered after sale.

BUSINESS NEWS
(SHARE WITH EMPLOYEES)

OCTOBER 24, 1988

MONDAY

RECEIVED
OCT 24 1988

PRODUCT SERVICES - XP100 RECALL

A limited number of Model XP-100 pistols (all calibers), produced between January 1, 1987 - October 4, 1988 and sold to Remington customers, may have an improperly assembled part in the trigger assembly and are being recalled. Just under 5,800 guns are involved.

As a result of an improper manufacturing process, some XP-100 front trigger housing screws may not have been degreased and/or have not received the proper amount and distribution of special locking compounds applied to prevent the screw from turning.

Potentially, if the screw is allowed to turn, under certain conditions, the pistol could accidentally fire upon release of the safety or upon bolt closing. If safe gun handling practices are observed, personal injury or property damage should not occur. However, there is potential for severe personal injury or property damage if gun safety is not observed.

The potential problem with the front trigger housing screw was discovered by Product Service on September 14, 1988 when one of our warrantee gunsmiths reported the condition with two XP-100 pistols he was servicing. Subsequently, we found affected guns in both Syracuse and Ilion Warehouses.

We expect notification of Remington customers and individual consumers, through serial number screening, to be swift. A national advertising campaign is also being initiated. It's anticipated that follow-up activities can be completed within one year.

The dedicated Ilion group handling this XP-100 recall is the same one coordinating the Model 700 Series Trigger Assembly Replacement Program (TARP).

The Model XP-100 Trigger Assembly Correction Program is already well underway.

Roger Potter
Program Coordinator
Ext. 222

"WE WILL BE THE BEST FIREARMS PLANT IN THE WORLD"

Remington Arms Company, Inc.

R2518367

Please send that information to:

Remington Arms Co., Inc.
Department KP
14 Hoefler Ave
Ilion, NY 13357

You may also call the information to 1-800-634-2459.

With those addresses, Remington will contact the gun owners with instructions for returning the pistol for factory repair.

Thank you in advance for any help in this important matter. Needless to say, inadvertant or accidental firing could cause severe personal injury or death if safe gun handling practices are not observed.

Sincerely,

R.H. Potter

R.H. Potter
Technical Specialist
Product Service

RHP/lab

Remington.

bcc: Ken Green
Circuit Book

REMINGTON ARMS COMPANY, INC.

SPORTING ARMS-AMMUNITION-TARGETS-TRAPS

ILION, NEW YORK 13357

TELEPHONE 315 895-3200

November 18, 1988

California Department of Justice
Record Security Section
P.O. Box 903417
Sacramento, CA 94203-4170
C/O Dennis Kojima

Dear Mr. Kojima:

Per your recent conversation with our Mrs. L. Backus, this letter is to request vital information on three (3) recalled Remington Model XP-100 pistols, all chambered for the Remington 7MM BR caliber cartridge. The serial numbers of these guns are B7518121, B7521703 and B7521635.

The problem involves the fact that three firearms were all sold to the now bankrupt firm:

Iron Sight Gun Works, Inc.
Gerald Bartlett
8478 Loma Place
Upland, CA 91786

The important information we're seeking regards who now owns these pistols now under recall for a serious trigger assembly problem which could make the guns fire accidentally.

Any help you can give us regarding the current gun owners' names and addresses will be appreciated.

As Federal Law dictates that there has to be a Federal gun ownership form (#4473) for every firearm sold by a dealer, the past principals of the Iron Sight Gun Works, Inc. should be able to provide you with the appropriate Model XP-100 owners and their addresses.

R2518400

Remington.

REMINGTON ARMS COMPANY, INC.

SPORTING ARMS-AMMUNITION-TARGETS-TRAPS

ILION, NEW YORK 13357

TELEPHONE (315) 895-3301

October 24, 1988

TO ALL REMINGTON RECOMMENDED GUNSMITHS:

IMPORTANT NOTICE

Remington has discovered a potential problem with a limited number of Model XP-100 pistols shipped between January 1, 1987 - October 4, 1988 and is recalling these firearms. All calibers are involved.

The potential problem involves the front trigger housing screw. This screw, which controls the distance of trigger movement to fire the gun, may not have been degreased or have received sufficient distribution of locking compounds to secure the screw in place and to prevent it from turning.

Potentially, under certain conditions, if the screw is allowed to turn, the pistol could fire upon release of the safety or upon closing of the bolt.

Because of the specialty nature of the Model XP-100, all affected pistols are to be returned to the below factory address for trigger assembly correction:

Remington Arms Co., Inc.
Dept. XP
14 Hoefler Ave.
Ilion, Ny 13357

Custom Shop Model XP-100 pistols should be returned to the same address but marked, Dept. XP - CUSTOM SHOP.

The affected pistols can be returned via United Parcel Service, Transportation, C.O.D.

R2518319

Features to check at a focus panel 2/19/91

1. barrel contour
2. barrel length
3. box magazine
4. synthetic stocks
5. safety location
6. trigger feel (creep, overtravel, force)
7. stainless vs. carbon steel
8. sights vs. no sights
9. metal finish
10. accuracy
11. receiver shape (Blaser vs. traditional)
12. muzzle brake/porting
13. weight
14. balance
15. bolt lock
16. electronic fire control
17. extractor
18. recoil lug
19. "custom" order a gun and get it in 1 week

- SUMMER FOCUS PANNEL TO EARLEY FALL (SEPT, OCT)
  JULY & AUGUST FORMULATE QUESTIONEER WITH GEIDMAN.

GET WITH VIC ON AVAILABILITY OF REMMER TO FUND THIS PROJECT. (CASH)??

NETWORK WITH TOM GEIDMAN AND MUNSON ON THEIR WAY CONFERENCE CALL. (NEW APPROACH / CUSTOM DESIGN)

Types of people for a focus panel

- hunters (provide practical input)
- benchrest shooters (provide accuracy input)
- plaintiff's lawyer (L.S. Martin?)
- mechanical engineer (practical production)
- electrical engineer (new electronic technology)
- doctor ($$$$$ for high end product)
- lawyer (" " " " " , product liability)
- ballistics expert (accuracy, gun/ammo system approach)
- women (size consideration in design)
- rancher (gun is an everyday tool)
- gunsmith (serviceability issues)

Features to check at a focus panel 2/19/91

1. barrel contour
2. barrel length
3. box magazine
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6. trigger feel (creep, overtravel, force)
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12. muzzle brake/porting
13. weight
14. balance
15. bolt lock
16. electronic fire control
17. extractor
18. recoil lug
19. "custom" order a gun and get it in 1 week logistic problem?

$30 M FOR O/U FOCUS PANEL

SEPT.-OCT. TIME FRAME FOR FOCUS PANEL

JULY - AUG. TIME FRAME FOR GEDEMAN

JAY - SHOW TO VIC WEEK OF 4/1, DO WE HAVE #?, SETUP SUBJ w/ GEDEMAN

US - REVISE THIS DOCUMENT, GET GUNS TOGETHER

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

not yet applicable
Nov 28th

The NRA Hunter Safety Handbook contains the following message on gun safeties:

The safety should be "on" at all times when the gun is loaded and released only immediately before the shot. However - a good word of caution - safeties are mechanical devices and sometimes fail to work because of wear or some other reason. No hunter should depend wholly on the safety to prevent accidental firing. The safety is meant only to supplement proper gun handling.

RD-48 REV. 5-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

November 10, 1978

To: J. E. Preiser

From: E. G. Larson

File
Recall

I suggest that a copy of the NRA safety page, relative to safeties and pointing of guns at all times (about which P. H. Burdett feels so strongly), be included in any mailing to a gun owner involved in the recall.

What do you think?

E. G. L.

E. G. Larson

EGL:lb

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RECEIVED
OCT 30 1978
PHILIP H. BURDETT

5211 Manitor Dr.
Dayton Ohio 45424
October 26, 1978

President
Remington Arms Co. Inc.
939 Barnum Ave
Bridgeport C.T 06602

Dear Sir:

I was listening to the radio this morning and it said Remington Arms had to recall quite a few firearms. I got really mad because it said the safties had failed. Not too long ago I took a N.R.A. course and passed it. My N.R.A. book said something like (a safety is a mechanical device that you should not trust). The guy that got shot could'nt get shot unless he was not using proper gun safty. I am ten years old and have a 22 rifle, 22 double action revolver and a 7/10 caliber shotgun. I don't do very well with my shotgun but I do a lot better with my 22s.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

I'm really sorry to hear about having to recall the firearms. I think it was a case of improper firearm use rather than faulty safties. If he had remembered the most important firearm rule, Do not point a firearm at anything you do not wish to shoot. He would not have been shot.

Yours truly,
Laura M. Friend

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Xc: J. W. Bower
J. W. Brooks
J. S. Martin
C. E. Ritchie

December 16, 1981

TO: C. B. WORKMAN

FROM: T. L. CAPELETTI

SUBJECT: ACTION ITEMS FROM DECEMBER OPERATIONS COMMITTEE MEETING

Items requiring action by the Research Division are as follows:

1) M/870 Competition Trap

Ed Barrett indicated that we need to proceed as-soon-as-possible with our endurance testing to confirm acceptability of the 0.035 inch bolt clearance specification. Complete prior to the January meeting!

2) M/700 Scope Mounts

Ed Barrett agrees that including the extruded aluminum mounts with the .257 Roberts special offering in 1982 is a good idea. We need to confirm by the January meeting our ability to make 3,000 sets. Ed also requested a detailed program outline at the January meeting on how we plan to prove out the .257 Roberts design.

3) M/700 Lubrication of Fire Controls

As part of the Annual Quality Review, Dick St. John summarized the most serious and most frequent complaints received from gunsmiths during visits by field personnel. I suggest we have Dick and John Linde repeat their presentations for Research personnel. However, the first item Dick covered was that of sticking sears on M/700's. Ed Barrett indicated that we need to resolve the following ASAP:

a) Replacement for "Steelguard" during assembly in the Plant. (Approve John Linde's solution?)

b) Recommendations in Owner's Manual for lubricants to be used in the field.

TLC:ws

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

January 18, 1982

TO: C. B. WORKMAN

FROM: C. E. RITCHIE

EVALUATION OF LUBRICANTS ON FIREARMS

ABSTRACT

Remington Arms Company is interested in developing a cleaning and lubrication procedure for the Model 700 Fire Control that can be included in the rifles instruction manual. It is intended the cleaning and lubrication procedure be done without disassembly from the receiver and the products used should not gum up the close tolerances of the mechanism. The products selected should also be readily available on a nationwide basis, be non-flammable and non-toxic, as well as operate from -20°F to 130°F.

Preliminary evaluations were conducted by A.E. Hughes, Senior Consultant, ESD Maintenance Engineering Group, with conclusions reported on August 24, 1981 in document entitled "Maintenance Engineering - Lubrication of Rifles". Twenty-five (25) products were finally screened for rust removal, rust prevention, grease displacement, water displacement, cleaning capability, and appearance on metal and wood firearms parts. From this evaluation five candidates have been recommended for further testing:

1. Du Pont - Synthetic Bleather
2. Krylon Tan-4
3. Sprayon 711
4. CRC 3-36
5. Boughton RLS

These five lubricants (along with 2 lubricants presently being used in Firearms Research Test Lab - WD-40 and Molycote GN-paste) will now be subjected to a more extensive test which best duplicates conditions the rifle will experience in the field and storage between hunting seasons.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SCOPE OF NSN TESTS

List of lubricants to be tested:

- Dry Condition (No lubricant)
- Du Pont Synthetic Diesther
- Krylon Ten-4
- Sprayon 711
- CRC 3-36
- Roughton RLP
- WD-40
- Molycote GN-paste } ASD Slick results only

Tests to be conducted will include:

- Cock & Fire Dry cycle tests
- Environmental/Cold Tests
- Cleaning Capability, Rust Removal & Prevention Analysis

Sample size:

- 1 ea M/700 Rifle, 3 bolts, 3 fire controls per lubricant and controls.

Environmental/Cold Tests

Firearms: M/700 and M/1100

1. Photos of surfaces where lubricant applied.
2. Determine application (same as dry cycle tests)
3. Live round jack shooting in following sequence:
   - Take bolt and cleaning velocities, Fire 100 rounds.
   - Place firearm on roof of building for 4 hours
   - Place firearm in freezer for remainder of soak (specify time on log) at -20°F.
   - Place rifle in stress cost oven overnight at +120°F.

   } All to take place in one day
4. Continue with Step 3 for one week or until failure of firearm to function properly occurs.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

"Failure to Function Properly"

- o The firearm does not perform as designed.
- o Evaluate rust development if any.
- o Record the function of the M/1100 via bolt velocities and/or closing velocities during test every 100 rounds.
- o Observe safety operation on both firearms during test.

Cock & Fire Dry Cycle Test Procedure

1. Photos at start of test
   a. Cocking cam surface on bolt body
   b. Firing pin striker
2. Apply lube: Determine amount of spray (1 sec./2 sec., distance from surface, etc.)
   a. Bolt assembly
   b. Fire control assembly
3. Take the following measurements:
   a. Trigger pull (3)
   b. Safe on/off forces (3)
   c. Bolt lift — cocked & fired — rear lift / rear engagement
4. Start Dry Cycle

   Inspection cycles: 0, every 100 cycles on 1st sample of each lube to determine inspection cycle for remaining four samples.

   Monitor cycles: Auto counter and human inspection.

5. Cycle Limit: 25,000 cycles all samples - or failure. Re-evaluate at 25,000 cycles if failure does not occur.
6. Measurements (#3) will be taken on samples #2 thru #5 at levels determined by sample #1.
7. Photos at completion of test - or failure
   a. Cam crack area on bolt
   b. Firing pin striker area
   c. Sear and connector surfaces of fire control

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

8. Measurements (#3) taken at completion of test.

Note: Two dry cycle machines available.
. Cycle rate: 1 every 3 seconds per machine.

Cleaning Capability, Rust Removal & Prevention Analysis

Firearms: Consignment guns at Ilion Fish & Game Club (Winter Skeet/Trap Shooting)

(All firearms tested will be M/1100 - 12 & 20 Ga.)

1. Review firearms and select for excessive crud/dirty condition and rust evident on surfaces of receiver and barrel.
2. Assign a lubricant to a firearm.
3. Record via photos; crud and rust.
4. Attempt to clean firearm using assigned lubricant and document results.
5. Thoroughly clean firearm by other means if assigned lubricant fails to do so.
6. Lubricate firearm with assigned lubricant.
7. Maintain accurate log on each firearm in test for one month's usage at the Gun Club, or longer depending on results.
   - o Date - rounds fired
   - o Lead used
   - o Shooters comments on function
   - o Weather
   - o Storage location and temperature variance.
8. Review condition of firearms and record results of crud and rust via photos.

Note: Bolt velocities at start and finish?

CER:P
Test.,Meas.& Mech.Analysis Lab

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

#8

MEMO: 1-18-82

FROM: C.E. RITCHIE

TO: C.B. WORKMAN

RE: EVALUATION OF LUBRICANT ON FIREARMS

OBJECTIVE TO SEE ABOUT DEVELOPMENT (BY REMINGTON) OF LUBRICANT FOR RIFLES

See marked pages

Read in entirety

Jan 1982 Remington is looking for a lubricant that won't "gum up" the Fire control. They intend to describe the cleaning and lubing procedure in the owners manual

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

January 18, 1982

TO: C. B. WORKMAN

FROM: C. E. RITCHIE

EVALUATION OF LUBRICANTS ON FIREARMS

ABSTRACT

Remington Arms Company is interested in developing a cleaning and lubrication procedure for the Model 700 Rifle Control that can be included in the rifles instruction manual. It is intended the cleaning and lubrication procedure be done without disassembly from the Hogue Fancy Cut products used should not gum up the close tolerances of the mechanism. The products selected should also be readily available on a nationwide basis, be non-flammable and non-toxic, as well as operate from -20°F to 120°F.

Preliminary evaluations were conducted by A.B. Hughes, Senior Consultant, ESD Maintenance Engineering Group, with conclusions reported on August 24, 1981 in document entitled "Maintenance Engineering - Lubrication of Rifles". Twenty-five (25) products were finally screened for rust removal, rust prevention, grease displacement, water displacement, cleaning capability, and appearance on metal and wood firearms parts. From this evaluation five candidates have been recommended for further testing:

1. Du Pont - Synthetic Diesther
2. Krylon Ten-4
3. Sprayon 711
4. CRC 3-36
5. Houghton ELP

These five lubricants (along with 2 lubricants presently being used in Firearms Research Test Lab - WD-40 and Molycote GN-paste) will now be subjected to a more extensive test which best duplicates conditions the rifle will experience in the field and storage between hunting seasons.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SCOPE OF NEW TESTS

List of lubricants to be tested:

- Dry Condition (No lubricant)
- Du Pont Synthetic Diesther
- Krylon Ten-4
- Sprayon 711
- CRC 3-36
- Houghton HLP
- WD-40
- Molycote GN-paste } R&D Ilion results only

LEWV

Tests to be conducted will include:

- Cock & Fire Dry cycle tests
- Environmental/Cold Tests
- Cleaning Capability, Rust Removal & Prevention Analysis

Sample size:

- 1 - M/700 Rifle, 5 bolts, 5 fire controls per lubricant and controls.

Environmental/Cold Tests

Firearms: M/700 and M/1100

1. Photos of surfaces where lubricant applied.
2. Determine application (same as dry cycle tests)
3. Live round jack shooting in following sequence:
   - o Take belt and closing velocities, fire 100 rounds.
   - o Place firearm on roof of building for 4 hours
   - o Place firearm in freezer for remainder of shift (specify time on log) at -20°F.
   - o Place rifle in stress coat oven overnight at +120°F.

   } All to take place in one day
4. Continue with Step 3 for one week or until failure of firearm to function properly occurs.

"Failure to Function Properly"

- The firearm does not perform as designed.
- Evaluate rust development if any.
- Record the function of the M/1100 via bolt velocities and/or closing velocities during test every 100 rounds.
- Observe safety operation on both [redacted] during test.

Cock & Fire Dry Cycle Test Procedure

1. Photos at start of test
   a. Cocking cam surface on bolt body
   b. Firing pin striker
2. Apply lube: Determine amount of spray (1 sec./2 sec., distance from surface, etc.)
   a. Bolt assembly
   b. Fire control assembly
3. Take the following measurements:
   a. Trigger pull (3)
   b. Safe on/off forces (3)
   c. Bolt lift — cocked & fired
   d. ~~_____~~ sear lift / sear engagement
4. Start Dry Cycle
   Inspection cycles: 0, every 100 cycles on 1st sample of each lube to determine inspection cycle for remaining four samples.
   Monitor cycles: Auto counter and human inspection.
5. Cycle Limit: 25,000 cycles all samples — or failure. Re-evaluate at 25,000 cycles if failure does not occur.
6. Measurements: (#3) will be taken on samples #2 thru #5 at levels determined by sample #1.
7. Photos at completion of test — or failure
   a. Cam track area on bolt
   b. Firing pin striker area
   c. Sear and connector surfaces of fire control

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

8. Measurements (#3) taken at completion of test.

Note: Two dry cycle machines available.
Cycle rate: 1 every 3 seconds per machine.

LGWV

Cleaning Capability, Rust Removal & Prevention Analysis

Firearms: Consignment guns at Ilion Fish & Game Club (Winter Skeet/Trap Shooting)

(All firearms tested will be M/1100 - 12 & 20 Ga.)

1. Review firearms and select for excessive crud/dirty condition and rust evident on surfaces of receiver and barrel.
2. Assign a lubricant to a firearm.
3. Record via photos; crud and rust.
4. Attempt to clean firearm using assigned lubricant and document results.
5. Thoroughly clean firearm by other means if assigned lubricant fails to do so.
6. Lubricate firearm with assigned lubricant.
7. Maintain accurate log on each firearm in test for one month's usage at the Gun Club, or longer depending on results.
   - o Date - rounds fired
   - o Load used
   - o Shooters comments on function
   - o Weather
   - o Storage location and temperature variance.
8. Review condition of firearms and record results of crud and rust via photos.

Note: Bolt velocities at start and finish?

CER:T
Test.,Meas.& Mech.Analysis Lab

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

1027

WORK REQUEST

DATE REQUESTED 14 Dec 76 WORK ORDER G0460

DESIGNER OR ENGINEER F. MARTIN / D. LEWIS

MODEL M-700 CAL. OR GAUGE .30-06 BARREL TYPE —

TYPE OF TEST

NEW DESIGN _____ DESIGN CHANGE _____

DRY CYCLE ✓ ACCURACY _____ HAND LOADING _____ STRESS _____

PRESSURE _____ MUZZLE VELOCITY _____ FUNCTION _____ PHOTOS _____

EVALUATION ✓ BOLT VELOCITIES _____ OTHER _____

REPORT REQUIRED

FORMAL ✓ INFORMAL _____ TEST RESULTS ONLY _____

TEST OBJECTIVE

To Evaluate Present Fire Control Line Marks And New Line FS-3951.

Total Cycle 25,000 - Trigger Pull Taken Three Every 250 Cycles To Be Reported For Two Guns Supplied.
To Be Reported With a Different Fire Control And New Hammer If Necessary.

GUNS REQUIRED

TEST COMPLETION DATE _____ SIGNED _____

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

#8788	5	4 3/4	4 3/4
#2315	4 3/4	4 3/4	4 3/4

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

10-22-76

FABRICATE A TRANSDUCER FOR MEASURING EVERY TRIGGER PULL IN THE M700 TRIGGER PULL COCK AND DRY FIRE TEST EVALUATION OF CURRENT VERSES FS 3451 LUBRICANTS.

THE TRIGGER PULL CAN BE FED INTO THE M.O.S. OR STRIP CHART RECORDED.

TWO MACHINES WILL BE RUNNING AT SAME TIME.

A. A. HUGICK

ENGINEERING COMPUTATION SHEET

Sheet No.

Title of Proj. or Study: 700 Tripoint Lub

Proj. or Study No.

Subject: Molykote Grease

Work'd

Computed: Yes

Date

679 8788 5 lbs

680 2372 4 lbs

1027

WORK REQUEST

DATE REQUESTED 14 Oct 96 WORK ORDER G0460

DESIGNER OR ENGINEER F. Martin / D. Lewis

MODEL M-700 CAL. OR GAUGE .30-06 BARREL TYPE —

TYPE OF TEST

NEW DESIGN _____ DESIGN CHANGE _____

DRY CYCLE ✓ ACCURACY _____ HAND LOADING _____ STRESS _____

PRESSURE _____ MUZZLE VELOCITY _____ FUNCTION _____ PHOTOS _____

EVALUATION ✓ BOLT VELOCITIES _____ OTHER _____

REPORT REQUIRED

FORMAL ✓ INFORMAL _____ TEST RESULTS ONLY _____

TEST OBJECTIVE

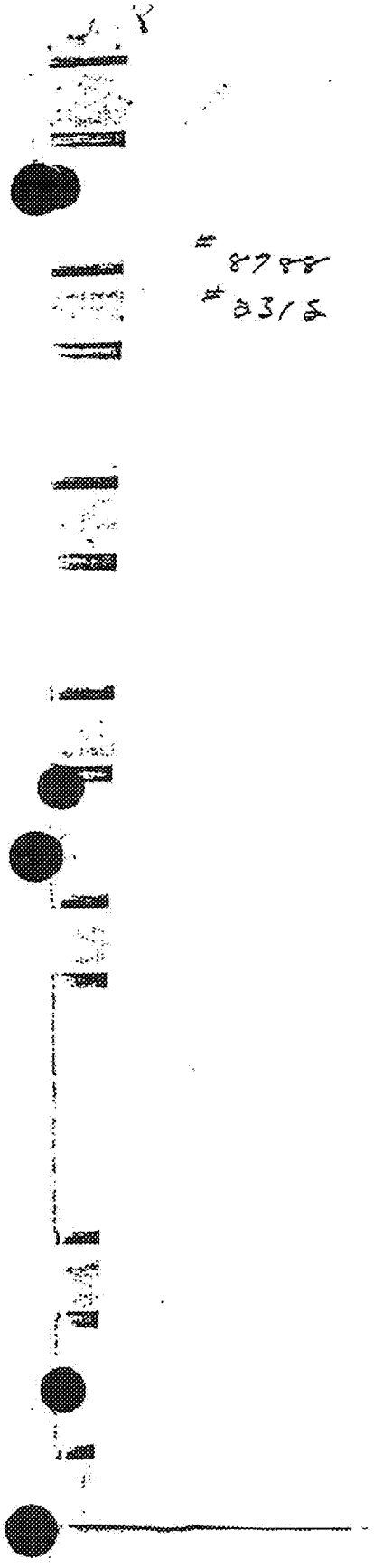
To Evaluate Present Fire Control Linkage Mods And New Linkage FS-3451.

Total Cycles 25,000 - Trigger Pull Taken Force Every 250 Cycles To Be Reported For Two Guns Supplied.
To Be Reported With a Different Fire Control And New Hammer If Necessary.

GUNS REQUIRED

TEST COMPLETION DATE _____ SIGNED _____

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

#8

MEMO: 1-18-82

From: CE. RITCHIE

TO: CB WORKMAN

RE: EVALUATION OF LUBRICANTS ON FIREARMS

OBJECTIVES TO SEE ABOUT DEVELOPMENT (BY REMINGTON) OF LUBRICANT FOR RIFLES.

See marked pages

Read in entirety

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REMINGTON ARMS COMPANY, INC.
Firearms Research Division
January 18, 1982

EX 91

TO: C. B. WORKMAN

FROM: C. E. RITCHIE

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ABSTRACT

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1. Du Pont - Synthetic Diesther
2. Krylon Ten-4
3. Sprayon 711
4. CRC 3-36
5. Houghton HLP

These five lubricants (along with 2 lubricants presently being used in Firearms Research Test Lab - WD-40 and Molycote GN-paste) will now be subjected to a more extensive test which best duplicates conditions the rifle will experience in the field and storage between hunting seasons.

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REMINGTON ARMS COMPANY, INC.
Firearms Research Division
January 18, 1982

TO: C. B. WORKMAN

FROM: C. E. RITCHIE

EVALUATION OF LUBRICANTS ON FIREARMS

Interesting objective!

ABSTRACT

Remington Arms Company is interested in developing a clean and lubrication procedure for the Model 700 Fire Control that can be included in the rifles instruction manual. It is intended that cleaning and lubrication procedure be done without disassembly of the action and the products used should not gum up the close tolerances of the mechanism. The products selected should also be readily available on a nationwide basis, be non-flammable and non-toxic, as well as operate from -20°F to 120°F.

Preliminary evaluations were conducted by A.B. Hughes, Senior Consultant, ESD Maintenance Engineering Group, with conclusions reported on August 24, 1981 in document entitled "Maintenance Engineering - Lubrication of Rifles". Twenty-five (25) products were finally screened for rust removal, rust prevention, grease displacement, water displacement, cleaning capability, and appearance on metal and wood firearms parts. From this evaluation five candidates have been recommended for further testing:

1. Du Pont - Synthetic Diesther
2. Krylon Ten-4
3. Sprayon 711
4. CRC 3-36
5. Houghton ELP

These five lubricants (along with 2 lubricants presently being used in Firearms Research Test Lab - WD-40 and Molycote GN-paste) will now be subjected to a more extensive test which best duplicates conditions the rifle will experience in the field and storage between hunting seasons.

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RECOMMENDATIONS

DU PONT SYNTHETIC DIESTHER (WET LUBRICANT)

- BEST LUBRICATING PROPERTIES
- BEST CLEANING CAPABILITIES
- GOOD RUST PREVENTITIVE

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TEST RESULTS SUMMARY

	DU PONT SYNTHETIC DIESTHER	CAC 3-36 (5-50)	SPRAYON 711
COCK & FIRE SIMULATION	1	3	2
ENVIRONMENTAL/COLD	1	2	3
RUST PREVENTION	2	1	2
CLEANING	1	2	3
RELIEVED FIRE CONTROL	-	-	-
AMMO PENETRATION	1	1	2
GUM BUILDUP	-	-	-

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BARBER - 1.30.130000293

7. M700 FIRE CONTROL - GUN BUILDUP

STEEL GUARD - STARTING TO CONCEAL

ALL OTHERS - NO CONCEALING

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6. LUBRICANT CONTAMINATION OF AMMUNITION

- DU PONT
- CRC 3-36
- SPRAYON 711

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5. M700 RELIEVED FIRE CONTROL COMPONENTS

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5. M/700 RELIEVED-FIRE CONTROL COMPONENTS

NO NOTICEABLE DIFFERENCES BETWEEN

DU PONT
CRC 5-36
MD-40

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4. FIREARMS CLEANING ABILITY

CLEANING RESULTS:

- DU PONT
- CRC 5-56 (3-36)
- SPRAYON 711

LUBRICATION RESULTS:

- DU PONT
- CRC 5-56 (3-36)
- SPRAYON 711

3. RUST PREVENTION TEST

- CRC 3-36 - BEST
- DU PONT & SPRAYON 711 - NOT AS GOOD AS CRC 3-36

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2. ENVIRONMENTAL / COLD TESTS

FUNCTION:

- DU PONT - 0 MALFUNCTIONS
- CRC 3-36 - 1 FAIL TO CONNECT
- SPRAYON 711 - 2 FAIL TO CONNECT

RUST PREVENTION:

- DU PONT & CRC - VERY LITTLE RUST
- 711 - GREATER AMOUNTS OF RUST

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1. W/OD COCK & FIRE SIMULATION

- DU PONT
- SPRAYON 711
- CRC 3-36
- HOUGHTON HLP
- KRYLON TFN-4

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FIREARMS TESTS

- M/700 COCK & FIRE SIMULATION
- ENVIRONMENTAL / COLD TEST
- RUST PREVENTION TEST
- FIREARMS CLEANING ABILITY
- M/700 RELIEVED FIRE CONTROL COMPONENTS
- AMMUNITION PENETRATION BY LUBRICANT
- M/700 FIRE CONTROL - GUM BUILDUP

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RECOMMENDED LUBRICANTS BY DUPONT

- DUPONT SYNTHETIC DIESTHER "WET LUBRICANT"
- KRYTOX TEX-6
- SYNATON 711
- CRC 3-36
- HOUGHTON HLP

EVALUATION

OIL PORT

- ODOR
- FEEL
- DRYING RATE
- PENETRATION
- SURFACE WETTING
- GREASE DISPLACEMENT
- TYPE CONTAINER
- LIQUID APPEARANCE
- WOOD OPEN PORE
- METAL SURFACE
- RUST REMOVAL
- DISPLACE MOISTURE
- DISPLACE SOLIDS
- GUN BARREL
- WOOD STOCK
- RUST PREVENTION

REMINGTON

- CLEANING
- LUBRICATION
- RUST PREVENTION

CLEANING / LUBRICATING PROCEDURE

- WITHOUT DISASSEMBLY
- NO SOAKING
- NATIONALLY AVAILABLE
- NON-FLAMMABLE
- NON-TOXIC
- -20°F TO 120°F

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PROBLEM

- VISUAL FILM BUILDUP
- CUSTOMER COMPLAINTS
- PRODUCT LIABILITY

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MODEL 700
FIRE CONTROL
LUBRICATION
EVALUATION

C.E. Ritchie
Firearms Research
June 30, 1982

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MODEL 700 FIRE CONTROL LUBRICATION EVALUATION

COVER SLIDE

Good morning. My name is Evan Ritchie; I am the Sr. Supervisor of the Ilion Firearms Research Testing & Measurement Lab.

Today, I would like to review with you the results to date of the Model 700 fire control lubrication testing.

PROBLEM SLIDE

It is clear we have a problem in firearms due to improper cleaning and lubricating. This is evident by the visible signs of film and gum buildup on returned customer firearms, customer complaints in the field and product liability cases in this area. To improve this situation, the owners manual can be rewritten to include a more detailed description on "How to properly clean and lubricate the firearm." The best available lubricant would be one which offers outstanding cleaning, lubricating and rust preventative properties. Through extensive testing by both a Du Pont Lubrication Consultant and the Remington Research Test Lab, we feel we have found a few lubricants which are much better performers than those presently known in the firearms community.

Today's presentation will review the results of these tests.

Allen B. Hughes, Senior Consultant in the Engineering Service Division's Maintenance Engineering Group of Du Pont, was consulted to evaluate the many different lubricants on the market today for their capability to clean and lubricate a M/700 fire control. CLEAN SLIDE It is intended that the cleaning and lubrication procedure be done without disassembly from the receiver and the products used should not gum up the close tolerances of the mechanism. The products selected should be readily available on a nationwide basis, be non-flammable and non-toxic, as well as [illegible] from -10°F. to 110°F.

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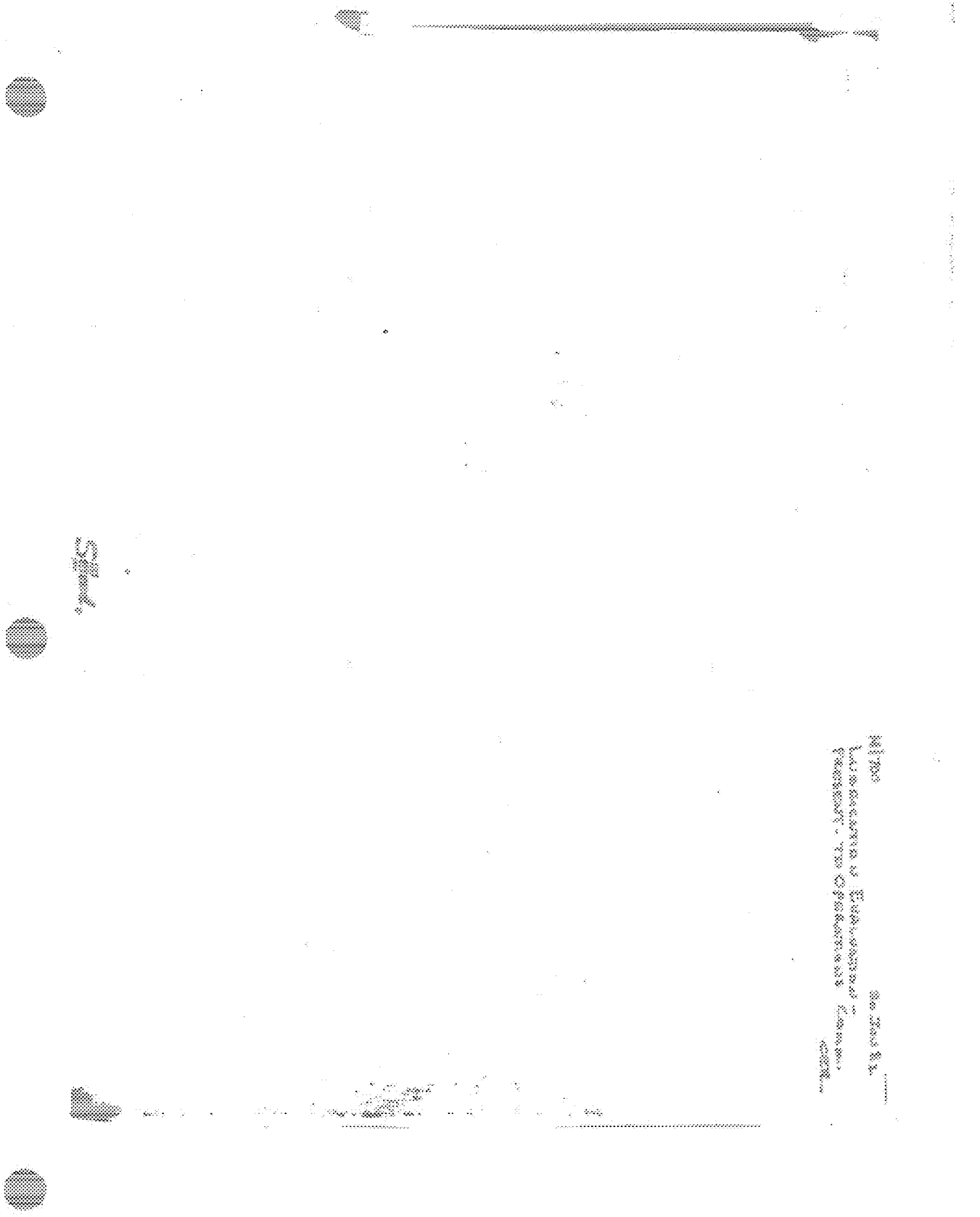

In 10 shotshells shot: 1 misfire (Hoppes Solvent)

In 20 centerfire rounds:

Spray:	Hoppes Solvent	3 misfire - 1 delay
	Hoppes Oil	2 misfire - 5 delay
	WD-40	0 misfire - 0 delay
Soak:	Hoppes Solvent	16 misfire - 0 delay
	Hoppes Oil	8 misfire - 5 delay
	WD-40	13 misfire - 1 delay

We felt this information was worthwhile to note.

Overall - Du Pont.com out equal to CRC and both well ahead of Fil.

M/700 Fire Control - Gum Buildup

The purpose of this test is to induce gumming of M/700 fire controls using only assigned lubricants.

To date only Steelguard has showed signs of starting to congeal. All others are still liquid.

This is an overview of the test results.

It is easily seen that the Du Pont Synthetic Diesther "Wet Lubricant" offers: Best Slide.

Outstanding lubricating and cleaning properties as well as good rust preventative.

The writing of the owners manuals on cleaning and lubricating is presently in progress. Both legal and marketing will be contacted for their input and final approval during this process.

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* CRC 3-36 - performed better than 711. Samples showed signs of good lubrication but some signs of drying and light rust.
* Du Pont Synthetic Diether - performed the best of all. Samples all showed good signs of lubrication and rust prevention.

5. M/700 Relieved-Fire Control Components

Fifteen (15) fire controls were dry cycled to 10,000 or 25,000 cycles. Five (5) fire controls had the sear safety cam, trigger and connector relieved 0.005" - ten (10) fire controls were by 0.010". Each fire control was degreased and lubricated before beginning of the test.

There were no noticeable difference between the lubricants used (Du Pont, CRC and WD-40). (Discuss WD-40 Use)

6. Lubricant Contamination of Ammunition

The purpose of this test was to see if any of the three lubricants being tested would contaminate the primer and cause a misfire or delay fire.

Centerfire and shotgun ammunition were sprayed or soaked in each of the three lubricants for periods ranging from 1 to 7 days and then test fired.

In 80 centerfire rounds shot: Du Pont and CRC 3-36 have experienced only one (1) misfire each. The 711 has had 30 misfires or delay fires.

In ten (10) shotshells shot: There were no misfires or delay fires of these 3 lubricants. We also tested WD-40, Hoppes Gun Oil and Hoppes Solvent just to see if they would cause misfires too.

Firearms Cleaning Ability

The purpose of this test was to compare: the cleaning capabilities of each lubricant, and the ability to continue to lubricate after an extended period of shooting.

Sixteen M/1100 shotguns were removed from the Ilion Fish & Game Club. Each lubricant was used as a cleaning agent to clean the dirty components.

The following conclusions were made during the cleaning of the Fish & Game Club shotguns:

- Sprayon 711 emits a heavy fog while spraying. It wiped off better than CRC 5-36 but not as well as Du Pont Synthetic Diesther.

  NOTE: CRC 5-36 and CRC 5-56 are slightly different

- CRC 5-56 became gummy after setting for 1/2 hour. It also was harder to remove grime (i.e., elbow grease).
- Du Pont Synthetic Diesther - cleaned relatively easy and did not gum up after setting.

After cleaning, the guns were degreased, relubricated by sample lubricants and returned to the Fish & Game Club. Three months later, those 16 guns were inspected.

The following conclusions were made while inspecting the 16 M/1100 shotguns at the Ilion Fish & Game Club.

- Sprayon 711 - performed the worst. Samples showed signs of rust and film buildup.

week-end. At 8:00 A.M. Monday, they were removed and bolt velocity measurements were taken.

The guns were then placed in a dry cabinet for 24 hours. The guns were removed from the dry cabinet and bolt velocity measurements were taken.

At the completion of the test, all the guns were disassembled and examined for rust.

The results of the test are as follows: *Results #2 slide*

For Function:

Du Pont - 0 Malfunctions

CRC 3-36 - 1 Fail to Connect

711 - 2 Fail to Connect

For Rust Prevention:

Du Pont & CRC - Very little rust.

711 - Greater amounts of rust.

#3 slide *3. Rust Prevention Test

The third test was the Rust Prevention Test. The purpose was to evaluate the lubricants' ability to prevent rust from developing on a firearm continuously exposed to the elements. M/1100 shotguns had their stock and forearms removed, and totally degreased. All metal parts were saturated with an assigned lubricant and placed horizontally in a rack on the roof of Bldg. 32 for one month.

Results of the test are: *Results #3 slide*

* CRC 3-36 - Best

* Du Pont & 711 - Not as good as CRC 3-36

-2-

Five M/700 firecontrols per sample lubricant were dry cycle tested to 20,000 cycles or failure whichever came first. Tests were performed on pneumatic actuated equipment which simulate the cocking and firing of the M/700 fire control.

The results of this test are shown here on this slide [DRY CYCLE SLIDE OF RESULTS - DISCUSS]

The Du Pont Synthetic Diether "Wet Lubricant" finished at the top with Sprayon 711 second and CRC 3-36 third. Houghton HLP and Krytox Ten-4 were eliminated from further testing due to their poor performance in this test.

2. Environmental/Cold Tests

The purpose of this test was to evaluate the lubricating properties over the temperature extremes -20°F to 120°F and to check for rust prevention.

M/700 centerfires and M/1100 shotguns were selected for this test. The test went as follows:

- At 8:00 A.M. each day bolt velocity measurements were taken by the Measurements Lab, utilizing the photo-diode transducer system.
- 100 rounds were fired through each gun.
- All guns were exposed to the environment by being placed on the roof for 8 hours each day.
- They were then placed in a freezer at -20°F for 3 hours. Trigger pull and firing pin indents were taken as guns were removed from the freezer.
- The guns were placed in a stress coat oven at 120°F overnight (16 hours).

  The procedure was repeated each day for 5 consecutive days. The guns were then placed on the roof over the

Over 40 different products were considered for initial screening. The number was reduced to 25 samples for physical properties and performance evaluations. Some common names of lubricants tested which are related to the firearms industry are Hoppes & Outers Gun Oil, Steelguard, WD-40 and Molykote. The 16 lubricant properties looked at by Du Pont were: * Evaluation Slide - Discuss!

The Test Lab looked at the more practical aspects such as cleaning, lubricating and rust prevention.

Of the 25 samples tested, 5 were rated superior to the others by Du Pont and further testing recommended. These are: * Rec. Lub. Slide.

- Du Pont - Synthetic Diether - "Wet Lubricant"
- Krytox Ten-4
- Sprayon 711
- CRC 8-36
- Houghton HLP

The Ilion Test Lab has taken these results and have developed additional tests which are more applicable to firearm evaluation. The tests include: * Tests Slide

- Cock and Fire Simulation
- Environmental / Cold Test
- Rust Prevention Test
- Firearms Cleaning Ability
- Relieved Fire Control Components
- Ammunition Penetration by Lubricant
- Fire Control - Gum Buildup Evaluation

Results are as follows:

* #1 Slide

1. M/700 Cock and Fire Simulation

This test was selected as a first test because the Test Lab felt it would be an excellent evaluation of the lubricating properties of the 5 lubricants recommended by Allen Hughes.

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OPERATIONS COMMITTEE

FIREARMS - TRAPS

ILION DIVISION

JUNE 30, 1988

FIREARMS

ITEMS FROM REGULAR AGENDA

ITEM	RESPONSIBILITY
SHOTGUNS	
MODEL 870 RIOT - BREECH BOLT MODIFICATION	Production
1988 DUCKS UNLIMITED (1988 Introduction	Marketing ✓ Research Production
MODEL 870/1100 LEFT HAND BORE BARREL (1988 Introduction)	Marketing ✓ Research Production
MODEL 870 LIMITED EDITION (1988 Introduction)	Marketing ✓ Research Production
PARKER SHOTGUNS	Marketing ✓
CENTER FIRE RIFLES	
MODEL SEVEN LMT (1988 Introduction)	Production Research

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-2-

ITEM	RESPONSIBILITY
CENTER FIRE RIFLES	
MODEL 700 ADL MONTHLY (1983 introduction)	Production Research
MODEL 700 CLASSIC 700 M & R (1983 introduction)	Marketing ✓ Research Production
MODELS 7400, 7600, FOUR AND SIX - PROGRAM UPDATE	Marketing ✓
GENERAL	
FIREARMS LUBRICATION - STATUS REPORT	Research Production Marketing ✓

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REMINGTON ARMS COMPANY, INC.

INTER-COMPANY INTERNAL CORRESPONDENCE

Remington (1816) Parker (1865)

Distribution: C.B. Workman
C.E. Ritchie
J.W. Brooks
L.J. Hagen

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

RESEARCH TEST and MEASUREMENT REPORT -- Report No. 82 0361

M/700 FIRE CONTROL EVALUATION AND LUBRICATION TEST
RELIEVED SEAR SAFETY CAM, TRIGGER AND CONNECTOR

Prepared by: A. Long – F. Supry

Date Prepared: 5-25-82

Proofread and Cleared By:

J.E. Hennings, Foreman-Test Lab / R.E. Nightengale, Foreman-Measurement Lab — Signature — 6-2-82 Date

C.E. Ritchie, Sr. Supervisor - Testing, Mtrls. & Mech. Analysis Lab — Signature — 6/2/82 Date

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TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	82 0361
REPORT TITLE:	M/700 Fire Control Evaluation and Lubrication Test Relieved Sear Safety Cam, Trigger and Connector
MODEL(S):	700
GAUGE OR CALIBER:	All
DATE:	5-25-82
WORK ORDER NO.:	C-1803-000
PART NAME:	Fire Control
DESIGNER/ENGINEER:	L.J. Hagen

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED 15
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: Trigger Pull / Sear Lift Measurements
6. ENVIRONMENTAL TEST -
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. BIO TRANCE - NO. OF GUNS TESTED: _____

   NO. OF ROUNDS PER GUN: _____

   TOTAL ROUNDS FIRED IN TEST: _____

   AMMO TYPE: MAKE _____ TARGET: _____

   RIM FIRE _____ CENTER FIRE _____

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Report No. 82 0561

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

May 25, 1982

TO: J.H. Hennings

FROM: A.J. Long -- F. L. Supry

REPORT TITLE: M/700 Fire Control Evaluation and Lubrication Test Relieved Sear Safety Cam, Trigger and Connector.

ABSTRACT

On 3-5-82 a request was received from Pete Hagen, Research Current Products, to test 15 altered M/700 fire controls.

A. 10 fire controls have the sear safety cam, trigger and connector relieved by .010".

B. 5 fire controls have the sear safety cam, trigger and connector relieved by .005".

The test was to be a dry cycle evaluation with inspection at 5000 cycle intervals. WD-40, Du Pont and CRC lubricants were to be used for the test.

SCOPE OF TEST

To compare the 15 altered fire controls and to compare the 3 lubricants.

TEST RESULTS

All 15 fire controls were tested with no malfunctions occuring. No significant differences were noticed.

The three lubricants included in the test performed well. No significant differences were noticed.

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REPORT TEXT

Data Sheet No. 1 (Appendix A) contains the following information: lubricant used, cycles completed, amount of relief, sear lift, sear engagement, and trigger pull measurements on each fire control.

A. Dry Cycle

Fire controls No. 1, No. 2 (with WD-40) and No. 6 and No. 7 (with Du Pont) were cycled to 25,000 cycles, all others were stopped at 10,000 cycles.

Six (6) fire controls were lubricated with WD-40, seven (7) with Du Pont and two (2) with CRC.

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TEST PROCEDURE

1. The fire controls with .005 relief were marked 1 through 5.

2. The fire controls with .010 relief were marked 6 through 10.

3. The fire controls were degreased, using the solvent degreasing tanks located in the Heat Treat and then lubricated with the assigned lubricant.

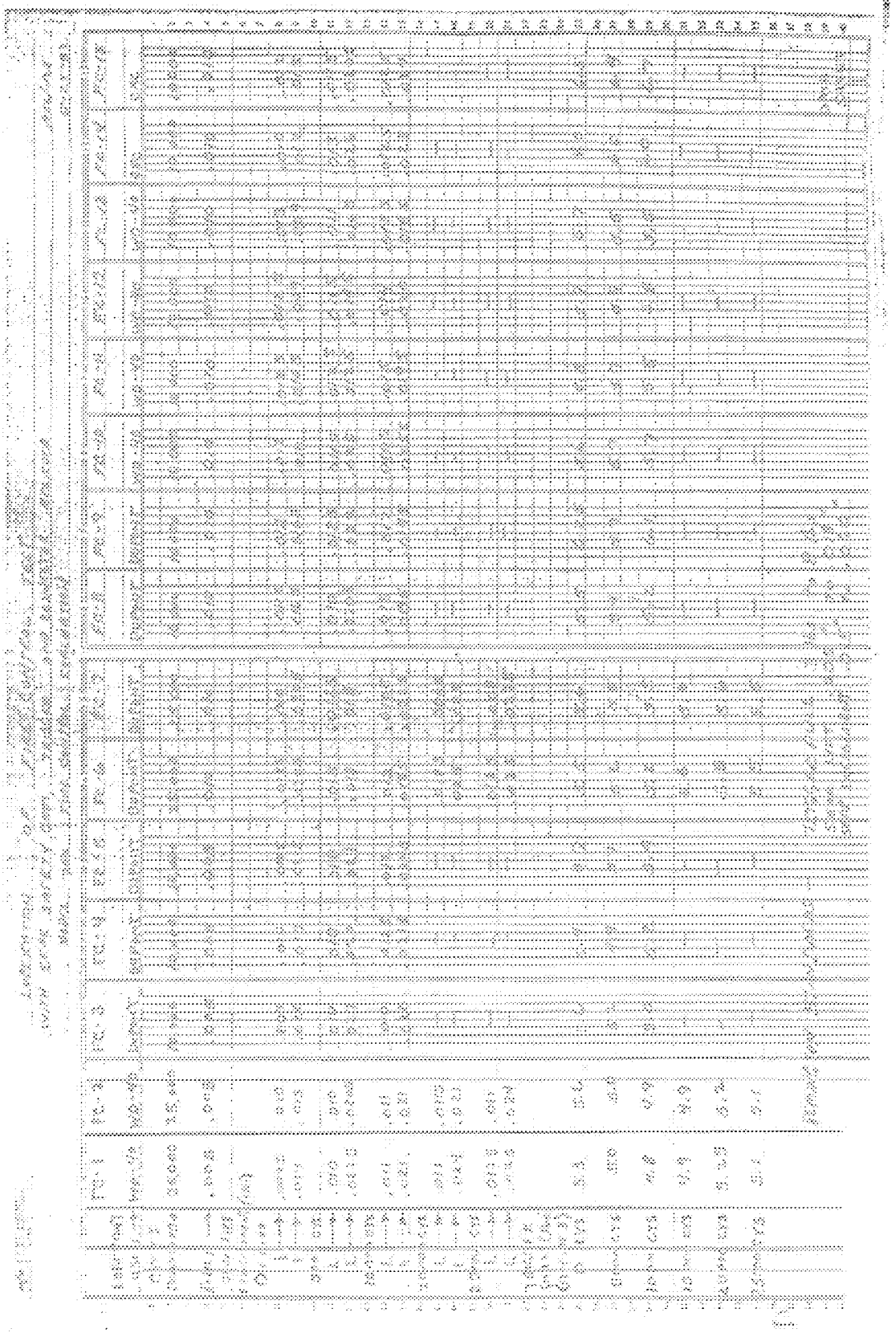
4. The fire controls were assembled into Model 700 actions, then sear lift and engagement measurements, and trigger pull measurements were taken.

5. The actions were assembled into a dry cycle simulator and a predetermined number of cycles were run, with measurements taken every 5000 cycles.

6. Steps No. 3, 4 and 5 were repeated until all the fire controls were tested.

APPENDIX "A"

(Data Sheet No. 1)



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NO

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(1)

Lubricant Test:

Procedure: - Cock & Fire Dry Cycle.

1. Photos at start of test
   a- ~~cocking~~ sear surface on bolt body.
   b- firing pin striker

2. Apply lube: determine amount (spray)
   a. bolt assem. (1 sec/2 sec. — ok)
   b. fire control assem. (distance, sec)

3. Take the following meas.
   a. trigger pull - (3)
   b. safe on/off forces. (3)
   c. bolt lift - — cocked & fired.

4. Start Dry Cycle
   inspection cycles:
   @ every 100 cycles on 1st sample of each lube to determine inspection cycle for remaining four samples

5. Cycle limit:
   25,000 cycles all samples - — or failure.

6. Measurements (*3) will be taken on samples #2 thru #5 at levels determined by sample #1

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2.

7. Photos at completion of test. - - or failure.
   a. - cam track area on bolt.
   b. - firing pin striker area.
   c. - sear and connector surfaces of fire control.

8. Measurements (#3) taken at completion of test.

Lubricants to be tested.

- DuPont Diester - production sample.
- Krytox Ten-4
- Sprayon 711
- CRC 5-56
- Houghton HLP
- WD-40
- Molycote GN - Paste.

} Qualification results only.

Additional Testing: At completion of successful dry cycle

- Combination to failure.
- Combination with lubricant removed.
- Cold tests.
- Environment Tests.

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Test Sample Size.

- 1 rifle, 5 balls, & fire controls per lubricant.

- 2 dry cycle machines available.
  cycle rate -- 1 every 8 seconds. per machine.

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(9)

1-12-93

Lubricant Tests — Cont'd.

— Congealment vs Function —

Firearms: M-700 & M-1100

1. Photos of surfaces where lubricant applied
2. Determine application (Per sheet 1)
3. Live round jack shooting in following sequence:
   - Fire 100 rds.
   - Place firearm on roof of building for 4 hours.
   - Place firearm in freezer for remainder of shift (specify time only) at -20°.
   - Place rifle in stress cond oven overnight at +120°.

   (All to take place in one day.)
4. Continue with step 3 for one week or until failure of firearm to function properly occurs.

"Failure to function properly"

- The firearm does not perform as designed.
- Evaluate rust development, if any
- Record the function of the M-1100 via both velocities and or closing velocities during the test when irregular operation occurs.
- Observe safety operation on both firearms during test.

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(5)

1-12-82
JK

Cleaning Capability, Rust Removal & Prevention
Firearms: Consignment guns at Ilion Fish & Game Club.
(Winter Skeet/Trap Shooting)
(All firearms tested will be M-1100 - 12 and 20ga.)

1. Review firearms and select for excessive crud/dirty condition and rust evident on surfaces of receiver and barrel.
2. Assign an lubricant to a firearm
3. Record via photos; crud and rust.
4. Attempt to clean firearm using assigned lubricant and document results.
5. Thoroughly clean firearm by other means if assigned lubricant fails to do so.
6. Lubricate firearm with assigned lubricant.
7. Maintain accurate log on each firearm in test for one months usage at the Gun Club.
   - Date - rounds fired.
   - load used.
   - Shooters comments on function
   - Weather
   - Storage location and temperature variances
8. Review condition of firearms and record results of crud & rust via photos.

Note:- Bolt velocities at start and finish ?*
*- Same test at Rem. Farms. ?

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SEND LIST w ENCLOSURE

Sample	Low Avg	Low Avg
1 - 2 -	.0094	.017
5000	.010	.0225
10000	.011	.021
15000	.010	.0225
20001	.011	.023
25000	.0125	.025
3. 0	.010	.016
5000	.0105	.0205
10000	011	.021
15000	.010	.0215
20000	.0115	.021
25000	011	.024
3. 0	.008	.0128
5000	.007	.0124
10000	.010	.027
[illegible]	[illegible]	[illegible]
4. 0	.010	.017
5000	.010	.020
10000	.0125	.0215
15000		
20000		
25000		

	Low Light	Low Crystal
0	.0105	.0225
5000	.010	.024
10000	.012	.0245
15000		
20000		
25000		

2	0	.0125	.0201
	5000	.015	.0195
	10000	.013	.0185
	15000	.0125	.0235
	20000	.011	.025
	25000	.0125	.025

	0	.0101	.0205
	5000	.0135	.015
	10000	.0105	.0224
	15000	.0105	.0205
	20000	.0085	.025
	25000	.008	.0235

5	0	.0115	.0101
	5000	.010	.0201
	10000	.0115	.0195

6	0	.012	.0185
	5000	.0135	.023
	10000	.017	.0195

		Min Slope	Max Segment
10	0	.012	.018
	5000	.0113	.023
	10000	.0103	.0253
11	0	.0123	.0103
	5000	.0123	.0123
	10000	.013	.0193
12	0	.0123	.008
	5000	.0113	.0183
	10000	.013	.020
13	0	.013	.008
	5000	.011	.0163
	10000	.0133	.0193
14	0	.010	.012
	5000	.013	.026
	10000	.0123	.023
15	0	.012	.013
	5000	.0113	.0203
	10000	.0123	.027
	Min Slope Min Eng		.005 .018
	Max Eng		.015 .021

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INTER-DEPARTMENTAL CORRESPONDENCE

Remington
DuPont

Distribution: C.B. Wehrman
C.E. Ritchie
J.W. Brooks
L.J. Hagan

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RESEARCH TEST and MEASUREMENT REPORT – Report No. 82 0361

M/700 FIRE CONTROL EVALUATION AND LUBRICATION TEST
RELIEVED SEAR SAFETY CAM, TRIGGER AND CONNECTOR

Prepared by: A. Long – F. Supry

Date Prepared: 5-25-82

Proofread and Cleared By:

J.E. Hennings, Foreman-Test Lab / R.E. Nightingale, Foreman-Measurement Lab — Signature — 6-2-82 Date

C.E. Ritchie, Sr. Supervisor - Testing, Mess. & Mech. Analysis Lab — Signature — 6/3/82 Date

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TEST & MEASUREMENT LAB REPORT

REPORT NUMBER:	82 0261
REPORT TITLE:	M/700 Fire Control Evaluation and Lubrication Test
MODEL(S):	Relieved Sear Safety Cam, Trigger and Connector 700
GAUGE OR CALIBER:	All
DATE:	5-25-82
WORK ORDER NO.:	C-1803-006
PART NAME:	Fire Control
DESIGNER/ENGINEER:	L.J. Hagen

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED 18
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: Trigger Pull - Sear Lift Engagement
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: _____

   NO. OF ROUNDS PER GUN: _____

   TOTAL ROUNDS FIRED IN TEST: _____

   AMMO TYPE: MAGS _____; TARGET: _____

   RIM FIRE _____ CENTER FIRE _____

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Report No. 82 0361

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

May 25, 1982

TO: J.H. Hennings

FROM: A.J. Long -- F. L. Supry

REPORT TITLE: M/700 Fire Control Evaluation and Lubrication Test Relieved Sear Safety Cam, Trigger and Connector

ABSTRACT

On 2-5-82 a request was received from Pete Hagen, Research Current Products, to test 15 altered M/700 fire controls.

A. 10 fire controls have the sear safety cam, trigger and connector relieved by .010".

B. 5 fire controls have the sear safety cam, trigger and connector relieved by .005".

The test was to be a dry cycle evaluation with inspection at 5000 cycle intervals. WD-40, Du Pont and CRC lubricants were to be used for the test.

SCOPE OF TEST

To compare the 15 altered fire controls and to compare the 3 lubricants.

TEST RESULTS

All 15 fire controls were tested with no malfunctions occurring. No significant differences were noticed.

The three lubricants included in the test performed well. No significant differences were noticed.

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REPORT TEXT

Data Sheet No. 1 (Appendix A) contains the following information: lubricant used, cycles completed, amount of relief, sear lift, sear engagement, and trigger pull measurements on each fire control.

A. Dry Cycle

Fire controls No. 1, No. 2 (with WD-40) and No. 6 and No. 7 (with Du Pont) were cycled to 25,000 cycles, all others were stopped at 10,000 cycles.

Six (6) fire controls were lubricated with WD-40, seven (7) with Du Pont and two (2) with CRC.

TEST PROCEDURE

1. The fire controls with .005 relief were marked 1 through 5.

2. The fire controls with .010 relief were marked 6 through 15.

3. The fire controls were degreased, using the solvent degreasing tanks located in the Heat Treat and then lubricated with the assigned lubricant.

4. The fire controls were assembled into Model 700 actions, then sear lift and engagement measurements, and trigger pull measurements were taken.

5. The actions were assembled into a dry cycle simulator and a predetermined number of cycles were run, with measurements taken every 5000 cycles.

6. Steps No. 3, 4 and 5 were repeated until all the fire controls were tested.

APPENDIX "A"

(Data Sheet No. 1)

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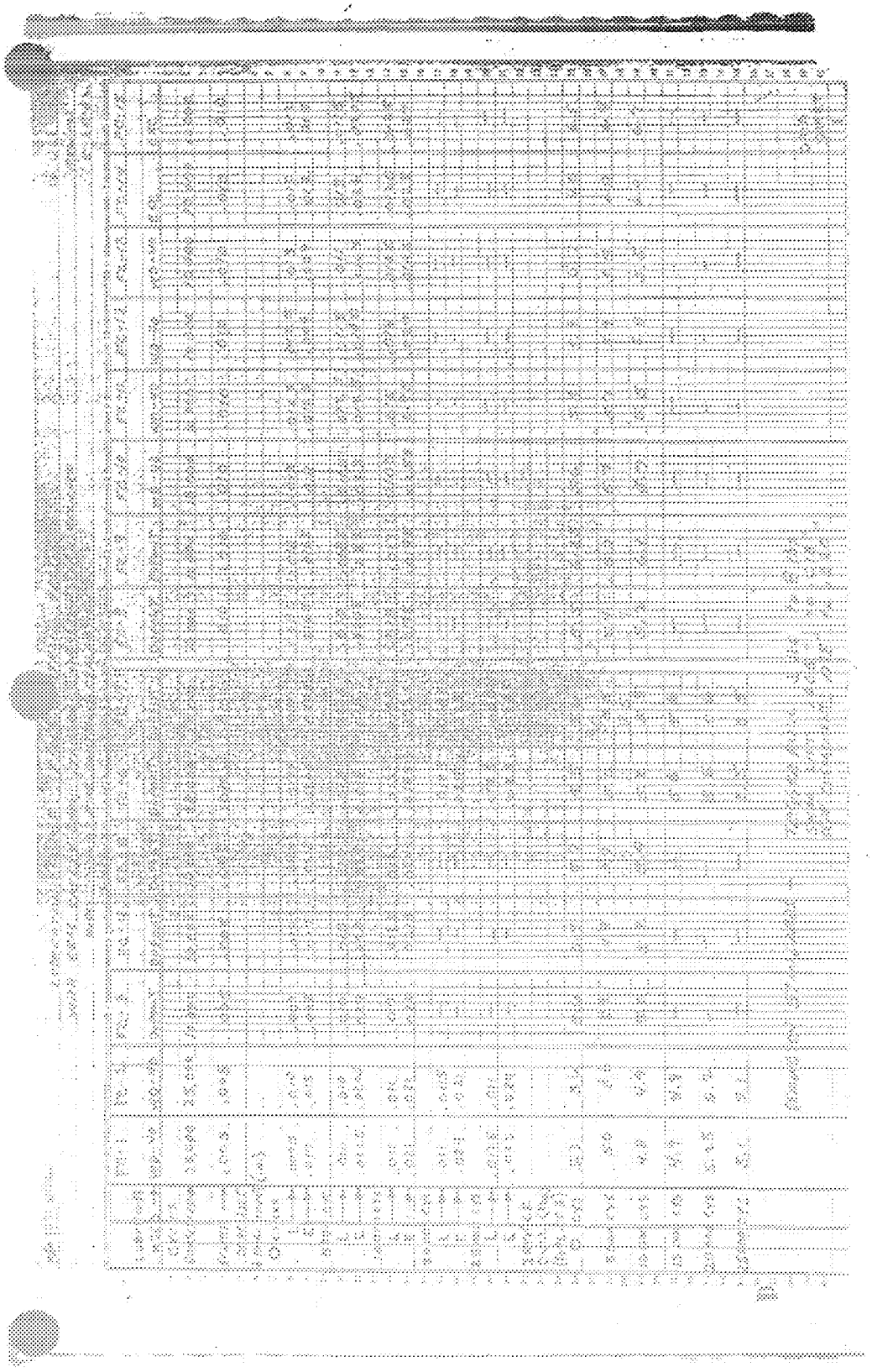

R2513288

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REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

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J.W. Brooks
R.J. Pohl
Petroleum Lab
Chambers Works
A.B. Hughes
ESD - Louviers

RESEARCH TEST and MEASUREMENT REPORT – Report No. 82 0331 Supplement No. 3

Evaluation of Lubricants on Firearms
Rust Prevention Test

Prepared by: F.L. Surry

Date Prepared: 5-6-82

Proofread and Cleared By:

J.H. Hastings, Foreman-Test Lab / R.E. Nightingale, Foreman-Measurement Lab — Signature — Date 5-20-82

C.E. Ritchie, Sr. Supervisor - Testing, Mens. & Mech. Analysis Lab — Signature — Date 5/20/82

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 82 0331 - Supplement No. 3

REPORT TITLE: Evaluation of Lubricants on Firearms Rust Prevention Tests

MODEL(S): M/1100

GAUGE OR CALIBER:

DATE: 5-6-82

WORK ORDER NO.:

PART NAME:

DESIGNER/ENGINEER:

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: _____
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: _____

   NO. OF ROUNDS PER GUN: _____

   TOTAL ROUNDS FIRED IN TEST: _____

   AMMO TYPE: MAGS _____; TARGET: _____

   RIM FIRE _____ CENTER FIRE _____

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Report No. 82 0331 Supplement No. 3

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

May 6, 1982

TO: J.H. Hennings

FROM: F.L. Sarry

REPORT TITLE: Evaluation of Lubricants on Firearms
Rust Prevention Test

ABSTRACT

C.E. Rachin requested that the Test Lab conduct a rust prevention test on the three lubricants still under evaluation:

1. Du Pont -- Synthetic Diesel
2. Sprayon -- 711
3. CRC -- 3-36

SCOPE OF TEST

To observe the differences in rust prevention of the three lubricants.

TEST RESULTS

In their order of finish, from the best performing lubricant to the poorest performing lubricant evaluating rust prevention, the following results were obtained.

1. CRC 3-36
2. Du Pont and 711

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REPORT TEXT

Eight M/1100 shotguns were selected for the test by J.H. Hennings (Test Lab).

For daily weather conditions during this test refer to Data Sheet No. 1.

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TEST PROCEDURE

The stocks and fore-ends were removed from the shotguns. The shotguns were then degreased, using the solvent degreasing tanks located in our Heat Treat Department.

All metal parts of the shotguns were then saturated with the assigned lubricant.

The guns were then placed horizontally in a rack on the roof of Bldg. 52.

The guns were left untouched in the environment for one month. They were then removed and inspected for rust.

Photographs were taken after two weeks on the roof and individual photographs were taken at the completion of the test.

The shotguns were disassembled and stored in boxes in the machine room at the completion of the test.

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APPENDIX "A"

(Data Sheets)

DAILY WEATHER LOG - STARTING 3-22-52

Date	Temp. (Hi-Low)	Humidity	Weather Comments
3-22	38° - 31° F	47%	Cloudy, snow flurries
23	46° - 25°	41%	Clear, sunny
24	47° - 32°	43%	Clear
25	37° - 32°	47%	Overcast
26	36° - 14°		Flurries
27	24° - 9°		Snow
28	31° - 10°		Windy, clear
29	36° - 12°		Sunny
30	35° - 32°		Sunny
31	38° - 35°		Rain, windy
4-1	35° - 15°		Flurries, windy
2	32° - 20°		Clear, windy
3	38° - 20°		Rain
4	29° - 15°		Snow, cold wind
5	32° - 18°		Heavy snow
6	26° - 8°	70%	Strong wind, snow
7	36° - 10°		Windy - snow (light)
8	35° - 28°		Partly cloudy
9	40° - 30°		Partly cloudy
10	46° - 20°		Light snow, rain
11	40° - 28°		Light snow, rain
12			
13			
14			
15			
16			
17	72° - 47°		Sunny
18	69° - 32°		Rain
19	64° - 45°		
20	45° - 38°		
21	40° - 30°		Flurries
22			

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J.P. Linde
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R.J. Pohl
Petroleum Lab
Chambers Works
A.B. Hughes
ESD - Louviers

RESEARCH TEST and MEASUREMENT REPORT – Report No. 82 0331 - Supplement No. 2

Evaluation of Lubricants on Firearms
Environmental / Cold Tests (M/700 and M/1100)

Prepared by: F.L. Sunry

Date Prepared: 5/2/82

Processed and Cleared By:

J.E. Hennings, Foreman-Test Lab / R.E. Nightingale, Foreman-Measurement Lab — Signature — Date 5-26-82

C.E. Ritchie, Sr. Supervisor - Testing, Mass. & Mech. Analysis Lab — Signature — Date 5/28/82

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 82 0331 - Supplement No. 2

REPORT TITLE: Evaluation of Lubricants on Firearms
Environmental / Cold Tests (M700 and M1100)

MODEL(S): M/700 and M/1100

GAUGE OR CALIBER:

DATE: 5-2-82

WORK ORDER NO.:

PART NAME:

DESIGNER/ENGINEER:

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: _____
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: _____

   NO. OF ROUNDS PER GUN: _____

   TOTAL ROUNDS FIRED IN TEST: _____

   AMMO TYPE: MAGS _____; TARGET: _____

   RIM FIRE _____ CENTER FIRE _____

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Report No. 82 0331 - Supplement No. 2

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

May 25, 1982

TO: J.H. Hennings

FROM: F.L. Supry

REPORT TITLE: Evaluation of Lubricants on Firearms
Environmental / Cold Tests (M/700 and M/1100)

ABSTRACT

C.E. Rimble requested that the Test Lab conduct Environment/Cold Tests on three spray lubricants.

1. Du Pont - Synthetic Diester
2. Sprayon - 711
3. CRC - 3-36

NOTE: Krylon Tex-4 and Houghton HLP were eliminated from further testing due to their poor performance in the M700 cock and fire simulation test.

SCOPE OF TEST

To compare the three lubricants in an environmental/cold test.

TEST RESULTS

In their order of finish, from the best performing to the poorest performing lubricant, the following results were obtained: Du Pont - Synthetic Diester
CRC - 3-36
Sprayon - 711

The following is a brief synopsis of each phase of the environmental/cold test.

1. Firearm function as removed from freezer after 3 hours at -20° F.

Du Pont	No failures to function occurred.
CRC	1 failure to function occurred.
711	2 failures to function occurred.

2. Rust inspection at completion of test.

Du Pont and CRC	Very little rust.
711	Greater amount of rust

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TEST RESULTS - continued

3. Firearms function during firing of 100 rounds per day.

   There were no malfunctions or failures during this phase of the test. All lubricants were equal.

4. Bolt Velocity Measurements

   Measurements indicate that the lubricants all performed equal during this phase of the test.

5. Firearm function as removed from roof after 8 hours exposure to environment.

   Lubricants all performed equal during this phase of the test.

6. Firearm function as removed from roof after 64 consecutive hours of exposure to environment.

   Du Pont and CRC - No failures to function occurred.
   Teflon - Authors figure.

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REPORT TEXT

A. Bolt velocity measurements were taken at the start of the test and each morning during the test. Refer to Data Sheet No. 1 in Appendix A for individual results.

B. Trigger pull, firing pin indent, sear engagement, sear lift, safe on, safe off, and bolt lift measurements were taken at the start and completion of the test. Refer to Data Sheet 2 in Appendix A for individual results.

C. Trigger pull and firing pin indents were taken each day after the guns had remained in the freezer at -20°F. for three hours. Refer to Data Sheet 3, Appendix A, for individual results.

D. Weather conditions during test:

3/29	Sunny 45° F.	3 hours exposure each day.
3/30	Sunny 55° F.	
3/31	Rain 50° F.	
4/1	Flurries 30° F.	
4/2	Sunny, windy 35° F.	
4/3	Rain, freezing rain 32° F. to 20° F.	Week-end exposure.
4/4	Snow 20°F. to 15° F.	

TEST PROCEDURE

A. All rifles and shotguns selected to be used in the test were disassembled and degreased, using the solvent degreasing tanks located in our Test Department.

Each gun was lubricated with the assigned lubricant and reassembled.

1. At 8:00 A.M. each day bolt velocity measurements were taken by the Measurements Lab, utilizing the photo-diode recordimer system.

2. 100 rounds were fired through each gun.

3. All guns were exposed to the environment by being placed on the roof for 3 hours each day.

4. They were then placed in a freezer at -20°F. for 3 hours. Trigger pull and firing pin indents were taken as guns were removed from the freezer.

5. The guns were placed in a forced draft oven at 120°F. overnight (16 hours).

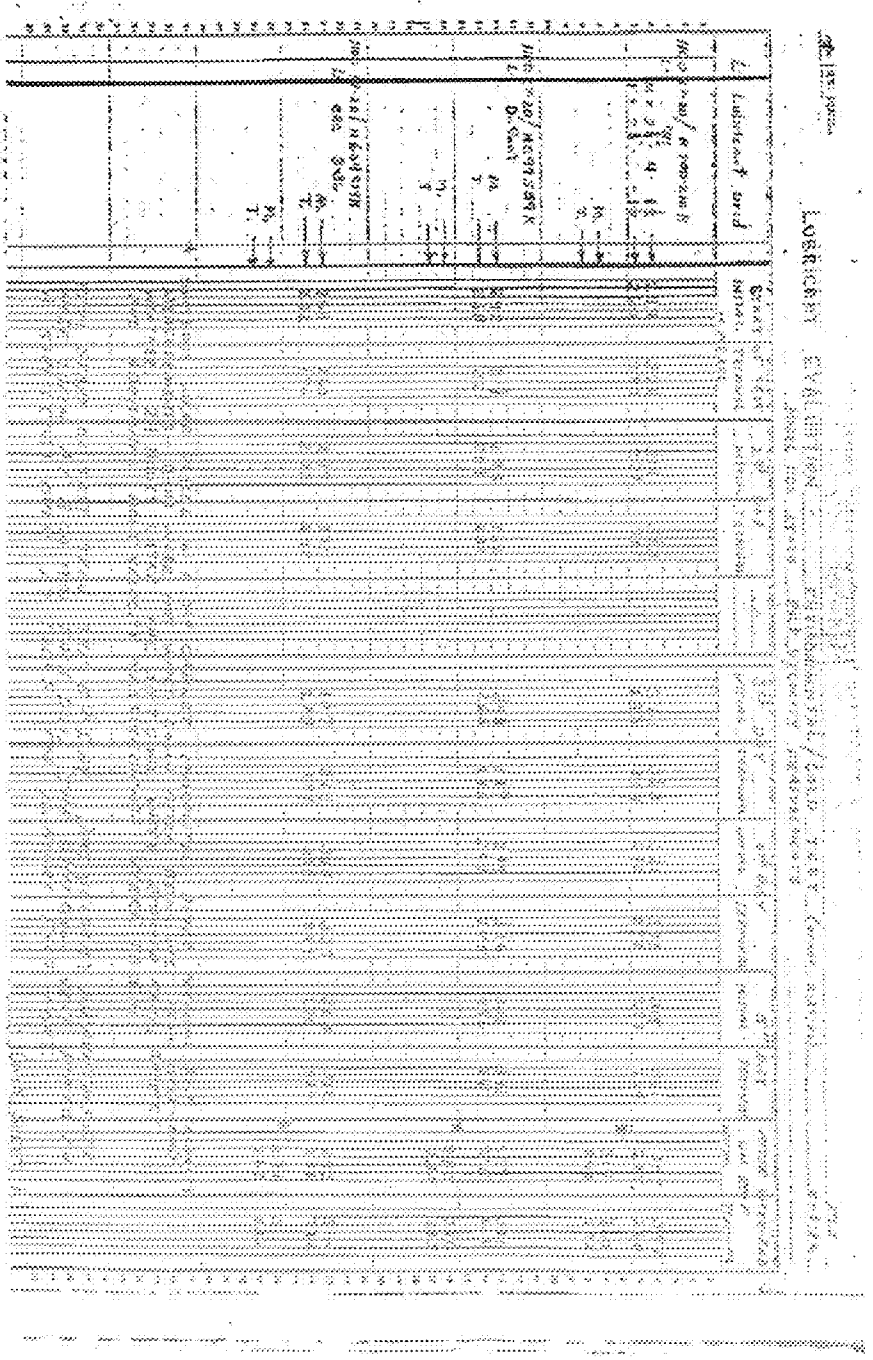
The procedure was repeated each day for 5 consecutive days.

The guns were then placed on the roof over the week-end. At 8:00 A.M. Monday they were removed and bolt velocity measurements were taken.

The guns were then placed in a dry cabinet for 24 hours.

The guns were removed from the dry cabinet and bolt velocity measurements were taken.

At the completion of the test all the guns were disassembled and examined for rust.



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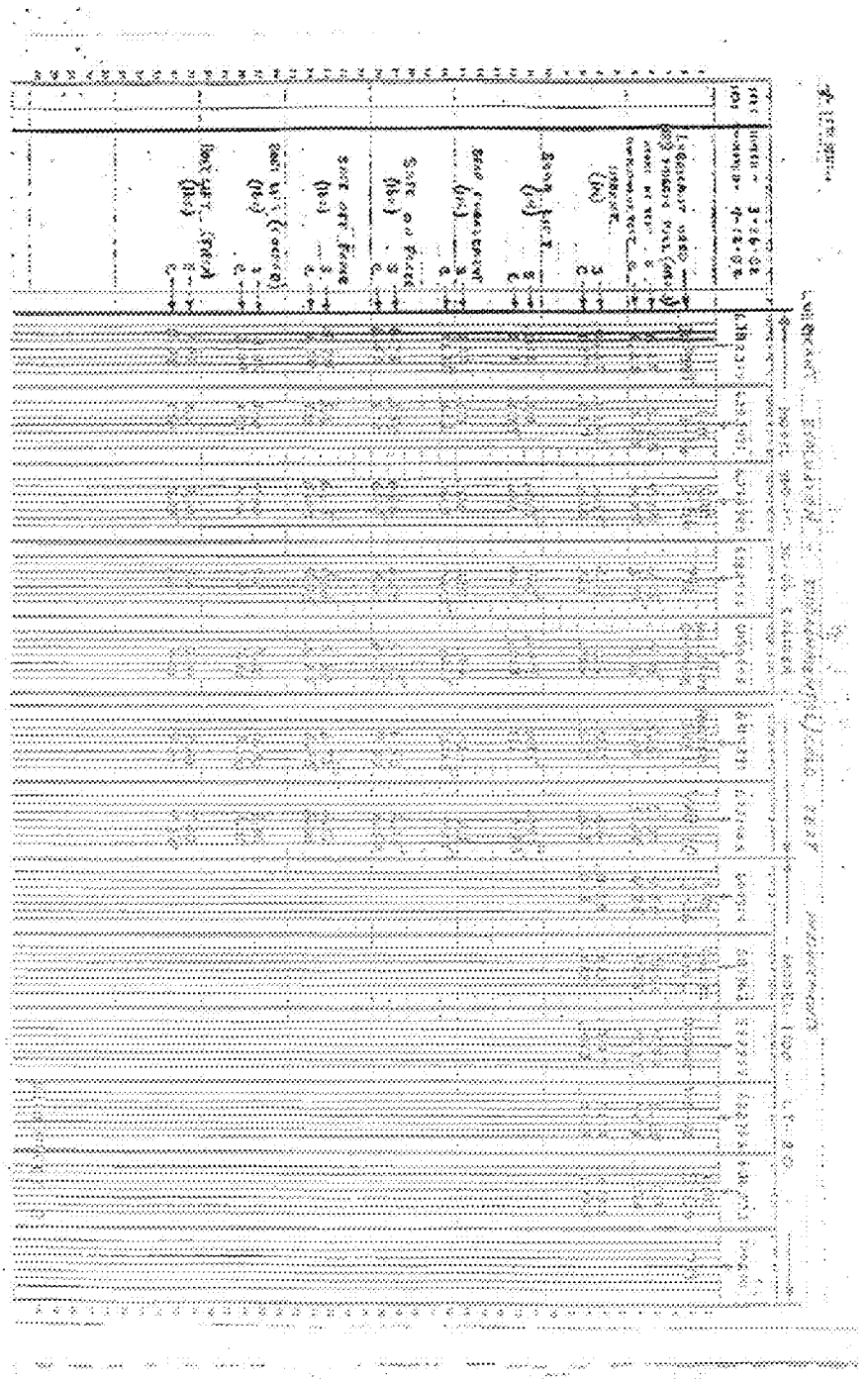

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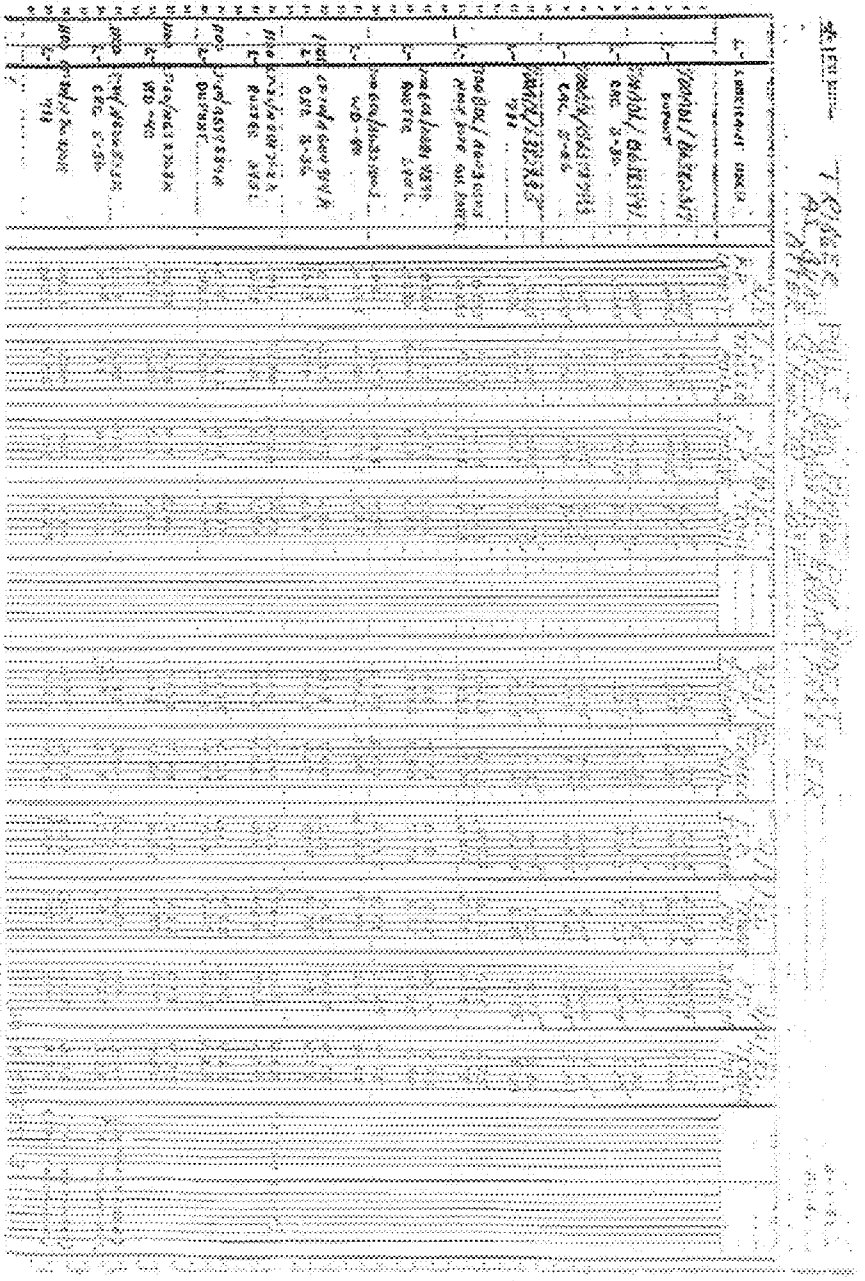

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RESEARCH TEST MANUAL
STATUS REPORT

AS OF FEBRUARY 1, 1965

		DRAFT	REVISIONS 1	2	3	4	FINAL
MEASUREMENTS (5000-5999)							
STATIC MEASUREMENTS							
5010	Breakaway - Proof - Breakaway						
5020	Firing Pin Impact						
5030	Trigger Pull						
5040	Safety and Lockout						
5050	Sear Engagement						
5060	Primer Protrusion						
5070	Head Space Varies						
5080	Bolt Open Force						
5090	Max. Chamber Pressure (Shotgun)						
5100	Bore and Chore						
5110	Chamber Measurement (Chamber Cast)						
5120	Firing Pin Protrusion						
5130	Firing Pin Marking						
5140	Sear Lift Measurement (Percentage)						
DYNAMIC TEST (6000-6999)							
MF CYCLE							
6010	Common Dry Cycle Simulators						
	- Actuating Stroke						
	- Ambidextrous Serrations						
	- Actuating Direction						
	- Bore Axis vs. Axis						
	- Knock-Down Distance						
6020	Manual Movement Effort						
6030	M/CYCLE Safe to Fire						
6040	M/CYCLE Safety						
6050	M/CYC. Retraction Impact						
6060	M/CYC Sear Engagement (See 5050)						
6070	M/CYC Extract Cartridge Retained						
6080	M/CYC Primer						
6090	M/CYC Slam Fire						
6100	M/CYC Carrier Release Test						
6110	M/CYC U.S. Rifle Vibration Test						
6120	M/CYC Recoil Run Test						
6130	M/CYC Extract Test						

C.J. Swan

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ENDURANCE TEST LUBRICATION PROCEDURES

M-98C

LUBRICATION USED - HOPPE'S GUN OIL

ACTION BARS - One drop of oil on the left and right action bar. Rub it in the full length of both bars.

ACTION SPRING - One drop of oil at the front, mid-section and the rear of the action spring. Work the oil in by cycling the action three to four times.

FIRING PIN - One drop of oil on the left and right side of the locking block. One drop of oil to the center of the firing pin spring.

SLIDE BLOCK - One drop of oil on each top side of the slide block. This allows the bolt to slide smoothly.

FIRE CONTROL - One drop of oil to the following:

- The hammer pivot pin; swing the hammer back and forth to work the oil in.
- The hammer spring/below the plunger.
- The hammer face where it contacts the sear; smear the oil with your finger.
- The trigger connecting pin
- The safety pin hole/work the safety on and off to work the oil in.

CARRIER DOG - One drop of oil to the top of the carrier dog where it contacts the bottom of the slide block.

DISCONNECTOR - One drop of oil on the top of the disconnector where it makes contact with the action bars.

ASSEMBLY - Every 5000 rounds, or sooner if needed.

C.J.S.

ENDURANCE TEST-LUBRICATION PROCEDURES

M-1100

LUBRICATION USED - HOPPE'S GUN OIL

ACTION BARS - One drop of oil on the left and right action bar. Rub it in the full length of both bars.

ACTION SPRING - One drop of oil on the Magazine Follower.(The rear of the follower so that the oil drips down to the action spring.)

FIRING PIN - One drop of oil to the left and right side of the locking block. One drop of oil to the center of the firing pin spring.

SLIDE BLOCK - One drop of oil on each top side of the slide block. This allows the bolt to move freely by eliminating some of the friction.

LINKS - One drop of oil to each link out inside of the receiver. Work the links back and forth a few times to work the oil in.

TRIGGER HOUSING - One drop of oil to the following:

- The hammer pivot pin; swing the hammer back and forth to work the oil in.
- The hammer spring; below the plunger.
- The hammer face where it contacts the sear; smear the oil with your finger.
- The trigger connecting pin.
- The safety pin hole; work the safety on and off to work the oil in.

CARRIER DOG - One drop of oil to the top of the carrier dog where it contacts the bottom of the slide block.

DISCONNECTOR - One drop of oil on the top of the disconnector where it makes contact with the action bars.

FREQUENCY - Every 1000 rounds, or sooner if needed.

C.J.S.

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Report No. 82 0331

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

April 13, 1982

TO: J.H. Hennings

FROM: F.L. Supry

REPORT TITLE: Evaluation of Lubricants on Firearms M700 Cock and Fire Simulation

ABSTRACT

C.E. Ritchie requested that the Test Lab conduct a cock and fire evaluation on five spray lubricants.

1. Du Pont – Synthetic Diester
2. Krylon – Ten - 4
3. Sprayon – 711
4. CRC – 3-36
5. Houghton – HLP

These five lubricants were selected for evaluation from the results of a preliminary evaluation conducted by A.B. Hughes, Senior Consultant, ESD Maintenance Engineering Group, Du Pont. A copy of his evaluation for each of the five lubricants is located in Appendix "C". Engineering Dept.

SCOPE OF TEST

To compare the five lubricants in a Model 700 cock and fire simulation test.

TEST RESULTS

In their order of finish, from the best performing lubricant to the poorest performing lubricant, the following results were obtained.

LUBRICANT	AVERAGE CYCLE LIFE (5 Samples)
1. Du Pont – Synthetic Diester	21,181 cys.
2. Sprayon – 711	17,646 cys.
3. CRC – 3-36	14,382 cys.
4. Houghton – HLP	3,333 cys.
5. Krylon – Ten-4	2,830 cys.

R2512835

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REPORT TEXT

A. Trigger pull, sear lift, sear engagement, safe on, safe off, and bolt lift measurements were taken on each test vehicle at the start of the test, and at 5000 cycle intervals. Remington specifications for the M700 components used are:

• Trigger Pull	3¼ lbs. – 6½ lbs.
• Sear Lift	.005" – .018"
• Sear Engagement	.015" – .020"
• Safe "On" – "Off"	None Established
• Bolt Lift	None Established

Refer to Appendix "A", data sheets No. 1 through No. 5, for individual results.

The Rc hardness was measured, at the cocking cam area, on each M700 bolt. Remington specifications Rc 37-46.
Refer to Appendix "A", data sheet No. 6, for individual hardness, lubricant used, simulator used and cycles completed.

A graphical analysis comparing the lubricants tested to their cycle life, and their cycle life to the simulator used is found in Appendix "B".

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TEST PROCEDURE

A. Measurements

1. Trigger Pull
Trigger Pull measurements were conducted using a Chatillon Model IN-10 pull scale.

2. Sear Lift and Sear Engagement
Sear lift and sear engagement measurements were conducted using a Model FC-14 optical comparator and measuring machine.

3. Safe "ON" and "OFF" Forces.
Safe On and Off forces were taken using a Chatillon Model DPP-25, push-pull scale.

4. Bolt Lift
Bolt lift forces, both cocked and fired, were taken utilizing a Chatillon Model 80D pull scale mounted on a machine designed to be used for bolt lift measurements.

5. Rc Hardness
The Rc hardness measurements were taken by George Catta, a production inspector, utilizing a Wilson Rockwell Hardness Tester.

B. Lubrication – (Pictorial presentation - Appendix "D")

1. Lubrication Points

a.	Receiver:	Locking lug area. Track on receiver tang.
b.	Bolt:	Cocking cam Locking lugs
c.	Firing Pin:	Threads Striker radius and track.
d.	Trigger Assembly:	Sear safety cam face. Interior of trigger assembly, through sear inspection hole.

2. Lubrication procedure

a. Components to be lubricated were completely degreased, using the solvent degreasing tanks located in our Heat Treat Department.

b. The interior of the trigger assembly was lubricated by holding the spray can to direct the spray into the sear inspection hole. Duration of spray approximately 1 second.

NOTE: The two position nozzle on Du Pont aerosol can was more difficult to control for pin point application, than the standard plastic tubes on the other samples. (Pictorial example included.)

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2. Lubrication Procedure - continued

c. All other lubrication points were lubricated by holding the aerosol can approximately six inches away from the area to be lubricated and covering the area until a thin layer of lubricant forms on the surface. Duration of spray; approximately 1 second.

C. Pictorial Presentation

1. Lubrication points and procedures.

2. Cocking cam, sear face, and striker radius and track areas were photographed at the start and completion of the test and are available on request.

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APPENDIX A

(Data Sheets)

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M 700 BOLT ACTION SIMULATION — FIG 5

LUBRICANT EVALUATION — 3-8-82

FIRST SAMPLE OF EACH LUBRICANT

REM	SPECS →	TRIGGER PULL 3½-4½ lbs	SEAR LIFT .005"-.009"	SEAR ENGAGEMENT .015"-.020"	SAFE ON (lbs)	SAFE OFF (lbs)	BOLT LIFT COCKED (lbs)	BOLT LIFT FIRED (lbs)
1 = DUPONT		(average)			(average)	(average)	(average)	(average)
2 = 711								
3 = CRC								
4 = HLP								
5 = Ten 4								
	1	6.25	.005	.020	7.5	6.50	3.00	7.00
0	2	6.50	.006	.015	6.75	4.25	2.00	4.50
cycles	3	5.50	.009	.016	5.25	4.25	3.00	6.00
	4	6.00	.008	.017	7.00	5.75	3.00	6.50
	5	6.50	.008	.016	6.75	4.50	4.50	7.50
	1	6.00	.0055	.020	5.50	4.00	2.50	6.50
5000	2	6.00	.0065	.0175	6.00	5.50	3.50	6.50
cycles	3	6.00	.006	.020	6.00	4.50	3.00	6.00
	4	5.75	.010	.017	7.50	5.00	3.00	7.25
	#5	6.50	.010	.020	7.25	5.50	5.00	9.00
	1	5.75	.008	.020	5.75	4.0	2.25	7.00
10,000	#2	5.75	.008	.018	5.25	3.75	2.50	10.50
cycles	3	5.25	.008	.022	4.50	3.75	2.0	7.00
	4	6.25	.0095	.019	7.25	4.75	3.0	13.00
	5	—	—	—	—	—	—	—
	1	6.00	.009	.0205	6.00	4.00	2.00	8.50
15,000	2	—	—	—	—	—	—	—
cycles	3	5.50	.009	.024	5.00	5.50	2.00	8.50
	#4	6.00	.0105	.019	6.50	4.50	3.00	18.00
	5	—	—	—	—	—	—	—
	#1	6.00	.0095	.021	6.00	4.00	2.00	8.00
20,000	2	—	—	—	—	—	—	—
cycles	#3	5.50	.0105	.027	4.50	4.00	2.00	9.00
	4	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—
	1	—	—	—	—	—	—	—
25,000	2	—	—	—	—	—	—	—
cycles	3	—	—	—	—	—	—	—
	4	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—
	#1	FAILED	15,59	cycles				
	#2	FAILED	12,26	cycles				
	#3	FAILED	16,359	cycles				
	#4	FAILED	10,400	cycles				
	#5	FAILED	1990	cycles			DATA SHEET 1	

R2512840

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

M700 COCK & FIRE SIMULATION — ELS

LUBRICANT EVALUATION — 3-8-82

SECOND SAMPLE OF EACH LUBRICANT

			TRIGGER PULL	SEAR LIFT	SEAR ENGAGEMENT	SAFE ON	SAFE OFF	BOLT LIFT COCKED	BOLT LIFT FIRED
		REMINGTON	3½ - 6½ lbs	.006"-.018"	.015"-.020"	(lbs)	(lbs)	(lbs)	(lbs)
1		DuPont	(AVG. OF 3)			(AVG. OF 3)	(AVG. OF 3)	(AVG. OF 3)	(AVG. OF 3)
2		2 TH							
3		3 SEA							
4		4 HLP							
5		5 TEN 4							
		1	6.00	.009	.0185	6.00	4.50	4.00	8.00
Cl		2	5.00	.006	.018	7.50	4.75	3.00	6.00
cycles		3	6.00	.012	.013	7.00	4.50	3.00	7.00
		4	6.75	.0095	.016	7.50	6.75	1.50	7.00
		5	5.50	.008	.016	7.50	5.50	3.50	7.00
5000		1	5.25	.0095	.0215	6.00	4.50	3.50	7.00
cycles		2	5.00	.0065	.0119	5.75	4.00	3.50	6.00
		3	5.75	.013	.020	5.00	4.00	3.00	8.00
		4	6.25	.0095	.020	6.75	6.25	2.50	8.00
		* 5	5.00	.009	.020	5.75	4.00	3.50	13.00
10,000		1	5.50	.0111	.025	5.75	4.25	3.50	7.00
cycles		2	4.75	.0065	.0119	5.25	4.00	2.50	6.50
		* 3	6.00	.013	.023	6.25	3.75	3.00	15.00
		* 4	6.00	.0095	.021	6.50	5.75	3.00	25.00
		5	—	—	—	—	—	—	—
15,000		1	5.50	.011	.026	5.50	4.25	4.00	9.25
cycles		2	4.75	.0095	.019	5.00	4.00	3.00	7.00
		3	—	—	—	—	—	—	—
		4	—	—	—	—	—	—	—
		5	—	—	—	—	—	—	—
20,000		1	5.50	.011	.0265	5.50	4.00	4.00	9.25
cycles		2	4.75	.009	.019	5.25	4.50	3.00	6.50
		3	—	—	—	—	—	—	—
		4	—	—	—	—	—	—	—
		5	—	—	—	—	—	—	—
25,000		* 1	5.25	.011	.0295	5.50	3.75	4.00	14.00
cycles		* 2	4.50	.0095	.021	5.25	4.00	2.50	7.00
		3	—	—	—	—	—	—	—
		4	—	—	—	—	—	—	—
		5	—	—	—	—	—	—	—
		* 1	COMPLETED	25,000	cycles				
		* 2	COMPLETED	25,000	cycles				
		* 3	FAILED	8317	cycles				
		* 4	FAILED	6115	cycles				
		* 5	FAILED	2788	cycles			DATA SHEET 2	

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

M700 COCK & FIRE SIMULATION — F.L.S.
LUBRICANT EVALUATION — 3-8-82
THIRD SAMPLE OF FOUR LUBRICANT

		TRIGGER PULL 2½-6½ lbs	SEAR LIFT .005"-.015"	SEAR DISENGAGEMENT .015"-.020"	SAFE ON (lbs)	SAFE OFF (lbs)	BOLT LIFT CYCLED (lbs)	BOLT LIFT FIXED (lbs)
1	LUBRIPLATE	(AVG OF 3)			(AVG OF 3)	(AVG OF 3)	(AVG OF 3)	(AVG OF 3)
2	711							
3	CRC							
4	HLP							
5	TEN 4							
	1	5.75	.007	.015	7.25	4.50	2.50	6.50
0	2	6.00	.008	.015	7.50	7.50	1.50	8.25
cycles	3	6.25	.008	.017	6.75	5.50	3.00	7.00
	4	5.75	.0125	.0195	8.00	5.50	3.00	7.00
	5	5.50	.008	.015	8.00	5.00	2.50	6.00
5000	1	6.25	.009	.019	6.50	4.25	2.00	6.00
cycles	2	5.25	.009	.021	5.25	7.50	3.50	6.50
	3	6.25	.0105	.0175	7.25	4.00	3.00	9.00
	4	5.75	.0125	.021	7.00	5.00	3.00	10.00
	#5	5.50	.013	.021	6.00	3.75	3.50	18.00
10000	1	6.00	.010	.020	6.00	3.75	2.00	5.50
cycles	2	5.25	.009	.021	7.00	6.00	3.50	7.00
	3	6.00	.015	.0195	6.75	4.75	3.00	10.00
	#4	5.75	.0125	.0225	6.50	4.50	3.50	51.00
	5	—	—	—	—	—	—	—
15000	1	5.25	.0115	.020	6.75	4.00	2.00	6.50
cycles	#2	5.50	.0145	.0225	6.50	5.50	4.00	14.00
	#3	6.50	.0145	.0195	6.75	4.00	3.00	15.00
	4	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—
20000	1	5.25	.0115	.020	6.00	4.00	2.00	6.00
cycles	2	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—
	4	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—
25000	#1	6.00	.0115	.021	6.25	3.75	2.00	12.00
cycles	2	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—
	4	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—
	#1	FAILED	25,500	cycles				
	#2	FAILED	15,940	cycles				
	#3	FAILED	20,970	cycles				
	#4	FAILED	6,788	cycles				
	#5	FAILED	21,480	cycles			DATA SHEET 3	

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

M1911 LOCK & FIRE SIMULATION — S.L.S.

LUBRICANT EVALUATION — 3-8-92

FOURTH SAMPLE OF EACH LUBRICANT

			1	2	3	4	5	6
		TRIGGER PULL ½-6½ lbs	SEAR LIFT .005"-.018"	SEAR ENGAGEMENT .05"-.020"	SAFE ON (lbs)	SAFE OFF (lbs)	BOLT→LIFT Impact (lbs)	BOLT→LIFT Mixed (lbs)
1	DuPont	(AVG. OF 3)			(AVG. OF 3)	(AVG. OF 3)	(AVG. OF 3)	(AVG. OF 3)
2	711							
3	CRC							
4	HLP							
5	TEN 4							
6	1	6.50	.0095	.019	6.75	4.25	4.00	8.00
7	2	6.50	.008	.019	8.50	5.25	3.50	7.00
8	3	5.50	.0098	.016	7.25	4.75	3.00	9.00
9	4	5.75	.009	.019	8.25	5.50	4.00	7.50
10	5	5.50	.005	.017	9.00	6.75	3.00	7.50
11	1	6.25	.010	.023	6.25	3.25	3.00	8.00
12	2	6.00	.011	.020	7.50	4.25	3.50	7.00
13	3	5.50	.0095	.021	7.00	4.50	3.00	8.00
14	4	6.00	.010	.019	7.25	5.00	4.00	10.00
15	5	5.75	.010	.0165	9.00	4.75	3.00	16.00
16	1	6.25	.010	.023	5.75	3.50	4.00	8.00
17	2	6.00	.012	.022	7.00	4.00	3.00	8.00
18	3	5.50	.0095	.021	6.50	4.25	3.00	8.00
19	4	6.00	.010	.021	7.00	5.25	4.00	29.00
20	5	—	—	—	—	—	—	—
21	1	6.25	.0105	.024	5.25	3.00	3.50	9.00
22	2	6.25	.012	.0225	7.50	4.00	3.50	9.00
23	3	6.50	.0105	.0215	6.75	4.50	3.25	22.00
24	4	—	—	—	—	—	—	—
25	5	—	—	—	—	—	—	—
26	#1	6.25	.0115	.024	6.25	3.00	3.00	24.00
27	#2	6.25	.0125	.024	6.50	4.00	4.00	24.00
28	3	—	—	—	—	—	—	—
29	4	—	—	—	—	—	—	—
30	5	—	—	—	—	—	—	—
31	1	—	—	—	—	—	—	—
32	2	—	—	—	—	—	—	—
33	3	—	—	—	—	—	—	—
34	4	—	—	—	—	—	—	—
35	5	—	—	—	—	—	—	—
36	#1	FAILED	10,620 cycles					
37	#2	FAILED	16,866 cycles					
38	#3	FAILED	11,830 cycles					
39	#4	FAILED	8376 cycles					
40	#5	FAILED	3427 cycles				DATA SHEET 4	

M700 BOLT & FIRE SIMULATION — F.L.S.

LUBRICANT EVALUATION — 3-9-82

FIFTH SAMPLE OF EACH LUBRICANT

		TRIGGER PULL (3½ - 6½ lbs)	SEAR LIFT (.005" - .018")	SEAR ENGAGEMENT (.015" - .026")	SAFE ON (lbs)	SAFE OFF (lbs)	BOLT — LIFT COCKED (lbs)	BOLT — LIFT FIRED (lbs)
1	DuPont	(Average)			(Average)	(Average)	(Average)	(Average)
2	711							
3	CRC							
4	NLP							
5	TBM 4							
	1	6.00	.0085	.0157	7.00	4.75	2.00	7.00
	2	5.75	.0083	.0155	6.75	5.00	3.50	7.00
cycles	3	5.75	.0105	.0215	6.50	4.00	3.00	9.00
	4	6.25	.012	.016	7.00	4.50	3.00	8.00
	5	6.25	.008	.018	7.25	5.50	3.00	6.50
5000	1	5.50	.0110	.0205	7.50	4.50	2.50	7.00
cycles	2	6.00	.0085	.0175	5.75	4.00	4.00	8.00
	3	5.75	.0105	.0215	5.50	4.25	3.00	8.00
	4	6.25	.013	.0219	5.50	4.25	4.00	7.50
	#5	6.25	.010	.0220	5.75	4.00	3.50	18.00
10,000	1	5.25	.0110	.0211	7.50	4.00	3.00	8.00
cycles	2	5.50	.0110	.0218	5.75	3.75	4.00	7.50
	3	5.75	.0105	.0215	6.50	4.25	3.00	7.50
	#4	6.25	.0133	.0235	7.25	3.75	4.00	27.00
	5	—	—	—	—	—	—	—
15,000	1	5.50	.0105	.0211	6.50	4.00	3.00	8.00
cycles	2	5.25	.0110	.0198	5.75	4.00	3.50	7.50
	3	6.00	.0105	.0215	5.50	4.50	3.00	7.00
	4	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—
20,000	1	5.50	.0105	.0214	7.00	3.75	3.50	14.00
cycles	2	6.25	.0101	.0210	6.50	4.00	3.50	9.00
	3	5.75	.0105	.0222	6.50	4.25	3.00	11.00
	4	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—
25,000	#1	5.00	.0111	.0222	7.00	4.00	3.00	28.00
cycles	#2	5.25	.0111	.0220	5.75	3.75	4.00	12.00
	#3	6.25	.0111	.0223	6.25	4.00	4.00	16.00
	4	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—
	#1	FAILED	28000	cycles				
	#2	FAILED	25000	cycles				
	#3	FAILED	25000	cycles				
	#4	FAILED	32000	cycles				
	#5	FAILED	30000	cycles				

DATA SHEET 51

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

M 700 COCK & FIRE SIMULATION

LUBRICANT EVALUATION

3-10-92

Rc HARDNESS : M700 BOLT COCKING CAM AREA

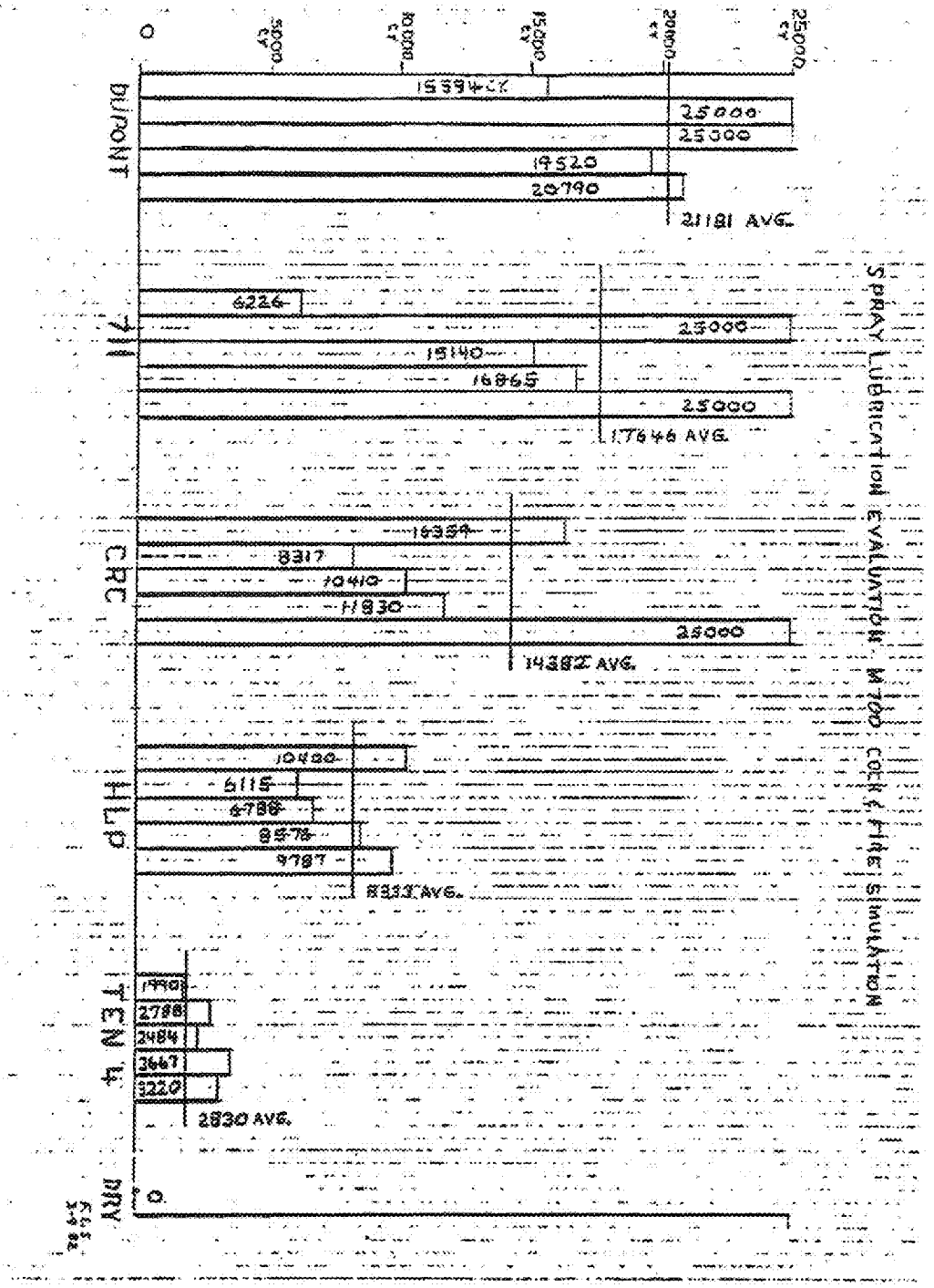
REM. SPEC. Rc 37-46	Rc HARDNESS	LUBRICANT USED	SIMULATOR USED	CYCLES COMPLETED
* BOLT NO. *				
C1	39	DUPONT	1	15 994
C9	40	DUPONT	3	25 000
C12	40	DUPONT	2	25 000
C19	38	DUPONT	4	19 520
C20	37	DUPONT	1	20 790
C3	38	711	3	6 226
C7	39	711	2	25 000
C16	38	711	1	15 140
C27	38	711	2	16 865
C29	39	711	4	25 000
C4	38	CRC 3-36	4	16 359
C10	39	CRC 3-36	1	8 317
C17	40	CRC 3-36	3	10 410
C21	39	CRC 3-36	2	11 830
C25	39	CRC 5-56	4	25 000
C11	39	HLP	4	10 400
C18	39	HLP	3	16 115
C24	39	HLP	2	6 788
C26	39	HLP	1	8 576
C28	38	HLP	11	9 787
C2	38	TEM-4	2	1 990
C5	38	TEM-4	2	2 788
C6	39	TEM-4	3	2 484
C8	38	TEM-4	4	3 667
C13	39	TEM-4	1	3 220
C22	39	DRY		0

DATA SHEET 6

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

APPENDIX B

(Graphic Presentation)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5000 PSI
10000 PSI
15000 PSI
20000 PSI
25000 PSI
BURNT
15594 CX
25000
25000
19520
20790
21181 AVG.
SPRAY LUBRICATION EVALUATION M-700 COCK / FIRE SIMULATION
WET
6226
25000
18140
16865
25000
17646 AVG.
CRC
16389
8317
10410
11830
25000
14382 AVG.
HLP
10480
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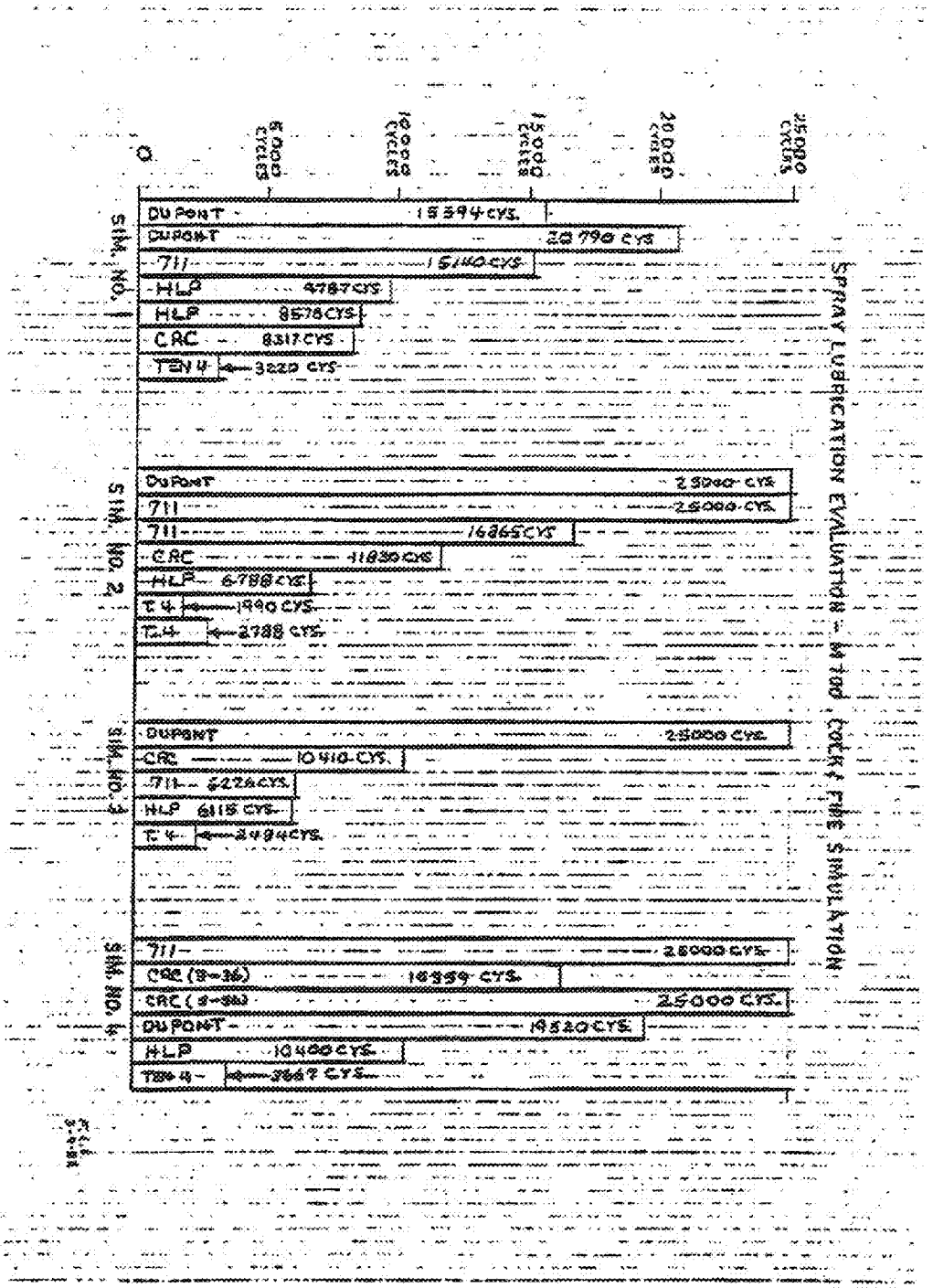

R2512848

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

APPENDIX C

(Previous Evaluation)

Test # 20

Product: Du Pont - Synthetic Diester - 20%

Function: Multipurpose, prevents rust
Displaces moisture, dirt and lubricates

Evaluation Notes

1. Odor: Synthetic chemical oily smell, not lasting
2. Feel: Light oily feel
3. Drying Rate: Slow drying
4. Penetration: Rapid penetration and spreading, clear color
5. Surface Wetting: Local wetting, removes oxidation, good cleanup
6. Grease Displacement: Rapid spreading, no dissolving, good cleanup
7. Type Container: 4 oz aerosol, nozzle with straw
8. Liquid Appearance: Watery, light tan
9. Wood-Open Pore: Damp look, no damage
10. Metal Surface: Wet look, no rust within 24 hours
11. Rust Removal: Most rust removed
12. Displace Moisture: Excellent
13. Displace Solids: Excellent
14. Gun Barrel: Excellent
15. Wood Stock: Excellent
16. Rust Prevention:
    Test 1 - 7
    Test 2 - 7
    Avg - 7.0
17. Reason for Elimination: Continue testing

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Test # 14

Product: Sprayon #711 Penetrant/Lube/Demoisturize

Function: Multipurpose, prevents rust
Displaces moisture and lubricates

Evaluation Notes

1. Odor: Strong fly spray, lasting
2. Feel: Very oily feel
3. Drying Rate: Medium drying rate
4. Penetration: Slow spreading, but continuous, clear color
5. Surface Wetting: Minimum spreading, removes oxidation, bright
6. Grease Displacement: Rapid spread, no dissolving, good cleanup
7. Type Container: 12 oz aerosol, nozzle with straw
8. Liquid Appearance: Very watery, light tan
9. Wood-Open Pore: Damp look, no damage
10. Metal Surface: Oily look, no rust within 24 hours
11. Rust Removal: Some rust removed
12. Displace Moisture: Excellent
13. Displace Solids: Good
14. Gun Barrel: Excellent
15. Wood Stock: Excellent
16. Rust Prevention:
    Test 1 - 6
    Test 2 - 5
    Avg - 5.5
17. Reason for Elimination: Continue testing

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Test # 18

Product: CRC - 3-36

Function: Multipurpose, prevents rust
Displaces moisture and lubricates

Evaluation Notes

1. Odor: Pleasant peppermint smell, lasting
2. Feel: Light oily feel
3. Drying Rate: Medium drying rate
4. Penetration: Medium penetrating and spreading, tan color
5. Surface Wetting: Slow spread, removes oxidation, good cleanup
6. Grease Displacement: Rapid spreading, some dissolving, easy cleanup
7. Type Container: 1 oz aerosol, nozzle
8. Liquid Appearance: Watery, light tan
9. Wood-Open Pore: Damp look, no damage
10. Metal Surface: Oily look, no rust within 24 hours
11. Rust Removal: Some rust removed
12. Displace Moisture: Excellent
13. Displace Solids: Good
14. Gun Barrel: Excellent
15. Wood Stock: Excellent
16. Rust Prevention:
    Test 1 - 4
    Test 2 - 5
    Avg - 4.5
17. Reason for Elimination: Continue testing

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Test # 11

Product: R. T. Vanderbilt - HLP All Purpose

Function: Multipurpose, prevents rust
Displaces moisture, dirt and lubricates

Evaluation Notes

1. Odor: Fly spray smell, not lasting
2. Feel: Oily feel
3. Drying Rate: Rapid drying
4. Penetration: Rapid spreading, med. spreading, tan stain
5. Surface Wetting: Slow spreading, rapid dry to oily film, hard to clean
6. Grease Displacement: Rapid spread, no dissolving, good cleanup
7. Type Container: 12 oz aerosol, nozzle with straw
8. Liquid Appearance: Waxy, dark tan
9. Wood-Open Pore: Damp look, no damage
10. Metal Surface: Oil look, no rust within 24 hours
11. Rust Removal: No rust removal
12. Displace Moisture: Poor
13. Displace Solids: Fair
14. Gun Barrel: Good
15. Wood Stock: Good
16. Rust Prevention:
    Test 1 - 8
    Test 2 - 5
    Avg - 6.5
17. Reason for Elimination: Continue testing

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130000378

Test # 13

Product: Krylon - Ten 4

Function: Maltipurpose, prevents rust
Displaces moisture, gums, dirt and lubricates

Evaluation Notes

1. Oder: Strong fly spray, lasting
2. Feel: Light oily feel
3. Drying Rate: Medium drying rate
4. Penetration: Rapid absorption and spreading, dark tan stain
5. Surface Wetting: Slow spreading, oily appearance, good cleanup
6. Grease Dirplacement: Rapid spread, no dissolving, good cleanup
7. Type Container: 11 oz aerosol, nozzle with stray
8. Liquid Appearance: Dark tan, watery
9. Wood-Open Pore: Damp look, no damage
10. Metal Surface: Damp look, no rust within 24 hours
11. Rust Removal: Most rust removed
12. Displace Moisture: Good
13. Displace Solids: Good
14. Gun Barrel: Good
15. Wood Stock: Good
16. Rust Prevention:
    Test 1 - 8
    Test 2 - 5
    Avg - 6.5
17. Reason for Elimination: Continue testing

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

APPENDIX D

(Pictorial Presentation)

1. Lubrication procedures.

2. Individual components at the start and completion of test. (Available upon request.)

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

WE OUTFIT THE SPORTSMAN

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1/10/50

Mike Walker
Remington Arms Co.
Ilion, N.Y.

Mr Mike Walker

Dear Sir,

Joe Biccum was in yesterday & I was complaining to him about the trigger on my 40X rifle. I showed him where it has a lot of side movement & drag or creep before it goes off. I am quite concerned about this as there is no way of removing either. I have a 37 Rem that I think has a far superior trigger.

Is there anything you can do for me? I don't want to have to get rid of the gun but I can't use it with the present trigger. Would you send me a new trigger complete & I'll return the old one to you?

Yours truly,
E. O. Beegle

January 15, 1958

Beegle's Sporting Goods
133 S. Richard St.
Bedford, Pa.

Dear Mr. Beegle:

It would be much easier for me to repair your trigger or send you a replacement if you would send in your trigger with a letter of complaint. If you are using it at the present time and are unable to send it in, then the necessary arrangements to send you a new trigger would have to be made. I am sure we can supply a trigger which would be satisfactory to you.

If you do return the trigger please write a letter of instruction addressed to the Arms Service Division, Remington Arms Company, Inc. Ilion, N. Y., instructing them to turn the trigger over to me for repair or replacement. If you would like it returned as quickly as possible, mail it in first class parcel post and I will return it the same way.

Sincerely,

M. H. Walker, Supervisor
Design Section
Ilion Research Division

MHW:NL

Customer Inquiries

Beagle's Sporting Goods
133 S. Richard Street
Bedford, Pa.

January 27, 1958

Dear Mr. Beagle:

Your M/40X Trigger is being shipped by Parcel Post first class today. It is a new Trigger which has been readjusted. It is adjusted with as little engagement as will hold the rifle in a cocked position. For this reason it will be necessary to prevent accumulations of dirt or gummed oil from collecting in the mechanism. I have found that Hoppes No.9 is a useful solvent in removing these accumulations. If properly cared for the setting should last for a long time.

You will note that slave pins are used in the assembly. This is done to ease the assembly to the receiver. The slave pins are driven out by the regular pins during the assembly operation.

Let me know how you make out with this one!

Sincerely,

M. H. Walker, Supervisor
Design Section
Ilion Research Division

MHW:NL

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: HUTTON/MARTIN TESTER: RH/FS DATE: 05/01/86
REPORT NO.: 860984 WORK ORDER NO.: C-5504
WRITTEN BY: F SUPRY
TEST TYPE: LUBRICATION TEST (HEAT-COOL-TRY)

FIREARM STAT'S : MODEL: N-BAR

REASON FOR TEST :

To accelerate the breaking down of lubrication, to compare reactions in standard, skeletonized, and relieved side plate trigger plate assemblies.

EQUIPMENT REQUIRED :

An oven, five samples of skeletonized and relieved side plate trigger plate assemblies, ten samples (five to be used with no additional lubrication added) of standard trigger plate assemblies, twenty receivers and bolt assemblies, and the following lubricants:

LPS#1 HOPPES 3'N'1 REM OIL WD-40 (LINSEED OIL)

TEST PROCEDURE :

The trigger plate assemblies were cleaned and assembled into receivers, then one of each style was lubricated with each lubricant. The parts were fired down and placed in the oven (120-130 degrees F.) for varied lengths of time (3, 16 and 67 hours). When removed from the oven, the parts were allowed to cool and then, cocked and fired. The results were recorded, the parts relubricated and replaced in the oven. After eight days without being able to leave any reside, the test was changed. In place of lubricant, linseed oil was added to each part. After a weekend in the oven every part was gummed up so badly that none would function properly. At this point all the residue was removed from the parts and the test restarted. Two three hour, one sixteen hour, and one twenty four hour samples were taken.

TEST RESULTS :

All parts functioned properly after both three hour samples.

Two Relieved Side Plate, and Three skeletonized samples followed down after sixteen hours.

All five Relieved Side Plate, all five Skeletonized, and four of the Standard samples followed down after twenty four hours.

xc: J.W. Bower/File
R.W. Murphy

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Report No. E60984

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	AREA OF TESTING		
____ Developmental	____ Safety Related	____ Litigation	
____ Design Acceptance	____ Competitive Evaluation	____ Warehouse Audit	
____ Pre-Pilot	____ New Design	____ Cost Reduction	
____ Pilot	____ Design Change	Stake ____	
____ Production Acceptance	____ Plant Assistance	____ Other	

FIREARM STAT'S.	REPORT REQ'D.	
MODEL: ____	FORMAL ____	DATE REQUESTED: 4/8/86
CAL. or GAGE: ____	TEST RESULTS ONLY ✓	DATE NEEDED BY: ____
BARREL TYPE: ____		REQUESTED BY: Hutton
PROOFED: YES ____ NO ____		WORK ORDER NO: C-5584

TEST TYPE

____ Strength Test	____ Ammunition Test	____ Dry Cycle Test	____ Photo/Video
✓ Function Test	____ Environmental Test	____ Measurements	____ Other ____
____ Accuracy Test	____ Customer Complaint	____ Endurance Test	

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

N-Bar Fire Control Lubrication Test

15 Fire controls 5 different Lubricants

- Heat, cool - Try

GUNS REQUIRED:

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 5/1 PC

TEST COMPLETED BY: RH/FS

REPORT DATE: 5/1/86

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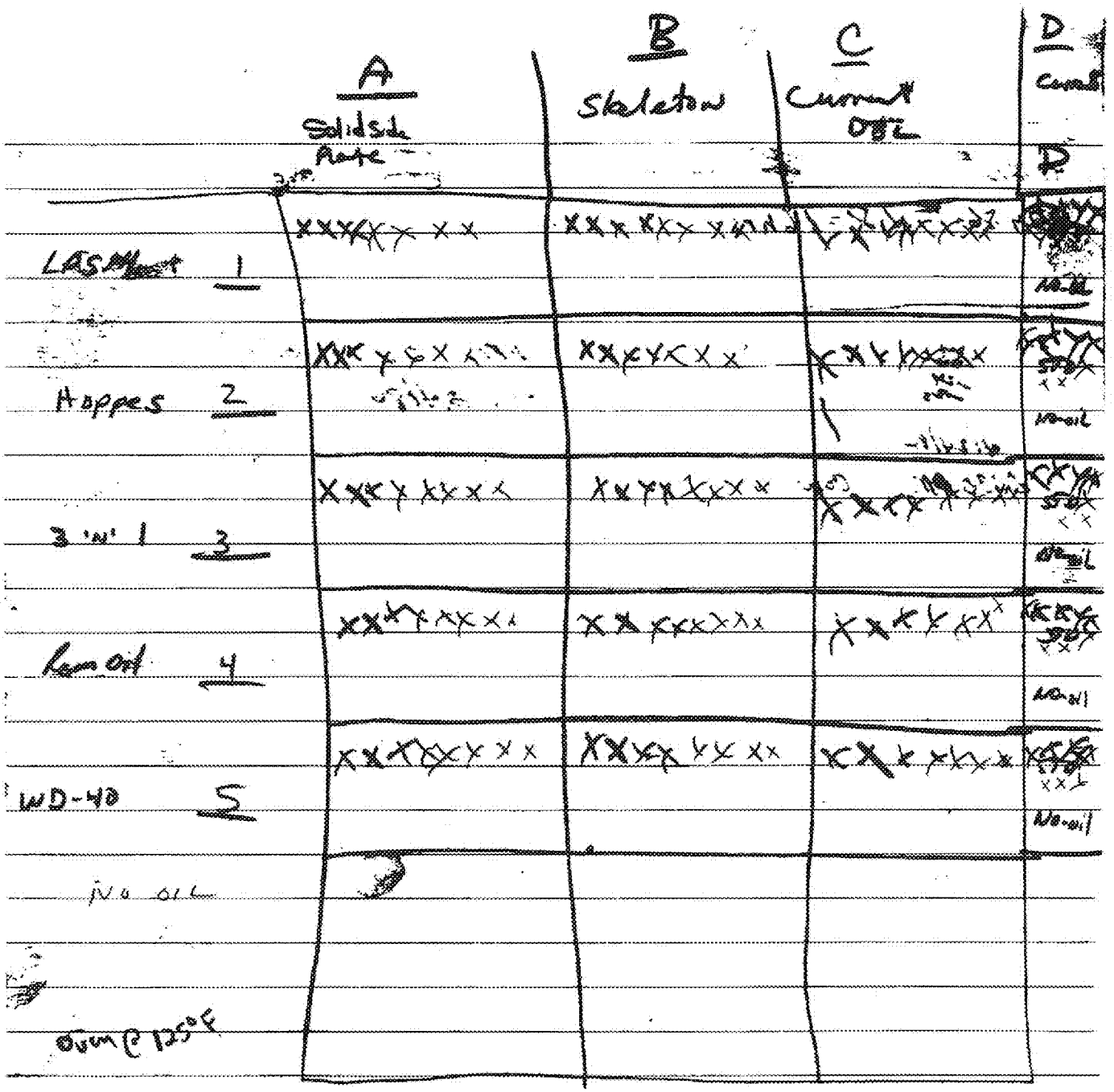
Used Test II

4/28/86 - 3 hrs - all ok + 3 hrs all ok

4/30/86 - SSP A-4 A-2 ; Skeleton B-1 A-2 A-5 } Follow-downs 16 hours

5/1/86 - 24 hrs

SSP	Skeleton	520	
A-1	B-1	D-1	C-4
A-2	B-2		
A-3	B-3	D-3	
A-4	B-4		
A-5	B-5	D-5	



Inspect started

#2 - 3 hrs, #3 - 3 hrs 4/16/86

#4 - 16 hrs, #5 3 hrs, #6 3 hrs 4/17/86

#7 - 16 hrs, #8 - 3 hrs, #9 3 hrs 4/18/86

#10 60 hrs, #11 - 3 hrs 4/21/86

#12 16 hrs, #13 - 3 hrs. #14 - 3 hrs. 4-22-86

on Bench

Date Hours

4/20/86 #15 16 hrs [redacted]; #16 [redacted] - 3hrs; #17 3hrs,

4.24.86 - #15 = 16 hrs —, #91 3hrs

START LINSEED OIL TEST
4/24/86

4/24/86

2:30 PM Come out 7:30 AM 4/25/86 (87 hrs)

11129 03642

N-BAR

N. Bar magnums in test 5/26

540 nylox screws

Thread 540 Block —

Force spring scale on end of allen wrench

100 Times

ck every 20

125°

Lubrication Test then WORK!! →

DROP TEST

Ready → 1

Review Procedure

reload

(4) - domestic

5- bassman ↔

Rem 0,1

Hoppes

CRC

WD-40

** 3-1

Inspection points

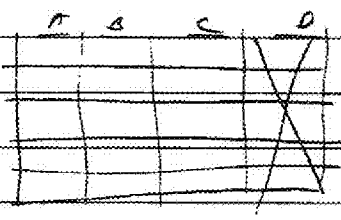
- Sear Safety can feel
interior of trigger assembly,
through inspection hole

Duration of [illegible] 1 sec.

LUBRICATION TEST N-BAR

FIRST CONTACTS

A 5 current BOL
B 5 Skeleton's
C 5- relieve solid side plates
D 5- STD - unaltered FC, no Lub



Lubrication Build-up over Time

5 Types - 3 in 1 oil
- Remington oil
- Hoppe's
- Teflow spray (DRY) LPS #1
- WD-40
- Common Lubrication procedure — spray duration 1 sec on both sides of cam Safety cam

1) Dry cycle 1500 cycles
- Test in Lock Time Fixture
- oven @ 125° F for 24 hours

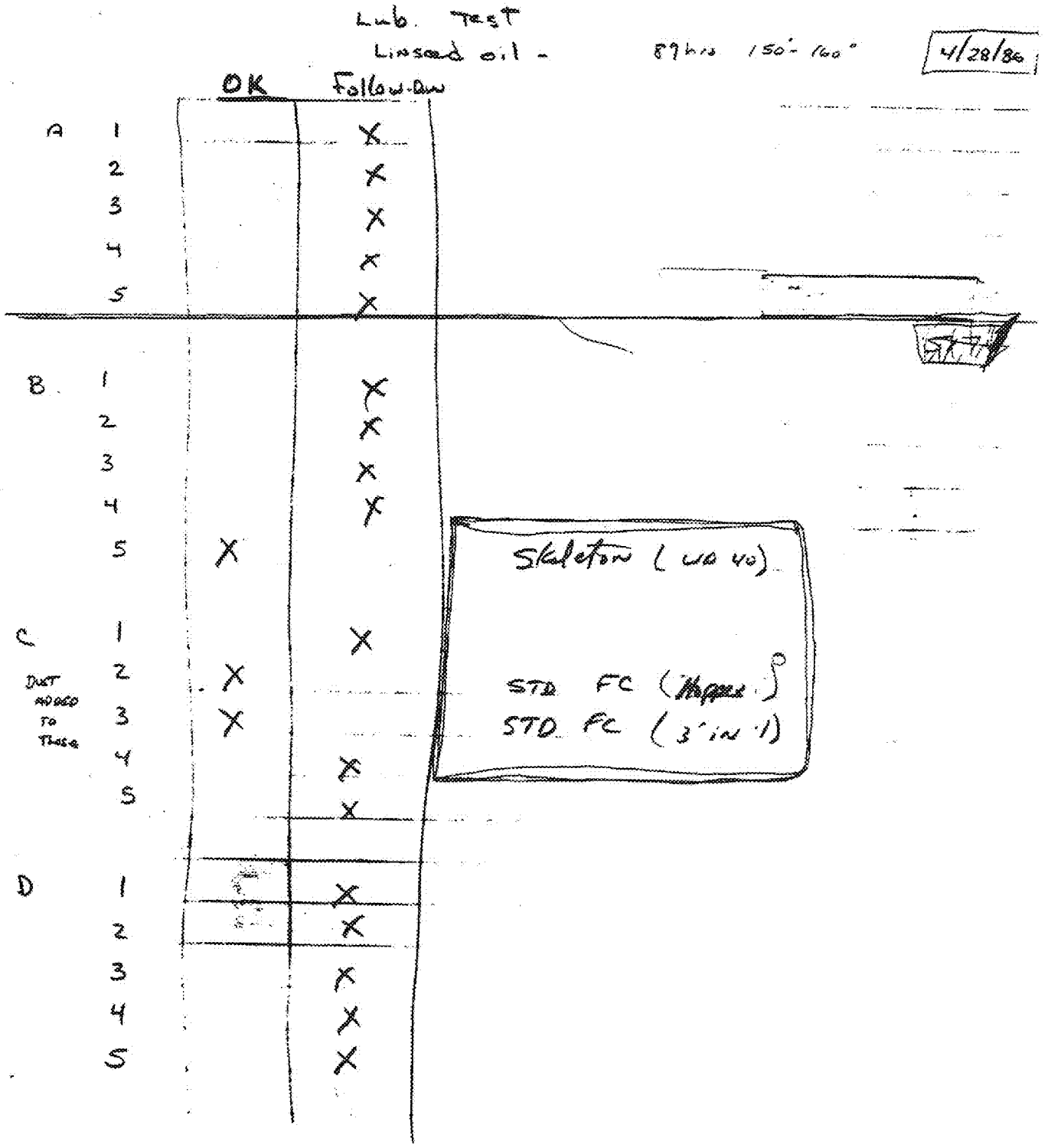
Lubricant Motion

Grease for placement in oven

Dry cycles —

1T
LUB
2T
500 DRY CYCLES
3T
- OVEN 24hr
4T after cool ambient
LUB Cock action
OVEN 24 hrs
5T after

Repeat for one week


Lub. Test
Linseed oil - 89 hrs 150°-160°
4/28/86
OK
Follow-On
A 1
2
3
4
5
B 1
2
3
4
5
C 1
2
3
4
5
D 1
2
3
4
5
Duet moved to Thick
Skeleton (no vo)
STD FC (Thick)
STD FC (3 in 1)

#.2

3. Fire Control - modifications

• Check test results and follow up with a report on how good the trigger block/sear block is. A.I report needed on this program - including bolt lock.

• I think there is more work on the new bolt action rifle than you can handle alone. I will get with you after the operations Comm. Mtg meeting and go over the schedules - they have set up - Again they want the new guns - and we should proceed to give what we think is needed

5.11.82

To Fred Martin

Subject: work Load.

1. New bolt action Rifle (m/7 adl version)

Continue work to complete that models with the specifications we set up. Make sure we have a action ready for Bob Emmons to stock. This work should be complete by Sept. 82.

2. Scope Mounts.

Scope Mounts should be complete and released to the model shop with the type attachment we discussed. They also should retrofit on our new guns.

Xc: W.M. Curry
F.E. Martin
R.S. Murphy
R.J. Sanzo
J.E. Selan
J.R. Snedeker
J.W. Bower
File: NBAR

CONFIDENTIAL

NBAR MEETING
MAY 5, 1986

- Magazine Boxes:
  - Six boxes are ready for design verification testing.
  - Magazine bottoms have been sent to H&P.
  - H&P is scheduled to supply additional boxes the week of May 5.
- Bolt Lock:
  - Heavier springs and redesigned plungers are complete.
- Extractor:
  - Additional modifications to the magnum extractor are under review.
  - During the blow-up phase of development testing, purposely break through the wall of the bolt head to determine consequence.
  - Standard extractors need to be heat treated.
- Trigger Pull Adjustment Screw:
  - Long-Lock, Inc. has been sent threaded blocks for application review. They will make their recommendation by 4/25.
- Critical Path Components:
  - Receivers
    - 9 have been heat treated and are in the Custom Shop for assembly to barrels.
    - The next 25 blanks will be delivered to the Model Shop starting on 5/7 and complete by May 6.

- Critical Path Components -Contd.
  - Stock
    - An error has been found in the model which has been transferred to the Master Stock. After the first twelve stocks are complete, the master will be modified for the balance of the test guns.
    - The first six stocks are now expected to be complete, ready for actions, by May 9.
  - Magazine Components are on schedule.
    - Magazine latches should be complete by 5/7.
    - Trigger Guard
      - 13 are complete.
      - Sears are at plate. Eleven triggers are complete.
- Lubrication tests are complete.
- Drop testing should be started 5/7.
- Blow up testing to be done at the completion of drop testing.
- Design verification testing is scheduled to start on May 12 and be complete by June 15. A debris test will be designed.
  - 30 rifles total: 6 each of 30-06, 280, 270, 7mm Rem., 300 Mag. calibers (calibers are listed in order that they will be tested).

NOTE: The next meeting will be on May 12 - 9:00 AM.

JWB:js

Form 69340

REMINGTON ARMS COMPANY, INC.

Mmo Fifle

ENGINEERING DEPARTMENT (UMC) COMPUTATION SHEET SHEET NO

TYPE OF PROJ. M1700 TRIGGER OF LOS INTERO JOB NO

SUBJECT OF MOVIE FOR CAUSE OF TRIGGER PULL

COMPUTER DATE 5-18 19 74

REPORTED BY LORDS OF TWENTY PULLS,

REJECTED FOR CAUSE	PASSED
11	8
2	15
4	15
0	7
5	15
6	14
3	17
9	11
12	8
5	15
4	16
4	16
7	13
4	16
4	16

By,

"Rio in upon us during Los Lusiums Lord I only ask that you & God Key God, Rio to show thy metal more we got and we Shall

Jim

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KINZER V. REMINGTON

) 263 Rev. 1

GUNSMITH CALL REPORT

ate 6-1-83 Reporter Don McClure

op Name Old West Arms Gunsmith's Name Wayne Markiewicz

ddress 7024 W. Colfax Ave. (No. & Street) Lakewood (City) Colorado (State) Zip80215

unsmith on Premises? yes If not, give address below:

unsmith's Address (No. & Street) (City) (State) Zip

ecommended List (x) Open Acct. (x) % Disc. 30% Dealer (X) Large (X) Small ( )

New Gun Repair

ERSONS INTERVIEWED and POSITION:

1) Wayne Markiewicz Gunsmith (2) Rick Jeranson Gunsmith

3) (4)

PECIFIC PROBLEMS ENCOUNTERED:

1. Gun Guard creating problems in chambers and fire controls.
2. Screw in chokes are in demand.

ENERAL DISCUSSION

Wayne and Rick both stated that several M-700's had been brought in with a complaint of firing when the safety was released or when the trigger susposedly had not been touched. They thought the total was five guns. All guns had been returned to Arms Service per the instructions of the letter sent to all recommended shops covering this type complaint. I asked if they could determine if any of the guns involved were coated in the fire control area with gun guard or any other form of heavy lubricant. They stated that since they had not probed into the guns to any degree before returning them they could not answer in the affirmative but it was a distinct possibility. Rick stated that heavy gun guard in the chambers of M-Fours and 7400's had created function problems when the guns were fired before proper cleaning. Several cases of this nature have occured. I had told them about this problem on my last call and they found it to be the cause in many function complaints. Occasionally a smaller .097 nozzle was found also and opened to the .110 current dimension.

The demand for screw in chokes is increasing. Many people want them installed in their present shotguns and problems sometimes occur when unwary gunsmiths start working with our vent rib barrels. The hardened material under the rib portion causing the threading device to wander

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1 318 233

6/8/83 Reporter Donald McClure

op Name Douglas Jackalope Gun & Sport Shop Gunsmith's Name Bill Meehan

dress 1048 South 5th St. Douglas, Wyoming Zip 82633
No. & Street City State

nsmith on Premises? Yes If not, give address below:

nsmith's Address _____ Zip
No. & Street City State

commended List (X) Open Acct. (X) % Disc. 30% Dealer (X) Large ( ) Small (X)

RSONS INTERVIEWED and POSITION:

) Bill Meehan - Owner/Gunsmith (2) _____

) _____ (4) _____

CIFIC PROBLEMS ENCOUNTERED:

. M-700 - 270 Caliber - Fired upon closing.

. M-540X - Target Rifles - Several broken bolt stops.

. Components in demand (bullets)

NERAL DISCUSSION

Bill mentioned a M-700, 270 caliber which fired on closing. This gun, though 11 years old, had the original Duco cement sealant on the adjusting rews. I asked if the fire control showed signs of dried steel guard but he did t know. Bill had talked to Dick St. John regarding this gun and had been told return it to Arms Service which he had done. The gun had been returned with a v trigger installed. Bill said he had been told he would receive an explanation what was found to be wrong but this has not arrived.

Bill maintains the target rifles for a local small bore club. This club very active; they have 24 Model 540X's which are used on an average of twice veek. Bill states that bolt stop breakage has been a serious problem. EAch gun erages the replacement of one bolt stop a year. When he could receive them thi s not a big problem, but having to return them to Arms Service with the new licy is. He said that he had called Dick St. John about this problem also and x bolt stops had been sent but they have long since been used up. He has 14 ns that need bolt stops at this time. Perhaps another supply could be sent to n. He is very competent to make this repair.

He mentioned that bullet components are wanted by many customers; bronc ints and 17 caliber by the varmit shooters.

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) 263 Rev. 1

517 232

GUNSMITH CALL REPORT

ite 7/25/83 Reporter Donald McClure

iop Name C. Wheeler Guns & Gunsmith Ser. Gunsmith's Name C. Wheeler

ddress 1908 E. George Washington Way (No. & Street) Richland, (City) WA (State) Zip 99352

insmith on Premises? Yes If not, give address below:

insmith's Address _____ (No. & Street) _____ (City) _____ (State) Zip _____

ecommended List (X) Open Acct. (X) % Disc. 30% Dealer (X) Large ( ) Small (X)

NEW GUN REPAIR

ERSONS INTERVIEWED and POSITION:

1) C. Wheeler - Owner/Gunsmith (2) _____

3) _____ (4) _____

PECIFIC PROBLEMS ENCOUNTERED:

1. M-700 - Guns fire when safety switch moved to off position.

2. M-1148 - 12 Ga. - Needed oversize locking block.

ENERAL DISCUSSION

Mr. Wheeler told me they have had 5 M-700's in the last year which the owners claimed fired when the safety was pushed to the off position. All were returned to Arms Service per our instructions. The guns came back with new triggers installed but no explanation of what, if anything, was found wrong. He said a couple of the gun owners were unhappy because their gun had to be sent to the factory, but he told them that was Company policy, so they accepted it.

Still some M-1148 shotguns coming in; usually need an oversize locking block to correct the problem.

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KINZER V. REMINGTON

RD-55-S

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

FILE 700 Fire Control

Xc: C.F. Prosser
D.J. Anderson
J.W. Bower
K.R. Chadwick
J.P. Linde
A.A. Hugick
W.R. Googin - File

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
November 24, 1975

SUBJECT: MODEL 700 SEAR LUBRICANT EVALUATION

Date Started: November 12, 1975
Date Completed: November 19, 1975
Work Order: 90245

INTRODUCTION

Request received from C.F. Prosser to evaluate a possible substitute lubricant for the sear of the Model 700 fire control. Plant presently uses Moly-cote Dry Type "Z", and the new product is labeled Lifelube dry lubricant. Test to consist of cock and fire dry cycle at rate of 30 cycles per minute with trigger pull measurements every 500 cycles. Test to stop at 10,000 cycles. Two rifles were supplied for test: M/700, Serial No. A6223479 with current Moly-cote, and M/700, Serial No. A6210935 with new product on sear.

RESULTS

A. Moly-cote Dry Type "Z" (current)

1. Trigger pull averages varied .70# during test. Neither failures to fire nor excessive wear were noticed.

2. Trigger pull at start: 4.65# ~0~ cycles
Trigger pull at finish: 5.35# 10,000 cycles

3. No breakages occurred during test.

B. Lifelube dry lubricant (possible substitute)

1. Trigger pull averages varied .70# during test. No failures to fire were noticed.

2. Bolt cam surface experienced galling and had to be stoned at 7,500 cycles.

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RESULTS Continued

B.	3.	Trigger pull at start:	4.90#	-0- cycles
		Trigger pull at finish:	5.40#	10,000 cycles
	4.	No breakages occurred during test.		

JHHennings:T
Research Test Lab
Ilion Research Division

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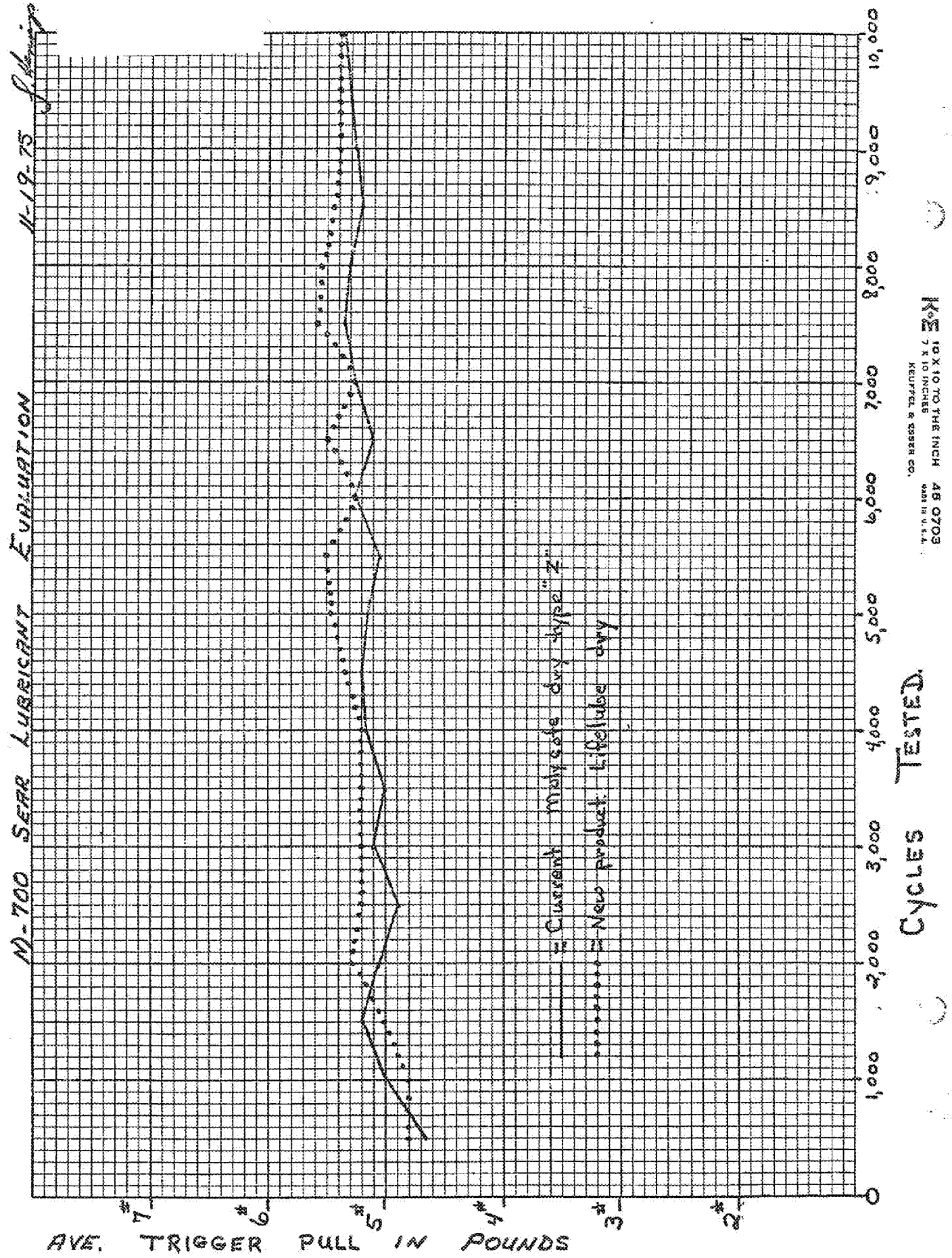
KINZER V. REMINGTON



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KINZER V. REMINGTON

MINUTE # 12 - June 30, 1982

FROM PAGE NUMBER - 7

SUBJECT - GENERAL - FIREARMS LUBRICATION-STATUS REPORT

FIREARMS LUBRICATION - STATUS REPORT

Research reported the results of a study to determine which lubricants are most suited to use in firearms (Exhibit 10). Production noted that Du Pont's "Teflon Wet" will be adopted to lubricate Model 700 Fire Controls. They will also evaluate the possibility of replacing Steelgard with bulk "Teflon Wet" for in-process protection of steel parts.

Marketing reported that after reviewing the favorable test results of "Teflon Wet", they are interested in pursuing the possibilities of Marketing this product. They are assisting in the development of a Du Pont strategy that will optimize the marketing of "Teflon Wet", and "Teflon Dry", and consider the Remington branding of a similar product.

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KINZER V. REMINGTON

CONFIDENTIAL

From: Ronkainen, Jim
Sent: Friday, July 19, 2002 4:47 PM
To: Diaz, Danny; Danner, Dale; Franz, Scott; Snedeker, Jim
Subject: Gun A33 - Extended SAAMI Jar-Off Testing

On Tuesday, July 16, 2002, Bolt Action Maintenance Review Design Acceptance Test (DAT) rifle A33 (Model 700 VS, 223 Rem) with a police firing pin assembly had the firing pin fall at the 6" level of the Extended SAAMI Jar-Off test in the "bottom of the stock up" attitude. Subsequent post-test inspection and measurement of the rifle showed that, while the trigger/sear engagement was within specification for the test (0.0187 versus 0.0150-0.0195), the trigger pull force was below the minimum limit permitted by the test (3.135 lbs actual versus 3.500 lbs minimum).

After the post-test measurements were completed, the trigger/sear engagement was adjusted to 0.0190 and the trigger assembly was lubricated per design engineering specifications. Prior to readjustment of the trigger pull screw, the trigger pull force was measured and found to be substantially below the minimum limit for the test (force measured was approximately 2.0 lbs versus 3.5 lbs minimum limit). The trigger pull force was then adjusted to be above the minimum specification (3.530 lbs actual versus 3.500 lbs minimum) and the Extended SAAMI Jar-Off test at 6" was repeated on the firearm. The rifle passed. Post-test measurements and subsequent relubrication and adjustments were made and the Extended SAAMI Jar-Off test was repeated again. The rifle passed. This cycle was repeated three more times for a total of five trials, with the rifle passing the test each time.

Based on the evidence gathered, the fall of the firing pin of rifle A33 during the initial Extended SAAMI Jar-Off test at 6" was due to inadequate relubrication of the trigger assembly between test cycles. The marked drop in trigger pull force after the trigger assembly was properly relubricated strongly supports this finding. This hypothesis is also supported by the fact that the properly lubricated and adjusted trigger assembly was retested and passed the 6" level of the Extended SAAMI Jar-Off test five times.

Some background may be helpful in understanding how and why lubrication affects trigger pull force. The trigger pull force is equal to the sum of the force due to the trigger pull spring plus the force due to friction between the trigger and other components within the trigger assembly. When the trigger assembly is not properly lubricated, the frictional component of the trigger pull force becomes larger, which necessarily causes the trigger pull spring component of trigger pull force to be smaller when the trigger pull force is adjusted to meet the trigger pull force limit for the test. Low trigger pull spring forces contribute to increased jar-off sensitivity.

Subject to Protective Order - Williams v. Remington

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After the post-test measurements were completed, the trigger/sear engagement was adjusted to 0.0180 and the trigger assembly was lubricated per design engineering specifications. Prior to readjustment of the trigger pull screw, the trigger pull force was measured and found to be substantially below the minimum limit for the test (force measured was approximately 2.0 lbs versus 3.5 lbs minimum limit). The trigger pull force was then adjusted to be above the minimum specification (3.530 lbs actual versus 3.500 lbs minimum) and the Extended SAAMI Jar-Off test at 6" was repeated on the firearm. The rifle passed. Post-test measurements and subsequent relubrication and adjustments were made and the Extended SAAMI Jar-Off test was repeated again. The rifle passed. This cycle was repeated three more times for a total of five trials, with the rifle passing the test each time.

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COMPANY CONFIDENTIAL

Subject to Protective Order - Williams v. Remington

(1)

TO: TERRY DOUGLAS

FROM: BILL WARREN 6-23-87

QUARTERLY PROGRESS REPORT

ACTIVITY	% OF QUARTERLY TIME
M12 REMINGTON CONTRACT ACTIVITY AND THE IMPROVEMENT OPPORTUNITIES TO CURRENT MODELS RESULTING FROM IT.	45
INVESTIGATE QUALIFYING M870 TO MIL. SPEC. MIL-S-3443E	7
DATA COLLECTION FOR M700 SAFETY OPERATING FORCE ANALYSIS	7
M11 CUSHION REPLACEMENT	0
M7400 GALLERY PERFORMANCE DATA	0
SINGLE SHOT SHOTGUN	0
(THESE 3 FOR INFO. ONLY)	

M12 MATCH/CURRENT MODEL IMPROVEMENT

M12 ACTIVITY, PER SE, STOPPED WHEN GOVT. AWARDED BID TO KIMBER. IF THIS ITEM/PROGRAM IS CONSIDERED IN THE FUTURE, TWO ITEMS WILL REQUIRE MAJOR DRAWING TIME & STOCK AND ADJUSTABLE BUTT PLATE ASS'Y. MOST OTHER COMPONENTS CAN BE DESCRIBED BY TABULATION ON AN EXISTING DRAWING. THE STOCK HAS BEEN FINISHED @ S&K. IT IS → BEING PUT IN R&D GUN LIBRARY. S.N. A104807Z

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KINZER V. REMINGTON

DURING THIS ACTIVITY, OPPORTUNITIES FOR IMPROVEMENT WERE DEVELOPED/IDENTIFIED. THESE CAN BE APPLIED TO CURRENT PRODUCT. THERE ARE THREE TYPES OF THESE:

(1) CHANGES TO IMPROVE PERFORMANCE
(2) " " REDUCE AMOUNT OF EFFORT OR SUB-ASSEMBLY OPERATIONS NEEDED.
(3) RECORDS/PRACTICE . TO BE RECONCILED

A REVIEW MEETING WAS HELD 6-22-87; AT WHICH IT WAS DECIDED TO PROCEED WITH THESE IMPROVEMENTS.

THE PROGRAM HAS BEEN REVIEWED WITH THE TEST LAB. THEY HAVE A WORK REQUEST AND SAMPLE PARTS TO BEGIN COMPREHENSIVE TESTING.

M 870 MIL-S-3443E

ACTIVITY CONSISTED OF REVIEWING LATEST MIL. SPEC. AND OUR EXISTING/HISTORICAL 870 MIL. MODIFICATIONS/ACCESSORIES.

SUMMARY

WITH ONLY MINOR DESIGN AND/OR MATERIAL AND/OR ACCESSORY CHANGES, THE 870 CAN BE MADE TO MEET SPECIFICATIONS FOR TWO OF THREE TYPES OF SHOTGUNS IN MIL-S-3443E.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

QUARTERLY PROGRESS REPORT BILL WARREN 6-23-87

WE WILL REQUIRE SIGNIFICANT DESIGN ACTIVITY TO COMPLY WITH,

"TYPE I CLASS 1 ... WITH BAYONET ADAPTER, HEAT SHIELD, AND SLING ... TAKE-DOWN RECEIVER"

I THINK WE DO NOT NOW QUALIFY BECAUSE OF THE REQUIREMENT THAT, "... the barrel can be easily removed from the receiver without the use of tools..." (3.2.1.4). THE PRESENT BAYONET ADAPTER CLAMPS TO BOTH THE BARREL AND MAGAZINE TUBE EXTENSION. THIS REQUIRES A TOOL TO LOOSEN 3 SCREWS TO REMOVE THE BARREL.

JUDGING FROM CATALOG ILLUSTRATIONS, THE MOSSBERG PRODUCT MOUNTS THE BAYONET COMPLETELY ON THE BARREL ASSEMBLY. IF SO, THIS MEETS THE REQUIREMENT OF THIS SECTION.

TWO QUESTIONS NEED TO BE ADDRESSED BEFORE IN-DEPTH DESIGN ACTIVITY BEGINS TO QUALIFY THE 820:

- IN WHAT TYPE AND CLASS IS THE MAJORITY OF THE GOVT/CIVILIAN MARKET LIKELY TO BE?
- WHAT EXACTLY DOES THE SPEC. MEAN BY, "barrel ... easily removed ... without tools

→

MY OPINION IS THAT WE SHOULD QUALIFY THE 870, BY DESIGN, FOR CLASS 1 AND ALL THREE TYPES, EVEN IF THIS DELAYS OFFERING TYPE I CLASS 1 - TO PERMIT DESIGN/TEST TIME FOR A SUPERIOR DESIGN.

M 700 SAFETY OPERATING FORCE ANALYSIS DATA AND SAMPLE COLLECTION HAVE BEEN ONGOING FOR SIX MONTHS. THESE ARE NOW AMPLE TO BEGIN A SYSTEMATIC PLANNED APPROACH TO DETERMINE MAJOR CAUSE(S).

THERE ARE APPROX. 100 RIFLES DOCUMENTED BY FINAL INSPECTION DATE AND APPROX. 60 TRIGGER ASSEMBLY EXAMPLES FULLY DOCUMENTED.

TRIGGER ASSEMBLIES BUILT IN FOUR DIFFERENT YEARS HAVE BEEN FOUND WITH THE S.W.H / S.W.W. CONDITION. (SEE ATTACHED HISTOGRAM)

THERE ARE ALSO TWO OTHER SITUATIONS TO BE CONSIDERED IN A COMPREHENSIVE CONSISTENT SOLUTION:

- THE LUBRICANT USED ON PRODUCTION IS DIFFERENT FROM THE ONE RECOMMENDED

(2)

QUARTERLY PROGRESS REPORT BILL WARREN

6-25-87

IN THE OWNER'S MANUAL.

- FIELD SERVICE PERSONNEL HAVE BEEN TELLING GUNSMITHS NOT TO ALTER OR ADJUST TRIGGER ASSEMBLIES. BUT WE PAY NEW GUN REPAIR STATIONS CLAIMS FOR ALTERING M200 TRIGGER ASSEMBLY'S TO CORRECT FOR SWW/SWH.

M11 CUSHION REPLACEMENT

ENGINEERING ACTIVITY ON THIS HAS BEEN DEFERRED SINCE MARCH FAVORING REMINGTON'S BID RESPONSE FOR THE M12 MATCH RIFLE (BECAUSE OF RESPONSE DEADLINE AND DOLLAR VOLUME OF POTENTIAL GOVT BUSINESS).

CURRENT STATUS

DRY CYCLE TEST DEVICE HAS BEGUN TESTING ORIGINAL AND FIRST RUN SAMPLES TO ESTABLISH BENCH MARK LEVEL OF PERFORMANCE. THIS HAS NOT CONTINUED IN THE LAB. SAMPLES FROM THE (DAMAGED) TEMPORARY SPRAY UP TOOLING USING THE SELECTED ST 801 WS MATERIAL HAVE BEEN RUN. THEY REQUIRE SOME ALTERATION (IN MODEL SHOP TO CORRECT DIMENSIONAL PROBLEMS WITH THE TOOLING. THEY CAN THEN BE TESTED.

(6)

A SECOND, NEARLY NEW, M11 HAS BEEN MODIFIED TO PROVIDE FOR SHOOTING TESTS ON BOFFERS (BUFFER IS EASILY REPLACEABLE) SHOOTING SHOULD FOLLOW DRY CYCLE TESTING.

FUTURE TO BE DONE

RESUME DRY CYCLE TESTING

DEVELOP AGREEMENT WITH ALL INTERESTED PARTIES ON THE NATURE AND EXTENT OF TESTING CONSIDERED APPROPRIATE.

INSIGHTS

THE PART DESIGN SHOULD BE BASED ON THE ASSUMPTION THAT A MALE MASTER PART WILL BE MADE AS AN ELECTRODE TO SINK A MOLD CAVITY. OTHERWISE THERE ARE TOO MANY SHAPE COMPROMISES NECESSARY IF THE DIE CAVITY IS MACHINED DIRECTLY.

FINAL DESIGN CAN BE OPTIMIZED BASED ON DRY CYCLE TEST RESULTS.

THE 3T 80 HS MATERIAL LOOKS VERY GOOD THRU BLACK OXIDE. SOLVENT RESISTANCE TESTS CAN BE BASED ON TABULATED (DUPONT) TEST RESULTS AND FIELD

QUARTERLY PROGRESS REPORT BILL WARREN
6-26-87

PERFORMANCE OF THE NYLON 66 STOCK

R&D WILL NOT DEVELOP OR INVESTIGATE SOURCES FOR PERMANENT TOOLING, OR THE "GUNSMITHING" END OF FIELD REPLACEMENT INSTALLATIONS.

ALL TO-DATE ACTIVITY HAS CENTERED ON THE 12 GAUGE. A COMBINATION 16-20 GAUGE IS ALSO REQUIRED.

I'LL BE HAPPY TO BRIEF THOSE WHO WILL BE TAKING OVER FOR ME ON THESE ACTIVITIES. THIS COULD ASSURE MAXIMUM KNOWLEDGE TRANSFER AND MINIMUM LOST EFFORT.

Bill Warren

Automotive Products Department

and

Fabricated Products Department

Research & Development

Quarterly Summary

October -- December 1987

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SPECIAL CONTROL
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EDITED BY M.M. COBURN

Distribution on Back Cover

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Automotive Products and Fabricated Products 4Q87 R&D Report 3

HIGHER METHACRYLATE MONOMERS EXPANSION 14

A continuous process for the manufacture of n-Butyl Methacrylate from methacrylic acid has been developed and a $3MM project is scheduled for authorization 1Q88. The project will reduce the internal use of Methyl Methacrylate, avoiding outside purchase and yielding $700M per year ATOI.

CORIAN® CRACKING 15

A more crack resistant formulation has been identified utilizing methyl methacrylate-g-butadiene-styrene (MBS) particles in the Corian® sirup while reducing the alumina tri-hydrate filler content. Subject to additional testing, early 1988 plant conversion is planned to eliminate this leading quality complaint in our $84MM Corian® business.

NEW CORIAN® SHAPE PROCESS 16

A new closed-mold process for producing Corian® Shape products is nearing the semiworks testing stage. Marketing plans to develop the Shape market are being implemented in anticipation of process development and equipment design successes. Achievement of process and product goals will provide a 50% IRR on a $12MM investment.

TEFLON® PFA POWDER COATING APPLICATIONS 16

A joint program between FPD and PPD is moving Teflon® PFA powder-based coatings technology nearer to commercial success. Improvements in the process used to make the powder have been defined. One key market application is a coating for light bulbs, estimated at $20MM at 14% ATOI margin by 1992.

RICE COOKERS IN ASIA - A KOREAN OPPORTUNITY 17

We are working with a Korean firm to develop markets in Asia for coatings developed earlier for rice cookers and possibly microwave ovens. Success of these products could result in penetration of the Japanese market.

ACRYLIC BEAD RESINS BY SPECIAL CHAIN TRANSFER PROCESS COMMERCIALIZED 17

Cobalt-based Chain Transfer technology has been successfully used to synthesize 40M lb of acrylic bead resin to satisfy a commercial order, highlighting the rapid commercialization of this new technology. The initial opportunity represents $1.25MM in sales with a PTOI margin of 28% in 1988. Other opportunities for these sulfur-free resins are being sought.

test was run in December and initial data indicates that the MBS can be readily incorporated in the formula without process changes. Sheet product will be evaluated and properties measured to quantify the toughening improvement. Early 1988 plant conversion is planned.

NEW CORIAN® SHAPE PROCESS

Sales of Corian® shaped products grew 17% in 1987 and continued growth is expected. To meet anticipated needs, we are developing a new closed-mold process targeted for production in late 1990. In the new process, which we are developing with Engineering Department assistance, Corian® sirup is in a closed mold at low pressure as opposed to the present casting process at atmospheric pressure. Our goal is a 55% reduction in cost of shaped products.

We have now developed three prototype molds which will test release surfaces, seal options, and heat transfer processes in semiworks runs planned for the near future. Automated mold filling and changing equipment is being developed for the next stage of testing. The goal is annual capacity of 600M shape units, about 4X 1987 volume. Achievement of process and product goals will provide excellent project economics of about 50% IRR on a $12MM investment.

TEFLON® PFA POWDER COATING APPLICATIONS

Powder coating with Teflon® PFA powder has turned out to be a complicated process, but potential markets are attractive. We have determined that PFA prepared by the existing Parkersburg non-aqueous process is not satisfactory for most of our applications, probably due to the polymer morphology. The most promising long range product is PFA manufactured by the aqueous process, which is currently operated in Japan by PPD's Mitsui joint venture. The process, however, will be used at Parkersburg in mid-1988. Critical to our product needs is heat treatment, which affects the grindability of the product. Until material from Parkersburg is available, we are using Mitsui's shot tower prepared powder (MP-10), which does not require grinding, and found it to be adequate for some applications, but less satisfactory than ground aqueous process material. We are continuing our close working relationship with PPD to resolve all the supply aspects associated with our PFA powder coating requirements.

Attractive markets for PFA powder coating continue to appear in the consumer light bulb coating area, where GE is enthusiastic about the results of their marketing studies, and for weld nut coating at Nylock. The market for light bulb coating formulations is expected to be $20MM at 14% ATOI in 1992.

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CONTINUOUS REACTOR/EXTRUDER PROCESS FOR ACRYLIC RESINS

BELLAND AG, a small Swiss Engineering Company, has developed a state-of-technology continuous twin screw reactor coupled with a W&P extruder/compounder to produce specialty acrylic polymers. Six difficult to make Elvacites® were run on their line to produce dry extruded products within each product's Inherent Viscosity specification range.

The flexibility of the process was demonstrated as these six resins were made in successive runs of 2 hours each. The compositions covered a wide range of product characteristics such as very soft resins, a high acid containing polymer for Riston®, odorous Elvacite® 2014, and a potentially new offering for Vacrel®. The process could also be used to make acrylics of low molecular weight without mercaptans. This alternative to our current Bead Process would resolve some key issues (odor, low Tg, etc.) and increase Plant productivity significantly by making low productivity bead resins by Belland Process - all directly in dry pellets, powder or film form. We are assessing the economics of the process to justify the implementation of the technology in FPD for producing not only specialty acrylics by free radical, GTP and SCT polymerization technologies, but also for developing new products such as thermoplastic elastomers, hot melt adhesives and tougheners by polymerization and reactive compounding using polymeric blocks from GTP and SCT technologies.

MODEL 700 MOUNTAIN RIFLE CALIBER ADDITIONS

The Model 700 Mountain Rifle was introduced in 1986 with a lighter-weight barrel and stock contour. The Mountain Rifle concept was well received by the market and is currently one of the most popular versions of the Model 700. For 1988, we are adding three popular short-action calibers: .308, .243, and 7mm-08 to complement the popular long-action calibers.

Production Trial and Pilot is currently underway with final assembly anticipated during January. Annual sales volume of the new short-action version is estimated at 3000 rifles.

MODEL 1100 MAGNUM RETROFIT BARREL FOR STEEL SHOT

This program will provide a retrofit barrel and choke tube system for owners of M/1100 12 Gauge Magnum shotguns. The gas orifice hole is optimized for proper functioning with the lower-powered 2 3/4 and 3 inch magnum steel ammunition. The choke tube system will handle the BBB, T, and F steel shot sizes without deformation, and the choke constrictions are being developed using 2 3/4 inch Magnum 2's as the benchmark ammunition.

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REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
June 27, 1985

TO: Jim Corle, Corporate Counsel

FROM: Randy Murphy

Research has requested a sample of GSB Lubricant to test, however since Gregg does not have patent protection yet, he would like us to sign a non-disclosure agreement. Please review to see if this is something that we can do. Research is still interested in testing this product. If you have any questions, please call me on extension 365.

Thank you.

RSM:sps RSM

1 OCT.'91

The following two tests where conducted to determine the effect of applying Iosso Cleaner to a Model 700 Fire Control. In Test #1, trigger pull was measured on 5 rifles and the average of 5 pulls for each fire control was recorded. Iosso was then applied to the inside of the mechanism and trigger pull measurements were again taken. Finally, the fire controls were cleaned in Stodard Solvent and the trigger pulls again were measured. No statistically significant differences were detected in the test data.

The second test was conducted to determine the effect of leaving the Iosso Cleaner inside the fire control mechanism for a one week period and measuring the trigger pull. After measurement the fire controls were cleaned in Stodard Solvent and re-measured for trigger pull. Again, no significant differences were found between before and after Iosso Cleaner application.

TEST #1:

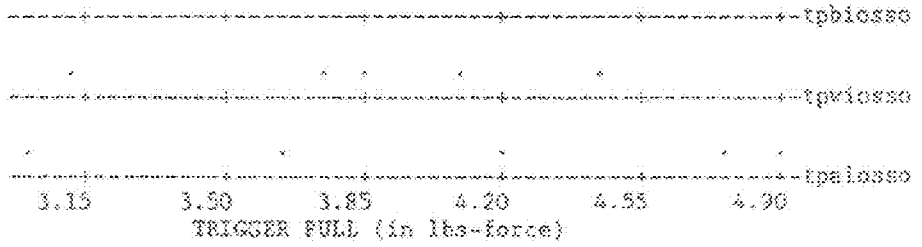
Note 'tpbiosso' - means trigger pull before Iosso was used.
Note 'tpviosso' - means trigger pull with Iosso still in the Fire Control.
Note 'tpaiosso' - means trigger pull without Iosso (after being cleaned in Stodard Solvent

BASIC STATISTICS

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN
tpbiosso	5	4.020	4.300	4.020	0.575	0.257
tpviosso	5	3.850	3.850	3.850	0.499	0.223
tpaiosso	5	4.100	4.200	4.100	0.788	0.352

	MIN	MAX	Q1	Q3
tpbiosso	3.150	4.600	3.450	4.450
tpviosso	3.100	4.450	3.425	4.275
tpaiosso	3.000	4.900	3.325	4.825

BOXPLOT OF THE 3 CONDITIONS



ANALYSIS OF VARIANCE

SOURCE	DF	SS	MS	F	p
FACTOR	2	0.163	0.082	0.20	0.819
ERROR	12	4.803	0.400		
TOTAL	14	4.966			

LEVEL	N	MEAN	STDEV	INDIVIDUAL 95 PCT CI'S FOR MEAN BASED ON POOLED STDEV
tpbiosso	5	4.0200	0.5751	(----------*----------)
tpviosso	5	3.8500	0.4987	(----------*----------)
tpaiosso	5	4.1000	0.7882	(----------*----------)
POOLED STDEV =		0.6327		3.50 4.00 4.50 5.00

CONCLUSION: There is not a statistically significant difference between the three conditions.

TEST #2:

Note 'tpbiossv' - means trigger pull with Iosso prior to week's application.
Note 'tpviossv' - means trigger pull with Iosso after one week's application.
Note 'tpaiossv' - means trigger pull with Iosso removed by Stodard Solvent after setting one week with Iosso applied to the Fire Control.'

BASIC STATISTICS

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN
tpbiossv	5	4.390	4.350	4.390	0.338	0.150
tpviossv	5	4.3300	4.3000	4.3300	0.2168	0.0970
tpaiossv	5	4.310	4.000	4.310	0.910	0.328

	MIN	MAX	Q1	Q3
tpbiossv	4.150	4.950	4.150	4.700
tpviossv	4.1000	4.6000	4.1250	4.5500
tpaiossv	3.900	5.100	3.950	4.825

DOTPLOT OF THE 3 CONDITIONS

tpbiossv
tpviossv
tpaiossv
4.00 4.25 4.50 4.75 5.00 5.25

TRIGGER PULL (in lbs.-force)

R20190039

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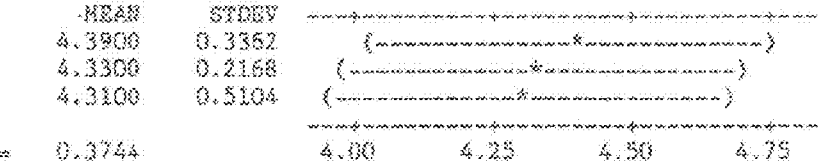
ANALYSIS OF VARIANCE

SOURCE	DF	SS	MS	F	p
FACTOR	2	0.017	0.009	0.06	0.940
ERROR	12	1.682	0.140		
TOTAL	14	1.699			

LEVEL	N	MEAN	STDEV
tpblossv	5	4.3900	0.3362
tpwlossv	5	4.3300	0.2168
tpslossv	5	4.3100	0.5104

POOLED STDEV = 0.3744

INDIVIDUAL 95 PCT CI'S FOR MEAN BASED ON POOLED STDEV



Conclusion: There is no statistically significant difference between the three conditions tested. JRS]

Results:(continued)

No Lube Test (continued)

The Browning had a problem feeding left rounds from the magazine. The feeding rounds are contacted by part of one bolt locking lug. There is not much coverage here. A stripped trigger guard screw hole further compounded this problem. This prevented a tight fit between the floorplate and the stock which resulted in a lower magazine box position.

All the bolts operated slightly harder without lubrication than with it. Remington's closing bolt rotation was much harder than the four competitor's rifles.

All five rifles froze up during the dry cycle test without lubrication. This resulted from the high friction build-up between the cocking cam surface and the firing pin cocking piece. Lubrication was applied to open the bolts.

	Cycles to Freeze Up
Browning BBR	220
Remington M/700	100
Ruger M/77	615
Smith & Wesson M/1500	311
Winchester M/70	262

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Report No. 91141

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

AREA OF TESTING

___ Developmental	___ Safety Related	___ Litigation
___ Design Assistance	___ Competitive Evaluation	___ Warehouse Audit
___ Pre-Pilot	___ New Design	___ Cost Reduction
___ Pilot	___ Design Change	Stake ___
✓ Production Assistance	✓ Plant Assistance	___ Other

FIREARM STATS
MODEL: 700
CAL. or GAGE:
BARREL TYPE:
PROOFED: YES ___ NO ___

REPORT REQ'D.
FORMAL ___
TEST RESULTS ONLY ✓

DATE REQUESTED: 3-6-91
DATE NEEDED BY: 6-20-91
REQUESTED BY: J. SNEDEKER
WORK ORDER NO: 481152

TEST TYPE

___ Strength Test	___ Ammunition Test	✓ Dry Cycle Test	___ Photo/Video
✓ Function Test	✓ Environmental Test	___ Measurements	___ Other ___
___ Accuracy Test	___ Customer Complaint	___ Endurance Test	

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

TO EVALUATE RUST RESISTANCE

PLEASE CHECK 15 OF EACH OF THE FOLLOWING M/700 TRIGGER HOUSING ASSEMBLIES FOR RUST RESISTANCE AND FUNCTION AFTER APROX 90 DAYS EXPOSURE TO PLANT TEMP AND HUMITITY AND TWO OF EACH SAMPLE AFTER 90 DAYS FOR FUNCTION BY DRY CYCLE TESTING TO 5,000 CYCLES EACH.

SAMPLE A. RUST PEL 45
B. PRO COR 18N
C. REM OIL

GUNS REQUIRED:

ALL SAMPLES TO HAVE "MOLYKOTE" AT SEAR/CONNECTOR SURFACE

15 OF EACH ABOVE SAMPLES PROVIDED

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 6-10-91
TEST COMPLETED BY: R.W. HOWE
REPORT DATE: 6-12-91

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TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: J. R. SNODDERLY TESTER: R.W. HOWE DATE: 6/12/91
REPORT NO.: 91164 WORK ORDER NO.: 48/152
WRITTEN BY: R W HOWE
TEST TYPE: DRY CYCLE & ENVIROMENTAL

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: ____
BARREL TYPE: ____ PROOFED: YES ___ NO ___

REASON FOR TEST :

TO DETERMINE IF THE FOLLOWING LUBRICANTS OR RUST INHIBITORS ARE SUITABLE FOR USE IN M/700 FIRE CONTROL PRODUCTION TO PROTECT THE PARTS FROM RUST DURING AND AFTER ASSEMBLY AND IF THEY HAVE ANY ADVERSE EFFECT ON THE ASSEMBLIES FUNCTION OR APPEARANCE. SAMPLE A. RUST PEL 45
B. PRO COR 18N
C. REM OIL

EQUIPMENT REQUIRED:

1. 15 SAMPLES OF EACH ABOVE TYPE TRIGGER HOUSING
2. M/700 COCK & FIRE DRY CYCLE MACHINE.
3 TEST LAB M/700 TEST RIFLE

TEST PROCEDURE

1. RUST RESISTANCE "ENVIROMENTAL TEST"
AFTER APROX. 90 DAY EXPOSURE TO AMBIANT PLANT TEMPERATURE AND HUMIDITY VISUALLY INSPECT 15 OF EACH OF THE SAMPLES LISTED BELOW FOR RUST OR CORROSION AND CHECK EACH MANUALLY FOR FUNCTION. ALL SAMPLES TO HAVE MOLYKOTE APPLIED TO THE SEAR/CONNECTOR SURFACE AND COATED WITH THE FOLLOWING
A. RUST PEL 45, B. PRO COR 18N, C. REM OIL

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BARBER - 1.30.130000424

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: J.R. SNEDEKER TESTER: R.W. Howe DATE: 6/12/91
REPORT NO.: 911641 WORK ORDER NO.: 4P1152
WRITTEN BY: R. W. Howe
TEST TYPE: DRY CYCLE & ENVIRONMENTAL

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: ____
BARREL TYPE: ____ PROOFED: YES ___ NO ___

TEST PROCEDURE CONT.

2. FOLLOWING RUST RESISTANCE EVALUATION ASSEMBLE TWO OF EACH SAMPLE INTO TEST LAB 700 RIFLE AND DRY CYCLE TO 5,000 CYCLES EACH. CHECK TRIGGER PULL AND SAFE "ON"-"OFF" FORCES AT ZERO AND FIVE THOUSAND CYCLE LEVELS ON ALL SAMPLES.

NOTE: SAFE IS CYCLED FROM "OFF" TO "ON" TO "OFF" ONCE IN EVERY TWENTY COCK & FIRE CYCLES.

TEST RESULTS:

1. - VISUAL AND MANUAL CHECK FOR RUST, CORROSION AND FUNCTION AFTER 90 DAY EXPOSURE TO PLANT TEMPERATURE AND HUMIDITY.

15 SAMPLES OF EACH TYPE (ALL WITH MOLYKOTE ON SEAR CONNECTOR SURFACE)

TYPE A. RUST PREV 45 - OK
B. PRO COR 18N - OK
C. REM OIL - OK

} FUNCTION GOOD AND NO RUST OR CORROSION

2. DRY CYCLE TEST

TWO OF EACH SAMPLE TO 5,000 DRY CYCLES EACH. TRIGGER PULL AND SAFE "ON"-"OFF" FORCES TAKEN AT 0 AND 5000 CYCLE LEVELS.

DATA ON NEXT PAGE.

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TEST RESULTS:

DATA

REPORT # 911641

6-12-91

		0 CYCLES			5000 CYCLES			
	SAMPLE #	TRIGGER PULL	SAFE ON	SAFE OFF	TRIGGER PULL	SAFE ON	SAFE OFF	FUNCTION APPEARANCE
A. RUST PEL 45	1	5.50	7.75	5.50	6.00	7.75	5.50	OK
	2	5.50	6.50	5.50	5.75	6.50	5.25	OK
B. PRO COR 18N	1	4.10	6.00	4.50	4.20	6.00	4.50	OK
	2	4.80	7.50	6.00	5.50	7.50	5.50	OK
C. REM OIL	1	4.50	6.25	4.00	4.50	6.50	3.75	OK
	2	5.20	7.50	6.20	5.25	7.40	5.50	OK

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Commentary on Adding the Blocker to the Current Production Trigger Assembly

While the SPL trigger assembly may look and act like the current production trigger assembly, the resemblance is only a little more than superficial – the parts from the SPL safety/blocking system are not directly portable to the current trigger assembly. Ilion's proposal to add the SPL safety/blocker system to the current trigger assembly design is an interesting idea that, with some changes and refinement, may be feasible. But, to just add the SPL blocker system parts to the current trigger assembly without a redesign of the blocker and several other components is not possible. The issues that must be addressed in making this change are outlined below.

Issues:

SPL safety and blocker would require complete redesign

The kinematics of the SPL safety/blocker mechanism are optimized for the components used and their locations with respect to each other in the SPL trigger assembly. This is a case of where the SPL and current trigger assembly designs are superficially similar – not only are the parts different in size and shape between the SPL and the current system, the relationship of the parts with respect to each other are quite different as well. To use the SPL safety blocker mechanism on the current trigger assembly would require a complete redesign of the safety/blocker mechanism to work as intended. In summary, while the concept of the SPL safety/blocker system is portable to the current trigger assembly, the SPL parts themselves are not.

Safety stop surfaces on rear spacer block

One of the less obvious functions of the SPL trigger housing is that the rear spacer block's top surfaces serve as the stop for the safety in the SAFE and FIRE positions. The locations of the stop surfaces on the rear spacer block are integral to the kinematics of the safety/blocker system mechanism. To ensure proper function of the safety/blocker mechanism, the SPL safety, the current trigger assembly's rear spacer block, or both would need to be redesigned.

Sear bias spring location

The SPL trigger assembly design required moving the sear spring and its support upward, and lowering the front spacer block to give the blocker room to operate inside the trigger housing while providing easy access to the blocker adjustment screw in the blocker after assembly. While it may be possible to use the current sear/safety cam and move the sear spring support from the top of the front spacer block, the motion requirements of the sear/safety cam and the space available for the sear spring make this an extremely difficult problem to solve. Folding a sear spring support shelf from one or both side plates creates asymmetry between the right and left hand side plates (i.e. they are no longer a common part). This in turn defeats one of the primary reasons for going with stamped side plates: both parts are not made in the same die set, thus permitting more variation in hole position between the assembled side plates.

Subject to Protective Order - Williams v. Remington

Conflict between front spacer block rivet and blocker hold down stud

The blocker hold down stud is important to the proper operation of the blocker system on the SPL. The blocker hold down stud prevents the deflection and twisting of the blocker so that a force applied to the trigger cannot overcome the blocking action of the blocker. To ensure the security of the blocker hold down stud, it is press fit into the front spacer of the trigger housing. On the current trigger housing, two rivets are used in each spacer block to secure the side plates and to prevent rotation of the spacer blocks in the trigger housing once assembled. The blocker hold down stud is in the same approximate location as the second rivet used in the front spacer of the current trigger housing. Removing this rivet to permit the use of the blocker hold down stud would require some type of mating feature between the front spacer block and the side plates to prevent undesired motion (rotation and translation) of the front spacer block in the trigger housing.

Trigger/connector not balanced

The trigger in the SPL is a balanced design, which is important to SAAMI Jar-Off performance. The nominal eccentricity of the center of gravity (CG) with respect to the axis of the SPL trigger pivot hole is 0.00007" (for all practical purposes 0). The eccentricity of the current trigger assembly trigger/connector CG is 0.118" from the axis of the trigger pivot hole.

Regain

The SPL trigger assembly has been designed and tested to regain at a trigger pull of 3½ lbs. The current trigger assembly will not consistently regain at that trigger pull force level and would require a higher minimum trigger pull force setting than the SPL.

Sear shape

The cross-sectional shape of the SPL sear is dog-boned as a concession to the MIM manufacturing process. The dog-bone shape also has the added benefit in that it does not provide a large area to support a film of congealing lubricant between the side of the sear and the side plates of the trigger housing. In addition, the side cavities in the sear provide relief for debris that could accumulate between the sear and side plate, decreasing the possibility of the debris impeding the function of the sear.

Sear retention feature of the SPL given up

One of the novel features provided by the SPL trigger housing is retention of the sear and sear spring without slave pins when the trigger assembly is not in the action. On the current trigger assembly, the sear and sear spring are free to exit the trigger housing and be lost if slave pins are not used. Installation of the trigger assembly into the action is simplified not only in production, but especially in the field where slave pins are generally not available.

Summary

In summary, while the concept of the SPL blocker is portable to the current trigger assembly design, the SPL parts themselves are not. To port the safety/blocker design to

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the current trigger assembly would require a complete redesign of the safety/blocker system as well as a good number of the components of the current trigger assembly to even work, which would likely negate any savings associated with this approach. The improved performance of the SPL trigger assembly (lower permissible trigger pull forces, lower SAAMI Jar Off sensitivity) would also have to be forgone if the SPL safety/blocker concept were to be implemented on the current trigger assembly. Finally, all testing (EET and DAT) would have to be repeated with a likely increase in the risk of failure.

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SAMPLE COPY

Commentary on Adding the Blocker to the Current Production Trigger Assembly

Background:

The primary design objective of the M/700 Safety Pivoted Link (SPL) trigger assembly is to insure the trigger is returned and maintained under the sear within 75% of full engagement when the safety is moved to the SAFE position. Secondly, the design provides for trigger regain at a trigger pull force of 3.5 pounds. In addition, the design addresses performance and corrosion issues. Finally, the design is retrofitable into current M/700 and Seven bolt action rifles.

While the SPL trigger assembly may look and act like the current production trigger assembly, the resemblance is only a little more than superficial – the parts from the SPL safety/blocking system are not directly portable to the current trigger assembly. Ilion's proposal to simply add the SPL safety/blocker system to the current trigger assembly design without a redesign of the blocker and several other components is not possible. The issues and areas affected defending these positions are outlined below.

Trigger under the sear:

SPL safety and blocker would require complete redesign

The kinematics of the SPL safety/blocker mechanism are optimized for the SPL components and their locations with respect to each other in the SPL trigger assembly. This is a case of where the SPL and current trigger assembly designs are superficially similar – not only are the parts different in size and shape between the SPL and the current system, the relationship of the parts with respect to each other are different as well. To use the SPL safety blocker mechanism on the current trigger assembly would require a complete redesign of the safety/blocker mechanism to work as intended. In summary, while the concept of the SPL safety/blocker system is portable to the current trigger assembly, the SPL parts themselves are not.

Sear bias spring location

The SPL trigger assembly design required moving the sear spring and its support upward, while lowering the top surface of the front spacer block to give the blocker room to operate inside the trigger housing while providing easy access to the blocker adjustment screw. The shape of the sear/safety cam was also modified to facilitate the relocation of the sear spring. While it may be possible to use the current sear/safety cam and move the sear spring support from the top of the front spacer block, the motion requirements of the sear/safety cam to release the firing pin head and the space available for the revised sear spring design make this an extremely difficult problem to solve. Folding a sear spring support shelf from one or both side plates creates asymmetry between the right and left hand side plates (i.e. they are no longer a common part). This in turn defeats one of the primary reasons for going with stamped side plates: both parts are not made in the same die set, thus increasing hole-to-hole position variation between the assembled side plates.

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Safety stop surfaces on rear spacer block

One of the less obvious functions of the SPL trigger housing is that the rear spacer block's top surfaces serve as the stop for the safety in the SAFE and FIRE positions. The locations of the stop surfaces on the rear spacer block are integral to the kinematics of the safety/blocker system mechanism. To ensure proper function of the safety/blocker mechanism, the SPL safety, the current trigger assembly's rear spacer block, or both would need to be redesigned.

Conflict between front spacer block rivet and blocker hold down stud

The blocker hold down stud is critical to the proper operation of the blocker system on the SPL. The blocker hold down stud prevents the deflection and twisting of the blocker so that a force applied to the trigger cannot defeat the blocking action of the blocker. To ensure the security of the blocker hold down stud, it is press fit into the front spacer of the trigger housing. On the current trigger housing, two rivets are used in each spacer block to secure the side plates and to prevent rotation of the spacer blocks in the trigger housing once assembled. The top rivet in the front spacer block presents two impediments to implementation of the blocker. First, the upper rivet's head would interfere with the movement of the blocker on the trigger housing. Second, and more importantly, the blocker hold down stud is in the same approximate location as the upper rivet. Removing this rivet to permit the use of the blocker hold down stud would require some type of mating feature between the front spacer block and the side plates to prevent undesired motion (rotation and translation) of the front spacer block in the trigger housing.

Connector removed

The trigger in the SPL is a balanced design, which is important to SAAMI Jar-Off performance. The nominal eccentricity of the center of gravity (CG) with respect to the axis of the SPL trigger pivot hole is 0.0001" (for all practical purposes zero). The eccentricity of the current trigger assembly trigger/connector CG is 0.118" from the axis of the trigger pivot hole.

Tolerancing

At first glance, the positional tolerances for holes in the side plates of the SPL trigger housing appear to be tight. But, when compared to the current side plate design, many of the positional tolerances are actually looser than the current design by up to 50%. The reason for the tight positional tolerances on the pivot holes for the critical components are not arbitrary. The tolerances specified are necessary to ensure that all components that are within their tolerance specifications will assemble and work properly. Misalignment of the holes between the side plates causes the parts mounted inside the trigger housing to twist, which can in turn cause them to contact and bind against the inside of the trigger housing if the twisting is great enough. The positional tolerances applied to the holes in the SPL trigger housing allow all parts that are within specification to be assembled and operate without binding.

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Regain

The SPL trigger assembly has been designed and tested to regain at a trigger pull of 3½ lbs. The current trigger assembly will not consistently regain at that trigger pull force level and would require a higher minimum trigger pull force setting than the SPL.

Surface finish

One of the main purposes of the surface finish requirement on the SPL trigger is to ensure regain. The surface roughness and directionality are important parameters as they can create macroscopic ridges that the sear must climb in order to regain engagement if they are improperly specified. The trigger/sear interface of the SPL trigger assembly is designed so that the sear has line contact with the top surface of the trigger. In addition, the surface roughness and direction on the trigger and sear are specified such that they will not interlock with each other – the features left from finishing are not parallel to each other. The surface finish specification on the trigger's sear engagement surface is 4µin. While this may seem to be very fine and difficult to achieve, the surface finish on the unplated connector is about the same. The surface finish on the SPL sear/safety cam is actually less stringent than the current sear/safety cam (20 versus 16µin).

Plating

Plating on the trigger's sear engagement surface is another important factor in promoting regain. The lubricity (slipperiness) of the electroless nickel plating is much better than that of steel by itself, which lowers the coefficient of friction between the trigger and sear permitting regain at lower restorative forces. The plating process used by the current plating vendor includes a highly aggressive wash to ensure the adhesion of the plating to the part substrate. The aggressiveness of the pre-plating wash treatment degrades the surface finish of the trigger by etching it, bringing it out of specification. A vendor with a less aggressive wash and plating process has been identified, but the costs are increased approximately 10X from the current plating vendor. It may be worthwhile to test triggers plated by Ilion's current plating vendor to see what effect the degraded surface finish has on regain.

Corrosion resistance and performance

Plating

Electroless nickel plating the SPL trigger assembly provides better corrosion protection to the trigger assembly components than black oxide. In addition, the plating acts as a lubricant between components that have sliding contact with each other. The corrosion resistance and lubrication effect are both desirable properties of the plating.

Trigger feel

Creep comes from perception of uneven motion of the trigger as sensed by the shooter's finger as it pulls the trigger to fire the gun. Rough surfaces, especially with the surface features aligned to interact with each other can cause a creepy feeling trigger. The stick-slip frictional phenomenon is also a contributor to creepy feeling triggers. The smoothness (surface finish) of the trigger's sear engagement surface provides similar

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performance benefits for trigger feel as it does for regain. The lubricity of the electroless nickel plating makes a positive contribution to trigger feel as it helps prevent stick-slip frictional phenomenon that contributes to a creepy trigger.

Other features

Sear retention feature of the SPL given up

One of the novel features provided by the SPL trigger housing is retention of the sear and sear spring without slave pins when the trigger assembly is not in the action. On the current trigger assembly, the sear and sear spring are free to exit the trigger housing and be lost if slave pins are not used. Installation of the trigger assembly into the action is simplified not only in production, but especially in the field where slave pins are generally not available.

Sear shape

The dog-boned cross-sectional shape of the SPL sear is a concession to the MIM manufacturing process to minimize thick sections in the part. The dog-bone shape also has the added benefit in that it does not provide a large area to support a film of congealing lubricant between the side of the sear and the side plates of the trigger housing. In addition, the side cavities in the sear provide relief for debris that could accumulate between the sear and side plate, decreasing the possibility of the debris impeding the function of the sear.

Summary:

In summary, while the concept of the SPL blocker is portable to the current trigger assembly design, the SPL parts themselves are not. To port the safety/blocker design to the current trigger assembly would require a complete redesign of the safety/blocker system as well as a good number of the components of the current trigger assembly to even work, which would likely negate any savings associated with this approach. The improved performance of the SPL trigger assembly (lower permissible trigger pull forces, lower SAAMI Jar Off sensitivity) would also have to be forgone if the SPL safety/blocker concept were to be implemented on the current trigger assembly. Finally, all testing (EET and DAT) would have to be repeated with a likely increase in the risk of failure.

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1/1/2005: Safety cost has been increased from $0.59 to $0.87

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M/700 CS Fire Control

2005 Unit Manufacturing Cost Comparison - Jan 12th '05

(Based on 2005 Labor rates, and Overhead rates)

(Capital Project - SPL Trigger Assy M/700 & 7 - Part II - Cost Comparison se

EX

	Incremental Std Cost						
	Material	Labor & EBs	Mfg Ovhd (*)	Total Incr. Cost	Plant Var & Fixed O/H	Total Unit Cost	
	(a)	(b)	(c)	(x) = (a+b+c)	(y)	(z) = (x+y)	
Current Fire control	$ 2.94	$ 5.87	$ 2.21	$ 10.82	$ 4.49	$ 15.11	(f)
Vs.							
New Fire Control (**)	$ 7.71	$ 6.43	$ 2.14	$ 16.28	$ 5.22	$ 21.50	(g)
Delta	$ 5.17	$ 0.56	$ (0.07)	$ 5.66	$ 0.73	$ 6.39	(g-f)
New Fire Control Vs. Current --- Incr / (Decr)				**$ 5.66**	**$ 0.73**	**$ 6.39**	

(**) Does not include additional Depreciation, and Maintenance cost $(1.25)/gun on the investment of $1,900M.

M/700 CS Fire Control

2004 Unit Manufacturing Cost Comparison

(From the project, and based on 2004 Labor rates, and Overhead rates)

EXHIBIT "B"

	Incremental Std Cost						
	Material	Labor & EBs	Mfg Ovhd (*)	Total Incr. Cost	Plant Var & Fixed O/H	Total Unit Cost	
	(a)	(b)	(c)	(x) = (a+b+c)	(y)	(z) = (x+y)	
Current Fire control	$ 2.20	$ 5.93	$ 2.45	$ 10.58	$ 4.37	$ 14.95	(d)
Vs.							
New Fire Control (**)	$ 7.51	$ 6.02	$ 1.67	$ 15.20	$ 4.55	$ 19.75	(e)
Delta	$ 5.31	$ 0.09	$ (0.78)	$ 4.62	$ 0.18	$ 4.80	(e-d)
New Fire Control Vs. Current --- Incr / (Decr)				**$ 4.62**	**$ 0.18**	**$ 4.80**	

(*) Includes Setup labor, perishable tools, equipment maintenance, and production supplies.

(**) Does not include additional Depreciation, and Maintenance cost $(1.25)/gun on the investment of $1,900M.

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M/700 CS Fire Control

2005 Unit Manufacturing Cost Comparison

(Based on 2005 Labor rates, and Overhead rates)

1/6/05

(Capital Project - SPL Trigger Assy M/700 & 7 - Part II - Cost Comparison sent to Steve P.)

EXHIBIT "A"

	Std Cost				Plant Var &	Total	
	Material	Labor & EBs	Mfg Ovhd (*)	Total Incr. Cost	Fixed O/H	Unit Cost	
	(a)	(b)	(c)	(x) = (a+b+c)	(y)	(z) = (x+y)	
Current Fire control	$ 2.64	$ 5.67	$ 2.21	$ 10.52	$ 4.49	$ 15.11	(f)
Vs.							
New Fire Control (**)	$ 7.43	$ 6.43	$ 2.14	$ 16.00	$ 5.22	$ 21.22	(g)
Delta	$ 4.89	$ 0.56	$ (0.07)	$ 5.38	$ 0.73	$ 6.11	(g-f)

New Fire Control Vs. Current --- Incr / (Decr) **$ 5.38** **$ 0.73** **$ 6.11**

(**) Does not include additional Depreciation, and Maintenance cost $(1.25)/gun on the investment of $1,900M.

M/700 CS Fire Control

2004 Unit Manufacturing Cost Comparison

(From the project, and based on 2004 Labor rates, and Overhead rates)

EXHIBIT "B"

	Std Cost				Plant Var &	Total	
	Material	Labor & EBs	Mfg Ovhd (*)	Total Incr. Cost	Fixed O/H	Unit Cost	
	(a)	(b)	(c)	(x) = (a+b+c)	(y)	(z) = (x+y)	
Current Fire control	$ 2.20	$ 5.93	$ 2.45	$ 10.58	$ 4.37	$ 14.95	(d)
Vs.							
New Fire Control (**)	$ 7.51	$ 6.02	$ 1.67	$ 15.20	$ 4.55	$ 19.76	(e)
Delta	$ 5.31	$ 0.08	$ (0.78)	$ 4.62	$ 0.18	$ 4.80	(e-d)

New Fire Control Vs. Current --- Incr / (Decr) **$ 4.62** **$ 0.18** **$ 4.80**

(*) Includes Setup labor, perishable tools, equipment maintenance, and production supplies.

(**) Does not include additional Depreciation, and Maintenance cost $(1.25)/gun on the investment of $1,900M.

BARBER - 1.30.13000436

2/16/05

r Assembly - Cost Comparison Current Ilion/Mayfield/Proposed)

Description	Current M/710 (Mayfield)	JR comments
Trigger (F109835)		same as current production M/700
Safety Detent Spring (F300407)		700/710 parts are different
Trigger Spring (F300487)		700/710 parts have identical requirements but different part numbers
		710 bolt stop is part of receiver assembly, not receiver insert assembly compl
Trigger Stop Screw (F300426)		700/710 parts are different
Sear Safety Cam Pi (F15666)		same as current production M/700
Safety Pivot Pin (F300932)		700/710 parts are different. This part replaces one of the retaining pins (3004
Pin, Retaining Clip (F300465) (1X)		710/SPL parts are similar (SPL is stainless), different than M/700
Sear Spring (F300481)		700/710 parts have identical requirements but different part numbers
Trigger Screw Front (F300486)		700/710 parts have identical requirements but different part numbers
Trigger Connector (F300485)		700/710 parts are similar, but not identical
Trigger Pivot Pin (F300483)		700/710 parts are different
Receiver Insert Assembly Complete (F300401)		
Side Plate Pin (F300328) (2X)		700/710 parts are different
Side Plate (F300333)		700/710 parts are different
Receiver Insert (F300327)		700/710 parts are different
Trigger Engagement Screw (F300448)		700/710 parts are different
Safety RH (F300408)		700/710 parts are different
		Safety button on 710 is integral to safety
Pin, Pivot, Trigger Housing (F300351)		Serves same purpose as M/700 sear pivot pin
Pin, Retaining (F300464) (1X)		Serves same purpose as M/700 bolt stop pivot pin, only 1 is supposed to be u
Pin, Retaining Clip (F300465) (2X)		Used to secure trigger pivot pin and retaining pin (300464)
Threaded Insert, Receiver Insert (F300347)		No M/700 equivalent part. For rear action screw attachment.
Receiver Insert Support (F300479)		No M/700 equivalent part. Improves rigidity of receiver insert assembly comp

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Part 2 Item 1001

QUALITY POLICY

DEFINITION

The traditional concept of quality holds that "conformance to standards" describes the quality mission.

A newer and expanded definition of quality contains the phrase "fitness for use", which deals with the customer's view on how a product measures up to his expectations in comparison with competitive products. Because all departments interact in the creation and maintenance of product standards the responsibility for quality is company wide, with individual departments reacting in relevant areas. The Remington Quality Policy is intended to delineate responsibilities in specific areas.

GOAL

It shall be the objective of Remington's quality effort to produce products which perform safely within the intended use, meet customer expectations and are perceived as the standard by which others are judged in each product's market segment.

RESPONSIBILITIES

* No one shall design or produce products with potentially unsafe performance characteristics. Any knowledge of product deficiency which has or might lead to personal injury must be brought to the Product Safety Committee for prompt evaluation and appropriate action.

* Each employee must accept responsibility for maintaining and improving product quality as part of his or her job assignment.

* All of management must exercise leadership responsibility to assure adherence to Remington's quality policy.

* Products must meet functional and visual standards as mutually established by Marketing, Production and Research.

  - Marketing should clearly identify specific needs perceived in the marketplace.

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Part 2 Item 1001

- R & D will create designs which respond to market expectations, are compatible with process capabilities and meet the company's business objectives.

- Production will be responsible for execution of the design at the lowest possible cost. The basic tenet here is that making it right the first time produces the lowest possible cost.

• It will be the responsibility of each manufacturing plant to provide technically sound quality management systems.

• Purchasing will be responsible for providing qualified vendors that consistently meet plant needs.

• Systems must be installed and maintained to continually provide feedback on product performance and customer needs.

• Management must audit quality systems to maintain and improve their effectiveness.

• Total cost of quality must be optimally low, consistent with achievement of the intended product quality level.

• All projects are required to contain a quality impact statement.

APPLICATION

Each department will establish and document policies, systems and plans for application of this policy.

7/15/82

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FIREARMS MODERNIZATION

Universal Receiver Manufacturing System

Remington, EDL, and Design Division personnel met in July to present the scope of work for the P & E to Remington Management. The development schedules for the critical technology items were also reviewed and discussed. The P & E and an additional EDL work request has been authorized.

EDL computer software personnel visited Ilion to begin discussing proposed system requirements with MRP and Quality Control personnel. Representatives of each plant department have been selected to act as a liaison between the plant and the FM group. This interface will insure that the most efficient, cost effective manufacturing systems are developed for the plant. The first meeting of this liaison group is scheduled for August 20 to discuss the details of the Rectangular Receiver Project.

GFM Automation

EDL has completed the construction estimate for the first machine. This will be combined with Remington's installation cost and forwarded to I.E. for economic evaluation. New project economics are expected in August.

Presently, the GFM mandrels are lubricated with a hot forging agent to reduce the friction caused by the blank as it is forged. For an automated process it will be much easier to lubricate the interior of the blanks rather than the exterior of the mandrel. A successful test of approximately 400 barrels was run with the interior of the blanks lubricated.

Long Stock Machining - Secondary Machining Cuts

A purchase order has been issued for a Heian NR12G dual turret CNC router. Delivery of the machine is expected in December 1982.

Plans are now underway to obtain a post processor, procure tooling and prepare N.C. tapes for M/700, M/788, M/7LW and M/500 series long stocks.

Production start up is scheduled for February 1983.

Wood Machining

A $7M purchase requisition was placed with Ekstrom, Carlson and Company to demonstrate twenty-two (22) long stock machining operations, i.e., top and bottom inletting and most secondary machining. Ekstrom is to provide a tool package and the minimum cycle time for the required operations. Fifty (50) carved but uninletted stocks have been shipped to Ekstrom for testing.

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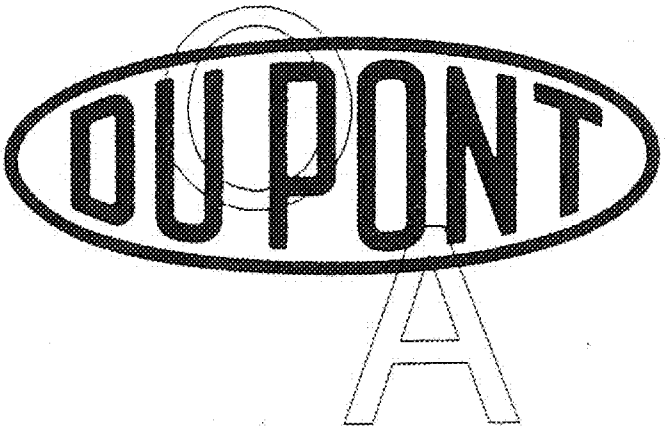

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Remington Arms Company, Inc., et al

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Ages and years of service as of April 29, 1993

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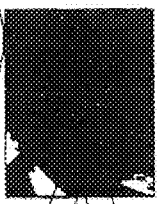

John A. Krol
Age 55, Service 28

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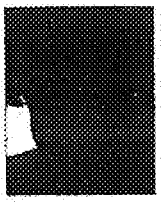
Office of the Chairman
Europe, Middle East, Africa



Constantine S. Nicandros
Age 58, Service 34

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Office of the Chairman
Marketing
Leisure Fabrics

D. John Ogren
Age 49, Service 26

FINANCE MATERIALS, LOGISTICS & SERVICES
Office of the Chairman
Pension Fund Investments

John J. Quindlen
Age 59, Service 37

FIBERS

Jerald A. Blumberg
Age 52, Service 31

CHEMICALS
Manufacturing

Robert v.d. Luft
Age 56, Service 34

REFINING, MARKETING SUPPLY AND TRANSPORTATION

Gary W. Edwards
Age 50, Service 28

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Remington Arms Company, Inc., et al

ASSISTANCE TO OPERATIONS

M/700 BELT ASSEMBLY PROCESS: (KENNEY)

Department 8560 has not been able to produce enough bolt assemblies to meet the daily requirements since the department was reorganized into the cell. Therefore, Joe Murray and Jeff Zahniser requested that the Continuous Improvement Group review the entire department and make suggestions to increase productivity. I was contacted by Dick Jackson and asked to work with the group to further increase their knowledge of the processes in the department. Currently, I am working with the group reviewing all possible constraints and flow characteristics.

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| BB 0002944 |

BARBER - 1.30.1300000443

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BCC: R.F.ULAK
J.F.WINSKE
W.H.COLEMAN
W.S.CULLITON
J.E.PREISER
L.E.ZEILLMANN
J.R.AYERS

J.S.HARRISON
P.B.ALLEN
R.A.DARBY
R.W.GOLDMAN
G.L.EHRENS
R.H.SCHELDT

APRIL 18, 1988

SPORTING GOODS COUNCIL
MEETING NOTES-4/15/88

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|REM 0029031 |
|LIB 0000670 |

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Get Monthly Reports E. Obszeteckie

xc. — John Winake
Bill Coleman

E. I. DuPont de Nemours & Co.
Remington Arms Company, Inc.
Technical Support Office
Lexington, Mo.

Appears a major problem is scheduling; what they should be working on?

To: K. W. Soucy
From: A. R. Baszczuk

April 12th, 1988

REMINGTON ARMS CO.
RECEIVED
APR 18 1988

Monthly Report - March

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I RR 0000832 I

GENERAL

An on going function of our group is to cost reduce our product without sacrificing quality. Activity this month includes:

* Identifying areas where common operations can be used. ie: common M/700 ADL &HDL carved stock and common fforr end tip mounting technigue(M/700M.R.)

**** Investigate effectiveness of machine sanding M/700 stockes on the Zuckermann carver.

| RB 0003323 |
| RB 0000933 |
| IIUN 0002800 |

Long Stocks

PART NO.	DESCRIPTION	SCHEDULED	SHIPPED	DIFFERENCE
93613	700 ADL S/A	208	726	+518
93614	700 ADL L/A	0	41	+44 41
93615	700 R/H ADL Mag.	832	233	-599
93616	700 BDL S/A	2015	939	-1076
93617	700 BDL L/A	0	1678	+1678
93618	700 BDL Mag.	1050	935	-115
93619	700 BDL Var. S/A	1421	666	-755
93621	700 Mountain Rifle	53	6	-47
93962	700 Safari Custom	0	38	+38
94330	700 ADL Sniper	800	708	-92
102826	ADL Kit	0	171	+171
94394	SPTS. 78 R/H L/A	382	45	-337
94395	SPTS. 78 R/H S/A	381	188	-193
93628	Model Seven	1292	1137	-155
	TOTAL:	8438	7511	-923

| EE 0003324 |
| EE 0000834 |
| LUE 0002841 |

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Jay Bunting

From: Bunting, Jay
Sent: 02/24/2004 12:05:52 PM
To: Millner, Tommy
CC:
BCC:
Subject: Ilion Hot List Items

The following issues and their resolution are core to making the quarter and making plan.

1. Production misses. Over 2700 units in January and more than 4000 units expected this month. All in new and backordered product.

2. COL availability. Started project in June of 03. Everyone on board. A no brainer as the only development was wood. Ilion handed off this important product to Boyds, a new vendor that has stumbled. Bottom-line we are not warehousing guns because wood isn't available. This in my opinion is inexecusible because the level of difficulty was not high nor was the level of urgency to get it done.

3. We need a single body with authority and accountability for the status of production and new products. Currently, there is not a single body held accountable, therefore sales and marketing finds it difficult to get direct, real and timely feedback on such issues. Maybe the position is Superintendent of Production and Development. Our score keeping is suffering.

4. The plant needs to break the mentality of guns per day to the warehouse. That just kills us if they are not producing the mix to schedule. Quantity isn't the answer.
Line item effectiveness is what we need focus on.... i.e. making products for which we have orders and have forecasted (new products).

5. I think we need to review our wood strategy. Sure everyone says S&K is screwing us....i.e. the large manufacturing variences they throw. But I would ask, are we doing the foundation work so that S&K can execute correctly? I've heard some stories that make my hair stand on end with respect to 332 wood....lack of nortides ect.
Not sure if the blame is being directed correctly.

6. We need a wood strategy. How are we going to do business with S&K, Boyds and Revival Industries? Case in point is that we are hell bent to contract 2100 wood to Revival when in fact, they haven't produced one piece of wood to my knowledge to print. Also, I have no confidence they can execute a project of this size and importance. I'd feel better if the project was with S&K based on what I've seen thus far in terms of stocks and forends and our COL experience with Boyds.

7. We still don't have a one piece barrel for the 2100. Why is this taking so long? Our test shoot next week is taking place with a bonded 3 piece barrel which is less than ideal for obvious reasons. Its been more than 60 days since the change was mandated. I don't understand why we are so slow to get things done. Its killing our competitiveness.

8. Quality. We are still building and boxing some items that don't measure up to Remington standards. In my opinion, we have cost reduced ourselves to this position by not keeping equipment and gauges to spec and by changing the processes over the years "for ease of manufacturing" that have relaxed tolerances and most importantly reduced the level of surface finishes to an all time low. This is one reason we have seen tons of problems with our autoloaders functioning correctly.....the friction created by rough parts causes malfunctions. No way will this protocol work with the 2100 or new 700 fire control. We need change here in the future or it will cost us dearly.

9. Manufacturing Variences. For the last two consecutive years we have generated manufacturing variances of nearly $10mm in 2002 and over $8mm in 2003, shutdown excluded. In both plans we had no budget allowances for manufacturing variances. Needless to say, this trend can not continue and

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must be reversed. Pricing can no longer hide our sins due to increased competitiveness in the marketplace. We must get manufacturing variances under control immediately. Scrap, rework, overtime, material price and usage must be addressed, otherwise our profitability will continue to decline in a death like spiral. We must address this head on as we are with all other costs facing the business.

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REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington Parker

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

December 1, 1988

TO: W.B. COLEMAN, II

FROM: D.J. ANDERSON

MONTHLY REPORT - NOVEMBER

The M/11-87 Shotgun has been the focal point for Synchronous Manufacturing activity in Final Assembly. It was exciting to see that in November, autoloading shotguns not only met, but slightly exceeded the warehouse schedule for the month.

To be sure, problems still abound and one victory doesn't win the war, but it was the first victory in this line for a long time and it was won with a minimum of expediting, hassle and frustration. There have also been some significant revelations that came with this effort.

- There is absolutely no better way to foul up a production line than INDISCRIMINATE EXPEDITING. Yet we tend to fall into this trap easily, having had so much practice at it.

- A MONTHLY MINDSET, coupled with BIG BATCHES lulls us into a false sense of security until the last week of the month. Then, as you know, it's "Oh My God!" time. We must convert monthly thinking into daily thinking so that each day on each job we produce what is needed that day without fail.

- There is a misconception that OVERTIME will cover all sorts of evil. It tends to mask the real source of our problems and is often used as a band-aid (or mustard plaster) to cover all the ills which assail us. I expect to read any day now that overtime is the latest cure for the common cold.

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We have discovered a lot of other things as well, and continue to learn as we go. This is, after all, a process of continuing improvement. Success will really start to show when we learn these lessons, not as an operating department or product line, but as a Plant.

In December, we will be announcing the results of our Crossword Puzzle promotion and attempt to analyse the level of comprehension the plant has for Synchronous Manufacturing.

DJA:cap

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LOW INVESTMENT IDEAS FOR THE PRODUCT LINE

1. IMPROVE THE FOUNDRY QUALITY (ESPECIALLY THE 1100) OF REMINGTON GUNS. INSPECT QUALITY IN INSTEAD OF TESTING FOR QUALITY OUT. IN OTHER WORDS GO TO A SYSTEM OF INSPECTORS TO CHECK PARTS BETWEEN OPERATIONS AND DEPARTMENTS. THE MRP SYSTEM OF CRIBS WITHIN THE FACTORY WOULD MAKE THIS EASY TO IMPLEMENT. PUT AN INSPECTOR IN EACH CRIB WITH THE NECESSARY GUAGES TO INSPECT THE PARTS. HE REJECTS OR ACCEPTS THE PARTS AS GOOD AND THAT DECISION STANDS. (NOT THE FOREMANS OR MIDDLE MANAGEMENT)

2. IMPROVE REMINGTON'S SIGHTS ON ALL CENTER FIRES BY EITHER

   1. REDESIGNING THEM
   2. POLISHING THEM (LIKE LE 7400)
   3. BUY WILLIAMS (OR SOME OTHER ONE) AND USE THEM

3. REMOVE STEEL GUARD AS A PRESERVITIVE IN THE PLANT

4. ELIMINATE PRESSED CHECKERING

6. PUT STRAIGHT TRAP STOCKS ON THE DEER GUNS TO GET THE RIGHT STOCK DIMENSIONS

6. OFFER A PARKERIZED OR GLASS BEADED / BLACK OXIDE RECEIVER AND BARREL FINISH ON DEER AND DUCK GUNS

7. OFFER 870 P LAW ENFORCEMENT TO THE PUBLIC IN A BIGGER WAY

8 MAKE A LAW ENFORCEMENT 7400 / 7600 FOR POLICE AND THE GENERAL PUBLIC (PARKERIZED WITH A FLASH SUPPRESSOR OPTION)

9. GET, OBTAIN, AND USE MORE AGGRESSIVE ADVERTISING TECHNIQUES THE "MADE IN AMERICA" ADS. DO NOT CUT IT IN TERMS OF CONVINCING HUNTERS TO BUY REMINGTON GUNS

9. (CONT) PEOPLE BUY REMINGTONS NOT MADE IN AMERICA!!

10. DEVELOPE A MONETARY INCENTIVE PROGRAMS TO ENCOURAGE INCREASED PRODUCTION OF QUALITY PARTS IE AN INCREASE BASED UPON GOOD PARTS ABOVE THE STANDARD PRODUCTION ~~REQUIREMENT~~ REQUIREMENT

11. MAKE A LIGHTWEIGHT 7400 (ALUM. RECEIVER)

12. GET INTERESTED IN GOVT. CONTRACTING WORK BY

1. GOING AFTER RESEARCH PROTOTYPE WORK

2. PRODUCTION CONTRACTS

THE GOVERNMENT PAYS THE SALARIES OF THE PEOPLE REMINGTON EMPLOYES IN ALL CONTRACTING WORK. RESEARCH WOULD ALSO GET AN IN ON NEW FIREARMS / PROPELLANT/ AND CARTRIDGE TECHNOLOGIES

13. OFFER MANUAL [redacted] PUSHBUTTON GAS SYSTEM IN 1894 WITH CHOKE TUBES. THIS COMBINATION WOULD ALLOW A SHOOTER TO SHOOT 3" DOWN TO 2¾" SLUGS [redacted] LOADS IN AN 1100 WITH ANY CHOKE HE WANTED

14. REDESIGN OUR PACKAGE, THAT WE SHIP GUNS IN, TO SOMETHING THAT HAS SOME QUALITY (IN CONSTRUCTION) IN IT.

15. BRING OUT 7X57/2600, 8X/MG CALIBER

16.

To J. S. Martin
From C. Kast

One major problem as I see it is that we (Remington) are trying to sell guns per usual, ie. to people who are hard pressed to put food on the table, make house payments and maintain an automobile. [We are selling to the wrong market for current economic conditions.] We need to appeal to consumers who have not been affected as much by the economy and are looking to put their excesses in a true store of wealth, ~~being~~ high grades!, in particular our M-700 octagonal rec., hammer forged bbl. and streamlined stock.

This gun should be produced on a custom made basis and sold when available at a price commensurate with the ~~additional~~ custom features, and we should start producing it now.

Jack Knox

cc: J.G. Williams

REMINGTON ARMS COMPANY, INC.

REMINGTON ARMS CO. RECEIVED

FIREARMS RESEARCH DIVISION

June 1, 1982

P.H. HOLMBERG

NEW BOLT ACTION RIFLE

As a result of our recent meeting with R&D and Production, the following is my interpretation of our objective and, more importantly, the desirable features/model requirements.

OBJECTIVE

Replace current 700 BDL, Varmint, and Left-Hand Speciale with new bolt action rifles having demonstrable consumer-perceived value-in-use features and completely new styling at minimum cost and capital investment.

Specifically, the above objective can be broken down into four major categories. They are as follows:

1. Styling -

   All-new look; i.e., stock, receiver, fore-end, barrel, trigger housing, etc.

2. Internal mechanical features -

   Mechanical changes should only occur if needed to improve a current known deficiency or if providing demonstrably-perceived consumer advantage.

3. External Features -

   Again, these features should represent consumer-perceived advantages such as scope mounts, external adjustable triggers, repositioning of safeties, etc.

4. Minimum Cost and Capital Investment -

   In this area, we would hope to produce the new bolt action rifle at a cost equal to, or lower than, our current models however, additional cost for a specific development may be incurred and

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accepted because they can be recovered in selling price. As for capital expenditures, if, in fact, we can develop this new gun in conjunction with the firearms modernization program, it would be most timely. Our basic goal is to introduce this new gun in the 1985 model year; however, if the situation requires, we could go as long as the 1986 model year.

Following are the desirable features/model requirements, along with some idea of what they mean, either to us in manufacturing or to the consumer.

Flat-Bottom Octagonal Receiver

1. Easier to customize.
2. Reduce weight.
3. Narrower - allows narrower stock configuration.
4. Relates to trade likes - flat bottom.
5. Visually different.

Integral Recoil Lug

1. Consumer-perceived added strength.
2. Improved uniform appearance between barrel and receiver.

Integral and Standard Scope Mounts - (Integral preferrably better than competition)

1. Flexibility in mounting systems.
2. Consumer-perceived value - windage and elevation adjustments.

Anti-bind Bolt

1. Consumer-perceived smoother action.
2. Reduced lateral motion of bolt through entire stroke.

Front Lock - (two-lug system (no change)

*1. Possibly three-lug system.

---

* Low priority Adv.

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Short and Long Actions

1. Provide actions for cartridge - although not necessary but common in the industry.

New Bolt Stop - Release

*1. Improve quality - appear stronger.

2. Possibly relocate.

Block Trigger and Firing Pins

1. Dual safety switch.

2. Reposition.

3. May be 3 position.

Bolt lock

1. Separate switch - not mandatory.

Cocking Indicator

1. Shows red when cocked.

Fire Control

Adjustments
1. Pounds pull - external - failsafe - down to 3 lbs.
2. Over travel - external - safety limits - if a factor??

3. Change gear to wrought iron.

4. New fire control - desirable.

5. Standard trigger.

Barrel

**1. High gloss - hammer marks - aesthetics - looks different.

2. Lt. weight contour - lighter weight - new contour.

3. Target crown - protects end of barrel - maybe accuracy improved.

4. Recoil reducing muzzle - % reduction in recoil.

*5. Stainless steel - option.

6. Clean barrel - no sights or holes.

Low priority Adv.
Cost factor possible.

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Feed System

1. Unload with bolt open.
2. No-bind follower.
3. Rotary magazine - better feed - no angles - more rigid receiver.
4. Magazine - 3 shots versus 4; and 4 versus 5 shots.
5. Jeweled follower.

Bolt

1. Claw-type extractor - more guts, heavier looking, etc.
2. Restyled bolt handle - styling - looks. Distinctive but functional.
3. Two-lug system - possibly 3.
4. Easy lift - no more than present 700.
5. Jeweled - aesthetics.
6. Reduced locked time - would not sacrifice for easy lift.
7. Restyled bolt plug - aesthetics.

Stocks

1. Walnut - appearance.
2. Cut checkered - 20 lpi. - full - Schnable fore-end.
3. Recessed sling swivel studs - styling.
4. Cast off and toe out - similar to Hygrade custom stocks.
5. Skeletonized butt and grip cap.
6. Epoxy bedding - strength.
7. Remove stock - slim down grip, etc.
8. Medium gloss.
9. No spacers.

During our session, we also discussed the need to conduct market research on potential new bolt action rifles. Following are a couple of areas where we discussed specific testing. I'm sure that as we proceed, others will become obvious.

Test Guns

1. Barrel - hammered high gloss versus no hammer high gloss.
2. Barrel contour - new versus straight or current.

Please feel free to update this list and the objective any way you see fit. We do need to expeditionsly confirm in writing our discussion with R&D. In addition, we should include in this document our version of performance specifications, i.e. accuracy, weight, etc.

C.R. RILEY

CRR:jt

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New BDL

REMINGTON ARMS COMPANY, INC.

Ilion, New York 13357 U.S.A.

Kenmore Denver

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Xc: R.B. Fields
C.A. Riley
P.H. Holmberg
W.H. Foreon, jr.
J.P. Linde
J.W. Bower
J.W. Brooks
J.S. Martin
F.E. Martin

June 1, 1982

TO: C.B. WORKMAN

FROM: T.L. CAPELETTI

SUBJECT: NEW BOLT ACTION RIFLE - NOTES FROM MAY 26, 1982 MEETING

Based on our meeting in Kingston on May 26, 1982, Marketing comments and Research action items on the bolt action rifle program are as follows:

A. MARKETING COMMENTS

- Objective : To replace the Model 700 BDL with a new bolt action rifle design - not just a BDL Restyle - a new product in appearance and features.

- Agreement was obtained on the specifications outlined in my memo to you dated April 30, 1982, with the following revisions:

  - Locking system should be a front lock but need not be limited to two lugs.

  - Bolt lock is desirable but need not be independent of the safety. A three position safety would be acceptable.

  - No interest in a double set trigger.

  - Low priority on stainless steel option.

  - Add jeweled magazine follower.

  - Add cut checkering 20 lines per inch full wrap-around pattern on fore-end.

A. MARKETING COMMENTS - Cont'd.

- Add Schnabel fore-end to Bob Simmons' stock.

o Scope Mounts

- The primary criteria are that the Remington design feature quick disconnect, windage and elevation adjustments, ability to accept competitor mounts, and be made of steel.

o Fire Control

- External trigger pull adjustment designed to avoid unsafe limits is essential.

o Rotary Magazine

- A very desirable feature; willing to accept reduced magazine capacity to add rotary design.

B. RESEARCH ACTION ITEMS

o Octagonal Receiver

- A key issue is the ability to polish the octagonal cross-section economically.

- Need to develop a polishing process or establish acceptable levels of polish using the current process.

o Scope Mounts

- Establish a design which features quick disconnect, coarse windage adjustment and coarse elevation adjustment.

- Prove out the injection molding process for scope mounts.

o Bolt Handle

- Design a new handle which is both distinctive and functional.

o Hammer Marked Barrels

- Develop a design which provides an acceptable appearance when roll marked and buffed to high lustre.

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8. RESEARCH ACTION ITEMS - Cont'd.

- Fire Control
  - Develop a fail safe design which provides for external trigger pull and over-travel adjustments.
- Recoil Reducer
  - Design an effective recoil reducing muzzle device.
- Bob Emmons' Stock
  - Add Schnabel fore-end, straight stock with cheek piece, cast off, and toe cut.
- Materials
  - Minimize use of plastic and aluminum.
  - If possible, design grip cap, butt plate, floor plate, and trigger guard to use all steel construction with wood inserts where appropriate.

ZLC:m

PATENTS & TRADEMARKS

Summary of Activity

June 1982

Patent Applications Filed

N O N E

Trademark Applications Filed

"REMINGTON" (word) filed in Class 8 for Pocket and Hunting Knives — U.S.A. — T-1 US #11

Patents Received

RECOIL-REDUCING AND PISTON SHOCK ABSORBING MECHANISM — RA-0200 — Mexico
Usaypacy — Sweden

ABSTRACT: The recoil-reducing system now in use in the Model 870 "Competition" trap gun. A free gas piston is driven rearwardly by tapped propellant gases, which concurrently apply a forward thrust against a gas cylinder. This lowers the peak recoil force, and delays the application of the recoil energy against the shooter's shoulder, so that recoil sensation is significantly reduced.

EXTRACTOR ARRANGEMENT FOR FIREARMS — RA-0225A — Canada
Rowlands — CIP

ABSTRACT: A cartridge extractor, developed for Models 7400 and 7600, is assembled in a surrouded bolt face simply by snapping it in place. No rivet is required, which will greatly facilitate replacement in the field.

Trademarks Received

N O N E

Inventions Reports

N O N E

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Bolt Action Rifles

The objective of this program is to design a bolt action rifle to replace the Model 700. Major features incorporated into the new design include an octagonal receiver, "diamond finish" barrel, and a restyled stock.

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FIREARMS

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BARBER - 1.30.130000467

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RESEARCH AND DEVELOPMENT

SECOND QUARTER PROGRESS REPORT - 1982

HIGHLIGHTS

Page

Firearms

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RESEARCH DEPARTMENT

SECOND QUARTER PROGRESS REPORT - 1981

JUNE 1981

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NOTE: Please destroy this report when it has served your needs.

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Barrel

* Lighter weight contour
* No sights
* Same lengths as present Model 700
* Target crown
* High gloss without removing hammer marks
* Recoil reducing muzzle device (optional)

Feed System

* Unload with bolt open-no binding on follower
* Jeweled follower
* Rotary magazine, possible trade-off one less round in magazine

Bolt

* Fully enclosed claw type extractor
* New bolt handle, several versions to be considered
* Easy lift
* Two lug (3 lug may be considered)
* Jeweled
* Reduced lock time
* Restyled bolt plug

Stock

* Walnut, full pattern cut checkering (20 lines per inch), medium gloss finish
* Emmons' design with schnabel fore-end tip
* Cast off and toe out
* Skeleton butt plate and grip cap, recoil pad on magnums
* No spacers
* Recessed sling swivels
* Epoxy bedding
* Wp sling

Scope Mounts

* Improved Redfield style with windage and elevation adjustment

Market Research

Some of the tentative model requirements will require market research testing to determine consumer reaction. Those features where research is necessary are:

* Barrel finish-hammered appearance versus smooth high lustre
* Stock shape

WHF:daf

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REMINGTON ARMS COMPANY, INC.

cc: R. E. Pialitz
C. A. Riley
P. H. Holmberg
T. L. Capelotti
J. S. Martin
J. P. Linde

May 27, 1982

TO: C. B. WORKMAN

FROM: P. H. HOLMBERG

SUBJECT: MODEL REQUIREMENTS - MODEL 700 BDL

As our May 20 Kingston, New York meeting we reached a tentative agreement on preferred design requirements for a new bolt action rifle that will replace the present Model 700 BDL. Each element will be investigated to determine feasibility, with the understanding some may require alternation to meet design, manufacturing or cost criteria. Product objectives and tentative model requirements follow:

Objective

* Replace present Model 700 BDL (may obsolete ADL)
* Completely new visual appearance
* Retail selling price $80-$100 higher than ADL

Receiver

* Octagonal shape on top, slimmer than present Model 700, preference for flat bottom
* Integral recoil lug-for increased strength and better appearance where barrel fits to receiver
* Anti-bind bolt
* Front lock, 2 lug (3 lug to be considered)
* Short and long action
* New bolt stop release-same location, improved appearance, eliminate stamped part

Safety-Fire Control

* Standard trigger exposed components-no housing
* Trigger pull and over-travel externally adjustable within safe limits
* Safety blocks trigger and firing pin
* Safety switch may be re-positioned
* Bolt lock (to be determined whether independent from safety switch)
* Cocking indicator (optional)

R25133366

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REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington (DUPONT) PETERS (DUPONT)

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Xc: R. E. Fielitz
C. A. Riley
P. H. Holmberg
W. H. Forson, Jr.
J. P. Linde
G. D. Campbell
J. W. Brooks
J. S. Martin
F. E. Martin
J. A. Stekl

Ilion, New York
April 22, 1982

TO: C. B. WORKMAN

FROM: T. L. CAPELETTI

SUBJECT: BOLT ACTION RIFLE DEVELOPMENT - REPLACEMENT FOR THE MODEL 700

Based on our discussion yesterday with Marketing and PE&C personnel, the revised goals for the new generation bolt action rifle are as indicated below. Target date for introduction of this product is for the 1985 model year: announcement in November 1984. However, due to the extensive development time that may be required to finalize the design, that schedule may have to be delayed one year.

Design Goals:

* Stock
  - Optional (Timmons' design, Straight Classic, Monte Carlo, etc.)
  - Market Research needed
  - Decision needed by March 1983!
  - Walnut
  - Recessed Sling Swivel Studs
  - Cast off and toe out
  - Skeleton Butt Plate and Grip Cap

* Receiver
  - Integral, heavier recoil bracket -
  - Glass/Epoxy bedding
  - Flat bottom -
  - Non circular (Octagonal?) Cross-Section -
  - Integral and Standard Scope Mounts -
  - Front Lock (Triple Lug?) -
  - Reposition bolt release and change process to eliminate stamped release button
  - Short and Long Action
  - Add guide rail to bolt for smoother action -

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- Safety - Multiple block (trigger, firing pin, sear)
  - Reposition switch (eg. Tang mount)
  - Independent bolt lock/cocking indicator
  - Improved appearance

- Fire Control - Adjustable without removing action from stock (Set with limits on sear/trigger engagement)
  - Investigate safe lower limits on trigger pull
  - Double set trigger?

- Barrel - Hammer Forged/High Gloss
  - Light Weight Contour
  - Target Crown
  - Recoil reducing muzzle device - Offer as optional accessory
  - Stainless steel components offered as option

- Feed System - Rotary Feed
  - Floor Plate/Detachable Box Option (Unload without cycling bolt)
  - Smoother and more reliable than M/700 (eg. No bind followed)

- Bolt - New extractor
  - New bolt handle
  - Multiple lug
  - Short throw/Easy lift
  - Jeweled
  - Reduced lock time (Lightweight firing pin/redesigned spring)

TLCase

5.18.82

To Fred Martus

Subject: work Load.

1. New bolt action rifle (m/7 and actagon)

Continue work to complete these models with the specifications we set up. Make sure we have a action ready for Bob Emmons to check. This work should be complete by Sept. 82.

2. Scope Mounts.

Scope Mounts should be complete and related to the model shop with the type attachment we discussed. They also should retrofit on our new gun.

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#12

3. File Control modifications

• Check test results and

follow up with a report on the

Send the Trijicon block/scope block

in. A.I report needed on this

program. including bolt lock.

4. I think there is more work

on the new bolt retro rifle than

you can handle alone. I will get

with you after the operations Committee

meeting and go over the schedules.

They have each up. Again they want

the new gun. and we should

proceed to gain what we think is needed

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FIREARMS RESEARCH DIVISION

Program Steps and Timing		Responsibility	Completion Date
1.	Investigation	Martin	2-1-82
2.	Layouts/design for mockups.	Martin	4-1-82
3.	Complete look/see types.	Martin	6-1-82
4.	Investigate new locking/extractors, etc.	Martin	3-1-82
5.	Layout/design and detail.	Martin	5-1-82
6.	Make prototypes	Martin	7-1-82
7.	Design test.	Martin	9-1-82

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MINUTES OF THE PRODUCTS STANDARDS TASK FORCE
SHOULDER FIREARMS AND HANDGUNS

Tuesday, September 28, 1982 - 9:00 A.M.
Springfield Marriott/Baystate West, Springfield, Massachusetts
Martin Kordas - Chairman & Meeting Secretary

Attendees:	Martin Kordas	Browning Arms
	Ray Chatigny	Harrington & Richardson
	Jack Maynes	Ithaca
	Bill Grenl	Mossberg
	Tom Henshaw	Olin/Winchester
	John F. Walsh	Olin/Winchester
	G. J. Hill	Remington
	Adam Hugick	Remington
	Carl Hildebrandt	Savage
	Richard Baker	Smith & Wesson
	Myron Johnson	Smith & Wesson
	Harold Sibley	Smith & Wesson
	Bill Ruger, Jr.	Sturm, Ruger
	Tim Pancurak	Thompson/Center
	Bob Reichenbach	U.S. Repeating Arms
	Ed Vartanian	U.S. Repeating Arms
Guests:	Earl Larson	
	Ed Stark	
	Mike Walker	
SAAMI:	Harry L. Hampton, Jr.	

1. Counsel's Anti-Trust Memorandum - The memo was called to the attention of the Task Force members.

2. Proposed Firearm Tests - Drop & Jar-Off - After much discussion the tests attached herewith constitute the Task Force's recommendation for Drop and Jar-Off Tests for Shoulder Firearms and Handguns. ACTION: Submit to SAAMI Joint Technical and Legislative and Legal Affairs Committees for approval prior to January 1983 Executive Committee meeting - H. Hampton.

Next meeting - January 3, 4, 5, 1983 - Dallas, Texas.

TESTS FOR RIFLES AND SHOTGUNS OF NEW DESIGN

The following test procedures are recommended for use in evaluating new designs.

The test procedures apply to rifles and shotguns as defined under the Gun Control Act of 1968.

DRAFT 9-30-82 RESULTS OF 9-29-82 MEETING SAAMI FIREARMS TASK FORCE

DROP TESTS FOR RIFLES AND SHOTGUNS

This test is to simulate abusive dropping of the firearm.

1. Drop Test - With the firearm in the "Safe Carrying" condition as defined in the Owner's Manual for the firearm being tested, the firearm should be capable of passing the below test criteria for drop testing from a height of four feet (1.22 meters) onto a 50-60 Durometer, Shore A, rubber mat, one-inch thick (2.54 centimeters) backed by concrete. The mat and concrete shall be large enough so that when the gun is dropped it will fall and come to rest without interference within the perimeter of the mat. The four feet (1.22 meters) shall be measured from the surface of the rubber mat to the center of gravity of the firearm. As an alternate to free dropping, other methods may be substituted if they provide equivalent impact characteristics. The firearm shall be re-cocked and re-set in the "Safe Carrying" condition after each drop or a separate firearm may be used for each drop.

Rem Uses Pendulum Drop Testing Method as the "Alternative" to free drop method - See #1

is the acceleration similar or equal to free drop method ??

Criteria - The firearm may indent a copper crusher to a depth not to exceed that shown below for the type of primer indicated.

Primer	Maximum Allowable Indent* In Inches	
Shotshell	.002	
Centerfire Rifle	.003	(J. Gourley to confirm)
Centerfire Pistol & Revolver	.002	
Rimfire	.0005	

* Indent shall be measured in accordance with SAAMI recommended practices outlined on page 50.02, Volumes VI, VII, and VIII of the SAAMI Tehcnical Committee Manual.

Parts breakage or other damage as a result of drop testing does not constitute failure as long as the firearm can be unloaded safely after each drop.

3. Test Procedure - The firearm or firearms shall be dropped in such a way as to strike the rubber mat surface in each of the following attitudes:

   (a) Barrel vertical, muzzle down.
   (b) Barrel vertical, muzzle up.
   (c) Barrel horizontal, bottom up.
   (d) Barrel horizontal, bottom down.
   (e) Barrel horizontal, left side up.
   (f) Barrel horizontal, right side up.

4. Testing of firearms which are designed to have a trigger pull force below three pounds (1.36 kg) is not covered by this procedure.

5. Tests shall be conducted with the trigger pull force set at the minimum force specified by the manufacturer.

6. The test shall be conducted with the magazine or clip fully loaded with dummy cartridges and inserted in the firearm. It is recommended that firearm weight variations introduced by combinations of accessories catalogued by the gun manufacturer be considered.

ROTATION TEST FOR RIFLES AND SHOTGUNS

This test is to simulate the abusive fall of a firearm when left leaning against a vertical surface.

1. Rotation Test - With the firearm in the "Safe Carrying" condition as defined in the Owner's Manual for the firearm being tested, the firearm should be capable of passing the below test criteria when allowed to fall freely from an upright position with its butt resting on the surface of a 50-60 Durometer, Shore A, rubber mat, one-inch thick (2.54 centimeters) backed by concrete. The mat and concrete shall be large enough so that when the gun falls it will come to rest without interferance within the perimeter of the mat. The firearm shall be tested so as to fall once on its right-hand side and once on its left-hand side. The firearm shall be re-cocked and re-set in the "Safe Carrying" condition after each drop or a separate firearm may be used for each drop.

2. Criteria - The firearm may indent a copper crusher to a depth not to exceed that shown below for the type of primer indicated.

Primer	Maximum Allowable Indent* In Inches	
Shotshell	.002	
Centerfire Rifle	.003	(J. Courley to confirm)
Centerfire Pistol & Revolver	.002	
Rimfire	.0005	

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JAR-OFF TEST FOR RIFLES AND SHOTGUNS

This test is to simulate the abusive impacting (bumping) of the firearms against a hard surface with the firearm in a condition of maximum readiness.

1. Jar-Off Test - With the firearm cocked and in the ready-to-fire condition (Safe "OFF") as defined in the Owner's Manual for the firearm being tested, the firearm should be capable of withstanding jar-off shock equivalent to being dropped from a height of twelve inches (.305 meters) onto a 50-60 Durometer, Shore A, rubber mat, one-inch thick (2.54 centimeters) backed by concrete. The mat and concrete shall be large enough so that when the gun is dropped it will fall within the perimeter of the mat striking the mat once. The twelve inches (.305 meters) will be measured from the test surface to the lowest point on the firearm. As an alternate to free dropping, other methods may be substituted if they provide equivalent impact characteristics. The firearm shall be re-cocked and re-set in the ready-to-fire condition after each drop or a separate firearm may be used for each drop.

2. Criteria - The firearm may indent a copper crusher to a depth not to exceed that shown below for the type of primer indicated.

Primer	Maximum Allowable Indent* In Inches	
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6. The test shall be conducted with the magazine or clip fully loaded with dummy cartridges and inserted in the firearm. It is recommended that firearm weight variations introduced by combinations of accessories catalogued by the gun manufacturer be considered.

MINUTES OF THE PRODUCTS STANDARDS TASK FORCE
SHOULDER FIREARMS AND HANDGUNS

Tuesday, September 28, 1982 - 9:00 A.M.
Springfield Marriott/Baystate West, Springfield, Massachusetts
Martin Kordas - Chairman & Meeting Secretary

Attendees:	Martin Kordas	Browning Arms
	Ray Chatigny	Harrington & Richardson
	Jack Moynes	Ithaca
	Bill Grenl	Mossberg
	Tom Henshaw	Olin/Winchester
	John F. Walsh	Olin/Winchester
	G. J. Hill	Remington
	Adam Hugick	Remington
	Carl Hildebrandt	Savage
	Richard Baker	Smith & Wesson
	Myron Johnson	Smith & Wesson
	Harold Sibley	Smith & Wesson
	Bill Ruger, Jr.	Sturm, Ruger
	Tim Pancurak	Thompson/Center
	Bob Reichenbach	U.S. Repeating Arms
	Ed Vartanian	U.S. Repeating Arms
Guests:	Earl Larson	
	Ed Stark	
	Mike Walker	
SAAMI:	Harry L. Hampton, Jr.	

1. Counsel's Anti-Trust Memorandum - The memo was called to the attention of the Task Force members.

2. Proposed Firearm Tests - Drop & Jar-Off - After much discussion the tests attached herewith constitute the Task Force's recommendation for Drop and Jar-Off Tests for Shoulder Firearms and Handguns. ACTION: Submit to SAAMI Joint Technical and Legislative and Legal Affairs Committees for approval prior to January 1983 Executive Committee meeting - H. Hampton.

Next meeting - January 3, 4, 5, 1983 - Dallas, Texas.

TESTS FOR RIFLES AND SHOTGUNS OF NEW DESIGN

The follcwing test procedures are recommended for use in evaluating new designs.

The test procedures apply to rifles and shotguns as defined under the Gun Control Act of 1968.

DRAFT 9-30-82 RESULTS OF 9-29-82 MEETING SAAMI FIREARMS TASK FORCE

DROP TESTS FOR RIFLES AND SHOTGUNS

This test is to simulate abusive dropping of the firearm.

1. Drop Test - With the firearm in the "Safe Carrying" condition as defined in the Owner's Manual for the firearm being tested, the firearm should be capable of passing the below test criteria for drop testing from a height of four feet (1.22 meters) onto a 50-60 Durometer, Shore A, rubber mat, one-inch thick (2.54 centimeters) backed by concrete. The mat and concrete shall be large enough so that when the gun is dropped it will fall and come to rest without interference within the perimeter of the mat. The four feet (1.22 meters) shall be measured from the surface of the rubber mat to the center of gravity of the firearm. As an alternate to free dropping, other methods may be substituted if they provide equivalent impact characteristics. The firearm shall be re-cocked and re-set in the "Safe Carrying" condition after each drop or a separate firearm may be used for each drop.

Ram Uses Pendulum Drop Testing Method as the "Alternative" to free drop method - See #1

Is the acceleration similar or equal to free drop method ??

Criteria - The firearm may indent a copper crusher to a depth not to exceed that shown below for the type of primer indicated.

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This test is to simulate the abusive fall of a firearm when left leaning against a vertical surface.

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DRAFT
6-12-72
A.

I. Minimum 48 Inch Height Drop Test.
(Safety Switch in "Safe" Position.)

II. Minimum 24 Inch Height Jar-Off Test.
(Safety Switch in "Fire" Position.)

III. Exposed Hammer/Striker Impact Test.
(Safety Switch in "Safe" Position.)

IV. Controlled Lab Bump Test Simulation.
(Safety Switch in "Safe" Position.)

V. Safety Switch Operational Force Requirements.

VI. Minimum Safety Switch Dry Cycle Endurance Performance.

VII. Minimum Safety Switch Firing Endurance Performance.

VIII. Performance Requirements Associated with Misuse and Abusive Firing.

IX. Sear Engagement/Trigger Pull Adjustment Review and Performance

X. Lubrication Review of Firearm - Firing Mechanism.

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I. Drop Test - Safety Switch in "Safe" Position.

A. Measurements required prior to and at end of test. (Min.)

1. Headspace
2. Safety switch on and off operational forces
3. Firing pin shape and dimension
4. Firing pin max. protrusion
5. Firing pin indent
6. Sear lift
7. Sear engagement
8. Trigger pull

B. Catalogue Accessory Consideration.

Those accessories which may affect testing should be considered. I.e. recoil pad, etc.

C. Functions Checks -Per Drop.

1. Safety switch movement to "Safe" and "Fire" position
2. Safety function
3. Trigger function
4. Striker movement and function
5. Bolt operation

D. Drop Height To Be Measured From Impact Elevation Point To Center of Firearm Mass At Release Elevation Point.

E. Impact Media:

1. Proposed S.A.A.M.I. impact media was that of one inch thick neoprene with material durometer reading of 90.

2. Ilion in-house impact media is two inch thick maple plank secured to rigid masonary structure.

F. Drop Test Techniques

1. Parallel pendulum utilization

2. Hand held - hand released

3. Quick release mechanical device.

G. Drop Test Gun Impact Surface Location.

1. Top drop

2. Bottom drop

3. Muzzle drop

4. Butt drop

5. Left side drop (right hand gun)

6. Possible forty-five degree angle variation of 1 - 5 drop positions.

H. Drop Test Repetition.

1. Full drop test cycle is once for all drop test orientations.

2. Proposed drop test cycle repetition for design evaluation test is three.

3. Proposed drop test cycle repetition for finished product evaluation is one.

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I. Drop Test Performance Control Monitor.

1. Primed cartridge for fire/no fire determination.

2. Firing pin indent copper crusher for marking depth determination.

J. Parts Failure and/or Parts Damage Failure Related to Striker - Firing Mechanism.

1. Gun does not fire

2. Gun can be safely unloaded

3. Damage does not result in an unsafe gun condition.

II. Jar-Off Test - Safety Switch in "Fire" Position.

Procedure is same as I. Drop Test except for safety switch in FIRE position.

III. Exposed Hammer/Striker Impact Test -

Safety switch in "Safe" position.

A. One pound mild steel mass, free falling a distance of 12 inches, impacting the exposed hammer/striker assembly with muzzle rigidly supported.

B. Three impact events for design evaluation and one impact event for product evaluation.

C. Repeat I. Drop Test - Items A,B,C,I,J.

IV. Gun Bumping Simulation Test - Mallet Test.

A. 1 lbs. 6 oz. Weight - Dead Blow - No Bounce Type Mallet.

B. 11.5 Inch Overall Length Mallet.

C. Ten FREE-FALL Mallet Strokes.

1. Five strokes at prescribed locations.

(a) One at front - top of receiver/frame location.

(b) One at rifle rear sight location of firearm.

(c) One at rear-top of receiver/frame surface.

(d) One on pistol grip/grip cap location of stock.

(e) One on receiver/lower stock bottom surface at receiver/frame forward location.

2. Five strokes at random locations.

D. Mallet Test Performance Control Monitor Is Striker/Hammer Fall.

E. Bump Simulation Test To Be Conducted With Safety Switch In The "Safe" Position And Repeated With Safety Switch In The "Fire" Position.

V. Safety Switch Operative Properties.

A. Thumb/Finger Applied Force Required To Position The Safety Switch In The "Safe" Location. Should Range SIX To EIGHT Lbs.

B. Thumb/Finger Applied Force Required To Position The Safety Switch In The "Fire" Location Should Range THREE To FOUR Lbs.

C. Safety Switch Location Should Be Such That Switch Operation Is NOT In The Immediate Proximity Of The Trigger Such As To Be Confused Or Result In Trigger Contact.

D. Safety Switch Operation Direction Should Be Dissimilar From Trigger Operation.

E. Safety Switch Moments Of Inertia Should Be Such As Not To Operate Freely During Use Or Mis-Use.

VI. Dry Cycle Endurance Performance.

A. Lubricant And Amount Of Lubricant Should Be Consistent With Expected Field Use.

B. Safety Switch On & Off Dry Cycle Endurance Non-Failure Should Be Established W/Min. Test Level Must Exceed Gun Model Use Life By a FACTOR Of At Least Three.

C. Cock & Dry Fire Dry Cycle Endurance Non-Failure Should Be Established W/Min. Test Level Must Exceed Gun Model Use Life By A FACTOR Of At Least FIVE.

D. Inspection &/Lubrication On a Cyclic Basis Should Be Consistent With Test Procedure And Results. I.e., Every ~~5,000~~ 2,500 Cycles.

E. Dry Cycle Endurance Performance Items To Be Included Are:

1. Triggering movement and operation forces
2. Safety switch function and operational forces
3. Sear life and engagement and changes
4. Firing pin indent

VII. Ammo Associated Abuse & Misuse Performance

A. Subject Test Gun To Pierce Prime For Establishing Gun Damage & Injury Potential. I.e. Gas Flow On To Witness Paper.

B. Subject Test Gun To Leaky Primer For Establishing Gun Damage & Injury Potential.

C. Subject Test Gun To ~~Balanced~~ primed Primer For Establishing Gun Damage & Injury Potential.

D. Subject Test Gun To Case Head Separation For Establishing Gun Damage & Injury Potential.

E. Subject Test Gun To Wrong Ammo For Establishing Gun Damage & Injury Potential.

F. Subject Test Gun To High Pressure Handload For Establishing Gun Damage And Injury Potential.

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VIII. Firing Mechanism Adjustments.

A. Min. - Max. Trigger Pull Establishment.

B. Out Of Specs. Trigger Pull Review.

C. Min. - Max. Sear Engagement Establishment.

D. Out Of Specs. Sear Engagement Review.

E. Min. Sear Engagement - Follow Down Review.

F. Follow Down - Sear Engagement Review.

IX. Lubrication Review

A. Variant Amount & Type Of Lubricant.

B. Rust & Corrosion Introduction.

X. Live Fire Endurance And Functional Life Review.

Sincerely, Assurance Proceedings
Clause 8.2 Test Procedures
Attached

Establishment of Malfunction Rate

Three catagories:

A. Gas Operated:

1. Centerfire / Rimfire
   - Over-all ------ 4%
   - First 100 rds. ---- 2%

2. Shotshell
   - Over-all ----- 3%
   - First 100 rds. ---- 1.5%

B. Pump Action - (ALL)
   - Over-all ----- 2.5%
   - First 100 rds. ---- 1.5%

C. Bolt Action - (ALL)
   - Over-all ---- 2.5%
   - First 100 rds. --- 1.5%

Possibly cat's B & C could be combined.

1-5-82

Bolt Action Program 1-5-82

Carbine - 83

1. Sights — alignment of new concept - check E.M.

2. Scope mnts for Carbine

3. M/700 ADL - BDL -
no low cost "Classic"

4. M/700 "ADL"

Bob Emmons - 84

Get a schedule for a completed obj by
1984

M/700 ADL - new - also standard
M/700 BDL new " "
M/700 Classic new - " "
M/700 Detachable Box
M/1100 Bar - and Slave

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M-700 Fire Control - Present
Connector-Less Trigger

M-700 Fire Contrl - Proposed
Connector Less Trigger - For Blocked Trig Safety
Side Plates - Skeletonize - For Blocked Trig Safety

Test Cab - Fire Controls With Sept. 81
Blocked Trig & Sear
* New Matl. To Elim.
Plunger Prob.
* Heat Treat Trigs

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BARBER - 1.30.130000501

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   - Over-all ----- 4%
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Possibly cat's B & C could be combined.

1-5-82

1-7-72
2:46

Joyce wants to [illegible]

find our about dates and address —

11/13/98

J.P. Finds

Ten Model 700's were taken after final inspection and checked for clearance between the trigger connector and sear ~~safety~~ cam using the twist test. All rifles passed this test.

Twelinger used:

1) Safety lever pushed to "On Safe" position
2) Trigger pulled rearward and held
3) Pressure was applied upward on the trigger connector
4) Trigger connector must not catch on sear safety cam
5) Trigger was released
6) Safety lever pushed to "Off safe" position
7) Firing pin must not fall

GUNS CHECKED BY AUDIT 10/24/78

Mohawk 600 — 38 guns checked

15.8% {
- 3 FSR by tricking
- 4 FSR
- 2 FD
- 3 Broken triggers
- 1 FOC complaint (no duplication)

Remington 600 — 11 guns checked

36.4% {
- 1 FSR by tricking
- 3 FSR
- 1 FOS
- 1 SWW - complaint

Rem. 660 — 5 guns checked

Total — 54 guns checked

18.5% {
- 3 FSR by tricking
- 7 FSR
- 2 FD
- 1 FOS
- 1 SWW
- 3 Broken triggers
- 1 no duplication

10/23/78

1. Check arm Lewis Experiment
2. Verify M 700 in customer. repair trick Only.
3. Check R+D - D See what they found on M/700. —

D Are there records on M/600 which we have found which can be tricked.

(2) Do the records show any difference between M/600 from M/660 from Mohawk 600 —

. Trim on one — Can we distinguish

Check for trick test on Model 700.

10/23/78.

Model 600 Trick Test Condition

1. Arms Service Division - Experience with rifles which can be tricked.
   A. All incoming rifles are checked and repaired. Not all repairmen were properly testing for trick condition. The ones which were, were not noting this on the ~~order~~ repair form. The rifles leaving customer repair are checked by an inspector who check the safety but did not operate the trick test satisfactorily.
   B. The M/700 and M/600 rifles are tested and repaired in the same manner as the M/600.

→ 2 Q. What per cent of the M/600 rifles which we have received back can be tricked?

→ Q Do the records show any difference between the
M/600 Rem
M/660 Rem
M/600 marlin.
check Rem off safe. also.

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10/23/78

Model 600 trick test Considerations

3. A. What date was the model 1700 rifle which can be tricked produced.

4. New guns assembled with new 700 style trigger housing 1/12/78 Ser. No. 6545434

5. We do the trick test at final assembly, 1 of two people in gallery checked (not in procurement), and the final inspectors were performing test wrong.

6. How many guns do we ship in assembly which fail the trick test. Check with Assembly.
M/1700 M/600.

6/10/77

John Linde

Proposed Remington System

1. Safety work independent of bolt lock.

2. Bolt lock is disengaged when rifle is fired

3. Bolt lock release can be locked in release position.

G-84

DON'T SAY IT — WRITE IT

To John Doe

From Jack

Date

No evidence A truck test
@ process dates back to 1963

SAFETY IS A WISE INVESTMENT

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BARBER - 1.30.13000511

R2543156

BARBER - 1.30.13000511

DATES AND REASONS FOR REVISIONS 2/8/78 - Retyped & filed with process no. 876636 - MB

2/8/78 - Revised element 13 - Hardy - 276636

4/4/78 - Chg. dept. to 61 - Hardy - 276772

DESCRIPTIVE INFORMATION

8. Hold Trigger and press down on Sear, must not bind. - Sear retracts without hesitation.
9. Pick Firing Pin Assembly, inspect, point not mared, Bolt Plug color - Good - No rust or miscut.
10. Assemble to Bolt group and remove (U) Washer.
11. Check Firing Pin Protrusion. Protrusion Ga. B-10-52089
12. Insert Bolt into Action and lock down.
13. Try Safety.
    (a) Must be clearance between Sear and Trigger Connector with Safety on.
    (b) With Bolt open pull Safety on, close Bolt and lock down. Must lock down without catching on Safety. Bolt must not open until Safety is moved to off position.

14. (a) Vertical Sear engagement at least .015 (Visual)
    (b) Check for jar off by steady pressure on end of Firing Pin Head, when rifle is cocked, with Safety in off position (Use end of Hammer Handle)
    (c) Cock Rifle - Hold Bolt Handle down hard - Must fire when Trigger is pulled.
    (d) Open and close Bolt forcibly three times. Trigger must not follow down.
    (e) Check notch escape by holding Trigger while closing Bolt slowly - Firing Pin must follow down.

15. Try Safety and Bolt Action - Observe for slight rearward movement of Firing Pin Head when Safety is pushed on. Adjust if necessary.

PART NAME Final Assembly COOLANT SET UP TIME MODEL No. Mohawk 600 OPER. No. 175

TYPE MACH. HRS. DEPT. No. 61 PAGE 2 OF 4

MACHINE

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BARBER - 1.30.13000512

DATES AND REASONS FOR REVISIONS 4/1/68 - Retyped from 3/18/68 - 266@$? 10/8/76 - Add info to 9 - Joy - 275299
12/23/70 - Added Mohawk 600 - CP - 269276 2/8/78 - Added to #9 - Hardy - 276637
3/13/73 - Added element 10, renumbered 11-CP - 271645
7/26/74 - Remove 660 - CP - 273270
3/27/75 - Added to #9 - CP - 273888

DESCRIPTIVE INFORMATION

8. Action:

1. Operate Bolt 3 times and fire, no bind, Bolt Handle raises and lowers easily.
2. Open and close Bolt forcibly 3 times. Trigger must not follow down.
3. Check for jar off by steady pressure on end of Firing Pin head, when rifle is cocked, with Safety in off position (Use end of Hammer Handle)

9. Safe, Gun cocked.

Clean sharp single detent.
Try Three Times { "On" back, can't fire with heavy Trigger pressure. Trigger must retract. Push Safety halway off, pull Trigger, Must not fire. Push Safety to OFF position, Firing Pin must not follow down; Safety must return to OFF position under tension. Use downward pressure on Safety.
Bolt Handle must not unlock on safe.
Safety should snap in Detent in both "On" and "Off" position.
Check Trigger Pull - No creep (4 to 6 lbs. on M/660) Mohawk 600)
(3 to 5 lbs. on M/700)
With Bolt open pull Safety on, close Bolt and lock down, Must lock down without catching on Safety.
Bolt must not open until Safety is moved to off position.

10. With Safety "ON" push upward on bottom of Trigger Connector while pulling back on Trigger and releasing. Trigger must retract without catching. Push Safety "OFF". Firing Pin must NOT follow down.

11. Stamp Final Inspection and Code Marks on Left Side of Barrel, Rear sign gun tag.

To Warehouse

PART NAME Final Assembly COOLANT SET UP TIME MODEL No. 700ADL-700 BDL OPER. No. 310
TYPE MACH. HRS. DEPT. No. 55 PAGE 4 OF 4
MACHINE

Form R. D. 6466

R2543157

BARBER - 1.30.13000512

REASON AND PLANNING FOR REVISIONS 10/8/75 - Took out M/700 reference notes and added to item V notes. Retyped from 10/16/67-
5/10/77-Add note to #3 - #9-JCH/bdm-275943

"JCH"

Jim Hutton

DESCRIPTIVE INFORMATION

VII. Description of Test.

A. Test.

-Each gun as received, Bolt in open positi

1. The first rifle after test is to be la — there will be one space between tested guns.
   and untested guns. Place first gun ba — ok load is completed.
2. Pick up gun from truck and inspect for:
   a. Safety - Inspect chamber and Maga — empty.
   b. Caliber - To verify for shooters — electing ammunition for test.
   c. Proof Mark on Barrel (NEP) must b — side of Barrel, ahead of Magnaflux stamp.
   d. Proof mark on Bolt - (.) Prick pu — ent at bottom of Bolt Handle.
   e. Visual Defects - If not within spe — s a-d, reject gun at this point.
   f. Normal Sight alignment - as descri

(PERFORM THREE TIMES)

3. With safe in "OFF" position - close Bolt — mber.
   a. Firing pin must not follow down as
   b. Must not fire on closing.
4. Move safe to "ON" position and try to raise Bolt
   a. Must not raise or open - must be locked closed by safety
5. With safe still "ON" - pull Trigger firmly.
   a. Gun must not fire.
6. With finger off Trigger - move safe to "OFF" position.
7. Open and close Bolt full stroke to cock firing pin
8. Move safe to full rear "ON" position and then move to half way "OFF" position with thumb only, if possib
9. If safety stops at half-way position - pull Trigger.
   a. Gun must not fire.
   b. Safety must not move to full "OFF" position.
10. With Action open, position gun in device and clamp.
11. Lower line-o-sights and adjust device to point gun on target paper if necessary.
12. Remove line-o-sighter.
13. Load Magazine to capacity - see table #1 and #2, item IV - for Magazine capacity by caliber.
14. Hold cartridges down in Magazine, start Bolt over Cartridge column and close Bolt on empty chamber.
15. Open Bolt full stroke to rear position.
16. Assemble Firing Pin Trip Pin in device.
17. Close guard.
18. Close Bolt to feed shell into chamber and lock - to start test.
19. Fire gun by pushing (2) two buttons on device simultaneously.

PART NAME Gallery Test - Target COOLANT SET UP TIME MODEL No. 700 OPER. No. 300
TITLE Procedure and Specification MACH. HRS. DEPT. No. 85 PAGE 9 OF 11

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
BARBER - 1.30.13000513
BARBER - 1.30.13000513
R2543158

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.13000514

PROCESS RECORDS-ASSEMBLY SHEETS

9

DATES AND REASONS FOR REVISIONS 3/27/75 - Retyped from 12/26/74 - Prosser - 273888 - Revised
8/12/75 - Removed 17a chg word. of 19 chg. adjust to weight & removed 20, renumber 21 & 22 - CP - 274202
10/8/76 - Added info to 18a - Joy - 275300

DESCRIPTIVE INFORMATION

~~Adjust Trigger Stop Screw to reduce overtravel~~
~~Turn Stop Screw in until Action will not fire. With Safety~~
~~off, Hold Trigger back and turn Stop Screw out until Action~~
~~fires. When difficult to cock, turn 1/8 and test. Then 1/4 turn more.~~
~~No overtravel. Trigger stop in groove of rivet.~~

17a. Check notch escape by holding Trigger while closing Bolt slowly. Firing Pin must follow down.

18. Try Safety and Bolt Action. Adjust if necessary.
a. Push Safety "ON" back, can't fire with heavy Trigger pressure. Trigger must retract. Push Safety halfway off, pull Trigger, must not fire. Push Safety to OFF position, Firing must not follow down, Safety must return to OFF position under tension. Use downward pressure on Safety. Perform check three times.

19. Weight Trigger Pull (3 to 5 lbs.)
a. Must be short & crisp, no creep or overdraw. Try 3 times.

~~20. Check adjustment of screws (two) with 700 AWL and deny~~

20. Pick correct Magazine Box, inspect for color, no rust.

21. Assemble Magazine Box to Action.

EQUIPMENT—TOOLS & GAGES

N

NOTE: - Cock Rifle - Hold down hard on Bolt Handle - Must fire when Trigger is pulled.

Trigger Pull scales B-70697

OPERATION DESCRIPTION								
Assemble Action (700 AWL)	OCC. No.							
	STD. HRS/C							
	STD. No.							
	EFF. DATE							
	PART No.							
	GA.							

PART NAME Final Assembly COOLANT SET UP TIME MODEL No. 700 AWL OPER. No. 175
TYPE MACH. HRS. DEPT. No. 61 PAGE 3 OF 4
MACHINE

R2543159

BARBER - 1.30.13000514

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.13000515

SEQUENCE OF OPERATIONS

OP. No.	OPERATION	DEPT.	OP. No.	OPERATION	DEPT.
5.	Clean engagement screw hole.	61	40.	Fit and head Bolt Assembly to Barrel Assembly.	61
8.	Inspect Connectors for straightness 100% and scrap defectives.	61	50.	Fit and head Bolt Assembly to Barrel Assembly. (6MM)	61
10.	Assemble Trigger Assembly (Stage one)	61	65.	Make chamber cast.	61
15.	Adjust Sear-Connector engagement and adjust Trigger pull and Trigger Stop Screws on Comparator.	61	70.	Ream Ejector hole.	61
~~16.~~	~~Adjust Trigger and Sear Engagement and Trigger Pull on Comparator.~~	~~61~~			
18.	Assemble Trigger Assembly (Stage two)	61	80.	Assemble Front Sight Base to Barrel with Front Sight Base Screws.	61
20.	Assemble Rear Sight Assembly.	61			
30.	Remove burr from Ejector hole at face of Bolt.	61			

3/4/78 - Retyped & filed with process no. 276772

DATES AND REASONS FOR REVISIONS	DATES AND REASONS FOR REVISIONS
3/4/78 - Chg. dept. 41 to 61 - Hardy - 276772	
5/23/78 - Obs. op. 16 - combined with op. 15 - MH - 276920	

MODEL Mch. 600 PART NAME Final Assembly PAGE 1 OF 4

GA. OR CAL.						
PART No.						

RD-6460

R2543146

BARBER - 1.30.13000515

PROCESS RECORDS ASSEMBLY SHEETS

DATES AND REASONS FOR REVISIONS 1/11/78 - New - Hardy - 276547
made correction, done in dept. 61 - RB
4/4/78 - Chg. dept. to 61 - Hardy - 276772

DESCRIPTIVE INFORMATION

1. Position Housing on front edge.
2. Air clean engagement screw hole.
3. Spray engagement screw hole with loquick.
4. Air clean to remove solution of oil and loquick.
5. To Sub-Assembly.

EQUIPMENT - TOOLS & GAGES

| OPERATION DESCRIPTION | OCC. No. | | |

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BARBER - 1.30.13000517

PROCESS RECORDS ASSEMBLY SHEETS

5

DATES AND REASONS FOR REVISIONS 2/10/76 - Added new - HLJ - 274653
3/15/76 - Added elemt #3 - CP - 274758
12/30/77 - Chg. C-54062 to C-43067 - CP - 276522
4/4/78 - Chg. dept. to 61 - Hardy - 275772

DESCRIPTIVE INFORMATION

1. Inspect long inside Trigger interface for warpage and scrap defective Connectors. Check 100%. GAGE
2. Check max. Connector width, if necessary, using special Reeiving Gage. GAGE
3. Smooth top of Connector on Crocus Cloth.
   a. Surface clean and flat.

EQUIPMENT-TOOLS & GAGES

Special Straightness and Receiving Gage - ~~C-54062~~ C-43062

Max. Connector width = .172

OPERATION DESCRIPTION								
Inspect Connectors for straightness 100% and scrap defectives.	OCC. No.							
	STD. HRS/C							
	STD. No.							
	EFF. DATE							
	PART No.							
	GA.							

PART NAME Final Assembly COOLANT SET UP TIME MODEL No. Mch. 600 OPER. No. 8
TYPE Bench MACH. HRS MACHINE DEPT. No. AA 61 PAGE 1 OF 1

R2543148

BARBER - 1.30.13000517

PROCESS RECORDS Assembly SHEETS

DATES AND REASONS FOR REVISIONS — 6/6/72 - Revised operation - Prosser - 270770

7/16/74 - Chg. dept. # - Remove 560 - Prosser - 273249

10/16/74 - Added 2A - OP - 273949

4/28/75 - Added 2B - OP - 274353

4/4/78 - Chg. dept. to 61 - Hardy - 276772

DESCRIPTIVE INFORMATION

1. Pick Housing - Color good.
2. Pick Trigger - Color Good - No Bleeding or Peeling.
   a. Pick Trigger Connector, 17 on Trigger, [illegible]
3. Position Trigger, [illegible]
4. Install (a) Trigger Connector-Square, no burr. - Front Corner
   (b) Trigger Stop Screw - Flush.
   (c) Trigger Adjusting Screw, Front with Trigger Spring
5. Install Sear, Sear Spring with dummy pins (A-21468)
6. Make all necessary repairs pertaining to this operation.

EQUIPMENT — TOOLS & GAGES

[illegible] Assembly, 16 necessary,
Pin Holder Drive Punch A-19643
Pin Flush on right side, Trigger free.
Trigger engagement screw.

OPERATION DESCRIPTION	OCC. No.	STD. HRS/C	STD. No.	EFF. DATE	PART No.	QA.
Assemble Trigger Assembly (Stage One)						

PART NAME Final Assembly COOLANT [illegible] MODEL No. Roberts 600 OPER. No. 10

TYPE Bench MACH. HRS. DEPT. No. 7611/77 61 PAGE 1 OF 1

MACHINE

Form R. D. 6469

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.13000519

PROCESS RECORDS ASSEMBLY SHEETS

DATES AND REASONS FOR REVISIONS 6/6/72 - New operation - CP - 270770
7/18/74 - Chg. dept. # - Remove 660 - Presser - 273240
12/30/77 - Chg. fixture B-40417 to B-39832 - CP - 276522
4/4/78 - Chg. dept. to 61 - Hardy - 276772
5/23/78 - Chg. operation description - Hardy - 276920

DESCRIPTIVE INFORMATION

1. Pick Trigger Housing Assembly
2. Position in Comparator Fixture and clamp.
3. Adjust fixture to get Sear on "Set" line if necessary.
4. Adjust Sear - Connector engagement and adjust Trigger pull and Trigger Stop screws on Comparator.
5. Seal Trigger engagement Screw.

After making Sear, Connector engagement Adjustment.

6. Hand weight on Trigger.
7. Adjust Trigger adjusting screw counter-clockwise until Sear disengages.
8. Remove weight from Trigger.
9. While holding Trigger in fired position with finger;
   a. Re-set Sear on set line.
   b. Turn Trigger Stop screw clockwise until Trigger Connector touches line on Comparator screen.
10. Seal front screws at same time as rear screw.

EQUIPMENT—TOOLS & GAGES

Comparator Fixture B-42271
Comparator Screen A-600-CL25

Turn Screw slowly as Connector disengages.

OPERATION DESCRIPTION

Adjust Sear - Connector engagement and adjust Trigger pull and Trigger Stop screws on Comparator.

OCC. No.							
STD. HRS/C							
STD. No.							
EFF. DATE							
PART No.							
GA.							

PART NAME Final Assembly COOLANT SET UP TIME MODEL No. Mohawk 600, 660 OPER. No. 15
TYPE Comparator - Jones & Lamson TC-10 MACH. HRS. DEPT. No. 61 PAGE 1 OF 1
MACHINE

Form R. D. 6464

R2543150

BARBER - 1.30.13000519

PROCESS RECORD and ASSEMBLY SHEETS

9

DATES AND REASONS FOR REVISIONS 6/6/72 - R sw operation # 17, - 270770
7/18/74 - Chg. dept. # - Rem. 660 - Premier - 273299
4/4/78 - Chg. dept. to 61 - Hardy - 276772

DESCRIPTIVE INFORMATION

1. Pick Trigger Housing Sub-Assembly

2. Assemble: -
   a. Safety Assembly.
   b. Safety Detent Ball.
   c. Safety Detent Spring.
   d. Safety Pivot Pin
   e. Safety Snap Washer

EQUIPMENT — TOOLS & GAGES

Chisel Part

Trigger Extraction
Binding of Gear
Operation of Gear Spring
Operation of Safety;

OPERATION DESCRIPTION

Assemble Trigger
Assembly (Stage two)

OCC. No.
STD. HRS/C
STD. No.
EFF. DATE
PART No.
GA.

PART NAME Final Assembly COOLANT SET UP MODEL No. Mdl. 600 - OPER. No. 18
TYPE Bench MACH. HRS. DEPT. No. 61 PAGE 1 OF 1
MACHINE

Form S. D. 6441

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BARBER - 1.30.13000521

PROCESS RECORDS

9

DATES AND REASONS FOR REVISIONS
2/19/75 - New operation - CP - 273781
4/30/75 - Chg. expiration date - Prosser - 273781
8/19/75 - Chg. S to T and chg. expiration date - Prosser - 273781
2/1/76 - Chg. expiration date - Bower - 273781
2/5/76 - Obsolete - Prosser - 273781

APPROVAL AND DATES

TOO SPEED	TOO FEED	GAGES AND EQUIPMENT	GA OR CAL.
		1. Pick Safety Assembly , position spacer and position in swaging fixture.	
		2. Swage	
		3. Remove spacer and Safety.	

OPERATION DESCRIPTION: Swage Safety

(Expires ~~4/30/75~~ ~~8/19/75~~ 2/1/76 8/1/76

PART NO 26795

PART NAME Safety Assembly COOLANT SET UP TIME MODEL No 600 OPER No 30-~~4~~ T

TYPE MACHINE DEPT No 79 PAGE 1 OF 1

RD-6461

R2543152

BARBER - 1.30.13000521

RD-49-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
October 28, 1978

RECALL OF MOHAWK 600 RIFLES

UPDATED STATUS

Trigger Assembly

The main consideration on the Trigger Assembly is that they are assembled, and safety checks are performed to insure that a safe reliable Trigger Assembly is shipped to the gunsmith. A complete analysis of the Process Record, of the Sub-Assembly operation where the Trigger Assembly is put together, has been made.

Additional checks have been added to insure that the Safety will pass the trick test. That is, the clearance between the Connector and Sear is being measured on a gage when the Safety lever is positioned on the null position between the Safe and fire detents.

The process has been completely reviewed by all the knowledgeable people at the plant. This includes Research personnel, P E & C personnel, and Field Service personnel. The assemblers on the Fire Control job will be reinstructed to the new process starting on 10-28.

To insure that safe Trigger Assemblies are being shipped from those manufactured during the week of 10-23, the following procedures have been followed:

The first lot of 100 completed on Wednesday, 10-25, was sampled by Quality Audit. A sample of ten pieces was taken. This sample was found to be unacceptable because the Assemblies had too much Sear-Connector engagement. The sample was rejected and the parts were reworked, that is, all parts were reworked.

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Another sample of ten parts was taken and found to be acceptable on the comparator. These ten assemblies were attached to rifles and all the standard safety checks were performed. All ten samples were satisfactory.

The rifles were then shot in the Gallery using the standard Audit test. All functioned normally. The Stocks were removed from the ten rifles and the Safeties were checked through all the safety tests. In addition, the Sear lift was measured with shim Stock and the Trigger pull was measured with a spring scale.

On Thursday, 10-26, another sample of 100 parts were assembled and a similar sample of ten was taken. This time, the sample was satisfactory. The same procedure was repeated, that is, the sample was checked on the comparator, all ten pieces; they were assembled to rifles, checked, shot with the Audit test and rechecked.

The results of the twenty samples indicate that the safety checks for the items which we are presently performing are in control.

It also indicated that there is a discrepancy between the spring weight adjustment on the Trigger Assembly, and what actually is measured in the gun. The average for the twenty guns checked was 6.75 lbs.

The absolute Sear lifts were checked on these twenty samples and compared to what was recorded on the Sear lift gage. The results correlated 100%.

Included with the report, are the test results from the twenty gun sample.

To insure that all 200 parts are acceptable, they were all checked on the Sear lift gage, and any assembly which had less than .008" Sear lift, was rejected. All assemblies will also be reworked on the comparator gage, but just for pounds-pull adjustment, so that when the gunsmith receives them, he will not have to make any adjustments. It is well to repeat on the Sear lift gage; the samples were

checked 100% in both the On Safe Position, and in the Null Position. In either position, if the gage read under .008", the assembly was rejected.

To make doubly sure on these parts, they were also checked by forcing the Connector up, with respect to the Trigger, with a small screwdriver and holding the Sear down with the Safety lever in the Null Position. The Trigger-Connector assembly was then rotated beneath the Sear, to make sure that the Connector cannot touch the Sear face.

The procedure now will be instituted where Production will build the Trigger Assemblies to the Process Record, and check them 100% on the Sear lift gage.

To begin, the area will be audited quite extensively and a certain percent of Trigger Assemblies will be assembled to rifles to verify that the operation is running as expected.

The critical dimensions covered and resolved are:

The fit of the Connector to the Trigger will have a max. clearance specification of .005".

The min. acceptable Sear lift will be .008".

The straightness on the Connector will be .003" max. bend, with the required squareness between the top surface and right front face.

A new fixture to measure Sear lift will be started immediately in the Tool Room, to insure that we can meet the increased production of this assembly.

All Trigger Assemblies which pass the required tests, will be stamped with a "V" on the left side of the Trigger.

Process for Retrofitting Customer Guns in the Field by Recommended Remington Gunsmiths

To make sure that the new Trigger Assemblies are assembled to the rifle in the correct procedure, a complete Process Record is being developed to give the gunsmiths step-by-step instructions on the proper disassembly and assembly procedures. The instructions will be completed on 10-28, and telecopied to Bridgeport for review by the Field Service and Legal Departments.

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KINZER V. REMINGTON

The Bridgeport Field Service Group will mail out the instruction folders to the recommended gunsmiths.

Also, boxes of Trigger Assemblies will include the complete installation instructions.

Gunsmiths will use only the supplied Trigger Assemblies, those stamped with a "V" on the left side of the Trigger. The gunsmiths will return the Trigger Assemblies which they replace. These assemblies will be put in a plastic bag, or envelope, so that the parts will be retained as a unit, and returned to Ilion. This is important because there have been a number of design changes, and we do not want the old parts out in the field, where they could contaminate our new assemblies indefinitely in the future.

There are no plans to stamp the completed rifle; the only identification on the rifle that it has been converted will be the "V" on the left side of the Trigger.

There are also no plans to have the gunsmith who converted the rifle stamp his work. The Field Service people will audit the work of the recommended gunsmiths in the conversion.

In preparing the manual for the gunsmiths, the following considerations have come to light:

> Should we at the point where the gunsmith has installed the new Trigger Assembly to the rifle, ask him to check the assembly to see if it will pass the trick test? This could be performed in two manners; he could put the Safety lever in the Null position, and check between the clearance between the Connector and the Sear, or, he could readily take a little screwdriver, push up on the Connector and pull back on the Trigger slightly, with the Safety in the Null position, and check to make sure that the front edge of the Connector does not touch the Sear. The instructions to do this check have been included but can be deleted, if it is determined to be unwarranted.
>
> Also, when the rifle has been completed, should the gunsmith check the Safety in the Null position by pulling the Trigger to make sure that the rifle cannot be set-up to be tricked. This, too, has been included in the instructions but can be deleted by the Legal or Field Service Group.

The Stock reinforcing screw has been addressed as to the problem, and pictures are included showing how this cross-piece can be influenced, so that there will be clearance between the Trigger Assembly and reinforcing screw.

The clearance underneath and to the rear of the Safety lever has also been addressed, and pictures have been taken showing how the wood should be cleared out.

Additional Notes:

Model 600's will be pulled from the warehouse, and the Trigger Assemblies will be removed. These Trigger Assemblies will be checked 100%, stamped, and used for replacements in the field. The parts will be put back in their original boxes, minus the Trigger Assemblies, and stored in a secure area.

JPLinde:eb

DON'T SAY IT — WRITE IT

To C. B. WORKMAN Date 10-30-78

From J. P. LINDE

SUBJECT: MODEL 600 FOR FIELD SERVICE MANUAL

It would seem to me that if we are going to check these rifles in the field using the "trick test", we are going to have to go through the gunsmith manual and re-do this instruction.

It would also seem that we, with our new procedures of setting these Trigger Assemblies, and the changes we are making - had better start limiting who gets the Trigger Assemblies. Either that, or, we had better make sure that we ship the Trigger Assembly as a Trigger Assembly, and stop selling Trigger Assembly parts. That is, do as we are doing on the 788 and 580 Series, where if the man wants a Sear, he can not buy it, he has to buy the complete Trigger Assembly.

JPL:eb

SAFETY IS A WISE INVESTMENT

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M/600 WAREHOUSE GUNS

PROCESS - UNPACK - DISASSEMBLE - REPACK - WAREHOUSE GUNS

1. Deliver pallets of 5 pack guns to Warehouse to unpacking area Bldg. 52-1.

2. Unpack 5 pack, unpack single gun, gun to assembler.

3. Remove Stock. Disassemble trigger assembly from action. Assemble two slave pins in trigger housing to hold sear-safety cam. Trigger assembly to bench. Re-assemble gun (Stock to action), tighten one screw in Stock. Put sear pins (2) in box. Repack gun in its original box. Retape. Repack in 5 pack container. Retape 5 pack when full. Use one piece of tape for repack. Restack on pallet. Keep proper paperwork with 5 pack. Return 5 packs to Warehouse.

4. Deliver trigger assemblies from bench to Assembly - Bldg. 82-2 in lot of 100. Perform the following tests on each trigger assembly:

   - Gage sear lift - use Gage D-42614. (See detail)
   - Perform screwdriver test. (See details)
   - Stamp "V" on left side of trigger - visible in assembled gun. (See sample)
   - If any other defects visible or rejected in above tests, "Reject Trigger Assembly".

5. Deliver completed Trigger Assemblies to Custom Repair - Bldg. 52-2.

6. Deliver rejects to P. E. & C. Assembly Office - Bldg. 51-4.

GJH/bdm
10/30/78

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PROCEDURE TO CHECK FOR SUFFICIENT SEAR LIFT

GAGE # D-42614

1. Push slave pins in fire control part way out toward right of trigger assembly.

2. Raise locating pins in gage part way.

3. Place fire control over locating pins and clamp.

4. Hold fire control in position with finger and raise locating pins with lever to full upward position.

5. Move safety lever to "OFF SAFE" position.

6. Draw dial indicator into position with adjustment knob until dial indicator reads "0".

7. Place safety lever in the "ON SAFE" position, check reading on dial indicator, MUST be .008" or greater.
   - Reject if less than 0.008".

8. Place safety lever in forward most "null location" - check reading on dial indicator - must be .008" or greater.
   - Reject if less than 0.008".

9. Move safety lever to "ON SAFE" position - loosen knob and move dial indicator away from the trigger assembly.

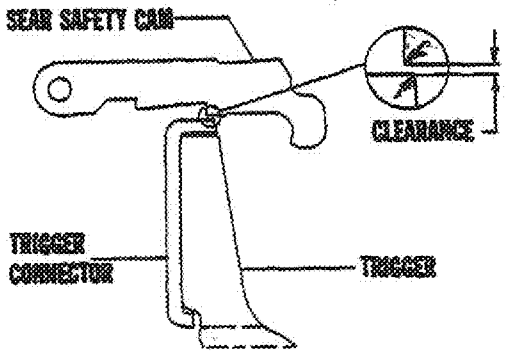
10. Move locating pin lever to position away from operator, push slave pins in flush with housing, remove clamp and take assembly from gage.

CHECK SEAR-CONNECTOR CLEARANCE

1. With safety lever in "null location", insert small blade of screw driver in housing just ahead of trigger. Push connector upward toward sear. CAUTION: Be sure to push on the connector and not on the spacer block.

2. While looking thru the inspection hole on the left side, push downward on the sear, using screwdriver rotate the trigger front to rear. Clearance must be observed between sear and connector. Connector must freely return under sear when trigger is released.

   * Reject for no clearance or if connector catches on sear.



3. Stamp "V" on Trigger left side, just below housing on Trigger Assemblies which have been passed on both tests.

JRS/bdm
Rev. 10-31-78 - GJH:eb

ELEMENTS FOR TRICK TEST IN CHECKING FUNCTION OF SAFETY

1. - COCK RIFLE

2. - MOVE SAFE TO "ON" POSITION -

3. - CHECK FOR ANY BIND -
- Good, Sharp, Single Detent -

4. - PULL TRIGGER -
A. No click or catch in pull
B. Firing pin head must not fall
- RELEASE TRIGGER -
C. Trigger must move to forward position when released

5. - MOVE SAFE TO "OFF" POSITION -
- Firing pin head must not fall -

6. - PULL TRIGGER -
- Firing pin head must fall -

7. - COCK RIFLE -

8. - MOVE SAFE TO "MIDWAY" POINT FROM THE "OFF" POSITION -

9. - PULL TRIGGER WITH SAFE IN "MIDWAY" POSITION, PULL TRIGGER TO THE RIGHT AND UPWARD -
A. No click or catch in pull
B. Trigger must move to forward position when released
C. Firing pin head must not fall

10. - PUSH SAFE TO "OFF" POSITION -
- Firing pin head must not fall -
- Safety must move to "Off" position by itself when pushed from the "Midway" position -
- Safe must have an observable "spring back from the fullest forward and rearward position -

11. - PULL TRIGGER -
- Firing Pin head must fall -

12. - COCK RIFLE AND CLOSE BOLT FIRMLY -
- Firing Pin head must not fall -

ELEMENTS FOR TRICK TEST IN CHECKING FUNCTION OF SAFETY - cont.

13. - REPEAT STEPS 7 THRU 12 AGAIN -

14. - THIS TIME: -
MOVE SAFE TO MIDWAY POSITION
FROM "ON" POSITION
AND REPEAT STEPS 7 THRU 12

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

M/600 . Warehouse Guns

10/30/75

Process - Unpack - Disassemble - Repack - Warehouse Guns

1- Deliver pallets of 5 pack guns to warehouse to unpacking area in Bldg 52-1.

2- Unpack 5 pack, unpack single gun, gun to assembler.

3- Remove stock. Disassemble trigger assembly from action. Assemble two slave pins in trigger housing to hold sear-safety cam. Trigger assembly to bench. Re-assemble gun (stock to action), Tighten one screw in stock. Put sear pins (2) in box. Repack gun in its original box. Retape. Repack in 5 pack container. Retape 5 pack when full. Use one piece of tape for repack. Restock on pallet. Keep proper paperwork with 5 pack. Return 5 packs to warehouse.

4- Deliver trigger assemblies from bench to _____ in lots of 100. Perform the following tests on each trigger assembly:

- Gage sear left - use gage D-42614. (See detail)

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KINZER V. REMINGTON

- Perform screwdriver test. (see details)
- Stamp "V" on left side of trigger - visible in assembled gun.
  (sketch)
- If any other defects visible or rejected in above tests, "reject Trigger assembly".

5- Deliver completed Trigger Assemblies to Custom Repair - Bldg 52-2.

6- Deliver rejects to PE&C assembly Office 51-4

DON'T SAY IT — WRITE IT

To SELF

Date 10-31-78

From J. P. LINDE

SUBJECT: ITEMS TO BE DONE 10-31-78

(1) Take the completed gunsmith instruction folder to Customer Repair and go through it one by one, with the assemblers, as to the process.

(2) Have a meeting and determine just exactly how we want to perform the so-called "trick test". Once the test is determined, and agreed upon, it will be typed up. The following areas will be reinstructed:

XP-100, 40X or Custom Shop, Final Assembly, Gallery, Final Inspection, Production, Quality Audit, Customer Repair, Gunsmiths and Final Inspectors.

(3) Check the guns which are being assembled from the comparator, and all through the tests - on rifles - to make sure that the assemblies are being maintained to the specifications desired.

(4) Check in Purchase Parts to see if the gage used to measure the gage point on safety levers, is still here. If it is, set it up and gage another of parts to see if we can find safety levers with greater lift to be used to correct assemblies with improper lift.

(5) Check with Brad Bosquet and Don Garlock on the drop test fixture for the Audit Room.

(6) Develop a note with the help of Earl Larson's group and Research, to be put in the box that the 600's at the plant have been converted.

JPL:eb

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BARBER - 1.30.13000536

PROCESS RECORDS ASSEMBLY SHEETS

DATES AND REASONS FOR REVISIONS 7/8/83 - New - Was op. 4 in F.A. - RLS - 283007

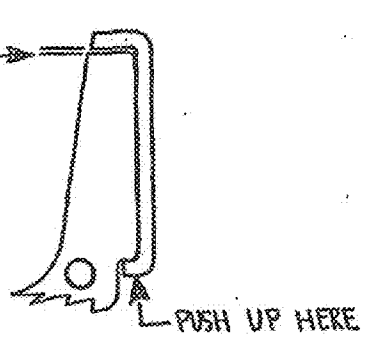
DESCRIPTIVE INFORMATION

2. With the Same Trigger and Connector, Check for Max.Working Clearance.

- Push Connector tight to Trigger at bottom and hold it parallel to sides of Trigger.
- Insert Shim Stock in clearance from front to back
  - .006 Shim Must Not Go.
- If Shim Enters without moving Connector, Scrap Trigger.

EQUIPMENT—TOOLS & GAGES

.006 Shim Stock. Make new shim as required.



OPERATION DESCRIPTION							
Check Connector To Trigger Fit. 100%	OCC. No.						
	STD. HRS/C						
	STD. No.						
	EFF. DATE						
	PART No.	91469					
	GA.						

PART NAME Trigger Assembly COOLANT SET UP TIME MODEL No. Mohawk 600 OPER. No. 20

TYPE MACH. HRS. DEPT. No. 61 PAGE 2 OF 2

MACHINE

R2535853

BARBER - 1.30.13000536

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BARBER - 1.30.13000537

PROCESS RECORDS ASSEMBLY SHEETS

DATES AND REASONS FOR REVISIONS 7/8/83 - New - Was Op. 4 in P.A. - RLS - 283007

DESCRIPTIVE INFORMATION

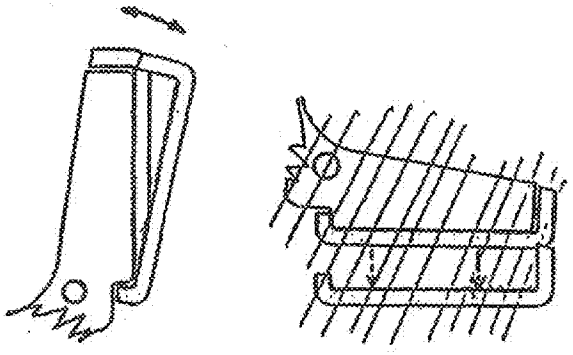
1. Fit passed Connector to passed Trigger and check for Min. working clearance (slip fit).

   * Connector must rotate freely around bottom (short) leg, without binding on top of Trigger.

   ~~W/ Connector most/ FAW/ off Trigger/ when/ Trigger/ is held/ horizontally.~~

   * If Binding occurs, file bottom notch on Trigger to remove bind. Filed surface must be flat and square with sides of Trigger. Use filing fixture only, not freehand.

EQUIPMENT - TOOLS & GAGES



SLIP FIT MIN.

Filing Fixture - D-44521

OPERATION DESCRIPTION	OCC. No.						
Check Connector to Trigger Fit. 100%	STD. HRS/C						
	STD. No.						
	EFF. DATE						
	PART No.	91469					
	GA.						

PART NAME Trigger Assembly COOLANT SET UP TIME MODEL No. Mohawk 600 OPER. No. 20

TYPE MACH. HRS DEPT. No. 61 PAGE 1 OF 2

MACHINE

Form R. D. 6464

R2535862

BARBER - 1.30.13000537

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BARBER - 1.30.13000538

PROCESS RECORDS ASSEMBLY SHEETS

DATES AND REASONS FOR REVISIONS 7/8/83 - New - Was op. 3.3 in F.A. - RLS - 783002

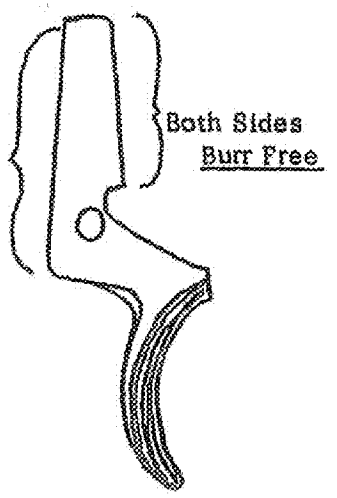
DESCRIPTIVE INFORMATION

1. Inspect Trigger.

   Trigger Must Have:

   - Good Black Color
   - No Bleed Out (White Material on Surface)
   - No Burrs on Sides
   - No cracks or damage @ pivot hole.

EQUIPMENT - TOOLS & GAGES



OPERATION DESCRIPTION								
Inspect Trigger.	OCC. No.							
	STD. HRS/C							
	STD. No.							
	EFF. DATE							
	PART No.	91469						
	GA.							

PART NAME Trigger Assembly COOLANT SET UP TIME MODEL No. Mohawk 600 OPER. No. 15

TYPE MACH. HRS DEPT. No. 61 PAGE 1 OF 1

MACHINE

R2535851

BARBER - 1.30.13000538

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BARBER - 1.30.13000539

DATES AND REASONS FOR REVISIONS 7/8/83 - New - Was op. 3.1 in F.A. - RLS - 283007

DESCRIPTIVE INFORMATION

Fig. #1
Good

Fig. #2
Test Light Gap
With Shim

Fig. #3
Reject

Figure #4

PART NAME Trigger Assembly COOLANT SET UP TIME MODEL No. Mohawk 600 OPER. No. 10
TYPE MACH. HRS. DEPT. No. 61 PAGE 4 OF 4
MACHINE

Form H. D. 6466

R2533850

BARBER - 1.30.13000539

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
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BARBER - 1.30.13000540

PROCESS RECORD ASSEMBLY SHEETS

DATES AND REASONS FOR REVISIONS ~~11/30/76 - NEW - WW 892418~~

6-16-83 NEW - Was Op 6.5 In EA. - EC

DESCRIPTIVE INFORMATION

7. (CONTINUED).

- If Null Location is passed (too far toward "ON SAFE") then return to "OFF SAFE" Position and approach Null Location from "OFF SAFE" side again.

8. With the Safety Lever in the forward most Null Location, lightly pull on Shim with thumb and finger.

- If Shim binds or hangs up between Sear and Connector, then REJECT TRIGGER ASSEMBLY. END OF TEST.

EQUIPMENT - TOOLS & GAGES

Figure 1

Connector Under Sear

Connector Trapped Forward of Sear

OPERATION DESCRIPTION								
Retest for Sufficient Sear Connector clearance with Shim.	OCC. No.							
	STD. HRS/C							
	STD. No.							
	EFF. DATE							
	PART No.							
	OA.							6.5

PART NAME ~~Trigger Final~~ Assembly COOLANT SET UP TIME MODEL No. Mohawk 600 OPER. No. 6.5

TYPE MACH. HRS DEPT. No. 61 PAGE 5 OF 8

MACHINE

R2535836

BARBER - 1.30.13000540

BARBER - 1.30.13000541

DATES AND REASONS FOR REVISIONS ~~11-10-82 — NEW — WAS 837418~~

6-15-83 New - Was Op ~~14~~ 12 - 17 E.A. - RLS

DESCRIPTIVE INFORMATION

FLOW CHART - TRIGGER ASSEMBLY TEST SEQUENCE

55 TO 70

PART NAME Trigger Assembly COOLANT SET UP TIME MODEL No. Mohawk 600 OPER. No. ~~11~~ TO 17

TYPE MACH. HRS. DEPT. No. 61 PAGE 1 OF 1

MACHINE

Form R. D. 6465

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R2535818

BARBER - 1.30.13000541

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BARBER - 1.30.13000542

PROCESS RECORDS ASSEMBLY SHEETS

DATES AND REASONS FOR REVISIONS 11/3/80-Revised for MRP-RLJ-279453
12/17/80 - Was Op. #150 - RIS - 279887

DESCRIPTIVE INFORMATION

1. Inspect Trigger Housing:
   - Black color
   - No bleedout (White Material).
   - Check inside Housing - No burrs at holes.
   - Clean and free of excess oil and foreign material
2. Position Trigger in Housing and install Trigger Pin:
   - Pin Must be flush to housing on right side (Flush to housing on left side for left hand assembly).
   - Grip Trigger and rotate housing around Trigger Pin. Trigger must rotate freely in housing without bind.

EQUIPMENT—TOOLS & GAGES

Pin Holder Drive Punch
A - 35645

OPERATION DESCRIPTION							
	DCC. No.						
	STD. HRS/C						
	STD. No.						
	EFF. DATE						
Assemble Trigger Assembly - Stage Two							
	PART No.	26345	32695				
	GA.						

PART NAME Trigger Assembly COOLANT SET UP TIME MODEL No. 700 OPER. No. 154
TYPE MACH. HRS. DEPT. No. 61 PAGE 2 OF 4
MACHINE

Patent R. D. 6465

R2535636

BARBER - 1.30.13000542

DATES AND REASONS FOR REVISIONS 11/3/00-Revised For MMP-MLF-279453
12/17/00 - Was Op. #150 - RLS - 279807
DESCRIPTIVE INFORMATION
Disconnector Spring - #117847
Trigger Stop Screw - #15488
(Long Dog Point Screw)
Trigger Adjusting Screw - #17853
(Short Dog Point Screw)
NOTE: For Australian use only:
Substitute Trigger Screw Front,
#911187 followed by Trigger Screw
Lock Screw Front, #91127.
Trigger Spring - #15489
Trigger Connector - #19461
Trigger - #152BB
Trigger Pin #24477
Trigger Engagement Screw
#91124
(has a radius on end of screw)
NOTE: For Australian use only:
Substitute Trigger Engagement Screw, #911171
followed by Trigger Engagement Screw Lock
Screw, #91127
NOTE: For Left Hand Version,
substitute:
• Trigger Housing Assembly
#32565
Trigger Assembly
COOLANT
SET UP
MODEL No. 700
OPER. No. 154
DEPT. No. 61
PAGE 1 OF 1
MACH. INS.
MACHINE

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DATES AND REASONS FOR REVISIONS 4/23/79 - Revised - WAW - 277804
9/29/80 - Update - MBP - RLJ - 279162

DESCRIPTIVE INFORMATION

IV. Barrel Stamp Markings

Must be present, clear, distinct and visible above Stock.

Type	Location	Example
* Magnaflux mark	Right side, rear	▶
* Proof	Right side, near Barrel Bracket, above centerline of Barrel	REP
* Test and Target	Just forward of Proof Stamp	X
* Assembler	Left side, forward of Receiver, above centerline of Barrel	2

V. Bolt Markings

Must be present, clear and distinct.

Type	Location
* Bolt head pull test - Prick Punch	Right side Lug
* Proof mark - Prick Punch	Bottom of Bolt Handle
* Bolt Handle braze test - Prick Punch	Rear of Bolt Handle
* Magnaflux Bolt Assembly Inspection - Prick Punch	Left side Lug
* Serial Number, must match Receiver, Last 4 digits	Bottom rear of Bolt body

PART NAME Final Pistol Assembly COOLANT SET UP TIME MODEL No. XP-100 OPER. No 630
TYPE Final Inspection MACH. HRS. MACHINE DEPT. No. 13 PAGE 3 OF 14

Form R 11 2/68

R2535575

BARBER - 1.30.13000544

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BARBER - 1.30.13000545

DATES AND REASONS FOR REVISIONS 4/23/79 - Revised - WAW - 277804
9/29/80 - Update - MRP - RLJ - 279162

DESCRIPTIVE INFORMATION

I. Ammunition Inspection

Inspect Gun for live ammunition:

- Chamber must be empty and there must be no live ammunition present.

II. Receiver Roll Markings

Must be present, clear, distinct and visible above Stock.

Type	Location
* Remington - In Script	Left side, center.
* Model XP-100	Left side, below "Remington".
* Serial Number and alphabetic prefix	Left side, forward of above items.

III. Barrel Roll Markings

Must be present, clear, distinct and visible above side of Stock.

Type	Location
* Remington Arms Co., Inc. Ilion, New York Made in U.S.A.	Left side
* .221 Rem. Fireball	Left side, rear of above item.
* Des. 201, 366	Right side, toward rear.
* Pat. 3,255,545	Right side, below above item.

PART NAME Final Pistol Assembly COOLANT SET UP TIME MODEL No. XP-100 OPER. No 630
TYPE Final Inspection MACH. HRS. DEPT. No 15 PAGE 2 OF 14
MACHINE

Form R. D. 0269

R2535574

BARBER - 1.30.13000545

PROCESS RECORD, ASSEMBLY SHEETS

DATES AND REASONS FOR REVISIONS 3/13/79 - Revised - WAW - 27724
9/29/80 - Update - MRP - RLJ - 27916Z

DESCRIPTIVE INFORMATION

23. Lubricate cam surface of Safety A ssembly:

* Only a small amount of lubricant is required.

EQUIPMENT -- TOOLS & GAGES

Moly Kote Type "CN" Paste

OPERATION DESCRIPTION	OCC. No.									
	STD. HRS/C									
Pistol Assembly	STD. No.									
	EFF. DATE									
	PART No.									
	QA.									

PART NAME Pistol Pistol Assembly COOLANT SET UP TIME MODEL No. XP-100 OPER. No. 575

MACH. HRS DEPT. No. 15 PAGE 13 OF 37

MACHINE

DATES AND REASONS FOR REVISIONS 9/29/00-NEW-MRP-JAA-279130

DESCRIPTIVE INFORMATION

PART NAME Sear Housing Assembly COOLANT SET UP TIME MODEL NO XP-100 OPER NO 55

TYPE MACH. HRS DEPT. NO 15 PAGE 10 OF 12

MACHINE

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BARBER - 1.30.130000548

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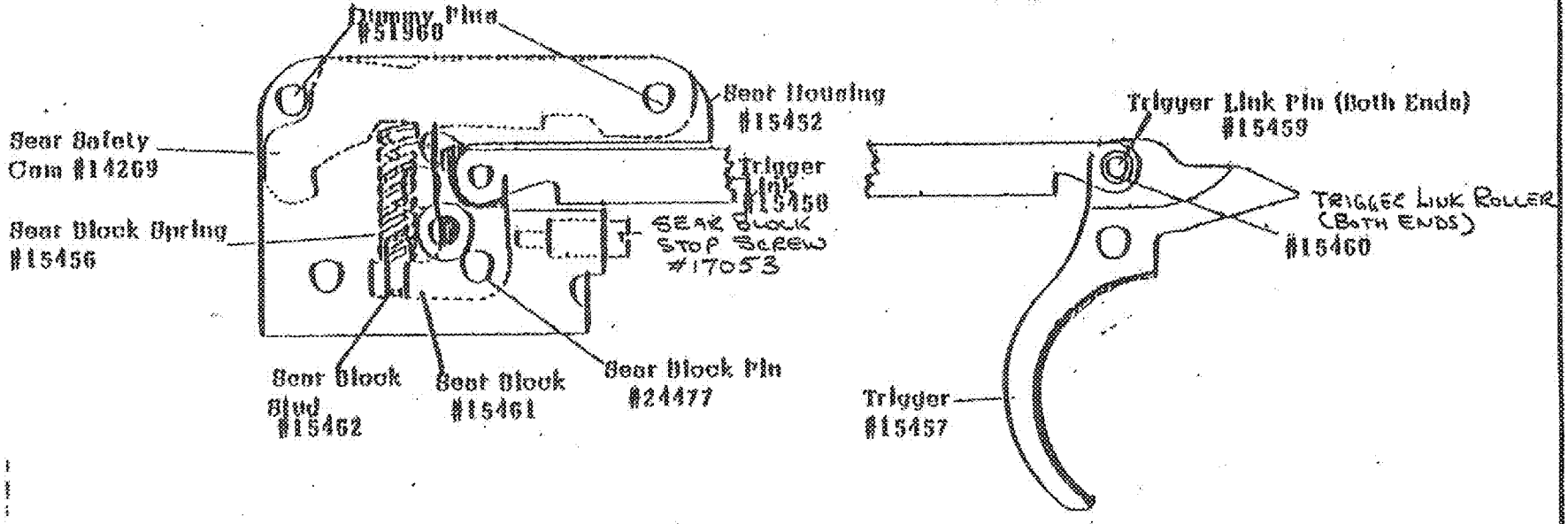
BARBER - 1.30.130000549

DATES AND REASONS FOR REVISIONS

6/9/80 New J.O.G.

DESCRIPTIVE INFORMATION

GEAR HOUSING ASSEMBLY



PART NAME Gear Housing Assembly COOLANT SET UP TIME MODEL No. XP-100 OPER. No 55

TYPE MACH. HRS DEPT. No. 15 PAGE 1 OF 12

MACHINE

R2535454

BARBER - 1.30.130000549

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BARBER - 1.30.13000550

PROCESS RECORDS

DATES AND REASONS FOR REVISIONS

6/5/80 New Op. No.

TOOLS, GAGES AND EQUIPMENT		GA. OR CAL.
SPEED	FEED	
		Sear Block R.#15461
		Sear Block Stud R.#15462

APPROVAL AND DATES

1. Visually Inspect Sear Block
   - All holes must be free of residue. Clean with paper clip wire if necessary.
   - Sear safety cam contact surface must be:
     - Smooth
     - Burr-free
     - Rear edge must be sharp

   Check for burrs and smoothness with fingertip.

2. Start Sear block stud into Sear Block hole and position into fixture.

3. Pull handle on press to firmly seat Sear Block stud shoulder on Sear Block.
   - Sear Block Stud must be tight to Sear Block.

OPERATION DESCRIPTION	PART NO.	26845
Assemble Sear Block Assembly		

PART NAME Sear Block Assembly COOLANT ____ SET UP ____ MODEL No. XP-100 OPER. No. 55

TYPE ____ MACHINE ____ DEPT. No. 15 PAGE 1 OF 1

R2835448

BARBER - 1.30.13000550

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DATES AND REASONS FOR REVISIONS

5/22/69 Jg.

DESCRIPTIVE INFORMATION

H 2 Greenerd Press
C-86199 Fixture
C-86199-A Ram

PART NAME Sear Block Assembly COOLANT SET UP TIME MODEL No. XP-100 OPER. No 55

TYPE MACH. HRS. DEPT. No. 15 PAGE 1 OF 1

MACHINE

Form R. D. 8466

BARBER - 1.30.13000551

11/26/78

1. XP-100 Complete pistols that have not been counted.
   A. Initiate test - .002 clearance in null position for safety check.

2. Count remainder of M 1000 rifles in warehouse.

3. Take two assemblies which failed screw driver test out to jig and show checker - have them recheck (the assemblies).

4. Institute new gage on job
   A. Review prior record
   B. Check sample for proper function and ~~safe~~ verification

5. Check all prior records for safety checks.

6. Review final inspection and assembly; caution repair for trick test.

7. Are they following the correct conversion procedure in customer repairs on M 1000 rifles

G-66

DON'T SAY IT — WRITE IT

To J. P. LINDE

Date December 12, 1978

From R. L. HALL

Pull together for H. K. Boyle:

1. All dwgs. for M/700 Fire Control.
2. All Process Records referring to M/700 fire control mfg., assem., and testing, incl. operations where Trick Test is used.
3. Best information available on rejects for "Trick Test" at final inspection for current production - by questioning final inspectors if necessary. (M/700)

RLH:ah

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R. L. H.
12/12/78

1. M 1700
Ask final inspector if in their memory if they have ever rejected any M 1700's for the trick test
[If they rejected did they reject at final, Level or Third Insp.

Lee H. Bowles

G-84

DON'T SAY IT — WRITE IT

11,500 to sale

To G. J. HILL

Date 12-11-78

From J. P. LINDE

SUBJECT: PROCESS RECORDS OF MODELS 721 and 722

10

The question keeps coming up on what were the safety checks on the 721 and 722.

Please see what we are going to have to do to get the Process Records from microfilm to see just exactly the checks we performed on these models.

Thank you.

JPL:eb

NOTE: We could check with the Process Engineers and/or Research people who were associated with this model and see if might have some copies of the process record in their files. Thank you.

- microfilmed records initially in 1955
- attached is a photo of P/R in 1958 -
I plan to get a record from 2 later microfilming to see if any changes made

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BARBER - 1.30.130000556

file m/600 trigger assembly 6-12-79 P. 1 OF 5
copy of file m 700

M600 & 700 TRIGGER ASSEMBLY IMPROVEMENTS

I. RESTORE COMMONALITY.

A. PARTS. SEAR SAFETY CAMS

1. .005" DIFFERENCE IN TAIL HEIGHT
2. .029" " " PIN CLEARANCE

B. DIMENSIONS. ESTABLISH COMMON SAFETY CAM LIFT. MUST BE DECIDED FROM & CONSISTENT WITH MODEL DRAWINGS.

C. SPECIFICATIONS.

1. SEAR LIFT.

a. REVISE ON M600 TRIGGER ASS'Y DRAWING TO ELIMINATE THEORETICAL GEOMETRIC POSSIBILITY OF TRAPPING CONNECTOR FORWARD OF SEAR.

b. ADD ABOVE TO M700 TRIGGER ASS'Y DRAWING.

2. "SCREWDRIVER" TEST SIGNIFICANCE. THIS IS CURRENTLY PART OF M700 FINAL INSPECTION PROCESS. IT IS NOT BEING DONE.

a. DIMENSIONAL IMPLICATIONS AND/OR

b. FUNCTIONAL IMPLICATIONS

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R2542999
BARBER - 1.30.130000556

6-12-79

M600 & 700 TRIGGER ASSEMBLY IMPROVEMENTS

II. ADJUSTMENTS. DEFINE PICTORIALLY/GEOMETRICALLY, THE CORRECT AMOUNT (AND RANGE) OF TRIGGER OVERTRAVEL, M600 & 700, FOR COMPARATOR SETTING.

III. SAFETY ASSEMBLY

A. INCOMING PART INSPECTION OF SAFETY. ADD VIEWING HOLE TO M700, THIS WOULD ALLOW OPTICAL COMPARATOR PROJECTION INSPECTION OF SAFETY CAM GEOMETRY (SIMILAR TO M600).

B. SAFETY BUTTON CLEARANCE

1. HOLE TO CLEAR BOLT PLUG

2. HOLE TO CLEAR STOCK

C. DEFINE: BEYOND-DETENT POSITION STROKE REQUIREMENTS (IF ANY) IN ASSEMBLED GUN.

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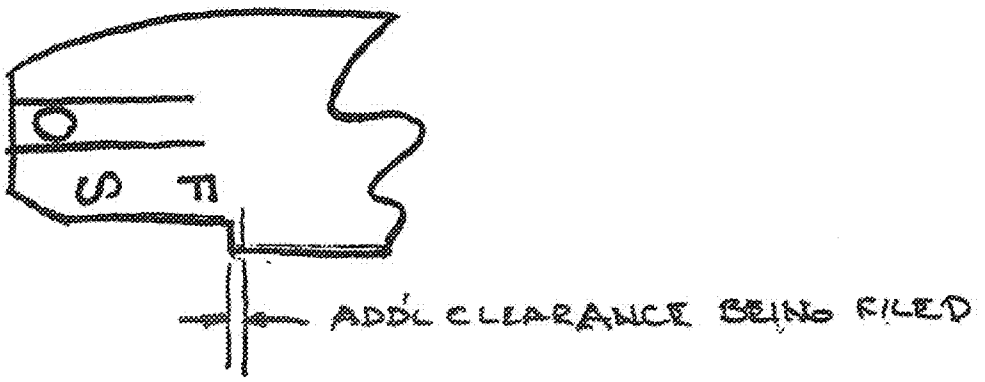
BARBER - 1.30.130000557

6-12-79

M600 & 700 TRIGGER ASSEMBLY IMPROVEMENTS

II. C. 1. IF MOTION FORWARD OF "F" DETENT POSITION IS REQUIRED, THEN INVESTIGATE ADDITIONAL RECEIVER CLEARANCE. ASSEMBLERS ARE OFTEN NOW FILING RECEIVER TO PROVIDE THIS.



2. IF MOTION REARWARD OF "S" DETENT POSITION IS REQUIRED, THEN INVESTIGATE PRESENT INTERFERENCE(S). THIS IS NOW DIFFICULT TO ATTAIN.

IV. STOCK-RECEIVER RELATIONSHIP

A. SEAR PIN, SHOULDER PIN TO ELIMINATE RIGHT END MOVING UPWARD. LEFT END DRIVEN SLIGHTLY BELOW FLUSH WITH BOLT STOP SLOT TO ELIMINATE POSSIBILITY OF BINDING BOLT STOP.

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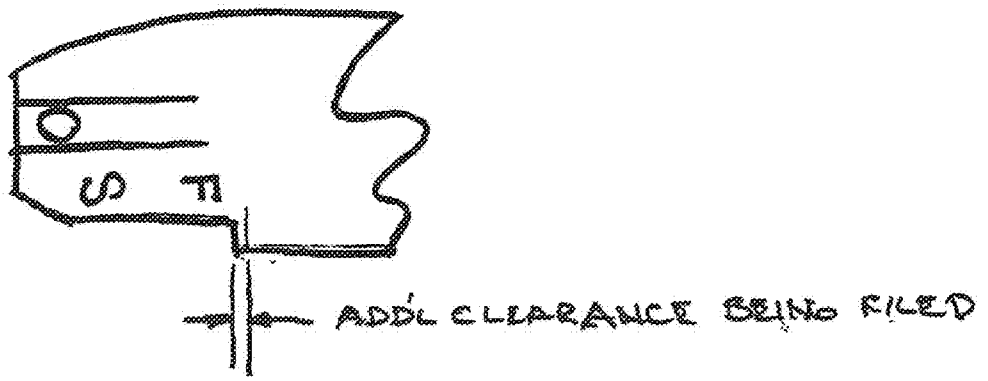
BARBER - 1.30.130000558

6-12-79

M600 & 700 TRIGGER ASSEMBLY IMPROVEMENTS

II. C. 1. IF MOTION FORWARD OF "F" DETENT POSITION IS REQUIRED, THEN INVESTIGATE ADDITIONAL RECEIVER CLEARANCE. ASSEMBLERS ARE OFTEN NOW FILING RECEIVER TO PROVIDE THIS.



2. IF MOTION REARWARD OF "S" DETENT POSITION IS REQUIRED, THEN INVESTIGATE PRESENT INTERFERENCE(S). THIS IS NOW DIFFICULT TO ATTAIN.

IV. STOCK-RECEIVER RELATIONSHIP

A. SEAR PIN, SHORTEN PIN TO ELIMINATE RIGHT END FITTING WORK. LEFT END DRIVEN SLIGHTLY BELOW FLUSH WITH BOLT STOP SLOT TO ELIMINATE POSSIBILITY OF BINDING BOLT STOP.

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BARBER - 1.30.130000559

W. A. WARREN, JR
6-12-79
P. 4 OF 5

M600 & 700 TRIGGER ASSEMBLY IMPROVEMENTS

V. B. ELIMINATE LEFT REAR SIDE RECEIVER PLUG SCREW - WOOD INTERFERENCE.

V. LUBRICATION. "MOLYKOTE TYPE GN" PASTE IS PROPOSED FOR BOLT PLUG THREAD AND COCKING CAM LUBRICATION ON PRODUCTION. IT WOULD REPLACE PRESENT MoS_2 POWDER. MOLYKOTE SPECIFIES LOWER TEMPERATURE LIMIT OF 0° F. R&D HAS BEEN ASKED TO TEST (AND SUPPLIED WITH MAT'L) FOR ANY ADVERSE EFFECTS @ -20° F (STAB AND DOWN, ETC.)

VI AUSTRALIAN GUNS. THESE ARE SUBJECTED TO UNUSUAL "SAFETY TESTS" @ CUSTOMS.

A. PROVIDE PARTS LISTS FOR ALL AUSTRALIAN MODEL VARIATIONS; RIMFIRE, CENTERFIRE; SPORTING & TARGET.

AND/OR

B. DEFINE ALL CUSTOMS TESTS SO WE MAY DUPLICATE @ ILION

AND/OR

C. PROVIDE MODIFIED SPECIFICATIONS TO MEET CUSTOMS REQUIREMENTS.

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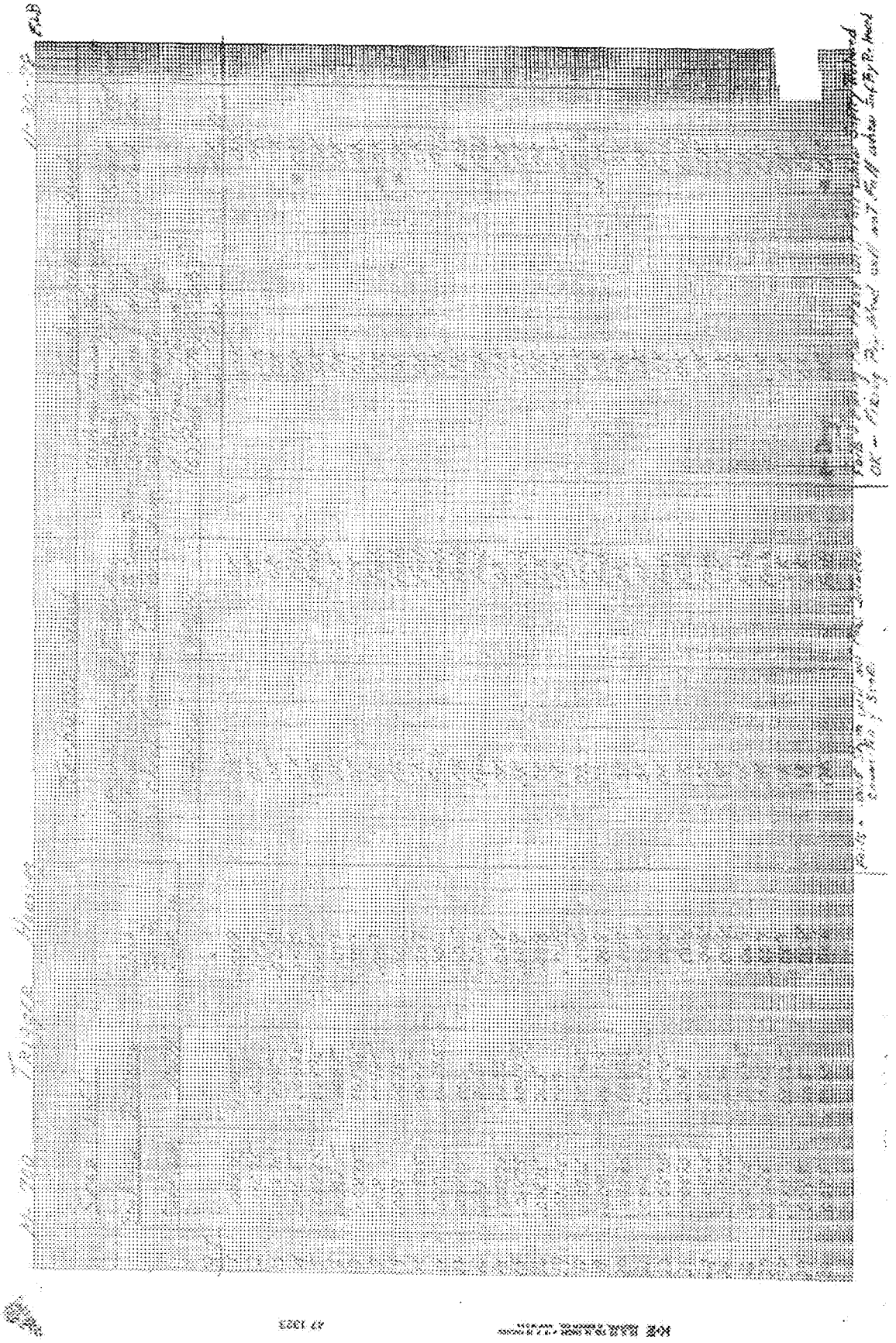
W. A. WARREN, JR.
6-14-79
P 5 OF 5

M600 & 700 TRIGGER ASSEMBLY IMPROVEMENTS

VII MISCELLANEOUS

A. SAFETY SNAP WASHER - SAFETY DETENT SPRING RADIAL RELATIONSHIP. S.S.W. HAS BEEN OBSERVED TO ROTATE IN USE WITHIN OPENING AS PERMITTED BY SINGLE DIMPLE ON S.D.S. IF CLOSER RELATIONSHIP IS NEEDED, S.D.S. SHOULD HAVE SECOND DIMPLE.



SG-68-6

XC: File

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ftl m/600

November 29, 1978

J. P. LINDE

REVIEW OF M/700 RIFLES RETURNED TO ARMS SERVICE

A total of six hundred and sixty nine M/700's were checked for firing pin falls when safety was released. Of the 176 that were manufactured prior to January 1, 1975, there were three firing pin falls when the safety lever was released, one of which was by cocking (mull position). The causes of the three as follows: (1) Trigger adjusting screws tampered with so there was no tension on trigger (2) Trigger connector had excessive clearance with trigger and (3) Safety lever was binding on Stock.

Of the four hundred and ninety three that were manufactured after January 1, 1975, there were four firing pin falls when safety lever was released. The causes of the four are as follows: (1) trigger adjusting screw tampered with and connector broken at clearance hole (2) Trigger not retracting with safety lever on. Screws had been tampered with and trigger assembly dirty (3) Connector warped, excessive clearance between trigger and connector and (4) Trigger adjusting screws tampered with, trigger connector broken at clearance hole possibly caused by pierced primers.

by

J. J. Burns, Supervisor
Quality Control and
Product Testing

JJB/bdm

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

DON'T SAY IT — WRITE IT

To E. HOOTON, JR. Date November 17, 1978

From R. L. HALL

LATEST COUNTS ON TRICK TESTS

	Total	Failed Test No.	Failed Test %
M/600 Wholesaler's guns returned from Texas in 1975	615	342	56%
M/700 Returns to Arms Service 6/13/78 to 11/16/78	625	6	1%
XP-100 In Ilion Warehouse-Nov. 1978 (Warehouse has been cleared)	243	1	0.4%

RLH:ah

SAFETY IS A WISE INVESTMENT

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

25,00C

50.00
5.00

25,000.00 JAN 29

AS OF JAN 31,

MUGGER ASSY'S ISSUED TO DATE

STATUS OF ASSYS ON HAND

YELLOW PAGES ON OTHER MODELS

INVOICES

ALLEGED SAFETY PROBLEMS

SEPT. 78

700'S TO DATE

	XP100 M/66	700	721	742 600	40X	552	IMPROVED BOLT 200
SEPT 19, 78	1	2 2		2		2	1
" 26		8		3			
OCT 10		5	1				
OCT 12		1		4	1		
JAN 26		9		5			
26		1		1			
26							
JAN	1	2 9/30	1/2	3/3	4/19	1	2 1

APPROX. 40 MILE TO REVIEW

PRIMARY CAUSES (COULD NOT DUPLICATE) 90% - SEAR ENGAGE

1. UNAUTHORIZED IMPROPER ADJUSTMENTS TRIGGER PULL.
2. DIRT, CRUD OIL OVER OILING & NEGLECT SLUDGE
1. BWN. HAMPERED WITH

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

(APPENDIX X)

4/9/75

UNPACK

Pull staples and open packing case.
Record Dealer and Wholesaler on form.
Record Serial Numbers on form.
Cut Seal.
Open box, on Safety Bench, remove Rifle (INSPECT FOR LIVE AMMO.)
Unpack Bolt, Assemble to Rifle, Rifle to Truck. Empty box returned to Case.
Number case and truck section with same no.
Verify Serial Nos. of guns - match serial nos. on cases.

INSPECT

Pick Rifle, inspect for live ammo. Close and lock Bolt.
(Pull Safety back to "ON" position.
Worse (Pull Trigger, No Click, Trigger retracts.
Test (Push Safety foreward to "OFF" position.
(Firing Pin remains cocked.
Try 3 times.

1. In addition to passing Worse and Trick Test, .008 shim must go freely between Sear and Trigger when Safety is on.

(Pull Safety back to "ON" position.
(Push Safety halfway off, pull Trigger.
Trick (Firing Pin remains cocked, no click, Trigger retracts.
Test (Push Safety lightly, must spring foreward to full "OFF" position, Firing Pin
(remains cocked.
Try 3 times

1. In addition to passing Worse and Trick Test, .008 shim must go freely between Sear & Trigger when Safety is on.

If Rifle fails either test:
Remove Stock, replace Safety with a swaged one, reassemble Safety with a new Safety Pivot Pin and snap washer making certain that snap washer <u>is</u> and <u>stays</u> engaged on both sides.

Repeat both tests - Return passed Rifle to truck and fill out record form.
Rejected Rifle, replace entire Trigger Housing assembly to pass tests.

After the gun has been repaired, or when both tests have been tried and passed, the tester will stamp his mark adjacent to the Final Inspection stamp.

JWD
Rev. 1 4/28/75

RD-88 REV. 6-56

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

cc: J.G. Williams
W.J. Thresher, Sr.
E.G. Larson

Bridgeport, Connecticut
October 3, 1979

E.F. BARRETT

MODEL 600 RECALL STATUS

Attached per your request is Red Sherman's recent report on our recall status. Please note the following pertinent statistics:

- Total repairs to date approximate 21,000 units.
- Our estimate of the total to be repaired is 23,000 units which is 12% of the 191,424 guns sold subject to recall.
- Total inventory of fire controls approximates 3000 which is adequate to cover our projected needs. Red Sherman is contacting the gun repair stations to develop a plan for effective utilization of this inventory.

In reference to our conversation on the FFL mailings, I checked with Al Bell who said our total mailing amounted to approximately 140M and was completed on 9/7/79.

Shown below is a summary of activity from our Atlanta phone system.

Incoming Calls		
Ave. Per Day	Total Number	
31	22,171	Through 4/30/79
18	556	May
11	324	June
7	230	July
6	195	August
20*	594	September
28	24,070	Through 9/30/79

*Increased activity attributed to the approach of the hunting seasons and our FFL mailing.

If you need any additional information, please let me know.

J.E. Preiser

JEP:jl
Attach.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-69 REV 5-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

cc: J. E. Preiser

cc: Bill Thrasher, Sr.

Bill, we should start seeing fire controls showing up in Illion. Please alert pc to ensure proper accounting

Bridgeport, Connecticut
October 3, 1979

TO: R. G. SHERMAN

FROM: E. G. LARSON

600 RECALL

Please refer to your September 21st status report.

This recall appears to be winding down and my best estimate of total number of guns that will be returned for repair is 23,000. This takes into consideration guns that will be returned in response to the ATF mailing.

Based on above, will you please initiate the action you proposed on page 2 in reference to a tally on fire controls in the field.

I believe the 3 items listed will fill our needs and I suggest that we do it on the WATS phones set up for the recall. This is not a crash program and perhaps Carl Beck's group, J. H. Chisnall and J. A. Stekl can assist.

Prepare a master sheet that will allow you to enter the shop's name and address, number of fire controls on hand, number of rifles on hand and estimate of next 3 month's repairs.

Each person can use one of these sheets and jot the information down during the call.

When completed the list should be tallied and those stations having surplus fire controls should be asked, by letter, to return and a tally kept on the returns.

If any questions, please call.

E. G. L.

RECEIVED
OCT 4 1979
J. E. PREISER

EGL/kw

Rm-68 REV. 6-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

November 9, 1978

To: J. P. McAndrews

From: E. G. Larson

Subject: Recall Status - November 9, 1978

1. Number of calls received at Atlanta from October 25 through November 7, 1978, totals 6,727. Daily breakdown attached.

2. Number of trigger assemblies shipped through November 8 - 3,405.

3. Forecast daily supply of trigger assemblies through December 31 is 400-500 for a total of 16,000.

4. Number of calls received at Atlanta and Bridgeport on other models through November 7:

	Atlanta	Bridgeport	Total
Model 700	97	25	122
788	15		
760	10		
742	6		
870	6		
Nylon 66	1		
1100	1		
721 (bolt)	2		

5. Estimate of number of firearms that will be returned for repair through December 31 - 8-10M.

Gunsmiths indicate that many calls have been received in which the owner, when advised gun could not be repaired immediately, decided on his own to wait until after the current season. If true, the December receipts might run higher than average.

6. Number of participating gunsmiths:

168 Domestic
3 Alaska
4 Hawaii

E. G. Larson

EGL:lb
Attach.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-49 REV. 8-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

cc: R. G. Sherman
E. F. Sienkiewicz
J. E. Preiser

November 30, 1978

To: J. P. McAndrews

From: E. G. Larson

Subject: Recall Status
November 30, 1978

File

1. Number of calls received at Atlanta from October 25 through November 26, totals 9,219. Daily breakdowns are attached.

2. Number of trigger assemblies shipped through November 29 - 6,271.

3. Forecasted daily supply of trigger assemblies through December 31 is 400-500, for a total of 10,000.

4. Number of calls received at Atlanta and Bridgeport on other models, through November 29:

	Atlanta	Bridgeport	Total
Model 700	146	25	171
788	21		21
760	12		12
742	9		9
870	9		9
Nylon 66	1		1
1100	5		5
721	6		6

5. Estimate of number of firearms that will be returned for repair through December 31 is 8,000. The 8,000 is based on number of trigger assemblies shipped to date, gunsmith request for additional assemblies, and invoices received. The gunsmiths report that owners have contacted them, but will not return guns until after the hunting season.

   We expect another rise in calls and repairs in January when ads in major publications appear.

   I am building a small surplus of trigger assemblies for this, and once we reach 5,000, we will reduce daily production.

6. Number of participating gunsmiths: 166 domestic; 3 in Alaska; and 4 in Hawaii. We have also instructed Canadian gunsmiths, and have shipped them trigger assemblies.

7. Surplus trigger units at Ilion, as of November 29, are 3,156.

EGL

E. G. Larson

EGL:lb
Attach.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

bcc: E. F. Sienkiewicz/J.R.Stekl
R. G. Sherman
J. E. Preiser

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

February 20, 1979

To: J. P. McAndrews

From: E. G. Larson

Subject: Recall Status - January 28, 1978

1. Number of calls received at Atlanta from October 25, 1978 through January 28, 1979, were 19,843 (copy attached).

2. Number of trigger assemblies shipped to date - 15,708.

3. Forecasted daily supply of trigger assemblies - we have 6,629 on hand, and I have asked that we hold at 5,000 to cover dealer mailing of recall notice. Ilion given approval to reassemble guns in warehouse that were scavenged.

4. Other models returned - each customer calling relative to another model is requested to return the gun directly to Ilion for a complete check.

   To date, we have received and checked the following:

Model	700	30
	721	2
	722	3
	40X	1
	552	2
Nylon	66	2
Model	3200	1

   An additional 40 model 700's have been received, and are in process.

   Of the 30 Model 700's checked to date, Ilion reports the majority are within specification. Several showed improper screw adjustments, and the remainder hardened grease or sludge in the trigger assembly. For this reason, I have asked for a cold test check as received to gain information on cold temperature and lubricants.

5. Number of invoices paid through February 11, 1979 - 9,271. Average cost per repair - $7.92.

E. G. Larson

EGL:lb

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

c: E.G. Larson
R.G. Sherman
J.E. Preiser
E.B. Beattie

RD-69 REV. 6-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

Bridgeport, Connecticut
January 9, 1979

cc: JGW sent 1-12-79

TO: J.P. McANDREWS

FROM: N.S. OLENIK

SUBJECT: INQUIRIES - OTHER THAN RECALLED MODELS

The following tabulates phone calls received through year end for firearms models not under recall.

Model	Atlanta	Bridgeport	Total
700	171	40	211
788	26	1	27
760	14		14
742	10		10
870	13		13
1100	9	1	10
all other	16		16
	259	42	301

N. S. OLENIK

NSO:b

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Year	SHIPMENTS M/700 Rifles w/Bolt Lock	M/700 Rifles w/out Bolt Lock	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1962	42,799		1	
1963	41,087			
1964	37,661		1	
1965	53,789		1	
1966	58,031		2	
1967	65,082		2	
1968	69,813		8	
1969	80,209		7	
1970	89,651		9	1
1971	93,176		16	1
1972	84,178		16	1
1973	94,483		13	1
1974	107,146		22	1
1975	103,322		15	
1976	109,807		40	4
1977	124,560		32	

1978	132,600		19	
1979	139,768		15	1
1980	110,608		18	
1981	94,374		17	1
1982	12,833		1	
1982		64,165	5	1
1983		92,057	11	
1984		94,111	10	3
1985		85,576	16	1
1986		76,262	20	
1987		77,377	17	
1988		103,501	9	1
1989		132,696	7	
1990		96,746	3	2
1991		75,000	1	2

Year	SHIPMENTS All M/7 Rifles without Bolt Lock Feature	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1981			
1982	61		
1983	14,539	1	
1984	15,893	1	
1985	6,920		
1986	3,943	1	
1987	4,229		
1988	6,799	1	
1989	7,847		
1990	7,559	1	
1991	5,135		

Year	SHIPMENTS M/788 Rifles w/Bolt Lock	SHIPMENTS M/788 Rifles w/out Bolt Lock	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1966	40			
1967	25,859			
1968	19,974			
1969	23,623		1	1
1970	29,098			
1971	31,318			
1972	31,472			
1973	36,828			
1974	17,050			
1974		23,870		
1975		40,267		
1976		42,630		
1977		49,019		
1978		41,652	3	
1979		32,513		
1980		38,038		

1981	42,978
1982	23,650
1983	15,183
1984	8,939
1985	84
1986	1

Year	SHIPMENTS All M/600 Series Rifles with Bolt Lock Feature	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1963	100		
1964	25,279		
1965	24,851	4	1
1966	22,307	1	
1967	19,148	4	
1968	26,861	4	2
1969	14,196	1	
1970	7,696		
1971	8,972	1	
1972	5,154	1	
1973	8,739	2	
1974	12,110		
1975	13,120	2	
1976	13,318	2	
1977	17,631	2	
1978	17,387	2	

1979	5,340
1980	6

Year	SHIPMENTS All M/721 & M722 Rifles with Bolt Lock Feature	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1948			
1949			
1950		1	
1951			
1952			
1953		1	
1954			
1955	13,502		
1956	10,522		
1957	6,242		
1958	5,231		
1959	4,485		
1960	4,566		
1961	3,733		
1962	595		
1963			

TRIGGER ASSEMBLY REPLACEMENT PROGRAM 10 25 07
PINHEAD STATUS AS OF 12/16/91

TY	DESCRIPTION	GUNS SHIPPED	FIRST LOCATION CONFIRMED	LOCATED CURRENT OWNER	GUNS REPAIRED	OTHER	PERCENT LOCATED	ACCTD FOR
00	NOT DEFINED	0	0	0	0	0	0.0	0.0
01	DISTRIBUTOR	82	9	30	30	43	36.5	89.0
02	INTERNATL DIST.	5	2	0	0	3	0.0	60.0
03	HARDWARE	3	0	0	0	3	0.0	100.0
04	MASS MERCHANT	1	1	0	0	0	0.0	0.0
05	GUN CLUB	1	1	0	0	0	0.0	0.0
06	LAW ENFORCEMENT	0	0	0	0	0	0.0	0.0
07	DIRECT DEALER	3	0	1	1	2	33.3	100.0
08	DEALER	196	57	28	28	111	14.2	70.9
09	CUSTOMER	70	28	13	13	29	18.5	60.0
10	FIELD FORCE	1	0	0	0	1	0.0	100.0
11	CONSIGNMENT	3	1	1	1	1	33.3	66.6
12	GOVERNMENT	0	0	0	0	0	0.0	0.0
TOTAL		365	99	73	73	193	27.1	72.8

RIFLES REMAINING: 99

R2520058

BARREL ASSEMBLY REPLACEMENT PROGRAM 10 25 49
17-CALIBER STATUS AS OF 12/16/91

	DESCRIPTION	GUNS SHIPPED	FIRST LOCATION CONFIRMED	LOCATED CURRENT OWNER	GUNS REPAIRED	OTHER	PERCENT LOCATED	ACCTD FOR
00	NOT DEFINED	1	1	0	0	0	0.0	0.0
01	DISTRIBUTOR	220	4	70	21	14	31.8	15.9
02	INTERNATL DIST.	728	0	183	183	64	25.1	33.9
03	HARDWARE	54	10	23	19	18	42.5	68.5
04	MASS MERCHANT	17	4	11	8	1	64.7	52.9
05	GUN CLUB	0	0	0	0	0	0.0	0.0
06	LAW ENFORCEMENT	0	0	0	0	0	0.0	0.0
07	DIRECT DEALER	3	0	0	0	3	0.0	100.0
08	DEALER	1659	334	920	518	245	55.4	45.9
09	CUSTOMER	4884	310	4373	3526	153	89.5	75.3
10	FIELD FORCE	1	0	1	0	0	100.0	0.0
11	CONSIGNMENT	5	0	2	1	2	40.0	60.0
12	GOVERNMENT	0	0	0	0	0	0.0	0.0
TOTAL		7,572	663	5,583	4,276	500	8.7	83.0

RIFLES REMAINING: 2,796

R2520059

TRIGGER ASSEMBLY REPLACEMENT PROGRAM 10 30 08
MODEL 700 STATUS AS OF 12/16/91

TY.	DESCRIPTION	GUNS SHIPPED	FIRST LOCATION CONFIRMED	LOCATED CURRENT OWNER	GUNS REPAIRED	OTHER	PERCENT LOCATED	ACCTD FOR
00	NOT DEFINED	0	0	0	0	0	0.0	0.0
01	DISTRIBUTOR	1813	10	1781	1644	19	98.2	91.7
02	INTERNATL DIST.	332	6	303	303	24	91.2	98.4
03	HARDWARE	116	11	84	81	20	72.4	87.0
04	MASS MERCHANT	3390	359	2557	2485	472	75.4	87.2
05	GUN CLUB	32	0	32	32	0	100.0	100.0
06	LAW ENFORCEMENT	21	0	19	19	2	90.4	100.0
07	DIRECT DEALER	29	0	22	22	7	75.8	100.0
08	DEALER	5632	81	4392	4217	1146	77.9	95.2
09	CUSTOMER	8655	67	7156	6747	1415	82.6	94.3
10	FIELD FORCE	36	1	31	31	4	86.1	97.2
11	CONSIGNMENT	23	0	16	16	7	69.5	100.0
12	GOVERNMENT	3	0	3	2	0	100.0	66.6
TOTAL		20,082	534	16,396	15,599	3,116	81.6	93.1

RIFLES REMAINING: 1,367

R2520060

TRIGGER ASSEMBLY REPLACEMENT PROGRAM 10 25 26
SEARCAM STATUS AS OF 12/16/91

TY	DESCRIPTION	GUNS SHIPPED	FIRST LOCATION CONFIRMED	LOCATED CURRENT OWNER	GUNS REPAIRED	OTHER	PERCENT LOCATED	ACCTD FOR
00	NOT DEFINED	1	1	0	0	0	0.0	0.0
01	DISTRIBUTOR	5237	13	63	10	5131	1.2	98.1
02	INTERNATL DIST.	918	1	0	0	914	0.0	99.5
03	HARDWARE	169	3	10	8	156	5.9	97.0
04	MASS MERCHANT	299	102	16	4	181	5.3	61.9
05	GUN CLUB	10	0	2	0	8	20.0	80.0
06	LAW ENFORCEMENT	51	2	13	8	36	25.4	86.2
07	DIRECT DEALER	135	0	2	2	133	1.4	100.0
08	DEALER	7351	218	850	157	6345	11.2	86.1
09	CUSTOMER	1968	177	632	119	1115	32.1	62.7
10	FIELD FORCE	2	0	0	0	2	0.0	100.0
11	CONSIGNMENT	4	3	1	0	0	25.0	0.0
12	GOVERNMENT	1	0	0	0	0	0.0	0.0
TOTAL		16,346	520	1,589	308	14,021	3.1	87.6

RIFLES REMAINING: 2,017

R2520061

RECALL COMPLETION STATUS - November

	Rifles Shipped	Accounted For	Percent	Rifles Remaining
M/700 - TARP	20,082	18,715	93.2%	1,367
XP-100	6,046	5,035	83.3%	1,011
SEARCAM	16,346	14,329	87.7%	2,017
PINHEAD	365	266	72.9%	99 *
M/700 - .17 CAL.	7,572	4,776	63.1%	2,796

* DENOTES NO CHANGE

	TARP 100412 RAUS 3775	XP-100T 100418 RAUS 3777	.17 CAL 100412 RAUS 3774
GUNS SHIPPED	20,082	6,046	7,572
GUNS ACCOUNTED FOR	18,715	5,035	4,776
PERCENT ACCOUNTED FOR	93.2%	83.3%	63.1%
GUNS REMAINING	1,367	1,011	2,796
RESERVE AMOUNT - DEC. 88	$1,500,000	$300,000	$500,000
EXPENDITURES TO DATE	$1,518,298	$203,159	$396,185
RESERVE REMAINING	($18,298)	$96,841	$103,815
ESTIMATED REMAINING EXPENDITURES - 1991	$833	$500	$16,667
ESTIMATED RESERVE - YEAR END	($19,131)	$96,341	$87,148
ESTIMATED 1991 EXPENDITURES	$10,000	$6,000	$200,000

A:rr

RECALL COMPLETION STATUS - November

	Rifles Shipped	Accounted For	Percent	Rifles Remaining
M/700 - TARP	20,082	18,715	93.2%	1,367
SEARCAN	16,346	14,329	87.7%	2,017
PINHEAD	365	266	72.8%	99 *
M/700 - .17 CAL.	7,572	4,776	63.1%	2,796

* DENOTES NO CHANGE

	TARP 100412 RAUS 3775	.17 CAL 100412 RAUS 3774
GUNS SHIPPED	20,082	7,572
GUNS ACCOUNTED FOR	18,715	4,776
PERCENT ACCOUNTED FOR	93.2%	63.1%
GUNS REMAINING	1,367	2,796

A:rr

R2520067

Year	SHIPMENTS M/700 Rifles w/Bolt Lock	SHIPMENTS M/700 Rifles w/out Bolt Lock	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1962	42,799		1	
1963	41,087			
1964	37,661		1	
1965	53,789		1	
1966	58,031		2	
1967	65,082		2	
1968	69,813		8	
1969	80,209		7	
1970	89,651		9	1
1971	93,176		16	1
1972	84,178		16	1
1973	94,483		13	1
1974	107,146		22	1
1975	103,322		15	
1976	109,807		40	4
1977	124,560		32	

R2520068

1978	132,600		19	
1979	139,768		15	1
1980	110,608		18	
1981	94,374		17	1
1982	12,933		1	
1982		64,165	5	1
1983		92,057	11	
1984		94,111	10	3
1985		85,576	16	1
1986		76,262	20	
1987		77,377	17	
1988		103,501	9	1
1989		132,696	7	
1990		96,746	3	2
1991		75,000	1	2

Year	SHIPMENTS All M/7 Rifles without Bolt Lock Feature	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1981			
1982	61		
1983	14,539	1	
1984	15,893	1	
1985	6,920		
1986	3,943	1	
1987	4,229		
1988	6,799	1	
1989	7,847		
1990	7,559	1	
1991	5,135		

Year	SHIPMENTS M/788 Rifles w/Bolt Lock	SHIPMENTS M/788 Rifles w/out Bolt Lock	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1966	40			
1967	25,859			
1968	19,974			
1969	23,623		1	1
1970	29,098			
1971	31,318			
1972	31,472			
1973	36,828			
1974	17,050			
1974		23,870		
1975		40,267		
1976		42,630		
1977		48,019		
1978		41,652	3	
1979		32,513		
1980		38,038		

R2520071

1981	42,978
1982	23,650
1983	15,183
1984	8,939
1985	84
1986	1

Year	SHIPMENTS All M/600 Series Rifles with Bolt Lock Feature	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1963	100		
1964	25,279		
1965	24,851	4	1
1966	22,307	1	
1967	19,148	4	
1968	26,861	4	2
1969	14,196	1	
1970	7,696		
1971	8,972	1	
1972	5,154	1	
1973	8,739	2	
1974	12,110		
1975	13,120	2	
1976	13,318	2	
1977	17,631	2	
1978	17,387	2	

R2520073

1979	5,340
1980	6

Year	SHIPMENTS All M/721 & M722 Rifles with Bolt Lock Feature	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1948			
1949			
1950		1	
1951			
1952			
1953		1	
1954			
1955	13,502		
1956	10,522		
1957	6,242		
1958	5,231		
1959	4,485		
1960	4,566		
1961	3,733		
1962	595		
1963			

R2520075

Year	SHIPMENTS M/700 Rifles w/ Bolt Lock	SHIPMENTS M/700 Rifles w/o Bolt Lock	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1962	42,799		1	
1963	41,087			
1964	37,661			
1965	53,789		1	
1966	58,031		2	
1967	65,082		2	
1968	69,813		7	1
1969	80,209		11	1
1970	89,651		13	
1971	93,176		23	
1972	84,178		18	
1973	94,483		14	
1974	107,146		23	
1975	103,322		18	
1976	109,807		43	3

1977	124,560	36	2
1978	132,600	28	1
1979	139,768	21	1
1980	110,608	20	
1981	94,374	19	
1982	12,833	2	
1982	64,165	4	1
1983	92,057	7	
1984	94,111	16	1
1985	85,576	13	1
1986	76,262	18	2
1987	77,377	22	
1988	103,501	15	1
1989	132,696	11	
1990	96,746	3	
1991	75,000	2	
1992	122,839	2	

Year	SHIPMENTS All M/721 & M/722 Rifles without Bolt Lock Feature	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1948			
1949			
1950		1	
1951		1	
1952			
1953		1	
1954			
1955	13,502		
1956	10,822		
1957	6,242		
1958	5,231		
1959	4,485		
1960	4,566		
1961	3,733		
1962	595		
1963			

R2520085

Year	SHIPMENTS All M/7 Rifles without Bolt Lock Feature	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1981			
1982	61		
1983	14,539	2	
1984	15,893	6	
1985	6,920		
1986	3,943	2	
1987	4,229		
1988	6,799	3	
1989	7,847		
1990	7,559	1	
1991	5,135		
1992	9,553		

R2520086

Year	SHIPMENTS M/788 Rifles w/ Bolt Lock	SHIPMENTS M/788 Rifles w/o Bolt Lock	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1966	40			
1967	25,859			
1968	19,974			
1969	23,623		1	
1970	29,098			
1971	31,318			
1972	31,472			
1973	36,828			
1974	17,050			
1974		23,870		
1975		40,267		
1976		42,630	1	
1977		49,019		
1978		41,652	2	
1979		32,513		

1980	38,039
1981	42,978
1982	23,650
1983	15,183
1984	8,939
1985	84
1986	1

Year	SHIPMENTS All M/600 Series Rifles with Bolt Lock Feature	ALLEGATIONS OF "FSR"	FINDINGS OF "TRICKING" OR "FSR"
1963	100		
1964	25,279	1	
1965	24,851	2	1
1966	22,307	3	
1967	19,148	2	
1968	26,861	8	1
1969	14,196	1	
1970	7,696		
1971	8,972	3	
1972	5,154	2	
1973	8,739	3	
1974	12,110		
1975	13,120	2	
1976	13,318	3	
1977	17,631	3	
1978	17,387	1	1

R2520089

1979	5,340	1
1980	6	

WITH
SAKO L579
FORRESTER
REC'D
10.92

BARBER - 1.30.13000604

COMPARE AND YOU'LL CHOOSE SAKO EVERYTIME

FEATURE	SAKO	Weatherby Mark V	Weatherby Vanguard	Mossberg	Ruger 77	Rem. 700 BDL	Winchester Model 70	Sauer-90	Mauser 77	Browning A-Bolt	Steyr SSG
1. Three Different Action Lengths	Yes	No	No	No	No	No	No	No	No	No	No
2. One Piece Forged Bolt	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
3. Forged Receiver	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes
4. Integral Scope Mount Rails	Yes	No	No	No	Yes	No	No	No	No	No	Yes
5. Twin-lug, Forward Lock-up	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No
6. One Piece Trigger Guard/ Magazine Frame All Steel	Yes	Yes	No	No	No	No	No	No	No	No	No
7. Mechanical '98 Type Ejection	Yes	No	No	No	No	No	No	No	No	No	No
8. Integral Recoil Lug	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes
9. Hinged Floorplate of Steel	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	No
10. Fixed Magazine	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
11. Three-Way Adjustable Trigger	Yes	No	No	No	No	Yes	Yes	No	No	No	No

BARBER - 1.30.13000604

R2520082

RECALL COMPLETION STATUS – MAY 1993

	Rifles Shipped	Accounted For	Percent	Rifles Remaining
M/700 – TARP	20,083	19,569	97.4%	514
XP–100	6,048	5,982	98.9%	66
SEARCAM	16,383	16,120	98.4%	263
PINHEAD	365	274	75.1%	91
M/700 – .17 CAL.	7,569	6,174	81.6%	1,395
PINHEAD 2	49	45	91.8%	4
SST	1,819	1,772	97.4%	47
Totals	52,316	49,936	95.5%	2,380

RD-89 REV. 6-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

cc: K. D. Green
P. H. Holmberg

Approved Copies: R. E. Fieltiz
C. A. Riley
K. D. Green
J. H. Chisnall
J. A. Stekl
R. L. St. John
P. H. Holmberg
W. H. Forson, Jr.
C. B. Workman
R. L. Sassone - For inclusion in manual.

RECEIVED
SEP 15 1982
R. B. SPERLING

Bridgeport, Connecticut
September 13, 1982

R. B. SPERLING

RECALL INFORMATION IN FIELD SERVICE MANUAL

The Field Service Manual, which gives assembly, disassembly, and diagnostic information about our firearms, is being updated at this time. This manual is made available to our Recommended Gunsmiths and other gunsmiths who request it.

Previous editions of the manual have not had any reference to product recalls. For the following reasons, we propose to include Model 600 and XP-100 (attached) recall notes in the Field Service Manual:

- Those guns which are capable of being "tricked" are dangerous and should be modified.
- Four years after this recall was instituted, only 13% of the guns have been modified. Thus, there are still over 175,000 guns outstanding.
- Because the recall was started several years ago, some dealers and gunsmiths have discarded the descriptions of the guns subject to recall. These inserts will provide them with a ready reference.
- Recall was nationwide in scope as opposed to localized via a distribution pattern.

- Many of our Recommended Gunsmiths were and are participating in the recall by making the repairs.

If you have no objection, we will have the XP-100 and Model 600 notices put in the Field Service Manual.

F. T. Millener

FTM:fms
att.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130000607

PROCEDURE FOR REPLACEMENT OF TRIGGER HOUSING ASSEMBLIES

REMINGTON MODELS 600, 660 AND MOHAWK 600 ONLY

10-27-78

IMPORTANT NOTICE: ABSOLUTELY NO ALTERATIONS OR ADJUSTMENTS ARE TO BE MADE TO THE REPLACEMENT TRIGGER ASSEMBLY. IF ANY UNUSUAL PROBLEMS ARE ENCOUNTERED DURING REPLACEMENT OF TRIGGER ASSEMBLY, RETURN FIREARM TO FACTORY.

1) Inspect chamber and magazine for live ammunition.

2) Remove Bolt Assembly from firearm.

3) Remove Trigger Guard and Stock Assembly.

4) Remove Trigger Assembly by moving Safety to its full rearward position and remove two Sear Pins. Remove Trigger Assembly from the Action and place parts in an envelope for return to Remington, Ilion, New York, plant.

5) Assemble new Trigger Assembly to receiver. Be sure to assemble rear Sear Pin first.

   a. Pull and hold Trigger and depress rear of Sear with a screw driver to check for binding. With Trigger pulled, the Sear must depress and return to its full upward position. If binding occurs, insert a wide blade screw driver and carefully spread the walls of the Trigger Housing against the side of the Receiver. Recheck for Sear bind. (See sketch below.)

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

b. Stake Sear Pin holes in the Receiver on the left side to prevent pins from coming out and binding the Bolt stop.

c. Check for bind of the Safety lever in the Bolt lock slot of the Receiver. If the Safety lever binds, file the slot as needed to relieve.

6) Reassemble Bolt to Receiver.

a. Check for proper operation of the Safety by putting Safety in "ON" position, pulling Trigger (gun must not fire), putting Safety in "OFF" position, pulling Trigger (gun must fire). Repeat this test three times. Safety must work freely without binding and with positive detenting action at "ON" and "OFF" position. If gun fails this test, install a new Trigger Assembly and repeat tests.

7) Set Barreled Action into Stock.

a. With Trigger Guard removed, check for clearance between the Trigger Housing and the brass Stock reinforcing screw by looking through the bottom of the Stock. If the Trigger Assembly touches the Stock reinforcing screw, slightly bend the screw toward the muzzle to get clearance. (See sketch.)

b. Alter Safety Lever clearance in the Stock with a file, chisel or rotary Dremel-type tool. Remove enough wood so that the Safety Lever, when in the "ON" and "OFF" position, does not rub or bind on the Stock at the rear or sides.

8. Completely reassemble Rifle.

a. Dry fire Rifle three times.

b. Check for Trigger rubbing on the Trigger Guard. If rubbing occurs, file the Trigger Guard to relieve.

c. With the Bolt closed, operate the Safety to the "ON" and "OFF" positions. The Safety must not touch, rub or interfere with the Stock. Perform step 7 b. again if this occurs.

d. Check Safety three times by operating Bolt, putting Safety in "ON" position, pulling Trigger, (gun must not fire and the Trigger must work freely with no binding and must readily retract), putting Safety in "OFF" position, pulling Trigger (gun must fire).

e. Check for Bolt lock by cocking the rifle (operate Bolt) and putting the Safety in "ON" position. The Bolt must lock closed.

If rifle fails tests a, b, c, d, or e, replace the Trigger Assembly. If problems persist, return the rifle to Remington's Ilion plant for factory repair.

The serial numbers of guns involved are as follows:

Remington Model 600	From Serial #	0001 to # 131,552
Remington Model 660	From Serial #	0001 to # 131,552
Mohawk 600	From Serial	#6,200,000 to #6,899,999
Remington Model 660	From Serial	#6,200,000 to #6,899,999
Remington Model XP-100	From Serial #	0001 to #7,507,983

No guns of above models that carry a letter prefix "A" or "B" in the serial numbers are involved. XP-100's with an "A" or a "B" prefix or numbered between 7,507,984 and 7,509,999 are not involved.

HKB:iw

RD-69-2

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
October 26, 1978

RECALL OF MOHAWK 600 RIFLE, XP-100,
REMINGTON MODELS 600 AND 660 FIREARMS

Problem: The settlement in the Coates case in their favor has necessitated the recall of these firearms. The main consideration in the ruling is that some of the rifles can be manipulated to set up a series conditions which can cause the rifle to discharge when the Safety lever is moved from the "Safe" to "Fire" position.

Series of Events to Repair Guns in Field:

Rifles and pistols will be repaired by Remington recommended gunsmiths and by the plant. The gunsmiths will be supplied a complete M/600 or XP-100 Trigger Housing Assembly. These assemblies will be produced by the plant and shipped to gunsmiths.

Engineering Considerations:

What should be our position on Trigger Housing Assemblies already in the field?

Should we identify the new replacement Trigger Housing Assemblies shipped for recall?

Manufacturing control of Trigger Housing Assemblies is very important because Remington personnel will not be testing the rifle after assembly.

1. Therefore, the dimensional and safety checks of the Trigger Housing Assembly must be clearly defined and understood. Also, a check for the null position - Sear Connector clearance must be made.

2. A complete review of the process record, current practices, Industrial Engineering elements, and Research evaluation has been made and the sub-assemblers will be retrained.

A complete set of instructions will be compiled on how to convert the rifles and pistols to the new Trigger Housing Assembly. This will include all the necessary safety checks which will be performed during and after assembly, including follow down.

Should a stamp be supplied with the instructions so that every rifle converted could be identified in the future? Should the headspace or any other safety related item be checked in the recall? Should the individual repair stations be issued stamps so their work can be identified in the future? Should all the Trigger Housing Assemblies be coded in some manner?

Procedure to Follow:

Make up a number of Trigger Housing Assemblies complete and follow the outlined procedure. Take these assemblies and convert guns to following outline to be sent to repair stations. Test completed rifles.

To make sure that we are following the correct procedure in Assembly, Gallery and Final Inspection, review safety test procedures. Test operators with guns which can be tricked, fire off safe, and ones which are okay; test until we are assured they can pick out the bad rifles.

Resolve the design change made on the XP-100 in 1975, to verify if indeed, they are okay after 1975 to recent design change.

Intermediate Safety Training Goals:

A videotape will be made from a script describing with illustrations and explanations, the sub-assembly of Bolt Action Trigger Housing Assemblies, final assembly of Trigger Housing, Gallery procedures, Final Inspection procedures and Audit procedures. This will put all the information concerning proper assembly procedures in one place.

The tape will be divided in sections for each job assignment. The operators will be trained and will view the tape, with all questions being answered. They will then be tested on proper procedures. The test will be maintained in their records. If they fail, they will be reinstructed and retested. They will not be allowed to build assemblies or rifles until they meet the requirements. They will be reviewed by seeing the tape again at six months, and retested. All new operators will be trained with the tape and tested before they will be allowed to assemble rifles, or any part thereof.

JPLinde:eb

cc: E.G. Larson
C.W. Workman
J.P. Linde

RD-49-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

November 20, 1978

TO:	J.W. BROOKS	D.R. LEWIS	J.R. SNEDEKER
	G.D. BAILEY	F.E. MARTIN	J.A. STEKL
	B. BENNETT	D.W. MC CLURE	F.W. WOODRICK
	C.A. KORBA	P. NASYPANY	W. VAN SICKLE
	J.C. HUTTON	R.L. ST. JOHN	

FROM: E.F. SIENKIEWICZ

SUBJECT: TRIGGER REPLACEMENT PROGRAM

Please supply this office with a written report on calls made on gunsmiths involved in the Recall Trigger Replacement Program, with copies to C.B. Workman and J.P. Linde.

This report is to cover problems encountered, if any, with replacement trigger assemblies and installation. Also, include comments made by the gunsmiths concerning our installation procedures and all constructive comments that may further assist us on the Recall.

E.F. Sienkiewicz

EFS:tpp

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

DON'T SAY IT — WRITE IT

XC: W. A. Warren
File

To J. P. LINDE

Date 4/6/79

From G. J. HILL GJH 4/6/79

Copy to Jack Carter - and File

The attached information is for you.

Bill and I have reviewed these problems with D. J. Sanita and D. F. Polley on two separate occasions. The last two items were personally reviewed with the assembler involved by Bill Warren on 4/4/79.

GJH/bdm

KEEP SAFETY IN MIND IN '79

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

DON'T SAY IT — WRITE IT

XC: D. J. Sanita
J. R. Snedeker
File

To G. J. HILL

Date 4/5/79

From W. A. WARREN

XP 100 Recall: Repair Workmanship

The quality audit inspector has been finding poor workmanship when he adjusts triggers on the optical comparator. This is after Customer Repair has replaced the sear housing assembly.

DATE	ITEM	INCIDENCE	ACTION TAKEN
2/26/79	Trigger pivot pin not flush	1st	Discussed with and shown to repairman and Foreman. Repairman reinstructed and told to use new sear pins.
2/26/79	Trigger binds (2)	1st & 2nd	
2/26/79	Trigger housing loose	1st	
2/26/79	Sear pins installed backwards	1st	
3/7/79	Trigger binds	3rd	Discussed with and shown to Supervisor and Foreman. They will: • Reinstruct repairman. • Send up man to learn Q. C. comparator adjustment technique.
3/19/79	Trigger "sluggish"	4th	Situation again, reviewed with Custom Repair Foreman. Repairman now limited to 25 guns/day.
3/19/79	Sear pins installed backwards and/or old one reused.	2nd	
3/19/79	Trigger housing loose	2nd	
3/28/79	Trigger pivot pin not flush	2nd	Situation again reviewed with Custom Repair Supervisor and Foreman (4/2/79). Custom Repair will inspect and correct, using man trained by Q.C., before sending up guns for trigger adjustment.
3/28/79	Trigger housing loose	3rd	

DON'T BE SORRY — BE SAFE

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

XP 100 Recall: Repair Workmanship - contd. - 2 -

DATE	ITEM	INCIDENCE	ACTION TAKEN
4/3/79	Trigger housing loose (2)	4th, 5th)	The reasons for requiring these improvements BEFORE comparator setting was discussed with repairman and Foreman. Repairman agreed to modify his technique.
4/3/79	Trigger pivot pin not flush	3rd)	

WAW/bdm

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

10.9/

WAW

MONTHLY REPORT

WEEK OF 10.7.91

PRODUCTION HAVING TROUBLE WITH CHERRY TRIGGER PULLS OVER PREVIOUS TWO WEEKS.

WE FOUND THAT ALL BUT ONE OF TRIGGER ASSEMBLERS HAD EXCESSIVE ENGAGEMENT ON 6 TR. ASS'YS SET ASIDE AS THE WORST ONES.

I SUGGESTED TO B. VANSICKLE THAT HE HAVE EACH TRIGGER ASSEMBLER INSPECTOR HIS OWN PARTS AND CORRECT THEM. ALSO, BE SURE TRIGGER IS FIRMLY SEATED AGAINST ENGAGEMENT SCREW AS ENGAGEMENT ADJUSTMENT IS MADE.

(SHOULD BE EXCESS TRIGGER SPRING FORCE AT THIS POINT OF OPERATION).

ALSO, TRY CORRECTED TRIG. ASS'YS IN GUNS TO VERIFY THAT THIS WAS CAUSE OF COMPLAINTS

ALSO; TRY SOME ONES ASSEMBLED

10-21

WALL

MONTHLY REPORT

WEEK OF 10-7-91

PRODUCTION HAVING TROUBLE WITH CREEPY TRIGGER PULLS OVER PREVIOUS TWO WEEKS.

WE FOUND ALL BUT ONE OF TRIGGER ASSEMBLERS HAD EXCESSIVE ENGAGEMENT ON 6 TR. ASS'YS SET ASIDE AS THE WORST ONES.

I SUGGESTED TO B. VANSICKLER THAT HE HAVE EACH TRIGGER ASSEMBLER RECHECK HIS OWN PARTS AND CORRECT THEM, ALSO, BE SURE TRIGGER IS FIRMLY SEATED AGAINST ENGAGEMENT SCREW AS ENGAGEMENT ADJUSTMENT IS MADE.

(SHOULD BE EXCESS TRIGGER SPRING FORCE AT THIS POINT OF OPERATION).

ALSO, TRY CORRECTED TRIG. ASS'YS IN GUNS TO VERIFY THAT THIS WAS CAUSE OF COMPLAINTS

ALSO; TRY SOME ONES ASSEMBLED

RU - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO:

CHANGE NO.: 27817
EXPIRATION DATE:
INITIATED DATE: 9/26/79

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER			
PROCESS ENGR. GROUP LEADER	R. Stafford	R T Stafford	9-26-79
PRODUCTION SUPERVISOR	E Baer	[illegible]	9-27-79
AND PRODUCTION FOREMAN	G Veich	[illegible]	9-23-79
CHEM. & MET. SUPERVISOR			
OR PROCESS ENGR. SUPERVISOR	G. Hill	[illegible]	9/26/79
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			10/1/79

MODEL NO.: 700 REQUESTED BY: PE&C
PART NAME: Trig. Housing Assy ENGINEER: J. Angelino
PART NUMBER: 26655

DESCRIPTION OF CHANGE & REASON: Change Pilot Ga To Alignment Gage To Be Sure Rivets With Pass Through Assembly Dias Can Not Be Controlled At This Op It Is Only Necessary That Holes Are In Line For Rivets.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD - 6542 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☐ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 277994
EXPIRATION DATE:
INITIATED DATE: 6/11/79

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2	E. BROWN		
METHODS & STDS. LEADER	J.H. HAGERLE	J.H. Hagerle	6-20-79
PROCESS ENGR. GROUP LEADER	R.L. STAFFORD	R L Stafford	6-11-79
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	G.J. ENGERT	G.J. Engert	6/28/79
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	J. HUTTON / G.J. HILL		6/13/79
CONTROL OFFICE BLDG. 46-2	E. BROWN		
PROCESS RECORDS REVISED			7/13/79 SD

MODEL NO.: 700 - 40X
PART NAME: TRIGGER
PART NUMBER: 15280 - 15820

REQUESTED BY: RE. & C
ENGINEER: D. R. LEWIS

DESCRIPTION OF CHANGE & REASON: CHANGED DRILL JIG & FIXTURE C-54661 TO C-TS-7043 AND ADDED CHECKING FIXTURE (MASTER) A-TS-7044. This is to eliminate Primary Drilling on Hole Position, R&A is investigating MID Change, Wound Tooling on Drilling Operation.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☒ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

65

RU - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO: A/M

CHANGE NO.: 27784
EXPIRATION DATE:
INITIATED DATE: 6/6/79

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	J. HAEFELE	J. Haefele	6-11-79
PROCESS ENGR. GROUP LEADER	R. STAFFORD	R. Stafford	6-6-79
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	F. BARRY	F. Barry	6/11/79
	G. ULRICH	G. Ulrich	6-11-79
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	G. HILL		6/11/79
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			6/11/79 JD

MODEL NO.: 700-AdvB-700LH
PART NAME: Safety Assembly
PART NUMBER: 26585

REQUESTED BY: Production
ENGINEER: J. Albertino

DESCRIPTION OF CHANGE & REASON: Suggestion MM/5523 that 100% adjustment not necessary. Change wording of operation description to inspect 100% and adjust when necessary.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☑ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO:

CHANGE NO.: 277974
EXPIRATION DATE:
INITIATED DATE:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 16-2	E Brown		
METHODS & STDS. LEADER	W.J. Newkirk	W.J. Newkirk	6/5/79
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR	W.E. Ackley	W.E. Ackley	6/11/79
AND PRODUCTION FOREMAN	J.W. Kelly	J.W. Kelly	
CHEM. & MET. SUPERVISOR			
OR PROCESS ENGR. SUPERVISOR	G.J. Hill	G.J. Hill	6/6/79
CONTROL OFFICE BLDG. 16-2	E. Brown		
PROCESS RECORDS REVISED			6/12/79 EB

MODEL NO.: 600 & 700 REQUESTED BY: Production
PART NAME: Final Assembly ENGINEER: M. Hardy
PART NUMBER: 10600 & 10700

DESCRIPTION OF CHANGE & REASON: Update Final Assembly process to provide better control on Final Inspection Operation. Make seperate operation for BDL's at Final Inspection.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST		54175	PROD. FORECAST		
STD. HRS. PER 100	[illegible]	.850 hrs/100	STD. HRS. PER 100		
DOLLARS PER 100		on Bpc Engrng	DOLLARS PER 100		
REDUCTION DOLLARS	X	$ 3370	INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD - 6518 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO:

CHANGE NO.: 222904
EXPIRATION DATE:
INITIATED DATE: 5/2/79

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	J. HAEFELE	J. Haefele	5-9-79
PROCESS ENGR. GROUP LEADER	R. STAFFORD	R. L. Stafford	5-3-79
PRODUCTION SUPERVISOR	F. BARRY	F. Barry	5-10-79
AND PRODUCTION FOREMAN	G. URICH	G. Urich	5-10-79
CHEM. & MET. SUPERVISOR			
OR PROCESS ENGR. SUPERVISOR	G. HILL	G. Hill	5/14/79
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			5/14/79 EB

MODEL NO.: 700 600 40XB XP-100 REQUESTED BY: PRODUCTION
PART NAME: SEAR, SAFETY CAM ENGINEER: J. ALBERINO
PART NUMBER:

DESCRIPTION OF CHANGE & REASON: ADD SAND TUMBLE AFTER H.T. TO REMOVE SCALE. PRODUCTION HAS BEEN DOWN OF ON GREEN GAGE

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS ☐ HOLD FOR SALVAGE ☐ SCRAP PARTS ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

CHANGE NO.: 27805

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

EXPIRATION DATE:

ROUTE TO:

INITIATED DATE: 4-11-79

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	W. NEWBERRY		8/18/79
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR	W.E. ACKLEY		
AND PRODUCTION FOREMAN	W.L. GANEY		8-20-79
CHEM. & MET. SUPERVISOR	J. Lucas		
OR PROCESS ENGR. SUPERVISOR	G.J. HILL		8/15/79
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			8/24/79

MODEL NO.: 700 REQUESTED BY: PE&C

PART NAME: FINAL ASSEMBLY (PRECEDING OP 25) ENGINEER: W.A. WARREN, JR.

PART NUMBER:

DESCRIPTION OF CHANGE & REASON: PROCESS UPDATED AND IMPROVED: GAUGES ADDED TO IMPROVE CONNECTOR INSPECTION, FIXTURE ADDED TO IMPROVE TRIGGER-CONNECTOR FIT, ADDED ASSEMBLER IDENTIFICATION AND MULTIPLE CHECKS FOR CUSTOMER REPAIR-SUPPLIED TRIGGER ASSEMBLIES.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☒ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

Revised 7-2-79

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: G.E.S. DATE: 4-17-79

	REDUCTION IN COST			INCREASE IN COST		
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED	
PROD. FORECAST			PROD. FORECAST		141249	141,249
STD. HRS. PER 100			STD. HRS. PER 100	Increase →	1.710	1.568
DOLLARS PER 100			DOLLARS PER 100		$12.747	$11.963
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	$18010	$16900
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X		
PERCENT RETURN	X		PERCENT LOSS	X		

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RU - 6646 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☐ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 277219
EXPIRATION DATE:
INITIATED DATE: 9-21-78

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE SLDG. 46-2			
METHODS & STDS. LEADER	J. Bolduca		9.25.78
PROCESS ENGR. GROUP LEADER	R. Stafford		9-21-78
PRODUCTION SUPERVISOR	E Barry		9-25-78
AND PRODUCTION FOREMAN	R Vusinn		9-25-78
CHEM. & MET. SUPERVISOR			
OR PROCESS ENGR. SUPERVISOR	G Hill		9/27/78
CONTROL OFFICE SLDG. 46-2			
PROCESS RECORDS REVISED			9/27/78 JP

MODEL NO.: 600-700 REQUESTED BY: PEC
PART NAME: Seal Safety Cam ENGINEER: J. Alberino
PART NUMBER: 15666-914170

DESCRIPTION OF CHANGE & REASON: ADD 6° WHEEL DRESSER CLOSE TO P.R. TO CONFORM TO MFG SPEC

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD - 6528 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO:

CHANGE NO.: 276885
EXPIRATION DATE:
INITIATED DATE: 5/5/78

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	J. POLIUKA		5-5-78
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	C.A. RUSSELL J. CARTER	C.A.R. O.K.	5/8/78
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	A.G. JOHNSON O.J. HILL		5/8/78 5/8/78
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			5/10/78

MODEL NO.: 600, 700, 40XB, XP100, MAG. 600
PART NAME: SEAR SAFETY CAM
PART NUMBER: 15666, 14046, 14269, 91470
REQUESTED BY: C.A. CARBAN
ENGINEER:

DESCRIPTION OF CHANGE & REASON: ALL CHROME PLATED PARTS MUST PASS THROUGH PURCHASE PARTS WHEN RECEIVED FOR VERIFICATION OF GOOD PLATE.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

2P-6560 Rev. 5/25/78 - Obs. per DK Lewis

INTERIM OPERATION AUTHORIZATION — CHANGE NO. 276863

"S" INTERIM OPERATION

"T" INTERIM OPERATION (DEPT. TO GET CREDIT FOR STD. LABOR & EXPENSE)

"S" AUTHORIZATION _____ Process or Chem. & Met. Engr.

"S" RE-ISSUE AUTHORIZATION _____

"S" OPERATION GOOD FOR 2, 3 MO. PERIODS MAX. "T" OPERATION GOOD FOR 4, 6 MO. PERIODS MAX.

"S" INITIATED	_____	EXPIRES _____
"S" REISSUE	_____	EXPIRES _____
"T" INITIATED	4-24-78	EXPIRES 10-24-78
"T" 1st REISSUE	10/24/78	EXPIRES 5/24/79
"T" 2nd REISSUE	5/24/79	EXPIRES 11/24/79
"T" 3rd REISSUE	11/24/79	EXPIRES 5/24/80

ROUTE TO: CONTROL OFFICE BLDG. 46-2		ORIGINAL ISSUE	1st REISSUE	2nd REISSUE	3rd REISSUE
M & S GROUP LEADER	C.P. WILLIAMSON				
PROCESS ENG. GROUP LEADER	R.L. STAFFORD				
PRODUCTION SUPERVISOR	E.X. HASARD				
PRODUCTION FOREMAN	F. WRISLEY				
CHEM. & MET. OR PROCESS ENG. SUPERVISOR	J.P. LINOR				
CONTROL OFFICE 46-2	C. HILL				
	E. BROWN				

PROCESS RECORD REVISED:
PART NAME TRIGGER (PM)
PART NUMBER 15435
MODEL 600
REQUESTED BY PRODUCTION / PE & C

PROCESS ENGINEER PAUL R FORSTER 3/14/78

DEPT. # 02 WILL BE RESPONSIBLE TO PICK UP AND REWORK _____ COMPONENTS BEYOND THIS OPERATION.

OPERATION NO. 92-T NAME BEF SAND BOTTOM OF TRIGGER DEPT. 02
OPERATION NO. _____ NAME _____ DEPT. _____

DESCRIPTION OF CHANGE & REASON ADD OR 92-T - 'BEF SAND BOTTOM OF TRIGGER' TO PROVIDE CLEARANCE BETWEEN TRIGGER & TRIGGER GUARD TRIGGER OVER ALL LENGTH IS TOO LONG - FROM POWDER METAL.

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST _____

PRODUCTION COST - PREPARED BY M & S ENGINEER

ITEM	COST INCREASE PRESENT	PROPOSED
PRODUCTION FORECAST		20 645
STD. HRS. PER 100		.858
DOLLARS PER 100		5.682
TOTAL DOLLARS	X	$1170
INVESTMENT DOLLARS	X	
PERCENT	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED.

ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED.

RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD - 6548 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☑ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 276834
EXPIRATION DATE:
INITIATED DATE: 4/18/78

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	J - POLIVKA		4-20-78
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	W - ACKLEY R - HARGROVE	E.T. Hargrove	5-3-78
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	J - HILL		
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			[illegible]

MODEL NO.: 700 REQUESTED BY: PRODUCTION
PART NAME: FINAL ASSEMBLY ENGINEER: M HARDY
PART NUMBER:

DESCRIPTION OF CHANGE & REASON: FORM RADIUS ON EDGE OF FIRE PIN HOLE.
THIS OPERATION AS MUST BE DONE ON 17 CAL. & 2506 CAL. TO ELIMINATE PIERSING OF PRIMERS

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RU - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☐ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 276637
EXPIRATION DATE:
INITIATED DATE: 1-31-78

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	J-POLIVKA		2-2-78
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR	W-ACKLEY		2/3/78
AND PRODUCTION FOREMAN	C-RUSSELL		2/3/78
CHEM. & MET. SUPERVISOR			
OR PROCESS ENGR. SUPERVISOR	J-HILL		1/31/78
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			2/8/78 CB

MODEL NO.: 600 & 700 REQUESTED BY: PRODUCTION
PART NAME: FINAL INSPECTION ENGINEER: MARSHALL HARDY
PART NUMBER:

DESCRIPTION OF CHANGE & REASON: WITH BOLT OPEN PULL SAFETY ON CLOSED LOCK DOWN MUST LOCK DOWN WITHOUT CATCHING ON SAFETY. BOLT MUST NOT OPEN UNTIL SAFETY IS MOVED TO OFF POSITION
NEW FIRE CONTROL COMMON WITH 600 & 700

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS ☐ HOLD FOR SALVAGE ☐ SCRAP PARTS ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

MD - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO:

CHANGE NO.: 276545
EXPIRATION DATE:
INITIATED DATE: 11/30/77

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER			
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN			
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	G. Hill		12/30
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			1/5/78 ED

MODEL NO.: 600,700,788 REQUESTED BY:
PART NAME: FINAL ASSEMBLY ENGINEER: E. Prosser
PART NUMBER:

DESCRIPTION OF CHANGE & REASON: ADD HOLDING FIXTURE D-439855 TO OPERATION 30 REMOVE BURR FROM EJECTOR HOLE, TO ELIMINATE AN UNSAFE CONDITION.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RU - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO:

CHANGE NO.: 216544
EXPIRATION DATE:
INITIATED DATE: 12-27-77

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER			
PROCESS ENGR. GROUP LEADER	R Stafford	R.B. Stafford	12-27-77
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN			
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	G. Hill	[illegible]	1/3/78
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			1/5/78 CS

MODEL NO.: 600 700
PART NAME: Sebe Safety Cam
PART NUMBER: 15666
REQUESTED BY: Pearson
ENGINEER: J. Alberino

DESCRIPTION OF CHANGE & REASON: Operation being performed in Dept. 67

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 276522
EXPIRATION DATE:
INITIATED DATE: 12/20/77

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	J. POLIVKA		12-27-77
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR	W. ACKLEY		
AND PRODUCTION FOREMAN	R. HARGROVE		
CHEM. & MET. SUPERVISOR			
OR PROCESS ENGR. SUPERVISOR	G. HILL		
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			12/30/77 EP

MODEL NO.: 600 REQUESTED BY:
PART NAME: FINAL ASSEMBLY ENGINEER: C. PROSSER
PART NUMBER:

DESCRIPTION OF CHANGE & REASON: ADD OPERATION 16 TO ADJUST TRIGGER PULL ON THE COMPARATOR. NEW HOUSING ASSEMBLY MAKES THIS POSSIBLE - COST REDUCTION.
REMOVE ELEMENT 15, 17, 18 ON OP 15. WORK WILL BE DONE ON OPERATION 16.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS ☐ HOLD FOR SALVAGE ☐ SCRAP PARTS ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RU - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 21C520
EXPIRATION DATE:
INITIATED DATE: 12/22/77

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2	C.P. VALLASHANEK		
METHODS & STDS. LEADER	J. POLIVKA		12/27/77
PROCESS ENGR. GROUP LEADER	R.L. STAFFORD		
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	E.J. BARRY		1/9/78
CHEM. & MET. SUPERVISOR	P.G. JOHNSON		
OR PROCESS ENGR. SUPERVISOR	G.S. HILL		
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			1/18/78 EP

MODEL NO.: MOHAWK 600
PART NAME: SAFETY ASSEMBLY
PART NUMBER: 9146B

REQUESTED BY:
ENGINEER: Spencer Bennett

DESCRIPTION OF CHANGE & REASON: CHANGE TRIAL & PILOT PROCESS TO REGULAR PROCESS.

NEW DESIGN TRIGGER ASSEMBLY USING M/700 TRIGGER HOUSING.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☒ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED.
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RU - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
LONG DURATION ALTERNATE CHANGE
ROUTE TO:

CHANGE NO.: 276 S14
EXPIRATION DATE:
INITIATED DATE: 12/20/77

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	J. POLIVKA		12-27-77
PROCESS ENGR. GROUP LEADER	F. STAFFORD	R. Stafford	12-27-77
PRODUCTION SUPERVISOR	B. BARRY	B. Barry	12/27/77
AND PRODUCTION FOREMAN	R. UNSIN	R. Unsin	12-27-77
CHEM. & MET. SUPERVISOR			
OR PROCESS ENGR. SUPERVISOR	J. H.		
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			12/28/77 SP

MODEL NO.: 600, 700 REQUESTED BY: Spencer Bennett
PART NAME: SEAR SAFETY CAM ENGINEER: J.A. ALBERINO
PART NUMBER: 15666

DESCRIPTION OF CHANGE & REASON: ADD MOHAWK 600 SEAR SAFETY CAM PART # 91470.

NEW MOHAWK 600 TRIGGER ASSEMBLY DESIGN USING M700 TRIGGER HOUSING.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☒ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED.
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-6460

INTERIM OPERATION AUTHORIZATION — CHANGE NO. 376436

"S" INTERIM OPERATION — "S" INITIATED 11/21/77 EXPIRES 2/21/78
"T" INTERIM OPERATION (DEPT. TO GET CREDIT FOR STD. LABOR & EXPENSE) — "S" REISSUE 2/21/78 EXPIRES 5/21/78
"T" INITIATED ____ EXPIRES ____
"T" 1st REISSUE ____ EXPIRES ____
"T" 2nd REISSUE ____ EXPIRES ____
"T" 3rd REISSUE ____ EXPIRES ____

"S" AUTHORIZATION [signature] Process or Chem. & Met. Engr.

"S" RE-ISSUE AUTHORIZATION ____

"S" OPERATION GOOD FOR 2, 3 MO. PERIODS MAX. "T" OPERATION GOOD FOR 4, 6 MO. PERIODS MAX.

ROUTE TO:		ORIGINAL ISSUE	1st REISSUE	2nd REISSUE	3rd REISSUE
CONTROL OFFICE BLDG. 46-2					
M & S GROUP LEADER					
PROCESS ENG. GROUP LEADER	R.L. Simmons	[signature] 11/22/77			
PRODUCTION SUPERVISOR					
PRODUCTION FOREMAN					
CHEM. & MET. OR					
PROCESS ENG. SUPERVISOR	C. Hess	[signature] 11/23/77			
CONTROL OFFICE 46-2					11/30/77 - D

PROCESS RECORD REVISED:
PART NAME TRIGGER SIDE PLATE
PART NUMBER 30720
MODEL 700
REQUESTED BY Spencer Bennett

PROCESS ENGINEER S. BENNETT 2/16/78 -D

DEPT. # ____ WILL BE RESPONSIBLE TO PICK UP AND REWORK ____ COMPONENTS BEYOND THIS OPERATION.

OPERATION NO. 15-S NAME FILE CLEARANCE FOR SAFETY DEPT. 79
OPERATION NO. ____ NAME ____ DEPT. ____

DESCRIPTION OF CHANGE & REASON FILE 45° ANGLE PER SAMPLE TO PREVENT SAFETY BIND AT ASSEMELY
VENDOR DIE TO BE CORRECTED.

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST ____

PRODUCTION COST - PREPARED BY M & S ENGINEER

ITEM	COST INCREASE PRESENT	COST INCREASE PROPOSED
PRODUCTION FORECAST		
STD. HRS. PER 100		
DOLLARS PER 100		
TAL DOLLARS	X	
INVESTMENT DOLLARS	X	
PERCENT	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED.

ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED.

RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

GD-4560 Rev.

INTERIM OPERATION AUTHORIZATION

CHANGE NO. 276383

"S" INTERIM OPERATION

"T" INTERIM OPERATION (DEPT. TO GET CREDIT FOR STD. LABOR & EXPENSE)

"S" AUTHORIZATION _____
Process or Chem. & Mat. Engr.

"S" INITIATED		EXPIRES	
"S" REISSUE		EXPIRES	
"T" INITIATED	11/8/77	EXPIRES	5/8/78
"T" 1st REISSUE		EXPIRES	
"T" 2nd REISSUE		EXPIRES	
"T" 3rd REISSUE		EXPIRES	

"S" RE-ISSUE AUTHORIZATION _____
"S" OPERATION GOOD FOR 2, 3 MO. PERIODS MAX. "T" OPERATION GOOD FOR 4, 6 MO. PERIODS MAX.

ROUTE TO:		ORIGINAL ISSUE	1st REISSUE	2nd REISSUE	3rd REISSUE
CONTROL OFFICE BLDG. 46-2					
M & S GROUP LEADER	C. VALLABHANENI				
PROCESS ENG. GROUP LEADER					
PRODUCTION SUPERVISOR	E. BARRY				
PRODUCTION FOREMAN	B. VAN DAUSER		Cancel -		
CHEM. & MET. GR					
PROCESS ENG. SUPERVISOR	G. HILL				
CONTROL OFFICE 46-2					

PROCESS RECORD REVISED:
PART NAME Safety Assembly
PART NUMBER 26585, 32900
MODEL 700, 40XR
REQUESTED BY Final Assembly

PROCESS ENGINEER C. PROSSER

DEPT. # _____ WILL BE RESPONSIBLE TO PICK UP AND REWORK _____ COMPONENTS BEYOND THIS OPERATION.

OPERATION NO. 17-T NAME Adjust Lock Arm to Gage DEPT. 79
OPERATION NO. _____ NAME _____ DEPT. _____

DESCRIPTION OF CHANGE & REASON Add Operation 17-T to Adjust Lock Arm. To Eliminate Interferance Between Safety and Receiver Which Causes "Follow Down or Fires on Safe"

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST _____

PRODUCTION COST - PREPARED BY M & S ENGINEER

ITEM	COST INCREASE PRESENT	PROPOSED
PRODUCTION FORECAST		135 880
STD. HRS. PER 100		.345
DOLLARS PER 100		$1.321
TOTAL DOLLARS	X	$2070 ea
INVESTMENT DOLLARS	X	
PERCENT	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED.

ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED.

RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RU - 6528 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 276326
EXPIRATION DATE:
INITIATED DATE: 10/6/77

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	J Palmer		12-14-77
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	E Bailey R Young		12/14/77 12-14-77
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	G Hill		12/7/77
~~CONTROL OFFICE BLDG. 46-2~~	H. Boyce		11/23/77
PROCESS RECORDS REVISED			12/16/77 CP

MODEL NO.: 700 600 REQUESTED BY: P & C
PART NAME: Seal Safety Cam ENGINEER: J Alberino
PART NUMBER: 15666

DESCRIPTION OF CHANGE & REASON: Must have sharp corner to function. Chrome plate builds up at corners causing a radius.
Model Dwg Change #10524

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: G. Saunders DATE: 10-10-77

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		151,938
STD. HRS. PER 100			STD. HRS. PER 100		.768
DOLLARS PER 100			DOLLARS PER 100		5.310
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	$8070
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD - 6548 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☑ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO:

CHANGE NO.: 276299
EXPIRATION DATE:
INITIATED DATE: 9/27/77

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2	E Bowen		
METHODS & STDS. LEADER	J BLIVEN		9-27-77
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	W. ACKLEY J. CONOVER		9-27-77
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	G. HILL		9/27/77
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED			9/29/77 EP

MODEL NO.: 600,700,788 REQUESTED BY:
PART NAME: FINAL ASSEMBLY ENGINEER: C. PROSSER
PART NUMBER:

DESCRIPTION OF CHANGE & REASON: ADD NOTE "OPEN AND CLOSE BOLT FORCIBLY THREE TIMES. TRIGGER MUST NOT FOLLOW DOWN." TO CONFORM WITH SPECIFICATIONS & CHECK FOR FOLLOW DOWNS.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS ☐ HOLD FOR SALVAGE ☐ SCRAP PARTS ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RW - 6518 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 275943
EXPIRATION DATE:
INITIATED DATE: 5/10/77

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	J. Paliuka		5/11/77
PROCESS ENGR. GROUP LEADER	J.		
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	W. E. Ackley		5/10/77
	H. E. Lynch		5/10/77
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR			
	G. J. Hill		5/11/77
CONTROL OFFICE BLDG. 46-2	B. D. Matusik		5/11/77
PROCESS RECORDS REVISED			5/11/77

MODEL NO.: M1600, 700, 788 REQUESTED BY: E. H. Hill
PART NAME: 1) Gallery Test - Target ENGINEER:
~~PART NUMBER:~~ 2) Inspection Before Quality Audit Gallery Test

DESCRIPTION OF CHANGE & REASON: Change the number of times the functional check for safety operation is performed, from one to three times.
Checking the safety function three times insures the reliability of the test. To agree with present practice.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☒ USE PRESENT PARTS ☐ HOLD FOR SALVAGE ☐ SCRAP PARTS ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST
—	—	—	—	—

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: W. J. Newman DATE: 5-10-77

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		20,727
STD. HRS. PER 100			STD. HRS. PER 100		.551
DOLLARS PER 100			DOLLARS PER 100		$3.529
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	7,120
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

IMI - 6612 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 275539
EXPIRATION DATE:
INITIATED DATE: 1/11/77

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2	E. D. WHATSILK		
METHODS & STDS. LEADER			
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN			
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	J. W. Bowser	J. W. Bowser	1/11/77
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED		1/12/77 EB	

MODEL NO.: 700 BDL — REQUESTED BY: F.E. P.E.
PART NAME: FIRING ASSEMBLY — ENGINEER: R. Lee
PART NUMBER:

DESCRIPTION OF CHANGE & REASON: OP. # 170 — 3 to 5 LB TRIGGER PULL SPEC (2) ITEM 9, SHEET 7, WAS 4 to 6 LBS. — TO CORRECT PROCESS, 3 to 5 LBS IS THE PROPER TRIGGER WEIGHT.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED.
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

DON'T SAY IT—WRITE IT

To J Bowker Date 12/6/76

From C Prosser

Test To Determine Necessity For Lapping M1700, 600 Trigger Connector.

Two Thousand Connectors Were Processed With Lapping Omitted. Of These Only One Hundred Were Recorded Because The Assemblers Failed To Use The Engineering Tickets Provided. No Creepy Trigger Pulls Were Reported And No Noticable Increase In Rejects Occurred.

A Previous, Similar Test Of Several Thousand Unlapped Connectors Showed No Increase In Trigger Pull Rejects.

Eliminating Lap Would Also Save Parts Scrapped Because Lap Leaves Them Crooked.

FORM 6912 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☑ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO:

CHANGE NO.: 2754-62
EXPIRATION DATE:
INITIATED DATE:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	CP VALLABHANENI	[signature]	11-21-76
PROCESS ENGR. GROUP LEADER	DJ ANDERSON	[signature]	12/6/76
PRODUCTION SUPERVISOR	EM DOUGLASS	[signature]	12/9/76
AND PRODUCTION FOREMAN	CF HOWESER	K Haines	12-9-76
CHEK. & MST. SUPERVISOR			
OR PROCESS ENGR. SUPERVISOR	JW Bower	[signature]	12/9/76
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED		12/10/76 EB	

MODEL NO.: 40XB 600, 700 REQUESTED BY: Pete
PART NAME: TRIGGER CONNECTOR ENGINEER: Bower
PART NUMBER: 1679 AT936 1941

DESCRIPTION OF CHANGE & REASON: OBSOLETED LOADING OPERATION. SOME TIME AGO, VENDOR CHANGED METHOD OF MANUFACTURING SO THAT FORMING LINES ARE IN DIRECTION OF TRIGGER PULL. TESTS RUN INDICATE UNWRAPPED PARTS PERFORM AS WELL AS LOADED PARTS.

COMPONENT STATUS AS AFFECTED BY CHANGE – CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE – PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST – PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED.
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RU - 6518 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
ROUTE TO:

CHANGE NO.: 215299
EXPIRATION DATE:
INITIATED DATE: 10/4/76

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2	B. D. WATOSIK		
METHODS & STDS. LEADER	J. POLLICK		10-5-76
PROCESS ENGR. GROUP LEADER			
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	C. O. PARDEE / C. A. RUSSELL		10/6/76
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	J. W. BOWER		10/7/76
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED		10/8/76 EB	

MODEL NO.: 700 REQUESTED BY:
PART NAME: FINAL ASSEMBLY. ENGINEER: K. L. JOY
PART NUMBER:

DESCRIPTION OF CHANGE & REASON: OP # 310 — SHEET 4 #9 — ADDED LOTUS LUBE AND SPECIFIED TO CHECK THREE TIMES. — TO UPDATE PROCEDURE.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-4560 Rev. obsolete 12/30/77 cjp (276385)

INTERIM OPERATION AUTHORIZATION — CHANGE NO. 275263

"S" INTERIM OPERATION
"T" INTERIM OPERATION (DEPT. TO GET CREDIT FOR STD. LABOR & EXPENSE)

"S" INITIATED 11/10/76 EXPIRES 3/10/77
"S" REISSUE 3/10/77 EXPIRES 6/10/77
"T" INITIATED _____ EXPIRES _____
"T" 1st REISSUE _____ EXPIRES _____
"T" 2nd REISSUE _____ EXPIRES _____
"T" 3rd REISSUE _____ EXPIRES _____

"S" AUTHORIZATION C. Bower
Process or Chem. & Met. Engr.

Canceled 12/30/77

"S" RE-ISSUE AUTHORIZATION _____
"S" OPERATION GOOD FOR 2, 3 MO. PERIODS MAX. "T" OPERATION GOOD FOR 4, 6 MO. PERIODS MAX.

ROUTE TO:		ORIGINAL ISSUE	1st REISSUE	2nd REISSUE	3rd REISSUE
CONTROL OFFICE BLDG. 46-2					
M & S GROUP LEADER	VALLABHANENI				
PROCESS ENG. GROUP LEADER					
PRODUCTION SUPERVISOR	E. M. Douglas				
PRODUCTION FOREMAN	B. Van Dauber				
CHEM. & MET. OR PROCESS ENG. SUPERVISOR	J. BOWER	11/15/76		12/30/77	
CONTROL OFFICE 46-2					

PROCESS RECORD REVISED:
PART NAME SAFETY ASSEMBLY
PART NUMBER 26585
MODEL 700
REQUESTED BY ASSEMBLY

PROCESS ENGINEER _____

DEPT. # _____ WILL BE RESPONSIBLE TO PICK UP AND REWORK _____ COMPONENTS BEYOND THIS OPERATION.

OPERATION NO. [illegible] NAME [illegible] DEPT. [illegible]
OPERATION NO. 22-F NAME ADJUST TO GAGE DEPT. 37

DESCRIPTION OF CHANGE & REASON ADD GAGE OPERATION. TO CONTROL PARTS COMING TO SUB-ASSEMBLY WHICH EITHER CAN NOT BE ASSEMBLED, OR DO NOT FUNCTION CORRECTLY.

EQUIPMENT COST FOR CHANGE — PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST _____

PRODUCTION COST — PREPARED BY M & S ENGINEER

ITEM	COST INCREASE PRESENT	PROPOSED
PRODUCTION FORECAST		136,886 (12-77)
STD. HRS. PER 100		1.087
DOLLARS PER 100		$7.115
TOTAL DOLLARS	X	$9700
INVESTMENT DOLLARS	X	
PERCENT	X	Tool Accrual 6% (1-77)

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED.

ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED.

RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON.

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KINZER V. REMINGTON

REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 275205
EXPIRATION DATE:
INITIATED DATE:

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER			
PROCESS ENGR. GROUP LEADER	D. Burgess		8/26/76
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN			
CHEM. MACH. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	J. Bowser		8/26/76
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED		9/16/76 DS	

MODEL NO.: 700 REQUESTED BY: PE&C
PART NAME: Trig Housing Spacer — Front ENGINEER: J. Alberson
PART NUMBER: 14630

DESCRIPTION OF CHANGE & REASON: ADD .001" to Thickness of Spacer To Reset Trigger Lever Housing Dep. 10/73
M/Dwg Mechanics

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

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KINZER V. REMINGTON

RL 5 [illegible] REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 275204
EXPIRATION DATE:
INITIATED DATE:

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER			
PROCESS ENGR. GROUP LEADER	D. Anderson	D. Anderson	8/25/76
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN			
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR	J. Bauer	J. Bauer	8/24/76
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED		9/2/76 EB	

MODEL NO.: 700
PART NAME: 12½ Unfin. Spacer - Real
PART NUMBER: 14631

REQUESTED BY: Petc
ENGINEER: S. Anderson

DESCRIPTION OF CHANGE & REASON: Add .001 to Thk of Spacer.
To Reset Dry bind
1 M/Dwg. Change DCP # 10173

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

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RD-6560 Rev. Obsolete 4/12/77 CP

INTERIM OPERATION AUTHORIZATION — CHANGE NO. 275149

"S" INTERIM OPERATION — "S" INITIATED 7/30/76 EXPIRES 10/26/76
"S" REISSUE 10/26/76 EXPIRES 1/26/77
"T" INTERIM OPERATION (DEPT. TO GET CREDIT FOR STD. LABOR & EXPENSE) — "T" INITIATED ____ EXPIRES ____
"T" 1st REISSUE ____ EXPIRES ____
"T" 2nd REISSUE ____ EXPIRES ____
"T" 3rd REISSUE ____ EXPIRES ____

"S" AUTHORIZATION C. Prosser
Process or Chem. & Met. Engr.

"S" RE-ISSUE AUTHORIZATION ____

"S" OPERATION GOOD FOR 2, 3 MO. PERIODS MAX. "T" OPERATION GOOD FOR 4, 6 MO. PERIODS MAX.

ROUTE TO:		ORIGINAL ISSUE	1st REISSUE	2nd REISSUE	3rd REISSUE
CONTROL OFFICE BLDG. 46-2					
M & S GROUP LEADER	J. POLIVKA	7-30-76			
PROCESS ENG. GROUP LEADER	J. BOWER				
PRODUCTION SUPERVISOR	C. PARDEE				
PRODUCTION FOREMAN	J. CONOVER				
CHEM. & MET. OR					
PROCESS ENG. SUPERVISOR					
CONTROL OFFICE 46-2					

PROCESS RECORD REVISED:
PART NAME FINAL ASSEMBLY
PART NUMBER ____
MODEL 788
REQUESTED BY ASSEMBLY

PROCESS ENGINEER C. PROSSER 9/14/76

DEPT. # ____ WILL BE RESPONSIBLE TO PICK UP AND REWORK ____ COMPONENTS BEYOND THIS OPERATION.

OPERATION NO. 17215 NAME CLEAR STOCK FOR SAFETY DEPT. 41
OPERATION NO. ____ NAME ____ DEPT. ____

DESCRIPTION OF CHANGE & REASON ADD OPERATION TO CLEAR STOCK TO ELIMINATE SAFETY BIND - REJECTS FOR FOLLOW DOWN, FIRES ON SAFE ETC.

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST ____

PRODUCTION COST - PREPARED BY M & S ENGINEER GES 7-30-76

ITEM	COST INCREASE PRESENT	COST INCREASE PROPOSED
PRODUCTION FORECAST		46105
STD. HRS. PER 100		.330
DOLLARS PER 100		$ 1511
TOTAL DOLLARS	X	$ 700
INVESTMENT DOLLARS	X	
PERCENT	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED.

ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED.

RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

5

HD - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE

CHANGE NO.: 21,930 1
EXPIRATION DATE: _____
INITIATED DATE: 12-22-70

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER	E. KARLA	EK 1/4/71	
PROCESS ENGR. GROUP LEADER	N. THOMPSON		
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN	J. HUNTER R. WILSON	[illegible] 1/5/71 R. Wilson 1/5-71	
CHEM. & MET. SUPERVISOR	K. CHADWICK	[illegible] 1/5/71	
OR PROCESS ENGR. SUPERVISOR	R. CASE	[illegible] 1/6/71	
CONTROL OFFICE BLDG. 46-2	J. COMSTOCK		
PROCESS RECORDS REVISED		[illegible] 1.6.71	

MODEL NO.: 6400 & 6460 REQUESTED BY: C&I C
PART NAME: Fuse Contact Housing ENGINEER: L. Bergquist
PART NUMBER: 15429

DESCRIPTION OF CHANGE & REASON: Change coining at oper. 4 and add oper. 5 — Reaming and burr drill the trigger pin hole to eliminate assembly problems at assembly.

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☒ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST: _____

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: G.E. Saunders DATE: 1/4/71

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		26,577
STD. HRS. PER 100			STD. HRS. PER 100		.459
DOLLARS PER 100			DOLLARS PER 100		$1.807
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	$480/yr.
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED
ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED
RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
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RD - 6512 REV. 5-62

PROCESS RECORD CHANGE AUTHORIZATION

CHANGE NO.: 26727

✓ PERMANENT CHANGE

☐ LONG DURATION ALTERNATE CHANGE

EXPIRATION DATE: /

INITIATED DATE: 12/28/66

ROUTE TO:

		APPROVALS	DATE
CONTROL OFFICE BLDG. 46-2			
METHODS & STDS. LEADER			
PROCESS ENGR. GROUP LEADER	T Thompson		1/19/68
PRODUCTION SUPERVISOR AND PRODUCTION FOREMAN			
CHEM. & MET. SUPERVISOR OR PROCESS ENGR. SUPERVISOR			
CONTROL OFFICE BLDG. 46-2			
PROCESS RECORDS REVISED		1/19/68	

MODEL NO.: 700 & 660 REQUESTED BY: PELC

PART NAME: Bird Assembly ENGINEER: Tibaldi

PART NUMBER:

DESCRIPTION OF CHANGE & REASON: CHANGE METHOD OF LUBRICATION ON M660 & 700 FROM .220 GAL TO GUNSLICK TO IMPROVE HEAVY BOLT LIFT CONDITION

COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE

☐ USE PRESENT PARTS | ☐ HOLD FOR SALVAGE | ☐ SCRAP PARTS | ☐ REWORK PARTS

EQUIPMENT COST FOR CHANGE - PUT ESTIMATED COST UNDER ITEM

TOOLS & GAGES	CUTTING TOOLS	MACHINE OR EQUIPMENT	PLANT LAYOUT	TOTAL COST

DESCRIPTION OF COST:

PRODUCT COST - PREPARED BY METHODS & STANDARDS ENGINEER: DATE:

	REDUCTION IN COST			INCREASE IN COST	
ITEM	PRESENT	PROPOSED	ITEM	PRESENT	PROPOSED
PROD. FORECAST			PROD. FORECAST		
STD. HRS. PER 100			STD. HRS. PER 100		
DOLLARS PER 100			DOLLARS PER 100		
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	
INVESTMENT DOLLARS	X		INVESTMENT DOLLARS	X	
PERCENT RETURN	X		PERCENT LOSS	X	

TOOLING & EQUIPMENT MUST BE AVAILABLE BEFORE PROCESS CHANGE IS INITIATED

ATTACH PRESENT PROCESS RECORD PRINTS SHOWING CHANGES INDICATED IN RED

RETURN UNACCEPTABLE REQUEST TO ISSUING ENGINEER WITH REASON

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Rev.

Also two additional copies of this under
=1/100 - Rubber Stamp
=1/742
=1/743

LOG OF SAFETY PROBLEMS

Date	Code	Defect	Cause
11/21/76	600	FD	FOREIGN MATTER BINDING SEAR
	742	FD	F.P. BINDS, DOES NOT CUT MUCH IN F.P.
	742	FD	DISC. LOOSE, DROPS OFF ACTION BAR
	700	FD	cocking arm & notch off FS. in BOLT
11/28/76	600	FD	sear binds, base in BAR housing F.S. hole
	600	FSR	Connector binds, base @ hole
	600	FSR	don't duplicate - checks OK
12/5/76	742	FD	Primer fragment caught in F.P. hole
12/12/76	600	FSR	connector binds on crooked TRG stop screw
	600	FSR	connector doesn't detect - no use if not adjusted
12/19/76	742	FD	F.P. Binds Forward, Det. Pin cut .015 shallow(.14
	700	FSR	insufficient safety lift — .0015 (.005 min)
	700	FSR	Safety binds on stock — check at F.S. of trig
1/2/77	742	FD	insufficient travel on disconnector, drops off A.BAR
	700	FSR	Trigger sticks back, binds in guard - left side
1/16/77	742	FD	Cannot duplicate, but found primer hung in actio
	700	FSR	Safety Button binds on stock — check at F.S. of trig.
	742	FD	Disconnector over top of connector
	700	FSR	insufficient safety lift — .0015 (.005 min)

LUN 0012234

REM 0080902

PROCESS FLOW OF
GUNS RETURNED TO
PLANT

9-84

DON ROARK HAS
ASKED US TO
INCLUDE R&D
RE-TURNS TO
"RETURNED PRODUCT", WHICH TICKET

PROCESS FLOW OF
GUNS RETURNED TO
PLANT

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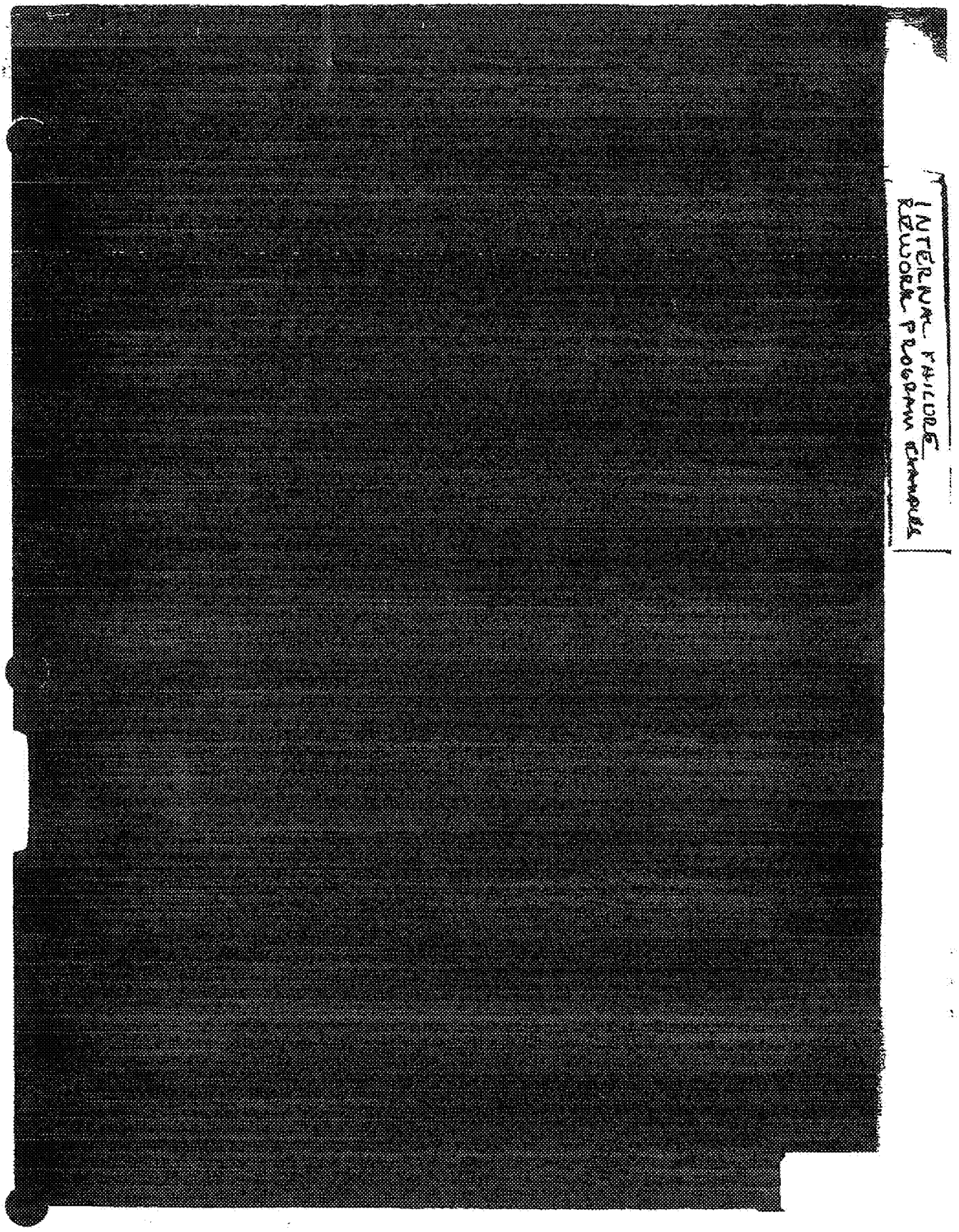

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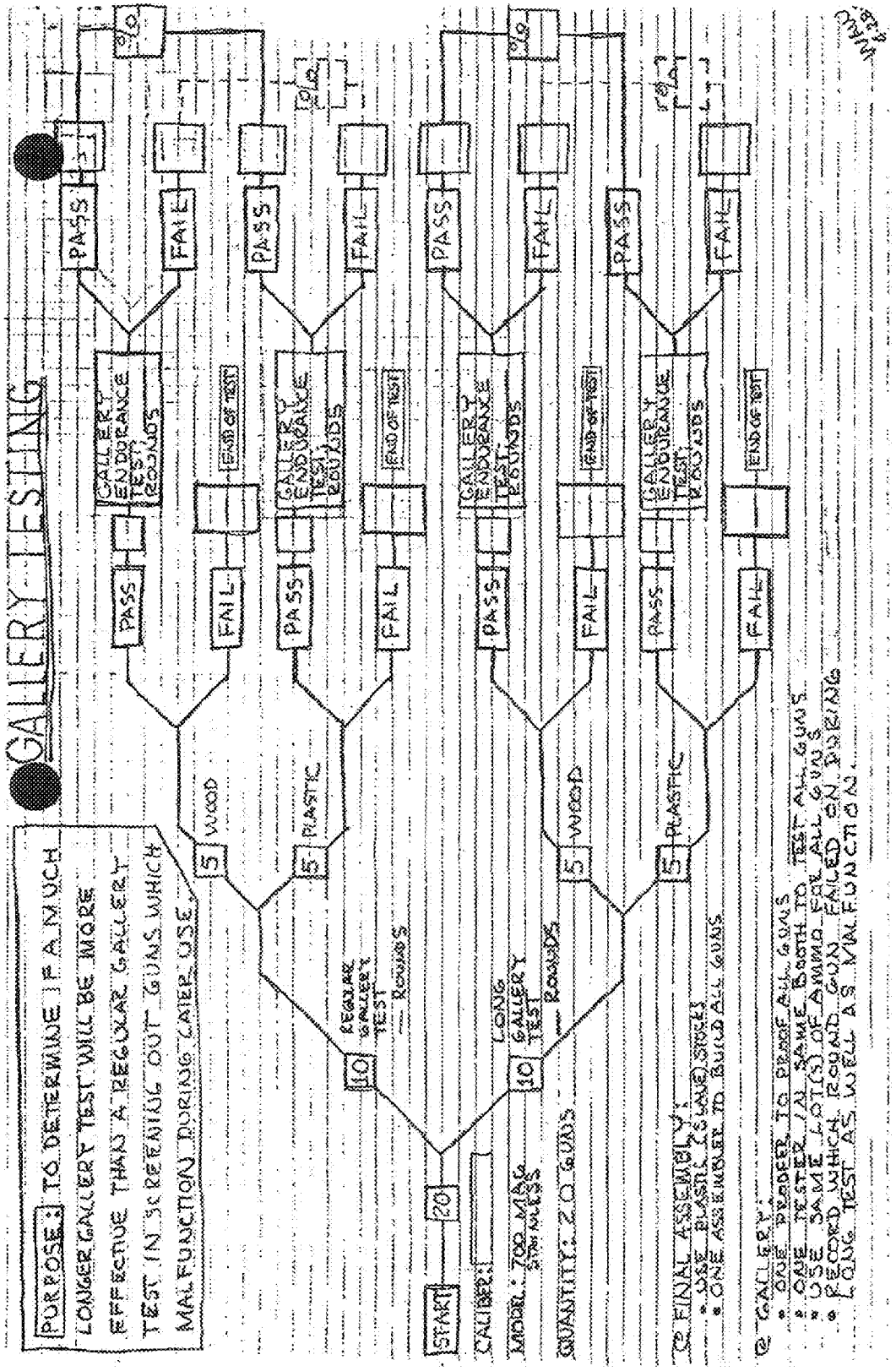
KINZER V. REMINGTON


GALLERY TESTING
PURPOSE: TO DETERMINE IF A MUCH LONGER GALLERY TEST WILL BE MORE EFFECTIVE THAN A REGULAR GALLERY TEST IN SCREENING OUT GUNS WHICH MALFUNCTION DURING LATER USE
START
CALIBER:
MODEL: 700 MAG
QUANTITY: 20 GUNS
20
5 WOOD
5 PLASTIC
REGULAR GALLERY TEST — ROUNDS
10
LONG GALLERY TEST — ROUNDS
10
5 WOOD
5 PLASTIC
GALLERY ENDURANCE TEST 200 ROUNDS
PASS
FAIL
END OF TEST
FINAL ASSEMBLY:
* USE PLASTIC STOCKS
* ONE ASSEMBLER TO BUILD ALL GUNS
GALLERY:
* ONE READER TO READ ALL GUNS
* ONE TESTER / ALL SAME BARTH TO TEST ALL GUNS
* USE SAME LOT(S) OF AMMO FOR ALL GUNS
* RECORD WHICH ROUND GUN FAILED ON PAPER
LOOK TEST AS WELL AS MALFUNCTIONS

SHEARED ENGINEERING COMPUTATION SHEET Sheet No.

Title of Proj. or Study: CMM M5 RECEIVER Proj. or Study No.

Subject: REPORTS NEEDED Works

Computer: VAX Date: 4-4-91

ANALYSIS PROGRAMS	PROCESS CONDITIONS				
	CONDITION 1 SAMPLES 1.1 ... 1.END	CONDITION 2 SAMPLES 2.1 ... 2.END	CONDITION 3 SAMPLES 3.1 ... 3.END	ALL SAMPLES 1 + 2 + 3 + ...
"INSPECTION SUMMARY DATA REPORT"				✓
"LOT ANALYSIS BY VARIABLES" (NORMAL)				✓
"LOT ANALYSIS BY VARIABLES" (FULL)	✓	✓	✓	
"LOT BY ATTRIBUTE ANALYSIS" (INCLUDES TOLERANCE)				2

USE STANDARDS FOR MINIMUM ESSENTIAL INSTALLATIONS

BARBER - 1.30.130000656

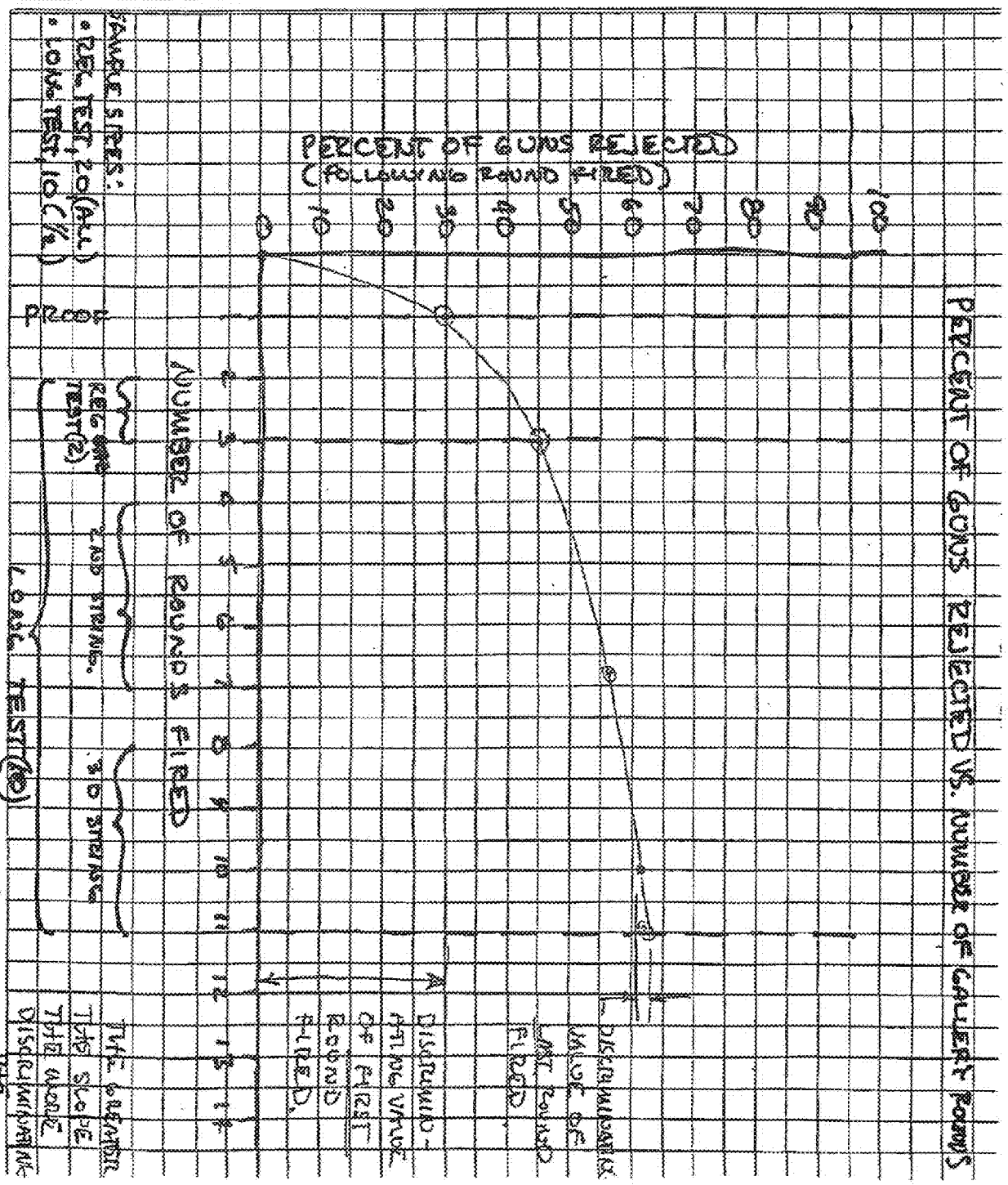
REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT COMPUTATION SHEET SHEET NO. 5

TITLE OF PROJ. M700 ST. STEEL TEST BEDS PROJ. NO.

SUBJECT WORKS

COMPUTER W. WARREN DATE 9.28.82 19



BARBER - 1.30.1300006 57

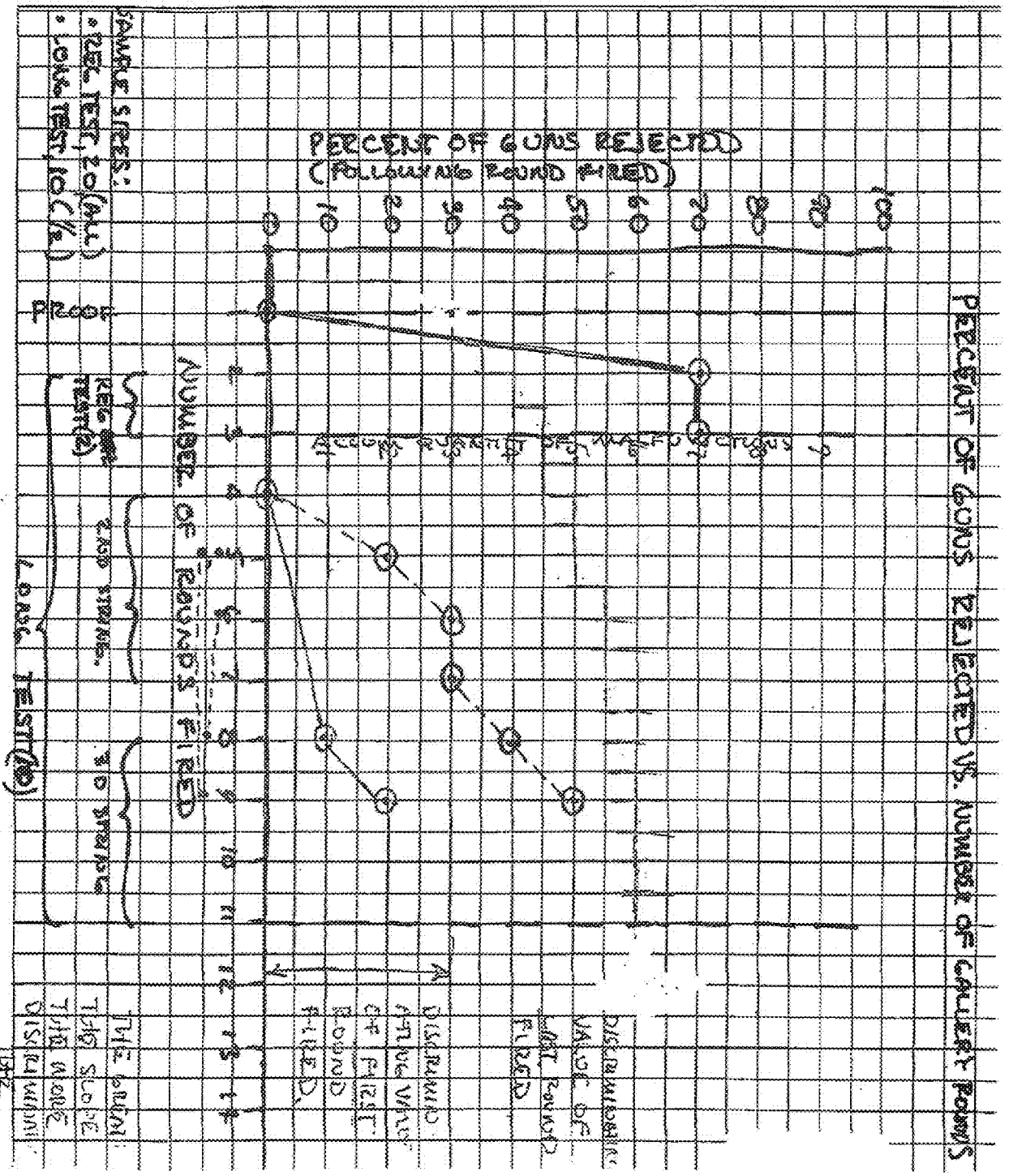
REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT — COMPUTATION SHEET — SHEET NO. →

TITLE OF PROJ. M700 ST. STEEL TEST AXLES — PROJ. NO.

SUBJECT — WORK#

COMPUTER W. WALKER DATE 9.29.92 19



BARBER - 1.30.13000065B

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R2520126

TEST EXAMPLE
(GALLERY)

MARKERS
GUARD
ADJUST

BILL WARREN
EXT 215

MONTHLY REPORT

Bill Warren
5-2-88

SAFETY

FIRST FOLLOWUP D6768: MIKE PAGETTI/AS
IDEA FOR COMMON TRIGGER PLATE ASS'Y
FUTURE ALTERATION TO REDUCE FINGER PINCH
POINT HAZARD IS IN PLACE AND IS WORKING
WELL. THE ASSEMBLERS LIKE IT ALSO.

QUALITY

* SQI CAR. TWELVE SQI'S COMPLETED.
THREE " " IN APRIL
MAJOR PARTS OF PROGRAM NOW IN PLACE
* MARLBORO QUALITY AUDIT PROGRAM.
THE EXTERNAL REPORT TO WILMINGTON HAS
BEEN COMPLETED. THIS INCLUDES THE CORRECTIVE
ACTIONS ASSOCIATED WITH EACH NONCONFORMITY
FOUND. 9/6 INVALID SEE WOOD.

* DESIGN TEAM FOR NEW QUALITY MECHANISM:
(MADISON JACKSON WARREN BALDWIN)
THE PROGRAM WAS REVIEWED WITH PLANT
STAFF AND MORE HAS BEEN HEARD.

* SPC INITIATIVE. THIS HAS TAKEN 50% OF
MY TIME. THE TEAM HAS COMPLETED
INTRODUCTION SESSIONS WITH 1ST AND 2ND
LINE SUPERVISION AND ENGINEERS.
INTRODUCTIONS WILL BEGIN WITH OPERATORS
IN ALL AREAS WHERE 11-87 PARTS ARE RUN.
MODEL FOCUS: START WITH M11-87 AND
BARREL ASS'Y FIRST.
* REVIEW OF QUALITY INFO GRAPHICS & KEEP CUSTOMER
NEEDS IN MIND.

PROCESS IMPROVEMENTS

DESIGN OF THE NEW™ TRIGGER ASS'Y
FIXTURE IS COMPLETE. THIS WILL ALLOW
BUILDING THE COMPLETE ASS'Y BEFORE
ADJUSTING AND WILL PERMIT VERIFYING
SEAR USE AT THIS OPERATION, RATHER
THAN AT FINAL INSPECTION.

SAFETY PAWL MACHINE

THE ALUMINUM INDEX WHEEL WAS WEARING
EXCESSIVELY AT WORKPIECE CONTACT POINTS. THIS
CONTRIBUTED TO SOME ERRATIC OUTPUT QUALITY.
A REPLACEMENT WHEEL MADE OF TOOL STEEL
PROVIDES MUCH IMPROVED PERFORMANCE.
* 25,000 PARTS WERE RAN NO LESS
THAN 4 DAYS IN EARLY APRIL.

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BARBER - 1.30.130000660

July 30, 1991

MONTHLY REPORT JULY, 1991 Bill Warren

SAFETY The Safety Manual section on cutter guarding was reviewed for a SITE audit. Because the audit was in an office area, I devoted attention to the contents of the manual itself.

My follow-up included:

- adding the specific cutter guarding requirements from the Safety Manual to our generic machine specifications data base
- bringing to the attention of the Manual review committee, a vague reference to "Engineering Standards." I could not locate any such information on site.

PROCESS CONTROL

Major process studies: completed and reviewed one each for Housing and Receiver just before shutdown. This permitted needed mold changes to proceed during shutdown.

Future studies: The greater need-and priority-is on molded parts.

molded parts (all repeats)	machined parts
receiver	bolt
housing	barrel
firing pin carrier	magazine box
magazine guide	
sear spring cap	

assemblies
housing (holes) C.M.M. program being written by G. Saunders
receiver (after welding sear pin)

Breech bolt process: I have been working with G. Barnes to help develop a process control strategy to help the operator take the appropriate corrective actions, integrated with the new optical gauge. We have ranked characteristics for importance and defined how "paired" dimensions will react when the cutter common to both of them is adjusted. There is more work to be done here to provide permanent written reference information and to exploit the graphical output/data base capabilities of the optical gauge.

I am working with G. Barnes to improve the current technical SOP for the Optical Gauge.

SPC: Recently, members of the Shotgun Process Engineering team have said that they are considering purchasing electronic gauges linked to an electronic data base to provide "instant SPC" for some dimensions on the O/U. My impression of their vision for this action was that they considered adding SPC to be strictly a technical activity. I indicated to them, at some length, that for a high probability of success, there must be other considerations and actions.

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As an alternative, I suggested that Engineering resources focus on providing clear instructions and means to the operator to make it easy for him to correctly gauge his work and adjust his process. These things are essential to any form of operator control.

I also provided him an article describing additional things which are essential to successful SPC implementation.

EXPERIMENTS

- Cryogenic treatment of M522 Receivers: to determine if post-mold shrinkage (without fixture cooling) could be reversed cryogenically. Conclusion: cryo. treatment was not a practical alternative to fixture cooling the receiver. I analysed the results and wrote and distributed the report.

- Elevated temperature exposure test for M522 housing blanks: to determine if dimensional changes occur over 2 days at 150 degrees F. Request of K. Soucy. Conclusion: localized dimensional changes of up to 3% were found in areas of this part. These were in the same areas where changes after molding have been measured over time. I planned this test, analyzed the results and issued the report.

  Similar testing needs to be repeated with the completed product.

EDUCATION/TRAINING

- Videoconference @ MVCC; "The new economics for management." Dr. Deming, himself, talked about several of his "14 points." He is 91 years old; his presentation is very labored. The value to me was that the depth of his beliefs and the strength of his convictions comes across very clearly.

- Suggestions were made to improve our 4/year gun handling review:
  - Eliminate redundancy by omitting grade variations
  - Change the "surprise" now and then.
  - Add models to anticipate new product introductions

  If necessary to implement the above improvements, we should divorce our choice of sample guns from those used by production.

VACATIONS/HOLIDAYS

combined: 7 1/2 days

SIGNIFICANT PROBLEM

We are still not able to transfer files from the R&D CMM to the Vax system. Doing so permits analysis using MINITAB. Our system person feels that we are caught between the machine manufacturer and the software supplier. This means that measurements of the M522 receiver must still be analyzed with the more modest CMM graphics package. We can adjust to this.

REMINGTON ARMS COMPANY, INC.
ILION, NEW YORK

CONFIDENTIAL

March 8, 1993

TO:

PITTSBURGH	ILION	WILMINGTON
B. R. BROWN	J. F. WINSKE	A. W. WHEATON
R. F. RIESMEYER	E. S. RENSI	V. M. ROMANO
	J. M. FLOYD	J. M. BUNTING
LONOKE	R. J. ORF	J. R. BALIO
P. EL OTTO	R. A. JACKSON	J. M. DWYER
R. S. TOULSON	D. P. CHRISTIE	J. H. CHISNALL
J. R. PRUITT	K. D. GREEN	
C. P. BIRCH		
T. C. DOUGLAS		

FROM: K. W. SOUCY

FEBRUARY PROGRESS REPORT
RESEARCH & DEVELOPMENT
FIREARMS/AMMUNITION

REPORTS OF INDIVIDUAL ENGINEERS ARE ATTACHED. DISTRIBUTE TO YOUR ORGANIZATIONS AS YOU DEEM APPROPRIATE. WHILE DISTRIBUTING AND DISPOSING OF THIS REPORT, RECIPIENTS ARE REMINDED OF THE PROPRIETARY NATURE OF THE CONTENTS.

FIREARMS HIGHLIGHTS

THE PEERLESS O/U TRIAL AND PILOT RUN COMMENCED 2/26/93. TESTING IS UNDERWAY.

THE XP-100 TRIAL AND PILOT TEST HAS BEEN DELAYED DUE TO SIGHT MISALIGNMENT AND STOCK FINISH PROBLEMS.

EFFECTIVE MARCH 1st, BILL WARREN HAS BEEN INSTRUCTED TO DIRECT HIS EFFORTS AROUND BASIC RESEARCH OF RELEASE MECHANISMS TOWARD A NEW FIRE CONTROL FOR THE M8AR.

AN INITIAL COLD FORGING TEST OF THE M8AR BARREL/RECEIVER WAS MODERATELY SUCCESSFUL. A SECOND TEST WITH LARGER DIAMETER BLANKS WAS CONDUCTED AND ACHIEVED 90% FILL. FURTHER ANALYSIS SHOWED LONGITUDINAL CRACKING ON INSIDE SURFACES. WARM/HOT FORGING AND DIFFERENT MATERIAL SELECTIONS ARE BEING CONSIDERED TO ELIMINATE CRACKING.

AMMO HIGHLIGHTS

A 10,000 ROUND TRIAL & PILOT RUN OF 12 GA PREMIER COPPER SOLID WAS PRODUCED USING SABOTS FROM THE EXPERIMENTAL MOLD. 5-SHOT, 100 YARD GROUPS AVERAGED SLIGHTLY UNDER 3 INCHES. THE PRODUCTION SABOT MOLD HAS BEEN APPROVED AND AN INITIAL PRODUCTION RUN OF PRODUCT IS SCHEDULED FOR MARCH 29th.

INITIAL DESIGN OF 20 GA PREMIER COPPER SOLID IS COMPLETE. PROTOTYPICAL SLUGS AND SABOTS ARE BEING PRODUCED ON THE R&D SCREW MACHINE.

INVESTIGATION HAS BEGUN ON THE QUALITY AND CONSISTENCY OF OUR PRESENT PRIMER MIXES. SEE MARCH 2, 1992 MEMO FROM F. G. LOPATA (LAST REPORT IN YOUR PACKET).

March 5, 1993

TO: K.W. Soucy
FROM: W.A. Warren, Jr.

PROGRESS REPORT Feb., 1993

M700 VS Long Action "Sendero Special"

- The vendor's master stock was approved 2-12-93.
- The first "production" stock from vendor's (H-S Precision) new tooling was reviewed 3-3-93. The vendor felt this sample was representative of his production process and quality system. Three significant opportunities for improvement were identified and communicated to the vendor. A duplicate inletting gauge and various "try" gun parts have been provided to him.
- We have requested a sample from each of the six new molds being built before each is used for production. The vendor says that it takes him 2-3 days to complete a new mold.

BASIC RESEARCH-RELEASE MECHANISMS

Measurement Apparatus: The detailed cost estimate for this project was completed on 3-5-93 and submitted for financial analysis and write-up. Most of the expenditures will be in 2Q93. This apparatus will provide an objective way to measure the force vs. displacement behavior of user-operated firearms' devices.

Benchmarking: competitive purchases-no change. Savage model 116FCS (stainless steel, synthetic stock, detachable box magazine) is cataloged in '93, but not yet available.

Change in activity focus: Effective 3-1-93, my release mechanism activity has become focused. This is now directed toward the specific objective of developing a fire control system for the current NBAR program.

DESIGN-RELATED

On an ongoing basis, I am assisting N. Keeney with his NBAR process-design integration program.

The Customer Repair computer data base, now being used by repairmen, has the potential to provide additional insight into customers' field experience with our products. I have requested of plant systems a systematic ranking/sorting of the data to look for patterns which might reveal opportunities to improve. This initial inquiry would be applicable to NBAR.

SAFETY

Monthly time invested in the R&D safety committee was 19 hours.

The quarterly Safe Gun Handling Review for all R&D employees is 95% complete.

ATO

I completed a technical briefing for a production foreman to help him with a 3d step grievance over a quality-of-execution issue on the common fire control.

I assisted ATO Engineering and Design with a cost saving opportunity (on a high-volume common fire control component) identified as a result of a need for new vendor tooling.

END

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

MONTHLY REPORT

Bill Warren
5-2-88

SAFETY
F.A.T. FOLLOWUP D6768: MIKE PAGESTELLAS IDEA FOR COMMON TRIGGER PLATE ASS'Y FUTURE ALTERATION TO REDUCE FINGER PINCH POINT HARDNED IS IN PLACE AND IS WORKING WELL. THE ASSEMBLERS LIKE IT ALSO.

QUALITY
* SQI CAR. TWELVE SQI'S COMPLETED. THREE " " IN APRIL
MAJOR PARTS OF PROGRAM NOW IN PLACE
* MARKETING QUALITY AUDIT PROGRAM. THE EXTERNAL REPORT TO WILMINGTON HAS BEEN COMPLETED. THIS INCLUDES THE CORRECTIVE ACTIONS ASSOCIATED WITH EARLY NONCONFORMITY FOUND. 9/L INVOLVED SEE WOOD.

* DESIGN TEAM FOR NEW QUALITY NEEDS: (WILKINSON, JACKSON, WARREN, BALDWIN) THE PROGRAM WAS REVIEWED WITH PLANT STAFF'S AND MORE HAS BEEN HEARD.

* SPC INITIATIVE. THIS HAS TAKEN 50% OF MY TIME. THE TEAM HAS COMPLETED INTRODUCTION SESSIONS WITH 1ST AND 2ND LINE SUPERVISION AND ENGINEERS. INDOCTRINATIONS WILL BEGIN WITH OPERATORS IN ALL AREAS WHERE 11-87 PARTS ARE RUN. MODEL FOCUS: START WITH M11-87 AND BARREL ASS'Y FIRST.
* REVIEW OF QUALITY INFO GRAPHICS & KEEP CUSTOMER NEEDS IN MIND.

PROCESS IMPROVEMENTS
DESIGN OF THE NEW™ TRIGGER ASS'Y FIXTURE IS COMPLETE. THIS WILL ALLOW BUILDING THE COMPLETE ASS'Y BEFORE ADJUSTING AND WILL PERMIT VERIFYING SEAR LIFT AT THIS OPERATION, RATHER THAN AT FINAL INSPECTION.

SAFETY PAINT MARKING
THE ALUMINUM IDLER WHEEL WAS WEARING EXCESSIVELY AT WORKPIECE CONTACT POINTS. THIS CONTRIBUTED TO SOME ERRATIC OUTPUT QUALITY. A REPLACEMENT WHEEL MADE OF TOOL STEEL PROVIDES MUCH IMPROVED PERFORMANCE.
* 25,000 PARTS WERE PAINTED IN LESS THAN 4 DAYS IN EARLY APRIL.

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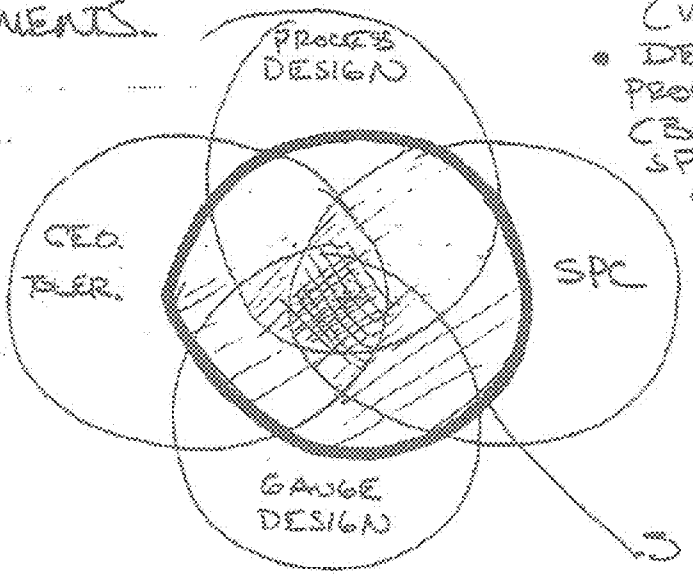
KINZER V. REMINGTON

W AM. 12/6/88

SPC IS PART OF A SYSTEM. ITS SUCCESS IS INFLUENCED BY OTHER SYSTEM ELEMENTS.

⇒ SPC NEEDS TO IMPACT OTHER SYSTEM ELEMENTS.



- POSITURE
- INDUSTRIAL ENG., (MANAGING GROUPS)
- DESIGN OF MACH PROCESSES OFF SITE (SEQUENCE/PERFORMANCE SPECS) OPERATOR CONTROL.
- EMPLOYEE RELATIONS (PEOPLE MGMT)

ALL THESE, AND OTHERS, HAVE AN IMPACT, DETRIMENTAL OR REINFORCING ON SUCCESS ON SPC.

- SPC/ SYS MFG: MORE LOT SIZE - ALLEVIATE SAMPLING. INVENTORY ON SEPARATING AND WORK-IN OUTPUT.
- MAIN GROUP/ SPC: # OF OTHER PEOPLE OPERATORS [illegible]

MONTHLY REPORT

Bill Warren
01/16/89

TIME BREAKDOWN
SPC: 80%
AFO: 15%
MISC: 5%

Vacation days used in month: 7
" " remaining in 1988: 0

QUALITY
SQICAR:
Month: 3
First 12 months: 28

A separate review and summary of the first year's responses is being prepared. It will be completed in January.

VSQC: The M700 line was shut down for awhile 12-7-88 because of control point inspection concern over receiver appearance (turned out to be due to wire brushing). Bill coordinated the meeting which provided temporary samples.

FINISHED GOW AUDIT: Bill has completed the revised auditor job description. It is ready for review by the committee.

There are two more items to be done to assist the resumption of this audit activity:

- Propose general changes, from previous practice, in the way auditing will be conducted.
- Make specific proposals for elements to be added, deleted or changed in the existing audit process records.

SPC: The SPC team has completed charting startup on all operations in the 7400 receiver area (8389) which are part of the FMS receiver process. The team will continue with some charting startup for all operations (manual line) in 8369 before leaving this area to start with the SP-10.

R2510511

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KINZER V. REMINGTON

Syn. Mfg
5-12-88

KEY MACHINES: like plastic molding machine
KEY OPERATIONS: Everything goes thru it.

CAUSE: warranty [contract 2%]

There is can be basic for capital expenditures. Consultants will help you justify these things.

LOSS flow areas: color reject

* There really isn't any constraints in this plant, except we

We have made 4200 guns per day here.

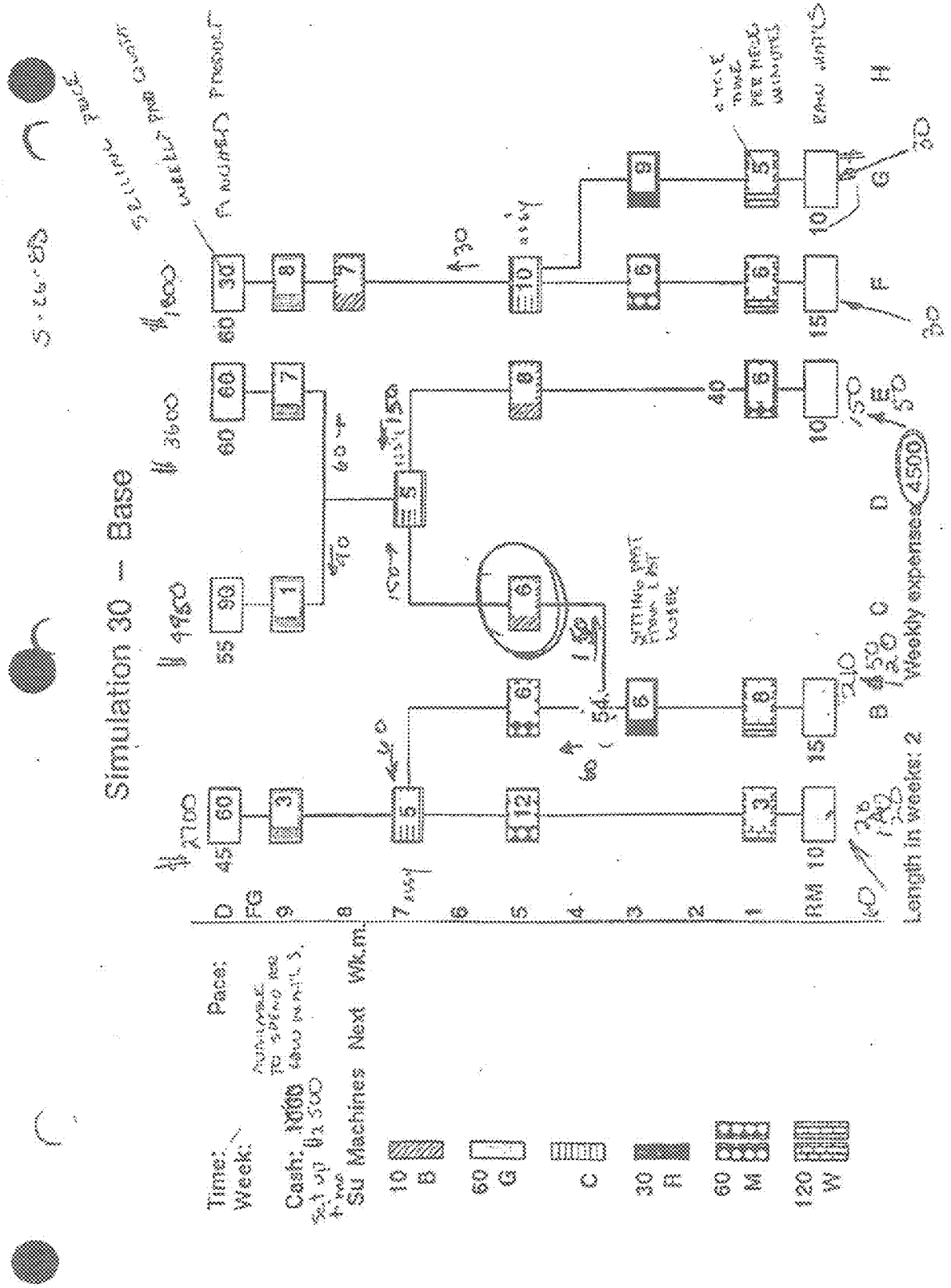
- Inventory constipates the plant -

- OE goes beyond labor expense -

There is value to having a circumference "bin system" for small parts, i.e. Bins. pins, screws, etc.

Look at T, I, OE for making decisions on costs, etc. changes.

* What does production want me to work on?


Simulation 30 – Base
Time:
Week:
Cash:
Pace:
Next
Wk.m.
Length in weeks: 2
Weekly expenses
10 B
60 G
C
30 R
60 M
120 W

CC: L. Vandewalker
2-28-90

MONTHLY REPORT FEB., 1990
William A. Warren, Jr.

CHARTING PROGRESS 870 EXPRESS RECEIVER SHOP
All 14 groups selected to chart are now charting all characteristics selected. This was completed with the arrival of a new variables gauge which replaces a long-standing step plug gauge for hole depth. CHARACTERISTIC SELECTION CRITERION: each group operator is charting at least the one "most important" from his group.
There have been no add'l groups with control limits added this month. This is because the processes for several characteristics, as run, are not capable of meeting existing spec limits. See below.

NEAR TERM DIRECTION FOR SPC IMPLEMENTATION
Receiver shop supervision have agreed that we should involve the four adjacent groups in 8365 which perform similar operations on the 1187 and LW lines. We are beginning this activity with an SPC III class 2-28-90.

CHARTING PROGRESS OTHER AREAS
Charting startup at Autodrill is complete. This awaited the new gauge for concentricity. Both shift operators and first line participated in the selection process. The operators here started charting the second part of the machine on their own.

SPC TEAM AUDIT FOLLOW-UP
We met with the the first liner and operator in Dept 03 after they requested a charting frequency review following the audit and machine grouping changes. They agreed to chart both machines each shift at what we consider to be a "minimum useful level."
Ralph Washburn shared his dept.s' favorable audit results with the plant via the Business News.

MACHINE STUDIES/CHART ANALYSES
We have completed several of these which specifically address processes which are incapable of meeting current spec limits. Most of these conditions are due to misaligned fixtures on multi-fixture machines and must have been reviewed with production for corrective action.
It does not make sense to apply control limits to these characteristics until these conditions are brought under control.

TRAINING
I attended an ASQC-sponsored seminar in Utica entitled, "A leadership style for changing times." It was very worthwhile and very modest in cost. Other SPC team members and others in Supervision could benefit from it. The author's premise is that profit, quality and management style are intimately linked. He then describes this link and identifies three problems typical of western-hemisphere-management and proposes alternatives; taking from Deming, Juran, Crosby and others. Very insightful.

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KINZER V. REMINGTON

RC: R. Jackson
L. Vandawalker

Oct.30, 1989

MONTHLY REPORT - OCT. '89 SPC TEAM
W. WARREN

Charts with control limits on floor in Dept's. 8156/77
- o 90-95 % complete. Exceptions: low volume product, machines down and tool room fixture work.

Taught and resourced SPC I and II classes for Receiver shop.

Met with Receiver shop supervision to prepare them for SPC.

Completed machine study in 8156. Shared results with the floor and engineering. Resourced discussion leading to agreement on corrective action strategy. See attachment.

Leacock task team. Attended several working sessions. I contributed idea on how to graphically represent complex CMM measurement sequences. This was reduced to practice by F. Wrisley. S. France and I recommended that the two of us discontinue active participation because this would have delayed SPC entry into next area. Accepted.

Visited Manth-Brownell (near Syracuse). Very worthwhile. They are strongly committed to training-32 hours for SPC alone. See attached Trip Report and "Network News".

Participating in two shotgun GPM process studies thru turn
- o This session 50 % complete

We have begun active floor involvement in dept. 8365, receiver shop, on the dual 670 Express lines, on 10-30-89.

Observation on process record sketch converted to Vaxcamps data base: some information has been altered in a way that has reduced its value to the user. Is there a system in place to check these sketches before inclusion? See attach.

Attachments:
- machine study follow-up letter
- trip report/Network News
- marked Vaxcamps process sketch

R2513994

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KINZER V. REMINGTON

CC: L. Vandewalker
1-31-90

MONTHLY REPORT JAN., 1990
William A. Warren, Jr.

CHARTING PROGRESS 870 EXPRESS RECEIVER SHOP

All groups have now been reviewed for charting applications. All groups which now have gauges to chart are charting.

- charting applicable; 14 of 15 groups
- now charting at least one characteristic; 12 groups
- charting all characteristics; 9 groups
- at least one chart with screen limits; 6 groups

TRAINING

We have begun to involve Jeff Lawrence in "These are the things we do and this is the way we do them."

MACHINE STUDIES

We have completed several studies/analyses on multiple-fixture operations. These identify opportunities to improve and we review results with supervision, machine setter and operator. They are useful because:

- The results frequently help establish charting strategy.
- They raise awareness of such tools available to help prod.
- This activity demonstrates a willingness of SPC team members to assist production with improvements.

DOCUMENTED QUALITY IMPROVEMENT

This before/after graphic comparison illustrates the positive results of action taken by production to correct one out-of-position fixture on a four-fixture machine. It was also sent to 2nd line supervision to reinforce this positive behavior.

AUDIT OF PREVIOUS SPC DEPARTMENT

This was a positive experience in Dept #156; one of the two depts. most recently completed by the SPC team. My method was to involve the first liner during the audit of his area. There are several advantages to doing this: his presence lends credibility to the task, he gains immediate and first-hand knowledge of the results and this provides an appropriate time to secure the first liner's commitment to corrective action.

SCREEN LIMITS

The way we are establishing screen limits is tedious and very labor-intensive. Also, the degree of correctness of these limits can enhance or reduce credibility of the SPC program on the floor. As a group, we have recognized the need to make improvements.

OTHER JOBS

- startup charting on auto drill group: minor progress-no need to wait for new hole diameter gauge
- re-evaluate control limits on GFM area: to be done after above is started

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KINZER V. REMINGTON

A 1989 GOALS

W.A. Warren,Jr.
11/9/88

Time allocation:
SPC 90%
ATD 10% This is not project-oriented time. Most of this has been invested as technical resource to others.

SAFETY Actively improve the level of plant safety and safety awareness by:
- avoiding injury to myself and all others impacted by my actions.
- completing useful SITE (or other) audits on time
- actively participating in (plant/committee/dept) safety-related assignments

STATISTICAL PROCESS CONTROL This is my current principal assignment. I expect it to continue well into 1990.
Broad SPC goals are to:
- accelerate the rate of spreading SPC
- identify and encourage change to cultural barriers to SPC in a way that makes SPC a stable and integral part of the way we manage our operations

Specific tasks and assignments supporting these are team-generated.

ATD Continue to resource/assist the following kinds/types of activities where my technical expertise, experience or prior involvement are useful:
- SRICAR improve/expand this activity in ways which have value to operations and emphasize proprietorship
- FIRE CONTROLS continue supporting current engineers as requested
- FINISHED GUN AUDIT resource the resumption and simplification of internal auditing of warehouse product in a way which better serves the needs of operations and minimizes the level of PE & C human resources needed.
- VSOC participate in this as needed in a way that reinforces the value of this activity to operations and the business
- QUALITY LEADERSHIP TEAM (new quality meeting) contribute to this activity when requested to do so

PROFESSIONALISM actively participate in learning and skillbuilding opportunities which further the above

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BARBER - 1.30.130000673

SYN. MFG
5-12-88

KEY MACHINES: LIKE BLACK AND DECKER WORST
KEY OPERATIONS: EVERYTHING GOES THROUGH IT.

CONCERN: WARRANTY [contract 2%]

They this can be basic for capital expenditures. Concentrate will help you justify these things.

LOCAL FLOW AREAS: color heat treat

* There really aren't any constraints in this plant, except we

We have made 4200 guns per day here.

- Inventory constipates the plant -

- OE goes beyond labor expense -

There is value to having a clearance "bin system" for small parts like BLNS. pins, screws, etc.

Look at T, I, OE for making decisions on costs, etc. changes.

* What does production want to work on?

MONTHLY REPORT

Bill Warren
5-2-88

SAFETY
E.A.T. FOLLOWUP D8768: MIKE PASTELLAS
IDEA FOR COMMON TRIGGER PLATE ASS'Y
FIXTURE ALTERATION TO REDUCE FINGER PINCH
POINT HAZARD IS IN PLACE AND IS WORKING
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THE PROBLEM WAS REVIEWED WITH PLANT
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* REVIEW OF QUALITY INFO & GRAPHICS: KEEP CUSTOMER
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THAN 4 DAYS IN EARLY APRIL

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KINZER V. REMINGTON

BARBER - 1.30.130000675

SPC

top ten / criteria

RATE OF PROGRESS
- DIRECTION
- ACCELERATE
- value to business?
- when done?
- # of employees?

SP-10 2-1-88

SP-10 — define important how measured

WEEKLY SCHEDULING / ACTIVITIES, PLANNING, DESIGNING MEETINGS — OPPORTUNITIES TO IMPROVE STEPS BEING

WHITE-PAPER: GUIDELINES: — MGMT — POLICY STATEMENT, INTERNAL USE, DOCUMENTS

VALUE OF NEW GUYS.

- GET ON FLOOR AS PART OF A PLANNED SEQUENCE. TRAINING / RESOURCING / PLANNING / ORGANIZATION / NUMBERS
- 2 PROD LESSON PLAN / SUPERVISOR / TRAINER

VALUE QUANTIFY TO DEPARTMENT SO PIECE, ETC.

KEY DECISION POINT — RECOGNIZE WE WILL SOON BE BACK FOR SPC / UNDERSTANDING / RUNS, TRENDS /

VISION

GOALS / PRINCIPLES — PREDICTABLE CONSIST. BEHAVIOR CAPTIVE VISION COMMIT

NOT CLEAR UNDERSTANDING FUNDAMENTAL PRACTICE

CREATE INTERNAL SYSTEMS

RUNS, RETRAINING, METHODOLOGY

BUILD A PERMANENT QUALITY INSTITUTION

THESE HAVE MORE VALUE AS WE INCREASE RATE OF PROGRESS WITH MORE PEOPLE

MONTHLY REPORT

William A. Werntz Jr
1-19-88

SAFETY

- COMPLETED " REQUEST FOR SPECIAL LOCK-OUT AND TRY VARIATIONS" FOR NEW SAFETY PAINT MACHINE NOW CIRCULATING FOR COMMENT/APPROVAL.
- IT WAS AT OUR DEPT SAFETY MEETING WHERE THE SUGGESTION WAS MADE TO PUBLICIZE WHAT A BROWN RECLUSE SPIDER LOOKS LIKE. DONE AS FOLLOWUP TO EMPLOYEE O. T. J. LOST TIME INJURY.

SIGNIFICANT PRODUCTION SUPPORT PROBLEMS

- COMMON GEAR BOX MILL SPECIAL LOCATOR WAS MARKING PART, FAILED PREMATURELY AND WAS UNIQUE TO THIS MACHINE. PROBLEM IDENTIFIED & CORRECTED WORKING WITH OPERATOR AND TOOLMAKER FOR INSERTS.
- 552 NONCONFORMING BOX GEARS ACCEPTED ON THIS MACHINE LOCATES BOX GEAR FACE RESPONSE ON SEVERAL GEARS. IDENTIFIED PROBLEM AND SOLUTION TO ENGINEERING AND OPERATOR.

NEW MACHINE

SAFETY PAINT MACHINE FIRST RUN 12-31-87.
FIRST GOOD PARTS ON 1-5-88
AS INSPECTION COMPLETED ON 1-13-88
AND ACCEPTED BY PRODUCTION.
THERE IS STILL WORK TO BE DONE S.O.P.'S REDESIGN OF NUMEROUS ELEMENTS, IMPROVING YIELD AND RESOLVING ISSUE OF ADDITIONAL PAYMENTS REQUESTED BY VENDOR. I WILL BE WORKING THERE FOR AWHILE.

SPECIAL ITEMS

TARP: ASSISTED WITH DESIGNING PROCESS INSTRUMENTS AND WRITING PROCESS FOR 16 MKTS TO BE SENT OUT AND 6 UNITS TO BE BUILT IN HOUSE.

REVIEWED AND COMMENTED ON NAME-PLATING TO BE SENT TO VENDORS FOR QUALITY AND CONSISTENCY.

- PARTICIPATED IN DISCUSSION AND COMMENT ON TOPIC " WHAT DO PROCESS CHANGES DO?"
- COMPUTER LISTINGS AND READOUTS OF WAREHOUSE STORE FOR USED TRUCK PARTS CHANGES COMPLETED BY MY DEPT.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130000677

MONTHLY REPORT — Bill Warren — 2-28-88

SAFETY

- LIGHT VARIATION FOR SAFETY PAINT MACHINE IS COMPLETE.
- WE PLANNED SAFETY INITIATIVE ON ACCESS TO ELECTRICAL PANEL DOORS IN BEING ACTED ON. SAFETY OFFICE WILL ADDRESS THIS IN SAFETY MANUAL AND THEN THIS INFORMATION WILL BE ADDED TO SPECS. FOR NEW MACHINES.

NEW MACHINE

- ADDITIONAL PAYMENT TO SAFETY PAINT MACHINE BUILDER FOR HIS COST OVER-RUNS HAS BEEN MADE. REMINGTON PAID ONLY FOR ADDED ITEMS WHICH PROVIDED US LONG TERM BENEFIT OR WHICH WE HAD SPECIFICALLY REQUESTED. THIS PAYMENT WAS 6% OF PURCHASE PRICE AND APPROX. 1/4 OF BUILDER'S CLAIMED UNANTICIPATED EXPENSES.
- THE MACHINE HAS NOW BEEN RUN FOR UP TO 15 MINUTES WITHOUT AN OPERATOR PRESENT - WEEK OF 2-15-88. THERE IS STILL WORK TO DO & MORE S.O.P'S AND IMPROVE CLUTCH PAD LIFE ON WORKPIECE FEEDING.

SIGNIFICANT PRODUCTION SUPPORT PROBLEMS

- SAFETY PAINT MACHINE WAS DOWN SEVERAL WEEKS; D.C. MOTOR AND CONTROLLER FAILED. MUCH ENGINEERING TIME WAS SPENT TROUBLESHOOTING THIS, CONTACTING COMPONENT MANUFACTURERS AND SECURING NO CHARGE REPLACEMENTS UNDER MFG'S WARRANTY.
- "CROSS" TRIGGER 700 SERIES: HAMMER NOTCHES HAD BEEN RUN WITH A DOLL BROACH, PROCESS RECORD IS VERY EXPLICIT WITH RESPECT TO BROACH LIFE AND WORKPIECE INSPECTION FOR QUALITY OF MASH OF NOTCH. SUPPLYING DEPT. SCREENED AND FOUND 1% UNSATISFACTORY.
- MTOD R.S.E. IN GALLERY; THIS WAS DUE TO IMPROPERLY ADJUSTED SEAR ENGAGEMENT. THE SAME OPERATOR RECEIVED A PRODUCT DEFICIENCY REPORT IN JANUARY FOR VARIOUS AMOUNTS OF SEAR ENGAGEMENT. PROCESS AND QA'T TECH. HAVE PROVIDED ADDITIONAL TRAINING.
- M77 BOLT INTERFERES WITH STOCK, NO PROGRESS! THIS CAUSES DOUBLE PLANE CUTTER ON UNDERSIDE OF BOLT AND NUMEROUS CONDITIONS BETWEEN STOCK HAVES. THE INTENTION IS TO AVOID REWORKING BOLTS BY REMOVING A SMALL AMOUNT OF METAL FROM STOCK.

QUALITY

- THE "SERIOUS QUALITY INCIDENT" RECENT PROGRAM HAS BEEN, WE WANT TO DEVELOP AND ENSURE QUALITY IMPROVEMENT TOOL OF VALUE TO THE

February 5, 1993

To: K.W. Soucy
From: W.A. Warren, Jr.

PROGRESS REPORT Jan., 1993

M700 VS Long Action "Sendero Special"

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- Information package will be transmitted to plant during the week of 2-8-93

BASIC RESEARCH-RELEASE MECHANISMS

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KINZER V. REMINGTON

June 25, 1991

MONTHLY REPORT JUNE 1991 Bill Warren

INTRODUCTION: This is my first progress report since the dissolution of the last SPC Implementation Team in third quarter of '90. This report emphasizes recent process control activity on behalf of the M522.

SUMMARY OF CURRENT ASSIGNMENT: "Obtain measurements, summarize and review results with those responsible to resolve process capability with product needs."
See attachment entitled: "Model S Molded Parts Process Study Activity"

PROCESS CONTROL: I encouraged and facilitated the actions of other specialists needed to provide automatic CMM measurements on major 522 molded parts and to convert the results into MINITAB format for detailed analysis. A measurement undertaking of this scale would not have been practical without automatic measurement and electronic file manipulation.
example: Housing; 56 dimensions, 30 samples, multiple molding runs.

Method of presentation of results: I developed a way of illustrating study results which, I believe, enhances understanding. This is color-marking model drawings in a way that depicts both closeness to aim and variability and implies priority for corrective action. This visual medium also facilitates recognition of patterns of relationships between dimensions and encourages discussion of how these patterns relate to the mechanics of the mold tooling and process variables. An example of this pattern recognition was the realization that many "length" dimensions on an early Housing sample were off aim in the same direction by a similar amount. This insight ultimately led to improved closeness to aim for all these dimensions by altering the datum surface in the mold.

Status of machine/process studies:

- vended metal parts: most studies have been completed on parts such as pins, springs, screws. Many of these were completed in the last quarter of last year.
- major molded parts: There is additional work to do as future runs correct unsatisfactory conditions noted by measurement, assembly and live testing. These are major studies on parts such as the housing and receiver.
- minor molded parts: There are mold runs coming up before shutdown on magazine guides and firing pin carriers. The f.p. carrier has been molded and studied approx. one-half dozen times.
- bolt and barrel: We have taken some measurements. A very quick intuitive review indicates to me that priority and emphasis should be on molded parts. That's where I've placed it.
- study of permanent assembly processes: This should be done. Many of these processes on the M522 are irreversible; some parts must be scrapped if the assembly is disassembled. I would like to increase our study activity here as these come on-line.

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KINZER V. REMINGTON

BARBER - 1.30.130000680

- specific limited studies: These have come up to answer additional questions posed by a major study or to trouble-shoot a particular condition; especially on housing, receiver and f.p. carrier. I expect these to continue well into such time as we achieve full production volume.

- design of experiments: I initiated the meeting process for the housing and receiver at which we established beforehand a strategy and plan to systematically adjust process variables and record the resulting dimensions.
  See attachment, "Housing 4-24-91"

Note: Not every measurement or study is analyzed and recorded.

MANPOWER: R. Deller has been on loan to me from R&D for M522 metrology jobs for the last two months. During this time, he has spent about 85 % of his time on the M522. I returned him back to M. Munson on 6-20-91. He has very good metrology skills and is the only one on site, as far as I know, who is proficient on the CMM located in the former Q.C. Metrology Lab. His availability has allowed us to accommodate both the major molded parts studies and more specific requests without major delays.
Others who have contributed:
J. Smith
M. Paestella
Purchased part inspectors

TRAINING: Year to date
- Autocad, 20 hours, Feb.-April
- OGP programming school, optical gauge, 40 hours, March
- Cutting tool insert seminar, 3 hours, May
- Twist drill seminar, 3 hours, June
- Dupont "Contract Administration", 8 hours, June

DEPT. REASSIGNMENT: This month I was transferred, at my request, from 9255, Continuous Improvement; to 9281, Rifle Process Engineering.

OTHER MAJOR ACTIVITIES THIS PERIOD:
- Resourced the Marketing Quality Audit of warehouse product conducted late in Feb. The changes made at that time were to communicate the results to a much larger plant audience and make the sample guns available for review by any employee.

- Assisted T. Hawkins with the acceptance run-off of the new Monarch shotgun lathe and swing-away steadyrest. He requested this as follow-up to the steadyrest feasibility study conducted last fall.

SPECIAL INTEREST:
Cryogenic treatment of molded parts to correct post-mold distortion: Analyzed results of experiment conducted and measured by R. Aubin. There was an improvement in the desired direction but only 5 to 10 % of the magnitude needed to provide a practical improvement. I issued a written summary to help reduce the "room temperature fusion"

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KINZER V. REMINGTON

mania that was developing on this one.

Elevated temperature test for M522 housings: request of R. Soucy. Any dimensional changes at 150 °F. for two days? Test is completed. The write-up has not been completed.

FOLLOW-UP TO PREVIOUS RECOMMENDATIONS:

R&D has reviewed their spring design program and has begun making changes to it. These will be more in accord with guidelines promoted by the Spring Manufacturers' Institute. The Remington spring design program specified significantly tighter tolerances on inspection loads and permitted departures from good spring design practice without making the designer aware of it. These differences became apparent thru the process capability analyses and vendor exceptions to specifications on spring quotes for some M522 springs. Both J. Salic and I believe it is better to address such conditions at the design stage; so we proposed last fall to R&D that they undertake this activity.

TRAINING SUGGESTION:

The M522 is the first Remington model to be designed using the Geometric Tolerancing system. This has now become quite common elsewhere. All of our Engineering Techs. and some of our Engineers can benefit from additional training on this system, especially the need to locate from specified datum surfaces for measurements.

SIGNIFICANT PROBLEM:

The previously purchased software, intended to convert data files generated by the R&D CMM into a format usable on the VAX system, has not worked with such a large file size. Therefore, while this condition is being corrected , the Receiver measurements are being analysed with the much more modest CMM software.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

November 11, 1992

To: K.W. Soucy
From: W.A. Warren, Jr.

PROGRESS REPORT

This summarizes my activities since joining R&D in August, 1992.

M700 VARMINT SYNTHETIC LONG ACTION IN MAGNUM CALIBERS

This project would expand the current (short action) offerings. The information package is nearly ready to transmit:

- Drawing changes are 95% complete.
- The revisions to the parts list is being typed.

Transmittal is being held pending a Review by Marketing on whether to offer this product. This has been started as a "SHOT Show Special". Documentation has been handled in a way that anticipates making this a catalog item in 1994.

The weight of the VS Magnum falls between that of the current wood-stocked BDL Magnum and current wood-stocked BDL Varmint.

The Varmint barrel contour provides adequate strength for magnum cartridges. Its diameter exceeds that of the magnum barrel at all locations except the first 1/2 inch forward of the barrel bracket. The diametral difference here is 0.0125" nominal.

Three prototype long-action VS style stocks have been received from R.S. Precision on 11-6-92.

BASIC RESEARCH-RELEASE MECHANISMS

Benchmarking:

I have completed reviews of several obsolete and current competitive product release mechanisms. These models are from our existing firearms library. Comparisons are made with respect to features, ease of use, complexity and methods of fabrication. To update this activity, we have purchased four new rifles and three after-market release mechanisms. This used $2200 of $3000 budgeted in 1992 for competitive bolt action purchases. Two additional competitive models, advertised in 1992, with features comparable to Remington model variations now under development, are not expected to become available before the end of the year. They will be purchased when they become available.

Measurement Apparatus-Purpose and Key Design Criteria:

This apparatus will provide an objective way to measure and describe "force vs. displacement" behavior of manually-operated mechanical devices on firearms (for example, trigger pull). This cannot now be measured with existing facilities. This apparatus will support current and future product development.

The apparatus will be flexible in use. It will be designed to accommodate a variety of Remington and competitive product.

- Transducers and motor drive system will be selected to provide a wide range of forces, displacements and speeds.

- Modular fixturing will be used for mounting and locating the major mechanical components and test firearm. Setups will

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KINZER V. REMINGTON

not need to be permanent or dedicated to a specific model or force measurement. Components can be disassembled and rearranged for a different need.

- The apparatus will be designed for use in the Res.Measurement Lab. It will be served by the expected new Lab. Transient Data Recorder to capture, process and display results. It will feed this device at least two continuous voltage signals on a common time base. Existing lab. devices will be used to analyse, plot and store results electronically.

- It will be designed to take replicate measurements quickly, without requiring the operator to record results manually.

- It is not intended to be readily portable, self-contained, or dedicated to a specific model or characteristic.

Design and Ease of Fabrication Modular fixturing ("Erector Set" construction) and off-the-shelf components will be used wherever practical. This will reduce the amount of tool design and model shop time otherwise required for dedicated design-and-build-here components.

TRANSITIONAL
I have been assisting my ATO Engineering replacement when asked.

MISCELLANEOUS
On an ongoing basis, I am assisting M. Keeny with his process-design integration project.

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KINZER V. REMINGTON

December 3, 1992
updated 12/15/92

To: K.W. Soucy
From: W.A. Warren, Jr.

PROGRESS REPORT Nov., 1992

M700 VS Long Action in game calibers, a.k.a."Sendero Special"

The information package was submitted for transmittal 12-3-92; immediately following notification of the fourth caliber to be offered. I did all this work myself to become familiar with the procedure.

This product will be "built to order". The forecast is 1500 units/year.

One display gun, in 7mm Rem. Mag., is being built for the SHOT show. New barrel marking tooling was received 12-14; name was mis-spelled by tooling vendor. We're looking at options. John Ballo prefers that the display gun be marked with the production tool (rather than hand-engraved), even if doing so delays completion of it until after plant shutdown.

The president of H.S. Precision, which supplies Remington with M700 VS and M700 Police Synthetic stocks, was in 12-1-92 for discussions. He had submitted 3 long action VS prototype stocks in early Nov. J. Ronkainen and I reviewed inspection characteristics, gauging and quality improvement opportunities with him:

- The 3 prototype stocks were returned to the vendor for rework. They will be returned to Remington in time to complete the display rifle for the SHOT show. Received on 12/11/92.

- One duplicate functional gauge needed for trigger guard inletting is on hand at purchase parts inspection (PPI) (D-47561-A). It should be sent to the vendor.

- I tabulated the PPI results over the previous 12 months on the current VS stock. This information along with inspectors' comments, suggests that we can replace an expensive functional gauge used for barrel-receiver inletting with a barreled action. Doing so can avoid the need for 274 hours of tool room build time. This is an operations cost avoidance of over $12,000 (@ $45/hour including labor, materials and overhead). I recommend this alternative as a prudent risk.

- We asked the president of H.S. Precision what else we could do to help them help us. His reply was that we could provide more timely communication back to them as soon as an unsatisfactory condition becomes apparent with their product.
  I will do this thru the first run.

BASIC RESEARCH-RELEASE MECHANISMS

Benchmarking:

Before year end, we will have a sample of the new M70 Winchester with detachable box magazine. This had been expected next year. We have now spent $2675 of $3000 budgeted for 1992. At our request, purchasing will continue, in 1993, seeking the synthetic stocked

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KINZER V. REMINGTON

BARBER - 1.30.130000685

stainless steel version of the Savage M110. They will not spend beyond 10% over $3000.

Measurement Apparatus:
This project was orally "pre-approved" in mid-Nov. for funding early in 1993. Detailed selection of components for the complete system for quotes and compatibility with our new Tektronix instrument has not been completed. It will not be ready for write-up before year end.
There are two issues to resolve:
- o drive system type (servo or stepper motor)
- o displacement transducer system required to provide signal compatible with Tektronix instrument

Now, after the "Sendero Special", work is resuming on this as the high-priority assignment.

ATO SUPPORT
Rifle: assisted with implementing gauging to measure force vs. deflection at Purchase Part Inspection on the M522 Viper sear spring (carry-over job).
Shotgun: assisted with problem diagnosis and suggested corrective action strategy for quality of execution nonconformity on trigger plate assembly for SP-10.

MISCELLANEOUS
I completed the most recent Remington-sponsored "Autocad" class at Saquoit High School.

February 5, 1993

To: K.W. Soucy
From: W.A. Warren, Jr.

PROGRESS REPORT Jan., 1993

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DESIGN-RELATED

On an ongoing basis, I am assisting M. Keeney with his process-design integration project.

SAFETY

I have been appointed a member of the five-man 1993 R&D Safety Committee. We are now 40% complete with the ("quarterly") Safe Gun Handling Review for all dept. employees.

ATO

I have provided requested assistance to the current common fire control engineer on carry-over opportunities for quality improvement and cost reductions on some stamped components.

I have been asked by a foreman to assist with technical support for a grievance over quality-of-execution on the common fire control. I will assist in this during the week of 2-8-93.

MISC

I have been asked by an employee to help a local college student who is doing course work on the topic of manufacturing quality systems. I would provide her with one week's edited final inspection report information from 1991. I will delete all labels which would be likely to identify company, product, model or nature of nonconformity-while preserving the statistical nature of the data. I will submit this to KWS and/or JCH for review beforehand.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

February 5, 1993

To: K.W. Soucy
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CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

MONTHLY REPORT

Bill Warren
5-2-88

SAFETY
F.A.T. FOLLOWUP D6768: WHITE PASTELLIAS IDEA FOR COMMON TRIGGER PLATE ASS'Y FIXTURE ALTERATION TO REDUCE FINGER PINCH POINT HAZARD IS IN PLACE AND IS WORKING WELL. THE ASSEMBLERS LIKE IT ALSO.

QUALITY
* SQI CAR. TWELVE SQI'S COMPLETED. THREE " " IN APRIL
MANY PARTS OF PROGRAMM NOW IN PLACE
* WARRENTY QUALITY AUDIT PROGRAM. THE EXTERNAL REPORT TO WINCHESTER HAS BEEN COMPLETED. THIS INCLUDES THE CORRECTIVE ACTIONS ASSOCIATED WITH EARLY NONCONFORMITY FOUND. 9/6 INVOLVED SEE WOOD.

* DESIGN TEAM FOR NEW QUALITY MECHANISM (JOHNSON, JACKSON, WARREN, BALDWIN) THE PROPOSAL WAS REVIEWED WITH PLANT STAFF AND MORE HAS BEEN HEARD.

* SPC INITIATIVE. THIS HAS TAKEN 50% OF MY TIME. THE TEAM HAS COMPLETED INTRODUCTION SESSIONS WITH 1ST AND 2ND LINE SUPERVISION AND ENGINEERS. INTRODUCTIONS WILL BEGIN WITH OPERATORS IN ALL AREAS WHERE 11-87 PARTS ARE RUN. MODEL FOCUS: START WITH MAI-87 AND BARREL ASS'Y FIRST.
* REVIEW OF QUALITY INFO GRAPHICS & KEEP CUSTOMER NEEDS IN MIND.

PROCESS IMPROVEMENTS
DESIGN OF THE NEW™ TRIGGER ASS'Y FIXTURE IS COMPLETE. THIS WILL ALLOW BUILDING THE COMPLETE ASS'Y BEFORE ADJUSTING AND WILL PERMIT USE OF FINAL SEAR USED AT THIS OPERATION; RATHER THAN AT FINAL INSPECTION.

SAFETY PLANT MAINTENANCE
THE ALUMINUM INDEX WHEEL WAS WEARING EXCESSIVELY AT WORKPIECE CONTACT POINTS. THIS CONTRIBUTED TO SOME ERRATIC OUTPUT QUALITY. A REPLACEMENT WHEEL MADE OF TOOL STEEL PROVIDES MUCH IMPROVED PERFORMANCE.
* 25,000 PARTS WERE PAINTED NO LESS THAN 4 DAYS IN EARLY APRIL

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130000689

DON'T SAY IT - WRITE IT

To: Dick J. Date: 9.13.91

From: Bill W.

Mike Walker did describe his design concepts and reasons for them for the WR200 locking system. This info. is in his patent # 2,585,195 "Breech closing construction..."

I have marked up a copy of the most descriptive parts of this patent and included an unmarked copy of the ringed extractor patent, # 2,973,373.

"THINK SAFETY IN ADVANCE,
YOU MAY NOT GET A SECOND CHANCE"

Patented Feb. 12, 1952

2,585,195

MARKED COPY 9-13-91 Bill Warren

UNITED STATES PATENT OFFICE

2,585,195

BREECH CLOSING CONSTRUCTION FOR FIREARMS

Merle H. Walker, Ilion, N. Y., assignor to Remington Arms Company, Inc., Bridgeport, Conn., a corporation of Delaware

Application January 8, 1949, Serial No. 69,368

3 Claims. (Cl. 42—16)

1

This invention relates to firearms and in particular to an improved construction for the breech bolt and barrel of such firearms. The invention is applicable to any firearm in which the breech bolt moves in opening and closing the breech along a straight path substantially coaxial with the barrel or along a straight or non-linear path which comes into substantial alignment with the axis of the barrel at the breech face thereof. Although not absolutely essential, an extractor of the type disclosed and claimed in the application of John D. Howell, Serial No. 644,207, filed January 30, 1946, now Patent No. 2,473,313, issued June 14, 1949, is of great utility in this construction.

Prior art firearms of the type employing fixed metallic ammunition have always been dependent upon the metallic cartridge case for securing obturation with the walls of the barrel chamber and preventing the rearward escape of gas from the barrel. As a result, the head of high intensity center-fire rifle cartridges has always been a massive chunk of brass of usually adequate strength to bridge over gaps between the end of the bolt and the chamber mouth or clearance cuts for extractors, ejectors, and the like. However, in spite of this massive construction, the heads of cartridges, due to metallurgical deficiencies, barrel obstructions, or other difficulties, all too often fail in service, releasing white hot gas at pressures in excess of 50,000 pounds per square inch into the interior of the receiver. With some modern commercial and military rifles the effects of a burst head are disastrous, completely wrecking the action and seriously injuring or killing the shooter. One of the better known military rifles presents in alignment with the shooter's face a straight line passage down the left hand bolt lug guide groove, which, even though the receiver proper does not blow up, channels high pressure gas and fragments of the cartridge head into the location where they can do the most damage. It has been often, and truthfully, said that the strength of most rifles is no greater than that of the head of the cartridges intended for use therein.

A primary object of this invention is the provision of a firearm construction which is not thus dependent upon the strength of a cartridge head, ordinarily formed of a material of relatively low strength by comparison with the ferrous alloys used for the firearm structure.

It is contemplated that this object may be best achieved by providing a recess in the head of the bolt adequate to receive and entirely surround the head of the cartridge case and by providing a reinforcing flange on barrel, barrel extension, or receiver ring into which the flange on the bolt head may fit when the bolt is fully locked. In a preferred embodiment this improvement may be obtained by recessing the end of the barrel in such a fashion as to receive and support the flange defining the recess in the bolt head. Thus, in the remote event of a failure of the supported cartridge head, the bolt flange will, before expansion to a dangerous degree, be supported by and will obturate with the barrel to prevent the escape of gas from the joint.

The exact nature of the invention as well as other objects and advantages thereof will become more apparent from consideration of the following specification referring to the attached drawing, in which:

Fig. 1 is a vertical longitudinal sectional view taken in a plane including the axis of the barrel of a firearm including my invention.

Fig. 2 is a vertical cross-sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a front end elevational view of the bolt assembly.

Fig. 4 is a rear end elevational view of the barrel.

Fig. 5 is an enlarged partial longitudinal sectional view including only the bolt head portion of Fig. 1.

Fig. 6 is a horizontal, longitudinal sectional view showing a modified form of my invention.

Fig. 7 is a view similar to Fig. 1, showing another modification.

Referring to the drawing by characters of reference, it may be seen that the firearm illustrated comprises a barrel 11, to which there is secured a receiver 11'. A fire control unit 12, which may be that disclosed in application of Walker and Haskell, Serial No. 7,775, filed February 12, 1948, now Patent No. 2,514,981, issued July 11, 1950, is secured to the receiver and the assembly of barrel, receiver, and fire control unit is suitably mounted in a stock 13.

A bolt 14 is provided in the receiver to serve as a closure for the breech end of the barrel and as a support for the firing pin 15 and main spring 16. For economy in construction, the bolt may comprise a tubular body 17 secured, as by a known brazing operation, to a bolt head 18 of high strength alloy steel. The bolt head includes the usual locking lugs 19 and differs from the conventional bolt chiefly in the provision of a continuous annular flange 20 extending forwardly from and encircling the cartridge head engaging

Feb. 12, 1952 M. H. WALKER 2,585,195 (D-1081)

BREECH CLOSING CONSTRUCTION FOR FIREARMS

Filed Jan. 8, 1949 2 SHEETS—SHEET 1

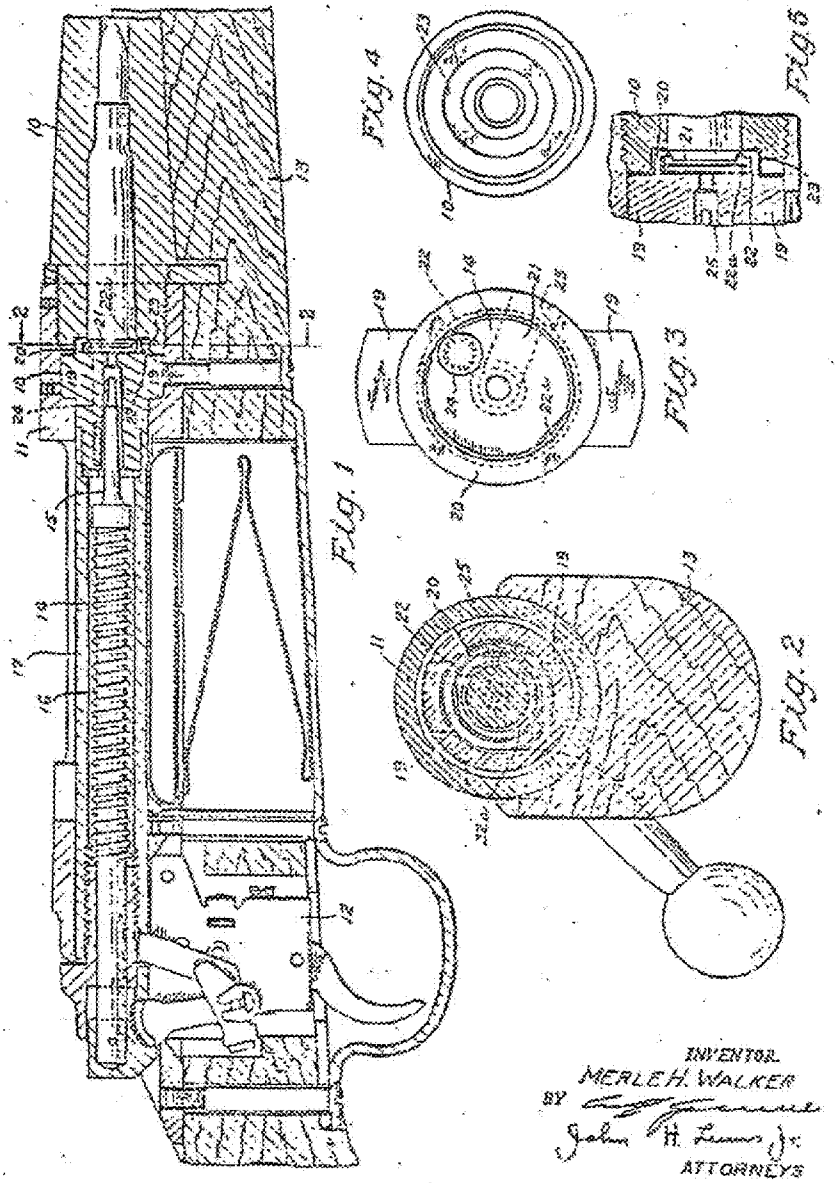

Fig. 1

Fig. 4

Fig. 5

Fig. 3

Fig. 2

INVENTOR.
MERLE H. WALKER
BY
John H. Lewis Jr.
ATTORNEYS

Feb. 12, 1952 M. H. WALKER 2,585,195

BREECH CLOSING CONSTRUCTION FOR FIREARMS

Filed Jan. 8, 1948 2 SHEETS—SHEET 2

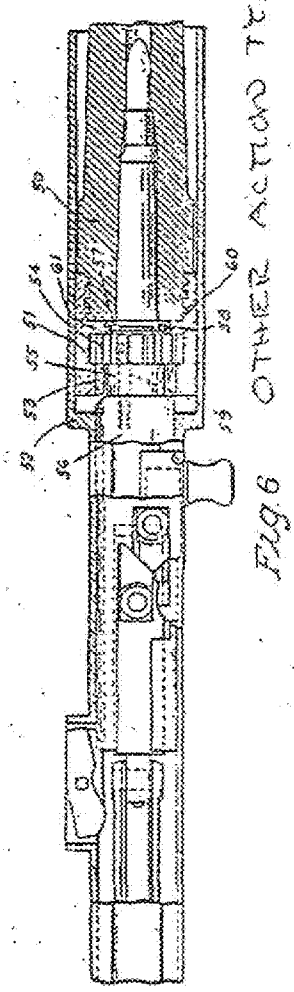

Fig 6 OTHER ACTION TYPE

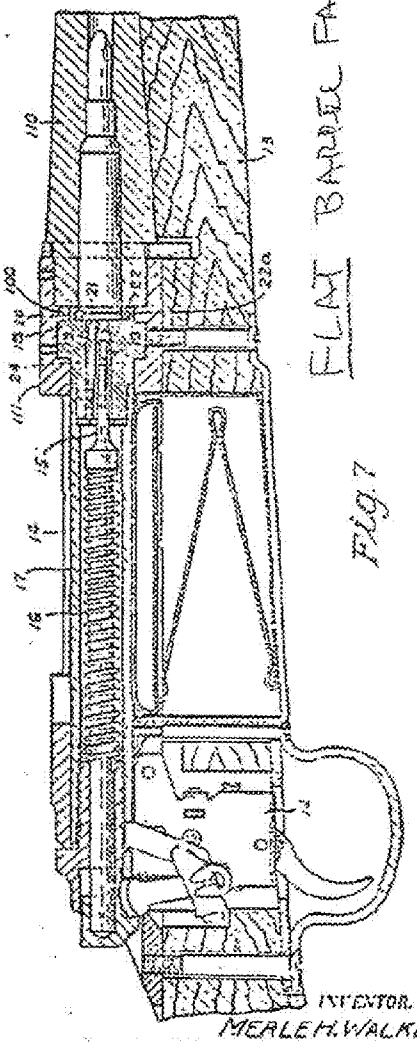

Fig 7 FLAT BARREL FACE

INVENTOR.
MERLE H. WALKER
BY
H. Lewis Jr.
ATTORNEYS

BARBER - 1.30.130000694

portion of the bolt face 21. This flange may be recessed as at 22 to accommodate a rim extractor 22a of the type disclosed in the Howell application above referred to. However, other types may be used which does not require that the continuity of the flange 21 be interrupted. An example of another type of extractor which could be used with slight modification is shown in the patent to Sampson et al., No. 2,463,368. While an annular flange such as the flange 20 would be sufficiently strong to withstand with a good factor of safety the forces imposed thereon under normal conditions, this invention contemplates additional improvement by recessing the end of the barrel at 23 to receive the flange 20. Obviously, a barrel extension of the type used in some conventional recoil actuated firearms, for example, that of Johnson Patent No. 2,140,743, issued February 13, 1939, could be so fitted, as shown in Fig. 6, to provide this extra support in place of a flange integral with the barrel. Referring specifically to this figure, it will be seen that there is provided a barrel 30 threadably or otherwise secured to a barrel extension 31 which is, in this instance, slidably received in a receiver 32. The barrel extension is provided with a plurality of interrupted locking lugs 33 arranged to coact with similar lugs 34 on the rotatable bolt head 35 supported in a reciprocable bolt carrier 36. The means for rotating the bolt are not material here and may be ascertained by consulting the Johnson patent or other known means may be used. As in the case of the Fig. 1 modification, the face of the bolt head 35 is recessed at 37 to receive the head of a cartridge. Within this recess, there are supported an extractor 38 and ejector 39 which may be identical in construction and mounting with those shown in the preceding figures. This recess 37 is, as in Fig. 1, completely defined by a forwardly projecting circumferentially continuous unbroken annulus 40. The only significant difference between this modification and those of the preceding figures is that the continuous annular flange 21 extending rearwardly from the mouth of the barrel chamber in supporting relation to the annulus 40 is, in this case, integral with the barrel extension 31. In this case, the breech end of the barrel is simply faced off square and butted against the forward face of the flange 41, doing away with the necessity for thread qualification in the barrel machining.

Similarly, in the case of arms employing a barrel fixed to the receiver, the forward receiver ring can be modified, as shown in Fig. 7, to provide a continuous annular flange 123 integral with the receiver 111 offering the same support to the cartridge 112 as that provided by the flange filling the recess 23 in the breech end of the barrel 18 of the preferred modification first described. In this modification, the breech end of the barrel 118 is faced off square and butted against the receiver flange 188. It is also believed to be obvious that in the case of bolt locking arrangements of the non-rotating type, the interfitting flanges may be of other than circular form.

With such an arrangement, if the flange should be expanded as the result of excessive pressure or the imminent failure of a cartridge head, such expansion will cause obturation between the flange and the barrel. This tends to produce a gas seal between these parts and once solid engagement is made, the flange is supported against further expansion by the barrel which is, in turn, supported by the front receiver ring. A spring loaded plunger type ejector 28 may be mounted in a blind hole in the bolt face 21 without endangering the adequacy of support for the cartridge or providing any opportunity for the escape of gas. The only possible line of escape for gas in the event of a pierced primer or ruptured head is through the firing pin hole which offers a restricted passage which is, as usual, vented through a hole 29 in the bolt head of greater diameter than the firing pin hole into a portion of the receiver communicating with a vent to atmosphere. The bolt vent hole 25 is shown in dotted lines in Fig. 3 and the receiver vent is not shown, as it is conventional and not conveniently located for inclusion in any of these views.

To summarize, it will be seen that a chambered round of ammunition is completely enclosed, there being no lateral openings in the breech face of the barrel or in the annular flange on the bolt face to permit the escape of gas or fragments in the event of a burst cartridge case. The strength of this combination has been demonstrated by tests which involved deliberately plugged barrels and cartridges loaded to normally produce higher than proof test pressures. Under these drastic conditions, where the pressures were high enough to permanently expand the bolt flange into engagement with the barrel recess and prevent manual opening of the breech, there was no failure which would have in any degree endangered a shooter. When this action was sectioned for study, it was found that the cartridge head had been caused to flow, as by a coining operation, into the recess in the bolt head but had not ruptured. Actual damage to the firearm had been confined to the bolt flange and, had the gun been disassembled by removing the barrel in a barrel vise, could have been repaired by the substitution of a new bolt. While the primer had ruptured and gas had escaped through the firing pin hole, the firing pin remained in the bolt body and there was no evidence that gas had escaped in any other way than through the vents provided. The receivers of all contemporary military and sporting firearms were shattered by much less drastic tests in such a way as to seriously, if not fatally, injure a shooter and others who might be near.

While a preferred embodiment has been specifically illustrated and certain obvious modifications have been described, it is not intended that the invention be considered as limited except as required by the claims appended hereto. In these claims "substantially continuous exterior support" afforded to the bolt wall by the rearwardly extending continuous annulus on barrel, barrel extension, or receiver ring is intended to mean an interfitting so close that any substantial distention of the bolt wall will result in actual supporting contact with the interior surface of the reinforcing annulus.

What is claimed is:

1. In a firearm adapted for the firing of cartridges comprising rigid extractible cases, the combination comprising a barrel having therein a chamber adapted to receive the major portion of the case of a cartridge to be fired; a breech bolt having integral therewith a forwardly projecting perimetrically continuous wall defining a recess in the head of said bolt adapted to receive the head portion of a cartridge chambered in said barrel; cartridge extracting means located within the recess bounded by said continuous wall and adapted for operative engagement with the head of said cartridge; and an exterior support means for said bolt wall comprising a rigidly fixed peri-

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metrically continuous wall extending rearwardly from the mouth of the chamber in said barrel into continuous exterior supporting relationship to said bolt wall when said bolt is in breech closing position.

2. In a firearm adapted for the firing of cartridges comprising rigid extractible cases, the combination comprising a barrel having therein a chamber adapted to receive the major portion of the case of a cartridge to be fired; a breech bolt having integral therewith a forwardly projecting circumferentially continuous unbroken annulus defining a recess in the head of said bolt adapted to receive the head portion of a cartridge chambered in said barrel; cartridge extracting means located within the continuous and unbroken interior wall of said annulus and adapted for operative engagement with the head of said cartridge; and an exterior support means for said bolt annulus comprising a rigidly fixed continuous annular flange extending rearwardly from the mouth of the chamber in said barrel into continuous exterior circumferential supporting relationship to said bolt annulus when said bolt is in breech closing position.

3. In a firearm adapted for the firing of cartridges comprising rigid extractible cases, the combination comprising a barrel having therein a chamber adapted to receive the major portion of the case of a cartridge to be fired; a breech bolt having integral therewith a forwardly projecting circumferentially continuous unbroken annulus defining a recess in the head of said bolt adapted to receive the head portion of a cartridge chambered in said barrel; cartridge extracting means located within the continuous and unbroken interior wall of said annulus and adapted for operative engagement with the head of said cartridge; and an exterior support means for said bolt annulus comprising a continuous annular flange integral with said barrel and extending rearwardly from the mouth of the chamber therein into continuous exterior circumferential supporting relationship to said bolt annulus when said bolt is in breech closing position.

4. In a firearm adapted for the firing of cartridges comprising rigid extractible cases, the combination comprising a barrel having therein a chamber adapted to receive the major portion of the case of a cartridge to be fired; a breech bolt having integral therewith a forwardly projecting circumferentially continuous unbroken annulus defining a recess in the head of said bolt adapted to receive the head portion of a cartridge

chambered in said barrel; cartridge extracting means located within the continuous and unbroken interior wall of said annulus and adapted for operative engagement with the head of said cartridge; and an exterior support means for said bolt annulus comprising a barrel extension rigidly fixed to said barrel and formed to define an integral continuous annular flange extending rearwardly from the mouth of the chamber in said barrel into continuous exterior circumferential supporting relationship to said bolt annulus when said bolt is in breech closing position.

5. In a firearm adapted for the firing of cartridges comprising rigid extractible cases, the combination comprising a barrel having therein a chamber adapted to receive the major portion of the case of a cartridge to be fired; a breech bolt having integral therewith a forwardly projecting circumferentially continuous unbroken annulus defining a recess in the head of said bolt adapted to receive the head portion of a cartridge chambered in said barrel; cartridge extracting means located within the continuous and unbroken interior wall of said annulus and adapted for operative engagement with the head of said cartridge; and an exterior support means for said bolt annulus comprising a receiver to which said barrel is rigidly secured, said receiver being formed to define a continuous annular flange integral with said receiver and extending rearwardly from the mouth of the chamber in said barrel into continuous exterior circumferential supporting relationship to said bolt annulus when said bolt is in breech closing position.

MERLE H. WALKER.

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The following references are of record in the file of this patent:

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June 14, 1949. J. O. HOWELL 2,473,373

BOLT HEAD AND EXTRACTOR FOR FIREARMS

Filed Jan. 30, 1946

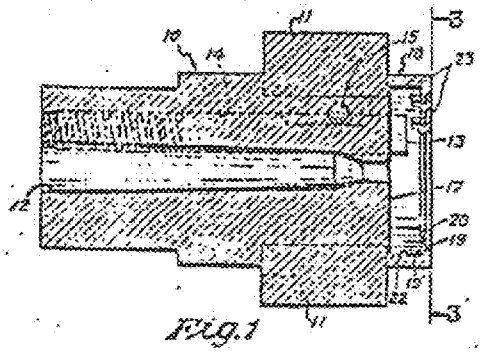

Fig. 1

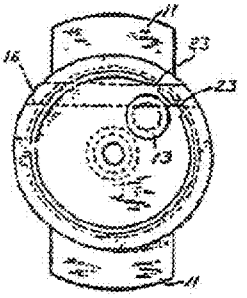

Fig. 2

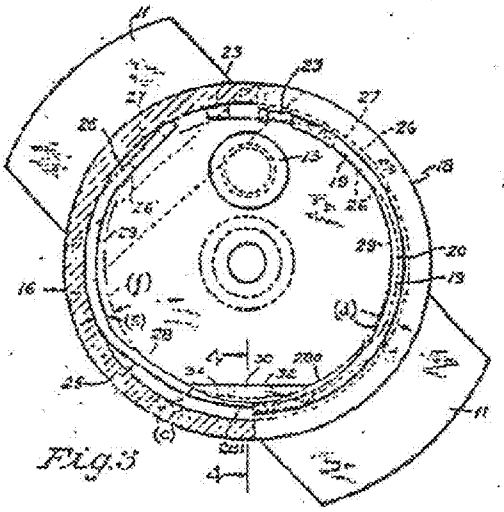

Fig. 3

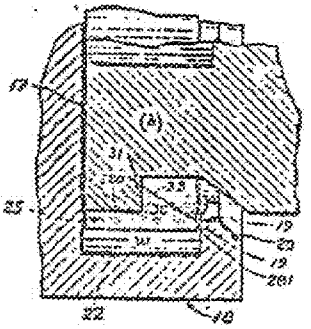

Fig. 4

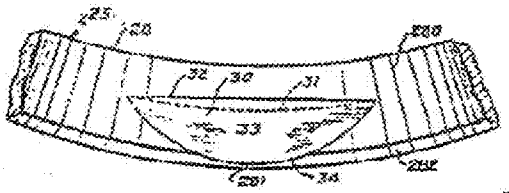

Fig. 5

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JOHN O. HOWELL
BY John H Lewis Jr
ATTORNEY

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Patented June 14, 1949 2,473,373

UNITED STATES PATENT OFFICE

2,473,373

BOLT HEAD AND EXTRACTOR FOR FIREARMS

John B. Howell, Westport, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn., a corporation of Delaware

Application January 28, 1948, Serial No. 544,207

3 Claims. (Cl. 42—15)

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The present invention relates, in general, to firearms, and, more especially, to an improved ring extractor applicable to breech loading bolt action guns.

An object of the invention is the provision of an improved extractor of simple and inexpensive construction. A further object is to provide an improved extractor adapted to be readily assembled and secured on the face of the bolt of a bolt action firearm. A still further object is to provide an improved ring extractor for assembly in a groove in the face of a breech bolt, the construction and arrangement of the ring and groove being such as to preclude excessive tolerance build-up. A still further object is to provide an improved ring extractor having an extractor claw arranged to have transverse movement only.

These and other objects, features and advantages of the invention will be more particularly described hereinafter, reference being made to the accompanying drawing, in which:

Fig. 1 is a side elevation in section of a bolt head having a ring extractor groove formed on its face.

Fig. 2 is a front elevation of the bolt head shown in Fig. 1.

Fig. 3 is an enlarged fragmentary view partly in section in the direction of arrows 3—3 of Fig. 1, including the novel ring extractor of this invention. The circumference of a cartridge head is indicated by the broken line *f*.

Fig. 4 is a fragmentary section on line 4—4 of Fig. 3, including a fragmentary cartridge case head.

Fig. 5 is a fragmentary perspective view of the extractor ring showing the extracting claw.

Referring to Fig. 1, 10 is a head of a bolt, and, in this exemplary embodiment, is separable from the body portion of the bolt (not shown). It will be understood, however, that the invention is applicable to either a single part or two part bolt and irrespective of whether the bolt is formed with locking projections at its front end or elsewhere. The bolt head, shown in Fig. 1, has diametrically opposite locking lugs 11, 11 and a longitudinal axial aperture 12 for a firing pin (not shown). A conventional spring loaded ejector 13 is adapted to be mounted in an aperture 14 in the bolt head substantially parallel to the longitudinal axis thereof, the ejector being secured in its aperture 14 with capacity for limited rectilinear movement by a pin 15 or other fastening means mounted in a transverse aperture 16.

Formed integrally with and projecting forwardly from the face 17 of the bolt and concentric with the longitudinal axis thereof is a cylindrical collar indicated generally at 18, the outside diameter of which corresponds substantially to the major diameter of the bolt head 10. The wall of the collar is of substantial uniform thickness and is provided at its forward end with an integral circumferential lip 19 which is disposed at substantially right angles to the collar wall. The diameter of the periphery of the lip 19 is shown only slightly greater than the diameter of the flange of a cartridge case (Fig. 2) so as to enable the latter to pass freely into the collar 18, and to be substantially enclosed by the lip when the head of the case is fully seated against the face 17 of the bolt. The outer corner of the lip 19 is shown relieved by an annular bevel 20. The circumferential wall of the collar 18 and the inner transverse wall 21 of the lip 19 form, in conjunction with the face 17 of the bolt, an annular groove or recess 22 substantially rectangular in cross section, the diameter of the groove being substantially equal to the outside diameter of the collar 18 less twice its wall thickness.

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As shown in Fig. 3, the diameter of the circumferential wall of the groove is sufficiently greater than the diameter of the flange of a cartridge (indicated by broken line *f*) so as to provide an appreciable annular space therebetween while the width of the groove 22 corresponds substantially to the distance from the head *h* of the cartridge to a point adjacent the shoulder of the case, as shown clearly in Fig. 4. Thus, when the head of a cartridge is seated against the face 17 of the bolt, the cartridge head is completely encased within the collar 18, there being no slots or openings in the bolt or barrel around the cartridge head. Adjacent the ejector 13 and located symmetrically on opposite sides of a radial line through the center of the ejector are a pair of protuberances 23 which in the present embodiment constitute staked indents in the lip 19 of the collar projecting inwardly into the groove or recess 22.

The extractor ring is shown generally at 25 in Figs. 3 and 4 seated in the groove 22 of the bolt face 17 and comprises a strip of metal capable of being hardened and made resilient by heat treatment and is of substantially rectangular cross section. The width of the strip is substantially equal to the width *w* of the groove 22, its thickness being considerably less than the depth *d* of the groove. The extractor ring is open on one side, a short portion 26 of the ring at each of its free ends being straight or flat and provided with

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portion 27 adapted to accommodate an extractor tool for removing the extractor ring from and to return it into the groove 22. The end of each flat portion 26 is adapted to be arranged in proximity to the adjacent protuberance 23 in the groove 22 so as to preclude rotation of the extractor ring in the groove.

As shown in Fig. 3, the inner face 26' of the midportion of each flat portion 26 is substantially flush with the edge of the lip 19 so as to prevent the flange of a cartridge from engaging behind the border 19' of the lip.

Substantially opposite the open side of the ring is a relatively flat arc portion 28 and between each flat portion 26 and the corresponding end of the flat arc 28 is an arcuate bearing surface 29. The major diameter of the resilient extractor ring in its free state, which corresponds to a diameter through the arcuate bearing surface 29, is greater than the inside diameter of the groove 22 with the result that when the extractor ring is forced into the groove 22, the bearing surfaces 29 will frictionally engage the adjacent circumferential wall portions of the groove 22 behind the shoulder 19' of the lip. The flat arc 28 will bridge from these bearing surfaces 29, thus providing an arcuate clearance space c between the periphery of the extractor ring and the adjacent circumferential wall of the groove 22 so as to permit the flat arc portion 28 to be deflected radially or transversely into the clearance space c.

In its normal assembled position, the inner face 280 of a major portion of the flat arc 28 extends slightly above the lip 19, although the lower front edge portion 281 of the flat are retains a firm purchase against the shoulder 19', as clearly shown in Fig. 4.

An extractor claw 30 is shown on the extractor ring diametrically opposite the opening thereof and is formed as an integral part of the ring by a sawing or cold forming process and is preferably heat treated to have an extremely high degree of hardness. The process of forming the claw integral with the extractor ring is not, however, a part of the present invention. The claw comprises a rigid, nonresilient protuberance which projects upwardly radially from the inner face 280 of the flat arc portion 28 of the extractor ring being joined integrally therewith by a relatively wide base and having a substantially square shoulder 31, see Fig. 4, the upper edge 32 of which extends as a cord across the arcuate inner surface 280 of the flat arc 28. The maximum height of the shoulder 31 is at a point midway between the opposite ends of the cord 32 and is only slightly less than the depth of the extractor groove at a cartridge case so as to afford a firm purchase against the flange of a case. The height of the shoulder 31 gradually decreases toward the outer ends of the cord where it is blended into the inner surface 280 of the flat arc 28. The front face 33 of the claw is a planar beveled surface or ramp which slopes forwardly and downwardly from the upper edge 32 of the claw, the angle of the slope being such that the lower edge 34 of the ramp 33 intersects the lower central portion of the front edge 281 of the extractor ring in an arcuate line which normally is substantially even with the edge of the lip 19 and which merges in a radius blended into the lower front edge portion 281 of the ring. As shown, the claw 30 is substantially diametrically opposite the ejector 13 and acts as a pivot about which an extracted cartridge may be rotated by the action of the ejector to eject the cartridge.

It will be further noted that the claw is on the lower periphery of the extractor ring as a consequence of which any force couples acting on the claw during extraction and tending to rotate the ring forcibly are effectively resisted both by engagement of the front and rear edges of the ring with the corresponding transverse walls 17 and 18' of the groove throughout substantially the entire circumference of the ring, and by engagement of the arcuate bearing surfaces 29 with the circumferential wall of the groove.

As the bolt is moved into breech closing position, the flange of a cartridge being chambered will ride up on the ramp 33 of the extractor claw simultaneously displacing the claw 30 downwardly radially until the cartridge flange snaps behind the shoulder 31 of the claw as shown in Fig. 4. Since the ring is held against rotational movement by the slanted indents 33 and against bodily displacement in the groove 22 by frictional engagement of the arcuate bearing surfaces 29 with the circumferential wall of the groove 22, the displacement of the claw is characterized by a transverse or radial movement of the flat arc portion 28 only of the extractor ring. Consequently, the ring may have a relatively light spring or detent force, which enables the claw to be easily displaced by the flange of a cartridge being chambered by the bolt. A further advantage resulting from the movement of the claw 30 in a transverse direction only without angularity or arcuate deviation is that a minimum of clearance is required for the flange of the cartridge, thus precluding a loose fit between the cartridge flange and the claw and minimizing the amount of slack movement of the bolt between its firing position and its position for initiating primary extraction. When the bolt is drawn back to open the breech, the cartridge case will be drawn rearwardly with the bolt by engagement of the flange of the case with the extractor claw 33 until the case is thrown out by the ejector 13 as described above.

It will be noted that the only tolerances involved between the extractor and the bolt are the width of the groove 22, the width of the extractor ring and the position of the shoulder 31 of the claw with respect to the face 17 of the bolt, and since each of these may be readily held to within extremely close limits, there will be little or no likelihood of excessive tolerance build-up between the bolt groove and the ring extractor.

What is claimed is:

1. An extractor for a firearm having a bolt provided with a recessed face adapted to completely enclose the head of a chambered cartridge, said extractor comprising a ring shaped member of substantial uniform cross section adapted to be received entirely within said recessed face and bent to provide two flats, a relatively flat arc and an arcuate peripheral bearing surface between each flat and said flat arc, said bearing surfaces being adapted to resiliently engage the walls of the recess to secure said ring means therein against bodily displacement; and a claw extending as a chord across said flat arc and adapted to engage the flange of a cartridge.

2. The combination with a breech bolt having a circular cartridge head enclosing recess in its face, said recess being provided with a circumferential lip; of an extractor comprising a resilient ring shaped member bent to provide arcuate peripheral bearing surfaces arranged to engage the walls of said recess at substantially diametrically opposite points only thereof to per-

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mit movement of a portion of said ring member in a direction transverse to the depth of said recess, said ring member being held in said recess by said circumferential lip; and a claw on the transversely movable portion of said ring member adapted to engage the flange of a cartridge.

3. The combination with a breech bolt having a circular cartridge head enclosing recess in its face and a circumferential lip on the edge of said recess; of an extractor comprising a resilient ring shaped member bent to provide two flats, a relatively flat arc and an arcuate peripheral bearing surface intermediate each flat and said flat arc, said bearing surfaces being constructed and arranged to engage the walls of the recess at substantially diametrically opposite points only thereof to permit movement of said flat arc only in a direction transverse to the depth of said recess, said ring member being held in said recess by said lip; and a ramp extending as a chord across said transversely movable flat arc and having a shoulder adapted to engage the flange of a cartridge.

4. The combination with a breech bolt having a circular cartridge head enclosing recess in its face, a circumferential inwardly extending lip on the edge of said recess, and a fixed abutment in the wall of said recess; of an extractor comprising a resilient ring shaped member open on one side and bent to provide two flat end portions on opposite sides of the opening, a relatively flat arc portion diametrically opposite said opening and an arcuate peripheral bearing portion intermediate each flat portion and said flat arc, said bearing portions being constructed and arranged to engage the walls of the recess at substantially diametrically opposite points thereof to permit movement of said flat arc only in a direction transverse to the depth of said recess, said ring member being held in said recess by said lip and restrained against rotation therein by engagement of the free ends of said ring with said fixed abutment; and a ramp on said transversely movable flat arc having a shoulder extending radially inwardly therefrom adapted to engage the flange of a cartridge.

5. The combination of a firearm breech bolt having a forward face adapted to engage the head of a chambered cartridge and also having an integral portion constructed and arranged to provide a rearwardly facing shelf spaced forwardly from and overlying a selected portion of said forward face with a cartridge extractor engaged with said shelf and provided with a claw adapted to engage the extractor rim of a chambered cartridge at a position to the rear of and slightly radially inward from the position of engagement with said shelf.

6. In a firearm for use with extractible rigidly cased cartridges, the combination of a breech bolt having a forwardly facing cartridge head engaging surface, cartridge extracting and ejecting means mounted in said breech bolt, and a continuous annular collar integral with said breech bolt and extending forwardly therefrom to form a continuous wall circumferentially surrounding said head engaging surface and said extracting and ejecting means.

7. In a firearm for use with extractible rigidly cased cartridges, the combination of a breech bolt, a forwardly extending circumferentially continuous collar of material integral with said bolt defining a recess in the face of said breech bolt, said recess being adapted to receive the head of a chambered cartridge, extractor means provided with a cartridge engaging claw mounted in said bolt and extending into said recess without interrupting the continuity of said collar, and ejector means mounted in said bolt without interrupting the continuity of said collar and arranged for projection into ejecting engagement with a cartridge in said recess.

JOHN D. HOWELL.

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HOUSING
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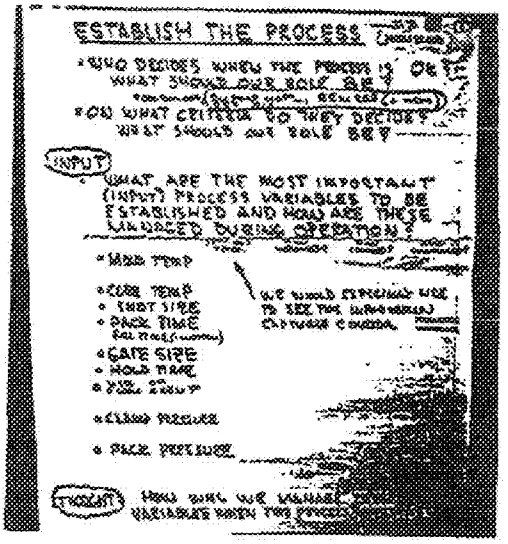
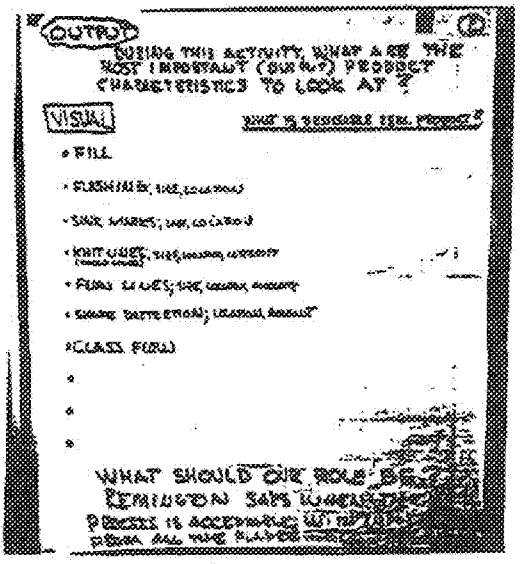
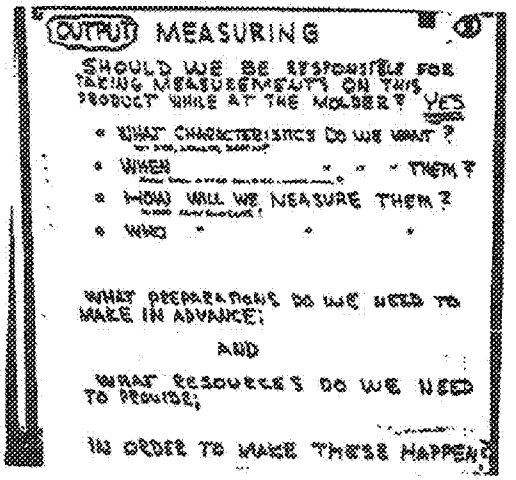
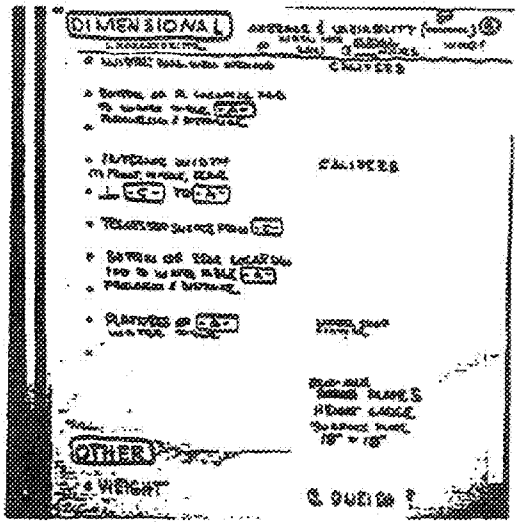
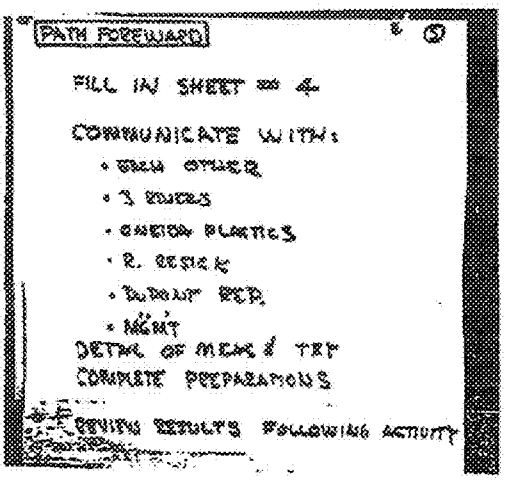
J. BALD
D. CHRISTE
D. FINCAT
J. SMITH
S SMITH
B WARREN











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CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

DEFENDANT'S EXHIBIT I 10

53 Rev. 2

GUNSMITH CALL REPORT

J-10

8/ 535-2691.

Mar. 5, 1975 Reporter E Fendrick

Name Evell Cross Gun Shop, Gunsmith's Name Mr. Malcolm Cross
Mr. Lester Brooks

ess 4101 East Rosedale Street, Fort Worth Texas Zip 76105
No. & Street City State

with on Premises? X If not, give address belc

with's Address
No. & Street City

CLERK U.S. DISTRICT COURT
Exhibits:
P D 69

Case No. 83-3172-F-2

mended List (X) Open Acct. (X) 30% Disc. Dealer (X) Large (X) Small (

ONS INTERVIEWED and POSITION:

Mr. Malcolm Cross, Owner & Gunsmith(2) Mr. Lester Brooks, Gunsmith

(4)

IFIC PROBLEMS ENCOUNTERED:

Hard opening on the M742 12 - 15 Guns this past year.
1 M 700 17 Rem 6543663 C7 (New gun from the box) Showed discoloratio
on receiver--stock had slight chip out at fore end tip & finished over. Bolt slightly rusted from finger printe.
7 6 M700's Last Fall (when the safety was put on and trigger pulled, then in releasing the safety the gun would fire.
M788 8 Bolt handles breaking.
M66 12 rear sight where the elevation screw strips out.
M1100 8 - 10 guns in which the inter. latch stud has worn around the retainer notch and will not properly hold the latch.

RAL DISCUSSION

Gun Connection
Air Gun Clearance

Mr. Cross and Brooks reported the above problems encountered on our guns this past year. In checking the new M700 the condition would not allow it to be sold for a new gun and suggested it be returned to the factory for correction. The men here did not think the trigger pulls on the M700's are up to the usual standard for they seldom ever heard of a complaint of this type. Both questioned about the inter. latch studs in the M1100 receiver, stating that with the number of guns in the field and all getting older the condition of the retainer moving and wearing the notch on the stud is starting to show up and no doubt will be giving this trouble, would like to see some corrective measure other than returning the receiver for a new stud. Mr. Cross stated th we are giving the best service on parts for today received a shipment

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

(D 263 Rev. 1

GUNSMITH CALL REPORT

Date Mar. 23, 1983 Reporter F. D. Emhof

Shop Name Ewell Cross Gun Shop Gunsmith's Name Malcolm Cross

Address 8204 I-30 West (No. & Street) Fort Worth, Tx. (City) (State) Zip 76108

Gunsmith on Premises? yes If not, give address below:

Gunsmith's Address (No. & Street) (City) (State) Zip

Recommended List (X) Open Acct. (X) % Disc. 30 Dealer ( ) Large ( ) Small ( )

PERSONS INTERVIEWED and POSITION:

(1) Mr. Malcolm Cross Owner. G.S. N.G.R. (2) Mr. Bo Wallace Gunsmith

(3) (4)

SPECIFIC PROBLEMS ENCOUNTERED:

700 Rifles which will fire when safe is taken off.

Order which has been billed to him and not recieved yet. order date 1/10/83 (his order no. 1452) He has received a barrel 2/3/83 which was the only part yet to come to him.

GENERAL DISCUSSION

Mr. Cross said that he will on occasion, [redacted] find a customer with a 700 rifle which during the course of repairs, he finds that the gun will fire when the safe is pushed to the fire position. When he calls this to the attention of the customer and says that it should be returned to the factory for repairs. The customer will sometimes refuse to have this done or to release the gun to be returned to us. He said that he has had, in the past, the customer come in with the rifle and complain about this problem and when he says that the rifle must be returned to factory they then refuse to let the gun go. This is a difficult situation to control and I am not sure what the answer to this is.

The problem of which he spoke on the order was taken care of yesterday when he called Remington, he however wanted to let me know about it in case a further question should come up.

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GUNSMITH CALL REPORT

cc: JP Shide
TW Ransom

Date 9-24-82 Reporter Donald McClure

Shop Name SPortswest-Div of Pay'n Save Corp Gunsmith's Name Daniel Cowen

Add. 508 South Third (No. & Street) Renton (City) Washington (State) Zip 98055

Gunsmith on Premises? yes If not, give address below:

Gunsmith's Address _____ (No. & Street) _____ (City) _____ (State) Zip _____

Recommended List (X) Open Acct. (X) % Disc. 30% Dealer (X) Large (X) Small ( )

New Gun Repair

PERSONS INTERVIEWED and POSITION:

1) Daniel Cowen Gunsmith (2) _____

3) _____ (4) _____

SPECIFIC PROBLEMS ENCOUNTERED:

1. M700 still very heavy trigger pulls from factory.

GENERAL DISCUSSION

No special problems. Lots of reblueing work, again because of the geographic location.

Dan did bring up the point that we are still sending out M700's with very heavy trigger pulls, 7-7½ pounds or heavier. This shop performs all the repair work for the chain of Sportswest stores in the north west area. Since the volume of stores sell a large number of M700's Dan receives several sent in from the other stores just to have the trigger pull lightened to the 3-4 pound range. This fact disturbs me because I wonder how many do it yourselfers adjust their own triggers and do it improperly perhaps by reducing the sear engagement.

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Live Load/Unload (cont'd.): Allowable malfunction rates are:

First 10: 0%
First 100: 1%
Total Life: .5%

Function: The rifle function test results should be as good as or better than the live load/unload test.

Accuracy: Both the 308 and 30-06 group size at 100 yards for 5-shot group should be less than 3.5".

Endurance: I expect minimal wear on all critical components after 2,000 rounds. The malfunction rates should be as good as or better than the live load/unload test. A failure to the extractor after 1,000 rounds is acceptable. No other parts should fail within 2,000 rounds.

Dry Cycle: All components should complete the dry cycle test with minimal wear. The components chosen for this test may be susceptible to fatigue failure and the high cycle level was selected to ensure that they will not fail in any rifle under any circumstances.

Trick Test: If the trigger does fail, I expect it to do so in a safe manner. If an "ear" on the trigger should break and go undetected, we should verify that there are no adverse effects.

The safety should have two well defined positions. Any position between the two is unacceptable.

In the environmental test, I expect the fire control to perform as well at -20° as at room temperature.

Jar Off Test/Drop Test: The rifles should meet the proposed minimum SAAMI specifications.

Ultimate Strength: The NBAR must handle extremely high pressures as well as or better than the current Model 700.

eps
11/30/84

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"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

cc: J.R. Snedeker
F.E. Martin

November 19, 1984

TO: J.W. Bower

FROM: R.S. Murphy

RE: NBAR Test Outline and Goals

Attached is the NBAR Test Outline as well as the corresponding Design Goals. Please review so that we are in agreement when testing begins.

RSM:sps
Attachs.

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TEST OUTLINE:

Weight
Headspace
Firing Pin Indent
Firing Pin Protrusion
Trigger Pull (and Range)
Safety On/Off Force
Locktime

Blanked Primer Test
Proof Test
Live Load/Unload
Function
Accuracy
Endurance/Dry Cycle/Trick Test
Accuracy
Jar Off Test/Drop Test
Ultimate Strength Test

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Test Outline

Weight: Weigh all test guns and record the weight. (Without scope mounts)

Headspace: Verify headspace of all rifles according to Research Manual in J.R. Snedeker's office

Firing Pin Indent: Std.

Firing Pin Protrusion: Std.

Trigger Pull: Measure trigger pull parallel to the axis of the bore. Take and record 5 readings from each rifle at the max. and min. ends of the trigger pull range. Cycle the bolt between each reading.

Safety On/Off Force: Measure safety forces at an angle as close to being parallel to the surface of the tang as possible. Take and record 5 safety on and 5 safety off readings from each rifle. Cycle the bolt between each reading.

Locktime: Measure and record the locktime of all rifles and explain method of measurement.

Blanked Primer Test: We want to determine how the action handles medium to high pressure gas.

Procedure:
- Proof rifle
- Determine load that will allow high pressure gas to escape through primer pocket.
- Shoot 5 shots in iron lung with witness paper to determine where gas is venting. Record pressures developed as well as avenue of gas escape. Note breakages, abnormalities, etc. Photograph results if necessary.

Proof Test: Proof test all 6 rifles.

Live Load/Unload: Cycle through each long action rifle 50 live rounds of the following bullet weights: 125PSP, 150SP, 180PSP, 220SP.

With the detachable box magazine, several magazines may be loaded and each successfully unloaded through a single rifles action.

Cycle through each short action rifle 50 live rounds of the following bullet wieghts:

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Live Load/Unload: (cont'd.) 150PSP, 180SP, Record all malfunctions. Also please note any bullet nose deformation resulting from this test. Test to be performed in the shooting jacks.

Function: Perform a full field cycle test at the Fish & Game Club with several shooters.

Accuracy: After sighting (and cooling if necessary) shoot 5-5 shot groups of each of the following ammo types: 150SP, 180SP, 180PSP. Cool and shoot one fouling shot between each group. Use Remington factory ammo and test each of the six rifles, (three 30-06 and three 308). (100 yard range)

Endurance: Live fire all rifles in the shooting jacks to 2,000 rounds each. Use all ammo types available and record any malfunctions. Take headspace, trigger pull and safety on-off force measurements every 500 rounds. Record all malfunctions.

Repeat Accuracy Test After Endurance

Dry Cycle:

* Cycle magazine latch 10,000 rounds, (latch to be deflected .100 and force to be applied thru mag release). Measure force required to deflect latch at start, at 5,000, and at 10,000 cycles.
* Dry fire rifle 10,000 rounds to determine wear of trigger, sear rotor and receiver. Measure trigger pull at 0, 5,000, and 10,000 cycles.
* Cycle extractor 10,000 times to determine fatigue life in bending. Fixture extractor in bolt. If extractor breaks, at what level does it fail?
* Using the dynamic pull test fixture, determine the strength relationship of the new extractor vs. the current. Does extractor pull through brass rim before it breaks?

Trick Test:

* Dry cycle trigger with "ear" broken to determine wear characteristics. Does it cause a safety problem?
* Try to trick rifle to fire off safe or to "hang" safe in the mid (or any other) position.
* An environmental test of the fire control should be performed. This should include cold box testing of the rifle with the fire control lubricated with oil.

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Trick Test (cont'd.): * What force is necessary to pull the trigger and break it when the safe is on. Does the rifle fire?

Jar Off Test/Drop Test: Perform test to meet the attached proposed SAAMI specifications.

Ultimate Strength Test: Work up several progressively increasing high pressure loads to the point where the barreled action yields or the ultimate strength test is reached.

New Bolt Action Design Goals

Weight: 6 lbs. 10 oz. (no scope mounts)

Headspace: Min. +.005 (working Max.)
Min. +.007 (Final inspection Max.)
Min. +.009 (Field Max.)

Firing Pin Indent: .018 min-.026 max (copper crusher)

Firing Pin Protrusion: .045 min-.075 max

Trigger Pull: 3 lbs. min.
5 lbs. max.

Safety On/Off Force: 3 lbs. min.
6 lbs. max.

Locktime: better than 3.3 msec.

Blanked Primer Test: I expect high pressure gas to vent along the left rail as the Model 700 does. The gas venting through the bolt body, however, will be deflected downward and dispersed harmlessly as it impinges on the bolt plug.

Proof Test: The rifles must be proofed before they may be live fired.

Live Load/Unload: I expect the number of feeding malfunctions will be reduced because of the new magazine box. Also, extraction and ejection will be enhanced because of the new extractor. All bullet weights and configurations should be fed and extracted with little or no tip deformation.

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SAAMI VOLUNTARY PERFORMANCE STANDARDS

~~Safe to increase pressure over 60,000 psi~~

"Safe Carrying" condition. As defined in the Owner's Manual for the particular firearm.

Safety. A device on a firearm intended to provide protection against accidental or unintentional discharge under normal usage when properly engaged.

1. "On" - A term describing the position of a component of the safety device when set in a manner to provide protection against accidental or unintentional discharge under normal usage.

2. "off" - To allow the firearm to be discharged.

Shotgun. A smooth bore shoulder firearm designed to fire shells containing numerous pellets or a single slug.

Striker. A rod-like firing-pin or a separate component which impinges on the firing-pin.

Trigger. That part of a firearm mechanism which is moved manually to cause the firearm to discharge.

Trigger pull. The average force which must be applied to the trigger of a firearm to cause sear or hammer release with the force applied approximately parallel to the bore line.

5. [redacted]

5.1 APPLIES TO: RIFLES, SHOTGUNS AND HANDGUNS.

5.1.1 This test simulates the unwise dropping of the firearm.

5.1.2 With the firearm in the "Safe Carrying" condition as defined in the Owner's Manual for the firearm being tested, the firearm shall be capable of passing the below test criteria for drop testing from a height of four feet (1.22 m) onto a 50-60 Durometer (Shore A) rubber mat, one inch thick (2.54 cm), backed by concrete. The mat and concrete shall be large enough so that when the gun is dropped it will fall and come to rest without interference within the perimeter of the mat. The drop height shall be measured from the surface of the rubber mat to the center of gravity of the firearm. The firearm shall be reloaded and reset in the "Safe Carrying" condition after each drop or a separate firearm may be used for each drop. As an alternative to free dropping, other methods may be substituted if they provide equivalent impact characteristics.

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SAAMI VOLUNTARY PERFORMANCE STANDARD

6.2 Criterion - The firearm shall not fire a chambered empty primed case of its designated cartridge when tested in accordance with this procedure. In a multi-chambered gun the primed case(s) shall be inserted in the chamber(s) directly in front of the firing-pin(s). Parts breakage or other damage resulting from drop testing does not constitute failure as long as the empty primed case does not fire and the firearm can be unloaded safely after each drop.

6.3 Test Procedure - The firearm or firearms shall be dropped in such a way as to cause them to strike the rubber mat surface in each of the following attitudes:

a. Barrel vertical, muzzle down.
b. Barrel vertical, muzzle up.
c. Barrel horizontal, bottom up.
d. Barrel horizontal, bottom down.
e. Barrel horizontal, left side up.
f. Barrel horizontal, right side up.

~~6.3.1 Testing of firearms which are designed to have a trigger pull force below three pounds is not to be covered by this procedure.~~

6.3.2 The test shall be conducted with the trigger pull force set at the minimum force specified by the manufacturer.

6.3.3 The test shall be conducted with the magazine, clip or revolving cylinder chambers fully loaded with dummy cartridges and locked in place.

6.3.4 The test shall be conducted with firearms of minimum and maximum weight configurations of a given model, including weight variations introduced by accessories catalogued by the manufacturer.

6. EXPOSED HAMMER TEST

6.1 APPLIES TO: HANDGUNS WITH EXPOSED HAMMERS OR STRIKERS.

6.1.1 This test simulates the dropping of the handgun on its exposed hammer or striker.

6.1.2 Handguns with exposed hammers or strikers shall be capable of passing the following test criteria with the firearm in the recommended "Safe Carrying" condition as described in the owner's manual for the firearm being tested. The firearm shall be

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SAAMI VOLUNTARY PERFORMANCE STANDARDS

7. [redacted]

7.1 APPLIES TO: RIFLES, SHOTGUNS AND HANDGUNS.

7.1.1 This test simulates the shoulder impacting (bumping) of the firearm against a hard surface with the firearm in a condition of maximum readiness.

7.1.2 With the firearm cocked and in the ready-to-fire condition (Safety "Off") as defined in the Owner's Manual for the firearm being tested, the firearm shall be capable of passing a jar-off shock equivalent to being dropped from a height of twelve inches (0.305 m) onto a 50-60 Durometer (Shore A) rubber mat, one inch (2.54 cm) thick, backed by concrete. The mat and concrete shall be large enough so that when the gun is dropped it will fall completely within the perimeter of the mat. The drop height shall be measured from the surface of the rubber mat to the lowest point on the firearm. The gun shall be caught after its first bounce from the mat so that it strikes the mat only one time. The firearm shall be uncocked and reset in the ready-to-fire condition after each drop or a separate firearm may be used for each drop. As an alternative to free dropping, other methods may be substituted if they provide equivalent impact characteristics.

7.2 Criterion - The firearm shall not fire a chambered empty primed case of its designated cartridge when tested in accordance with this procedure. In the case of a multi-chambered gun, the primed case(s) shall be in the chamber(s) directly in front of the firing-pin(s). Parts breakage or other damage resulting from drop testing does not constitute failure as long as the empty primed case does not fire and the firearm can be unloaded safely after each drop.

7.3 Test Procedure - The firearm or firearms shall be dropped in such a way as to cause them to strike the rubber mat surface one time only in each of the following attitudes:

a. Barrel vertical, muzzle down.
b. Barrel vertical, muzzle up.
c. Barrel horizontal, bottom up.
d. Barrel horizontal, bottom down.
e. Barrel horizontal, left side up.
f. Barrel horizontal, right side up.

~~7.3.1 Testing of firearms which are designed to have a trigger pull force less than [redacted] shall not be required to be tested by this procedure.~~

7.3.2 The test shall be conducted with the trigger pull force set at the minimum force specified by the manufacturer.

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SAAMI VOLUNTARY PERFORMANCE STANDARDS

7.3.3 The test shall be conducted with the magazine, clip or remaining revolver cylinder chambers fully loaded with dummy cartridges and locked in place.

7.3.4 The test shall be conducted with firearms of minimum and maximum weight configurations of a given model, including weight variations introduced by accessories catalogued by the manufacturer.

8. [redacted]

8.1 APPLIES TO: RIFLES AND SHOTGUNS.

8.1.1 This test simulates the abusive fall of a firearm when left leaning against a vertical surface.

8.1.2 With the rifle or shotgun in the "Safe Carrying" condition as defined in the Owner's Manual for the firearm being tested, the firearm shall be capable of passing the below test criteria when allowed to fall freely from an upright position with its butt resting on the surface of a 80-90 Durometer (Shore A) rubber mat, one inch (2.54 cm) thick, backed by concrete. The mat and concrete shall be large enough so that when the gun is dropped it will fall and come to rest without interference within the perimeter of the mat. The firearm shall be reloaded and reset to the "Safe Carrying" condition after each drop or a separate firearm may be used for each drop.

8.2 Criterion - The firearm shall not fire a chambered empty primed case of its designated cartridge when tested in accordance with this procedure. In a multi-chambered gun the primed case(s) shall be inserted in the chamber(s) directly in front of the firing-pin(s). Parts breakage or other damage resulting from drop testing does not constitute failure as long as the empty primed case does not fire and the firearm can be unloaded safely after each drop.

8.3 Test Procedure - the firearm shall be tested so as to fall once on its right side and once on its left side.

~~8.3.1 Testing of firearms which are designed to have a trigger pull force more than 6.5 lbs. (29 N) is not covered by this procedure.~~

8.3.2 The test shall be conducted with the trigger pull force set at the minimum force specified by the manufacturer.

8.3.3 The test shall be conducted with the magazine or clip fully loaded with dummy cartridges and locked in place.

8.3.4 The test shall be conducted with firearms of minimum and maximum weight configurations of a given model, including weight variations introduced by accessories catalogued by the manufacturer.

R2517697

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Testing for Issues

Trigger Strength - force req'd to break trigger
at any time that else deforms
- sear of trigger and test

- dry cycle life of sear surface

- dry cycle loaded rotor to determine
wear life

Recoil power escapes gas test

Dry Cycle Hammer latch

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New Bolt Action Rifle Design Goals

Accuracy - see attached sheet
Center of Impact Point at Dim. Range

Trigger Pull: 3 lbs min.
5 lbs max.
Smoothness: trigger pull to be crisp and free of any babbles or creep

~~Safety Engagement Force~~
Safety On-Off Force
3 lbs min.
6 lbs max.

Box Oh Test
Drop Test
Pedration Test
} See Attached SAAMI Draft

Weight (with scope mounts, no scope):

Length:

Feed type:
Headspace
Firing Pin: Indent
Pedration

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BARBER - 1.30.130000716

Endurance Life: Major Parts:
Minor Parts:

Pressure Vent (Blanked proved):
Ultimate Strength

Dry Cycle Testing: Extractor
Magazine Latch

Malfunction Rate
- first 10 0%
- first 100 1%
- Rest of gun <2%

Jack Tests - hang safety between cheeks

Foreseeable Failures: bolt shroud failure on double charge load

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cc: C. B. Workman
J. P. Linde
C. F. Prosser

RD-89-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" March 18, 1975

E. R. CARR

PROGRESS REPORT - M/600 - 700 FIRE CONTROL

All assemblers have been instructed in how to check for the gun firing when the Safety is released. Included in this instruction is the technique of attempting to hang the Safety up halfway between the on and off positions. The instructions will be included in the Process Records by 3/21.

An operation to swage the coming surface of the M/600 Safety is being done. This provides additional lift on the Sear.

Research is contemplating several design changes on the M/600. These include the following:

1. Heat treating the Housing stamping. This is currently soft and the Safety Detent Ball wears a groove in it which facilitates the Safety hanging up.
2. A change in the Safety to provide additional lift of the Sear.
3. A redesign of the countersink on the Housing to provide a minimum flat between the on and off position, which will mean a more positive Safety.
4. Eliminating the stamped Housing and going to side plates and spacers similar to the M/700. Costs are being developed on this proposal to determine if it is economically feasible.

J. W. Bower
Sr. Process Engineer

JWB:jc

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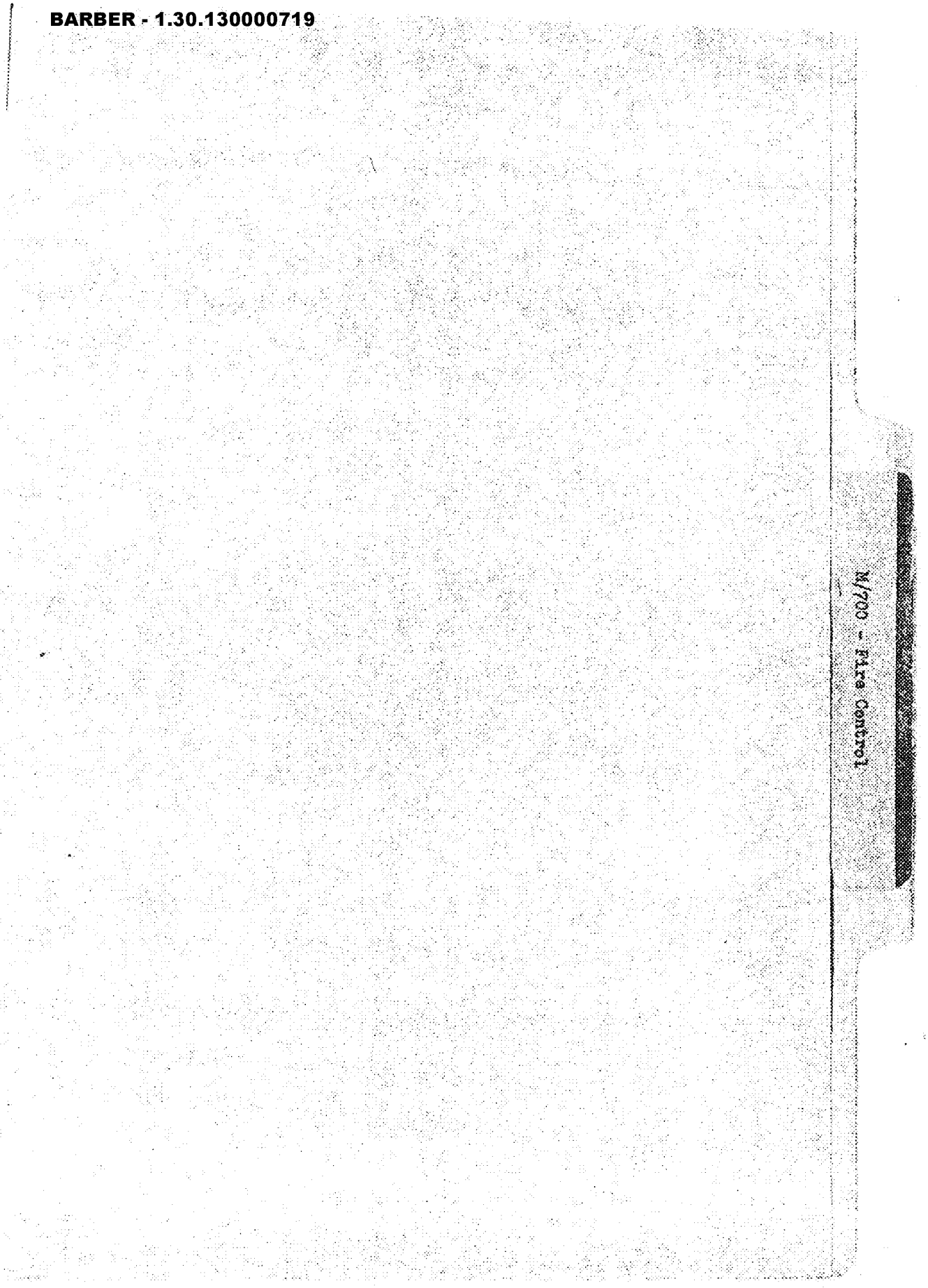
M/700 - Fire Control

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R2643049

	Grip Safety	Trigger Block	Sear Block	Striker Block	Disconnect	2 Position	3 Position	Manual-Safe on	Load Safe on	Hammer Safe	Fire-Hammer up	Fire on Safe	Ejection	Pull Over Travel	Fire-Hammer down Trigger-Safe on	Bolt Lock Part of Safe	Bolt Lock Independent	Trickable
Ruger 77					X		X	X	X	X	X		X	X	X			
Ruger 77 Hawkeye					X		X	X	X	X	X		X	X	X			
Ruger 77 Compact					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Stainless					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Target					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Compact					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Stainless					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Target					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Stainless					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless					X		X	X	X	X	X		X	X	X			
Ruger 77 Mark II Hawkeye Compact Target Stainless Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target Compact Left Hand Stainless Target					X		X	X	X	X	X		X	X	X			
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CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2543050

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
January 26, 1979

R. L. HALL

MODEL XP-100 SEQUENCE OF EVENTS

Model XP-100 sequence of events in modifying customer return guns and insuring integrity of production Trigger Assemblies is listed chronologically below:

Date	Event
10-24-78	Remington announced recall of M/600 and XP-100 pistol.
11-78	Engineering and Production effort concentrated on M/600. Gunsmith write-up - assemblies for gunsmith - establishing process for Trigger Assemblies to be shipped.
11-17-78	Present process reviewed - trick test for XP-100 reviewed with assemblers - shim test added (check for clearance between Sear and Sear Block with shim Stock, with Safety in null position).
12-1-78	Initial work on defining situation for customer repair XP-100's started - process reviewed, additions and clarifications were made.
12-15-78	Process developed for customer repair pistols; Engineers tried sample run. Customer repair gunsmith trained.
12-18-78	Initial lot of 25 customer guns modified to repair process. Lot rejected, two guns failed test. (1) Shim test and (2) trick test.

Date	Event
12-18-78	Contd.
	The trick test was re-evaluated and it was found that the engineer and gunsmith were using different techniques on standardized test. The shim test was also re-evaluated for consistent and easier operation.
	It was also found that customers had made alterations to the Sear Housing Assemblies and they had to be readjusted to standards.
12-28-78	A second lot of 25 was modified to revised process. A large percent of pistols would not pass shim test and the new gaging technique was questioned - parts measured.
1-4-79	Engineering analysis showed second lot of pistols was using a new shipment of Safety Assemblies which had .006" less lift on Sear. R & D altered drawing to increase lift - parts were ordered with higher lift. Shim test results were verified by using dial gage which fits into back of Receiver.
1-10-79	New lot of 25 pistols started to process for modification - high lift Sears were used and pistols were audited - process verified.
1-13-79	Repair verified on customer pistols - pistols being returned to customers. Production using Safety levers; reject rate increased dramatically ≈ 50%.
1-19-79	New Safety levers delivered to Ilion - found to have too much Sear lift, .002" over max. model drawing.
1-22-79	New Safety levers in Assemblies - mechanism would lock up when put on Safe. Safety levers ground down to max. model drawing. Mechanism worked but rear of Sear interferes with Sear Housing Pin.
1-23-79	Safety levers ground to mean model drawing - still binding. Drawing change made to grind clearance on Sear - parts tried, mechanism worked.

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Date	Event
1-24-79	Parts modified, Assemblies put together. Safety worked hard. Lubrication technique developed - parts delivered to Final Assembly - pistols put up.
1-25-79	Pistols tested satisfactorily. More parts were modified. Pistols which had been rejected were refitted with new Sear and lever.
1-26-79	More parts being modified - permanent process for part modification being developed.
1-29-79	Parts delivered to Customer Repair - to continue modifying guns - 147 shipped to date.

J. P. Linde, Superintendent
P E & C Section

JPL:eb

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DCR 11569

DESIGN CHANGE REQUEST (DCR)

Sheet 1 of 1

~~TRANSMITTAL OF DRAWINGS, PARTS LIST~~

Requested By	Changed By	Date
K.L. JOY	Z Rumbert	4/21/82
Originating Date	Transmittal Date	
4/13/82	4-2-82	

4/14/82

Model	Part Name / [illegible]	Drawing No.	Part No.
700 ADL, BDL, 40XR, 700 JR	SEAR SAFETY CAM BLANK	C-91919	91919
XP-100 & 700 CLASSIC	"		
40XR, XC			

Dwg. No.	Rev. No.	Design Change
C-91919	1	ADDED 40XR & XC.
"	2	WAS .226 NOW .228
"	3	WAS .123/.120 NOW .122/.124
"	4	WAS .265/.262 NOW .265/.269

Classification of Change

( ) Functional Change

( ) Safety Mechanism Revision

( ) Appearance

NOTE: Any or all of the above changes to current models require approval of Operations Committee and approval of DCR by Div. Manager. On models NOT IN PRODUCTION, the above changes require approval of Div. Manager ONLY.

(X) Other

Thomas S. Blackett
Designer Signature 4/20/82

Reason for Change: REV #1 - UPDATE MODEL USAGE

REV. #2 - THIS CHANGE WILL ENHANCE CLEARANCE BETWEEN THE SEAR SAFETY CAM AND THE TRIGGER CONNECTOR IN AN ASSEMBLY, WITHOUT HAVING TO GRIND THE SEAR SAFETY CAM. THE NEW DIMENSIONS WILL COMPENSATE FOR CONTAINMENT GROWTH DUE TO CARBON ABSORPTION AT HEAT TREATMENT. THIS DOES NOT CHANGE ON FINISHED PART

REV. #3 - DRAFTING & CHECKING ERROR

Disposition of Parts on Hand: (check below)

( ) Scrap ( ) Alter (X) Use Inventory ( ) RD 6589 Attached

(P.E.&C. If part is either scrapped or altered)

APPROVED: John W Beck 4/21-82

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R2522255

June 30, 1982

- M/7 LWT progressing
- M/700 ADL Restyle progressing

July 28, 1982

- 700 ADL Restyle progressing
- Model 700 BDL Redesign (1986 introduction)
  - "Marketing noted that the second phase of the Bolt Action Strategy involves a redesign of the Model 700 BDL. ...the new rifle will be a completely new rifle, not a restyle of the BDL."
- Research explained options being considered (see letter from Capeletti to Workman 4-30-82)

September 22, 1982 (Quarterly Report)

- Model 7 Progress Report
- Model 700 ADL Restyle Report
- New Bolt Action extensively layed out by CBW (1986 introduction, see following pages)

October 14, 1982

- Model 7 Progress Report
- Model 700 ADL Restyle Progress Report

December 15, 1982

- Shit hits fan on Model 7
- ADL Restyle warehoused

R. S. Murphy:ws
1-25-84

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Our goal is to be able to warehouse guns by mid-1983.

Our main design concern at this time is the strength of the fore-end. Different methods of reinforcement are currently under investigation.

As the schedule shows, the series is planned to continue through 1984 and 1985.

In 1984 it is planned to offer three more versions of the Special, a 12 gauge rifled slug version, a 3" chambered waterfowl version and the LT-20 special field grade. The rifled slug model and the LT-20 special field grade will probably have the same individual features as this sample. Model requirements for the waterfowl design have not yet been defined, but some of the features being considered include interchangeable choke tubes, a manual load selector for 2-3/4" and 3" shells, rust resistant internal finishes, and low luster external finishes for both wood and metal parts.

In 1986 the series will be completed with rifled slug and waterfowl versions of the LT-20.

Production commented that Research and Marketing have proposed model requirements for a 12 gauge Model 1100 Special (Chart XLVIII) to be introduced in mid-1983. Production is estimating investment and manufacturing costs based on advance prints supplied by Research. Economics and an implementation schedule will be presented at the October 14 meeting. The critical features, as perceived by Production, are listed in Chart XLIX.

Model 870 Special

A similar series based on the Model 870 is also being considered. Features comparable to those discussed on the 1100 will be investigated. As with the 1100 Special, shortening the magazine tube is expected to complicate the design of the fore-end. How much of a problem this will be remains to be seen. Unlike the 1100, however, 870 barrels will not be interchangeable, since the short magazine will necessitate moving the barrel guide ring.

If no insurmountable problems are encountered, the special field version will be announced in 1984, followed by a series of models in 1985 and 1986, patterned after the 1100 series; rifled slug, waterfowl and 20 gauge.

[redacted]

In July, a four-page list of design specifications for a bolt action rifle that is being considered as a replacement for the 700 was reviewed. Three contingency designs are being considered. Today, I will review what we feel are the key

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design elements (Chart L) of this rifle: the receiver will be redesigned to provide the features that seem to be preferred by gunsmiths, gun writers, and customers; flat bottom and integral recoil lug. The external appearance will be similar to the sample Model Seven that was passed around.

It is desireable that the safety block the trigger as well as the firing pin, for the added margin of safety against accidental discharge. We feel that a bolt lock is a good selling feature and continue to feel that it should be independent of the safety switch for maximum protection.

A fully adjustable fire control is also a good selling feature and we will try to provide one. We would like to go the extra step of providing this feature without removing the action from the stock.

The combination of a high gloss, lightweight contour with a hammer marked barrel may prove incompatible with the process, but this will have to be investigated. It does offer unique styling opportunities.

The rotary magazine feed system offers three advantages:

1. Smooth operation;

2. Better feeding characteristics since you feed from a single location;

3. A more rigid reciever since the shell opening cut is not as large. This feature can contribute to improved accuracy.

In spite of the fact that our present extractor is stronger than most competitors, it is perceived by shooters as being a cheap, weak, unreliable stamping. We will try to correct that problem without compromising the superior strength of the 700.

Reduced lock time is a key factor in the recognized accuracy of the 788. We will try to duplicate that feature in this new rifle and at the same time provide our Marketing Department with laboratory measured effects of improved lock time at the target, to be used in sales promotions and advertising.

Finally, the stock will be walnut, designed in conjunction with leading stock makers, with features found only in custom-made stocks. The butt will be cast off and toed out to fit the natural contour of the human shoulder and enable the shooter to sight quickly with a more natural head position. Current methods of stock manufacturing should enable us to make three versions if necessary: cast off or on, toed in or out, or straight. We believe this touch of custom work is a good

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F.L. # 74

LIMITED DISTRIBUTION

FIREARMS RESEARCH DIVISION

PROGRESS REPORT — HIGHLIGHTS

JANUARY 1982

Remington Arms Company, Inc.

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KINZER V. REMINGTON

M/4 - 6 Carbines

Research has provided samples to Marketing for evaluation. No further work is planned until their evaluation is complete.

Bolt Action Rifles

Five M/700 fire controls with blocked sears and blocked triggers are in the Test Lab for evaluation. Sample fire controls are being assembled without a connector to eliminate a part, insure a more positive lift, and maintain proper clearance.

The second M/7 Bolt Action Gun is complete with long action.

Bob Emmons Styling - Bolt Action Rifles

Two samples will be complete by mid-February. One will be similar to our present classic, the second will have Bob Emmons special items - butt plate, grip cap, fore-end tip, etc.

Bolt Action Carbine

Prototype stamped no-bind followers will be tested in February. A second generation master stock is due February 8.

CURRENT PRODUCT DEVELOPMENT

Model 870 Limited Edition

Artwork is being refined and will be ready by February 1.

Model 870 Competition Trap Shotgun

Endurance testing has been completed to 25,000 rounds on two guns. Production has been authorized to hold a .035" maximum bolt to receiver clearance by increasing bolt height .008".

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LIMITED DISTRIBUTION

RESEARCH DEPARTMENT

HIGHLIGHTS REPORT

JANUARY 1982

REMINGTON ARMS CO.
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J.P. McAndrews
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E.B. Beattie
R.A. Partnoy
C.A. Riley
L.J. Scott
W.H. Coleman, II
C.B. Workman

NOTE: Please destroy this report when it has served your needs.

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FIREARMS

NEW PRODUCT DEVELOPMENT

XSG/XPG Shotgun Design

Work is progressing on XSG contingency designs for the carrier release, locking block and gas system. One of two carrier release designs currently undergoing functional tests is scheduled for endurance testing in February. A lower cost rear lock design will also be ready for preliminary function testing in February. Test results continue to look promising for the forward bleed gas system. Work is also progressing on a contingency design based on the tandem orifice concept.

Models 7400/7600 Rifles

A sample lot of 100 M/7400 - 7mm Express Rem., with the altered barrel extension to correct feeding problems, will be tested in February.

Screw machine firing pins have been endurance tested to 3,000 rounds. The Research goal is 10,000 rounds without failure.

A sample lot of 3300 wave washers, to eliminate fore-end rattle in the M/7600, has been turned over to Production. Model drawings are complete and have been transmitted to the Plant.

Model 4 Limited Edition

All model drawings have been transmitted to the Plant. Two sample guns have been fabricated for testing and evaluation. Endurance testing on one sample has completed 1,000 rounds with no apparent problems.

Models 4-6 Carbines

Research has provided samples to Marketing for evaluation.

Bolt Action Rifles

Five Model 700 fire controls with blocked sears and blocked triggers are in the Test Lab for evaluation. We are assembling sample fire controls employing a new trigger design which does not require a connector to eliminate a part, insure a more positive lift, and maintain proper clearance.

The second Model 7 bolt action gun is complete with long action.

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BARBER - 1.30.130000732

POWDER METAL RESEARCH

Sintering of Powder Metal Parts in a Dissociated Ammonia Atmosphere

Current data on our sintering process is needed by the Engineering group for process development and tool design. This project was initiated last year and one technician is being devoted full-time to this single project.

Crygogenic Processing

A second batch of parts were treated by this process. The resultant properties were disappointing. This is attributed to the vacuum sinter as against the dissociated ammonia atmosphere sinter which was used for the first batch of samples.

Hot Isostatic Pressing of Powder Metal

Samples of selected alloys were fabricated by the powder metallurgy process, followed by Hot Isostatic Pressing (HIP). Significant increases in density were realized, together with some improvements in mechanical properties.

"Complex Metal Powder Shapes by Injection Molding" - Battalle Program

The third progress report dated December 31, 1981 on this work has been received. A considerable degree of information has been generated in the last three months.

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BARBER - 1.30.130000733

1982 Research Budget
Firearms Research Division

	1982 Budget
Injection Molded Powder Metal Research	$ 500M

A new Research program to develop a process to economically produce commercially accepted components by injection molding of powder metals and ceramics. The program objective is to expand our powder metal operations and establish a foothold in a market which is expected to have rapid growth. A project has been approved authorizing the purchase and installation of equipment needed for process development. The equipment and facilities are scheduled to be ready for use in the second quarter of 1982.

Total Injection Molded Powder Metal Research	$ 500M

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REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington DUPONT PETERS DUPONT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

August 25, 1983

TO: R.B. SPERLING - BRIDGEPORT

FROM: J.A. STEKL - ILION

SUBJECT: MUZYKA V. REMINGTON

Per your request, I am forwarding copies of Gun Examination Reports for Model 700 rifles returned because of alleged accidental firings.

J.A. Stekl

JAS:tpp
encl.

CAPA

PAGE (1) of (5) UUU-13

MOD. 700 BDL : 7MM REM. MAG. R# 06332

SER. NO. A6647268 P.I. No

RCVD. 02-2-83 MFD. 2-78

CHECKED BY Robert A Jackson

NUMBER

6-9-83

COMMENTS:

THROUGHOUT ALL ATTEMPTS, THE ALLEGED MALFUNCTION ("I flipped the safety off..... and when I did the gun discharged....") WAS NOT OBSERVED TO HAPPEN.

THE FOLLOWING MEASUREMENTS WERE OBSERVED:

SEAR LIFT (SAFETY ON "S") = 0.0085 INCH } IN-RECEIVER GAGE D-2-44581

SEAR LIFT (NULL POSITION) = 0.006 INCH }

TRIGGER PULL (FULL LOAD) = 4½ LB.

TRIGGER PULL (TRAVEL & SAFETY ON "S") = 5 LB.

SAFETY ARM WORKING FORCE } SPRING SCALE

FROM "S" TO "F" ..... = 6 LB.

FROM "F" TO "S" ..... = 7 LB.

ENGAGEMENT OF SEAR TO TRIGGER CONNECTOR = 0.009 INCH } OPTICAL COMPARATOR 50X

Rod

REM 0001698

PAGE (2) 3 (5)

WWL-14

Mod. M00

Ser No. A6647268

Recd. 02-2-83

Checked By RG Baker

Number

R# 06332

P.I. No

Mfd. 8-78

6-9-83

COMMENTS:

THIS GUN WAS PACKED, ITS SAFETY WAS SWITCH TO THE "S" POSITION, AND IT WAS PLACED INSIDE A COLD BOX (INSIDE THERMOMETER INDICATED -30F) AT 4:35 p.m. ON 06 APRIL 83. UPON REMOVAL OF THIS GUN FROM THE COLD BOX (INSIDE THERMOMETER INDICATED -29F) AT 9:40 a.m. ON 07 APRIL 83. THE FOLLOWING TEST WAS IMMEDIATELY PERFORMED:

① Pull trigger to see if it binds or sticks back — IT DID NEITHER.

② Switch safety to "F" position — IT DID NOT FIRE-DOWN.

③ Open bolt and check for ammo — NONE

④ Close bolt and work safety — POSITIVE, SNAPPY ACTION.

⑤ Switch safety to "S" position, pull bolt back on empty, release trigger, switch safety to "F" position. Repeat this three times. — THE FIRING PIN DID NOT FIRE-DOWN.

⑥ With safety switched to "F" position, pull trigger. — THE FIRING PIN FIRED-DOWN. THE FIRST TIME IT FIRED-DOWN SLUGGISHLY AND SUBSEQUENT FIRE-DOWNS WERE SNAPPY.

⑦ Recock the bolt and repeat the entire test. — NO PROBLEMS ENCOUNTERED AND NO F.S.R. OBSERVED.

⑧ Perform "trick test". — GUN PASSED THE "TRICK TEST".

I/C

IREM 0001609 1

PAGE (3) of (5)

uuu-15

Mod. 700

Ser No. A6647268

Recd. 02-2-83

Checked By RG Gibson

Number

R# 06332

P.I. No

Mfd. 8-78

6-9-83

COMMENTS:

UPON DISASSEMBLING THE GUN TO SUBASSEMBLIES, THE FOLLOWING OBSERVATIONS WERE MADE:

(1) THERE WAS SCORING ON THE BOLT HOLE AT THE REAR OF THE RECEIVER NEAR THE TANG.

(2) THE COLOR WAS WORN OFF OF THE BARREL MUZZLE.

(3) SEAR - CONNECTOR ENGAGEMENT APPEARED MINIMAL (MEASURED AT LE. 0.009 in.)

(4) TRIGGER HOUSING WAS DIRTY WITH GRIT AND "HAIR-LIKE" FIBERS.

(5) THERE APPEARED TO BE TWO DISTINCT, DISCRETE LINES OF ENGAGEMENT BETWEEN THE SEAR AND THE TRIGGER CONNECTOR. (This was viewed through the hole in the side of the housing under 10X magnification.)

THE TRIGGER HOUSING ASSEMBLY WAS REMOVED FROM THE BARRELED ACTION AND THE FOLLOWING OBSERVATIONS WERE MADE:

(6) TWO DISTINCT "WASH LINES" OF APPARENT SEAR - CONNECTOR ENGAGEMENT WERE OBSERVED WHILE LOOKING DOWN ON THE TOP OF THE CONNECTOR (THE SEAR WAS REMOVED FROM THE HOUSING).

(7) THERE WAS A VARNISH-LIKE BUILD-UP ON THE HOUSING PLATES WHERE THE SEAR APPEARED TO BE RUBBING.

(8) THE TRIGGER HOUSING UNIT WAS WET WITH OIL.

IREM 0001&10 I

PAGE (4) 5 (5)

LLLL-16

MOD. 700
SER. NR. A6647268
REC'D. 02-2-83
CHECKED BY RG/ocham
NUMBER 9

R# 06332
P.I. No
MFD. 8-78

6-9-83

COMMENTS:

THE SAFETY BLOCK AND BOLT RELEASE WERE DISASSEMBLED FROM THE HOUSING. THE TRIGGER, CONNECTOR, AND ADJUSTING SCREWS REMAINED IN-PLACE AND THE SUBSEQUENT OBSERVATIONS WERE MADE:

(9) THREE METALIC BURRS WERE HELD AGAINST THE INSIDE OF THE LEFT HOUSING SIDEPLATE BY A HEAVY LUBRICANT. THESE BURRS WERE REARWARD OF THE TRIGGER AND DID NOT APPEAR TO BE BINDING THE TRIGGER. ONE BURR APPEARED AS A FINE-LINE DOUBLE WISP, ANOTHER WAS A SINGLE CURL WHILE THE THIRD WAS A HELIX OF TWO FULL TURNS.

(10) THE TRIGGER MOVES FREELY IN THE HOUSING WHILE PINNED.

(11) EXACTLY ADJACENT TO, AND IN LINE WITH, THE SAFETY DETENT BALL NEST HOLE WAS A CLEAN AREA ON THE EDGE OF THE TRIGGER, WHERE THE HEAVY, DARK COLORED, LUBRICANT WAS WASHED AWAY. THIS AREA APPEARED TO BE THE SAME WIDTH AS THE HOLE DIAMETER AND EXTENDED ABOUT HALF-WAY ACROSS THE REAR OF THE TRIGGER.

THE TRIGGER AND TRIGGER CONNECTOR WERE DISASSEMBLED FROM THE HOUSING AND THESE SUBSEQUENT OBSERVATIONS WERE MADE:

(12) THE SIDES OF THE TRIGGER AND CONNECTOR WERE WET WITH LIGHT OIL.

(13) FIVE DISTINCT BRIGHT SCRATCH MARKS WERE ON THE LEFT SIDE OF THE TRIGGER ABOUT ¼" BELOW THE TOP OF THE TRIGGER.

REM 0001611

PAGE (5) of (5)

LLLL-17

MOD. 700
SER NO. A6647268
RECD. 02-2-83
CHECKED BY RA Jackson
NUMBER

R# 06332
P.I. No
MFD. 8-78

6-9-83

COMMENTS:

(14) A BRIGHT SCUFF MARK WAS ON THE UPPER REAR CORNER OF THE LEFT SIDE OF THE TRIGGER.

(15) THERE WERE TWO FLATTENED METALIC BURRS IN THE GREASE ON THE REAR OF THE FRAME AT THE REAR SEAR SCREW ASITION.

(16) THE CONNECTOR-TO-TRIGGER FIT WAS GOOD AND THE CONNECTOR WORKED FREELY ON THE TRIGGER.

(17) A LARGE PIECE OF VEGETATION WAS STUCK TO THE TOP OF THE REAR HOUSING PLATE SPACER.

(18) A LARGE PIECE OF NON-METALIC DEBRIS WAS INSIDE THE HOUSING NEAR THE TRIGGER SPRING.

(19) THERE WAS A BRIGHT RUB MARK ON THE RIGHT SIDE OF THE TRIGGER CONNECTOR ADJACENT TO THE HOLE.

(20) THERE WERE NO BURRS ON OR AROUND THE TRIGGER PIN HOLE.

(21) A BRIGHT MARK INDENTATION WAS ON THE INSIDE OF THE LEFT HOUSING PLATE TO THE REAR OF THE REAR SEAR PIN HOLE.

ADDITIONAL OBSERVATIONS:

(22) THE BARRELED ACTION HAD BEEN EPOXY-BEDDED INTO THE STOCK.

(23) THE LEFT SIDE OF THE TRIGGER SLOT IN THE TRIGGER GUARD HAD BEEN FILED BRIGHT.

REM 0001612 1

14 Sept 83

.357 Left Trigger Linkage to Top of Trigger Cam — Max
.335 — Min
.022 Free Vertical Movement
Actual Δ = .015 — See Below

Top Front Screw { 1.561 / 1.552 } .009 Above Flush (Long Screw)

Bottom Front Screw { 1.367 / 1.345 } .022 Above Flush (Shorter Screw)

Sealing Adhesive had been removed from both screws

Spring (.210 Free Length)

Ground end coils approx

Smoothed

1.028 — 1.085
1.073 — 1.070

.015 — Confirmed with feeler gage

Feeler gage reading gives .015 Δ

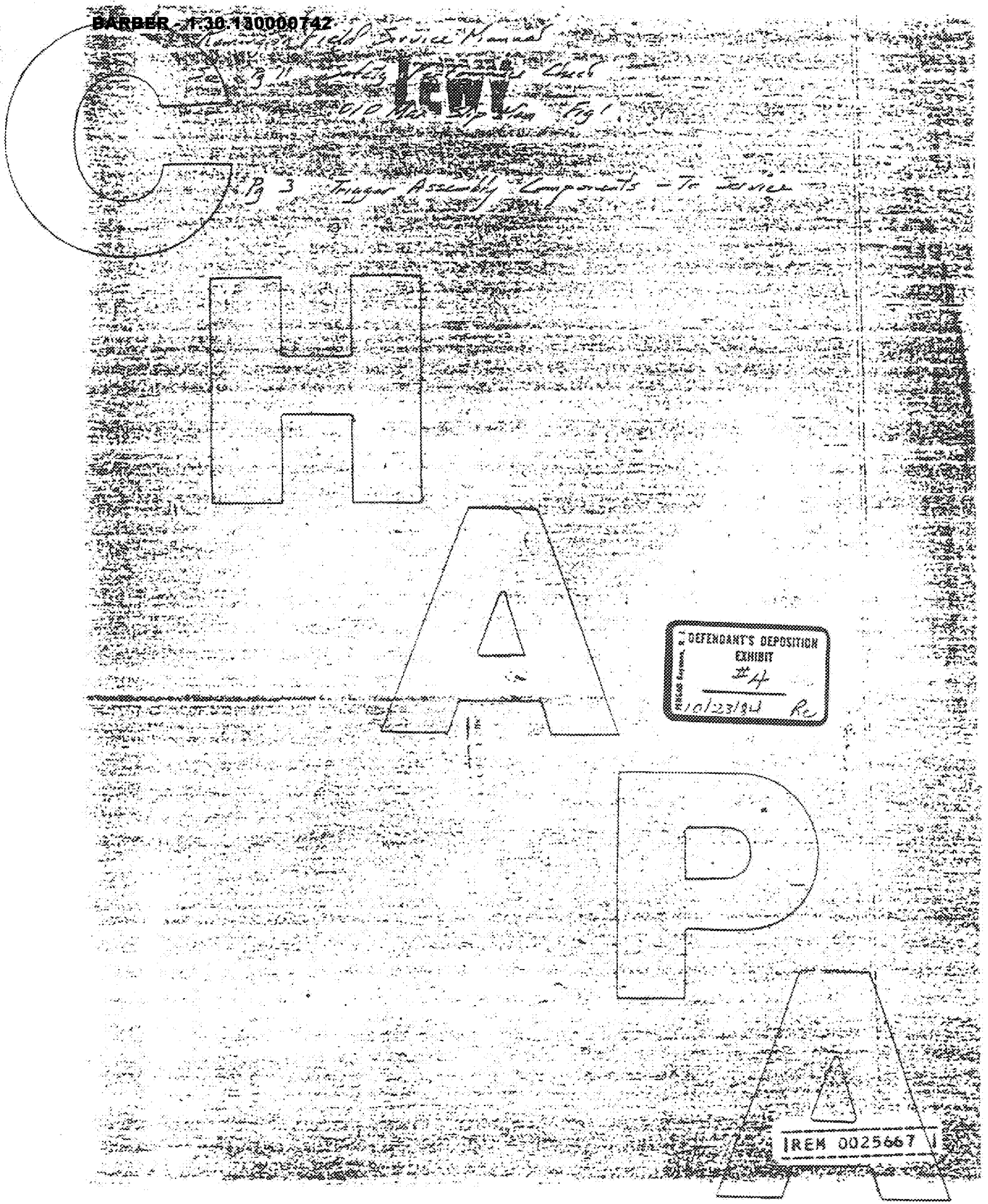
("A" dimension = 1.054)

Other connector — matched with 2 Triggers gives a Δ of .006 & .009

Triggers { 2 — "B" = 1.077 / 3 — "B" = 1.076 (1.078) (this trigger was qualified) }

IREM 0025666

No. 1 1.465 Max Slide Travel


DEFENDANT'S DEPOSITION
EXHIBIT
#4
10/23/94
IREM 0025667

LIMITED DISTRIBUTION

PRODUCT SAFETY SUBCOMMITTEE MEETING
JANUARY 2, 1979

PRESENT:

SUBCOMMITTEE	OTHER
E. F. BARRETT, CHAIRMAN	R. B. SPERLING, ACTING SECRETARY
J. G. WILLIAMS	
E. HOOTON, JR.	
R. A. PARTNOY	

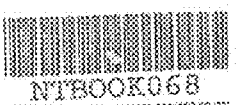
SAFE GUN HANDLING

It was reported to the Committee that in 1975, due to what we learned from a quality audit on the Mohawk 600, Remington instituted new inspection procedures for all center fire bolt action rifles which were designed to catch a gun capable of being "tricked" into firing when the safety lever is released from the "safe" position. "Tricked" in this context means, safety lever placed in between "safe" and "fire" positions, trigger is then pulled, and the safety lever is subsequently moved to the "fire" position and the gun discharges. The inspection procedures involve the following:

(1) A visual check for adequate clearance between the sear and the connector.

(2) Measurement of this clearance by use of a .005 shim.

(3) Attempting to trick the gun--three times in assembly, three times in gallery and three times at final inspection.



BARBER - 1.30.130000744

In addition to the above inspection procedures, Remington also changed the trigger assembly for the Model 600 family of guns by adopting Model 700 design features. Changes to the 600 included:

1. Going from a folded housing to an assembly consisting of side plates held together by rivets and spacer block.
2. Providing more lift to the sear.

No such changes were made in the design of the Model 700 because it already had those features.

Remington is confident because of the checks instituted in 1975, that bolt action rifles made during and after 1975 will not trick. Since June 1978, 500 post-1975 Model 700's have been returned to Ilion for repair for various reasons. Starting in June, Remington conducted a quality audit on these returned guns and none could be tricked.

During this same period (June 1978 to the present), two hundred pre-1975 Model 700's were returned to Ilion for repair, and it was found that two could be tricked (one because of insufficient clearance between sear and connector, and one because of a warped connector). Based on this sample, about 1% of the pre-1975 Model 700's in the field may be subject to tricking. There are about 2,000,000 pre-1975 Remington guns in the field with the Model 700 trigger assembly. (By comparison, it is noted that the 1975 quality audit indicated about 50% of the Model 600 family of guns in the field were susceptible to

NTBOOK069
BARBER - 1.30.130000744

tricking.)

In addition to the above sample of 700's, 19 Model 700's have been returned to Ilion in response to the Model 600 recall with the complaint that the gun will fire when the safety lever is moved to the "fire" position. Remington found that only one of those guns could be tricked, the cause being insufficient clearance. Three other guns did fire with the safety being moved, but for reasons associated with owner alteration of the product. In one instance, an owner was about to return a gun for accidental discharge upon release of the safety; but just before sending the gun, the owner discovered that he was inadvertently pulling the trigger as he released the safety. It is suspected that this was also the case with the remaining 15 guns, since they were found to be in proper operating condition.

Remington has run quality audits on competitor bolt action rifles and has found that a large percentage of competitor models can be tricked. This includes some famous guns, such as the "Springfield" 30 caliber rifle, which was used in quantity in both World Wars.

The Subcommittee discussed the issue of tricking, as well as other causes of accidental discharge. It was decided that tricking, along with problems such as owner adjustment of the trigger engagement screw or the trigger adjustment screw, finger on the trigger when the safety is released, and trigger assembly alterations, are really problems more associated with abnormal use or misuse of the product rather than indication of a defective

BARBER - 1.30.130000746

product. Consequently, a notice warning or a series of warnings against abnormal use or misuse, and highlighting safe gun handling procedures, is the most direct solution to the problem of accidental discharge.

The Subcommittee considered the possibility of recalling all pre-1975 Remington center fire bolt action rifles, many of which have been in the hands of the public well over several decades.

The Subcommittee decided against a recall for the following reasons:

1. Based on Remington's sample, only 1% of the pre-1975 Model 700 family of guns out in the field which number about 2,000,000 can be tricked. That would mean the recall would have to gather 2,000,000 guns just to find 20,000 that are susceptible to this condition.
2. An attempt to recall all bolt action rifles would undercut the message we plan to communicate to the public concerning proper gun handling. It would indicate that the answer to accidental discharge can be found entirely within the gun, when in reality only proper gun handling can eliminate injuries resulting from such occurrences.

The Subcommittee decided to recommend that an informational warning concerning accidental firing and safe gun handling be prepared and effectively communicated to the gun handling public. The Marketing, Legal and Public Relations Departments were to

BARBER - 1.30.130000746

coordinate their efforts, with possible help from outside consultants, in preparing such a notice.

Further meetings would be held to ensure that this informational program was launched effectively and expeditiously.

(Secretary's Note: The President approved these recommendations on January 2, 1979.)

R. B. Sperling
Acting Secretary

NTBOOK072
BARBER - 1.30.130000747

LIMITED DISTRIBUTION

DON'T SAY IT—*WRITE IT*

To PRODUCT SAFETY COMMITTEE Location

From E.F. BARRETT Location Phone No.

Subject PRODUCT SAFETY MEETING Date 4/28/75

A meeting was held 4/23/75 to review status of M/600 quality audit.

During this meeting a plan was developed to make a comprehensive review of the fire controls used in the other bolt action rifles.

We expect to have the results of this study ready for review with the Committee in late May.

EFB/ab

88 778 STOP, LOOK, AND LIVE

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.
Research Department

Bridgeport, Connecticut
April 23, 1975

TO: R.L. HALL

FROM: E.F. BARRETT

SUBJECT: PRODUCT SAFETY MEETING - 4/23/75

A. Define study objectives: Analyze product safety of bolt action fire controls.

B. Determine what should be done and who should do it.

1. Research

Review present design; Failure analysis; Identify tolerance build-up problems, if any; Determine critical design specifications.

2. Marketing

Review reports from field; Review present performance requirements; Identify possible or potential problems by improper use.

Review existing customer and gunsmith information for clarity and content.

3. Production

Review process specifications and records, quality control procedures and limits. Review actual Plant performance.

C. Discussion of Model 600 quality audit.

D. Assignment of responsibilities and development of tentative schedule.

EFB/ab

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

cc: E. Sparre
J.G. Williams
R.B. Sperling

Bridgeport, Connecticut
June 23, 1975

TO: J.P. McANDREWS

FROM: E.F. BARRETT

SUBJECT: MODEL 600 FIRE CONTROL STUDY

The Product Safety Committee met June 20, 1975, in Ilion to review the Model 600 fire control investigation.

In summary, (Bob Sperling will issue the meeting minutes) the Production and Research plans to improve bolt action fire controls were accepted. The recent audit indicates the new procedures instituted by the Plant have eliminated the "trick" safety condition on all bolt action guns. Design improvements which will be in production within the next six months will give additional assurance there will be no recurrence of the problem.

It was agreed that the section of the gunsmith manual which covers bolt action fire controls will be rewritten to include the additional checks and recommended corrective action for the "trick" safety condition.

No further action is contemplated at this time.

EFB/ab

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

cc: D.J. Sanita

RD-44-S

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

February 22, 1979

TO: E.G. LARSON

FROM: E.F. SIENKIEWICZ

SUBJECT: RIFLES RETURNED FOR FIRE ON SAFE RELEASE

Since the Model 600 recall, hundreds of people owning Model 700 and other model firearms have contacted Remington alleging that their guns have fired when pushing the safety from on safe to off safe position without touching the trigger.

To date, all such inquiries have been handled by requesting the rifle be returned to Ilion for examination and repair at no charge.

Examinations of the returned guns received at Ilion have revealed no factory defects. All problems that have been found are due to customers tampering with the trigger adjusting screws, over oiling, (I.E. motor oil, salad oil, etc.) and other unauthorized alterations.

Several models returned are old obsolete Models 721, 722 rifles, some being 30 years old, that are worn from hard use, including the trigger assemblies. We do not have any replacement assemblies for these models; therefore, requiring extensive alterations to present Model 700 trigger assemblies for installation at no charge.

Each firearm returned requires 20 minutes examination time for each of three (3) engineers and $25.00 to $30.00 Arms Service charges for time and parts to make the repairs, totaling approximately $50.00 to $55.00 per gun on a no charge basis.

I believe that we should review this problem with our Legal Department and, if possible, reword our letters to customers on these alleged incidences to read: "Return your rifle for our examination and, if the rifle is found to be factory defective, the repairs will be made at no charge." If these guns have been tampered with, neglected, or parts are worn because of long usage, the customer should be responsible for the repairs.

In order to put this problem into proper prospective, 500 guns returned, examined and repaired on a no charge basis, is costing our Company between $25,000 and $27,000.

E F Sienkiewicz

EFS:tpp

[redacted]

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-69 REV. 8-66

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

cc: E. F. Barrett
E. F. Sienkiewicz
J. A. Stekl

February 26, 1979

To: J. E. Preiser

From: E. G. Larson

Subject: Returned Bolt Action Rifles

Attached is a copy of a memo from Ed Sienkiewicz relative to other than Model 600's returned for allegedly firing on release of safety. Ed makes a point, but several items require some thought:

1. Based on our policy, any gun returned that is found to have a material or workmanship defect, should be repaired at no charge. This has always been our policy.

2. Because we specifically have asked that any bolt action gun, allegedly firing on release of safety, be returned at our expense, more or less obliges us to make a no charge repair.

3. Obsolete guns present another problem because parts are not easily interchanged.

I agree with Ed that worn or misused guns returned should bear a charge for repair. This will require a change in our request for return, and probably involve a management decision.

Any gun received in which we find a safety problem, regardless of cause, should be brought to the attention of the owner. I suggest that in the case of obsolete, worn, or misused guns, we advise the owner of the cause, and send him an estimate of cost of the repair required. Again, this is a management decision.

One thing that bears investigation (I initiated same several months back, but no answer to date) is a cold test, and accelerated storage of the oil-lube-protective materials used by the plant on new guns. Several reports from the field indicate a varnishing effect accrues after a period of time, causing a malfunction of trigger components. Cold temperature would induce a more severe condition.

Let's discuss.

E. G. Larson

EGL:lb

cc: E. Hooton, Jr.
E. F. Barrett
E. J. Conroy
J. E. Preiser ✓
R. B. Sperling
C. B. Workman

RD-69 REV 6-68

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

March 16, 1979

To: R. L. Hall
D. J. Sanita
J. A. Stekl

From: E. G. Larson

Subject: Returned Gun Procedures

Attached is our complete file covering the above. This material should cover the future handling of any guns not involved in the recall, but brought to our attention because of the recall.

E. Hooton, Jr., and R. B. Sperling have approved, and the procedure should be instituted immediately.

If you have any questions, please contact the writer.

E. G. Larson

EGL:lb
Attach.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.
ILION, NEW YORK

cc: R.L. Hall J.H. Carter

October 25, 1978

TO: ALL SUPERVISION - CODE B

BRIDGEPORT, CT., October 25, 1978 - Remington Arms Company, Inc., announced today that under certain unusual circumstances on some of its center fire bolt action firearms, the safety selector and trigger could be manipulated in such a way that subsequently moving the selector to the fire position could result in accidental discharge. Remington firearms involved are Model 600, 660 and Mohawk 600 Rifles and XP-100 Pistols manufactured prior to February 1975.

The difficulty can be corrected by installation of a new trigger assembly. In view of the potential safety hazard, the Company is recalling all of those guns produced prior to February 1975, for inspection and modification as required.

Efforts are being made to contact owners of these guns. Individuals who have Model 600, 660 and Mohawk 600 Rifles or XP-100 Pistols involved in the recall should write to Remington Arms Company, Inc., Bridgeport, Ct. 06602, or call the following toll-free number for information on procedures:

In all states except Georgia: 800-241-8444 - Ask for Operator 61

In Georgia: 800-282-1333 - Ask for Operator 61

Customers should give the operator the model and serial numbers of their gun when calling.

Serial numbers involved in the recall are as follows:

Remington Model 600's	-	From Serial #0001 to 131,552
Remington Model 660's	-	From Serial #0001 to 131,552
Mohawk 600's	-	From Serial #6,200,000 to 6,899,999
Remington Model 660's	-	From Serial #6,200,000 to 6,899,999
Remington XP-100	-	From Serial #0001 to 11,000
	-	From Serial #7,500,000 to 7,507,983

R.A. Morris
Superintendent-Employee Relations

RAM:cp

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Jack, For your information good letter by Ed

2/23/79 Glenn

cc: R L Hall 2-27-79

February 22, 1979

Copy

TO: E.G. LARSON

FROM: E.F. SIENKIEWICZ

SUBJECT: RIFLES RETURNED FOR FIRE ON SAFE RELEASE

Since the Model 600 recall, hundreds of people owning Model 700 and other model firearms have contacted Remington alleging that their guns have fired when pushing the safety from on safe to off safe position without touching the trigger.

To date, all such inquiries have been handled by requesting the rifle be returned to Ilion for examination and repair at no charge.

Examinations of the returned guns received at Ilion have revealed no factory defects. All problems that have been found are due to customers tampering with the trigger adjusting screws, over oiling, (I.E. motor oil, salad oil, etc.) and other unauthorized alterations.

Several models returned are old obsolete Models 721, 722 rifles, some being 30 years old, that are worn from hard use, including the trigger assemblies. We do not have any replacement assemblies for these models; therefore, requiring extensive alterations to present Model 700 trigger assemblies for installation at no charge.

Each firearm returned requires 20 minutes examination time for each of three (3) engineers and $25.00 to $30.00 Arms Service charges for time and parts to make the repairs, totaling approximately $50.00 to $55.00 per gun on a no charge basis.

I believe that we should review this problem with our Legal Department and, if possible, reword our letters to customers on these alleged incidences to read: "Return your rifle for our examination and, if the rifle is found to be factory defective, the repairs will be made at no charge." If these guns have been tampered with, neglected, or parts are worn because of long usage, the customer should be responsible for the repairs.

In order to put this problem into proper prospective, 500 guns returned, examined and repaired on a no charge basis, is costing our Company between $25,000 and $27,000.

E F Sienkiewicz

EFS:tpp

G-83

DON'T SAY IT — WRITE IT

cc: J. H. Carter
J. P. Linde

To E. HOOTON, JR.

Date March 6, 1979

From R. L. HALL

At present, we have on the Plant at Ilion the following customers' guns, which have been returned due to the Model 600 recall:

Model 721-722	34
" 725	1

Since these obsolete models have been out of the line for some time, no further trigger assemblies are available. At present, no other approved method is available for correcting fire controls in these models.

Attached is a sample letter used by Marketing requesting the return of these guns. Also attached is a copy of a letter from E. F. Sienkiewicz to E. G. Larson proposing a change in the letter concerning the return for repair at no charge.

RLH:AH
Attchs. 2

SAFETY IS A WISE INVESTMENT

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

MANUFACTURERS OF
SPORTING FIREARMS.AMMUNITION

TRAPS TARGETS

BRIDGEPORT, CONNECTICUT 06602

January 15, 1979

bcc: P.R.Burdett
J.P.McAndrews
E.S.McCauley

Dun's Review
Editorial Office
666 Fifth Avenue
New York, New York 10019

Attention: Mr. Clem Morpello, Editor

Gentlemen:

I just read your article "A Record Year for Recalls" in the January 1979 issue of Dun's Review, and I wish to bring to your attention a defective statement contained therein which is unreasonably hazardous to Remington's business reputation.

I am referring to the reference on page 28 to "a rifle that may fire without anyone pulling the trigger". (The listing of "rifles" and "Remington Arms Co." under "product" and "manufacturer" under the "Recall Roll Call" on page 31 leaves little doubt that the manufacturer of the rifle referred to on page 28 is Remington.)

The fact is, the Remington rifles being recalled will not fire without pulling the trigger. As stated in our recall notice, under unusual circumstances the safety selector and trigger of certain of these rifles can be manipulated in such a way that subsequently moving the selector to the fire position could result in accidental discharge. However, at some point in this sequence the trigger must be pulled or the gun will not fire. It is a gross misrepresentation of the facts to say the rifle may fire without anyone pulling the trigger.

May I suggest a recall of your statement, with appropriate notice to assure that the message is adequately disseminated.

Very truly yours,

R. A. Partney
General Counsel

RAP:CK

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2523161

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2523162

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2522923

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

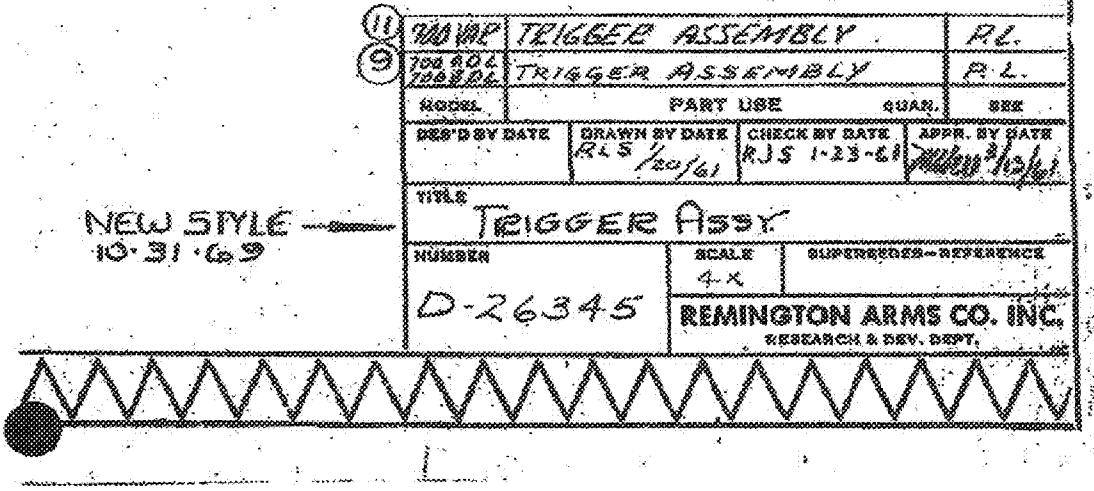
R2522824

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2523163

BARBER - 1.30.1300007 62

BARBER - 1.30.1300007 62



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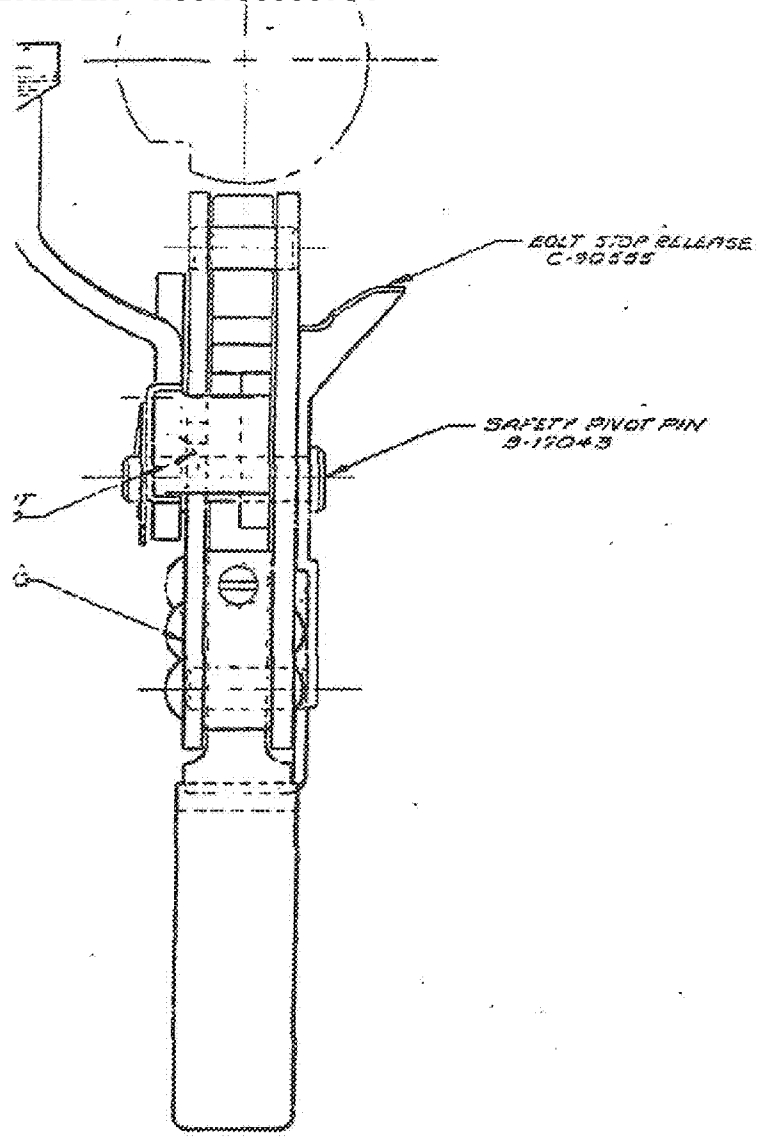
KINZER V. REMINGTON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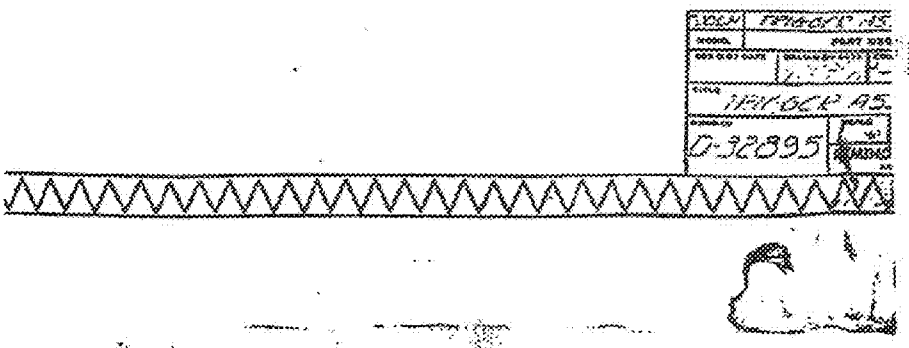
B-110413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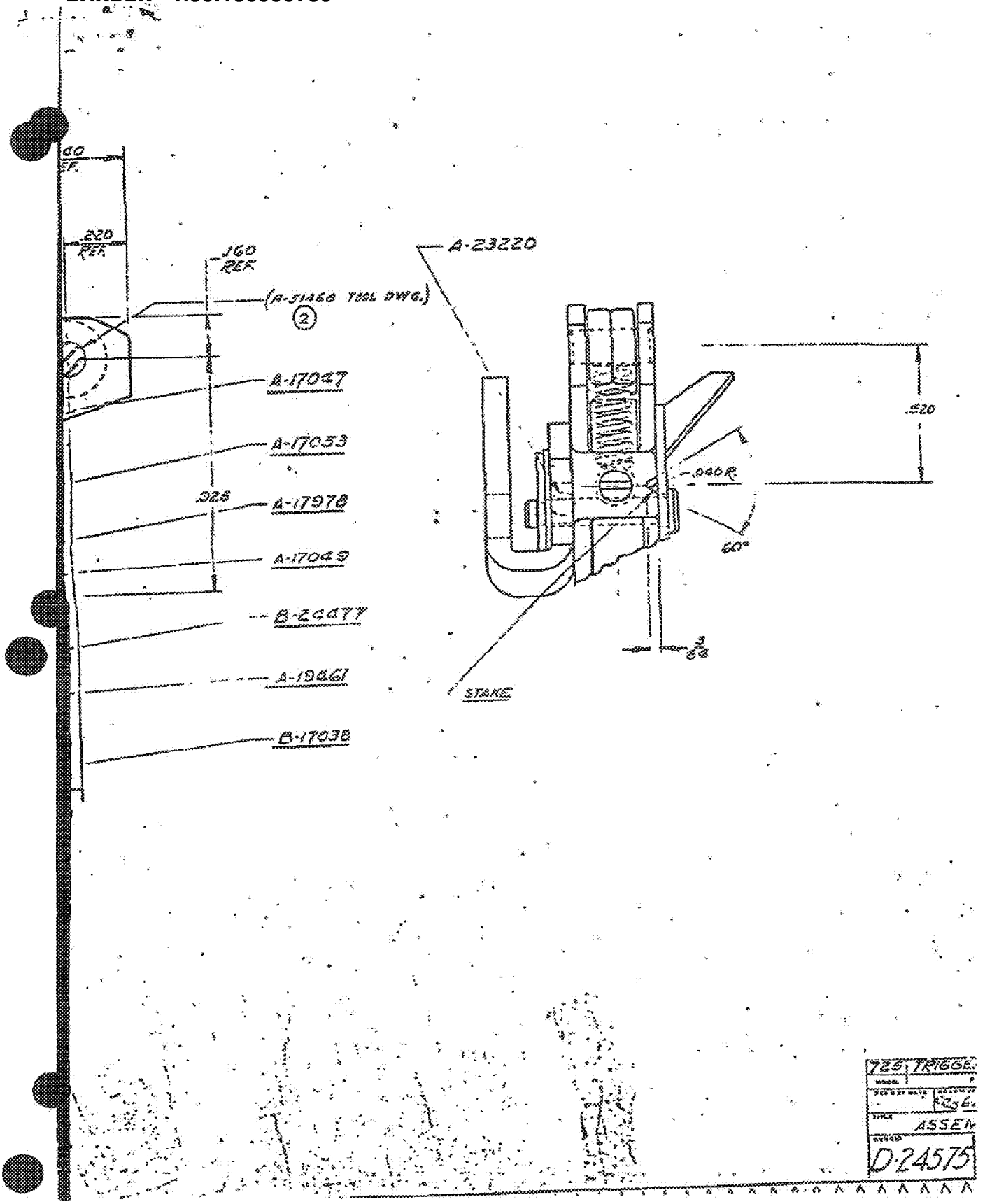
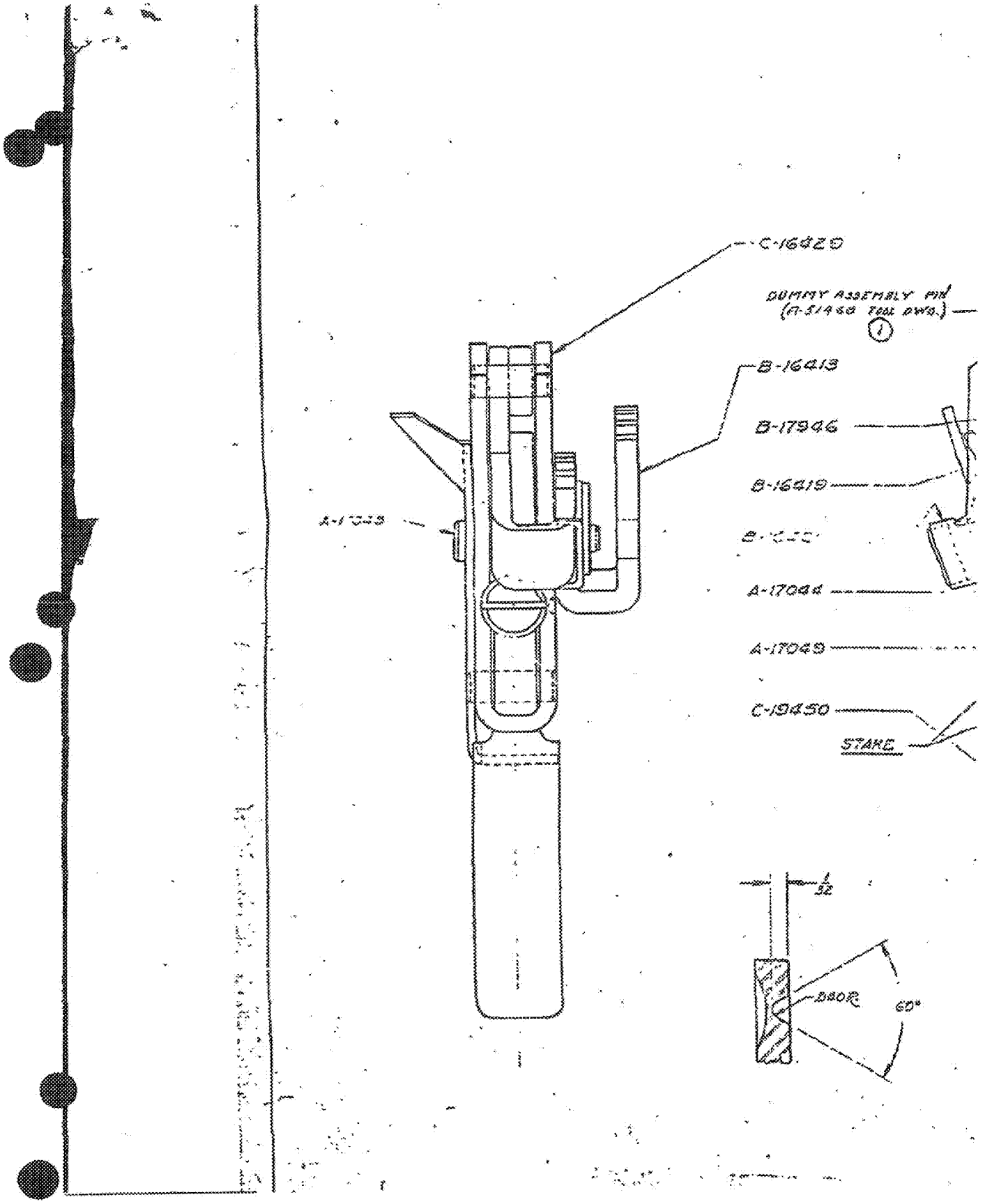
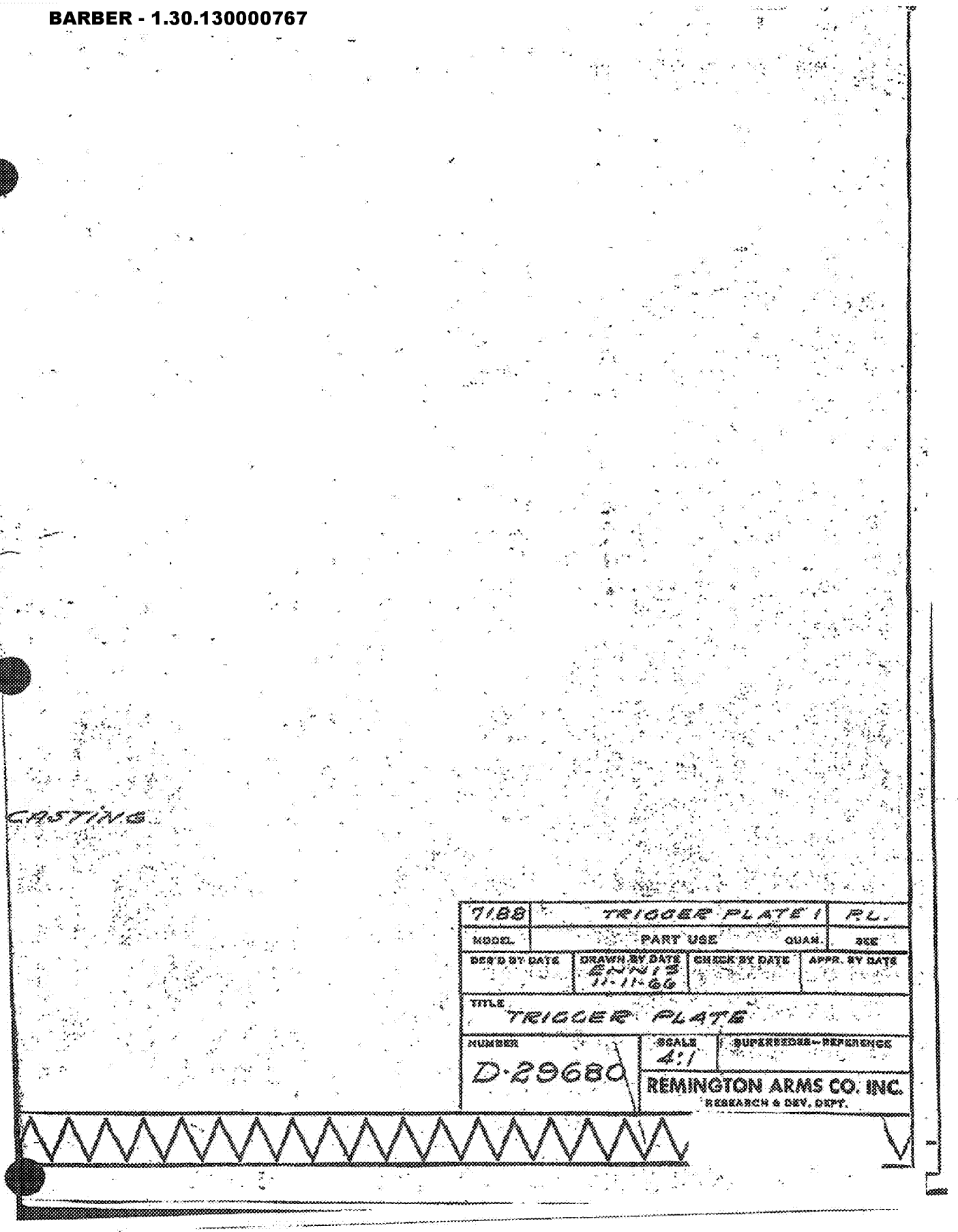


CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

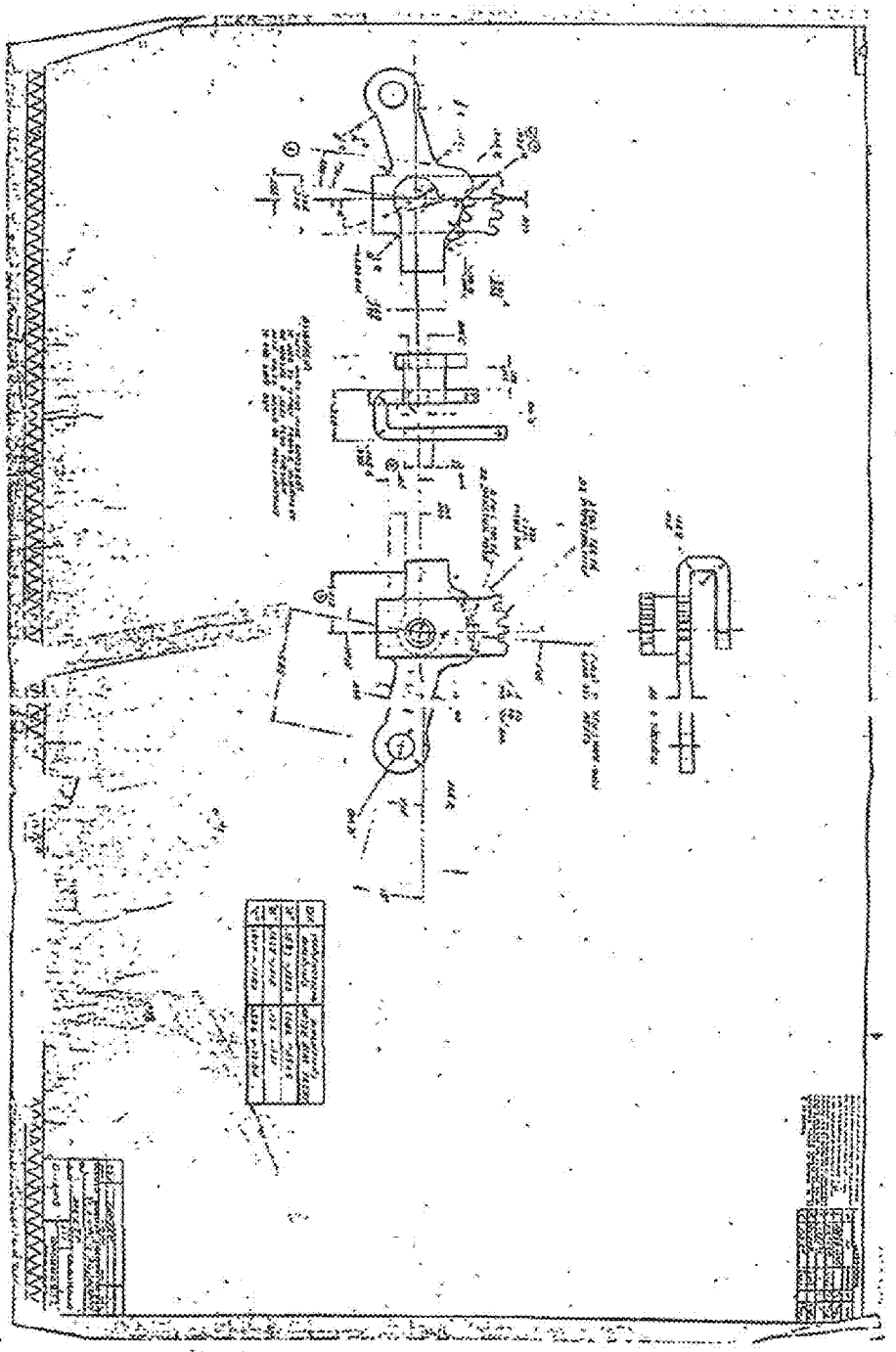


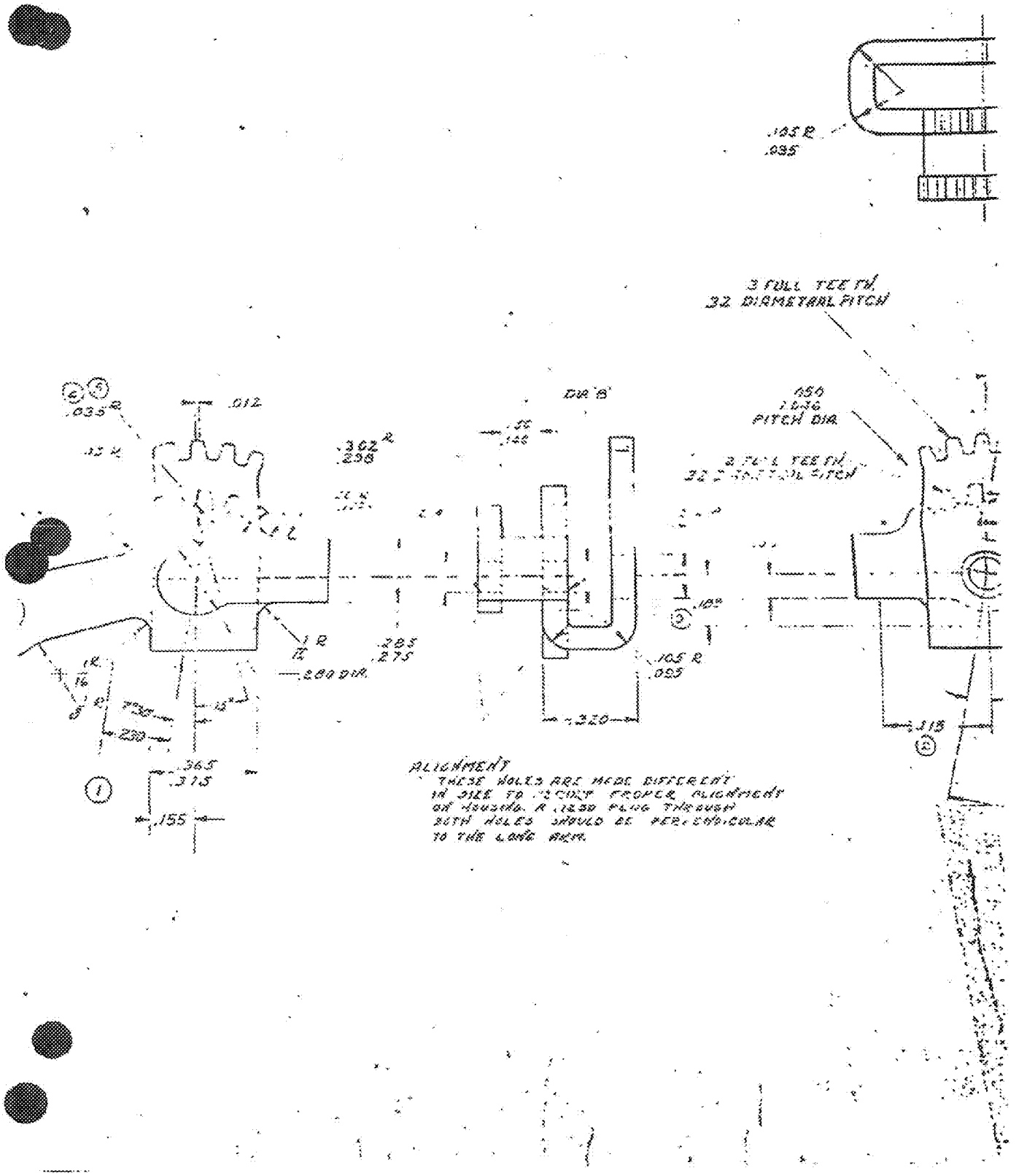
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

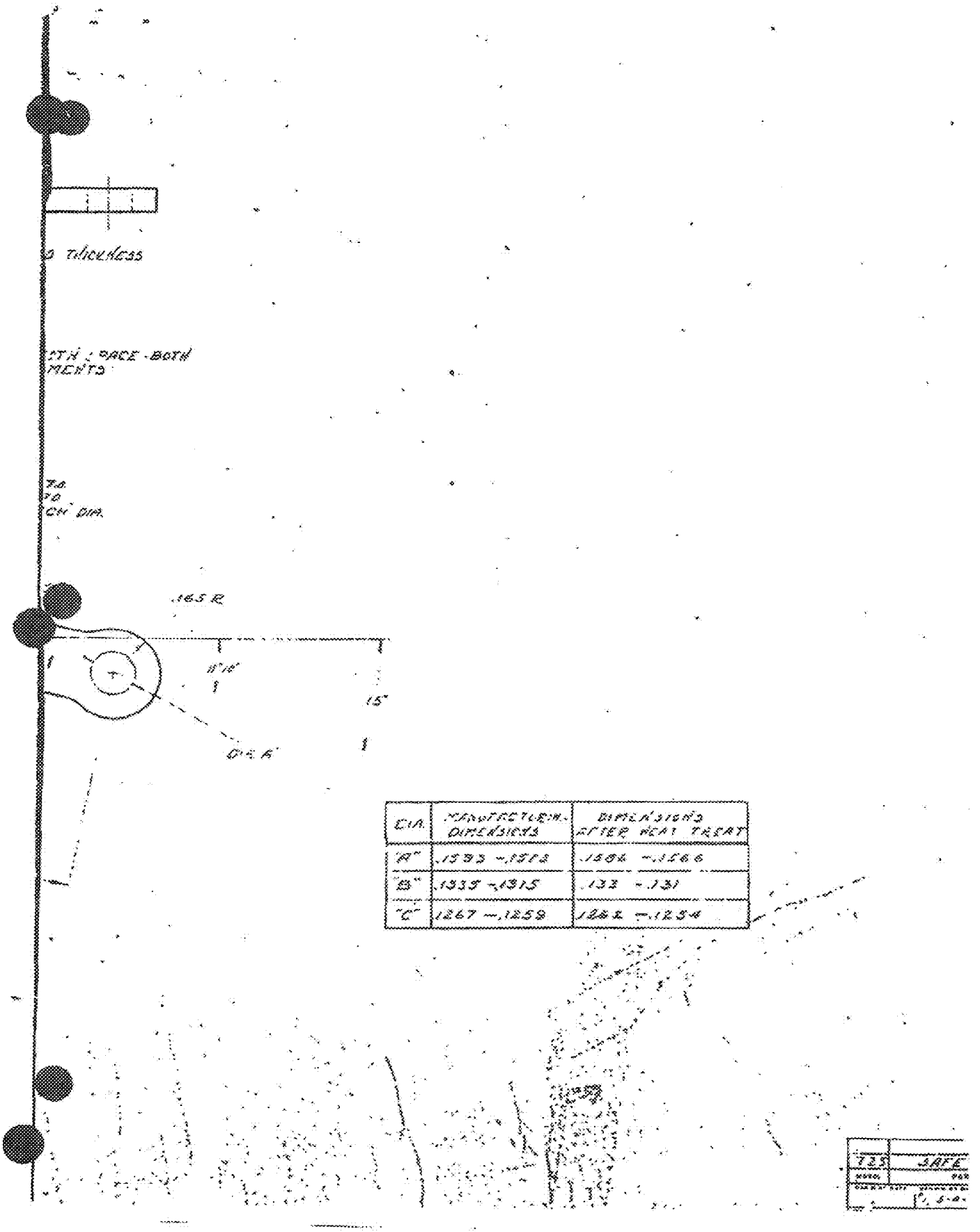


R2523021

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

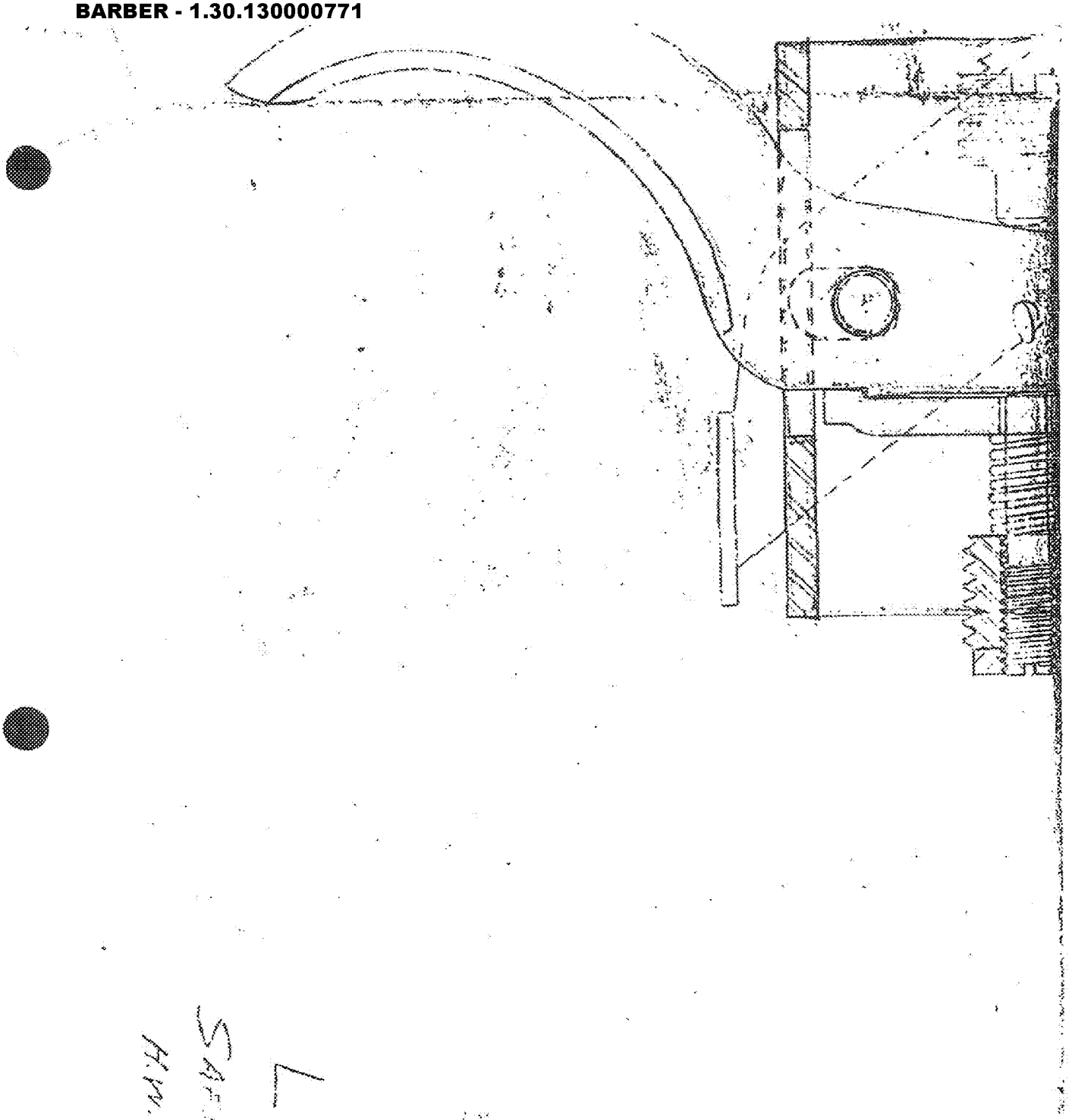


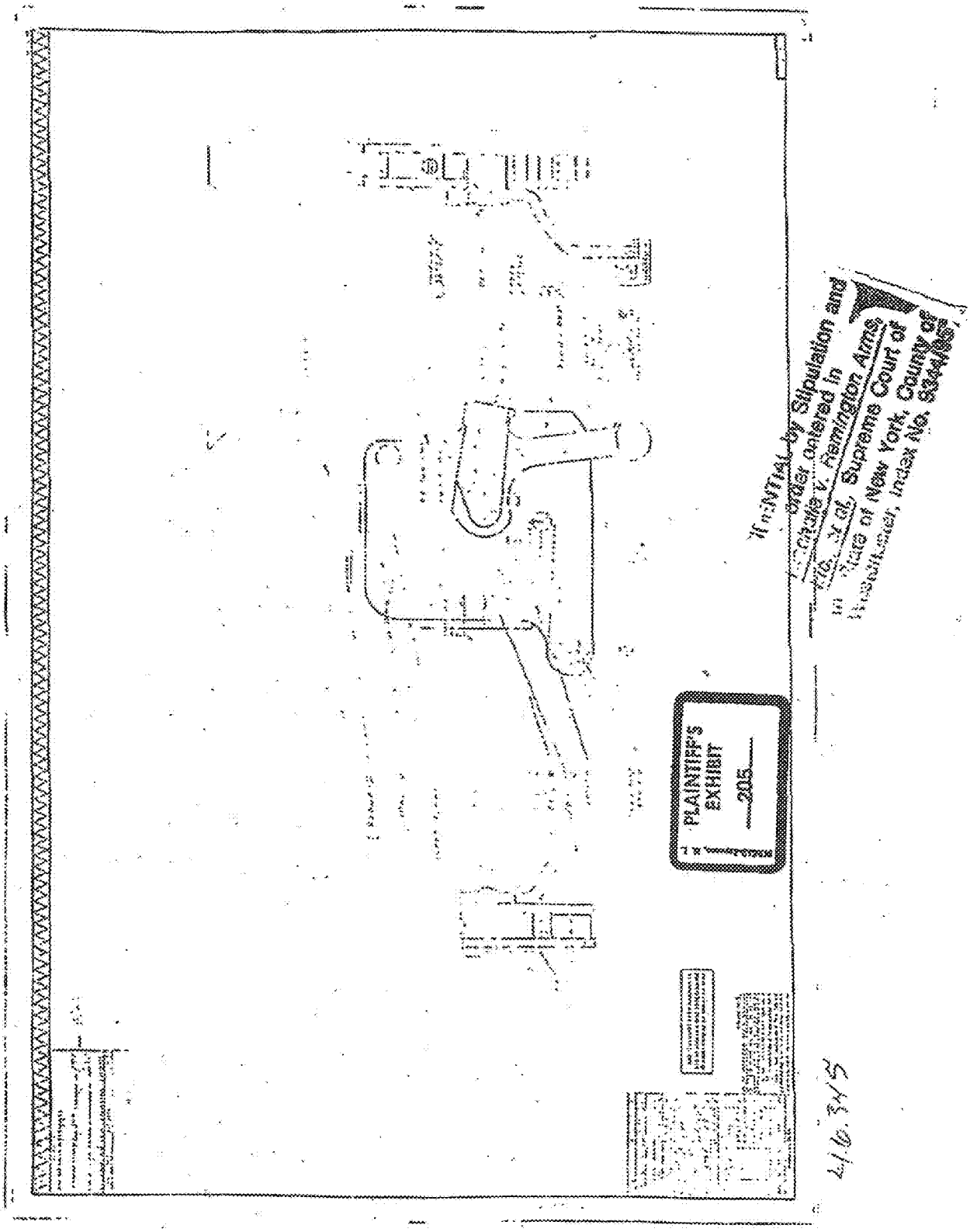

.185 R
.095
3 FULL TEETH
32 DIAMETRAL PITCH
.050
1.036
PITCH DIA.
DIA 'B'
.012
.035 R
.302
.258
.105 R
.095
.320
.318
.365
.315
.155
.280 DIA.
ALIGNMENT
THESE HOLES ARE MADE DIFFERENT
IN SIZE TO INSURE PROPER ALIGNMENT
OF HOUSING. A .1230 PLUG THROUGH
BOTH HOLES SHOULD BE PERPENDICULAR
TO THE LONG REF.



DIA.	MANUFACTURING DIMENSIONS	DIMENSIONS AFTER HEAT TREAT
"A"	.1393 – .1373	.1384 – .1366
"B"	.1335 – .1315	.133 – .131
"C"	.1267 – .1259	.1262 – .1254

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON




PLAINTIFF'S
EXHIBIT
205

TITLE: Trigger Assy

Process Header

Process Header

Document ID: Trigger Assy 700 7 Lwt	Remington Arms Company
Part Name: Trigger Assy	
Product Line: Rifle	Effective Date: 05-Apr-1991-08:00:00
Engineering Group: Rifle Group	Origination Date: 26-Jun-1990

Process History

Status	Date/Time	Status Set	Responsible User
Submitted	28-MAR-1991	10:29:57.06	Shirley Willoughby
Comment:	"Process verified by GEB"		
Fully Approved	1-APR-1991	09:49:21.84	R.A.Jackson
Comment:			
Normal Release	5-APR-1991	08:00:31.37	"CART"
Comment:			

Process Revision Reasons

Date:	Reason For Revision:	Eng Log #:	
26-Jun-1990	Retyped entire process from 283920 - Replaces old paper process.	SJK	290349
18-Jul-1990	Added Model 700 Trigger Assembly To Process; Changed Name From "Trigger Assembly 7 LWT" to present	JAR	290448
28-Mar-1991	This process has been varified and also added Oper.140	GEB	291237

Process Approval List

Approved By:	Badge #:	Date:	Designation:
R.A.Jackson	00000	1-APR-1991	Technical Supervisor

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2535940

BARBER - 1.30.130000773

TITLE: Trigger Assy

Operation Step Detail Operation: 151

Step Operation / Step Description

*** See Sketches (4) ***

Assemble Trigger Assembly - Stage One
Inspect Connector 100%, inspect Trigger 100% and check Connector to Trigger fit 100%.

NOTE: Do all elements 100%

1. Inspect long inside Connector surface, and inside surface of long (top) leg for flatness.

   Hold Connector against flatness block with light finger pressure.

   * If no light shows between inside surfaces of back and long leg of Connector and block surface, Connector is good.

   (See Figure #1)

   * If light gap shows, measure gap with a .006 shim. If gap accepts shim without moving Connector - Reject Connector. (See Fig. #2)

   * If Connector rocks on flatness block - reject Connector. (See Fig. #3)

   * Front edge of long (top) leg, must be square with shoulder of flatness block. (See Fig. #4)

   .006 Shim - Make new Shim as required.

2. Smooth top surface of long leg of Connector. Use Crocus cloth.

   Surface must be:
   * Smooth
   * Burr - Free at top and bottom corners and hole.
   * Dead flat within 1/32" (Minimum of end.

   Check for burrs and smoothness with fingertip.

   Separate rejected connector into labeled containers based on reject reason.

3. INSPECT TRIGGER.

   Trigger Must Have:
   * Good black color
   * No bleed out (white material on surface)
   * No burrs
   * No cracks or damage at pivot hole.
   * Floor Plate clearance milled, both sides of finger piece.

4. Fit passed Connector to passed Trigger and check for MIN. WORKING CLEARANCE. (Slip Fit)

   * Connector must rotate freely around bottom (short) leg, without binding on top of Trigger.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2535944

TITLE: Trigger Assy

Operation Step Detail Operation: 154

Step Operation / Step Description

*** See Sketch ***

Assembly Trigger Assembly - Stage Two

1. Inspect Trigger Housing:

   * Black color
   * No bleedout (White Material)
   * Check inside Housing - No burrs at holes.
   * Clean and free of excess oil and foreign material.

2. Position Trigger in Housing and install Trigger Pin:

   * Pin must be flush to housing on right side, left side for left hand.
   * Grip Trigger and rotate housing around Trigger Pin. Trigger must rotate freely in housing without bind.

3. Install:

   * Same Connector as fitted to Trigger (Op. #151)
   * Trigger Stop Screw - Flush with hole.
   * Trigger Spring
   * Trigger Adjusting Screw - Flush with hole or below. (There must be adequate spring force on Connector while adjusting Trigger Engagement Screw.) (except with Australlian)
   * Trigger Engagement Screw - flush with hole. (except with Austrailian) - Screw should have been precoated with loctite sealant before assembly - see PROCEDURE.

PROCEDURE FOR COATING TRIGGER ENGAGEMENT SCREW WITH LOCTITE SEALANT:

1. Place approximately 1000 clean, dry screws in a plastic bag.
2. Pour sufficient loctite sealant into bag to evenly coat screws with a thin film of sealant.
3. Agitate bag to coat all screws.
4. If screws are too moist, add more screws and re-agitate. If screws are too dry, add more sealant and re-agitate.

Screws may be used immediately or stored if required.

4. Install Sear Spring and *Sear Safety Cam using Two Dummy Pins.

   * Sear must be flat - not bowed. Check 100% thru width gage.
   * Sear must not have dimple.
   * Sear must be ground at vertical contact surface with Connector and at horizontal contact surface.
   * Sharp Square Corner at Connector Contact Surface.

     * Sear Safety Cam - Part #15666 does not have a recessed dimple.

   NOTE: Grind at vertical contact surface is done AFTER chrome plate. Grind at horizontal contact surface is done BEFORE

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R2535951

TITLE: Trigger Assy

Operation Tool Detail Operation: 155

Tool Number	Tooling Description
Std.	Jones & Lamson Comparator TC-10
E-42271	Comparator Fixture
A-600-CI.25	Comparator Screen

Operation Step Detail Operation: 160

Step	Operation / Step Description

**********SKETCH NEEDED**********

Assembly Trigger Assembly - Stage Three

1. Pick correctly adjusted Trigger Sub-Assembly.

2. Assemble:

   Bolt Stop Release - Do not use twisted or bent parts.
   File inside surface flat if necessary.
   Safety Assembly

   Safety Detent Ball

   Safety Detent Spring - Visually check for correct size dimples.

   Safety Pivot Pin

   Safety Snap Washer

   * Safety Snap Washer MUST be completely contained within Pivot Pin Groove.

   * Both raised dimples on Safety Detent Spring must be within opening of Safety Snap Washer (refer to illustration)

3. Push Bolt Stop Release up and down to ends of Travel several times.

   * Bolt Stop Release must move smoothly and freely without bind.

4. Apply a small amount of Molykote Powder to Sear/Connector engagement surfaces thru engagement view hole, and safety detent area of trigger assembly.

5. Place in pan.

   MOLYKOTE POWDER: Dry Type "Z"
   Squeeze container or eye dropper

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R2535957

BARBER - 1.30.130000776

TITLE: Final Assy 700

Operation Procedure Notes Operation: 640

Description

FINAL ASSEMBLY
OPER. NAME-FINAL INSPECTION
SEQUENCE OF INSPECTION POINTS (See Following)

1. SAFETY
2. STAMPS
3. SPECIFICATIONS
4. GUN GRADES
5. STOCK
6. METAL PARTS, FINISH
7. HEADING
8. SAFE
9. STAMP FINAL INSPECTION AND CODE MARKS

TO WAREHOUSE

Item:
1. SAFETY
Inspect chamber and Magazine NO LIVE AMMUNITION. Must see follower.

2. Stamps on Barrel
Proof (Rep) (Important, Proof, Test and Target Stamps on right side, rear.)

Magnaflux-Triangle with number in center on right side of Breech-Visible above stock.

3. Specifications
Gun matches gun tag.

Receiver Marking:
Remington Model and Serial No., on left side.
Model No. must be recognizable.

Barrel Marking:
Patent & Cal. on left side.
(Cal. per gun tag)

Bolt Marking: (Disassemble Bolt) Check Bolt Release, must be free. Check serial #-Must agree with Receiver #. Check for mars, finish, Brass in Bolt Head, Proof mark on undersize of Bolt Handle. Check for Extractor in position. Only Extractor claw should be visible.

4. Gun Grades:
Camo or Gray

5. Stock-Inspect for Handling Damage. Max allowance for Stock-Rec. Gap at Tang is .030". Trigger Guard & Floor Plate stock opening maybe excessive but must be uniform, not jagged. Inspect floor plate for mars, finish and proper function. Mountain Rifle barrel to be free floating with a minimum of .005 clearance. Trigger Guard Screws tight. Assemble correct Rear Swivel if specified on gun tag.

6. Front Sight Bead not jammed, Sights must be central. Slight mars per Inspection Stds. Crown good finish. Accept 1/16" light ring at bore. Uniform wall.

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KINZER V. REMINGTON

R2535998

BARBER - 1.30.130000777

Continued ...
Operation Procedure Notes Operation: 640
Description

7. Min. and Max heading plugs.
 1. Insert Min. plug in chamber, must close with no more than slight drag.
 2. Insert Inspection Max. plug in chamber, Bolt must stop or lock with noticable pressure.

Caliber		Min. Plug	Insp. Max Plug
1. 17 Rem.		B-38336	B-38113
2. 222 Rem.		B-81544	B-82320
3. 22-250		B-87465	B-87468
4. 223 Rem		B-86881	B-86883
5. 6mm Rem.		B-81268	B-82325
6. 243 Win.		B-81229-A	B-81229-C
7. 25-06		B-73438	B-82327
8. 257 Roberts		B-73286	B-82326
9. 270 Win.		B-73438	B-82327
10. 280 Rem.		B-81578	B-82329
11. 7mm-08 Rem.		B-81229-A	B-81229-C
12. 7mm Mauser (7x57)		B-44975-A	B-44975-C
13. 7mm Rem. Mag.		B-85241-A	B-85241-B
	(BELT)	B-83853-A	B-83853-C
14. 7mm Wby. Mag.		B-48583	B-48584
	(BELT)	B-83583-A	B-83853-C
15. 300 Savage		B-70556	B-82333
16. 30-06		B-73438	B-82327
17. 300 WBY. Mag.		B-48096	B-48097
	(BELT)	B-83583-A	B-83853-C
18. 308		B-81229-A	B-81229-C
19. 300 Win. Mag.		B-86567	B-86586
	(BELT)	B-83853-A	B-83853-C
20. 35 Whelen		B-73438	B-82327
21. 338 Win. Mag.		B-85241-A	B-85241-B
	(BELT)	B-83853-A	B-83853-C
22. 220 Swift		B-49143	B-49145

Remove Heading Plug

 3. With Action in fired position, lift Bolt while pressing foreward firmly, release handle, then close handle, Bolt must cock and remain cocked.

 4. Hold Bolt handle down hard, pull Trigger, Firing Pin must fall without drag or movement of Bolt Handle.

8. Action:
 A. Operate Bolt 3 times and fire, no bind, Bolt Handle raises and lowers easily.
 B. Open and close Bolt forcibly 3 times. Firing Pin must not follow down.

 C. Check for jar off by applying steady pressure on end of firing pin head with safety in "F" or "off" position. (use end of hammer handle).

9. Safe, Gun cocked:
 A. Clean sharp single detent.
 TRY THREE TIMES
 WITH SAFETY IN "S" OR "ON" POSITION, CAN'T FIRE WITH HEAVY TRIGGER PRESSURE. TRIGGER MUST RETRACT. PUSH SAFETY HALFWAY TO THE "F" OR "OFF" POSITION, PULL TRIGGER, MUST NOT FIRE. PUSH SAFETY TO "F" OR "OFF" POSITION.

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KINZER V. REMINGTON
R2535999
BARBER - 1.30.130000778

Continued ...
Operation Procedure Notes Operation: 640

Description
FIRING PIN MUST NOT FOLLOW DOWN, SAFETY MUST RETURN TO OFF POSTION UNDER TENSION. USE DOWNWARD PRESSURE ON SAFETY. Bolt handle must unlock with safety ON. Safety should snap in detent in both "ON" and "OFF" position. B. Check trigger pull-no creep (3 to 5 lbs. on M/700) C. With bolt open, pull safety on, close bolt and lock down. Bolt must lock down without catching on safety. Bolt must open with safety on. *D. Remove Bolt and insert Special Dial Gage into Receiver and measure Safe-ON, Sear Connector clearance. If clearance is less the .006, reject. Remove gage and reinsert Bolt. 10. Stamp Final Inspection and Code Marks on Left rear side of barrel, sign gun tag. 11. Stock Rejects only: A. Place 3/4" yellow dot with identification stamp and nonconformity code, close to nonconformity on stock rejects. *Special Dial Gage D-44581, use with 5/64 Balldriver Hex Tool Bondhus Cat. #10604, Series 106, or equivalent.

Operation Step Detail Operation: 660

Step	Operation / Step Description
	Assemble Front Sight Cover to Front Sight Ramp Insert Front Sight Cover into slots in Front Sight Ramp. Press until seated in Detents. Pointed ends forward.

Operation Tool Detail Operation: 660

Tool Number	Tooling Description
	Bench

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R2536000

TITLE: Final Assy 700

Operation Step Detail Operation: 677C

Step	Operation / Step Description
	Pack authorized gunsmith folder.

Operation Step Detail Operation: 678C

Step	Operation / Step Description
	Position Wax Paper around Barrel, Oil, place price tag on Trigger Guard and Pack rifle Oil-700 Solution-(10) parts Shell Solvent, wipe bore and metal parts with (1) part steel guard. ROD D-43447 TAG: 700 1. Select correct tag for model. 2. Attach to trigger guard. 3. Use Packaging Box Assy. Pt.#1411 Royal Self Seal Waxed Paper (6" x 6" x .002) A-P1232 1232 White Ethafoam Block (1 1/2" x 2 1/2" x 1") Tape (16" x 1/2" of 3M #898 A-P-1233 1233 Fil Tape A-P-1234 1234

Operation Step Detail Operation: 690R

Step	Operation / Step Description
	Unpack Gun

Operation Step Detail Operation: 695R

Step	Operation / Step Description
	Re-Pack Gun. To be used for guns taken from Warehouse for Re-work

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R2536002

Title: Final Assy 700

Operation Step Detail Operation: 667

Step	Operation / Step Description
	Pack Instruction folder, ten commandments, gunsmith list, and wire brush in envelope and seal. Polyethylene Bag 7"x 10"s .002 Dwg. #A-P-1238 Pt.#1238

Operation Step Detail Operation: 676

Step	Operation / Step Description
	Pack Rifle A. Oil-700 Solution-(10) parts Shell Solvent, wipe bore and metal parts with (1) part steel guard. ROD D-43447 TAG: 700 1. Select correct tag for Model. 2. Attach to Trigger Guard 3. Packaging Box Ass'y Pt.1411 Royal Self Seal Waxed Paper (6" x 6" .002) A-P-1232 1232 White Ethafoam Block (1 1/2" x 2 1/4" x 1" Tape (16" x 1/2' of 3M#898 A-P-1233 1233 Fil Tape A-P-1234 1234 B. Pack document bag. C. Pack authorized gunsmith folder. D. Pack & Seal Rifle. 1. Place swivel baggie into Bolt slot in Barrel insert. Clean, white cloth wipers Use Polyethylene bag Dwg. A_P_1230 Pt.#1239 (2 1/2" x 9" x .002)

Operation Step Detail Operation: 676C

Step	Operation / Step Description
	Pack hardware with gun. Use Polyethylene Bag (2 1/2" x 9 x .002) Dwg. A-P-1230 Part # 1239

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KINZER V. REMINGTON

R2536001

OPERATIONS COMMITTEE MEETING
January 18, 1951

MINUTE #1, 1951
ARMS

Pages 3 & 4

GUN FINISHES

(a) Browning

The records show customer complaints on finishes to be relatively few. For the Model 11-48 they amounted to 2% of the total complaints received in 1950 and in the case of the Model 870 there were only 2 complaints charged to this defect. Also, at the same time, it is agreed that our finishes should be further improved, especially the Browning process which is principally used in the coloring of our metal parts.

At present a minimum of two coats are used on parts of the 500 Series, three coats on the Model 721, and four coats on shotgun parts. Mr. Kenneth Wheat recited a brief history of the Browning process and explained the studies that are being made with the help of a DuPont Consultant to determine many of the unknowns connected with this process. Formerly it was a slow process without the elaborate controls that are now available for temperature and humidity. The merits of this process were discussed in some detail in comparison with the merits of the Cyanide Black process which is covered later in these Minutes. Additional progress reports on research into the Browning process will be submitted at intervals until the study has been completed.

FILE: Finishes (papers)
Browning
Complaints
Model 11-48
Model 870.
M/500 Series
Model 721
Parts
Cyanide Black
Components

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

TEST & MEASUREMENTS LAB
TEST RANGE
TESTER R. W. HOUSE

REQUESTED J. SHOEMAKER DATE 4-28-88

REPORT # 88/032 WORK ORDER NO. 44/1011

TEST TYPE - DRY CYCLE "DEVELOPMENTAL"

FIRE ARMS STATS. M/700

REASON FOR TEST.

TO CHECK THE FEASABILITY OF USING ZINK PHOSPHATE COATING ON M/700 FIRE CONTROL HOUSINGS.

EQUIPMENT REQUIRED.

SIX M/700 FIRE CONTROLS WITH ZINK PHOSPHATE COATING. TEST LAB M/700 COCK-FIRE AND SAFE LEVER CYCLING DRY CYCLE MACHINE AND TEST LAB M/700 TEST RIFLE.

TEST PROCEDURE.

INDIVIDUAL M/700 FIRE CONTROL ASSEMBLIES NOS. 1 THRU 6 WERE PLACED IN TEST RIFLE IN DRY CYCLE MACHINE AND CYCLED TO A TOTAL OF 20,000 CYCLES EACH OF COCK & FIRE WITH SAFETY LEVER BEING CYCLED "OFF-ON-OFF" ONCE EVERY FIFTEEN CYCLES.

ALL FIRE-CONTROLS WERE VISUALY CHECKED AT 10 AND 20,000 CYCLE LEVELS.

TOTAL SAFE "OFF ON OFF" CYCLES = 1,333 FOR 20,000.

TEST RESULTS

SEE ATTACHED SHEET.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
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TEST RESULTS: REPORT # 881032

SLIGHT DETERIORATION (WEAR) OF THE ZINK PHOSPHATE COATING OCCURED AT RIGHT SIDE REAR OF FIRE CONTROL SIDE PLATE (AT SAFE ARM CONTACT AREA). NO FIRE CONTROL RELATED MALFUNCTION OCCURED IN ANY TEST SAMPLES DURING THE ENTIRE TEST.

TEST SAMPLE	VISUAL OBSERVATION 10,000 CYC.	VISUAL OBSERVATION 20,000 CYC.
#1	OK	SLIGHT COATING WEAR AT REAR RIGHT PLATE, AT SAFE ARM CONTACT POINT (BRIGHT)
#2	OK	" " "
#3	OK	" " "
#4	BRIGHT SPOT AT REAR RIGHT PLATE AT SAFE ARM CONTACT POINT	MORE BRIGHTNESS (COATING WEAR) ALSO AT LOWER DETENT BALL COUNTER BORE EDGE
#5	OK	SLIGHT COATING WEAR AT REAR OF RIGHT PLATE, AT SAFE ARM CONTACT ARM (BRIGHT) ALSO AT LOWER DETENT BALL COUNTER BORE EDGE
#6	OK	" " "

NOTE: BEFORE BEGINNING OF TEST SOME RUST WAS NOTICED AT THE CONTACT AREA BETWEEN THE FRONT SPACER AND TWO SIDE PLATES OF THE HOUSING SUB ASSM.

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Report No. 881032

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	AREA OF TESTING	
X Developmental	___ Safety Related	___ Litigation
___ Design Acceptance	___ Competitive Evaluation	___ Warehouse Audit
___ Pre-Pilot	___ New Design	___ Cost Reduction
___ Pilot	___ Design Change	Stake ___
___ Production Assistance	___ Plant Assistance	X Other MATERIAL CHANGE

FIREARM STAT'S.	REPORT REQ'D.	
MODEL: 700	FORMAL ___	DATE REQUESTED: 4/12/88
CAL. or GAGE: 308	TEST RESULTS ONLY X	DATE NEEDED BY: 4/30/88
BARREL TYPE: ___		REQUESTED BY: JS/283
PROOFED: YES ___ NO ___		WORK ORDER NO: 481811

TEST TYPE

___ Strength Test	___ Ammunition Test	___ Dry Cycle Test	___ Photo/Video
___ Function Test	___ Environmental Test	___ Measurements	X Other DRY CYCLE
___ Accuracy Test	___ Customer Complaint	___ Endurance Test	SEAR

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

Dry cycle - 6 Fire controls with zinc plunger
cycling to 10,000 cycles
visually inspect
continue to 20,000 cycles
and repeat visual inspection

GUNS REQUIRED:

SIX SAMPLES RETURNED TO J. SNEDEKER FOR FURTHER TESTING.

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 4-28-88
TEST COMPLETED BY: [illegible]
REPORT DATE: ___

R2518091

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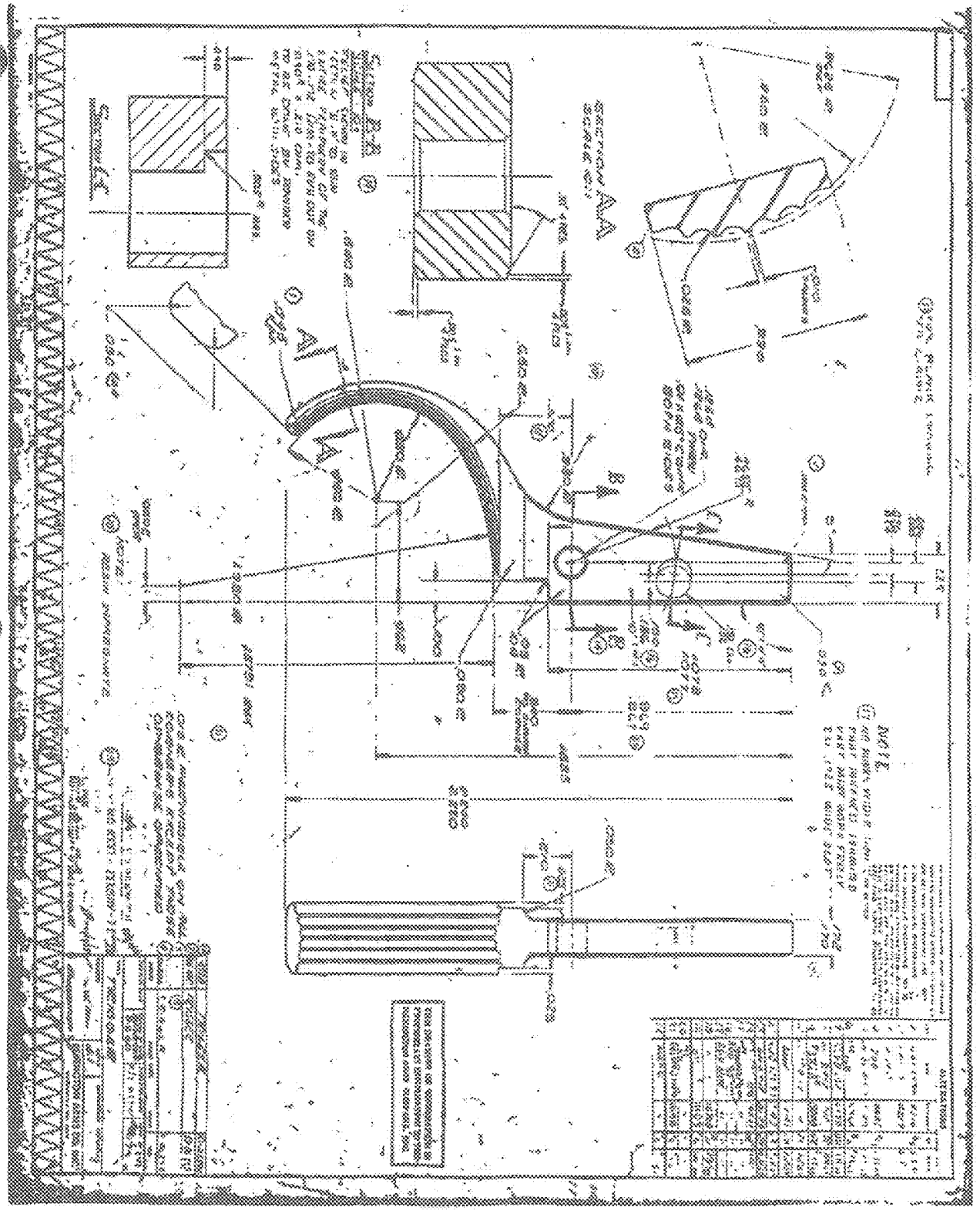

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.1300007787

SPACER, FRONT
B-14630
NOTES:
1. RESIN IMPREGNATE
2. FOR BLANK DRAWING SEE B-21613.
.0565 DIA THRU
.0565
2 PL
.030
.070
.075
.073
.402
.287
.284
.405
.400
.189
.185
.650
1.000
90°
0°
A
.182/.178
.176/.174
BLANK DIM
FINISH DIM

B-93637
SPACER,REAR
B-93637
NOTE;
FOR BLANK ORDER PART NO. 93636
NOTE;
RESIN IMPREGNATE
PART NO. DIM "A"
93636 .182/.178
93637 .176/.174
#5-40 UNC-2B
.600 REF
.372
.116
.114
.139
.0985
.0965 DIA.(2 HOLES)
.070
.161
.148
.378 R
.485 REF
.123 I.C.'BORE TO BE
DONE BY REMINGTON
.138
.088
.063 R
15°
.442
.200
.063 R
15°
.161
A

BARBER - 1.30.130000791

BARBER - 1.30.1300007 92

) MATERIAL AND HEAT TREAT

Fine Grain
MIL DENSITY

COLOR TO BE DONE BY REMINGTON
RED OXIDE

DO NOT SCALE THIS DRAWING. WORK TO FIGURES UNLESS OTHERWISE NOTED. TOLERANCES ON DECIMAL DIMENSIONS ARE ±.005 & ON FRACTIONAL DIMENSIONS ± 1/64 & ON ANGULAR DIMENSIONS ± 30'-30" FINISHES ARE DESIGNATED BY ROOT MEAN SQUARE R.M.S. MICRO-INCH ROUGHNESS VALUES AND ARE THE MAXIMUM ROUGHNESS ACCEPTABLE UNLESS OTHERWISE SPECIFIED. FINISH ROUGHNESS TO BE 125 OR BETTER

ALTERATIONS

LTR.	WAS	REFERENCE	BY	DATE
1	DELETE 285	7383	JMC	11-1
2	SUPERSEDED	8005	JK	2-17
3	REINSTATED	8179	JK	10-3
4	MOLD CAVITY	8226	JK	1-1
5	ADD USE	10195	JK	10-3
6	171-175	10173	JK	3-4
7	173-173	"	"	"
8	ADD NOTE	10768	JK	2-3
9	ADDED	11198	JK	4-1

RESIN IMPREGNATE

"A"

SR BLANK DRAWING
RE B-9123

B-14630

5

	PVC HOUSING FRONT SPACER	C-2
7 USE	TEFL HOUSING FRONT SPACER	C-2
8 USE		C-2
9 USE		C-2
10 USE		C-2
11 USE	TEFL HOUSING FRONT SPACER	C-2

MODEL	PART USE	QUAN.	SEE

DES BY DATE	DRAWN BY DATE	CHECK BY DATE	APPR. BY DATE
	R.D. 3-8-67		JCB 4-10-67

TITLE: SPACER, FRONT

NUMBER: B-14630

SCALE: 4X

SUPERSEDING DRAWING: B-12823

REMINGTON ARMS CO. INC.
BRIDGEPORT & DEV. DEPT.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.1300007933

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2522645

NOTES:
1. FOR BLANK DRAWING SEE B 91524.
2. RESIN IMPREGNATE
SPACER, REAR
B-1164
BLANK DIM .182/.178
FINISH DIM .176/.174
.600 REF
.372
.116
.114
.139
.038 DIA
2 PL
.070
.151
.149
.495 REF
.378 R
#5-40UNC-2B
.138
.161
.063 R
19°
.442
.063 R
19°
.008
A
0°
2°

Test Results: Report # 81032

Slight deterioration (wear) of the zinc phosphate coating occurred at right side rear of fire control side plate (at sear arm contact area). No fire control related malfunctions occurred in any test samples during the entire test.

Test Sample	Visual Observation 10,000 cyc.	Visual Observation 20,000 cyc.
#1	OK	Coating slight loss at rear right plate, at sear arm contact point (as cut)
#2	OK	" " "
#3	OK	" " "
#4	Bright spot at rear side plate at sear arm contact point	Same as 10,000 cyc. (coating loss) also at lower hammer ball contact (same type)
#5	OK	Slight coating loss at rear of rear plate, at sear arm contact area (bright) also at lower hammer ball contact area
#6	OK	" " "

Note: Burred beginning of test some rust was noticed at the contact area between the front spacer and two side plates of the housing sub assm.

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Test Results: Report # 88/032.

Slight deterioration (wear) of the zinc phosphate coating occurred at right side rear of fire control side plate (at sear arm contact area). No fire control related malfunction occurred in any test samples during the entire test.

Test Sample #	Visual observation 10,000 cyc.	Visual observation 20,000 cyc.
#1	OK	Slight coating wear at rear right plate, at sear arm contact point (each)
#2	OK	" " "
#3	OK	" " "
#4	Slight wear at rear right plate at sear arm contact point	Wear determined (coating worn) also at lower outer bolt control plate edge
#5	OK	Slight coating wear at rear of rear plate, at side sear contact area (each) also at lower outer bolt control plate edge
#6	OK	" " "

Note: Before beginning of test some rust was noticed at the contact area between the front spacer and two side plates of the housing sub asm.

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BARBER - 1.30.130000797

Test & Measurements Lab
Test Results
Tests R. W. House

Requested - J. Shooker — Date 4-28-83
Report # 83-1032 — Work order no. 4/31011

Test Type - Dev Cycle "Developmental"
Fire arms sets. M/700

Reason for Test,

To check the advisability of using zinc phosphate coating on M/700 fire control housings.

Equipment Required.

Six M/700 fire controls with zinc phosphate coating. Test Lab M/700 Cock-fire and Safe Levers cycling dry cycle machine and Test Lab M/700 Test Rifle.

Test Procedure.

Individual M/700 Fire Control Assemblies Nos. 1 thru 6 were placed in test rifle in dry cycle machine and cycled to a total of 20,000 cycles each of cock - fire with safety lever being cycled "off-on-off" once every fifteen cycles.

All fire controls were visually checked at 10 and 20,000 cycle levels.

Total safe "off on off" cycles = 1,333 for 20,000.

Test Results

See attached sheet.

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KINZER V. REMINGTON

Test & Measurements Lab
Test Reports
Tester R. W. Howe

Requested J. Shooker — Date 9-28-84
Report # 84-1032 — Work order no. 9-9-1011

Test Type - Dev Cycle "Developmental"
Fire arm used, M/700

Reason for Test,

To check the reliability of using zinc phosphate coating on M/700 fire control housings.

Equipment Required.

Six M/700 fire controls with zinc phosphate coating. Test lab M/700 cock-fire and safe lever cycling dev cycle machine and test lab M/700 test rifle.

Test Procedure,

Individual M/700 Fire Control Assemblies nos. 1 thru 6 were placed in test rifle in dev cycle machine and cycled to a total of 20,000 cycles each of cock & fire with safety lever being cycled "off-on-off" once every fifteen cycles.

All fire controls were visually checked at 10 and 20,000 cycle levels.

Total safe "off on off" cycles = 1,333 for 20,000.

Test Results

See attached sheet.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Report No. 99032

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

X Developmental	AABA DE TESTING: Safety Related	Litigation
Design Assistance	Competitive Evaluation	Warranty Audit
Pre-Pilot	New Design	Cost Reduction
Pilot	Design Change	Status
Production Assistance	Pilot Assistance	2 Other Operating System upgrade

FIREARM STATS
MODEL: 700
CAL or GAGE: 243
BARREL TYPE:
PROOFED: YES NO

REPORT REQ'D.
FORMAL
TEST RESULTS ONLY X

DATE REQUESTED: 4/12/99
DATE NEEDED BY: 4/20/99
REQUESTED BY: JG/SBS
WORK ORDER NO: 98141

TEST TYPE

Strength Test	Ammunition Test	Dry Cycle Test	Photo/Misc
Function Test	Environmental Test	Measurements	1 Other DRY CYCLE
Accuracy Test	Customer Complaint	Endurance Test	XXXXX

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

Dry cycle - 6 Fire controls with " zinc phosphate coating to 20,000 cycles
visually inspect it
Continue to 30,000 cycles
and repeat visual inspection

SUBS REQUIRED:

SIX SAMPLES RETURNED TO J. SPRECKER FOR FURTHER TESTING.

NOTE: NO firearms or parts will be stored in the Lab unless they are accompanied by a Work Request, and both are delivered to the Lab by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 4-28-99
TEST COMPLETED BY: [illegible]
REPORT DATE:

R2516091

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Report No. 881032

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

	AREA OF TESTING	
X Developmental	____ Safety Related	____ Litigation
____ Design Acceptance	____ Competitive Evaluation	____ Warehouse Audit
____ Prototype	____ New Design	____ Cost Reduction
____ Pilot	____ Design Change	Stake ____
____ Production Acceptance	____ Plant Assistance	X Other MISFIRING CONTROL CONCEPT

FIREARM STATS	REPORT REQ'D.	
MODEL: 700	FORMAL ____	DATE REQUESTED: 4/12/88
CAL. or GAGE: 243	TEST RESULTS ONLY X	DATE NEEDED BY: 4/30/88
BARREL TYPE: ____		REQUESTED BY: JC/JBB
PROOFED: YES ____ NO ____		WORK ORDER NO: 48616

TEST TYPE

____ Sample Test	____ Ammunition Test	____ Dry Cycle Test	____ Photo/Video
____ Function Test	____ Environmental Test	____ Measurements	X Other DRY CYCLE
____ Accuracy Test	____ Customer Complaint	____ Endurance Test	XM40A

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

Dry cycle - 6 Fire controls with zinc phosphate
coating to 10,000 cycles
visually inspect
continue to 20,000 cycles
and repeat visual inspection

--GUNS REQUIRED:

SIX SAMPLES RETURNED TO J. SPEDDEN FOR FURTHER TESTING.

NOTE: NO firearms or parts will be issued in the Lab unless they are accompanied by a Work Request, and both are delivered to the Lab by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 4-27-88
TEST COMPLETED BY: R.W. Howe
REPORT DATE: ____

R2518091

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-6542-1 Rev. 2-15-61

P.I. No GUN EXAMINATION REPORT NUMBER: _____ MODEL: 700

GENERAL CONDITION: Good R #: 21196

OUTSIDE WORK: Scope Mounted DATE: 10-2-70

FROM: Davison,

FIRED AMMO TYPE: — Michigan

& CONDITION: _____ GUN #: 6216922

PROOF: E.E.P. INSP.: 9 TEST: 87 CODE: LS = 8/69

HEADING: O.K. GA./CAL.: 243 WIN.

BREECH OPENING: — CHECKED BY: _____

RECOIL SHOULDERS: — APPROVED: _____

CHAMBER: O.K. APPROVED: _____

TEST: No APPROVED: _____

COMPONENT CONDITION: (Damaged, Broken, Old Style) APPROVED: _____

Trigger Connector Broken.

COMPLAINT: Firing Pin Follows Down

INCIDENT: _____

COMMENTS: The Connector Being Broken, Engagement Between it and the Sear was Unlikely Therefore the Firing Pin was Free to Follow Down.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-6542-1 Rev. 2-15-61

P.I. No GUN EXAMINATION REPORT NUMBER: _____ MODEL: 700

GENERAL CONDITION: NEW R # : 22775

OUTSIDE WORK: No DATE: 10-15-70

FROM: MARKLEYSBURG, PA.

FIRED AMMO TYPE: — GUN # : 6262918

& CONDITION: _____ CODE: OS = 7/69

PROOF: R.E.P. INSP.: 9 TEST: _____ ~~GA./~~CAL.: 22-250

HEADING: O.K. CHECKED BY: C. PROSSER

BREECH OPENING: — APPROVED: _____

RECOIL SHOULDERS: — APPROVED: _____

CHAMBER: — APPROVED: _____

TEST: FUNCTION ONLY APPROVED: _____

COMPONENT CONDITION: (Damaged, Broken, Old Style) APPROVED: _____

COMPLAINT: FOLLOWS DOWN WHEN SAFETY IS PUSHED OFF.

INCIDENT: _____

COMMENTS: THE DIMENSION FROM THE TOP OF THE TRIGGER TO CENTER OF TRIGGER PIN HOLE BEING .011 OVERSIZE ELIMINATES MOST OF THE CLEARANCE NEEDED FOR THE TRIGGER-CONNECTOR TO RETRACT WITH THE SAFETY ON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-6542-1 Rev. 2-15-61

P.I. No GUN EXAMINATION REPORT NUMBER: _____ MODEL: 700 ADL

GENERAL CONDITION: NEW R # : 22730

OUTSIDE WORK: NO DATE: 10-16-70

FROM: LIVONIA,

FIRED AMMO TYPE: — MICH.

& CONDITION: _____ GUN # : 6278113

PROOF: — R.E.P. INSP.: _____ TEST: _____ CODE: _____

HEADING: — GA./CAL.: 3006

BREECH OPENING: — CHECKED BY: C. PROSSER

RECOIL SHOULDERS: — APPROVED: _____

CHAMBER: — APPROVED: _____

TEST: FUNCTION ONLY APPROVED: _____

COMPONENT CONDITION: (Damaged, Broken, Old Style) APPROVED: _____

CONNECTOR IS .005 UNDERSIZE ON 1.080 / 1.085 DIMENSION (TRIGGER CLEARANCE)

COMPLAINT: FOLLOWS DOWN

INCIDENT: _____

COMMENTS: CONNECTOR BEING TIGHT ON TRIGGER DID NOT RETRACT, ACTION WOULD NOT COCK. AS LONG AS THE CONNECTOR STAYED IN POSITION ON THE TRIGGER THE RIFLE WOULD WORK O.K.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-6542-1 Rev. 2-15-61 M/700 Fire Control

P.I. No GUN EXAMINATION REPORT NUMBER: _____ MODEL: 700 ADL

GENERAL CONDITION: Good R # : 22760

OUTSIDE WORK: All Trigger Adjusting DATE: 10-16-70

Screws Unsealed, Adjustments Changed FROM: Centralia,

FIRED AMMO TYPE: — Illinois,

& CONDITION: _____ GUN # : 193587

PROOF: R.E.P. INSP.: 9 TEST: _____ CODE: WTS = 3/70 LW = 2/70

HEADING: _____ Gage/CAL.: 222

BREECH OPENING: _____ CHECKED BY: C. Prosser

RECOIL SHOULDERS: _____ APPROVED: _____

CHAMBER: _____ APPROVED: _____

TEST: _____ APPROVED: _____

COMPONENT CONDITION: (Damaged, Broken, Old Style) APPROVED: _____

Old Style Sear-Safety Cam, (Heavy Oil Used)

Trigger Connector Broken.

COMPLAINT: Follows Down.

INCIDENT: _____

COMMENTS: Follow Down Was Caused By The Broken Connector.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Form RD5845

REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT COMPUTATION SHEET Sheet No.

M/700 Fire Control

Title of Proj. M/700 TRIGGER & TRIGGER CONN. Works

Subject

Computer Date 19

TRIGGER

DIM. 1.076/1.080

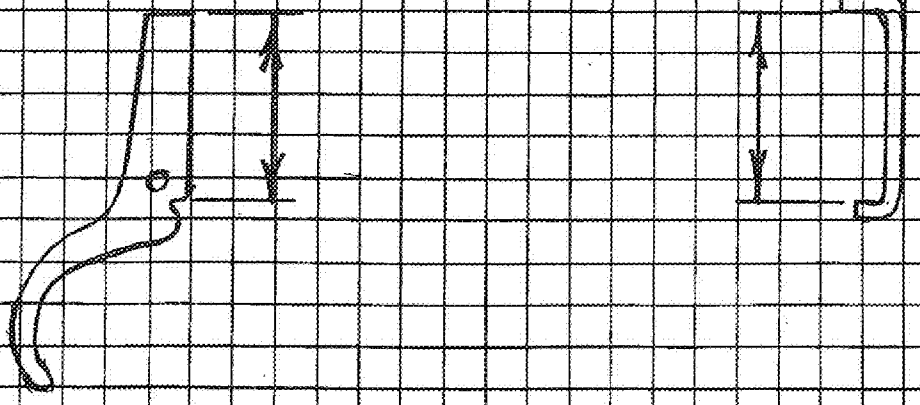
1.085
1.084
1.083
1.082
1.081
1.080
1.079
1.078
1.077
1.076

TOL.

TRG. CONNECTOR

DIM. 1.080/1.083

TOL.



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

Distribution:

Remington ~ Peters

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

RESEARCH TEST and MEASUREMENT REPORT – Report No. 84032/

Test Title: "Results Only"
M/700 Vendor Supplied Connectors vs. Connectors
To Model Drawing.

Prepared by: R. W. Howe

Date Prepared: Feb. 28 1984

Proofread and Cleared By:

R.E. Nightingale,
Foreman-Test Lab / Foreman-Measurement Lab

Signature Date

C.E. Ritchie,
Sr. Supervisor - Testing,
Mass. & Mech. Analysis Lab

Signature Date

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS CO. INC.
FIREARMS RESEARCH DIVISION.
FEB 28, 1984

REPORT #840321

TO: R. NIGHTINGALE

TEST TITLE: "RESULTS ONLY"
M/700 VENDOR SUPPLIED CONNECTORS VS. CONNECTORS TO MODEL DRAWING.

REASON FOR TEST:
TO DETERMINE IF THERE IS A FUNCTIONAL DIFFERANCE IN THE VENDOR SUPPLIED CONNECTORS AND CONNECTORS THAT ARE TO MODEL DRAWING.

TEST PROCEDURE:
SIXTY FOUR M/700 FIRE CONTROLS WERE ASSEMBLED INTO M/700 ACTIONS, TEN AT A TIME, AND PENDULUM DROP TESTED AT THE 2' AND 4' LEVELS IN BOTH SAFE "ON" AND SAFE "OFF" MODES IN THE FOLLOWING SIX POSITIONS. MUZZLE FIRST, BUTT FIRST, TOP SIDE, BOTTOM SIDE, RIGHT SIDE, AND LEFT SIDE. ONE DROP FOR EACH MODE AND POSITION AT EACH DROP LEVEL AS REQUESTED BY J.A. LAWRENCE, [redacted] CURRENT PRODUCTS DESIGN.

TEST RESULTS.
TEST RESULTS ARE IN THE FOLLOWING PENDULUM DROP TEST DATA SHEETS. TO BE EVALUATED BY CURRENT PRODUCTS DESIGN.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

2' Pendulum Drop Test
Data Sheets

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

- HARD WOOD BACK STOP - 2' PENDULUM DROP TEST -

MODEL 700 DATE 2-24-84

REPORT NUMBER 840321 (1)

X - JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	1													1
B6439427	2								X					2
B6439303	3								X					3
B6440068	4								X					4
B6440047	5								X					5
B6440044	6								X					6
B6439446	7													7
B6439467	8								X					8
B6439976	9								X					9
B6439302	10								X					10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

[redacted] HARD WOOD BACK STOP - 2' PENDULUM DROP TEST -

MODEL 760 DATE 2-25-84

REPORT NUMBER 84032-1 (2)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B 6439312	11								X					1
B6439423	12								X					2
B 6439303	13													3
B6440068	14													4
B6440047	15								X					5
B6440044	16								X					6
B6439446	17								X					7
B 6439467	18													8
B 6439976	19								X					9
B6439302	20													10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

[redacted] - HARD WOOD BACK STOP - 2' PENDULUM DROP TEST -

MODEL 700 DATE 2-25-84

REPORT NUMBER 840321 (3)

X - JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	21													1
B6439427	22								X					2
B6439303	23								X					3
B6440068	24								X					4
B6440047	25								X					5
B6440044	26													6
B6439446	27								X					7
B6439467	28													8
B6439976	29								X					9
B6439302	30													10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

- HARD WOOD BACK STOP - 2' PENDULUM DROP TEST -

MODEL 700 DATE 2-28-84

REPORT NUMBER E40321 (4)

X - JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	31													1
B6439427	32													2
B6439303	33						X		X					3
B6440068	34													4
B6440047	35								X					5
B6440044	36								X					6
B6439446	37								X					7
B6439467	38						X		X					8
B6439976	39								X					9
B6439302	40													10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

- HARD WOOD BACK STOP - 2' PENDULUM DROP TEST -

MODEL 700 DATE 2-27-84

REPORT NUMBER 840321 (5)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	41													1
B6439427	42								X					2
B6439303	43						X							3
B6440068	44													4
B6440047	45								X					5
B6440044	46													6
B6439446	47													7
B6439467	48								X					8
B6439976	49								X					9
B6439302	50						X		X					10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

- [redacted] HARD WOOD BACK STOP - 2' PENDULUM DROP TEST -

MODEL 700 DATE 2-23-84

REPORT NUMBER 840321 (6)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	51								X					1
B6439427	52								X					2
B6439303	53								X					3
B6440068	54													4
B6440047	55								X					5
B6440044	56													6
B6439446	57													7
B6439467	58													8
B6439976	59													9
B6439302	60													10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

[redacted] - HARD WOOD BACK STOP - 2' PENDULUM DROP TEST -

MODEL 700 DATE 2-23-84

REPORT NUMBER 840321 (17)

X - JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	61								X					1
B6439427	62													2
B6439303	63													3
B6440068	64													4
														5
														6
														7
														8
														9
														10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130000816

4' Pendulum Drop Test
Data Sheets

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

4' HARD WOOD BACK STOP PENDULM DROP TEST

MODEL 700 DATE 2-20-84

REPORT NUMBER 840321 (1)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B 6439317	1								X					1
B6439427	2						X		X					2
B6439303	3						X							3
B 6440068	4								X					4
B 6440047	5						X		X				X	5
B 6440044	6								X				X	6
B 6439446	7								X					7
B 6439467	8								X					8
B 6439976	9								X					9
B 6439302	10								X					10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

4' HARD WOOD BACK STOP PENDULM DROP TEST

MODEL 740 DATE 2-20-84

REPORT NUMBER 84032 1 (2)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B 6439317	11								X					1
B 6439427	12								X					2
B 6439303	13												X	3
B 6440068	14								X					4
B 6440047	15								X					5
B 6440044	16								X					6
B 6439446	17						X		X					7
B 6439467	18						X		X					8
B 6439976	19								X					9
B 6439302	20								X					10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

4' HARD WOOD BACK STOP PENDULM DROP TEST

MODEL 700 DATE 2-21-84

REPORT NUMBER 840221 (3)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	21								X					1
B6439427	22								X					2
B6439303	23								X					3
B6440068	24								X					4
B6440047	25								X					5
B6440044	26								X		X			6
B6439446	27								X					7
B6439467	28						X		X					8
B6439976	29								X					9
B6439302	30								X					10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

4' HARD WOOD BACK STOP PENDULM DROP TEST

MODEL 700 DATE 2-21-84

REPORT NUMBER 840321 (4)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	31								X					1
B6439427	32								X					2
B6439303	33								X					3
B6440068	34								X					4
B6440047	35						X		X					5
B6440044	36								X				X	6
B6439446	37								X					7
B6439467	38						X		X					8
B6439976	39								X					9
B6439302	40						X		X					10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

4' HARD WOOD BACK STOP PENDULM DROP TEST

MODEL 700 DATE 2-21-84

REPORT NUMBER 840321

X - JAR-OFF

(5)

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	41								X					1
B6439427	42						X		X					2
B6439303	43						X		X					3
B6440068	44								X					4
B6440047	45						X		X					5
B6440044	46						X		X					6
B6439446	47								X					7
B6439467	48						X		X					8
B6439976	49								X					9
B6439302	50								X					10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

4' HARD WOOD BACK STOP PENDULM DROP TEST

MODEL 700 DATE 2-22-84

REPORT NUMBER 840321 (6)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	51								X		X			1
B6439427	52								X					2
B6439303	53								X					3
B6440068	54						X		X					4
B6440047	55								X					5
B6440044	56						X		X					6
B6439446	57								X					7
B6439467	58								X					8
B6439976	59								X					9
B6439302	(60)													10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

4' HARD WOOD BACK STOP PENDULM DROP TEST

MODEL 700 DATE 2-22-84

REPORT NUMBER 840321 (7)

X = JAR-OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	61								X					1
B6439427	62								X					2
B6439303	63						X		X					3
B6440068	64								X					4
														5
														6
														7
														8
														9
														10

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Report No. 840321

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

___ Developmental	✓ Safety Related	___ Litigation
___ Design Assistance	___ Competitive Evaluation	___ Warehouse Audit
___ Pre-Pilot	___ New Design	___ Cost Reduction
___ Pilot	___ Design Change	Sales ___
✓ Production Acceptance	✓ Plant Assistance	___ Other

AREA OF TESTING

FIREARM STAT'S.

MODEL: M/700
CAL. or GAGE: ___
BARREL TYPE: ___
PROOFED: YES ___ NO ___

REPORT REQ'D.

FORMAL ___
TEST RESULTS ONLY X

DATE REQUESTED: 2/1/83
DATE NEEDED BY: ASAP
REQUESTED BY: JAL
WORK ORDER NO: 6-0960

TEST TYPE

___ Strength Test	___ Ammunition Test	___ Dry Cycle Test	___ Photo/Video
___ Function Test	___ Environmental Test	___ Measurements	X Other Drop Test
___ Accuracy Test	___ Customer Complaint	___ Endurance Test	

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

Determine if there is a functional difference in the vendor supplied connectors and connectors that are to model drawing.

Contact Jeff for test procedure

GUNS REQUIRED: 10 M/700 Guns/Actions
60 M/700 Fire controles
aprox 60 Scrap Stocks

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: ___
TEST COMPLETED BY: ___
REPORT DATE: ___

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

30 January 1990

TO: J.C. Sutton

Subject: Model 700 Drop Test

Muzzle drop tests, at one and three feet, were conducted using a vertical drop fixture and a Model 700 30.06 rifle. To determine the G acceleration, a PCB-305A04 accelerometer, serial# 8295 with a .000923 volts/g sensitivity, was mounted on the rifle. The drop mediums were as follows:

1) Large rock mounted in a base of sand.

2) Concrete floor.

3) Small rock mounted in a base of sand.

4) Two inch patio block mounted in a base of sand.

5) Wooden slab mounted in a base of sand.

In all cases the rifle was dropped with the safe in the off position.

The following pages contain a summary of the results of the drop test to date.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

30 January 1990

DIGITAL ANALYZER SETTINGS	MEDIUM	DROP NUMBER		PEAK VOLTAGE	G ACCELERATION
Freq. Scan	Large Rock	1		1.6	1730
0 ~ 100 kHz	in sand	2		1.7	1840
		3		1.6	1730
Full scale	1 foot	4		1.6	1730
Sensitivity 3.2V	drops	5		1.7	1840
		Avg.		1.64	1780
Freq. Scan	Large Rock	1		2.1	2280
0 ~ 100 kHz	in sand	2	*	2.4	2600
		3		2.9	3140
Full scale	3 foot	4		3.1	3350
Sensitivity 3.2V	drops	5		3.1	3350
		Avg.		2.72	2930
Freq. Scan	Concrete	1		.89	960
0 ~ 100 kHz	Floor	2		.67	720
		3		.74	800
Full scale	1 foot	4		.67	720
Sensitivity 3.2V	drops	5		.93	990
		Avg.		.778	840
Freq. Scan	Concrete	1		1.9	2050
0 ~ 100 kHz	Floor	2	*	2.4	2600
		3	*	1.9	2050
Full scale	3 foot	4		2.1	2280
Sensitivity 3.2V	drops	5		2.0	2160
		Avg.		2.06	2230
Freq. Scan	Small Rock	1		1.1	1190
0 ~ 100 kHz	in sand	2		1.1	1190
		3		1.3	1400
Full scale	1 foot	4		1.2	1300
Sensitivity 1.8V	drops	5		1.4	1510
		Avg.		1.22	1320
Freq. Scan	Small Rock	1	*	1.6	1730
0 ~ 100 kHz	in sand	2		2.1	2270
		3	*	2.4	2600
Full scale	3 foot	4	*	2.4	2600
Sensitivity 3.2V	drops	5		2.1	2270
		Avg.		2.13	2300

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

30 January 1990

DIGITAL ANALYZER SETTINGS	MEDIUM	DROP NUMBER	PEAK VOLTAGE	G ACCELERATION
Freq. Scan 0 - 100 kHz	Patio Block in sand	1	.76	820
		2	.47	510
		3	.71	770
Full scale	1 foot	4	.82	890
Sensitivity 1.8V	drops	5	.85	920
		Avg.	.721	780
Freq. Scan 0 - 100 kHz	Patio Block in sand	1	1.6	1730
		2	.78	840
		3	1.1	1190
Full scale	3 foot	4	1.0	1080
Sensitivity 2.8V	drops	5	1.1	1190
		Avg.	1.116	1210
Freq. Scan 0 - 100 kHz	Wooden slab in sand	1	.33	240
		2	.32	230
		3	.32	230
Full scale	1 foot	4	.33	240
Sensitivity 0.32V	drops	5	.32	230
		Avg.	.324	240
Freq. Scan 0 - 100 kHz	Wooden slab in sand	1	.31	330
		2	.28	260
		3	.27	290
Full scale	3 foot	4	.28	300
Sensitivity 0.5V	drops	5	.32	340
		Avg.	.284	310

key:

* following the drop number indicates that the rifle fired on that drop. If there is no indication then the rifle did not fire.

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KINZER V. REMINGTON

30 January 1990

TO: J.C. Hutton

Subject: Completion of the muzzle drops on the Model 700 Drop Test

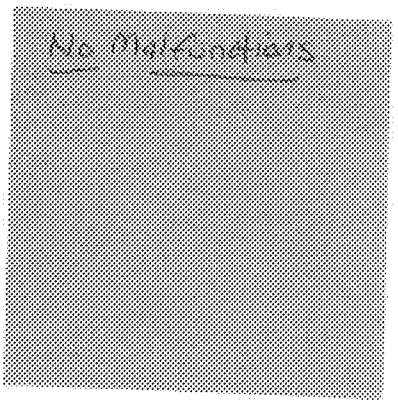
Muzzle drop tests, at one and three feet, were completed using the same vertical drop fixture and a Model 700 30.06 rifle, as used in the previous drops. To determine the G acceleration, a PCB-305A04 accelerometer, serial# 8295 with a .000923 volts/g sensitivity, was mounted on the rifle. The final two drop mediums were as follows:

1) 90 durometer mat 4' X 4' X 1" thick placed on concrete floor

2) Maple plank 8" X 38" X 2" thick

In all cases the rifle was dropped with the safe in the off position.

The following page contains a summary of the results of the drop test on the media mentioned above.



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(2)

30 January 1990

DIGITAL ANALYZER SETTINGS	MEDIUM	DROP NUMBER	PEAK VOLTAGE	G ACCELERATION
Freq. Scan 0 - 25 kHz	90 Durometer Mat	1	.11	120
		2	.11	120
		3	.12	130
Full scale	1 foot	4	.11	120
Sensitivity 0.2V	drops	5	.12	130
		Avg.	.114	124
Freq. Scan 0 - 100 kHz	90 Durometer Mat	1	.23	350
		2	.23	250
		3	.23	250
Full scale	3 foot	4	.24	260
Sensitivity 0.28V	drops	5	.23	250
		Avg.	.232	251
Freq. Scan 0 - 10 kHz	Maple plank	1	.19	206
		2	.21	228
		3	.18	195
Full scale	1 foot	4	.19	206
Sensitivity 0.25V	drops	5	.21	228
		Avg.	.196	212
Freq. Scan 0 - 10 kHz	Maple plank	1	.22	298
		2	.28	303
		3	.30	325
Full scale	3 foot	4	.27	293
Sensitivity 0.5V	drops	5	.28	303
		Avg.	.27	293

key:

* following the drop number indicates that the rifle fired on that drop. If there is no indication then the rifle did not fire.

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KINZER V. REMINGTON

DROP TEST UPDATE
3/13/90

- LIVE FIRE in SHOOTING JACK:
  (M/700 30-06 CAL., 180 gr. AMMO, RECOIL RESTRICTED AND WT. ON BARREL TO ELIMINATE MUZZLE JUMP)

SHOT	PEAK ACCELERATION	CONDITION
1	481 G'S	TRIGGER JERKED
2	401 G'S	SHOOTS TRIGGER PULL

- Live FIRE in SHOOTING JACK:
  (SAME CONDITIONS AS ABOVE EXCEPT FULL RECOIL PERMITTED IN JACK)

SHOT	PEAK ACCELERATION	CONDITION
1	413 G'S	TRIGGER JERKED

- DRY FIRED ON EMPTY CHAMBER:

  Acceleration was monitored as the rifle was dry fired on an empty chamber. This was done with the trigger jerked and pulled smoothly. No significant acceleration was recorded. Only some low amplitude vibrations were observed. See attached traces.

- MUZZLE DROP ON 1 in. THICK BRASS PLATE:

  Muzzle drops were repeated onto 0.1" thick brass plate at 6 in. increments. The brass plate was approximately 12 in. square and was placed onto a concrete floor for this testing. Five drops were done at each height and peak acceleration was measured on all five drops. One complete waveform from each height was recorded. The safe was off for this entire test. Fire control specifications were set to equal Davison's gun.

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HEIGHT (in.)	PEAK ACCELERATION (G's)
6	1858
	1861
	3275
	1950
	1950
	avg. 1815
12	3033
	3141
	2383
	3033
	2809
	avg. 2830
18	3466
	3683
	3633
	3900
	3250
	avg. 3486
24	4117
	3900
	3875
	4117
	3900
	avg. 3921
30	4333
	3900
	4333
	4333
	4333
	avg. 4203
36	4983
	4658
	4767
	4550
	4550
	avg. 4702

No firings occured on any of these drops.

o HI-SPEED MOVIE TESTING OF MUZZLE, BUTT, AND TOP DROPS:

The above rifle was dropped on the muzzle, butt, and on the top of the receiver onto the large rock imbedded in sand. Acceleration levels were monitored and hi-speed movies were taken. The movies will be sent out for processing on 1/13/98. They should be ready for viewing thursday.

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KINZER V. REMINGTON

12/9/87

1987 PLANT PROPRIETORSHIP REPORT

W. WARREN

SAFETY

RESPONSE TO N66 BBL SPUT @ TEST
(COPY OF "SERIOUS POTENTIAL INCIDENT" ATTACHED)

QUALITY

RESUMPTION OF MARKETING QUALITY AUDIT PROGRAM, 11-87, AFTER 13 MONTH ABSENCE.

PRODUCTIVITY

NEW SAFETY PAINT MACHINE ACCEPTED @ VENDOR'S PLANT ON 12/3/87.

ADVANTAGES:

- PRODUCTION RATE UP TO 1000 / HOUR
- AUTOMATIC OPERATION - WILL NOT REQUIRE FULL TIME OPERATOR IN ATTENDANCE
- QUALITY IMPROVEMENT RELATIVE TO YIELD OF PRESENT WORN-OUT MACHINE.

THIS IS EXPECTED TO BE OPERATIONAL BEFORE END OF YEAR.

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MONTHLY REPORT

William A. Warren, Jr.
11.30.87

SAFETY

- Attended Central Safety and briefed Soucy's staff. My suggestion to B. Firman on how to make significance of safety statistics more obvious to all, was accepted by the group.
- Contributed to N66 serious incident investigation and written report on split barrel @ gallery. My portion of followup corrective action has been completed.

NEW MACHINE

The 4TH vendor sample from the new Safety paint machine was received 11.30.87. Previous samples following an earlier trip to Detroit have indicated additional work was required of vendor.

We are planning runoff of machine in Detroit 12-8-87.

QUALITY

The first "Marketing Quality Audit" of 1987 was conducted 11-9-87. Rating: VERY GOOD. Internal report has been issued to comm. room and plant bulletin boards. External report will be completed when production responds to corrective action requests in writing. This is the first such audit in 13 months.

TRANSMITTALS

I am behind on SS2/72 RESTYLE wood. This will be a learning experience for me on MEP - PROCESS RECORD requirements.

SIGNIFICANT PRODUCTION SUPPORT/PROBLEMS

- Trip to WHIP CITY to run r.d l. conn. with our tooling and material. Improvements were made to flatness and fit with trigger. There is more work to be done on this items. Trip with F. WORSLEY to keep production running.
- Locating/identifying soft flat connectors. All have been found.

MONTHLY REPORT

William A. Warren, Jr
12-18-87

SAFETY
- No new initiatives

NEW MACHINE
Safety paint machine accepted 12-3-87.
Installed @ 11 ten week of 12/14/87
There are additional items to complete before startup and AS inspection.
We will be doing T&P site runoff late this month or early next month.

QUALITY
The results of the Nov 9 audit including the corrective actions resulting from it are complete. They require only kws signature for distribution.

TRANSMITTALS
The 552/22 BDL restyle transmittals added to Process record / MRP data base are complete. This was referred to in last month's report.

SIGNIFICANT PRODUCTION SUPPORT / PROBLEMS
"Green" surface discoloration on Safeties ready for paint operation. Various theories on origin of this. Short term correction was sand tumble to remove. A ~~correct~~ ~~clear~~ recent change made to the process record may not have been followed.

SPECIAL ITEMS
Provided experience insights on consequences of a broken connector in M 700, during several 1 on 1 conversations.

PERSONNEL
My appraisal covering my service in [illegible] completed.

WAW

File: Conn Spring

E. I. DuPont de Nemours & Company
Remington Arms Company, Inc.
Ilion, New York 13357

cc: J. F. Winske

June 6, 1988

TO: W. H. COLEMAN

FROM: R. C. HUNSON

CONNECTICUT SPRING & STAMPING CO.
RISK ANALYSIS OF MAKING A CLAIM FOR TRIGGER CONNECTOR COMPENSATION

Background

- Cracked trigger connectors manufactured by Connecticut Spring may have been assembled into some M/700 rifles. This resulted in a trigger assembly replacement program with an estimated cost of $1,81MM.
- Connecticut Spring annual sales are about $30MM.
  - Remington represents 1 1/2-2% of their sales.
  - Total firearms parts make up 8-10% of their sales.
  - DuPont's Electronics Department also represented about 1 1/2% of their sales in 1987, but this is decreasing rapidly due to offshore manufacturing.
- Connecticut Spring has supplied millions of parts over many years to Remington.

Considerations in Determining What Action to Take

The main risk consideration is the potential loss of firearms sales if Connecticut Spring should decline to make parts beyond current commitments. This may be handled in advance by a white paper contract providing a "window of protection" for at least one year. Without assurance that the supplier is obligated to keep supplying parts against our releases, we would be foolish to risk a loss of supply. Connecticut Spring supplies parts that are used across our entire product line. Nearly all are single-sourced, including an 11-87 part for which no other potential sources have been found.

A "worst case" situation was analysed, using gross approximations of time and expense required to find new suppliers for all these parts. As an order of magnitude, this effort would consume 7-8 man-months of engineering time, $250,000 in tool costs, and 6-8 months elapsed time to account for initiation, tool build, development runs, approvals, and production time.

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Recommendations

- Establish a white paper contract with Connecticut Spring, providing assurance of supply for a minimum of one year at all times (for example, a two-year contract renewed annually).
- Continue increasing our activity with Connecticut Spring through Engineering work on new parts and resolution of problems on existing parts.
- Consider a gradual build-up of inventory of a few very difficult parts
- Assess our position monthly to determine the best time to make a claim.
- Determine the best team to visit Connecticut Spring for the purpose of initiating discussions on F.A.R.P. compensation.

Summary

We need Connecticut Spring as a partnership supplier. By increasing our communication and activity with them over the next 6-12 months, and by establishing a firm contract as we have with other suppliers, we can be in a much stronger position to negotiate sharing costs incurred as a result of defective M/700 trigger connectors.

I will proceed on this basis unless you feel differently.

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KINZER V. REMINGTON

CONNECTICUT SPRING - IMPACT OF CHANGING SUPPLIERS

Approximately 123 Remington parts are made by Connecticut Spring.

Approximately 3/4 (90) are active parts.

Of the 90, about 1/3 (27) are not coil springs.

Of the 27, 1/3 (9) would be very difficult to move, including the 31-87 gas cylinder spring which no one else will quote.

Assume the following costs and engineering time:

	Coil Springs	Specials
Tool Cost	$500 - $1000 (Use $750)	$3000 - 40,000 (Use$8000)
Engineers Initial Time	1-2 Hrs.	1-2
Purchasing Time	1-2 Hrs.	1-2
Follow-Up	2-4 Hrs.	4-8
Scheduling Coord.	1 Hr.	1
Sample Approval (or not)	2-4 Hrs.	2-20
Purchase Order	1 Hr.	1 Hr.
	8-14 Hr. (Use 10 Hrs.)	10-34 (Use 20Hrs.)
	Elapsed Time: Weeks	Elapsed Time: Months
Total Cost 63 ($750) =	$47,250	27 ($8000) = $216,000
Total Time Invested:	630 Hrs.	540 Hrs.

Total	$250,000 in Tooling
Our Engineering Time	1,200 Hrs. @ $25/Hr. = $30,000
Elapsed Time	6-8 Months

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Press Contact: Dick Dietz
302-774-5048

REMINGTON RECALLS BOLT ACTION CENTERFIRE RIFLES
PRODUCED AND SOLD BETWEEN JULY 25 AND DEC. 11, 1987

The Remington Arms Company is replacing the trigger assembly mechanisms of the Model 700™, Seven™, 40-XB™, 40-XC™, and "Sportsman" 78 centerfire rifles manufactured between July 29 and December 11, 1987.

This action is being taken because a limited number of rifles produced during that period may have an improperly manufactured part in the trigger assembly mechanism. Although it is unlikely, the defective part could break and cause the rifle to fire accidentally.

While the possibility of such a malfunction is quite low, Remington requests the owners who have purchased one of these rifles since July 29, 1987 not to load it. They should call the toll-free number 1-800-634-2459 with the model and serial number of the rifle. The customer will immediately be informed if the rifle is potentially affected.

For any affected rifles, Remington will supply the name and location of a designated repair gunsmith who will install a replacement trigger assembly at no charge.

Remington Arms Company, Inc.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SUMMARY

- Only subject Remington bolt action centerfire rifles pur chased after July 29, 1987 are potentially affected.

- These include only MODEL 700 (all versions), MODEL SEVEN, "SPORTSMAN" 78, MODEL 40-XB, and MODEL 40-XC rifles.

- They do not include autoloading and pump action centerfire rifles or shotguns.

- All owners of potentially affected rifles should call the toll-free number 1-800-634-2459 before using those rifles.

EDITOR'S NOTE: The toll-free 800 number is the contact number to be published for customer inquiries. The number at the beginning of the release is for press contact only and should not be published.

Remington Arms Company, Inc.

Remington

REMINGTON ARMS COMPANY, INC.

SPORTING ARMS-AMMUNITION-TARGETS-TRAPS

ILION, NEW YORK 13357

TELEPHONE (315) 894-9961

January 15, 1988

TO OUR GUNSMITHS:

Remington has uncovered a potential trigger assembly problem with a small quantity of Model 700 series rifles produced and shipped between July 29 - December 11, 1987. The involved models include Models 700, Seven, 40XB, 40XC and Sportsman 78 rifles. You have already been informed of the problem restated below and elected to assist Remington in replacing these trigger assemblies in the field.

During routine test firing, Remington discovered the possibility that an improperly manufactured trigger part may have been assembled in a number of Model 700 series rifles. Although unlikely, the improperly produced part could possibly break and allow the rifle to fire when the safety is moved from the safe position to the fire position without the trigger being pulled.

Since the safety and quality of our firearms is of our utmost concern, Remington will replace the trigger assemblies in all rifles which possibly contain the impacted part. To accomplish this, a trigger assembly replacement program has been instituted.

We are currently contacting all distributors, dealers and consumers who have purchased these rifles requesting they have their guns up-dated by a Remington New Gun Repair Station in their area.

Under separate cover, we are sending you ten (10) replacement trigger assemblies at no charge, along with a supply of a form you're to complete and promptly return for each repair. You will find that the replacement assemblies will have a prick punch mark on the left side of the trigger piece for easy determination in the future of trigger assembly replacement.

IMPORTANT: To assist you, we have enclosed a detailed explanation of the trigger assembly replacement process. Please review that information carefully before beginning any replacement.

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KINZER V. REMINGTON

After the trigger assembly has been replaced, the following procedures must be followed:

1) Complete the repair form, being sure to provide all information listed, especially YOUR IDENTIFICATION NUMBER, customer's FULL name, address, telephone number, if known, and the serial number of the rifle. Additional forms and trigger assemblies may be obtained by calling 800-634-2459.

NOTE: YOUR CUSTOMER NUMBER IS _____.

2) Your total fee is not to exceed $22.00 per gun. This includes labor, postage, shipping and handling. However, we will reimburse any incurred incoming C.O.D. shipping charges which you should add to the $22.00 total and specify on the form.

3) Send the complete replaced trigger assemblies to:

Remington Arms Company, Inc.
14 Hoefler Ave.
Ilion, NY 13357
Attn: J. Kast

NOTE: All parts of the replaced trigger assemblies such as sear safety cam and slave pins, etc., must be returned.

4) Send the fully completed invoice form to:

Remington Arms Company, Inc.
Department RP
14 Hoefler Ave.
Ilion, NY 13357

- For technical assistance, call our Arms Service Division at (315) 895-7791.

- For all other Model 700 series trigger assembly replacement information, you may use our toll free number (800) 634-2459 (8:00 - 4:30 EST).

IMPORTANT NOTE: If you have purchased any Model 700 series trigger assemblies since July 29, 1987, return them to Remington and notify us at the toll free number for free replacement. If you installed any of these triggers in any of your customers' guns, please contact that customer and replace the trigger assembly and send us the form as usual.

NOTE: WHEN REPORTING THIS TYPE OF TRIGGER ASSEMBLY REPLACEMENT, PLEASE EXPLAIN FULLY ON FORM SINCE THE SERIAL NUMBER WOULD NOT NORMALLY SHOW UP ON OUR RECORDS.

Remington Arms Company, Inc.

We apologize for whatever inconvenience this may cause you. However, we feel our mutual customers deserve our very best combined efforts in repairing the involved rifles.

Rifles involved in this replacement program will be marked with one of the following barrel codes:

OH July 1987
WH August 1987
DH September 1987
EH October 1987
RH November 1987
XH December 1987

We appreciate your assistance in this replacement program and wish you every business success in 1988.

Sincerely,

F.D. Emhof
Fild Service

FDE:tpp

Remington Arms Company, Inc.

E.I. du Pont de Nemours & Company
Remington Arms Company, Inc.
Business Services Division
Ilion, New York

cc: D.M. Condon
W.H. Coleman, II
K.T. Krewson
S.M. Morris
J.F. Winske

File 700 Recall

December 22, 1987

CONFIDENTIAL

REMINGTON ARMS CO.

DEC 23 1987

FIREARMS ... Division

T.J. PERRY
B-2268
WILMINGTON

REQUEST FOR RESERVE ACCOUNT
MODEL 700 RECALL

Because of a defective vendor supplied component, Remington is initiating a recall of certain Model 700 Rifles produced during the third and fourth quarters of 1987.

This recall will affect approximately 20,000 rifles which have been shipped from the warehouse, plus an estimated 18,000 rifles and sub-assemblies which are either in-process or in the warehouse.

The estimated cost of this recall is $2 Million (see attached). We are requesting that a reserve account be established to charge the anticipated cost of this recall against 1987 earnings.

RICHARD S. DOBZELECKI, JR.
SUPERINTENDENT - BUSINESS SERVICES

RSD:sp
Attach.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

ESTIMATED MODEL 700 RECALL COSTS 12/22/87

NOTIFICATION			
MAILING			
SAY 40,000 LETTERS (2 PER GUN) @ $2 PER LETTER	40,000	$2.00	$80,000
TELEPHONE			
SAY 5 "800" LINES FOR FIRST YEAR, PLUS ONE LINE FOR TWO ADDITIONAL YEARS @ $17,500 PER LINE PER YEAR	7	$17,500	$122,500
TELEPHONE SWITCHING EQUIPMENT			$12,000
OPERATORS (TEMPORARY EMPLOYEES) - SAY $ 8.00 PER HOUR FOR 2,000 HOURS PER LINE PER YEAR	7 2,000	$8.00	$112,000
ADVERTISING SAY - PER MARKETING			$250,000
SUB - TOTAL			$576,500
SHIPPING			
FREIGHT			
SAY 15,000 GUNS TO BE SHIPPED (IN AND OUT) @ $6.00 EACH WAY	15,000 2	$6.00	$180,000
PACKING MATERIAL - SAY 15,000 BOXES @ $1.25 EACH	15,000	$1.25	$18,750
SUB - TOTAL			$198,750
REPAIR COSTS			
REPLACEMENT PARTS - SAY 10,000 REPLACEMENT TRIGGER ASSEMBLIES @ $8.56 EACH	10,000	$8.56	$85,600
REPAIR COST			
SAY 11,000 GUNS AT WARRANTY REPAIR STATIONS @ $25 EACH	11,000	$25.00	$275,000
SAY 5,000 GUNS AT DEALERS / DISTRIBUTORS (BY REMINGTON PERSONNEL) @ $50 EACH	5,000	$50.00	$250,000
SAY 4,000 GUNS AT FACTORY @ $30 EACH	4,000	$30.00	$120,000
RECONDITIONING OLD TRIGGER ASSEMBLIES			
SAY 10,000 ASSEMBLIES TO BE RECONDITIONED BY DISASSEMBLING, REPLACING CONNECTOR, REASSEMBLING, AND RETESTING @ $8.00 EACH	10,000	$9.00	$90,000
SUB - TOTAL			$820,600
IN - HOUSE COSTS			
SORTING CONNECTORS			$5,000
SORTING AND RECONDITIONING GUNS AND TRIGGER ASSEMBLIES IN PROCESS OR WAREHOUSE - SAY 18,000 UNITS @ $9.00 EACH	18,000	$9.00	$162,000
ENGINEERING, SUPERVISION, AND ADMINISTRATION			$200,000
PROGRAMMING AND SYSTEMS SUPPORT			$15,000
REARRANGEMENT AND WIRING			$6,000
SUB - TOTAL			$388,000
TOTAL			$1,983,850

cc: C. B. Workman
(no attachments)

RD-69 REV. 6-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

BRIDGEPORT, CONN.
SEPTEMBER 14, 1978

TO: J. W. BROOKS

FROM: W. L. ERICSON

SUBJECT: THREE-POSITION SAFETY: RELEASABLE BOLT LOCK

An extensive search has been made for patents relevant to the prototype three-position safety shown in the "C" series photos you supplied us (stamped April 3, 1978 by your Photo Lab). No patents which could raise any infringement risks were found. The following are of interest with respect to the patentability of this design:

1,318,423 - Williams —
2,824,402 - Fischer —
2,869,269 - Couture -
3,138,888 - Brewer —

The Williams, Fischer, Couture and Brewer patents show various forms of three-position safeties having alternate "safe" positions in which the bolt is locked and released. However, it appears to me that none of these is so closely related to your prototype as to foreclose us from obtaining patent protection for it, in the event it is selected for use.

Williams uses a safety bar N which is slidable transversely of the bolt C, and has ribs O that interfere with ribs P on the firing pin F in two "safe" positions, but are cut away at Q to define a "fire" position. In one of the safe positions, the bolt C and its handle D are locked by the projection into a recess U of a spring-loaded detent S (see Fig. 9); but this detent retracts into a notch T_2 in the safety bar in its remaining two positions.

Fischer has a bolt lock button 12, 13 engageable with a notch 14 in the bolt 2 of a Mauser action (Fig. 4); this button carries an interlock pin 26 which is engaged by a safety lever 23 in its "fire" position 23A, to unlock the bolt. In an intermediate "safe" position 23B, the firing pin 4 is locked by a safety pin 19 (see Fig. 5), and the button 13 can be manually operated to either lock or unlock the bolt. In a second "safe" position, shown in solid line at 23 in Fig. 4, the button 13 is held in the locking position by a notch 28.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

TO: J. W. BROOKS
RE: THREE-POSITION SAFETY: RELEASABLE BOLT LOCK

Couture bears some resemblance to our Walker Patent 2,514,981 in that a bell crank lever 28 serves both as a safety and a bolt lock. However, Couture provides for three safety positions rather than two; these positions are determined by a spring-loaded lug 60 engageable in any of three recesses, shown unnumbered in Fig. 2. The safety has a stop member 54 which locks the trigger in either a rear or an intermediate position, and a longer arm 55 which engages a notch 57 in the bolt only in the rear position. (This mode of operation is the reverse of your prototype).

Brewer employs a sliding safety 190 that has a screw 228 which locks the trigger, and a lug 230 which engages a locking notch 234 in the bolt, in the rearmost safety position shown in Fig. 12. Forward movement to an intermediate position keeps the trigger locked, but disengages the lug 230 from the bolt notch. Incidentally, there are only two detent notches 229 and 231, which correspond to the rear "double-safe", and "fire" positions: so feeling the intermediate position would appear to be somewhat uncertain.

To summarize, the prior art most nearly related to your design is the Couture patent, but this is a one-piece trigger safety and bolt lock that is readily distinguishable both in construction and mode of operation. Patent protection should be obtainable on your prototype.

There is a mention in earlier correspondence of a three-position safety in the Model 725. If you have a sample, we might compare it.

Bill Ericson

W. L. ERICSON
SENIOR PATENT COUNSEL

WLE/dt
Attach.(5)

48.50

Copies to: R. L. Hall
G. E. Puckett
A. D. Kerr
C. D. Mortensen
H. E. Keck
J. J. Marley
J. Kowalski
Sat. File #3401

RFK

March 21, 1975

J. H. [redacted]

Model 700-40XC-40XR Three-Position Safety

An economic evaluation has been completed on the proposal to re-design the present Two-Position Safety to a Three-Position Safety on the Models 700-40XC-40XR rifles. Presently, the bolt on these rifles can be unlocked and opened only when the safe is in the 'Fire' position. The Three-Position safe would enable the bolt to be opened in either the 'Fire' position or the new 'U' position. On the 'U' position the rifle could not fire.

The economics indicate an annual cost increase of $4400 and an expenditure of $25,000 for new tooling and fixturing. The full book unit cost indicates a cost increase of $ .056 for each rifle.

METHODS & STANDARDS SECTION
[redacted] Harrison, Superintendent

By John Polivka

JP/ma

MODELS 700 - 40XC -40XR 3-POSITION SAFETY

		M/700		M/40XC - 40XR	
		PRESENT 2-POSITION	PROPOSED 3-POSITION	PRESENT 2-POSITION	PROPOSED 3-POSITION
STD. LABOR		99,251	101,889	340,980	343,618
VARIANCE	10%	9,925	10,189	34,098	34,362
TOTAL STD. LABOR		109,176	112,078	375,078	377,980
IND. REL	41%	44,762	45,952	153,782	154,972
DIRECT EXPENSE		1,044	1,106	3,380	3,442
ALLOCATED BURDEN	9.8%	10,699	10,984	36,758	37,042
MFG. OVERHEAD	163%	17,796	18,269	61,138	61,611
SUB TOTAL		183,477	188,389	630,136	635,047
PLANT OVERHEAD	12%	22,017	22,607	75,616	76,206
INV. ADJUSTMENT	1%	1,835	1,884	6,301	6,350
TOTAL COST/C		$ 207,329	$ 212,880	$ 712,053	$ 717,603
COST INCREASE PER UNIT FULL BOOK			$ .056		$ .056

RD-6565
Rev.:10-10-67
1-12-71

ESTIMATE #

ESTIMATED SAVINGS & RETURN ON INVESTMENT

M/700 -XOXR -XOXR 3 - POSITION SAFETY

	PRESENT 2 - POSITION SAFETY	PROPOSED 3 - POSITION SAFETY		
Forecast Year	2 - 1975			
Quantity Forecast	105620			
OPERATING COSTS				
Purchased Parts	$	$	$	$
Raw Material				
Standard Labor	109640	112430		
Labor Variance @ 10%	10960	11240		
Industrial Relations @ 41 %	49450	50700		
Supplies	650	670		
Tool Replacement	200	230		
Cutter Grind				
Tool Maintenance	40	70		
Maintenance	250	250		
Electricity				
Equipment Depreciation @				
Franchise Tax @				
	$ 171190	$ 175590	$	$
SAVINGS IN OPERATING COST		($ 4400)		$
Less: All other expense: All Other ____ %; Federal Tax ____ %		$		$
NET SAVINGS		$		$
INVESTMENT				
Project expenditures		$		$
Manufacturing and working facilities				
Net change in working capital				
Total capital required for this project		$		$
RETURN ON INVESTMENT - THIS PROJECT		%		%
NET SAVINGS - After Amortization of Operation Charges		$		$
Project Operation Charges		$ 25600		$
Less: Federal Tax ____ %		$		$
Total capital required including research and development and other charges		$		$
Return on total capital required		%		%
Equipment to be released				
Increased space requirements (Decrease)				
Production capacity				
Forecast burdening		%		%

Engineer: [signature]

Date: 2-12-75

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.13000852

ILION WORKS

STANDARD COST STANDARDS

Approvals:

Effective Date:

Unit = 100 Components

M/700 .308C-XR 3-POSITION SAFETY

PRESENT

Model	Description	Oper. No.	Std. Labor	Direct Expense: Supplies	Prod. Scrap.	Cutter Grind	Tool Replacement	Tool Maint.	Mfg. Equip. Repairs	All Other Repairs	Misc. Oper. Exp.	Total Direct Expense
700	Final Assy	175 116	81,648	.575			.079	.009		.196		
"	Final Insp	310	16,376	.026			.072			.028		
"	Receiver - Stamp "F"	167	1,227	.002			.024	.030	.002			
			99,251	.603			.126	.039	.002	.224		1,044
	ANNUAL @ 103630		50	1			1	1/0	.11			
700 XC XR	Final Assy	175	326,216	[illegible]			.567	.030		.642		
"	Final Insp	307-1	13,537	.039			.302			.026		
"	Receiver - Stamp "F"	167	1,227	.002			.024	.030	.003			
			340,980	1.756			.894	.060	.002	.668		3,380
	ANNUAL @ 1972		[illegible]	[illegible]			20		1			

PROPOSED

Model	Description	Oper. No.	Std. Labor	Direct Expense: Supplies	Prod. Scrap.	Cutter Grind	Tool Replacement	Tool Maint.	Mfg. Equip. Repairs	All Other Repairs	Misc. Oper. Exp.	Total Direct Expense
700	Final Assy	175 176	82,368	.577			.079	.009		.196		
"	Final Insp	310	17,067	.028			.072			.028		
"	Receiver - Stamp "F"	167	1.227	.002			.024	.030	.002			
"	" - Stamp "U"	167-2	1.227	.002			.024	.030	.002			
			101,889	.609			.200	.069	.004	.224		1.106
	ANNUAL @ 103630		105590	630			210	70	21			
700 XC XR	Final Assy	175	326,936	1.717			.567	.030		.642		
"	Final Insp	307-1	14,218	.041			.302			.026		
"	Receiver - Stamp "F"	167	1.227	.002			.024	.030	.002			
"	" - Stamp "U"	167-2	1.227	.002			.024	.030	.002			
			343,618	1.762			.918	.090	.004	.668		3.442
	ANNUAL @ 1972		6.10	40			20	—	10			

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
R2539469
BARBER - 1.30.13000852

3-POSITION SAFE

PRESENT

PROPOSED

Oper. 175 Final Assy

" 207-1 Final Insp

M/700 FINAL ASSY

Oper. 175 Final Assy

" 310 Final Insp

M/700 RECEIVER R.H. #33265

Oper. 167

M/40 XC-KR RECEIVER #33575

Oper. 147

M 700 RECEIVER L.H. #E-33265

Oper. 16

M/700 SAFETY ASSY R.H. #33270

Oper. 167

M/700 SAFETY L.H. #E-33270

$9,049/c

M/700 SAFETY L.H. #E-33270

$9,256/c

SAFETY DETENT SPRING #E-15368

$4,233/c

DETENT #27 L.H. #E-20527

#27 $4,270/c

Final Assy + check safe on unlock position

Final Insp + check safe on unlock position

Action + check safe on unlock pos-

Final Insp + " " " " " " " "

167
+
Oper. 167-2 Stamp "U"

167
+
Oper. 167-2 Stamp "U"

167-2 Stamp "U"

Same as present

Same as present

Purchase Insp $9,049/c

Purchase Insp $9,256/c

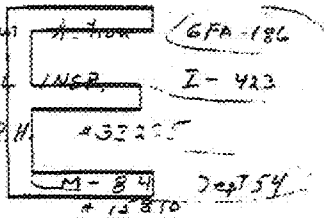
Purchase Insp $4,233/c

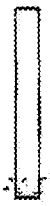
Purchase Insp $4,270/c

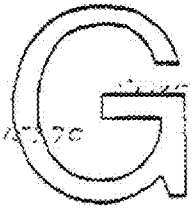
Same

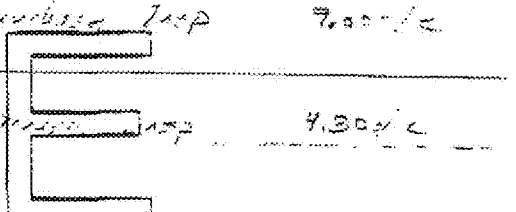
Purchase

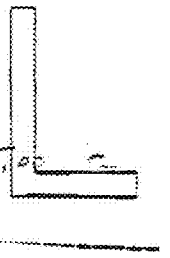
Stock











- 3 Position. Safe - F.G. Carlson

PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET

• SEQUENCE OF OPERATIONS •

MODEL 40XL COMPONENT Final Assembly PART NO. —

DATE 1-3-75 COMPUTER Kowalski SHEET 1 OF 1

OPER NO.	OPERATION NAME	MACHINE	DEPT. NO.	HOURS DESIGN	HOURS BUILD
	Note: Same as present Final Assembly except for the following operations				
175	Final Assembly	Bench			
	Same as is except Add Elements to check Safe ed Unlock position				
307.1	Final Inspection	Bench			
	Same as is except Add Elements to check Safe ed Unlock position				
	TOTAL				

FD-6588 1-18-63

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

- 3 Position Safe -

PROCESS ENGINEERING ESTIMATE - TRIAL AND PILOT SHEET

* SEQUENCE OF OPERATIONS *

M/Paint

MODEL 700-4907C COMPONENT Trigger Side Plate, Right PART NO. C-30780

DATE 10-6-75 COMPUTER Kowalski HAND SHEET 1 OF 2

OPER NO.	OPERATION NAME	MACHINE	DEPT. NO.	HOURS DESIGN	HOURS BUILD
	NOTE: Purchase from Stamping Vendor				
	Est Pc/Piece - $ 50.00 / M				
	Est Tooling - $ 500.00				
	Purchase Inspection	Bench - Comparator			
		Comp Screen	Insp	8	-
		Rules - (132-1280A)	Std.	-	-
		Pneumatic Ga C-31647	Insp	10	30
		Calipers or Gages	A.U.	-	-
5	C'sink Safety Detent Hole	Solo Drill Press			
		Fixture Block C-38430	Oper	5	15
		C'sink A-54097-V	AU	-	-
		Deburr Stone	STD	-	-
		C'sink Ga C-86657	AU	-	-
		Master B-86659	AU	-	-
10	Deburr / Detent Hole (Both Sides)	- Bench - Same as previous part -			
20	Degrease - Carburize, Temper, Harden) - Degrease	" " " "			
23	Assemble for Inspection Draw	" " " "			
	TOTAL				

RD-6585 1-15-63

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

"C" Series Photos

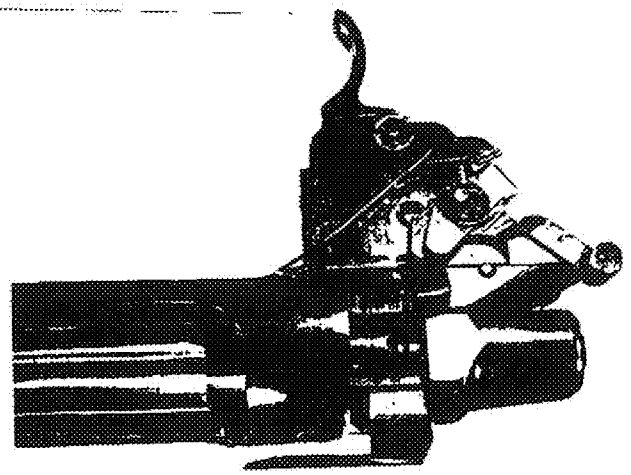
Bolt lock is mounted, as in "B" Series, independently of safety.

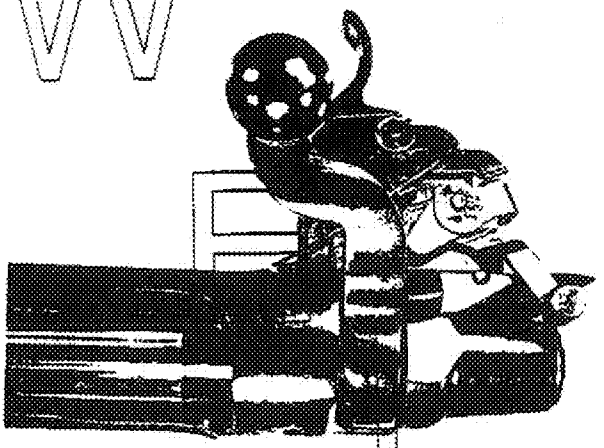
C-1 Gun cocked - ready to fire
Safe in "Fire" posotion
Bolt unlocked

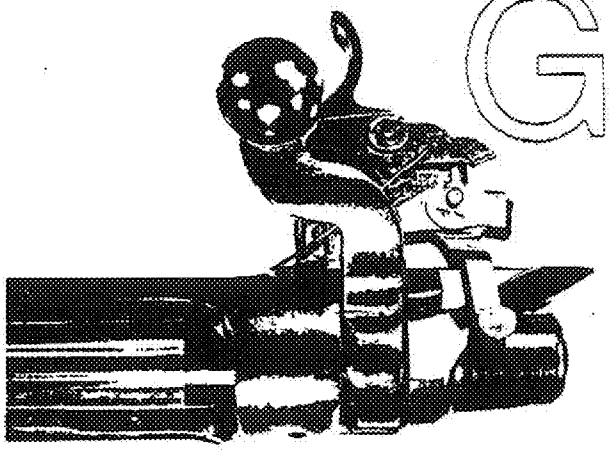
C-2 Gun cocked
Safe in "ON SAFE" position
Bolt locked

C-3 Gun cocked
Safe in "ON SAFE" position but is pulled rearward to unlock bolt

F.E. Martin:T
4-11-78







M.700 3 Position with
Separate Bolt Lock
©

BOB HAGEL
RT. 10, BOX 1160
GOODING, IDAHO 83330
PHONE (208) 886-2221

Feb. 9, 1984

RECEIVED
FEB 13 1984
R. METZ

Dear Dick,

Just a quick note to let you know the trigger arrived and how much I appreciate your kind efforts in obtaining it for me. Of course all I needed was the safety lever, but will swap the parts with no problem to get what I want.

Do wish the engineers at Remington would come up with a three-stage trigger setup so that the bolt handle could be locked down. As much as I like the M-700 action, I would not buy a Model 700 with the new safety setup for serious hunting of big game--especially any game that could possibly be dangerous. Any time you are hunting where you may be in the brush there is the possibility that the bolt handle may be up a little when you need to shoot in a hurry. Anyone who doesn't believe that hasn't spent much time hunting brown bear in coastal Alaska.

I can appreciate Remington's concern with the liability angle, with so damn many people sue-happy, but a three-stage trigger arrangement would take care of both situations. Why don't you put pressure in the right place for that kind of safety setup. If there is any way I can help to make one of the best rifle actions ever developed have a safety as good as the action, just give me a yell.

Don't worry, Dick, I won't write anything on the trigger swap. I will, however, continue to express my opinion in print on safeties that do not lock the bolt handle on rifles designed to be used for hunting big game.

Thanks again for this and the many past favors.

Best,

Bob Hagel

Remington.

REMINGTON ARMS COMPANY, INC.

SPORTING ARMS · AMMUNITION · TARGETS · TRAPS

939 BARNUM AVENUE
P.O. BOX 1939
BRIDGEPORT, CONNECTICUT 06601

February 14, 1984

Mr. Bob Hagel
HC 10, Box 1190
Gibbonsville, ID 83463

Dear Bob:

Thanks for your letter. I'm glad the unit arrived safely.

Having read you for a number of years, I'm aware of your feelings about the three-position safety. I would certainly expect you to continue promoting something you believe so strongly in. In the meantime, I'm passing your letter around here to those who should be aware of your feelings.

Best wishes,

Richard F. Dietz
Manager
Product Information

RFD:lb

RD-69 91.V 5-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

XC. to WLF CPR I w Bowen ✓

February 14, 1984

Randy - For information

To: T. W. Rawson

From: R. F. Dietz

See attached copy of a letter from Bob Hagel. He's one of the numerous proponents among serious writers for the three-stage safety. Based on what I know, I believe this would be a positive step for us someday, should it be economically feasible. Is this still an open possibility?

R.F.D.

R. F. Dietz

RFD:lb
Attach

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

MINUTE # 39 - 1946 December 5, 1946

FROM PAGE NO.: 3

SUBJECT: SAFETY - M/514

MODEL 514

The Technical Department requested approval to use the current Model 510 front sight (without tinned bead) to give time for investigation of other designs for the Model 514. Also, approval was requested for rotating the Safety from "on" to "off" position by moving the thumb piece in a counterclockwise direction instead of clockwise as originally presented. In addition, approval was requested for use of the Model 514 open sight leaf on the Models 510, 511, 512, 121 and 580.

Decision:

The Products Committee approved the front sight alternate design and the change in direction of movement of Safety as described. No action by Products Committee was considered necessary on the use of the Model 514 open sight leaf on the other models.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

MINUTE # 19 - 1947 December 8, 1947

FROM PAGE NO.: 1

SUBJECT: SAFETY - M/514

PRODUCTION SAMPLE MODEL 514 "A" GRADE RIFLE

In Minute #17, November 11, 1947, the Products Committee recommended to Management that a production sample of the Model 514-"A" Grade Rifle designated as P-267 be approved. In the course of handling and operating this rifle, it developed that when the safety was turned to the "off" position there was a tendency to turn the bolt which sometimes caused the opening of the bolt sufficiently to eject a cartridge. This condition did not develop at the Products Committee Meeting when the rifle was submitted for approval, nor was this deficiency in evidence at the Ilion Plant, as the rifle had passed all of the inspections and tests. Apparently, there was a defection in the relationship of the bolt and safety detents. E. H. Alvis advised that this condition had not been encountered before but that an examination of other rifles indicates that there should be a greater margin of safety to overcome the possibility of a repetition of this defect. Accordingly, the countersink in the bolt detent retainer has been altered to give more positive control.

Decision:

The Products Committee reaffirms action taken at the meeting on November 11, 1947, and recommends to Management that the production sample of Model 514-"A" Grade Rifle, designated as P-267, be approved. This rifle has been altered to overcome the defect described above.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130000863

MINUTE # 11 - 1950 July 13, 1950

FROM PAGE NO.: 3 & 4

SUBJECT: SAFETY - M/514

MODEL 514 IMPROVEMENTS

A report on efforts to improve the Model 514 indicated that the following are being considered:

1. Chrome plated bolt, bolt handle and trigger
2. Improved trigger
3. Model 513-S trigger guard
4. Improved safety (thumb piece)
5. Automatic safety

It was estimated that it would cost 42¢ for chrome plating the bolt and bolt handle and finish with a high grade polish. By color buffing after chrome plating but without a prior polish before plating, the cost can be reduced to 26¢ but the finished components would possibly not have a sufficiently high lustre as now furnished on the Winchester rifle. The improved trigger involves an additional cost for normal year production of 2.3 cents per rifle with $2,000 required for tooling. The use of the Model 513-S trigger guard involves an additional tooling cost of $1,350 and 4.1 cents per rifle. The improved safety (thumb piece) would require $500 for tooling with increased cost of .3 cents per rifle. After an examination of the latter feature, it was thought that the direction of rotation for turning the safety "on" and "off" should be carefully checked as there is a tendency to turn the bolt toward the unlocked position when the safety is turned to the "off" position. This condition could become serious and possibly cause accidents. It is to be restudied to determine costs of revising the direction of turn so that the bolt handle will be turned downward (locked position) as the safety is turned to the "off" position. It was stated that no additional cost would be involved for the supply of an automatic safety but G. E. Pinckney felt that this feature should not be added to the Model 514 as it is a distinctive feature of the higher priced Model 510 Rifles.

If we accept the lower plating cost for the bolt handle of 26¢ and add the additional cost of the other items, we find that a total increase in the cost would be 32.7 cents per rifle with $3,850 in tooling involved. The margin of profit is now extremely low even on a forecast of 60,000 rifles per year so that it is considered highly desirable to make more intensive studies on the plating particularly as it is the feature desired immediately. By contacting plating firms which produce for the automobile trade, it is believed that a chrome plated bolt handle can be obtained for a cost approximating 10¢ each. However, there is some risk in damage to bolt heads while shipping to and from the plating plants.

The verbal discussion of this subject was considered as a progress report and the Operations Committee requested a prompt and thorough exploration of ways and means of reducing plating costs on bolts, bolt handles and triggers.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130000864

MINUTE #4 - 1952 July 9, 1952

FROM PAGE NO.: 8

SUBJECT: SAFETY

NEW RIM FIRE DESIGNS

E. W. Hailston reported that considerable testing had been done on the M/552 which will accommodate Short Hi-Speed, Long Rifle Hi-Speed, Long and Long Rifle cartridges. The 22 Short of Standard Velocity was eliminated for use in this new design. Gail Evans stressed the necessity of simplification of types in the rim fire line and the development of new and attractive models to help maintain and improve our volume of business in this particular field. He offered Sales assistance wherever possible to aid the designers in accomplishing the aforesaid objectives which have No. 1 priority from a sales viewpoint.

In discussing the lower cost autoloader it was stated that plans were progressing along the following lines:- first, to convert a M/511 to do the desired work thus minimizing new tooling costs. Estimates of cost and functioning tests should be available in the early part of August; second, another autoloader will be prepared with features somewhat different than the M/511 but less complicated than the M/552. This design will also be ready for test by August 1; third, another rifle is being prepared to replace the M/37. This design also will be ready by August 1.

W. E. Leek pointed out there was very little change from the auto ejector type to the autoloader. If you leave out the magazine and make a few other changes on the autoloader you have an auto ejector. However, the bolt action single feed type presents many problems when box fed, therefore, it is possible that we may eventually keep the M/514 in the line.

C. W. Roney pointed out a safety feature which should not be overlooked. He stated that the Sheridan Arms Company had introduced an air rifle with an automatic safety of the push button type located on the top of the pistol grip so that in firing the gunner presses down on the safety with his thumb and then pulls the trigger. He felt this particular design should be studied with a view of utilizing it on the new rim fire rifle line.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
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BARBER - 1.30.130000865

LIMITED DISTRIBUTION

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington Parker

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

cc: R. E. Fielitz
C. A. Riley
P. H. Holmberg
W. H. Forson, Jr.
J. S. Martin
F. E. Martin

Ilion, New York
September 3, 1982

TO: C. B. WORKMAN

FROM: T. L. CAPELETTI

SUBJECT: BOLT ACTION RIFLE DEVELOPMENT — PRIORITY ITEMS

I have reviewed with Paul Holmberg the priority list of critical development items for the new bolt action rifle as presented at the July Operations Committee Meeting. Paul indicated that Marketing supports our priority listing as summarized in my memorandum on June 16, 1982 and the priority ranking of critical development items in order of decreasing priority as follows:

1. Rotary detachable magazine
2. Fire control — fully adjustable in the stock with limits on engagement and trigger pull
3. Fully enclosed claw type extractor
4. Reduced lock time
5. Recoil reducing muzzle device
6. Safety switch — trigger and firing pin block

TLC:ws
Firearms Research Division

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

Report No. 812441

September 10, 1982

TO: J. H. Hennings

FROM: R. Williams

REPORT TITLE: NEW DESIGN M/700 TRIGGER/SEAR BLOCK EVALUATION

ABSTRACT:

A total of (5) M /700 Fire control assemblies with the New Design safety assemblies, were delivered to the Test Lab by Fred Martin for testing. This safety assembly blocks the trigger and the sear so that the firing pin won't fall when the trigger is held back while the safety switch is pushed from the safe to fire position. Both dry cycle and live fire endurance tests were used to test the assemblies. A M/700 fire control assembly (Current Production) was used as a control and (4) out of the (5) New Design assemblies were used in the test.

SCOPE OF TEST

To evaluate the functional performance of the New Design safety assembly, in the M/700 Rifle during lab testing.

TEST RESULTS

No functional problems arose during testing. Both the New Design safety and the control functioned normally. There was no significant change in the safe.On/Off forces measured before, during and after testing, on all the assemblies, including the control.

REPORT TEXT

All four (4) new trigger assemblies were subjected to the following trick test:

- Place Safety Switch in the Safe "On" position.
- Close the bolt.
- Put constant pressure on the trigger attempting to fire the rifle.
- Push the Safety Switch from the "On" position to the "Off" position.
- Does the firing pin fall?

All four (4) New Design Trigger Assemblies with the trigger /sear blocked passed this test. In all four (4) guns the firing pin did not fall.

NOTE: The measurements recorded for the Safe On/Off forces are questionable. There is no way to determine if they are within Remington Standards, because there are no standards written for these forces with this fire control assembly. The only Remington Standards written for Safe On/Off forces, pertain to the common fire control. That Standard is:

4 – 8 lbs. – One sharp click
Double click not allowed

The Safe On/Off forces measured in this test range from 5.25 lbs to 10.2 lbs. – almost a 5 lb. difference. (Refer to Appendix A, Data Sheets No. 1 – 5 for all Safe On/Off measurements).

TEST PROCEDURE

A. MEASUREMENTS

The following measurements were taken on the five rifles used in this test:

- Headspace
- Firing Pin Indent
- Trigger Pull
- Sear Lift
- Sear Engagement
- Safe On/Off Forces

B. TEST CONDITIONS

1. After every 20 rounds fired, the safety was checked. This was done by holding the trigger and pushing the safety switch from safe to fire.

2. After 1,000 rds. of live fire all the rifles were cleaned and they were remeasured. (Jack Shooting).

3. The rifles were then subjected to Safe On/Off dry cycle. Each rifle was cycled for 2,500 cycles, with Safe On/Off measurements taken every 500 cycles and Sear Lift and Engagement at the 2500 cycle level.

4. The rifles were then live-fired to the 2,000 round level. (Jack Shooting) Measurements were taken at this level.

TEST PROCEDURE – CONT'D.

5. The rifles were then subjected to another Safe On/Off dry cycle test. They were brought to the 5,000 cycle level. (2,500 additional cycles) Safe on/off measurements were taken every 500 cycles and sear lift and engagement wear measured at the 5,000 cycle level.

These same procedures were followed until live fire totaled 2,500 rounds per rifle and safe On/Off dry cycle totaled 7500 cycles per rifle.

C. AMMUNITION

Remington 80 grain Pointed Soft Point.

APPENDIX "A"

Report No. 81244

M-700 TRIGGER/SEAR BLOCK EVALUATION

No 1

Aug. 31, 1982

R. Williams

M-700	6MM CAL # A6752473 Sample No 1	1 Headspace	2 Firing P.M. Impact	3 Sear (lbs) On	3 Sear (lbs) Off	4 Trigger Pull (lbs)	5 Sear Lift	6 Sear Engagement
1								
2	START OF TEST	MIN + .004"	.025"	6.2	6.0	4.0	.0105"	.035"
3								
4	LIVE FIRE							
5	after 1000 rds	MIN + .004"	.025"	6.2	6.8	4.25		
6								
7	DRY CYCLE							
8	500 cyc			5.5	9.6			
9	1000 cyc			5.8	9.7			
10	1500 cyc			5.9	9.5			
11	2000 cyc			5.5	9.9			
12	2500 cyc			5.9	9.3		.0105"	.035"
13								
14	LIVE FIRE							
15	after 2000 rds	MIN + .004"	.025"	5.6	7.3	4.0	.0165"	.027"
16								
17	DRY CYCLE							
18	3000 cyc			6.2	9.8			
19	3500 cyc			6.5	10.3			
20	4000 cyc			5.9	9.2			
21	4500 cyc			6.2	9.5			
22	5000 cyc			6.2	9.2		.0165"	.027"
23								
24								
25	LIVE FIRE							
26	after 2500 rds HL	MIN + .004"	.025"	6.3	9.5	4.5		
27								
28	DRY CYCLE							
29	5500 cyc			6.2	10.5	4.8		
30	6000 cyc			6.2	10.0	4.6		
31	6500 cyc			6.2	9.8	4.6		
32	7000 cyc			6.0	7.8	4.8		
33	7500 cyc			6.2	9.8	4.6		
34								
35								
36								
37								
38								
39								
40								

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Report No. 81244
No. 2

M-700 TRIGGER/SEAR BLOCK EVALUATION

Aug. 31, 1982

R. Williams

M-700	6MM cal. #A6744989 Sample No. 2	Headspace	Firing Pin Indent	Safe (in lbs) ON	Safe (in lbs) OFF	Trigger Pull (in lbs)	Sear Lift	Sear Engagement
	START OF TEST	Mid +.003"	.1023"	6.5	5.3	4.3	.0185"	.026"
	Live Fire after 1000 rds.	Mid +.004"	.0247"	6.4	5.2	4.4		
	Dry Cycle 5000 cyc			5.9	7.8			
	10000 cyc			6.0	6.7			
	15000 cyc			6.0	7.0			
	20000 cyc			5.5	6.7			
	25000 cyc			5.3	7.7		.015	.025
	Live Fire after 2000 rds	Mid +.003"	.0223"	5.7	4.8	4.2	.014"	.029"
	Dry Cycle 30000 cyc			6.5	8.0			
	35000 cyc			5.5	7.8			
	40000 cyc			5.8	7.2			
	45000 cyc			6.2	7.7			
	50000 cyc			7.8	8.0		.018	.0285
	Live Fire after 2500 rds III	Mid +.004"	.0213"	5.8	4.5	4.7		
	Dry Cycle 55000 cyc			7.0	9.5	4.8		
	60000 cyc			8.7	8.7	4.5		
	65000 cyc			8.7	9.8	4.5		
	70000 cyc			7.7	7.8	4.8		
	75000 cyc			6.6	8.5	4.5		

Report No. 812441

M-700 TRIGGER / SEAR BLOCK EVALUATION

No. 3

Aug. 31, 1982

R. Williams

M-700	6MMcal. #A6744915 Sample No. 3	1 Headspace	2 Firing Pin Indent	3 Safe (in lbs) ON	3 Safe (in lbs) OFF	4 Trigger Pull (lb)	5 Sear Lift	6 Sear Engagement
	START OF TEST	Min. +.004"	.025"	9.1	6.4	4.7	.015"	.025"
	LIVE FIRE after 1900 rds.	Min. +.004"	.026"	9.7	6.7"	4.1		
	DRY CYCLE 500 cyc			8.2	6.9			
	1000 cyc			8.3	7.0			
	1500 cyc			8.8	6.3			
	2000 cyc			9.2	7.0			
	2500 cyc			9.8	6.0		.012"	.032"
	LIVE FIRE after 2900 rds	Min. +.005"	.026"	10.2	5.2		.013"	.033"
	DRY CYCLE 3000 cyc			8.5	8.5			
	3500 cyc			9.2	7.2			
	4000 cyc			9.2	9.0			
	4500 cyc			8.7	10.1			
	5000 cyc			9.5	12.2		.015"	.032"
	LIVE FIRE after 2500 rds. HL	Min. +.005	.026"	9.8	5.2			
	DRY CYCLE 5500 cyc			8.3	8.3			
	6000 cyc			9.2	8.8			
	6500 cyc			9.7	9.3			
	7000 cyc			8.5	12.0			
	7500 cyc			9.5	12.0			

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KINZER V. REMINGTON

Report No. 812

M-700 TRIGGER / SEAR BLOCK EVALUATION No. 1

Aug. 31, 1982 — R. Williams

M-700 6MMCAL #6745544 Sample No. 4	1 Headspace	2 Firing Pin Indent	3 Safe (lbs) ON	3 Safe (lbs) OFF	4 Trigger Pull (lbs)	5 Sear Lift	6 Sear Engagement
START OF TEST	Min +.002	.022	8.3	5.4	3.8	.018	.034
LIVE FIRE after 1,000 rds	Min +.002	.022	6.8	5.2	4.0		
DRY CYCLE							
500 cyc.			7.7	7.7			
1000 cyc.			7.8	7.5			
1500 cyc.			6.8	7.3			
2,000 cyc.			7.8	7.2			
2500 cyc.			7.2	7.7		.017	.035
LIVE FIRE after 2,000 rds.	Min +.003	.022	7.3	4.5	3.8	.0155	.035
DRY CYCLE							
3000 cyc.			6.7	8.7			
3500 cyc.			7.5	7.7			
4000 cyc.			7.7	6.7			
4500 cyc.			7.5	7.7			
5000 cyc.			7.7	6.8		.017	.036
LIVE FIRE after 2,500 rds. HH	Min +.003	.022	8.8	4.3	4.3		
DRY CYCLE							
5500 cyc.			8.2	9.0	4.5		
6000 cyc.			7.3	9.0	4.1		
6500 cyc.			7.5	9.3	4.2		
7000 cyc.			8.3	9.2	4.3		
7500 cyc.			8.7	8.3	4.3		

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KINZER V. REMINGTON

Report No. K1244
No. 5
R. W. Williams

M-700 TRIGGER / SEAR BLOCK EVALUATION

Aug. 31, 1982

M-700	6MM CAL. #6747525 Sample No. 5 Control Gun	1 Headspace	2 Firing Pin Indent	3 Safe (lbs) ON	3 Safe (lbs) OFF	4 Trigger Pull (lbs)	5 Sear Lift	6 Sear Engagement
	START OF TEST	Min+.003	.025	5.2	5.2	4.2	.019	.020
	LIVE FIRE after 1,000 rds.	Min+.003	.025	5.5	5.2	4.0		
	DRY CYCLE 500 cyc.			6.3	7.6			
	1000 cyc.			5.6	8.3			
	1500 cyc.			5.8	7.8			
	2000 cyc.			6.1	8.5			
	2500 cyc.			5.1	8.3		.021	.0205
	LIVE FIRE after 2,000 rds.	Min+.003	.025	5.5	5.1	4.5	.020	.020
	DRY CYCLE 3,000 cyc.			6.6	8.1			
	3500 cyc.			6.8	8.1			
	4000 cyc.			6.1	7.6			
	4500 cyc.			6.1	7.3			
	5000 cyc.			6.0	6.5		.020	.020
	LIVE FIRE after 2,500 rds ttl.	Min+.003	.025	5.1	4.8	5.1		
	DRY CYCLE 5500 cyc.			6.1	8.0	4.7		
	6000 cyc.			6.1	8.0	4.6		
	6500 cyc.			7.0	8.5	4.6		
	7000 cyc.			6.8	8.1	4.7		
	7500 cyc.			6.3	7.6	4.8		

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KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

Remington Peters

Distribution: C. B. Workman
J. S. Martin
C. E. Ritchie
F. S. Martin

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

RESEARCH TEST and MEASUREMENT REPORT – Report No. 812441

NEW DESIGN M/700 TRIGGER/SEAR BLOCK EVALUATION

Prepared by: Ron Williams

Date Prepared: 9/10/82

Proofread and Cleared By:

J.H. Hennings, Foreman-Test Lab / R.E. Nightingale, Foreman-Measurement Lab — Signature — 9-15-82 Date

C.E. Ritchie, Sr. Supervisor - Testing, Meas. & Mech. Analysis Lab — Signature — 9-14-82 Date

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 812441

REPORT TITLE: New Design Trigger/Sear Block Evaluation

MODEL(S): 700 ADL

GAUGE OR CALIBER: 6MM Remington

DATE: 9/10/82

WORK ORDER NO.: C-1803-000

PART NAME: Trigger Assembly

DESIGNER/ENGINEER: F. Martin

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: Static
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: 5

   NO. OF ROUNDS PER GUN 2,500

   TOTAL ROUNDS FIRED IN TEST: 12,500

   AMMO TYPE: MAGS. _____ ; TARGET: _____

   RIM FIRE _____ CENTER FIRE 6mm

December 21, 1981

Bolt Action Program
1984 Introduction
Fire Control Revision & Redesign

Add to Fire Control

— Trigger Block

— Housing Clearance
Skeletonize

— Sear Clearance
Relieve

— Remove Connector

— Restyle Trigger

Extractor - M-1911-A1 Style

New Receiver Configuration
Barrel Bracket - .250 thick
Lighten Barrel
Ruger Patent on Action Screw - Diagonal Tension
Detachable Magazine - Mag Con
Sights - Rear P.E. & C.
Safety On Bolt Plug
Safety On Tang
Feeding
Restyle Trigger

Add caliber to short action line to be based on 7mm SR case .25 caliber.

F. E. Martin:ws

Wide Fire Center – Present
Connector Cuts Trigger

Wide Fire Center – Proposed
Connector Cuts Trigger – For Burned Trig Safety

Slide Rivets – Spot Grind – For Burned Trig Safety

Test Cuts – Fire Controls with Burned Trig & Some *Slide Rivets To Eliminate Plunger Pins
* After Heat Treat Trigs

Sept. 91

2-23-82

Bob Emmons' Stock Design

New Model Specifications

Wood:

- Grip style - Bob Emmons
- New floor plate trigger inletting
- Cheek piece - like sample (no step) without line - first
- Grip cap - in house same size as samples
- Classic pad black & black
- Ebony two reinforcing pin holes
- Current studs
- Ebony fore-end tip
- Flat rails (top section of fore-end)
- Beveled ejection port

Metal:

- Shilen type barrel contour no. 1
- Tang safety - reshape tang (two position)
- New bolt handle
- Rear receiver cuts altered
- New floor plate design
- Flat bottom receiver design
- Restyle recoil lug

J. S. Martinews

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

September 2, 1981

To: J. S. Martin

From: F. E. Martin

Subject: M/7 Design Specification

The M/7 proto-type was conceived with these specifications:

- Octagonal Receiver
- Hammer Forged Barrel (not turned or polished)
- Light Weight Firing Pin (reduced lock-time) — Should Extra to M/700
- Fully Enclosed Bolt Plug with Cocking Indicator — Enclosed M/2 not required.
- No Bolt Lock — Need Bolt Lock.
- Blocked Trigger and Sear — Need Safe on T.!
- New "No Drag" Follower (to enhance action smoothness) — Non-Rotating Follower
- A Truly "Classic" Stock — No Monte Carlo, Cheekpiece, modified Fore-end
- A Functional Checkering Pattern
- No Sights
- Classic Calibers i.e., .257, 7 x 57, .35 Whelen, etc.
- Limited Production of Calibers 3,000 - 4,000

+ Scope Mounts — must look good!
+ Option of Floorplate or detachable Magazine
+ New Extractor

FEM:ws

Development required

9/11/81
RC

M/7 DESIGN SPECIFICATION

This is a composite listing of features provided on the M/7 proto-type and those desired by Research:

- Octagonal Receiver
  - Investigate the use of octagonal stock
  - Heavier barrel lug
- Walnut Stock
  - True Classic
  - No Monte Carlo
  - Cheekpiece
  - Cut - functional checkering
  - Sling swivel studs
- Hammer Forged Barrel
  - No turn or polish
  - Program to determine possible benefits i.e., accuracy vs. finish
  - Lightweight - slimmer contour
  - Clean no sights
- Fire Control
  - Blocked trigger and sear
  - Bolt lock
  - New safety configuration or location
  - With safe adjustments
- Improved (Reduced) Locktime
  - Lightweight firing pin
  - Investigate pierced primer gas flow around firing pin and head
- Additional Desired Features
  - Scope mounts
  - New bolt handle
  - Jeweled
    - follower
    - bolt body
- New Extractor
- New Feeding System
  - To be smoother
  - To be functionally superior
  - To be detachable with integral magazine box

- Classic Calibers
- Limited Production 3,000 - 4,000 per year

F. E. Martin:ws
September 11, 1981

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

Report No. 812441

ptember 10, 1982

TO: J. H. Hennings

FROM: R. Williams II

REPORT TITLE: NEW DESIGN M/700 TRIGGER/SEAR BLOCK EVALUATION

ABSTRACT:

A total of (5) M /700 Fire control assemblies with the New Design safety assemblies, were delivered to the Test Lab by Fred Martin for testing. This safety assembly blocks the trigger and the sear so that the firing pin won't fall when the trigger is held back while the safety switch is pushed from the safe to fire position. Both dry cycle and live fire endurance tests were used to test the assemblies. A M/700 fire control assembly (Current Production) was used as a control and (4) out of the (5) New Design assemblies were used in the test.

SCOPE OF TEST

To evaluate the functional performance of the New Design safety assembly, in the M/700 Rifle during lab testing.

T RESULTS

No functional problems arose during testing. Both the New Design safety and the control functioned normally. There was no significant change in the safe.On/Off forces measured before, during and after testing, on all the assemblies, including the control.

3 of 11

"CONFIDENTIAL by Stipulation and order entered in Tsachalis v. Remington Arms, Inc., et al., Supreme Court of the State of New York, County of Westchester, Index No. 9344/95"

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

Report No. 812441

September 10, 1982

TO: J. H. Hennings

FROM: R. Williams

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KINZER V. REMINGTON

REPORT TEXT

All four (4) new trigger assemblies were subjected to the following trick test:

- Place Safety Switch in the Safe "On" position.
- Close the bolt.
- Put constant pressure on the trigger attempting to fire the rifle.
- Push the Safety Switch from the "On" position to the "Off" position.
- Does the firing pin fall?

All four (4) New Design Trigger Assemblies with the trigger /sear blocked passed this test. In all four (4) guns the firing pin did not fall.

NOTE: The measurements recorded for the Safe On/Off forces are questionable. There is no way to determine if they are within Remington Standards, because there are no standards written for these forces with this fire control assembly. The only Remington Standards written for Safe On/Off forces, pertain to the common fire control. That Standard is:

4 – 8 lbs. – One sharp click
Double click not allowed

The Safe On/Off forces measured in this test range from 5.25 lbs to 10.2 lbs. – almost a 5 lb. difference. (Refer to Appendix A, Data Sheets No. 1 – 5 for all Safe On/Off measurements).

TEST PROCEDURE

A. MEASUREMENTS

The following measurements were taken on the five rifles used in this test:

- Headspace
- Firing Pin Indent
- Trigger Pull
- Sear Lift
- Sear Engagement
- Safe On/Off Forces

B. TEST CONDITIONS

1. After every 20 rounds fired, the safety was checked. This was done by holding the trigger and pushing the safety switch from safe to fire.
2. After 1,000 rds. of live fire all the rifles were cleaned and they were remeasured. (Jack Shooting).
3. The rifles were then subjected to Safe On/Off dry cycle. Each rifle was cycled for 2,500 cycles, with Safe On/Off measurements taken every 500 cycles and Sear Lift and Engagement at the 2500 cycle level.
4. The rifles were then live-fired to the 2,000 round level. (Jack Shooting) Measurements were taken at this level.

TEST PROCEDURE – CONT'D.

5. The rifles were then subjected to another Safe On/Off dry cycle test. They were brought to the 5,000 cycle level. (2,500 additional cycles) Safe on/off measurements were taken every 500 cycles and sear lift and engagement wear measured at the 5,000 cycle level.

These same procedures were followed until live fire totaled 2,500 rounds per rifle and safe On/Off dry cycle totaled 7500 cycles per rifle.

C. AMMUNITION

Remington 80 grain Pointed Soft Point.

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Distribution: C. B. Workman
J. S. Martin
C. E. Ritchie
F. S. Martin

RESEARCH TEST and MEASUREMENT REPORT – Report No. 812441

NEW DESIGN M/700 TRIGGER/SEAR BLOCK EVALUATION

Prepared by: Ron Williams

Date Prepared: 9/10/82

Proofread and Cleared By:

J.H. Hennings, Foreman-Test Lab / R.E. Nightingale, Foreman-Measurement Lab

Signature Date 9-15-82

C.E. Ritchie,
Sr. Supervisor - Testing,
Meas. & Mech. Analysis Lab

Signature Date 9-14-82

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 812441

REPORT TITLE: New Design Trigger/Sear Block Evaluation

MODEL(S): 700 ADL

GAUGE OR CALIBER: 6MM Remington

DATE: 9/10/82

WORK ORDER NO.: C-1803-000

PART NAME: Trigger Assembly

DESIGNER/ENGINEER: F. Martin

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: Static
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: 5

   NO. OF ROUNDS PER GUN 2,500

   TOTAL ROUNDS FIRED IN TEST: 12,500

   AMMO TYPE: MAGS. _____; TARGET: _____

   RIM FIRE _____ CENTER FIRE 6mm

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KINZER V. REMINGTON

8-9-93
WAW

LOOKING FOR WAY TO PRESERVE ADVANTAGES OF CONNECTOR = ACCOMMODATES / IMPERFECT ENGAGEMENT SURFACES & SLIGHTLY REMODED CORNERS

DOES NOT FEEDBACK TO TRIGGER AS CONNECTOR CONTINUES TO MOVE

ACCOMMODATE DIFFT MATERIALS WITH STRENGTH & TOUGHNESS WHERE NEEDED.

SAFETY WHICH ALSO BLOCKS CONNECTOR/ TRIGGER & COMBINES TIMER RETURN AS SAFETY IS APPLIED.

BIGGEST CONCERN:

IF BIGGEST LIABILITY THREAT IS FOR TR. MAGAZINE POSITION, THEN ANY DEVICE (WITHOUT POSITIVE CLEARING OF MAGAZINE) MANIPULATED BY THUMB IS UNACCEPTABLE. (POTENTIAL SLIDING) TO INADVERTENT TRIGGER ACTUATION BY TRAINING FINGER.

MOST SPORTING GOODS MAY DIFFER FOR DEVICE except crossbolt safety

⇒ STAY WITH TWO POSITION FRONT/REAR ON RIGHT REAR OF RECEIVER.

- ADD RELEASEABLE BOLT LOCK (CLOSE TO SAFETY-MINIMUM LINKAGE)
- ADD IT TRIGGER BLOCK. (DETENT P.S.D. TRIGGER CONTACT)

FINGER POSITION

CUTAWAY STRATEGY

WHAT vs HOW

WHAT WANT MECHANISM TO DO

WANTED
PERMITS FIRING TRIGGER

PREVENTS UNWANTED FIRING. SAFETY

PREVENTS UNWANTED BOLT ROTATION BOLT LOCK

PERMITS WANTED BOLT OPERATION

SAFETY: "F" POSITION

SEPARATE VS INTEGRAL (LOCATION)/MOMENTUM PERMITS (RE)LOADING VIA BOLT

INDEPENDENT VS INTERFERENCE (INTERACTION) OPERATIONS/ITEMS	LOCATION/MOMENTUM	
	SEPARATE	TO WHAT INTEGRAL
INDEPENDENT		
INTERACTIVE		

BOLT LOCK RELEASE

PERMITS CYCLING BOLT W/M IN S CONDITION.

SAFETY & TRIGGER CAN BE SEPARATE AND INDEPENDENT M70

OR

INTEGRAL AND INTERACTIVE INDEPENDENT

OR

SEPARATE AND INTERACTIVE

RUGER M77
INTEGRAL AND INTERACTIVE
RECEIVER & BOLT

8-10-82

CUSTOMER PERCEPTION OF CLOSED BOLT PLUG IS BETTER.

THE 2ND QUALITY | PERFORMANCE CHARACTERISTIC IS TO SHOOTER PROTECTION LEAKING PRIMER FEATURE

M700 HAS ONE; M700 STYLE

M700 IS DIFFICULT TO FIELD STRIP — F.P.N. ASST. [COIN SLOT ON F.P. HEAD]

MARKETING WOULD LIKE TO SEE THIS CHANGED. HOW IMPORTANT IS THIS TO TARGET AREA CUSTOMERS?

YOU WANT A BOLT LOCK MEANS.

YOU WANT TO OPEN BOLT WITH GUN ON SAFE.

ERGONOMIC ISSUES OF EASE OF USE & NO CONFUSION.

→ BOLT RELEASE AWAY FROM (IN FRONT OF TRIGGER.
- PUSH ON SIDE OPPOSITE BOLT -

JRB NON-OBJECTION TO CLOCK-TYPE TRIGGER LEVER - SOUND LIKE CONCEPT. LEADING TO COSMOS - ADJUSTABLE TRIGGER.

THIS IS HISTORY

PURPOSE: DIFFERENTIATE NBAR from EXPRESS

SPECIFICATION PROPOSALS
NBAR VS. EXPRESS RIFLE

"economy priced"

	NBAR	EXPRESS RIFLE
BARRELED ACTION MATERIAL	BLUED/MATTE STAINLESS	BLUED CARBON STEEL
SCOPE MOUNTING	INTEGRAL BASE	RECEIVER DRILLED & TAPPED
* SAFETY TYPE	THREE POSITION ON BOLT SHROUD	TWO POSITION ON RECEIVER TANG
BOLT LOCKING LUG TYPE	DUAL OPPOSED	DUAL OPPOSED
LOCKING LUG LOCATION	FRONT OF BOLT	FRONT OF BOLT
BOLT HANDLE	M700 TYPE	M700 TYPE
EXTRACTOR TYPE	PRE 64 M70X	M700 TYPE
EJECTOR TYPE	M700 TYPE	M700 TYPE
BOLT RELEASE	MAUSER TYPE	M700 TYPE
BOLT SHROUD/PLUG	CLOSED AT REAR	OPEN AT REAR
BOLT BODY STYLE	NON FLUTED	NON FLUTED
BOLT BODY FINISH	POLISHED & JEWELED	BLUE/BLACK
BOLT HANDLE KNOB STYLE	CHECKERED SURFACE	SMOOTH SURFACE
MAGAZINE	DETACHABLE	BLIND
OPEN SIGHTS ON BBL	NO	YES
STOCK MATERIAL	WALNUT/SYNTHETIC ATTRACTIVE	SYNTHETIC
STOCK STYLE	CLASSIC	CLASSIC
RECOIL PAD	SOLID	SOLID

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KINZER V. REMINGTON

PAGE 2

	NBAR	EXPRESS RIFLE
RECOIL PAD COLOR	BLACK	BLACK
CHEEKPIECE	YES	YES
WOOD FINISH	SATIN	-
SYNTHETIC STOCK FINISH	SMOOTH TEXTURE	ROUGH TEXTURE
SYNTHETIC STOCK COLOR	BLACK/CAMO	BLACK
STOCK/ACTION BOLT TYPE	HEX (allen head)	HEX
LEFT HAND ACTION (12%)	YES	NO
SHORT ACTION AVAILABLE	YES	NO
CARBINE AVAILABLE	YES	NO
BBL LENGTH OF CARBINE	20"	-
CUSTOM/IMPROVED BEDDING	YES	-
IMPROVED FIT & FINISH	YES	-

CONSIDERATIONS MOST IMPORTANT TO THE PURCHASE OF A BOLT ACTION BIG GAME RIFLE (PRIORITIZED).

1. ACCURATE
2. RELIABLE
3. STRONG
4. HANDSOME
5. AVAILABILITY OF CALIBERS
6. FIT/FEEL, HANDLING

RUGER 77 IS BEST LOOKING RIFLE (SEXY)

"IF ITS SHINY, THEY'LL PICK IT UP."

IMPROVE AESTHETIC QUALITIES OF OUR PRODUCT.

DON'T SAY IT—WRITE IT

To P.J. Scruby Location Arms Service

From T.A. Steele Location Parts Service No.

Subject Cr 21525 Optic sight SN 08509382 Date 11/22/6

Please replace the trigger assembly on the subject rifle with a new-style assembly (no part-link) no-charge.

Use the old trigger assembly for parts/future reference.

Can expedite the work and return rifle to owner.

Dick Kay
P.O. Box 0303
Fincastle Beach, CA. 30559-0303

SO TTH Joe.

STOP, LOOK, AND LIVE

R2517481

rifle Mo mc (Model 70 ASC
22-250 # A 6855932

Dick Ivy
Po Box 309
Mineral Bluff, Georgia -
30559
404-374-5894

RECEIVED
NOV - 3 1984
J. A. STEKL

11-19-84

Dear Mr. Stekl,

To say the least I am disappointed that Remington Arms is unwilling to take responsibility for the rifle I sent you recently. Apparently previous to the incident and the subsequent of my grandson that gun and rifle has been sent to him before the gun was returned.

I certainly would like the new trigger assembly installed allowing me to unload while in the "safe" position. I find it curious that you now have such a safety mechanism if the mechanism on my rifle was at fault according to your examination claims. Why change a good system? Please send the check and return the

November 9, 1984

assembly, we can replace it with a new one that will allow opening and closing the bolt while the safety is in the "on safe" position, at no-charge, to insure that your faith in the rifle is restored, or, the rifle can be returned to you in the same condition as received. We will await your decision and reply.

Thank you for allowing us to examine the rifle and to be of service to you.

Sincerely,

J.A. Stekl, Supervisor
Product Service

JAS:tpp

R21526

November 9, 1984

Mr. Dick Key
Box 309
Mineral Bluff, Georgia 30559-0303

Dear Mr. Key:

Examination has been completed on the Model 700 ADL 22-250 Rem. caliber rifle, serial number A6850932, which you returned to us because it allegedly fired when you released the safety.

The returned firearm, which was produced in December of 1979, has been thoroughly examined by our firearms experts who report that it contained our high-pressure proof test, gallery test, and final inspection stampings, indicating that it had successfully passed all our necessary tests prior to shipment from our factory.

The general condition of the rifle appeared to be very good, but it was noted that the stock did contain slight dents and mars. In addition, it was noted that scope-mount bases had been added to the rifle. In going over the individual parts, we found the headspace, recoil shoulders, and chamber all to be normal.

Examination of the rifle and trigger assembly could not duplicate the malfunction that was reported. All parts tolerances and dimensions were found to be normal, including sear-connector engagement. Also, factory seals were intact on the trigger adjusting screws, indicating no alterations were made on the trigger outside our factory. Trigger pull was well within our specifications at 4½ - 3/4 pounds.

Based on our findings, Remington Arms Company, Inc. cannot accept any liability or responsibility for the reported incident, as the rifle and trigger assembly operate properly and cannot be made to malfunction. We only can assume that accidental contact was made with the trigger, with the safety in the "fire" position, which caused the rifle to fire.

We do want to be as helpful to you as possible and, as a gesture of good-will, even though there is nothing wrong with the present trigger

DON'T SAY IT—*WRITE IT*

To Plant Key Location

From Location Phone No.

Subject Motor oil 30/250 SW Recommend Date

Ring gap = .010" Oil pressure = 12/15

[illegible] = [illegible]

XB 778 STOP, LOOK, AND LIVE

R2517476

9-30-14

Dear Kingston Arms,
(SA. Steel)

I [illegible] this to Frank Schlesinger, a summer in Wausau, Georgia (Rt. Box 304-B (Hwy 14) Frank owns on the [illegible] has never been touched. The [illegible] and remarked the sun went down on [illegible]

[illegible] like when the [illegible] and always see [illegible] like. You can see for yourself the size [illegible] the [illegible] and property maintained. [illegible] correction [illegible] this [illegible] [illegible] [illegible]

Remington REMINGTON ARMS COMPANY, INC. Peters

SPORTING FIREARMS
TRAPS
POWDER METAL PARTS
ILION, NEW YORK
AMMUNITION, BRIDGEPORT, CONNECTICUT
CONWAY, ARKANSAS

MANUFACTURERS OF
SPORTING FIREARMS, AMMUNITION
TRAPS TARGETS
ILION, NEW YORK 13357
TELEPHONE 315 894-3041

PETERS CARTRIDGE DIVISION
BRIDGEPORT, CONNECTICUT
TARGETS, ADA, OKLAHOMA
ATHENS, GEORGIA
RIPLEY, OHIO
CABLE—HARTLEY, BRIDGEPORT

August 30, 1984

Mr. Dick Key
P.O. Box 303
Mineral Bluff, Georgia 30559-0303

Dear Mr. Key:

Your letter of July 24, 1984 that was addressed to our Bridgeport, Connecticut facility, regarding the accidental firing you experienced with your Model 700 22-250 Rem. caliber rifle, serial number A6850932, has been forwarded to this office for handling.

We were indeed sorry to learn of your having a problem of the nature you described, as it is not characteristic of the Model 700 rifle.

Generally, the type of malfunction you described results from either improper adjustment of the trigger assembly outside our factory, from improper maintenance of the rifle, or, from pressure being inadvertently applied to the trigger at the instant the safety is released.

Please, at your convenience, return the rifle via insured and collect transportation, to:

Remington Arms Company, Inc.
Attn: Mr. J.A. Stekl
Supervisor, Product Service
Ilion, New York 13357

Upon receipt, we will thoroughly examine the rifle and, if it is found to be factory faulty, we will assume responsibility for your unfortunate mishap.

Thank you for bringing this matter to our attention and for affording us this opportunity to be of service to you.

Sincerely,

J.A. Stekl, Supervisor
Product Service

JAS:tpp

R2517472

me that occurred due to the faulty action of your gun. I've sent the gun to a gunsmith to correct the operating problem. I'll send his statement later.

Witness to the mis-firings were:

1) Mr. Robert Kisselburg
Rt 7, Box 27, Murphy, N.C.
28906
704-644-5246

2) Mr. James Ewing
4961 Welsh Rd
Roseberg, Or.
97470
515-877-3215

I'd appreciate a prompt reply.

Sincerely,

Dick Key
904-574-5814

Dick & Jill Key
P. O. Box 383
Mineral Bluff, GA 30559-0383

R2517471

RECEIVED

AUG - 2 1984

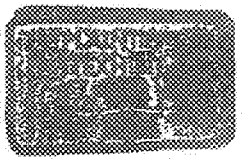
CONSUMER SERVICE

7-29-84

Dear Remington,

PROPERTY DAMAGE

I own a 1984 Remington 700 BDL 30-06 bolt action rifle. Yesterday while showing a friend who wished to borrow it to hunt groundhogs how to load and unload it, it went off accidentally. It passed the safety from safe to fire in the loaded, my [illegible] in the [illegible] into my wife [illegible]. My homeowners insurance will cover all but $100 of the damage. I'm writing you asking that you reimburse



R2517470

Remington.

REMINGTON ARMS COMPANY, INC.

SPORTING ARMS-AMMUNITION-TARGETS-TRAPS

ILION, NEW YORK 13357

TELEPHONE (315) 894-9761

March 1, 1984

Mr. Curtis Hairston
13950 Stardust Lane
Farmers Branch, Texas 75234

Dear Mr. Hairston:

Reference is made to your recent letter regarding the accidental firings experienced with your Model 700 243 Win. caliber rifle, serial number 6327205.

We were indeed sorry to learn of your having a problem of the nature you described.

Please, at your convenience, return the rifle via insured and collect transportation, to:

Remington Arms Company, Inc.
Attn: J.A. Stekl
Ilion, New York 13357

Please mark "Stekl" on the outside of <u>both ends</u> of the box. If, upon receipt, the rifle is found to be factory faulty, we will gladly make any necessary corrections on a no-charge basis.

Thank you for bringing this matter to our attention and for having afforded us this opportunity to be of service to you.

Sincerely,

J.A. Stekl, Supervisor
Product Service

JAS:tpp

R2517469

3311

J. A. SIEKL

Curtis Hairston
13937 Litchat St.
Farmers Branch, Tex
75234

Remington Arms Co.
Ilion, N.Y.

Customer service:

I have a .243 win. model 700. The gun has been used only 2 or 3 times because it belongs to my wife. This year the gun was used by my son while hunting. The gun went off 2 times when the gun was taken off safety. At a local gun shop I was told of a recall of some guns on a problem with the safety. I will list all identification numbs starting at the butt of the stock and going toward the trigger.

PAT. No. 2,823,323
2,574,951
2,535,193
CT-1
632726.5

Please advise what I should do to correct the problem.

Curtis Hairston

RECEIVED
FEB 23 1984
CONSUMER SERVICE

CONFIDENTIAL

From: Reesor, Phillip K.
Sent: 11/5/2000 11:46:51 AM
To: Danner, Dale; Franz, Scott
CC: Snedeker, Jim; Diaz, Danny; Keeney, Mike
BCC:
Subject: RE: T & P Status for Saturday & Sunday

Sunday: worked 6:00 to 12:00
Trigger pull- complete
Firing Pin Indent- complete
Bolt Stop function test- complete
10 rd. safety function- complete, A-14 would not fire twice during this test, looks like follow downs.
Details on sheet in packet. (with gun in my office)
Bore Sighting check on A-21 to A-30 complete, less A-26
All scopes have been removed in preparation for further testing.
The firing pin head to sear engagement is next, then come accuracy, 100 rd function & detailed measurements.
I thought we want to have a sit down and discuss what we've seen to this point before continuing into function & accuracy.

PKR

From: Franz, Scott
Sent: Saturday, November 04, 2000 2:17 PM
To: Reesor, Phillip K.; Danner, Dale
Cc: Snedeker, Jim; Diaz, Danny; Keeney, Mike; Franz, Scott
Subject: T & P Status for Saturday
Importance: High

Labeled 30 guns A-1 to A-30

Inspected all 30 guns for Magnaflux and Proof marks - OK

Measured headspace as received
1. Gun A-2 (71001425) : Can't close on min. gauge plug (closes on dummy rd).
tagged gun. Gun is out of test for now. Can take measurements but do not shoot until we all review.

Ran 10 rd. Safety Function Test w/ Lyman on guns A-21 to A-30 only
1. Gun A-26 taken out of test, 3rd rd. failed to fire (possible follow down) and
4th rd. fired when bolt was barely related into the closed position(was fully locked when it fired).
Note: Safety was off during this 10 rd. test as per my instructions.
Measured trigger pull and engagement and then put in my office.

Measured trigger pull on guns A-1 to A-20.

Measured Indent on guns A-1 to A-20.
1. During this the bolt stop on gun A-15 (71001484) broke. Broken piece in bag in information pouch. The first indent was taken ok. While closing the bolt to take the second indent the bolt would not close. When the bolt was opened a small metal piece fell out of the gun. At this time it was noticed that the bolt stop was broken. Tagged gun. Out of test for now.

Performed Bolt Stop Function Check on guns A-1 to A-20. Did not measure forces yet. Need to come up with a way to do this. Guns mentioned that the bolt stop functioning gets easier as it is cycled, even after only a few cycles.

Subject to Protective Order - Williams v. Remington

Thelma
Please file
Thanks

cc: H.F. Larsen
H.A. Brown
J.B. Maupin
J.D Mitchell
E.B. Wallin

Ilion, New York
September 14, 1955

C. W. CALHOUN

PROPOSED SPECIFICATIONS FOR MODEL 725

Attached hereto is a copy of proposed specifications for a new model high power bolt action rifle. The Sales Department has requested that this model be designated as Model 725 and be offered in seven calibers, which means all calibers presently supplied in the M/721-722 with exception of 300 Savage. Sales has also proposed that the same model designation be used for all calibers although approximately half would involve the M/721 style of long receiver, with remainder being M/722 style short receiver.

I have prepared these specifications on basis of notes from our discussion with J.D. Mitchell and W.K. Foster on Wednesday, September 7. At the Operations Committee Meeting on the following day this item was incorporated into the proposed Arms Development Schedule on basis of being "Under Investigation" and also contemplating a proposed retail selling price of approximately $120.00, and with a tentative forecast of from 7,000 to 10,000 "additional" rifles. The Models 721 and 722 would be retained in the line except that the AC and BDL Grades would be dropped.

It was decided that as a first step, sufficient information be furnished to H.F. Larsen for purpose of making an evaluation of the indicated economies. In this connection, I have found from a review of our files that essentially all of these items have been considered before although in different combinations. Therefore, it was possible to "extract" practically all of the details for an estimate summary for use in an economic evaluation.

Also attached hereto is a copy of the estimated cost for tooling as well as indicated unit factory cost which would be over and above the present factory cost for the M/721. It will be noted by Mr. Larsen that only in several cases was it possible for [redacted] to indicate the "additional capital" required; therefore, he may have to develop this information for us, and perhaps E.B. Wallin can help.

This estimate indicates an estimated total cost for tooling in amount of $136,290, of which approximately 10% would be [redacted] operations. The additional estimated total factory cost would amount to $5.82 per gun. In addition to the total indicated

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KINZER V. REMINGTON

tooling cost above, it is estimated that approximately $25,000 will be required for development in the categories of design, product engineering, pilot operations, production aids, etc., as shown in the detail. No attempt has been made to estimate additional working capital involved since this obviously would be affected by the forecasted schedule. However, believe that data available from the economic evaluation estimate for M/721 improvements dated December 22, 1953 might well be used as basis for a determination. I have reviewed this briefly with Messrs. J.B. Maupin and E.B. Wallin and it was agreed in order to proceed with distribution of these specifications along with our own estimate. This will then be reviewed by Messrs. Larsen, and Wallin, who perhaps by telephone can clear up any questions.

It also should be pointed out that the tooling estimate and product cost is based on the development of a machine for checkering which would involve approximately $100,000 on basis of an evaluation submitted to W.L. Clay by J.B. Maupin dated November 4 and November 11, 1953. If it were decided to consider on basis of hand checkering, the estimated appropriation might be reduced accordingly. However, the factory cost would have to be increased by approximately $5.00 greater than for machine checkering.

It should also be noted that the estimate has been based on the purchase of a Marble folding leaf rear sight instead of designing and tooling up for another. Should the latter course be followed it would then be necessary to increase the appropriation and investment, and there would probably be a reduction in additional unit factory cost of approximately $2.00.

We suggest that Mr. Larsen proceed to make an evaluation on basis of this estimate and if the results appear favorable then further work might be done on which to base a check estimate. There is some doubt in our minds that the proposed improvement in the form of a new model will gain the additional volume which is indicated. Undoubtedly, it would do so for at least the first year. However, at the same time, it will probably gain as much additional volume as would for the introduction of some other new bolt action high power rifle. In other words, with the present competition of more popular autoloading and slide action rifles today, it is doubtful that we could ever justify complete new development of another high power center fire bolt action rifle unless supported by some entirely new and novel designs and processes, either having significant effect on cost or design features. This may therefore be a rather economic

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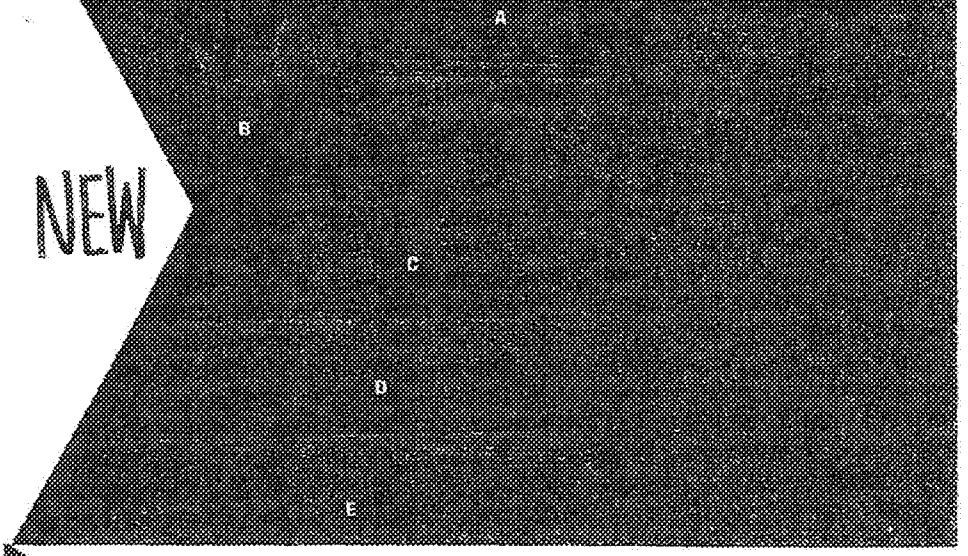
way to obtain a new model. We would also question the wisdom of coming out with so many different calibers before it has been possible to determine the acceptance. By restricting the first year to only one or two of the most popular calibers it would be possible to avoid the large additional working capital together with increased inventory of finished guns.

S. K. Alvis, Manager
Ilion Research Division

SKA:T

Now . . . Drilled & tapped for 5 possible sight mountings

NEW



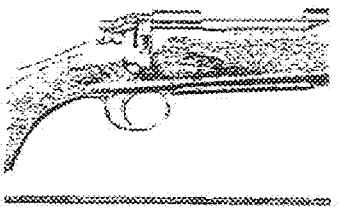
NEW

LOADING OR UNLOADING

Hinged floor plate makes job of loading, or unloading a lot easier. Just push the release button to remove cartridges from magazine. No working of bolt. If a low mounted scope interferes, load magazine from the bottom in seconds!

LARGE THUMB SAFETY

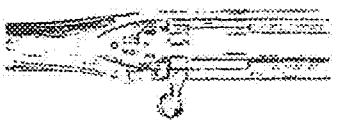
Placed on the right rear of the receiver, the big safety is right where shooters want it. Fast, positive, quiet . . . it also has a neutral (middle) position which allows the bolt to be drawn back, keeping the rifle on "Safe" at same time. Long travel distance of safety allows shooter to see at a glance whether safety is on or off.



NEW

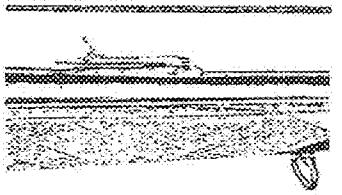
MATTED RECEIVER

Finish of receiver is matted for better visibility. Note clearly marked F and S for "Fire" and "Safe".



Windage Adjustable Open Rear Sight

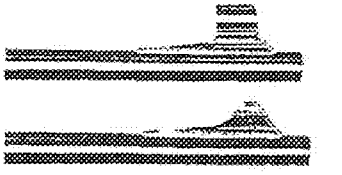
New Remington designed open rear sight has windage adjustment screw on right side of sight leaf. Merely turn screw right or left when sighting in. To remove rear sight, if receiver or scope sights are desired, take out screw on right side of sight base. This allows sight leaf to be removed. Two hold down screws will be found on top of base. Remove these and barrel is ready for scope block mounting. If receiver sight is installed, take out filler screws on left side of receiver, and use to fill in barrel under rear open sight.



NEW

WITH OR WITHOUT

Easily removable hood on ramp front sight gives shooter instant choice. With hood in place, gold bead is exactly centered and flat faced for a more perfect sight picture every time!



What The New All Purpose Stock Does For The Shooter!

Revolutionary new all purpose stock means no more worry about interchanging between open and telescopic sights. No matter which is used, the eye is always in perfect sighting line. The pistol grip has been shaped to reduce the reach from hand to trigger . . . assuring more uniform squeezing of trigger. Straighter stock lines combined with slight forward slope of comb means less recoil.

SPECIFICATIONS

Remington Model 725ADL

Caliber
30-06, 280 Remington, 270 Win.

Action
Bolt. Bright finished body . . . handle blued. Same strong bolt design as famous Remington M/721-722. Receiver matte finished.

Magazine
Fixed box with hinged floor plate. Floor plate release inside trigger guard. 4 shot capacity plus one in chamber. Wide corrugated match-type trigger.

Stock
American Walnut . . . forearm and pistol grip finely checkered. All purpose stock with Monte Carlo comb for use with open or telescopic sights. Black grip cap and black checkered butt plate.

Safety
Thumb operated lever . . . 3 position control. Receiver marked F and S for "Fire" and "Safe". Middle position for opening bolt with trigger on safe.

Barrel
22-inch round tapered.

Sights
Flat face gold bead front sight with hood. Step adjustable rear sight with windage adjustment screw.

Weight	Length
7 lbs.	42½ inches overall.

Also available in D "Peerless" and F "Premier" grades.

Remington

DUPONT

Remington Arms Company, Inc.
Bridgeport 2, Connecticut

Form No. 57-2188 Printed in U.S.A.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

distinguished, all-new...

BOLT ACTION RIFLE

REMINGTON

le luxe model

725

CUSTOM FEATURES

-
-
-
-
-

Remington

DU PONT

$134.95*

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BARBER - 1.30.13000914

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BARBER - 1.30.13000914

R2831154

AL 0025456

Now . . . Drilled & tapped for 5 possible sight mountings

NEW

NEW

NEW

NEW

NEW

LOADING OR UNLOADING
Hinged floor plate makes job of loading or unloading a lot easier. Just push the release button to remove cartridges from magazine. No working of bolt. If a low mounted scope interferes, load magazine from the bottom in seconds!

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Placed on the right rear of the receiver, the big safety is right where shooters want it. Fast, positive, quiet . . . it also has a neutral (middle) position which allows the bolt to be drawn back, keeping the rifle on "Safe" at same time. Long travel distance of safety allows shooter to see at a glance whether safety is on or off.

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Easily removable hood on ramp front sight gives shooter instant choice. With hood in place, gold bead is exactly centered and flat faces for a more perfect sight picture every time!

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Safety
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Barrel
22-inch round tapered.

Sights
Flat face gold bead front sight with hood. Step adjustable rear sight with windage adjustment screw.

Weight	Length
7 lbs.	42½ inches overall

Also available in B "Peerless" and F "Premier" grades.

Remington

DUPONT

Remington Arms Company, Inc.
Bridgeport 2, Connecticut

Form No. 57-2188 Printed in U.S.A.

A distinguished, all-new...
BOLT ACTION RIFLE
REMINGTON
CUSTOM FEATURES
deluxe model
725
30-06 — January '58 delivery
280 Rem. — March '58 delivery
270 Win. — May '58 delivery
Remington
DUPONT
$134.95*

REMINGTON ARMS COMPANY, INC.

MANUFACTURERS OF
SPORTING FIREARMS. AMMUNITION
TRAPS TARGETS
INDUSTRIAL TOOLS

ARMS AND INDUSTRIAL TOOL WORKS
ILION, N. Y.
AMMUNITION WORKS, BRIDGEPORT, CONN.
CABLE—HARTLEY, BRIDGEPORT—ALL CODES

PETERS CARTRIDGE DIVISION
BRIDGEPORT, CONN.
TRAP AND TARGET WORKS
FINDLAY, OHIO

BRIDGEPORT 2, CONN.

JANUARY 3, 1958

ANNOUNCING

THE NEW REMINGTON

MODEL 725

DELUXE BOLT ACTION CENTER FIRE RIFLE

TO OUR WHOLESALERS

Gentlemen:

The all new Remington Model 725 is a truly distinguished addition to the very fine Remington line of sporting firearms. Loaded with custom features, the Model 725 will meet the demands of the most exacting sportsmen. One look will tell you that here is a rifle with tremendous built-in sales appeal.

STRIKING NEW SALES FEATURES

1. NEW ALL PURPOSE MONTE CARLO STOCK ESPECIALLY DESIGNED FOR INSTANT USE WITH EITHER OPEN OR TELESCOPIC SIGHTS.

2. HINGED FLOOR PLATE WITH FAST, POSITIVE RELEASE LOCATED INSIDE THE TRIGGER GUARD.

3. NEWLY DESIGNED REAR SIGHT EASILY ADJUSTABLE FOR BOTH WINDAGE AND ELEVATION.

4. HOODED RAMP FRONT SIGHT....HOOD EASILY REMOVABLE.

5. OVERSIZED, SILENT THUMB SAFETY WITH THREE POSITIVE POSITIONS.

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KINZER V. REMINGTON

6. BEAUTIFULLY FINISHED AMERICAN WALNUT STOCK WITH PISTOL GRIP AND FOREARM FINELY CHECKERED.

7. DRILLED AND TAPPED FOR FIVE POSSIBLE SIGHT MOUNTINGS.

PRICES AND TERMS

	Net to Wholesaler	Dealer	Retail
Model 725ADL "Deluxe" Grade	$ 79.18	$101.20	$ 134.95
Model 725D "Peerless" Grade	398.35	466.75	565.75
Model 725F "Premier" Grade	734.31	860.35	1,012.20

The U. S. Excise Tax of 11% should be added to the net price. Dealer and retail prices include this tax. The terms and conditions outlined in our letter of December 27, 1956 will apply. The above dealer and retail prices have been established as minimum Fair Trade prices in all states having Fair Trade laws in effect.

ADVERTISING MATERIAL

Your regular supply of catalog pages, one copy of which is attached, will be forwarded to you shortly.

Electrotypes of this new rifle will be furnished in sizes 2-5/8", 3-1/4", 4", and 6" promptly upon request. These will be sent without charge.

DELIVERY AND ALLOTMENT

Deliveries will begin as follows:

30/06 Springfield Caliber----------January 1958
280 Remington Caliber----------March 1958
270 Win. Caliber----------May 1958

To assure every wholesaler of his proportionate share, distribution will be on an allocation basis. Your allotment for the entire year of 1958 is attached. Shipments against allocation will be on a fair and equitable basis, and every effort will be made to complete these deliveries not later than October 31, 1958. Please forward your order at once covering your allocation.

Thank you for your past efforts which have made Remington the world's leading sporting firearms manufacturer. Your enthusiastic cooperation will keep us continually on the march.

Sincerely yours,

REMINGTON ARMS COMPANY, INC.

Gail Evans

Director of Sales

Gail Evans:vv
Attachment

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KINZER V. REMINGTON

MODEL 725

Problems of the adequacy of the Rear Sight Assembly and sight alignment have been the major factors in producing warehouse guns.

The Rear Sight Leaf has been improved by adding a web between the ears and strengthening fillets. In addition, current production has a reverse die break which has greatly reduced cracking at the ear bend junction. Replacing the bent up ears by a roll construction should if manufacturing requirements can be held, further strengthen the sight. Samples of the roll design are expected the middle of March.

Radial alignment of the Receiver scope holes, Rear Sight Base, and Front Sight Base which existed with the old sight set up but were not visually objectionable, now are with the new sight line with the Rear Sight Base and higher Front Sight Ramp. In order to produce warehouse guns, selected Barrel Assemblies are required. A major program is under way to produce assemblies that will meet specifications. Contributing component processes are being studied which includes the effect of angular displacement in the first inch of the muzzle. These are not new items but the solution is most important to the production of a quality product.

A new Bolt Stop Pin to reduce the side play and looseness of the Safety has been made effective. The action of the Safety has been measurably

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KINZER V. REMINGTON

improved since initial production. The action of the Safety is still the basic M/721-722 but the added lever and gear action has reduced the force to actuate the Safety. The first initial movement of Safety raises the Safety Cam and locks back the Firing Pin. The force required to provide the initial locking is to the uninitiated sufficient to move the Safe to the full on position. This is considered advisable. The operator then is able to return the Safe to the center position if desired.

As an added improvement, the closer tolerences for the Bolt Stop Pin provided a better fit of the Fire Control Housing in the Receiver with a resultant better Trigger pull. An interference between the Housing and the Trigger Guard has been corrected. This caused a binding of the Bolt Stop Pin and affected functioning. Further means of improving the Fire Control are being studied.

Difficulties of color, checkering, and dimensions of initial Stock production have been greatly improved in current production. The vendor is being promptly advised of any problems. Additional gages to enable the vendor to better control dimensions are being provided.

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The crowning of the Barrel has been questioned. While this is the same as used on all center fire Barrels, it is believed that by changing the operation the feather edge can be eliminated.

A record is being kept of Sales and customer reaction to this new gun. Action is and will be taken on any condition which adversely affects the acceptance of this gun.

An initial quantity of 270 caliber guns has been assembled. Ten (10) guns have been selected by Research for pilot testing.

The warehouse schedule is revised as follows:

	January 7, 1958 Schedule			March 4, 1958 Schedule		
	30-06	270	280	30-06	270	280
December 1957	*6	0	0	*6	0	0
January 1958	900	300	0	*333	0	0
February 1958	720	300	0	*400	0	0
March 1958	680	0	400	500	400	200
April 1958				500	200	500

* Actual

VGD:EK

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C O P Y

cc: Dewey Godfrey
Gail Evans
F. E. Morgan
S. M. Alvis
A. A. Riehl

Bridgeport, Conn.
September 20, 1956

TO: J. D. MITCHELL

FROM: DAN CARROLL

SUBJECT: SPECIFICATIONS FOR CENTER FIRE "N.R.A. MATCH RIFLE"

"N.R.A. Match Rifle" Weight - mandatory 10-1/2 lbs., caliber 30-06 with swivels, sights, but without sling or scope blocks.

Barrel - 24" or 26" long, .900" muzzle, 1.250" breech. The 1.250" section should be about 1-1/4" long before starting to taper toward the muzzle. Caliber 30-06.

Chambering- Should be as close as permissible, as near bench rest practice as we can get them, particularly in the long range, bench rest and varmint rifles.

Action - Bolt handle may need lengthening and repositioning to a high location on the bolt body. Bolt knob drilled to remove weight, if needed. Perhaps some sweep back may be good. If bolt handle is relocated, then telescope sight tube interference should be kept in mind. Clip slots cut for rapid fire clip loading, and if needed to improve ease of loading, they should be located slightly to the right of center, like some Mauser rifles.

Stock - Modification of Model 40X. Change to consist of deepening stock to provide for a 5-shot magazine. Field tests are a must to decide if stock lines (drop, pitch, comb height) are satisfactory, but for first trial the Model 40X stock should be tried as is. "Group tightener" should be fitted.

Magazine Box - Lengthened for 5-shot capacity.

Trigger Group - The trigger housing and trigger will have to be lengthened if the stock is deepened. The trigger face should be 5/16" forward. Removable floor plate should be provided for unloading without working cartridge through action. This is a must, because if the command to unload is given for some safety hazard on the range, then the rifle must be cleared safely.

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J. D. Mitchell September 20, 1956

Guard Screws - Lengthened to fit deeper stock.

Sights - Front: Redfield International Military. This is a light-weight alloy material.

Rear: Redfield International. (Lyman is designing a new "Match Rifle" sight.

Scope blocks should be fitted unless we are pressed to meet the weight limitation.

Dan Carroll
Shooting Promotion Section

DC/1

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Remington

REMINGTON ARMS COMPANY, INC.

SPORTING ARMS · AMMUNITION · TARGETS · TRAPS

939 BARNUM AVENUE
P.O. BOX 1939
BRIDGEPORT, CONNECTICUT 06601

April ?, 1984

Dear :

Remington has contacted and informed you about the problem that may develop with your Model Seven rifle, and you have refused to return the firearm to us for correction. By sending you this letter, we want to be sure you clearly understand that if your Model Seven is disassembled for any reason, the rifle may possibly be re-assembled incorrectly which could produce an off-center trigger alignment that may cause subsequent malfunction of the trigger and accidental firing of the rifle.

We strongly suggest you return your Model Seven to Remington or to a Remington warrantee gunsmith service location for no charge updating. The preventive modification will then eliminate the possibility of an incorrect re-assembly. However, we cannot correct the rifle if you do not return it to us, or to our agent, for updating.

It is always possible that you will loan your Model Seven to a family member or sell it to a friend or to some other third party sometime in the future. Since you have been adequately warned about the potential danger in your gun and have consciously determined not to take any corrective action, you could be held responsible and legally liable for any problem or injury that may arise in the future from disassembly and incorrect re-assembly of the rifle.

We now urge you to reconsider your decision in the interest of safety, and allow us to eliminate this potentially dangerous condition in your rifle.

To accomplish this necessary modification, we request that you bring or ship your Model Seven rifle to the nearest Remington warrantee gunsmith service location in your area. A list of such locations is enclosed.

R2517563

If it is inconvenient or difficult for you to return the rifle to a warrantee gunsmith service location, you may also ship the firearm, via United Parcel Service, transportation C.O.D., to:

Remington Arms Company, Inc.
Arms Service Division
Ilion, NY 13357

In returning your rifle to either a Remington warrantee gunsmith service location or to our Arms Service Division in Ilion, New York, please do the following:

1. Mark the outside of the box clearly with the words "Model Seven".

2. Include your name and return address on the outside of the box and on a note to be placed inside the box.

These procedures will expedite the updating of your rifle and its return to you.

If you need a box for shipping purposes, please advise me at the Bridgeport, Connecticut address.

Should you have any questions about the Model Seven update, you may call me collect at the following number:

203-333-1112 Ext. 1429
(8:00 a.m. - 4:30 p.m. EST)

Our apologies for any inconvenience this return may cause you. Thank you for your cooperation in this important matter.

Sincerely,

K. D. Green
Manager, Product Support

RDG
9/9/8

KDG:fd

enc.

cc: C. B. Workman
J. S. Martin
F. E. Martin
S. A. Fanelli

RS-41-R)

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
December 11, 1980

TO: J. P. GLAS

FROM: T. L. CAPELETTI

SUBJECT: POTENTIAL IMPROVEMENTS TO BOLT ACTION RIFLES

I have discussed potential improvements to our bolt action rifles with Fred Martin and Sal Fanelli in response to your inquiries concerning why Remington may be losing position in that market and what we might do to regain that position. In view of the new Winchester Model 70 light weight, this is an opportune time to review results of those discussions for you. Fred and Sal's suggestions, summarized below, fall into three general categories: Improvements in a.) Design, b.) Appearance, and c.) Marketing Philosophy. These suggestions have not been fully reviewed with either Jim Martin or Clark Workman. However, I feel they merit further consideration. Significant change in our market position will probably require focused attention on a complete redesign of the firearms combined with a more aggressive marketing approach.

Design

Areas where design changes may be beneficial are in the receiver, feeding, and fire control systems. It may be possible to design a bolt action with enough commonality in the receiver to permit use of one magazine box and fire control system with all of our centerfire rifles (autoload, pump, and bolt action). Commonality would have obvious cost improvement advantages and is worth serious consideration. However, our bolt actions have an excellent reputation for accuracy and durability and one of the program objectives would certainly be to maintain that performance and reputation.

Short of complete redesign of the line, improvements are possible in the feeding and fire control systems of the current designs. The magazine in the M/700 ADL 7mm magnum can only accommodate

two (2) rounds with ease; holding three (3) rounds sometimes requires special adjustments. Magazines should be designed to easily accommodate three (3) magnum rounds or four (4) standard rounds. In fact, we need focused attention on the feeding systems on all our bolt actions, including the rimfires. Regarding the fire controls, we already have a program to develop improved systems. Those improvements should be agressively pursued and implemented.

Appearance

When properly cleaned and displayed, our bolt action centerfires have an excellent appearance and give an impression of rugged dependability. However, out-of-the-box appearance is generally not as favorable due to salt bleedout problems, use of oil coatings for rust prevention, and dull sights. Salt bleedout is not a new problem and we have taken steps to eliminate bleedout where we have a known recurring problem. Oil coating for rust prevention is a standard Remington procedure which is not used by some of our competitors. We should investigate alternative protective coatings, such as dry lubricants. Our powder metallurgy sites have a dull appearance due to porosity even when polished. We should consider a complete change in our sight line.

Marketing Philosophy

Our marketing approach for bolt actions has been unchanged for many years. We need some innovations in design combined with more emphasis on strengths of our current line. The M/700 has the strongest locking system and is the most accurate bolt action centerfire rifle on the market. While our extractors are stronger than those of our competitors, they do not have the same massive appearance. We need to take advantage of existing test data to counter the implication that massive appearance correlates with strength. Finally, we should advertise availability of special calibers on custom orders or make special calibers available to preferred dealers or customers. One possibility is to introduce a special edition 35 Whalen caliber rifle as a commemorative to Col. Townsend Whalen.

TLC:ws
Firearms Research Division

Copies to: R. L. Hall
G. E. Puckett
A. D. Kerr
C. B. Norman
M. E. Leek
J. J. Marley
J. Kowalski
Ext. File #3401

March 21, 1975

J. K. SPECKERT

Model 700-[redacted]-[redacted]R Three-Position Safety

An economic evaluation has been completed on the proposal to re-design the present Two-Position Safety to a Three-Position Safety on the Models 700-[redacted]-[redacted]R rifles. Presently, the bolt on these rifles can be unlocked and opened only when the safe is in the 'Fire' position. The Three-Position safe would enable the bolt to be opened in either the 'Fire' position or the new 'U' position. On the 'U' position the rifle could not fire.

The economics indicate an annual cost increase of $4400 and an expenditure of $25,600 for new tooling and fixturing. The full book unit cost indicates a cost increase of $ .036 for each rifle.

METHODS & STANDARDS SECTION
F. G. Carlson, Superintendent
John Polivka

By: John Polivka

JP/nc

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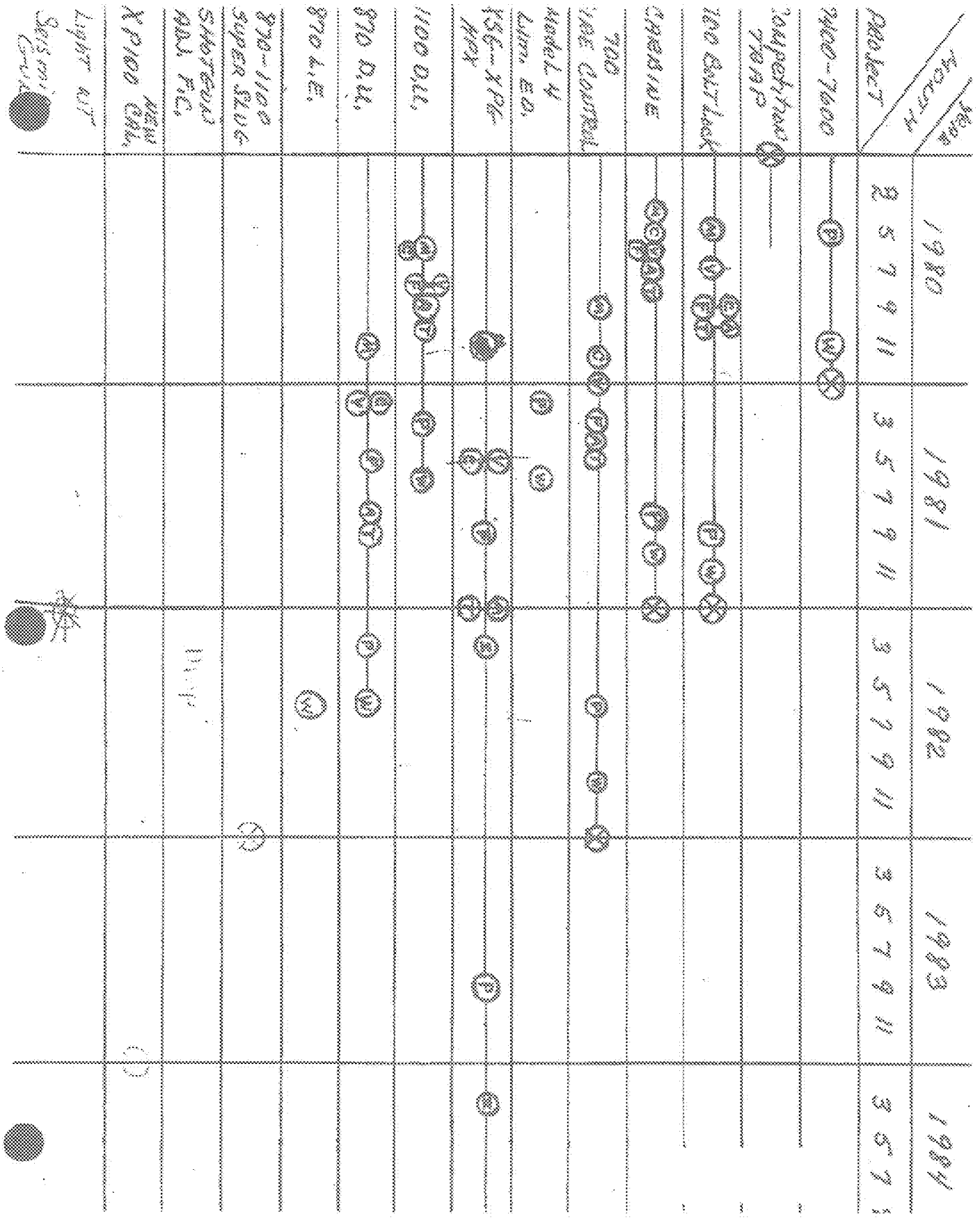

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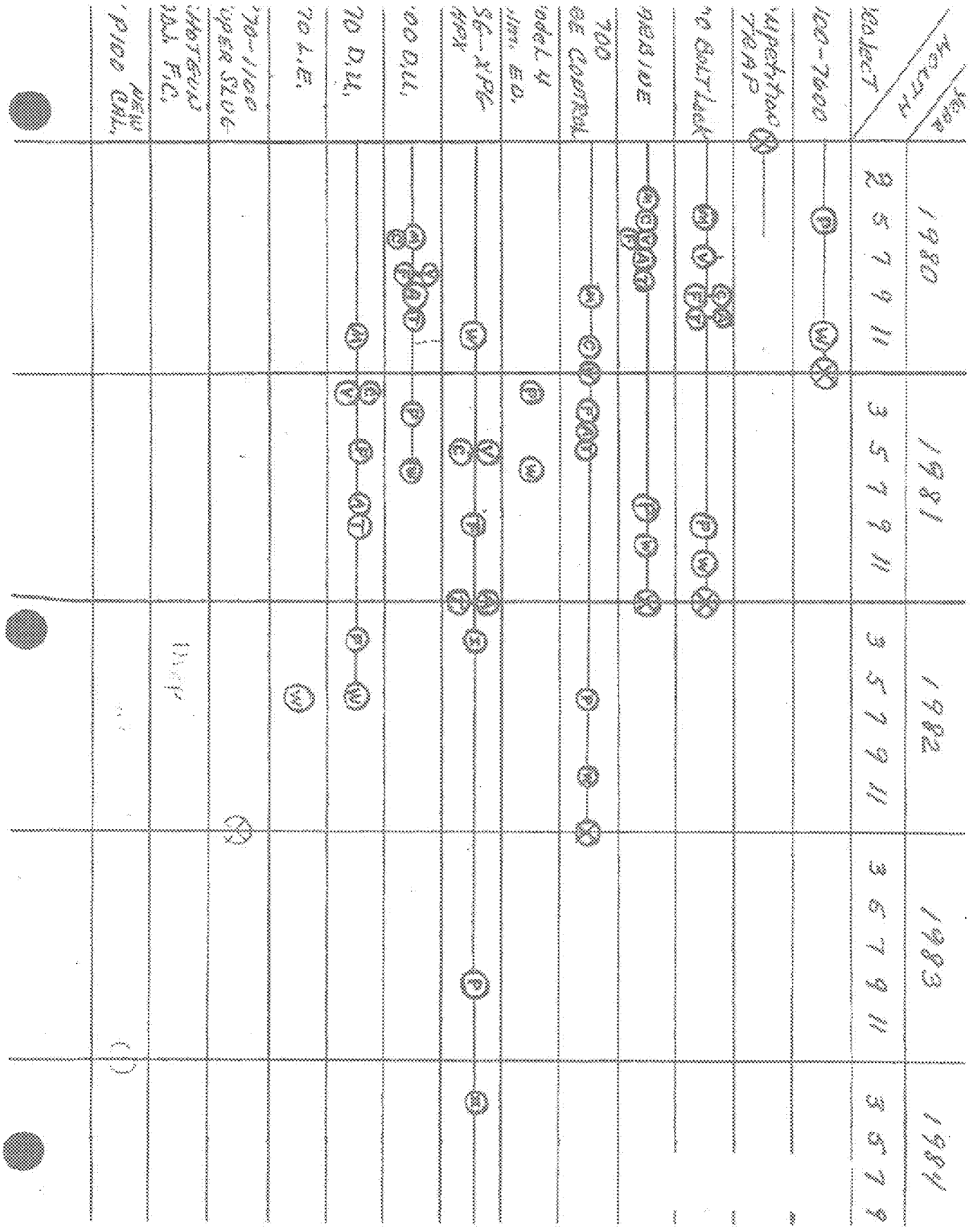
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REMINGTON ARMS COMPANY, INC.

RESEARCH AND DEVELOPMENT - FIREARMS

THIRD QUARTER PROGRESS REPORT - 1982

September 27, 1982

Distribution List

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	Page
MATERIALS AND PROCESS DEVELOPMENT	
• Development of a process for stainless steel components is receiving top priority in the injection molding program. The Parmatech equipment should be operational in October.	13
• A CNC machine has been identified which will meet all of the goals of the cut checkering machine development program. An Italian machine has been identified which also looks promising.	14
• A pilot run will be made during the week of September 20 to burnish shotgun firing pins by form-rolling.	14
• A fourth set of powder metal samples has been shipped for cryogenic processing by an external vendor.	15
• Research is in progress to investigate coatings to reduce corrosion of monel stainless steel powder metal parts.	15
• A master plan has been developed for automating the gallery and final inspection. EPL will submit a proposal for 100% inspection of critical components.	16

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Testing and Inspection

Three major areas are being investigated -- 100% inspection of critical components, automation of the gallery, and automation of final inspection. The goal of all of these programs is to improve product quality and reliability while simultaneously reducing unit costs.

A master plan for automating the gallery and final inspection has been formulated, consisting of five basic elements: the gun jack, fixturing, scanning, functioning equipment, and a computer control.

EPL was visited on September 14 to discuss various requirements for 100% inspection of critical components. They will submit a proposal by the end of October.

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REMINGTON ARMS COMPANY, INC.
INTER-DEPARTMENTAL CORRESPONDENCE

File 1146

XC: File

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
May 11, 1982

TO: R. E. FIELITZ

FROM: C. B. WORKMAN

SUBJECT: STAFF NOTES

Except for the following items, the status of Research programs is not significantly different than shown in the April Monthly Report.

- Model 7400/7600 Rifles

  Tests have been completed on Model 7400 Center Fire Rifles in all current production calibers to determine effect of the modified feeding ramps on gun performance. Results indicate no detrimental effect of the modification on either strength (30-06) or malfunction rate. Based on these results, the design change has been transmitted to Production and will be approved pending successful completion of Trial and Pilot tests on each caliber, as they become available.

- Injection Molding of Metal and Ceramic Components

  The first run of Fe-2% Ni components (test bars and experimental thin wall caps) has been completed through the binder removal operation. Sintering is in progress and will be completed today. Due to the extended process cycle time, Research personnel are monitoring the equipment on all three shifts.

  To facilitate coordination throughout Du Pont on injection molding programs, a meeting is scheduled for Thursday, May 20, 1982, in Ilion. Representatives from Du Pont EMD, EPD, MDL, CR & D, Textile Fibers, and Photo Products Departments are scheduled to attend.

We are reviewing our programs in light of the recent layoff and work schedule changes at the Ilion site. Seventeen Research employees will have their work schedules cut 10%. I will advise you of the effect on Development Schedules as soon as the full impact is clear.

CBW:ab

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FIREARMS RESEARCH DIVISION

INJECTION MOLDED POWDER METAL RESEARCH

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1982 Research Budget
Firearms Design Programs

		1982 Budget
SUMMARY		
Firearms		
Improvement to Established Business		
Shotguns Programs	$ 860M	
Centerfire Rifle Programs	1250M	
Rimfire Rifle Programs	35M	
Firearms - General	305M	
Process and Material Research	500M	
Total Technical Activities		$ 2950M
Other Work		$ 835M
Total Firearms Research Division Budget		$ 3785M

12-10-81
RLS:T

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BARBER - 1.30.130000937

1982 Research Budget
Firearms Design Programs

	1982 Budget
New Concept Design Studies	$ 90M

This program provides for investigations of new technologies which are not yet state of the art. The program attempts to push back the frontiers of technology. Areas of investigation will include laser research, unmanned machining, new techniques for testing and inspection, and the possible use of machine control techniques in firearms design.

Cut Checkering Process Development	$ 75M

A program to develop a lower cost alternative to N/C checkering machines and thus allow Remington to cut checker a broader range of firearms.

Value Analysis Investigation	$ 65M

Research program to assure the cost competitiveness of Remington products. Process Research personnel will initiate the program and coordinate the various process improvement groups in carrying out specific assignments.

Total Firearms - Process and Material Research	$ 500M

OTHER WORK

Projects under this category cover work performed by Research personnel which is not chargeable to Research "Technical Activities" projects but rather charged to Production, Marketing and Other Department Accounts.	$ 835M
Total Other Work	$ 835M

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	1982 Budget
Technical Computer Software Development Continued	
investigation and expansion of our Computer Aided Design and test facilities. A new system together with software and software development has been proposed which will improve effectiveness of the Research computer facilities and reduce design and test costs.	
Computer Techniques/Instrumentation for Test Lab	$ 85M
A program to develop new analytical techniques for determining firearms and ammunition performance parameters; i.e. bolt velocity, chamber pressure, recoil force, etc.. The project also provides for continuing development of the high and low speed ranges, software development to monitor dry cycle testing, and the update of instrumentation equipment.	
Total Arms Design - General	$ 305M

FIREARMS PROCESS AND MATERIAL RESEARCH

State of the Art Process Investigation	$ 150M
A Research program to identify state of the art processes that can be used to reduce part cost, improve gun reliability and/or appearance. Component redesign may be required. Areas of investigation will include form rolling, substitute materials, fiber reinforced materials and improved metal and wood finishes.	
Numerical Control New Techniques Development	$ 90M
A program to provide improved techniques for N/C computer program preparation and to investigate new N/C processes to reduce model making costs and improve capability.	
Four Slide Application Program	$ 30M
Continued program to develop expertise in formed stamping manufacture. A four slide stamping and forming machine has been purchased. Funds are provided to complete machine installation and develop an in-house process for producing formed stamped components.	

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	1982 Budget
Centerfire Rifle System Research	$ 125M

A Research program for investigation of a new concept of centerfire rifles, such as a family line of bolt action, auto and pump rifles. The proposed new firearms will be designed to feature one basic frame and will provide commonality throughout the system. The program also includes investigation for new concepts in caliber semi-automatics and a new magazine box design with increased capacity.

Total Arms Design - Centerfire	$ 1,250M

RIMFIRE RIFLES

Product Improvement - Rimfire Rifles	$ 25M

A continuing program to design model improvements for appearance, function and performance.

Cost Reduction Program - Rimfire Rifle	$ 10M

A continuing program for incorporating improvements to reduce model cost.

Total Rimfire Rifle Program	$ 35M

ARMS DESIGN - GENERAL

Miscellaneous Design Jobs	$ 40M

The project provides for preliminary investigation of design activities which have potential for major development programs. Included under this project are such programs as Iron Shot Investigation, Investigation and Development of Scope Mount for the Model 700, and Investigation of 10 Ga. Shotgun.

Technical Computer Software Development	$ 180M

This program provides for development of technical software not chargeable to a specific project but covers overall arms design and process research. The project also provides funds to continue

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1982 Research Budget
Firearms Design Programs

CENTERFIRE RIFLES	1982 Budget
Model 7400-7600 Development Program - Carbine and New Calibers	$ 405M

The program has been expanded to design and develop the M/7400-7600 Carbine models. In addition three new calibers (25-06, 7mm-08, and the .223) will be developed for the standard models. Prototype models will be fabricated and design tested. Also, the program provides for engineering support to resolve production problems.

Product Improvement Program - Bolt Action Rifles $ 65M

A continuing program to design and incorporate minor model improvements for improved performance, function and appearance.

Bolt Action Carbine Styling Program $ 80M

This program is continuing to finalize design of the new Carbine scheduled for introduction in 1983. The new model is lighter and is styled to fit within our current centerfire rifle line.

Cost Reduction Program - Centerfire Rifles $ 75M

This is a continuing program to investigate and evaluate designs to reduce factory cost.

Bolt Action Rifle Development Program $ 430M

A Research program to develop and design a better line of bolt action rifles. Design objectives include functional improvements, smoothness of action, a new bolt lock system and fire control. Also, cosmetic changes such as new checkering patterns, receiver shapes and stock configurations are to be investigated.

Special Edition Development - Centerfire Rifles $ 70M

The program provides for design of special models of current rifle line on a limited production basis. Prototype models are to be fabricated and tested.

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R E S E A R C H B U D G E T

FIREARMS DESIGN PROGRAMS

		1982 Budget
SHOTGUNS		
Models XSG and XPG Development Program		$ 250M
To continue to develop and design the new auto-loading and pump shotguns. The project objective is to design model replacement for the Models 1100 and 870 that are lighter in weight, less expensive to produce and are competitively priced.		
Product Improvements	Model 1100	$ 165M
	Model 870	$ 60M
A continuing Research program to improve design, function, endurance and appearance of current product line. Investigation of design improvements and revisions requested by Marketing and Production are made. Also, customer complaints are reviewed and corrective action implemented.		
Cost Reduction Program		$ 85M
A continuing program to investigate and evaluate designs and materials to reduce the factory cost on current line shotguns.		
Special Edition Model Development Program		$ 90M
This Research project provides for design of special version models of the current shotgun line for limited production. Examples of special models previously designed are Ducks Unlimited, Ohio State Highway Patrol, and Limited Edition Commemorative.		
New Shotgun Concept/Design Investigation		$ 210M
The program provides for development and follow-up work on a new shotgun concept to assure our position of leadership and customer acceptance. Investigation of new designs using parts and system from the XSG/Model 1100 designs will be undertaken. Also the project provides for development of a new gas system that will handle all types of ammunition.		
Total Arms Design - Shotguns		$ 860M

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FIREARMS RESEARCH DIVISION

FIREARMS DESIGN PROGRAMS

Remington Arms Company, Inc.

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To SEE BELOW Location

From R.E. FEEITZ Location Phone No.

Subject NEW FIREARMS IDEAS FOR AD HOC COMMITTEE Date 9-30-82

Attached is a list of the ideas received to date.

Shotguns	Center Fire	Rim Fire	Others
1100 - 22	700 - 18	27	14
870 - 13	7400 - 9		
3200 - 4	XP-100 - 5		
Misc.- 13	Misc. - 13		
52	45		

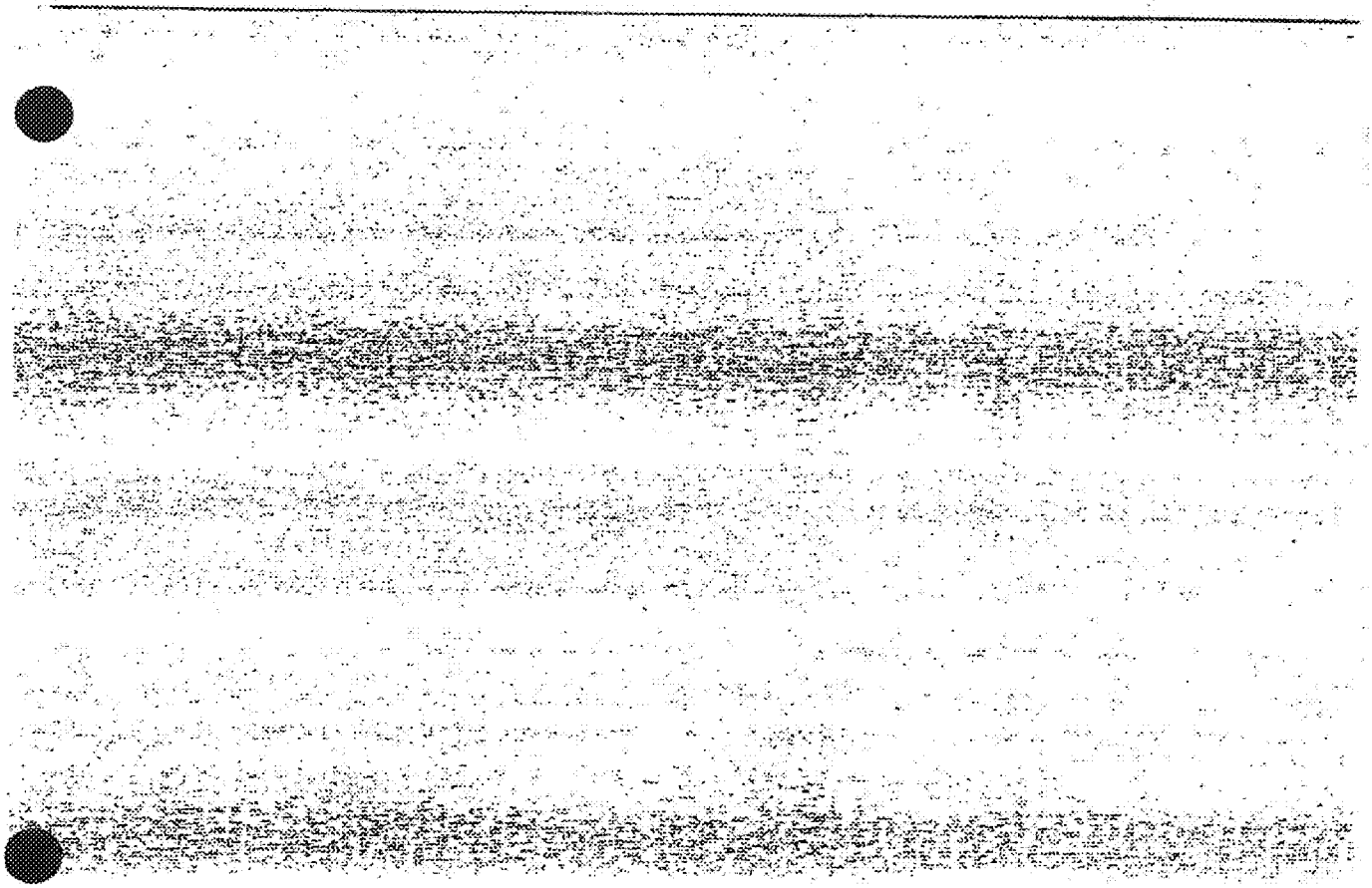
Shotgun	52
C.F.	45
R.F.	27
Others	14
	138

Committee Members

J.H. Chambers
W.H. Forson, Jr.
J.P. Linde
J.S. Martin
T.W. Rawson

jl

STOP, LOOK, AND LIVE



RESEARCH AND DEVELOPMENT PROJECT - FINANCIAL CLOSING NOTICE

PLANT - Bridgeport, Ilion & Lonoke

DIVISIONS - Firearms and Ammunition Research, Engineering R&D, Abrasive Products Research and Powder Metal Research

PROJECT NO. - 81-00000

PLANT ORDER - 81-00000

CLOSING NOTICE - 3-8-82

TITLE - Firearms and Ammunition Research Divisions, Engineering Research and Development, Abrasive Products Research and Powder Metal Research for 1981.

ACCOUNTING DEPARTMENT:

With the completion of the program for the year 1981, cost of the work budgeted under the above project should be closed as follows:

	Authorized Amount	Expended 12-31-81	Percent Difference
Improvement of Established Business	$6,400,000	$5,836,563	(8.8)
Exploratory Research	-	-	-
Total Technical Activities	$6,400,000	$5,836,563	(8.8)
Other Work	$1,395,000	$2,123,379	52.2
Total	$7,795,000	$7,959,942	2.1

APPROVALS: D E McWhirt 3/19/82
Treasurer's Department Date

for J Phil Anderson 3/22/82
Research Department Date

c: J.P. McAndrews
E.F. Barrett
J.P. Glas
W.J. Thresher, Sr.
C.E. Erickson
D.E. McWhirt

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FIREARMS RESEARCH DIVISION

Project No.	Description	1981 Budget	Amount Expended 12-31-81
Improvement of Established Business			
	Arms Design - Shotgun		
B-1800	XSG & XPG Development Program	$ 675,000	$ 818,28
1900	M/870 Competition Trap	60,000	100,85
2000	Product Improvement	200,000	146,48
3050	Cost Reduction Programs	100,000	47,71
4050	21MM Seismic Exploration	60,000	55,63
5000	M/700-870 Spl. Slug		8,64
	Total Arms Design - Shotgun	$1,095,000	$1,177,61
	Arms Design - Center Fire		
C-0250	Preliminary Accuracy Study	$ -	$ 5,61
0300	New Calibers for C.F. Rifles	-	4,70
1700	M/7400 & M/7600 Development Program	150,000	381,66
1800	Product Improvement Program	135,000	184,56
1850	Bolt Action Carbine Styling Program	85,000	121,34
2000	Cost Reduction Program	90,000	4,46
2050	C.F. Fire Control Improvement Program	200,000	51,10
3000	C.F. Bolt Lock Improvment Program	75,000	16,76
3050	Model 788 Safety/Improvement Program	60,000	-
4000	Model 7 New Bolt Action Rifle	-	12,767
	Total Arms Design - Center Fire	$ 795,000	$ 782,99
	Arms Design - Rim Fire		
D-1100	Product Improvement Program	$ 40,000	$ 32,95
1250	Cost Reduction Program	20,000	7,239
1200	Model 6600 Development Program	-	542
	Total Arms Design - Rim Fire	$ 60,000	$ 40,739

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FIREARMS RESEARCH DIVISION

Project No.	Description	1981 Budget	Amount Expended 12-31-81
	Arms Design - General		
E-0200	Misc. Exploratory Design Jobs	$ 40,000	$ 64,30
0300	Development of Fundamental Firearms Concepts	65,000	57,59
0750	Technical Computer Software Program Development	145,000	63,97
1000	Computer Techniques & Intrumentation for Measurement & Test Lab	75,000	34,92
1050	Consultant Investigation & Exploratory Studies	25,000	
	Total Arms Design - General	$ 350,000	$ 220,79
Total Arms Design		$2,300,000	$2,222,15
	Process & Material Research		
F-0300	Investigation of New Process for Gun Parts	$ 40,000	$ 57,46
0500	Numerical Control New Technique Dev.	75,000	67,25
0650	Manipulator Application Program	90,000	25,60
0750	Four Slide Application Program	75,000	(7,92
0800	High Energy Beam Application Investigation	80,000	17,03
0850	Deformation Process Investigation	45,000	59,47
0900	General Material Investigation	20,000	37,83
0950	XSG Process/Transfer Machine Investigation Program	50,000	145,72
RXI-63	Receiver Polishing	25,000	40,11
F-1100	Injection Molded Powder Metal	-	54,94
	Total Process & Material Research	$ 500,000	$ 497,53

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

FIREARMS RESEARCH DIVISION

Project No.	Description	1981 Budget	Amount Expended 12-31-81
Trap			
L-0400	Traps	$ -	$ 235
Total Traps			
Total Improvement of Established Business			$2,719,920
Other Work			
G-0150	Special Testing	$ 10,000	$ 29,895
0200	Technical Information & Service	35,000	70,249
0250	Misc. Work for Plant & Others	250,000	252,638
0300	Misc. Competitive Arms Evaluation & Work for Sales	75,000	72,171
0400	Research Service - Sales Promotion	35,000	33,882
0450	Plant Assistance on Current Remington Guns	175,000	127,304
1250	Gun Owner Guide Graphic & Layout	50,000	-
1450	Service to SAAMI	10,000	16,046
1500	Model Drawings & Parts List Maintenance	20,000	8,042
1550	Testing Assistance to Bridgeport Research	10,000	1,593
1660	Investigate Material & Packaging of Product	15,000	-
Total Other Work		$ 685,000	$ 611,822
TOTAL FIREARMS RESEARCH DIVISION		$3,485,000	$3,331,742

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AMMUNITION RESEARCH DIVISION

Project No.	Description	1981 Budget	Amount Expended 12-31-81
Improvement of Established Business			
	Ammunition-New Products & Processes		
81-12233	New Unibody Shotshell Process	$ 660,000	$ 778,839
12249	7mm-08 140 Gr. & 160 Gr. PSP	10,000	12,774
12252	Integral Anvil Battery Cup	145,000	137,437
12258	High Performance C.F. Ammo/Gun	5,000	1,339
12260	21MM Seismic Cartridge	100,000	130,285
12266	Degradable Wad	-	-
12268	New Component Wad	75,000	23,104
12269	20 ga. Steel Shot	5,000	2,678
12272	Remington Target Load	65,000	92,875
12273	357 Super Magnum	30,000	45,387
12274	7mm Bench Rest	25,000	50,205
12275	7mm Mauser 140 Gr. PSP	15,000	10,893
12276	Extended Range Shotshell	100,000	36,808
12277	Extended Range Center Fire	45,000	51,590
12278	22 Cal. Std. Vel. W/Match Bullet	-	-
12279	3" Rifled Slug - 1-1/8 Oz.	30,000	46,906
12280	Spatterless Bullet - R.F.	5,000	2,265
12281	Center Fire Modernization	50,000	31,601
12282	Material Cost Reduction	-	-
12283	Electric Primer	-	-
12284	Scorpion	15,000	23,264
12285	22 Win. Mag.	30,000	3,782
12286	38/357 - 125 Gr.	15,000	3,412
12287	257 Roberts	20,000	2,183
	Total Ammo - New Products & Processes	$1,445,000	$1,487,630

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AMMUNITION RESEARCH DIVISION

Project No.	Description	1981 Budget	Amount Expended 12-31-81
Improvement of Established Business - Cont'd			
	Improvement to Products & Processes		
81-11059	Ballistics Research	$ 85,000	$ 26,148
11062	Improved Ballistic Test Facilities	70,000	86,923
11092	Process Safety - Primers	125,000	100,033
11093	Asbestos Elimination	50,000	82,538
11094	Polymer Improvement Program	125,000	109,957
11095	1024 Primer Mix - R.F.	-	-
11096	Wax Application - R.F.	5,000	95
11097	C.F. Muzzle Flash	-	-
11098	C.F. Primer Improvement	15,000	3,728
11103	Long Range S.S. Improvement	80,000	23,558
11104	Current S.S. Product Improvement	65,000	107,057
11105	117X A Primer	20,000	126,636
11106	Target Load Recoil	15,000	13,799
11107	Primer Manufacture Automation	45,000	-
11108	Primer Basics	70,000	118,275
11109	RTL Wad Cost Reduction	55,000	170
11110	Primer Assembly	40,000	727
11111	21MM Cost Reduction	30,000	-
	Total Impr. to Products & Processes	$ 895,000	$ 799,644
Total Improvement of Established Business		$2,340,000	$2,287,274
Other Work			
81-14009	Assistance to SAAMI	$ 10,000	$ 3,102
14016	Assistance to Legal	1,000	-
14017	Assistance to Public Relations	1,000	166
14018	Assistance to Customer Service	4,000	375
14019	Assistance to Marketing	25,000	26,442
14020	Assistance to Plant	74,000	65,935
	Misc. Plant Work - PSH	5,000	120,859
Total Other Work		$ 120,000	$ 216,879
TOTAL AMMUNITION RESEARCH DIVISION		$2,460,000	$2,504,153

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ENGINEERING RESEARCH & DEVELOPMENT

Project No.	Description	1981 Budget	Amount Expende 12-31-8
Improvement of Established Business			
71-03979	Auto Primer Assembly	$ 100,000	$ 16,0
03982	Component Handling Systems	10,000	24,1
03992	Shotshell Mechanization Study	40,000	18,5
03994	Shotshell Assembly Study	115,000	(10,5
03999	Equipment Analysis - New Ammo Products	10,000	2,5
04003	One-Piece Shotshell Body Mfg. Equip.	200,000	363,1
04004	Machine Signature Analysis	40,000	14,1
04006	Paper Covered Flash Hole S.S. Primer	-	(190,4
04007	R.F. Autoloader Defect Detection System	34,000	56,6
04008	One-Piece S.S. Body - Semi-works Equip.	50,000	61,5
04009	21MM Seismic Round - Electric Primer	30,000	24,3
04010	Shotshell Cut Down Inspector	-	17,9
04011	Shotshell Assembly	-	85,62
71001	General Surveys	30,000	29,9
72-05003	C.F. Equipment Improvement Plan	-	11,0
05004	Duplex C.F. Bullet Assembly	-	1,52
05005	Progressive Shell Draw (C.F.)	100,000	29,3
71-3990	New "RXP" Process	-	(3,32
	Provision for Probable Projects	151,000	
Total Improvement of Established Business		$ 910,000	$ 552,30
Other Work			
5200-9312	Cope/Machamer & Staat	$ -	$ 137,79
51-30350)	Assist to Bridgeport	20,000	3,39
51-30837)			
52-11121	Assist to Lonoke	20,000	5,46
51-30475	Shellmaker Modification	-	43,76
61-04931	Shotshell Load & Pack Optimization	50,000	166,08
62-00024	S.S. HiSpeed Load & Pack-Mfg. Equip.	-	14,92
62-00048	S.S. Feeder Printer	-	36,21
61-04945	21mm Seismic	-	24,81
62-00051	Center Fire Modernization	-	213,64
61-04940	Paper Covered Primer Flash Hole	-	274,14
62-04940	Paper Covered Primer Flash Hole	-	52,53
	Provision for Probable Projects	500,000	322,00
Total Other Work		$ 590,000	$1,294,67
TOTAL ENGINEERING RESEARCH & DEVELOPMENT		$1,500,000	$1,846,97

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ABRASIVE PRODUCTS RESEARCH

Project No.	Description	1981 Budget	Amount Expended 12-31-81
Improvement of Established Business			
81-52101	Diamond Impregnated TC Coating	$ 35,000	$ 5,374
Total Improvement of Established Business		$ 35,000	$ 5,374
TOTAL ABRASIVE PRODUCTS RESEARCH		$ 35,000	$ 5,374

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POWDER METAL RESEARCH

Project No.	Description	1981 Budget	Amount Expended 12-31-81
Improvement of Established Business			
F-0200	Alloy Development	$ 110,000	$ 96,692
0450	P/M Basic Research	164,000	138,170
0500	New Alloy	41,000	36,833
Total Improvement of Established Business		$ 315,000	$ 271,695
TOTAL POWDER METAL RESEARCH		$ 315,000	$ 271,695

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KINZER V. REMINGTON

SUMMARY
1981 EXPENDITURES BUDGET

	Firearms Research	Ammunition Research	Engineering R&D Bridgeport	Abrasive Products Research	Powder Metal Research	Total Expended	Total Authorized
Improvement of Established Business	$2,719,926	$2,287,274	$ 552,300	$ 5,374	$ 271,695	$5,836,569	$6,400,000
Exploratory Research	-	-	-	-	-	-	-
Total Technical Activities	$2,719,926	$2,287,274	$ 552,300	$ 5,374	$ 271,695	$5,836,569	$6,400,000
Other Work	613,822	216,879	1,294,678	$ -	$ -	$2,123,379	$1,395,000
Totals	$3,331,742	$2,504,153	$1,846,978	$ 5,374	$ 271,695	$7,959,942	$7,795,000

Jo LaScala

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FIREARMS RESEARCH DIVISION

FIREARMS PROGRAMS

1989 - 1991

NECESSITY	Configurable Non Years	1989 Estimated Expenditures	Configurable Non Years	1991 Estimated Expenditures Cash Items	Incentive	Estimated Completion
CP BOLT ACTION IMPROVEMENT	.3	$ 115M	.5	$ 75M	Necessary to reduce product liability.	Prototype August 1990 Dev. 1990 Roll through to 1991.
CP FIRE CONTROL IMPROVEMENT	1.2	$200M	1.5	1.0 200M	Necessary to reduce product liability.	Three prototypes June 1990 Dec. 1991
MODEL 700 SAFETY	.3	20M	.5	.5 60M	Necessary to reduce product liability.	Six prototypes June 1990 Dec. 1990 Design freeze - 1991
SUB TOTAL	2.2	$275M	2.5	$ 335M		
CURRENT PROGRAMS						
MODEL 7600 IMPROVEMENTS	2.0	20M + 630M	1.5	.3 $ 150M	21.7MM increased 5 year earnings 24% R.O.I.	Dec. 1990, design freeze on spool addition of new cartridges Dec. 1991
MODEL 700 IMPROVEMENT	5.0	30MM	3.0	5.5 $ 700M	Sales earnings 30%	Four prototypes Sept. 1989 Design verification testing complete Nov. 1990 Product Dec. 1991
3-GUN CMR DEVELOPMENT SECURITY PROJECT	2.2	23MM	.5	.5 $ 80M	Required to support sales of M groups association	August 1989 design freeze up program. December 1990 - 1991
PERSONAL GUN CHARACTERISTIC TRACK CMR	3.2	20MM + 62M	.5	1 $ 60M	Increase Earnings 66.25M Earnings for 5 years	December 1989 1991 for design freeze program
BOLT ACTION FIREARMS STYLING	1.9	33MM	1.0	0 2.5M	Increased sales earnings	December 1991

Continuing Investment	Annualized Man Years	1981 Estimated Expenditures	Annualized Man Years	1982 Estimated Expenditures	Incentives	Estimated Completion
PRODUCT IMPROVEMENT COST REDUCTION - SS	1.5	$ 2000	1.0	$ 1150	$300K savings have been defined, additional savings TBD	Internal Ejector - Dec. 1983
PRODUCT IMPROVEMENT COST REDUCTION - CF	1.3	1250	1.5	2250	$450K savings have been defined, additional savings TBD	Blowback Extractor - Dec. 1984
PRODUCT IMPROVEMENT COST REDUCTION - MF	.3	500	.3	600	Savings not defined. TBD	
MISC. DESIGN ENGINEERING CHANGE ORDER - SS PARTS ONLINTED	.6	650	.5	500	Increased earnings $283K, 30% R.O.I. on defined cost savings TBD	August 1982 April 1983
MODEL 700 BOLT & TRIGGER DEVELOPMENT		500			Program curtailed, expenditures cover tooling, etc.	
PROCESS DEVELOPMENT						
(A) MISCELLANEOUS, SMALL (B) PROCESS SUPPORT	2.0	1350	3.0	200M 1550 1000	Potential savings in labor of $350K per year can be realized. Also design lead time would be reduced.	Submit project for new S/C machine Aug. 1982 Recommendation - Interactive Graphic System Sept. 1981, Prototype Dec. 1982
FROM SLIDE MACHINE DEVELOPMENT	.4	550 $ 2700	.5	750	Potential saving of at least $400K may be realized after expiration of IBM contract in 1985.	Dec. 1981

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	1980 Available Man Years	1980 Estimated Expenditures	1981 Available Man Years	1981 Estimated Expenditures	Incentive	Estimated Completion
PROCESS DEVELOPMENT Continued						
(C) AUTOMATIC RECEIVER POLISHING MACHINE	.5	$ 60M (C) 130M	1.0	$ 115M (B) 180M	Labor savings of $70M per year with 27% R.O.I. has been estimated. Additional savings of $10M per year is estimated for polishing 81BD and 870 receivers.	BSBA Dec. 1980 81BDM & 870 Dec. 1981
(D) PROGRAMMABLE MANIPULATOR						
Sub Total	20.5	$19900M	21.2	$20995M		
NEW INITIATIVE						
NEW PROCESSES FOR NEW PARTS	.8	$ 20M	.5	$0M	Program provides for investigation only. Major development will be covered under separate programs.	
NEW PROCESS/TRANSFER MACHINE			.5	50M		
(E) LASER CUTTING - METHOD & WORD DECORATING	.8	40M	.5	0M (E) 100M	Potential labor saving of $30M per year may be realized. Increased sales for word decorating TBD.	Dec. 1981
INFORMATION PROCESS INVESTIGATION	.2	10M	.5	65M	Potential labor and material savings estimated to be 1,000/year.	TBD
(G) COMPUTER AND INSTRUMENT APPLICATION	.3	30M	1.5	100M (G) 30M	Potential yearly labor savings of $29M. Design testing lead will also be reduced.	Dec. 1982
PRODUCT DEVELOPMENT - FUNDAMENTAL FIREARMS CONCEPTS	.4	25M	.7	75M	Support Program for Providing Design with data for new concepts.	
Sub Total	3.7	$ 335M	4.2	$ 420M		

A,B,C,D,E,F,G Capital Expense $1,185M
*Plant Capital Expense 4,822M

R2511456

BARBER - 1.30.13000957

BARBER - 1.30.13000957

	1 9 8 8		1 9 8 1			
	Assignable Man Years	Estimated Expenditures	Assignable Man Years	Estimated Expenditures	Increases	Net Increase or Decrease
OTHER ACTIVITIES						
Basic Work for Plant & Office	1.3	$ 220M	1.4	$ 250M		
PLANT MAINTENANCE AND CONVERT REMINGTON FARMS	2.6	$ 125M	2.5	175M		
PROPERTY PROTECTION	.6	$ 65M	.6	110M		
a) Protective Ring Maintenance & Work for Sales						
b) Watchman Service - Sales Promotion						
TECHNICAL INFORMATION	.9	$ 75M	1.5	125M		
a) Technical Information & Research						
b) Time Studies Graphics & Layout						
c) Forms, Drawings & Parts List Maintenance						
d) Packaging						
SERVICE TO SALES	.2	$ 15M	.2	10M		

	Man Years	Estimated Expenditures	Man Years	Estimated Expenditures
	1980		1981	
OTHER ACTIVITIES (continued)				
ADVERTG. TESTING				
a) TESTING ASSISTANCE -	.2	$ 15M	.2	$ 20M
b) ENVIRONMENT RESEARCH				
c) SPECIAL TESTING - LEGAL				
d) OTHER				
Sub Total	7.5	$ 570M	8.1	$ 685M
TOTAL	31.9	$2890M	36.9	$3.525B

* 30.9 Eng./Developers
1.0 ESD on loan
31.9 Man Years

* Includes 3.5 new eng. 2nd 1/2 of year.

Incentive

Not Included in Completion

FROM: ROBERT A. BARBY
Rifles and Pistols Product Dept.
Research and Development Division
Ilion, New York

Dec December 30, 1982

TO: 1) [redacted]
2) J. E. Prather

In reviewing the attached strategic summary on firearms, one product feature which we stress internally, but to my knowledge we do not stress very extensively in the marketplace, is safety. (For example, our barrels will "bird-cage" rather than shatter like some competitive offerings.) The world is surely increasingly safety-conscious - I don't know whether macho hunters are concerned, but they should be. R & D is working on improved safety and security features which should have marketable value. (If they don't, we ought to stop the work.)

I'd be glad to discuss further with you and share views.

Thanks.

R.A. Barby

Date 5/10/84

To: SPORTING GOODS BUSINESS TEAM (SEE BELOW)

From: [redacted]

M. S. COLEMAN
S. M. COMER
I. O. FINI
L. E. ZEILMANN
A. F. ULAZ

Bob Darby in the attached note is questioning the marketable value of the safety features of our firearms. I would appreciate any thoughts you might have from a product liability standpoint on this subject. Also, helpful, would be any principles you would recommend that we follow in our marketing communications activity around product safety features.

JEF:dyg
Attachment

Date 1/10/86

TO: SPORTING GOODS BUSINESS TEAM (SEE BELOW)

FROM: JOHN E. PREISER
Finishes & Fabricated Products Department
Sporting Goods -- B-6232
Ext. 38326

W. H. COLEMAN
D. M. CONDON
E. O. FINI
L. E. ZEILLMANN
R. F. ULAK

Bob Darby in the attached note is questioning the marketable value of the safety features of our firearms. I would appreciate any thoughts you might have from a product liability standpoint on this subject. Also, helpful, would be any principles you would recommend that we follow in our marketing communications activity around product safety features.

JEP:dyg
Attachment

FROM:
Ext. 49348

ROBERT A. DARBY
Finishes and Fabricated Products Dept.
Research and Development Division
B-3324-5
Wilmington, Delaware

Date: December 30, 1985

TO: 1) ~~E. E. Woodacre~~
2) J. E. Preiser

In reviewing the attached strategic summary on Firearms, one product feature which we stress internally, but to my knowledge we do not stress very extensively in the marketplace, is safety. (For example, our barrels will "bird-cage" rather than shatter like some competitive offerings.) The world is surely increasingly safety-conscious - I don't know whether macho hunters are concerned, but they should be. R & D is working on improved safety and security features which should have marketable value. (If they don't, we ought to stop the work.)

I'd be glad to discuss further with you and share views.

Thanks.

R.A. Darby

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KINZER V. REMINGTON

February 14, 1986

TO: J. E. PREISER

FROM: E. O. FINL

SUBJECT: DARBY I.E. (PRODUCT SAFETY FEATURES)

I personally think that integral safety of firearms is something for the most part taken for granted by Hunter's.

However, I think the issue can be raised and they, the shooters, will pay attention. It is not a dominant part of the purchase thought process. I say this with some confidence as a result of our focus group sessions.

I agree we don't do as good a job as possible in our advertising and will work with MCD to better capitalise on our strengths.

In any event we should never stop our efforts towards increased safety and security in our firearms - as long as they do not hinder or impair the products ability to perform in its environment.

EOF/tvm

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KINZER V. REMINGTON

File - SAAMI

STURM, RUGER & Company, Inc.
Southport, Connecticut 06490 U.S.A.
ALL RUGER FIREARMS ARE DESIGNED AND MANUFACTURED IN OUR OWN FACTORIES IN THE UNITED STATES OF AMERICA

RECEIVED
[illegible]
[illegible] PATENTS

cc: R B SPERLING, LEGL
K D GREEN, ILION
J E PREISER, FPL
D M CONDON, FPL
W H COLEMAN, ILIC

MEMO TO: All Members of SAAMI Legislative & Legal Affairs Committee

FROM: Stephen L. Sanetti, General Counsel

DATE: August 10, 1987

RE: Final Revision -- SAAMI Firearms Safety Rules

Ladies & Gentlemen:

Enclosed please find what is hopefully the final version of the above. I specifically considered comments from member companies submitted to me since our last meeting.

As we discussed at the last meeting, this will be the version submitted to the Executive Committee for approval. If you have any dire objections to any of the language contained herein, please submit these immediately to Dick Bachmann. Hopefully, these rules will be approved at the next Executive Committee meeting and will be ready for printing by NSSF/SAAMI after that time.

I would like to personally thank all of you for your suggestions and assistance with this project. Combined with the individual instruction manuals that the member companies each put out, these generalized rules of firearms safety should greatly assist in our goal of encouraging the safe, responsible use of firearms.

Thank you.

Stephen L. Sanetti
General Counsel

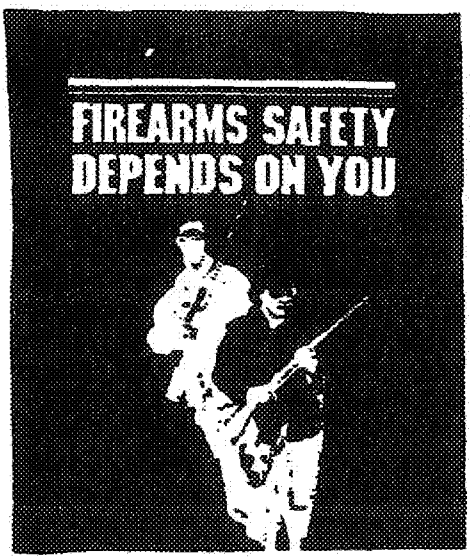
SLS:sab

Enclosure

cc: Doug Painter, NSSF
Bob Delfay, NSSF

P.S. The art work, etc. will be strictly up to you fellows. SLS

[illegible]TNGTON ARMS CO.
RECEIVED
AUG 28 1987
FIREARMS RESEARCH DIVISION



INTRODUCTION

From the time he picks up a firearm, the shooter becomes a part of a system over which he has complete control. He is the only part of the system that can make a gun safe - or unsafe.

Hunting and target shooting are among the safest of all sports. This booklet is intended to make them even safer - by re-emphasizing and reaffirming the basics of safe gun handling and storage and by reminding each individual shooter that he or she is the key to firearms safety.

You can help meet this responsibility by enrolling in hunter safety or shooting safety courses. You must constantly stress safety when handling firearms, especially to children and non-shooters. Newcomers in particular must be closely supervised when handling firearms with which they may not be acquainted. Don't be timid when it comes to gun safety. If you observe anyone violating any safety precautions, you have an obligation to suggest safer handling practices, such as those in this booklet.

Please read this booklet carefully and follow the safety procedures outlined. Firearms safety is up to you. Make no mistake about it.

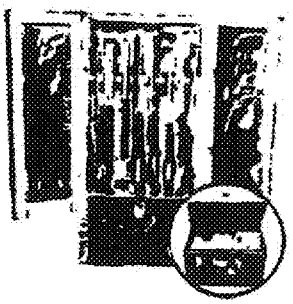
ALCOHOL, DRUGS AND GUNPOWDER DON'T MIX!

1. ALWAYS KEEP THE MUZZLE POINTED IN A SAFE DIRECTION. This is the most basic gun safety rule. If everyone handled his firearm so carefully that the muzzle never pointed at something he didn't intend to shoot, there would be virtually no firearms accidents. It's as simple as that, and it's up to you.

Never point your gun at anything you do not intend to shoot. This is particularly important when loading or unloading a firearm. In the event of an accidental discharge, no injury can occur as long as the muzzle is pointing in a safe direction.

A safe direction means a direction in which a bullet cannot possibly strike anyone, taking into account possible ricochets, and the fact that bullets can penetrate walls and ceilings. The safe direction may be "up" on some occasions or "down" on others, but never at anyone or anything not intended as a target. Even when "dry firing" with an unloaded gun, you should never point the gun at an unsafe target. Develop safe shooting habits.

Make it a habit to know exactly where the muzzle of your gun is pointing at all times, and be sure that you are in control of the direction in which the muzzle is pointing, even if you fall or stumble. This is your responsibility, and only you can control it.

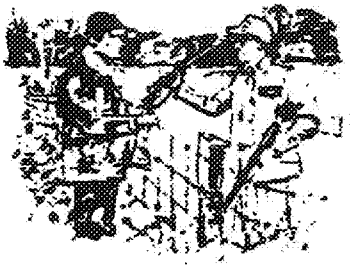


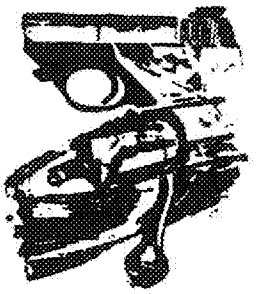
2. FIREARMS SHOULD BE UNLOADED WHEN NOT ACTUALLY IN USE. Firearms should be loaded only when you are in the field or on the target range or shooting area, ready to shoot. Firearms and ammunition should be securely locked in a safe place, separate from each other, when not in use. It is your responsibility to prevent children and careless adults from gaining access to firearms or ammunition. Unload your gun as soon as you are through. A loaded gun has no place in or near a car, truck, or building. Unload your gun immediately when you have finished shooting, well before you bring it into a car, camp, or home.

Whenever you handle a firearm, or hand it to someone, always open the action immediately, and visually check the chamber, receiver, and magazine to be certain they do not contain any ammunition. Never assume a gun is unloaded -- check for yourself! This is considered a mark of an experienced gun handler.

Never cross a fence, climb a tree, or perform any awkward actions with a loaded gun. There are other times during nearly all hunting trips when common sense and the basic rules of firearms safety will require you to unload your gun for maximum safety. Never pull or push a loaded firearm toward yourself or another person. There is never any excuse to carry a loaded gun in a scabbard, a holster not being worn, or a gun case. When in doubt, unload your gun!

Always Keep action open when not in use.



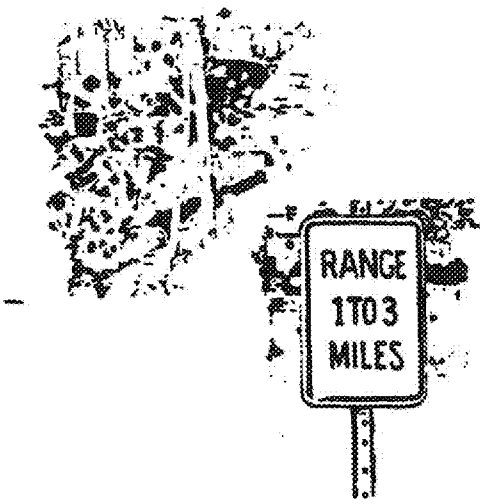


become inoperable

3. DON'T RELY ON YOUR GUN'S "SAFETY". Treat every gun as though it can fire at any time, regardless of pressure on the trigger. The "safety" on any gun is a mechanical device which, like any such device, can ~~fail~~ at the worst possible time. Besides, by mistake, the safety may be "off" when you think it is "on". The safety serves as a supplement to proper gun handling, but cannot possibly serve as a substitute for common sense. You should never handle a gun carelessly and assume that the gun won't fire just because the "safety is on".

Never touch the trigger on a firearm until you actually intend to shoot. Keep your fingers away from the trigger while loading or unloading. Never pull the trigger on any firearm with the safety on the "safe" position or anywhere in between "safe" and "fire". It is possible that the gun can fire at any time, or even later when you release the safety, without your ever touching the trigger again. Never place the safety in between positions, since half-safe is unsafe. Keep the safety "on" until you are absolutely ready to fire.

Regardless of the position of the safety, any blow or jar which is sufficient to actuate the firing mechanism of a gun can cause it to fire. This can happen even if the trigger is not touched, such as when a gun is dropped. Never rest a loaded gun against any object because there is always the possibility that it will be jarred or slide from its position and fall with sufficient force to discharge. The only safe gun is one in which the action is open and which is completely empty. You and the safe gun handling procedures you have learned are your gun's primary safeties.

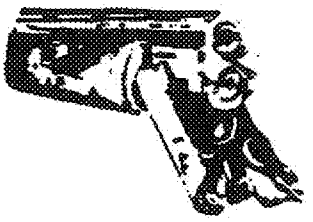


4. BE SURE OF YOUR TARGET AND WHAT'S BEYOND IT. No one can call a shot back. Once a gun fires, you have given up all control over where the shot will go or what it will strike. Don't shoot unless you know exactly where your shot is going to strike. Be sure that your bullet will not injure anyone or anything beyond your target. Firing at a movement or a noise without being absolutely certain of what you are shooting at constitutes a criminal disregard for the safety of others. No target or animal is so important that you do not have the time before you pull the trigger to be absolutely certain of your target and where your shot will stop.

Be aware that even a .22 short bullet can travel over 1½ miles, and a high velocity cartridge such as a .30-06 can send its bullet more than three miles. Shotgun pellets can travel 500 yards, and shotgun slugs have a range of half a mile.

Shooters should keep in mind how far a bullet will travel if it misses its intended target or ricochets in another direction.

Pointing up - Pointing Down
Neither Precludes injury IF
you dont control the instant, Time
or place, that a Remington Rifle
may spontaneously discharge...
This Admits this fact!



5. USE CORRECT AMMUNITION. You must assume the serious responsibility of using only the correct ammunition for your firearm. Read and heed all warnings including those that appear in the gun's instruction manual and on the ammunition boxes.

Improper or incorrect ammunition can destroy a gun and cause serious personal injury. It only takes one cartridge of improper caliber or gauge to wreck your gun, and only a second to check each one as you load it. Use only ammunition that exactly matches the caliber or gauge of your gun.

Firearms are designed, manufactured and proof tested to standards based upon factory loaded ammunition. Handloaded or reloaded ammunition deviating from pressures generated by factory loads or from component recommendations specified in reputable handloading manuals can be dangerous, and can cause severe damage to guns and serious injury to the shooter. Do not use improper reloads or ammunition made of unknown components.

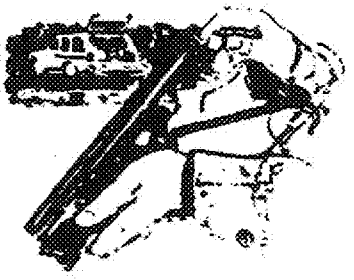
Form the habit of examining every cartridge you put into your gun. Never use damaged or substandard ammunition -- the money you save is not worth a ruined gun or very much worse.

6. IF YOUR GUN FAILS TO FIRE WHEN THE TRIGGER IS PULLED, HANDLE WITH CARE! Occasionally, a cartridge may not fire when the trigger is pulled. If this occurs, keep the muzzle pointed in a safe direction. Keep your face away from the breech. Then, carefully open the action, unload the firearm, and dispose of the cartridge in a safe way.

Any time there is a cartridge in the chamber, your gun is loaded and ready to fire -- even if you've tried to shoot and it did not go off. It could go off at any time, so you must always remember Rule #1 and watch that muzzle!

7. ALWAYS WEAR EYE AND EAR PROTECTION WHEN SHOOTING. All shooters should wear protective shooting glasses and some form of hearing protectors while shooting. Exposure to shooting noise can damage hearing, and adequate vision protection is essential. They guard against twigs, falling shot, clay target chips, and the rare ruptured case or firearm malfunction. There are wide variety of eye and ear protectors available. No target shooter, plinker, or hunter should ever be without them. Wearing eye protection when disassembling and cleaning any gun will also help prevent the possibility of springs, spring tension parts, solvents, or other agents from contacting your eyes.

Most rules of shooting safety are intended to protect you and others around you, but this rule is for your protection alone. Futhermore, having your hearing and eyes protected will make your shooting easier, and will help improve your enjoyment of the shooting sports.

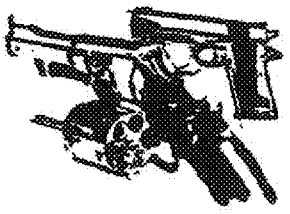


8. BE SURE THE BARREL IS CLEAR OF OBSTRUCTIONS BEFORE SHOOTING. Before you load your firearm, open the action and be certain that no ammunition is in the chamber or magazine. Then glance through the barrel to be sure it is clear of any obstruction. Even a small bit of mud, snow, excess lubricating oil, or grease in the bore can cause dangerously increased pressures, causing the barrel to bulge or even burst on firing, which can cause injury to the shooter and bystanders. Make it a habit to clean the bore with a cleaning rod and patch to wipe away anti-rust compounds in the gun each time immediately before you shoot it. If the noise or recoil on firing seems weak, or doesn't seem quite "right", cease firing immediately and be sure to check that no obstruction or projectile has become lodged in the barrel.

Placing a smaller gauge or caliber cartridge into a gun (such as a 20 gauge shell in a 12 gauge shotgun) can result in the smaller cartridge falling into the barrel and acting as a bore obstruction when a cartridge of proper size is fired. This can cause a burst barrel or worse. You can easily avoid this type of accident by paying close attention to each cartridge you insert into your firearm. This is really a case where "haste makes waste".

9. DON'T ALTER OR MODIFY YOUR GUN, AND HAVE GUNS SERVICED REGULARLY. Firearms are complicated mechanisms which are designed by experts to function properly in their original condition. Any alterations or changes made to firearms after manufacture can make the gun dangerous and usually void any factory warranties. Do not jeopardize your safety or the safety of others by altering the trigger, safety, or other mechanism of any firearm or allowing unqualified persons to repair or modify them. You'll usually ruin an expensive gun. Don't do it!

Your gun is a mechanical device which will not last forever and is subject to wear. As such, it requires periodic inspection, adjustment, and service. Check with the manufacturer of your firearm for recommended servicing.



10. LEARN THE MECHANICAL AND HANDLING CHARACTERISTICS OF THE FIREARM YOU ARE USING. Not all firearms are the same. The method of carrying and handling firearms varies in accordance with the mechanical characteristics of each gun. Since guns can be so different, no person should handle any firearm without first having thoroughly familiarized himself with a particular type of firearm he is using, and with safe gun handling rules for loading, unloading, carrying, handling that firearm, and with the rules of safe gun handling in general.

Just by way of one example, many handgun manufacturers recommend that their handguns always be carried with the hammer down on an empty chamber. This is particularly true for older single-action revolvers, but applies equally as well to some double-action revolvers or automatic pistols. You should always read and refer to the instruction manual you received with your gun, or if you have misplaced it, simply contact the manufacturer for a free copy.

The person with the gun in his possession has a full-time job. He cannot guess, he cannot forget. He must know how to use, handle, and store his firearm safely. Do not use any firearm without having a complete understanding of its particular characteristics and safe use. There is no such thing as a fool proof gun.

RD-63-8

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

Xc: C.B. Workman

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

MEMORANDUM OF MEETING

NEW BOLT ACTION RIFLE

November 15, 1979

PRESENT:

L. G. Wilke
L. B. Bosquet
D.D. Parker
K. F. Blumer
D. E. Bullis
J.W. Brooks
P.G. Johnson

This meeting was held so Process Engineering could look at the first proposed model and suggest problem areas of manufacture that should be reviewed before final prototype models are made.

1. The checkering pattern is large and close to top of stock and bottom of grip. It may go over radius of grip and fore end too far for custom checkering.

2. The top edge of stock along barrel and receiver should be approx. .050 min. width to meet present manufacturing processes.

3. Define tang area with more detail to establish safety button clearance with stock, safety arm clearance to prevent breakthru during sanding, and possible machining operation to help improve blend sanding of tang area.

4. It would be nice to have rear grip end radius as close as possible to radius on bottom of stock at rear of grip for machining purposes.

5. Can bolt handle cut be described so that it can be put on at inletter rather than with Z-arm router.

6. Inletting of floor plate should have as many common radii as possible and as large as possible.

7. Screw holes in butt end of stock should be same as in M600 to use same fixtures if possible.

8. Pitch should be same as M600 to use same fixtures if possible.

JWB:T
Ilion Research Division

Model Season Last 1980

DUPONT RECORDS CONTROL SCHEDULE

RECORDS CATEGORY OR TITLE:

Research Records

Research Files

COPY "O" (OFFICIAL) ☒ "X" (EXTRA) ☐

TOTAL RETENTION: Active Years + 5

Equip. & Process

GS-11890 Rev. 8/78

31 Aug 95

To: Bob Orf

From: Dick Jackson

RIFLE ENGINEERING UPDATE

PROCESS WORK

- Mori Seiki lathe is now ready to run M/522 barrels in dept. 8158. This will provide additional turning capacity which we will need to produce the number of rifles scheduled for 1996.
- New technical S.O.P. reviewed and issued for Mori Seiki.
- Nearing completion on a new machining group in dept. 8154 to off-load M/700 receiver work from the tri-ords and increase capacity.

PURCHASED PARTS

- 1st article inspection has been accepted from Parker & Harper on the M/700 bolt body.
- A new sign-off authorization form is now in place for 1st article acceptance.

GENERAL SUPPORT

- Submitted final M/700 trigger assembly project information to Accounting
- Built and began testing samples of new M/700 trigger assembly
- Screened Ilion and Syracuse for M/700 ADL (wood) for rifles with insufficient trigger-to-guard clearance
- Prepared (3) TWS DM .308 Win and (2)1/9" twist .223 Rem Police for shipment to the Law Enforcement Writer's Seminar.

IL5814

Confidential - Subject to Protective Order
Williams v. Remington

Remington Arms Co. Inc.
Ilion, NY

Date: 9/1/95

To: Sam Rensi **xc: Dennis Thompson**

From: R. J. Orf

Re: Weekly Technical report

- The following SKU's were released for invoiced shipment this past week:
  925859 M/700 30-06 DM Mountain rifle
  927510 M/700 7mmRemMag VLS Sendero (special for Sports South)

- Assembled the proto type M/700 fire controls for testing. The engineering estimate is complete and a verbal approval has been given to start purchasing the tooling needed to manufacture these fire controls in production.

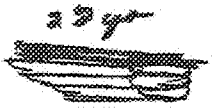
- First article inspection is complete and accepted on the M/700 bolt body from Parker & Harper.

- Testing is continuing on the cantilever. We believe we understand the harmonics of the barrels at this point and are now designing a test to see if we can over come the affect on accuracy.

- The first shipment of "Wildlife For Tomorrow" receivers will be sent to Barrons for artwork on 9/9/95.

IL5813

Confidential - Subject
to Protective Order
Williams v. Remington



New Bolt Action

Seer Spring - 6"-7"

.035 Diameter — Spring Coil ±10%

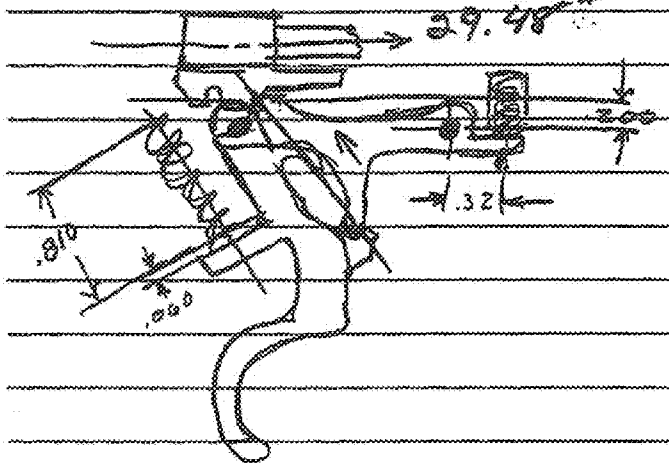
.220 Dia Knee

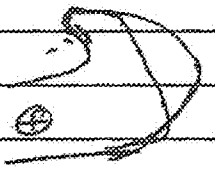
.325 Working Length

Max Load 26#

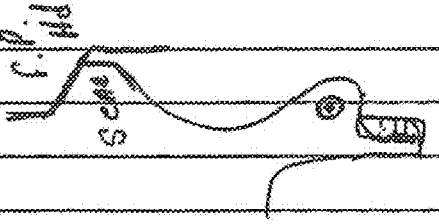
±10% 2.6#

29.4#





Design



3 .035 .810

$\frac{3}{.325}$ $\frac{.810}{.325}$

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KINZER V. REMINGTON

BARBER - 1.30.130000981

REMINGTON ARMS COMPANY, INC.

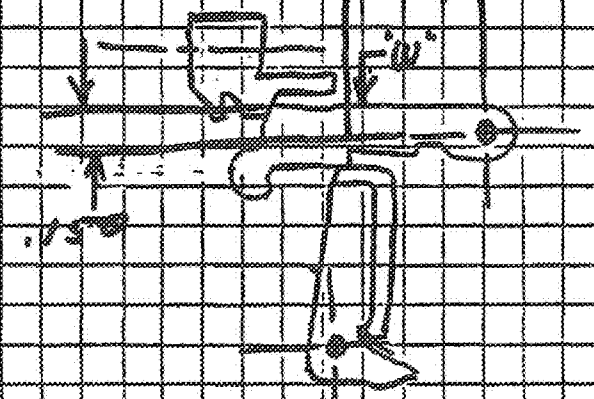
ENGINEERING DEPARTMENT COMPUTATION SHEET SHEET NO

TITLE OF PROJ M 700 Long Action Sear Lever PROJ NO

SUBJECT WORK#

COMPUTER Epsilon DATE 30 April 19 95

Spring Load Lbs/in 22.45



89.44 (.180) = 4.952 in lbs

.889 (3) = 4.452 in lbs

M = 5.14769 in lbs

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KINZER V. REMINGTON

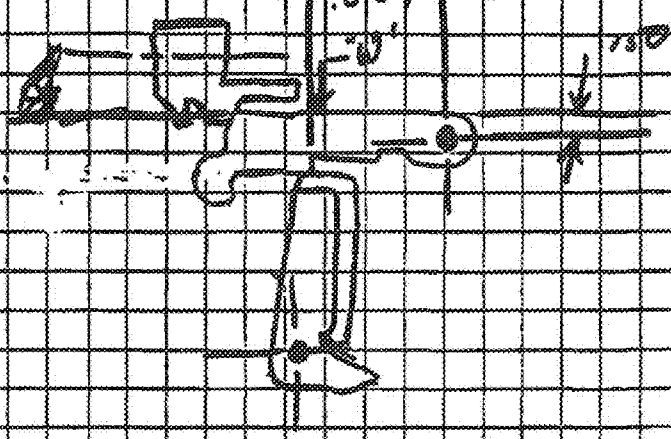
REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT COMPUTATION SHEET SHEET NO

TITLE OF PROJ M-700 Short Action Sear Temp PROJ NO

SUBJECT WORKS

COMPUTER Hatin DATE 30 April 19 75



Spring 2 Leg

25.50 Avg

25.50 (.157) = 3.9285 in lb

.259 (w) = 3.9285 in lb

w = 4.9545 lb Ans.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

March 17, 1993

TO: W. WOHL - 88202 Wilmington

FROM: R. POTTER RCP 8

RE: DEALER CALL RE/1/93 SHOOTING INDUSTRY ARTICLE

Mr. Walsh - Been in business 42 yrs.
Walsh's Gun Shop - NH
(603) 448-3644

His question stemming from Shooting Industry article of 1/93.

QUESTION:
How do I know which Model 700s will fire w/safety release as explained in that article?

MY ANSWER:
The article was written by a lawyer, Richard Miller, and the statements published are misleading and many not true. Expanded on that via the pertinent info. supplied to me by Jim Hutton prior to the call.

Mr. Walsh asked about the M/700 trigger assembly replacement program which he'd just learned about. I explained I headed that product call-back caused by a vender who supplied a number of improper connectors. Told him we updated guns to the high 90 percentile and that the recall was still proceeding. He has our 800 TARP number and I gave him mine.

He told me in all his 42 business years, he's had only one M/700 series rifle he sent back for alleged accidental firing and that we fixed gun. I told him that no bolt action rifle is immune to accidental discharge if improperly cared for, i.e. improper outside trigger adjustment, lack of proper cleaning and corrosion prevention, wrong lubrication and unsafe gun practices. He agreed.

I then reviewed with Mr. Walsh the TARP 800 number, location of date codes on barrel and the no charge trigger assembly replacement.

I also, again, gave him my direct line as a back-up to the Special Services number.

Mr. Walsh did not ask about the M/600 series recall as he was fully informed of those details back in the mid 1970s.

Mr. Walsh said he now felt much better especially since, like many non-direct independent dealers, he deals primarily in second-hand rifles and shotguns.

NOTE: This gun dealer's opening statement mentioned the Shooting Industry article and said, "How do I know which ones are bad"? I feel, therefore, that the article was about to turn him directly away from the Remington Model 700 rifle unless he got reassurance from Remington. No question about it.

We must ask ourselves how many dealers are going to shy away and not call.

R. H. Potter
Remington Product Service
Ilion, NY

xc: K.D. Green
bxc: D.J. Sanita
K.A. Cornell
J.C. Hudson

xc: C. B. Workman
J. P. Linde
F. E. Martin
S. A. Fanelli

RD-93-R

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
January 9, 1981

TO: T. L. Capeletti

FROM: J. S. Martin

SUBJECT: M/700 Bolt Lock - M/788 Safety

A meeting was held on January 8, 1981 with John Linde and Process Personnel to resolve the problems on the M/700 bolt lock and the M/788 safety designs.

The bolt lock design was covered first and a complete review of each component was discussed as to the design/cost, etc. The plunger will be looked at again (.0234) and the bolt handle. New quotes will be made. The rest of the parts were inspected for design/cost, etc. and found to be in line. Other designs were shown including the latest and the cost savings vs. the appearance and acceptability was not that much greater.

It was agreed upon that we will stay with the design we now have. Five models are complete and ready for test.

It is my opinion that we should finalize the bolt lock design as is, finish the testing and if proven satisfactory with the new fire control design, make a proposal to the committee that this be approved.

If there are objections, the other proposal would be to just remove the bolt lock completely and go with our present M/700 ~~design~~ fire control.

The M/788 Safety

The design was reviewed and explained to the Process Engineering Personnel.

It was suggested that a large sample of springs and plungers be purchased and our present safety lever be altered to the new angle 100° included and

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KINZER V. REMINGTON

try the design of the new safety force (on and off) to better prove the design. The only other thing left would then be to add the new head design the way we have it.

It is the opinion of the writer that this is a good way to go and we have full cooperation from Process Engineering. We should propose the design this way to the committee, show the new design lever and ask for approval to proceed in this manner.

JSM:ws
Firearms Research Division

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KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington parker

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

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FROM: R. POTTER RP 48

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KINZER V. REMINGTON

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R. H. Potter
Remington Product Service
Ilion, NY

cc: K.O. Green
bxc: O.J. Santa
K.A. Cornell
J.C. Hudson

DON'T SAY IT—*WRITE IT*

To E.G. IARSON Location BRIDGEPORT A/O BUILDING

From J.A. STEKL Location ILION Phone No.

Subject M/600 COMPLAINTS INVOLVING P.I. AND/OR PROPERTY DAMAGE Date 2/4/80

Per your request during our phone conversation earlier today, I am forwarding to you two (2) files involving the subject.

I will be pleased to handle these matters, however, it is felt that a policy should be established in this regard.

Basically, are we accepting liability for incidents involving recall rifles, when examination indicates no problems exists with the rifle, even though it contains the original fire-control?

Please advise.

JAS:tpp
attch.

RECEIVED
FEB 5 1980
E G. LARSON

RD 779 STOP, LOOK, AND LIVE

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, Inc.
Bridgeport, Connecticut

c: E. Hooton, Jr.
J. E. Preiser
E. S. McCawley
R. B. Sperling
E. G. Larson
R. G. Sherman

October 30, 1978

RECEIVED
OCT 30 1978
OFFICE - E. F. BARRETT

E. F. BARRETT

REMINGTON MODEL 600 AND 660 RIFLES
MOHAWK MODEL 600 RIFLES
XP-100 PISTOLS
SERIAL NUMBERS

Remington Model 600 and 660, Mohawk Model 600 Rifles -

Years 1963 to November 1968 -
Serial Numbers 000001 to 131552

November 1968 to August 1975
Serial Numbers 6,200,000 to 6,899,999*

August 1975 to present -
Serial Numbers A6,200,000 to current number.

Remington XP-100 Pistols -

Years 1962 to April 1968 -
Serial Numbers 00001 to 11,000

Years April 1968 to April 1975 -
Serial Numbers 7,500,000 to 7,507,983

Years April 1975 to September 1976 -
Serial Numbers 7,507,984 to 7,509,999

October 1976 to January 1978 -
Serial Numbers A7,500,000 to A7,504,695

January 1978 to present -
Serial Numbers B7,500,000 to current number.

* Contains serial numbers assigned to Model 700 Rifles.

H. K. Boyle

HKB:iw

I

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KINZER V. REMINGTON

	Rem. M/600	Rem. M/660	Mohawk 600	Total
1963	100	--	--	100
1964	25,279	--	--	25,279
1965	24,851	--	--	24,851
1966	22,307	--	--	22,307
1967	19,061	87	--	19,148
1968	2,488	24,373	--	26,861
1969	--	14,196	--	14,196
1970	2	7,694	--	7,696
1971	--	3,993	4,979	8,972
1972	--	193	4,961	5,154
1973	--	--	8,739	8,739
1974	--	--	12,110	12,110
1975	--	--	13,120	13,120
1976	--	--	13,318	13,318
1977	--	--	17,631	17,631
1978	--	--	16,927 (as of 10/18)	16,927
TOTAL	94,088	50,536	91,785	236,409

HDA/ap
10/23/78

H.

1978 XP-100 RECALL INFORMATION

In 1978, XP-100's with a serial number below 7507984, except those with a prefix "A" or "B" before the numbers, were recalled for trigger assembly replacement.

XP-100 actions which are subject to the recall and have not had their trigger assembly replaced should be returned to the factory. The actions with new trigger assemblies have an "O" on the flat surface at the rear of the receiver.

(Drawing)

1978 MODEL 600 RECALL INFORMATION

In 1978, all Remington Models 600 and 660, and Mohawk 600's (except those with a serial number starting with an "A") were recalled for trigger assembly replacement.

Contact Arms Service to determine nearest facility for trigger assembly replacement. The replacement trigger assembly has a "V" on the left side of the trigger up near the trigger plate.

(Drawing)

Post Office Box 75
Easton CT 06612
November 20, 1991

Dear John,

I certainly did enjoy your book on the Model 700. I am very impressed that you were able to compile so much detail. And more so that an "outsider" should be able to get so much. There are many in the company who profess to be "experts" and know a lot less. You organized the subject well and the book is enjoyable as well as technically structured. I do hope you are able to follow on with the 788, 600, 660 and Model 30 as you mentioned.

I have some detail that may be of use to you. I am a little uneasy at revealing the companys business and it is hard to do it accurately without getting into personalitiesand human conflicts. But the story makes no sense without the human factors. Lets leave it that I will write here "off the record" and if you elect later to use any of it, you will omit my references to peoples ~~actions~~, character ~~and decisions~~. With my comments ~~completed~~ removed, the rest is all "for the record".

I grew up in Maine, graduated from University of New Hampshire as a mechanical engineer in 1939, through ROTC found my self in the Army in 1940 in Coast Artillery, impulsively transferred to Ordnance and ended up at Aberdeen Proving Ground first as a proof officer testing artillery and then with incredible luck as Chief of the Design Section developing both facilities and weapons. I answered an ad in the RIFLEMAN for gun designers and arrived in Ilion in January 1946. The R & D manager in Ilion was a "Superintendent" Pete Rutherford and his assistant was Sam Alvis. I was hired with three others and it was crazy because Ilions war production was shutting down and there were too many engineers already there. Alvis tried an innovation—— rather than putting me at a board, I went to production as an assembler in work clothes and learned "final assembly" first with the 500 series 22s, them 121 and 241, then 141, 81 then model 31 and then the Model 11. I think I spent six months doing this. Then Sam put me with Mike Walker to learn the ropes in design. as well as with others

In college, I had made up my mind that I wanted to work for an arms company. It was depression time and guns wern't selling. I was turned down by Winchester, Remington, Savage, Smith & Wesson—everyone. Later I had an offer from Colts through

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a family friend but the Army got me before they did. In retrospect I should add, "Thank God".

In 1946 Remington was in disarray. It was ironic that Eli Whitney had used "muskets" to illustrate for the first time the theory of interchangeable manufacture. Remington might have first had it-this but long ago lost it. In 1946, the tools did not produce parts to the model drawings, the gauges did not match the tool drawings and the finished parts after they were filed by the assembler to make a gun matched neither. As I recall, the assembly of six or seven Model 31 pump shotguns was an acceptable output by an assembler. This situation existed in the whole sporting arms industry. Colt had developed and was sole source prewar for the caliber 50 machine gun. By Wars end, the Army was paying AC Spark Plug about $ 50 per gun (for a profit) and Colt $600 for the same gun and Colt was losing money. AC "machined" everything and Colt "filed" everything— filers were on piece work and made more than engineers. The AC gun was more reliable.

From the time duPont bought it, Ilion had made no profit except in 1940 briefly. At the time, duPont controlled Remington thru 51% of the common stock. duPont also was the largest stockholder in General Motors— about 20% of the common. General Motors thru Ieo, Inland, AC, Saginaw and etc made more small arms than anyone else. They turned to Remington for information about guns but they had better techniques for cutting metal than Remington had. Mutual assistance was a marriage of convenience. Assurances from GM gave duPont confidence that the Ilion plant could be completely retooled and make redesigned guns at a profit. duPont backed the expenditure by the Remington Board, promised technical assistance although Remington might later just as well perhaps not have wanted so much 'technical assistance'as finally came.

When I started to work with Mike say midsummer of 1947, the 721/722 was completely designed and the plant was making the pilot quantity of 100 (7) in 30-06 (always first) and Rutherford with an engineer Don Luster was starting the design of the 851 shotgun which finally was to have the model name of "Model 11-48".

It will sound like heresy to you but the 721/722 was of much less importance than the 851. Prewar, Remington had never done well with bolt actions. Even the Model 70 was sold in much smaller numbers than the 94. Even if the 721/722 was to have great acceptance, the numbers would be smaller than the yield from pump and auto to shotguns and pump and auto rifles. The 721 related to no other gun in the factory. The tooling that would make 851 would also make a pump shotgun, rifles etc and etc. This was the hindsight. Reality was that the excellence of the 721 prompted sales

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and lower price

in numbers beyond anyones expectations. Its excellence in effect created the market. The public fastened on to bolt guns.

When I started with Mike, our job at the moment was to get the Williams floating chamber out of the 550 22 rifle. The plant was busy restarting its line to make the shotguns and rifles it hadn't made in wartime plus 100 721s. And the big technical worry was the new shotgun to come. The order was to be first the boltrifle, then the autoloading shotgun, then the pump, then the pump rifle then the autoloading rifle.

I would have gathered that the design team on the 721 was Mike with Dana McNally helping and John Howell helping and Homer Young. I never met Dana McNally. He apparently went back to Maine to help his folks run a hunting camp. I never met Jack Howell but he must have been a tremendous guy and I have a lot of respect for his work. I think he must have made big contributions to that bolt design. He had designed a pump centerfire rifle that an engineer two boards back, Crawford Hayes was testing. I was impressed because Hayes fired 5,000 rounds through the model gun with no malfunctions in get this, 300 H & H Magnum! And this gun had a die-cast aluminum receiver. The Company never accepted this gun I think because of the diecast receiver. A cartridge fracture might have been serious although today the 16 (similar) is not questioned. I agree with the companys judgement but Rutherford didn't.

The 100 721s from the pilot operations came and were fine. But suddenly all Hell broke loose. John Lewis said the firecontrol violated a Winchester patent and the gun couldn't be sold. Pete Rutherford put four of us on that job and for maybe two or three weeks, we all read that patent, sketched ideas etc. Rutherford reported to Corporate that we had a big serious problem and that there would be substantial delay in announcement. Pete always encouraged us with "make it new, don't copy, think big" make a new arrangement completely, etc. It suddenly came to me that the part could be divided into two similar parts, one a safety cam and the other a sear. The factory had plenty of the thick stamped pieces on hand which could be thinned on a surface grinder to get production going quickly. Pete seemed almost disappointed with that solution (too simple ?) but Mike liked it and John Lewis said Go, Go.

I should explain that John Lewis had become patent attorney after Del Greene retired. John had been a civilian patent attorney in the Ordnance Department and we had common friends in the service.

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The gear I mentioned as having been stamped. Ilion R&D had a Chemical Metallurgical section and a metallurgical engineer, J W Miller, would later start work leading to strong but inexpensive powdered metal parts.

Other calibers of the 721 came and all was well. although Mike was tense, overstressed from the fire control problem. The first 722s came through in the all-new 222 caliber. We got the first samples late in a week. They wouldn't feed. The base of the cartridge would pop out of the reciver guide rails before the bullet nose was in the chamber. And the fired case when extracted would spin madly then fall back into the action ratherthan eject to the right. That Saturday, Mike and I and the Plant metalurgist Kelly Chadwick went duck hunting and Mike had a nervous breakdown in the duck blind. Monday morning found me as the resident "expert" in the 721/722 and it was a hairraising experience fixing that 222 feeding problem under pressure from the production guys standing around the desk asking, "What do you want to do ?" Mike was out ill and I would rathem have been out hunting. But a lot of people were helpful. I found out from the old timers that a good bolt gun would not only put the point of a bullet into the chamber but also "put the bullet point only into an annular area outside the primer so that the point of a Spitzer bullet feeding at high speed into a chamber could not possibly hit a live primer of a round inadvertantly left in the chamber". I don't know whether guns made today have that quality. We used toolmakers blue and dummies to develope this.

I mentioned that Mike was under stress. Mike was a crack shot with a rifle and understood what in the action, the bore, the chamber, the breeching, bedding etc would make accuracy. He loved the details of accuracy. Me,— I liked actions, feeding and sometimes enjoyed shooting a good rifle at a bench— but not often. The plant engineers, production and inspection, all were ~~production driven...~~ Mike, all by himself had to break often the bad news, "That isn't good enough" or "it doesn't shoot good here's why". Mike not only designed the gun but also set the standards that later earned the accolade for "out of the box" accuracy. He stubbornly held out for "in the limits", quality!

I remember too that while he was out, some of the salesmen were reporting that the trade folks were saying the spring driven ejector in the bolt "looked weak" and why didn't we copy the ejector of the Model 70. I was in Alvis' office talking out that and had a Model 70 in my hands with dummies that just happened to be the 220 grain variety. I slammed the 70s bolt back real hard and fast. That heavy dummy flew out and cracked his office window. That ended that suggestion.

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The fire control of the 721/722 was interesting to me because it was one of the first "blocked sear" guns I had ever seen. We used the terms "blocked sear" and "hooked sear". The Colt revolvers, Win 94 and Mauser 98 all had what we termed hooked sears. Imagine that the shooter takes a bead on the target and starts his squeeze. As the sear rotates to release the hammer, the hammer must slightly overcock. If the trigger squeeze is stopped when the sear is half out of the hammer notch, the main spring tension (force) and the hook angle tend to make the sear reseat itself fully in the hammers notch. The same sequence occurs in the Springfield or Mauser. If the effort to complete the second stage of trigger pull is discontinued, the force of the main spring contributes to the effort of other return springs. In the blocked sear arrangement, the striker doesn't have to retract as the trigger is pulled. Pull can be lighter because it doesn't have a component from the main spring. And the weight of pull doesn't have a variable resulting from having to precisely machine accurate angles on the hammer notch and the sear itself.

I think the blocked sear originated with the Sweany (sp?) trigger. I would guess when John Lewis first reviewed the 721 design for infringment, maybe either the Sweany hadn't been patented or he overlooked it. Maybe in the interval, Winchester had bought the Sweany to use on a later Model 52. I don't recall.

The other feature of the 721 arrangement that stood out in my mind was the fact that the trigger was dynamically balance. Its shape was such that mounted on a pin for rotation, a force or impulse from any azimuth could not induce movement of the trigger. Jar the butt to the ground as hard as you wish but that trigger wouldn't jar off. In theory at least. I've heard stories that they have but I am not able to explain why it could. The Model 70 by contrast has a trigger with its rotating pin mount just under the receiver with the entire mass of the trigger swinging below (or backward if the butt is thumped to the ground) The Springfield, Enfield, Mauser are all grossly dependent below the receiver. Jar-off is prevented by the single stage motion where the trigger can have major movement prior to let-off. Be cautious with devices that block out the single stage movement. Big trigger "slack" can absorb an awful lot of jar-off energy. I can remember that with designs on the board, we made cardboard cutouts of trigger shape and pin mounted them to see if they were rotationally neutral. Todays computers would do that quickly.. The desireability of a balanced trigger will be apparent also if you, as part of the 700 story, take up the XP100 pistols which, think have extra parts in a sort of trapeeze arrangement intended prevent jaroff.. by maintaining dynamic balance. even when the trigger is several inches away from the sear.

The 721 started to work as intended and production took off. I decided I had better buy one. The lab had just finished an accuracy test of 222s-- ten guns with ramp front held on by screws and ten guns with brazed-on ramp. I asked the technicians which was most accurate and then bought the gun with that serial. And stopped off at the wood job to get a better stock.

But things were not good in the department. The design of the auto shotgun was stalled- no working model. A centerfire companion to the Howell-designed diecast pump rifle (an autoloader)didn't work. Rutherford was retired and his 851 designer transferred. A new Project Manager from duPont showed up with three engineers and a working model of a streamlined 851. We had heard rumors about this and what a "bad" man he was and suddenly I am meeting him and being told that I will work for him and design a new pump action shotgun. His name was Lexie Ray Crittendon and during the war years at Ilion, he had designed the Springfield 1903A3 and A4 models. And he had been on the wartime R&M committee working with GM personnel on the Remington problem.

He turned out to be one of the most brilliant and likeable leaders I ever had. I worked briefly on the bolt design for what became the 740-760. Then I designed the 870 shotgun. That went well and even as the plant was starting to produce the last-tooled guns, 28 & 410 of the Model 11-'48 long-recoil shotgun. he got some funds and I designed what became the company's first gas operated shotgun, Sportsman '58. With a new gas system, the M1100.

Ray Crittendon had the brilliance to steer towards that family of guns principle which let rifles and shotguns, pumps and autoloaders, 22's and centerfires to be made on common tooling with interchangeability of stocks, firecontrols, etc and etc.

He helped me too in the design of a 15 pound semiautomatic caliber .50 Spotting Rifle for Ordnance.

Crittendon was on loan from duPont and went back there about 1951. My pay came from Remington but technical direction from Ray. In the course of this crash design work, there had been some resentment in Ilion that Ray was calling the shots and I missed the opportunity to 'inform' my Remington bosses as problems came up. Things became uncomfortable and I sought transfer and went to Bridgeport research in 1951 or 1952. Worked on cartridge powered devices--stud drivers, pipe cutters, cattle stunners in sort of pioneering research. Then I ran chain saw design for a company that Remington bought then back to Bridgeport for other stuff including 310 Skeet and ...on with two others, created a new division that manufactured bide grit edge cutting tools. Retired in 1980 from that activity(Abrasive Products Division).

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I take you through this long travel for a reason. My time with the 721/722 was a few months, maybe 5 or 6 in 1947. And I got my name on a patent with luck— others spent much more time on that gun. BUT I MET HER AGAIN ! And its funny.

In 1974, I again encountered the gun. A friend was intent on making up his "ultimate rifle". He had started by buying an FN bolt action in the white as made by FN in Belgium. Action only-no barrel. He asked me if I could make the action smoother and silkier. It already was, to me at least, very smooth. I think FN has some process by which they case-carburize medium carbon nickel steel. His criteria was that with the action aimed upward, the bolt should slide rearward of its own weight. In his sample it "almost" would, especially if it was given a little shake. But of course a 721 I was comparing it with wouldn't. But this shocked me into realizing that while the follower, gun empty, would rise until it came into frictional contact with the bolt body. it didn't have to be this way. It could instead stop against the receiver. I grabbed a tin follower from a 721, cut two slits with a hacksaw, bent up a lip and presto ! A free fall bolt. The next morning, I walked into Jack Lewis office and told him I had an "improvement" for turn-bolt rifles. He laughed and said, "You can't. BD.way.. There have been so many thousands of patents issue for turn-bolts that you couldn't possibly have anything new". I handed him the lipped follower and asked him to try it in his 721. The next morning he said, "Get me an Inventions report". He filed but he had died when it issued. I sent a copy of the Inventions report to Ilion. The subsequent Patent Attorney when the patent issued gave a copy to the Research Director but he didn't understand it. It issued in 1975 and lay unused until 1983. And I gather it is the follower , "nose contact" that you describe in the book. It was "that" for eight years.

This was the easiest patent I ever received. Inspiration took five minutes. It took maybe twenty minutes to make and try the model. And maybe two hours to write an Inventions Report. I've worked in engineering groups where maybe three or four guys might work two or three years on an idea or project and come up Zilch.

That something like this could happen was symptomatic of what had happened with the Ilion operations. Prewar, ammunition made money: Ilion guns didn't. Postwar, the new guns were forecast to be sold in what were thought to be optimistic quantities. Due the economics of the redesigned line, each new gun was profitable at even lower volumes. The tremendous post war economic growth boosted sales quantities fantastically and profits were up exponentially. There was a feeding frenzy for jobs, activities connected with new guns and designs for new guns. And the groups in power closed ranks against outside inputs. That was one reason I left Ilion and I think the reason maybe why Mike got shuffled off to

a newly designated "Custom Shop". It was a ruse so that the Department could get free to design their own 721 improvement which became the 725. But even in this new Custom Shop, Mike was hemmed in. He was free to make altered models of the 721 but was not encouraged to make better versions of "target" shotguns for Skeet and Trap. Nor improved versions of 760 or 742. Or Police Guns. Or anything new.

January 27, 1992

I took a little "time out" here. For the Xmas holidays and also for time to get the Flu. Even with the shots.

I enjoyed your chapter on the 720. I sort of have one-all most. I bought an Enfield (Ilion manufacture) from the DCM in maybe 1947 or 48. Took it into the factory in a case and told the Guards to enter it into the books as a Remington 257 Roberts which they did without examining it. I then stripped it to the receiver and bolt. Through the Cashier, I bought 720 parts such as bolt stop, magazine box and filler, trigger plate, sight and guard etc. But I wasn't permitted to buy a barrel. In a deserted warehouse, I found a wooden tub of dusty barrels for the Model 30. All were 30 caliber except one was 257. The Model makers in the tool room helped me. Typically, they found the cutters to mill off the receiver sight. I started to set up to mill off the rear sight whereupon they would push me to one side and do the job saying, "You'll ruin it". They inletted for the new bolt stop. I turned on the barrel but they pushed me aside and finish chambered it, asking, "what weight bullet ?" and I said 117 grain. Every time I shoot it it reminds me. You can just start to feel the 117 grain bullet enter the rifling as the bolt finishes closing. My metalurgist friend Kelly Chadwick saw the gun and said, "Where did you get that barrel?" I mentioned the dusty tub and he said, "I know those barrels. I put them there because they all failed magna-flux testing. It will split open when you shoot it". He and I took the gun to the proof house and had it proofed. Several rounds. He admitted that the barrel had to be OK. I put a "cock on opening gadget" from Numrich on it and have shot several deer with it. I had admired Ned Roberts and his development work on this round. It has low noise which is welcome in New England. I think the +P round is silly. If one needs more power, get a 25-06 ! When Ned Roberts did his thing, there was no Speer, no Hornaday, no bullet sources except the Army, Winchester and Remington. For 25 caliber, a shooter could use

for a little bullet, that from 25 ACP, the bullet for 25-35, the 250-3000 etc and have fun. And a good gun dealer could get them although it did take months for the order to come.

While I worked in Ilion, I know a few 720s were assembled but I also observed there was no assembly area in Production for this gun. They were assembled during my time by Arms Service. I saw them occasionally because there was a "rule" that all 720s "had to be inspected by Oliver Loomis" an older man who was foreman of the R&D Model shop. Oliver had been around guns for years, had helped John Browning, had worked for Pedersen and had worked on the Pedersen Device and had several in his cabinets. I think he checked for "misfires" particularly the 270 version.

I occasionally pumped him about the Enfield. Seemed to me he said that unlike our practice where the part drawing is the "Bible" as far as detail and correctness is concerned, the Enfield had "master gauges"at one plant and then"working gauges"at each Plant including the Plant that had the "Master". I think he said that "Eddystone" in Chester, PA had the master. I assume that this meant that a tool maker making an inspection gauge for a part would check his gauge against the Plants Working Gauge rather than a part print.

I have seen the buildings at Eddystone only from the train and of course have seen the buildings at Ilion and Bridgeport from having worked in them. They all look alike and I gather they were designed by one architect and built all at the same time using British money which was intended to make 303 rifles for their use in WW I. The original design of the gun was from England but I don't know who did the redesign for the 30-06 round: Springfield Armory or Remington or who ?

I was not involved with firearms at the time the 600/660 carbines were designed and produced. Nor with the 788.

I of course heard about the tragedy with the 600 fire control but don't know what was wrong with the gun, design or manufacture or really whether anyching was wrong at all. Many in the company felt the claim should have been fought on the basis that there should not be a loaded gun in a car and that a loaded gun should never be pointed at a person. But the decision to settle was I guess made by the insurance carrier and they are supposed to know whats best.

To me, it was sensible to have the trigger pull distance and sight controlled by all those adjusting screws. Maybe the company's lawyers would say it was a reckless thing to do. I think some users don't understand whats 'safe' and set the travel too short. I also think now that the housing of the parts is wrong. There is too much opportunity for small debris, foreign material to be-

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come trapped within that housing and then change the 'fit' or clearances of the internal parts. Who knows ? I think it was found necessary to drill a "drain" hole in the die-cast shotgun trigger plate merely because debris from wads would blow back, settle and accumulate in the blind space beneath the sear and then interfere with the operation of the sear when the buildup became gross.

I never heard what the economic basis of the 600/660 was. Was it the means of increasing product volume to justify the XP 100 ? Why couln't the 700 have been made into a carbine ?

I think the 788 has a different orientation. Remington was getting marketing people from duPont. I think one of these looked at a list of customer prefarence for cartridges and suddenly yelled, "Eureka ! Look at sales of two cartridges for which Remington doesn't even make a rifle——— 30-30 Winchester and 44 Remington Magnum ! Lets bring out a gun for these. Remington will make a mint !"

I remember G M Calhoun who was Director of Research coming into my office one day and saying, "You used to be a gun expert. Can a bolt action feed a rimmed cartridge like 30-30 ". I remembered that the model 54 Winchester had been made in 30-30 so said, "Yes".

I think that its easier with a rear lockup so the 788 made sense technically in that it became the chassis of a 30-30/ 44 Mag gun and also a 22 rimfire replacement for the 500 line (M510, M511 M512 and M513) which had some serious faults.

Rear lockup poses problems with high intensity cartridges in that while the gun is no way near blowing open, it can stretch under pressure and its sure hard to lift the bolt handle after the shot. The modulus of elasticity goes to work and a small elastic deformation of maybe less than a half thousandth per inch is several thousands when it includes distance from chamber back to lockup recess and distance from lockup lugs back to front of bolt. I'm told that the 308 in the 788 was tough to manufacture satisfactorily. But the 788 was the only chambering in 222.

I had a funny experience with a 788 Left Hand. I was to put on a scope for a friend and had gotten a brand new version of Pachmyrs Pivot Mount for a 788 M. From the first shipment. Quickly got the name of the Sales Manager there to give him the bad news. The 700 Left Hand had the bolt handle on the left and the ejection part on the Left. But the 788 M would have more properly called a right hand action with the bolt handle on the left side. Bolt handle was on the left but the ejection port [illegible] ejection was on the right and same as that of a right

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Packmayr had assumed because the 700 BR was a mirror image of a 700 RH, the 788 would be also and it wasn't. They had to recall those mounts and eat them.

I am not privvy to the Company's "reason" for discontinuing the 600 series and the 788 Series. I would assume that the 600 was out because of the bad product reputation following the law suit. I would visit the Ilion plant on business infrequently and I think I remember from a visit there an old friend explaining why the 788 was going out. It was surprising. Sales were up and Ilion could not fill all the orders. The plant was confined in size by city streets and in effect couldn't be further enlarged. So the smart kids were given the matrix problem, "How do we maximize profits ?" Answer, "Discontinue the models with lower profits." So 788 was not discontinued because it lost money but instead because ~~it made more profit~~ to make other models for which demand could not be met. Amazing when you consider that in the early thirties, the plant was eerily empty, toolmakers would make the setups to run say 30 bolts for Model 12. Or assemble a dozen autoloader shotguns a day.

If you would ask me the question, "What is the single most important factor in REMINGTONs Post War gun success?", I would not make reference to gun models in reply. I think it was the willingness of the REMINGTON Board to risk investment in retooling the Ilion plant for new models. As I recall, the amount was 4½ million dollars which would be what ? forty million in todays money. By the time John Olin and WINCHESTER realized what had happened, post war inflation was under way and it would have cost New Haven twice as much. Further, duPont had enlightened labor policies; medical plans, vacations, pensions, safety meetings etc rapid amoritizations so as to replace obsolete equipment where as WINCHESTER paid less and with fewer benefits, more hand labor and rundown equipment and more complex product designs. BUT: With superb quality, appearance, customer acceptance.
The duPont influence on the REMINGTON Board came mostly from (Chief Granville Reed (your "George" Reed pg 11?) Ex and duPont technical were pretty cocky. Hadn't they just done the "Manhattan Project" for Roosevelt, built a half dozen ammunition plants, Lake City, Denver, Salt Lake. He wanted the duPont operating divisions, Paint, Nylon to give their tricky hard machinery design problems and advanced research problems to his two new divisions in Wilmington, the Mechanical Development Laboratory and the Advanced Research Lab. Crittendon was his man in Ilion and after Ilion, headed up that Wilmington Lab. This was pretty heady stuff. The 721 design was completed and the model gun was approved before release to tool up. I was scared by this new

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bravado, cockiness as I was designing the 870. The Part Prints were being released to tool up (machinery and fixtures and dies) as fast as they came off the drafting boards and before any of us had seen and handled a model. I would never want to go through this again and never had to.

Management too took a lot of risk and it was never really recognized what the risk was. In 1946, those soldiers home from the war started to buy guns. The quantities were big, prices rose so that even the Ilion plant with its too-expensive prewar designs started to make money. But as the new models came along and because floor space was tight, the machinery to make Model 11 had to be scrapped to make Model 11-'48. And the machinery to make Model 31 had to be physically scrapped to make room for the 870. The big risk was, WHAT IF THERE HAD BEEN NO USER ACCEPTANCE OF Model 11-48, of 721, of 870 ? And the old tooling was forever gone! You couldn't go back.

There was another risk involving Ilion labor. The prewar guns had a lot of hand filing and fitting. Labor rates to workers reflected that. The newer guns with the General Motors metal-cutting modern machinery, tooling, gauging and quality control made guns that literally could be assembled by unskilled labor in departments where a metal cutting file could be outlawed. Labor rates for such work is justifiably lower. The company would have been justified in dropping wages. But it instead opted to do this by long term attrition protecting the wages and dignity of older workers. Very creditable. The whole line of gun products, all the machinery was changed, the forge shop and stamping shops closed to buy competitively "outside", workers retrained to stop filing, to stop gunsmithing and use gauges, quality control methods-without curtailing shipments and to do so with labor "peace" and minimum disruptions. Quite impressive performance. And unit volume rose, market share increased and profits went up. It was quite an event.

Your book gives the Ilion folks a lot of the credit for cartridge innovations. For the immediate post-war era, I'm not sure this is correct. The Bridgeport plant had an R&D section with skills in interior and exterior ballistics and electronic and hi-speed photographic innovations.

I have the impression that calibers 222, 222 Magnum, 244 and 280 came as products from that lab. And there was prewar justification for these.

The 222 round came because the company postwar wanted to pro-

vide an alternative to the Hornet that was first, rimless and second, a little more zing. The mag version was an alternative to the Swift. I forget the justification for the 244. The 280 was in response to the "pressure problem" of the 270.

I don't really know whether it is truth or fiction but the story went that when Winchester first devised the 270, the lots of powder they had on hand were "friendly" in that the published velocity could be had without exceeding max individual pressures. When REMINGTON loaded production quantities, it usually had to drop below published velocity in order to stay within pressure limits. WINCHESTER it was rumored was a little less likely to do this. I have never shot a 270 from the shoulder because of this. The 280 from REMINGTON permitted more margin through larger case volume so it could be loaded easily within both velocity and pressure specs. Probably post war improvements in powder manufacturing eased the "pressure problem".

The four rounds mentioned above came to Ilion really as fait accompli. But I do confirm that the Ilion people were absolutely originators and sponsors of the 244 Magnum within the Company.

I always felt the Company missed the boat with the 350 Magnum. There was a loyal following of older deer hunters who swore by the 35 Remington round. Many of them might have been ready converts and buyers if that round had been named 35 Remington Magnum. With that 24" barrel, short action and maybe the 158 grain 357 pistol bullet, it would have been a zinger. Even I would have bought one.

It is early March and I had better conclude this "short" note to you. I have an old document that seems to relate to misfires in the 720. Also I have copied my file on the non-contact bolt. I regret I have no photos that I might send. I will flip through the book again and comment if appropriate. Good luck on your future ventures.

With best regards,

Phil Haskell

3/9/82

Notes from rereading-

12 & 14 To me, the important elements of the fire control is the fact that main spring force exerts only a frictional resistance which is quite constant in value, the fact that the shape/mass of the trigger about its mounting point, the pin around which it rotates, is dynamically balanced so that forces that might arise from dropping the gun when the safe is "Off" or otherwise banging the gun around, can not impart movement of the trigger--especially movement which in effect could fire the gun.even though the shooters finger isn't touching it.

I like also the fact that the rear vertical surface of the safety cam is angled so that - pushing the safety to "On" forces the cam upward which in turn produces slight rearward movement of the firing pin head. This movement of the firing pin head is very slight but I think it is reassuring to the user to confirm that the arm is truly on "Safe" And of course this same angle "speeds" the sear down out of the way after trigger pull to help make lock time short.

In the era in which the 721/722 was designed, use of telescope sights was not widespread and many people used the receiver sight holes. The most widely known scopes early on were low powered and small in diameter. I think the 330 Weaver had a body diameter of 3/4 and the Lyman Alaskan I think was 7/8 ; both had straight tubes with only a slightly enlarged eyepiece diameter. With either mounted, the line of sight was only a little bit higher than iron sights and the stock comb was still felt against the cheek. But wow! When you mounted a Lyman target scope, your cheek had to come up off that stock. I think there were accessory combs shooters added as Weaver went to a 1" tube body and the magnifications started to grow. I think within the Company there was talk that the bolt guns might have to be shipped with both "standard" comb and "high" comb. Someone in Ilion hit on the idea of making the iron sights higher so that the comb was useful under all conditions and that was a fine idea.

As you mention in the book, some users mount huge scopes on the gun. And then complain they can't see a moving deer. I used to urge hunters going to Maine, New Hampshire or Vermont to use a 1 3/4 power in a Weaver pivot mount and hunt with the scope swung out of the way but quickly available if they get a shot at a non-moving deer at long range. With the pivot mount, one has to carry an angled screw driver and learn to keep the pivot screw quite rigid.

Plaintiff's Appendix Page 29

nters know that it is easy to brighten the bead sight
t 00. They are made I guess using powdered metal pro-
L..c with an alloy rich in copper. Its possible using a
r nail "emery" board or a fine cut file to make one or
trokes straight across the bead whereupon the face will
t "glow". But---- only for a week or so before oxide
. The this brightened bead has high visibility against
est background. And it takes only a minute to do when the
n comes round.

I never knew there was a change in the height of the rear
ver bridge. I guess I have mounted a few scopes where I
d have used shims. And there were other matters you mention
e book that were new to me. I was never "bored" reading

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REMINGTON ARMS COMPANY, INC.

CONFIDENTIAL August 24, 1995

TO: ROBERT W. HASKIN, JR.

FROM: JAY BUNTING JMB

MODEL 700 DEMARCATION (new frame)

At the R&D Review several weeks ago, Bard Howe made it clear that the 1996 Model 700 with new trigger assembly should be demarked.

Marketing has been wrestling with this challenge ever since. It is most likely that no other improvements to the gun will be available for introduction in January of 1996. Features such as improved lock time, tolerance reductions with the chamber and free bore, improvements with bore and rifle finish and improved bedding will not be available because design is incomplete and testing has yet to be performed. Given these circumstances, there is nothing to sell with the new 700 other than a non adjustable performance tuned trigger. It would be my preference therefore to physically identify all 1996 Model 700's with new serial number blocks. Descriptions in the 1996 catalog could be slightly modified to demark the 700 from previous product. For example:

- The Model 700 ADL becomes the Model 700 A.
- The Model 700 BDL becomes the Model 700 B.
- The Model 700 VS becomes the Model 700 V.
- The Model 700 MTN DM becomes the Model 700 MDM.

PR 0686

I would prefer to use these suttle name changes rather than tag the Model 700 with another acronym such as "AE", "X" or "T".

Please provide an opinion as to the acceptability of moving forward in the recommended manner. Should more complete demarcation be required on both the product and sales literature, a new course of action will be immediately required.

Your input on this issue is most appreciated.

JMB\mdm700dem.doc

Jay: I agree - keep it low key. Bob 9/1

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Report# 920431 17 Work Order# 481167

APPENDIX C ENDURANCE

CALIBER	SERIAL#	SBC	EDS	BO	BE	JM	DX	SSM	TOTAL MALF	TOTAL RDS.	MALF. RATE
338 Win	C6671720	4	41	0	0	0	0	0	45	4000	1.13
338 Win	C6678193	22	3	0	0	0	0	0	25	10000	.25
7mm Wby	C6678201	11	0	0	0	0	0	1	12	4000	.30
7mm Wby	C6678174	1	20	0	4	0	2	0	27	10000	.27
300 Win	C6671714	0	25	32	3	14	0	0	74	4000	1.85
300 Win	C6678188	0	10	3	4	0	8	0	25	10000	.25
7mm Rem	C6678192	125	36	15	20	0	0	0	196	4000	4.90
7mm Rem	C6678181	17	12	0	0	0	0	0	29	10000	.29
2506	C6678189	0	0	0	0	0	0	0	0	4000	0.00
2506	C6678195	0	0	0	0	0	0	0	0	10000	0.00
280	C6706176	0	0	0	0	0	0	0	0	4000	0.00
280	C6706177	1	0	0	0	0	0	0	1	10000	.01
3006	C6706171	0	0	0	0	0	0	0	0	4000	0.00
3006	C6671716	0	0	0	0	0	0	0	0	10000	0.00
270	C6706173	0	0	0	0	0	0	0	0	4000	0.00
270	C6678194	0	0	0	2	0	0	0	2	10000	.02
TOTALS		181	147	50	33	14	10	1	436	112000	.39%

CALIBER	SERIAL#	ROUND	COMMENTS
338 WIN	C6671720	1540	Replaced Extractor and EDS problem cleared up.
		3100	Fire Control was adjusted due to increased trigger pull.
338 Win	C6678193	3	Replaced Extractor.
		2000	First round feeding from Magazine(right side) will bind belt against belt on shell underneath.
		4900	Replaced Extractor.
		5100	Burnished chamber.
7mm Wby	C6678201	START	Bolt won't close over full Magazine.
			Bolt closes (cams) hard.
7mm Wby	C6678174	1000	Bolt won't close over full Magazine.
		3000	Very hard to extract fired case.
		4000	Burnished chamber to alleviate hard extraction.
300 Win	C6671714	100	Magazine Follower staked by J. Ronkainen.
		500	Old style, plated follower was installed to improve the jumping of shell from under the rail.
300 Win	C6678188	START	Bolt won't close over full Magazine.
		200	Staked tab on Magazine Follower.
		400	Replaced Extractor.
7mm Rem	C6678192	100	Staked tab on Magazine Follower.
		300	Staked tab on Magazine Follower.
		300	Bolt closes hard over full Magazine.
7mm Rem	C6678181	START	Bolt won't close over full Magazine.
		800	Trigger pull increased to 10 lbs.
		3300	Cleaned Bolt face. (EDS cleared up)
280 Rem	C6706176	2000	Heavy bolt lift.
270 Win	C6706173	200	J. Ronkainen staked Magazine Follower to keep spring in correct position.
270 Win	C6678194	1200	Trigger pull increased to 8.5~9 lbs. Moly-Kote found in Fire Control; Cleaned and readjusted to specification by production.

NOTE: Bolt closes hard over full magazine caused by the center guard screw being too tight

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MODEL 700 STAINLESS STEEL, DESIGN ACCEPTANCE

ABSTRACT:

Research and Development finds the Design Acceptance Evaluation of the Model 700 Stainless Steel rifle to be acceptable. The evaluation consisted of measurements, accuracy, function/endurance, S.A.A.M.I. drop and high pressure strength testing.

The following calibers were included in the evaluation:

7mm Remington Magnum
7mm Weatherby Magnum
300 Winchester Magnum
338 Winchester Magnum
25-06 Remington
30-06 Springfield
280 Remington
270 Winchester

Prepared by: D.E. Thomas
Date Prepared: June 8, 1992

proofread and cleared by:

J.W. Ronkainen
Design Engineer

J.R. SNEDEKER
Staff Engineer

K.W. SOUCY
Manager Firearms & Ammo Research

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cc: K.W. Scucy / file
J.W. Benkainen

RESEARCH TEST AND MEASUREMENT REPORT

REPORT# 920431
W.O.# 481167
JUNE 8, 1992

MODEL 700 STAINLESS STEEL, DESIGN ACCEPTANCE

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BARBER - 1.30.130001012

MONTHLY REPORT ITEMS-JANUARY 1991
FRED MARTIN

NEW BOLT ACTION RIFLE
Work on this item is beginning to pick up. Jim Ronkainen and I have prepared an outline of this program to be presented to marketing. With their approval we will "catch up" with the competition and later pass them. This can be done "IF" there is no "changing of minds" (specifications) once they are accepted and the program started. We don't sell guns, they don't design them.

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[redacted]

NOTE:

Since letters dated February 3 and February 11 were issued on this subject, it is recommended that those letters be discarded to avoid possible confusion.

[redacted]

F.T.M.

[redacted]

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PRIVILEGED AND CONFIDENTIAL
ATTORNEY/CLIENT PRIVILEGE
ATTORNEY WORK PRODUCT

To:			
	Ammunition Manufacturing	(Lonoke)	Cahan/Rink
	Ammunition Sales and Marketing	(Madison)	Dwyer
	Armorer's School/Field Service	(Ilion & Madison)	Evans
	Consumer Service	(Lonoke & Madison)	Evans/Rink
	Arms Service and Product Service	(Ilion)	Evans
	Engineering	(Elizabethtown, Ilion & Lonoke, Mayfield)	Cahan
	Firearms Sales and Marketing	(Madison)	Campbell
	Firearms Manufacturing	(Ilion & Mayfield)	Cahan, Lance
	Research & Development	(Elizabethtown & Lonoke)	Cahan, Diaz, Schlukebier, Franz

From: Ronald H. Bristol, II
Executive Vice President and Chief Operating Officer

Date: November 15, 2005

Re: Litigation-Related Document Retention

Remington is from time to time involved in products liability lawsuits involving the company's firearms and ammunition products. This is a reminder that regular records retention periods for company records (including both hard and electronic copies and records) do not apply to any materials (i.e., these records are to be kept until further notice) containing information on any of the following topics relating to Remington firearms (both domestically and internationally sourced) and ammunition:

- Alleged accidental discharges, barrel or other bursts, and other potentially safety-related incidents relating to firearms
- The design, manufacture or performance of fire control and safety mechanisms (including component parts) of firearms
- The design, manufacture or performance (strength and endurance) of barrels and actions of firearms
- Test and quality control data relating to fire control and safety mechanisms (including component parts) and strength and endurance of barrels and actions of firearms
- Alleged ammunition accidents and malfunctions involving safety-related incidents
- Test and quality control data relating to design or production of ammunition.

In particular, Remington has just received discovery requests in a personal injury lawsuit involving a Model 710 rifle. You should promptly send a copy of this directive to those employees at your facility who may have potentially responsive materials that such records must continue to be maintained as ordinarily kept and are not to be discarded, destroyed or deleted for any reason. With your assistance, we will be arranging for a coordinator at each site to assist in

Subject to Protective Order - Williams v. Remington

arranging for a review of the records maintained by those employees who may have responsive materials.

This general notice is in addition to, and does not supercede, special procedures in place at one or more of your worksites to maintain manufacturing and engineering records that may also be relevant to litigation.

Should you have any questions, please feel free to call me.

As always, thank you for your anticipated cooperation.

Ronald H. Bristol, II

CC:
Tommy Millner President and CEO
Mark Little EVP, CFO And CAO

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LIMITED DISTRIBUTION

REMINGTON ARMS COMPANY

RESEARCH DEPARTMENT

THIRD QUARTER PROGRESS REPORT - 1981

SEPTEMBER 29, 1981

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REMINGTON ARMS COMPANY

RESEARCH AND DEVELOPMENT

THIRD QUARTER PROGRESS REPORT - 1981

HIGHLIGHTS

		Page
•	Experimental runs of new unibody 12 gauge shotshell process product made on the production prototype machine and 20 gauge Semi-works product have been successfully headed and primed on plant equipment. Installation of the Bridgeport production system is on schedule for fourth quarter 1981 start-up.	1
•	A primer basics program has been outlined aimed at optimizing primer performance.	3
•	Four shotshell samples including 12, 16, 20 gauge and .410 bore have been loaded using two variations of the integral anvil battery cup primer. Ballistics and normal gun function and casualty results were satisfactory for each sample. Research is working with Production and Marketing to identify a specific product and quantity to be loaded as part of the unannounced introduction program.	3
•	An extended range shotshell informational project is scheduled for submission in October to define objectives, responsibilities, preliminary economics, etc.	4
•	A sample of the extended range center fire ammunition has been experimentally loaded and evaluated for down-range ballistics. Satisfactory results were obtained for this 30-06 Spfd cartridge using Sierra 160 grain Spitzer boat-tail bullets and a new powder: HRP-85, formulated by Hercules.	5
•	A satisfactory experimental run of TLX priming mixture in rim fire shells was completed; preparations are being made for a Trial and Pilot run.	5
•	A reduction in velocity in the "Viper" ("Scorpion") rim fire product from 1440 fps to 1410 fps allows use of a standard powder. An experimental run is to be made by October 1.	5

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REMINGTON ARMS COMPANY

RESEARCH AND DEVELOPMENT

THIRD QUARTER PROGRESS REPORT - 1981

AMMUNITION

New Unibody Shotshell Process

The new unibody shotshell process is being developed to overcome the inherent disadvantages of the present RXP® process. The unibody construction will be extended to all gauges, and gives Remington the opportunity to have a single process for all shotshell bodies.

The Bridgeport plant and Research successfully processed 30,000 of the 250,000 12 gauge bodies made on the Production prototype machine in Wilmington through a Triplex assemble, head and prime machine. No problems were encountered and all specifications were met. A Trial and Pilot run on the Bridgeport body former is scheduled for November. Upon installation of the Rotary Cam machine in Bridgeport, product is expected to be even better due to improved punch cooling and heatset temperature control.

The practicality of a deep skive, which substantially increases the reloading life of the new unibody, has been demonstrated on Production equipment with over one million skived without any machine problems.

Semi-works product of both 20 gauge lengths were successfully headed and primed on a Production Simplex assemble, head and prime machine. Both target and high base caps were used. Subsequent loading of high base S Mag loads on the PETERS® loader was only partially successful due to a high incidence of misfolded crimps. The cause is felt to be misalignment of the star crimp station on the loader possibly aggravated by the deep skive experimental tooling. Load fit and ballistics were acceptable, and another loading will be attempted, probably on a Simplex loader.

Continuing development on 8 gauge has presented more of a challenge than anticipated. A balance between primer bore, rim fill, wall thickness, and work ratio has caused more iterations in tooling than anticipated. Outside shell body diameter has been increased to accommodate the needed balance. An experimental run on Semi-works equipment is scheduled for October.

Preliminary tooling for 28 gauge on Semi-works equipment is 95% complete. Shop and machine change parts for all subsequent gauges have been specified.

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BARBER - 1.30.130001019

body Shotshell Process (Cont'd.)

The full-scale prototype production equipment system, of producing one-piece shotshell bodies in all gauges te of 960 parts per minute. has been successfully tested rall functionality at ETL. Equipment has been delivered Bridgeport plant with installation scheduled for comple- the end of October. Initial production of 12 gauge is expected in fourth quarter, 1981.

Process and Body Cut-off Study

DuPont and ETL is investigating two areas of resolving cut-off problem. The first area is to determine if rnal heat treating of the shell can be reduced to a pro- process. Samples of shells treated by various techniques en submitted for evaluation.

The second area of work is to determine the cause of fish- develop methods of minimizing their frequency. The result will be reduced scrap but it would allow an in- in work ratio which would improve the body cut-off per- . Using Energy Dispersive X-ray Analysis, ETL determined heyes contain chlorine and/or silicon and these elements found in the surrounding material. Bridgeport PE&C's s of residue on a filter screen cleaned at Berringer by yrolysis also indicates a high level of silicon. The source of this element is residual catalyst in the aterial. The particles in the shell containing the are in excess of 50μ in size and probably can be fil- t and it appears that some are being filtered out cur- According to ETL our filter should be able to trap 100μ s. Finer filtration will be evaluated. It may require area filters or continuous screen filtration to make it

imensional uniformity is an additional area of explora- ETL has noticed non-uniform extrudate emerging from their rheometer at shear rates lower than our processing This is at rates substantially lower than the critical es at which stick-slip flows occur. It is unknown this same dimensional non-uniformity is occurring in but tests will be attempted to determine this.

appears that much of the "surging" that is visible is er the extrudate leaves the extrusion die. It is im- tell at this time how much the extruder is contri- how much is occurring downstream. More complete in- ion and testing will be required to determine the on of each.

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BARBER - 1.30.130001020

Polymer Process and Body Cut-off Study (Cont'd.)

The program has not been completely defined yet but should be shortly when more information is available from DuPont. Bridgeport's experience with the Panametrics wall thickness control may also influence the program direction.

Primer Basics

A program has been developed at Bridgeport Research to improve our understanding of the mode of failure of shotshell primers. The program has been divided into two major sections; the three-piece primer (such as the 117XA) and the ABC primer. In the three-piece primer section of the program the major areas of work are:

- Analysis of the Federal #209 primer and preparation of a Technical Data Package that would allow us to produce a duplicate of this primer, if desired. Major elements of the duplication effort would include anvil thickness and material, primer cup grain size and profile, battery cup flash hole diameter, priming mixture ingredients and percentage of ingredients used. A substantial portion of this package is complete.

- Continue to define the parameters required to produce a Remington primer which will be fully competitive from the standpoint of performance. This will include such items as definition of materials including anvil metal that will not require annealing, evaluation of thicker anvil metal, optimum primer cup characteristics, analysis of process tolerances and priming mixture variations and their effect on performance, and a better understanding of the primer piercing mechanism which should lead to improved quality control testing. Similar effort will occur with the ABC primer.

The Primer Basics program has been scheduled on a PERT-type network. This network will be a working plan subject to change and because of this, it will be computerized to assist in making modifications to the program and assist in tracking our performance.

Integral Anvil Battery Cup

The objective of this program is to develop an integral anvil battery cup to reduce primer manufacturing costs, improve consistency of primer quality and provide greater opportunity for process automation. The ABC-202 primer which contains .92 grains

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BARBER - 1.30.130001021

Integral Anvil Battery Cup (Cont'd.)

of 5074 mix was loaded into 12, 16, and 20 gauge product and satisfactorily tested. The ABC-1108 primer which contains .73 grains of 5074 mix was loaded into .410 bore product and satisfactorily tested. A report summarizing the test results at Bridgeport and Lonoke has been written and forwarded to management for review. Ilion gallery testing with the 12 gauge product is continuing; zero misfires from over 55,000 rounds to date.

Future plans include production start-up of the press and die for making promotional load primers on a limited basis beginning in late September. Primer design will be refined through the Primer Basics project in order to achieve target level performance.

Asbestos Elimination

The objective of this program is to eliminate the dry molded asbestos basewad from Remington's shotshell products by conversion to a high density polyethylene component. At the Bridgeport plant, all gauges with the exception of 8, 10, and 12 gauge 3", have been converted and are in production.

A modification to the plant "Versa cutter" machine has now reduced cut slug skewness and length variability and after earlier problems which delayed the planned AH&P run in July, new extruder processing techniques have appeared to improve the large wall thickness variability. Approximately 30,000 special caps with primer prongs and an equal number of cut slugs are now on hand for an upcoming run on the Simplex AH&P to establish the required slug tolerances.

Extended Range Shotshell

Marketing has proposed that basically all shotshell products except target and promotional loads be modified and become the extended range line. Basically the changes will require plated shot in all loads, fluff in all Magnum loads, and harder shot in all Express loads and most field loads. The performance criteria must be established by Marketing.

Economics have been requested from both plants and are required for informational and construction projects which are scheduled for submission in October and December respectively. The primary technical questions to be resolved are developing the most economical method of plating shot, developing the most economical method of obtaining hard shot in larger shot sizes, developing methods of fluff charging small shot sizes and developing a primer for the 1-7/8 Magnum load which will use fluff.

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BARBER - 1.30.130001022

Extended Range Center Fire Ammunition

An extended range concept has been developed for center fire rifle ammunition products which should increase the customer's perceived value of Remington products. Eight popular cartridges are to be introduced containing boattail bullets.

The 30-06 Spfd 160 grain PSPBT experimental loading run has been very beneficial. Feeding problems with boattail bullets were identified and are being resolved. Problems in obtaining the proper bullet pull specification were also identified and several solution alternatives are under evaluation. The finished cartridges loaded with HRP-85 powder performed as well as the Federal Premium sample in both accuracy and down-range ballistics.

Hercules has identified four other powder formulations for these extended range cartridges and efforts are in progress toward their evaluation.

TLX Priming Mixture Process Evaluation

Two experimental runs of TLX mixture were made and charged in the rimfire operation at Bridgeport using NEDOX® coated charging plates and conventional knockout punches (NEDOX is a proprietary coating of nickel and TEFLON® for improved wear and slip characteristics). The NEDOX coated plates appear to improve charging, however six out of seven charging machines ran well with TLX using regular (uncoated) plates. Preparations are presently underway to perform an extensive Trial and Pilot run of TLX primed rimfire product.

"Viper" (Previously "Scorpion")Rimfire Cartridge

The objective of this program is to develop a solid point truncated cone, high performance rimfire cartridge.

The major development involves definition of a powder which will develop the desired ballistics and be compatible with the rimfire autoloaders. Due to continuing problems associated with consistently meeting the 1440 fps goal velocity at acceptable pressure levels, Marketing has agreed to lower the goal velocity to 1410 fps which should be attainable on a day-to-day production basis using DuPont 8159 powder.

An experimental production run is planned for late September and the following specifications will apply.

Shell	--	standard long with "u" headstamp
Powder	--	DuPont 8159
Bullet	--	36 grain, solid nose, truncated cone copper-plate, single knurl, standard lead knife and crimp
Velocity	--	1380 ± 47 fps control
Accuracy	--	2.72" @ 100' 5-10 shot groups

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BARBER - 1.30.130001023

"Viper" Rimfire Cartridge (Cont'd.)

Meanwhile, Hercules has expressed a desire to continue work on a high performance powder for both the "Yellow Jacket" and "Viper" loads.

357 Remington Maximum 158 Grain SJHP

Ruger has elected to stretch the revolver cylinder an additional 0.2 inches for a total extension of 0.4 inches over the current 357 Magnum cylinder. Limited testing of this effect on the cartridge indicates it can be safely loaded to 50,000 psi with Hercules 2400 powder and will have a vented test barrel muzzle velocity of at least 1700 feet per second.

This change requires fabrication of new test barrels, in progress, and relocation of the cannelure on current .357 caliber 158 grain bullets by either .100 or .200 inches.

Options include leaving the case as is and loading with a bullet having the cannelure relocated .200 inches versus extending the case by 0.100 inches and loading with a bullet having the cannelure relocated .100 inches. The final alternative will be selected based on ballistics, appearance, creep and telescope data.

7mm Bench Rest Remington Case

A satisfactory Final Test Report has been issued by Bridgeport Technical Services for this new case. Lonoke PE&C has completed their Trial and Pilot run. Several tooling modifications were identified and new tools for taper are due in late September.

The Technical Data Package including all tool, gage, and process data has been delivered to Production. Shells for the initial warehouse run are in the draw line. Research will continue to provide assistance on this first run as required.

7mm 140 Grain PSPCL Bullet

A successful experimental assembly run for this bullet, which has a slender nose profile to enhance downrange ballistics, has been conducted. Accuracy and mushroom performance were satisfactory for the 7mm-08 load. An experimental loading run has been scheduled to produce samples for product acceptance testing by Technical Services.

357 Magnum 125 Grain JSP

Components and tools have been made available to Production for an experimental bullet assembly run. It will be conducted during October.

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BARBER - 1.30.130001024

Center Fire Product Line Simplification

Marketing suggested that the 117 grain bullet for 257 Roberts be discontinued as a single use item. Replacement with two cartridges, 257 Roberts 87 grain PLHP and 100 grain PSPCL, has been proposed. Ballistics and accuracy for the proposed cartridges were excellent, however, overall loaded cartridge length is a problem because of current cannelure location. Research will document their results and forward the information to Marketing and Production for resolution.

1981 Grand American Study

Pressure-time curves were made for this product using an oscilloscope and UR transducer. Comparing these curves with similar data from other shotshell samples indicates the 1981 Grand American product has excessive pressure variations. Preliminary analysis indicates the primers produced higher than normally experienced pressures upon detonation. Further studies are being made to determine what steps should be taken to fine-tune the ignition system for minimum pressure variation.

Automatic 8 Gauge Packer

A new automatic 8 gauge packer has been developed to replace the current hand-packing operation. Operational testing of the plant equipment has been completed and a rate of 160/minute was demonstrated. Plant installation, scheduled to begin in mid-October, will couple the packer with the duplex loader recently converted to 8 gauge loading. The new 8 gauge production equipment should be in production by year-end.

WHC:mf

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BARBER - 1.30.130001025

STATUS: PRODUCT AND PROCESS DEVELOPMENT

21MM Seismic

An electrically fired cartridge, designated as the 21MM Seismic Shell, has been developed for MAPCO for use in seismographic exploration work. The shell requires an electric primer which is being developed and produced at Bridgeport, and a compatible gun and firing system designed at Ilion.

The third quarter production commitments of 50,000 rounds per month were met using Research produced components and dry assemblies. About 400,000 rounds have been produced to date, and 24,000 rounds are currently in the warehouse. It is planned to produce 250,000 loaded rounds in January on production equipment now in start-up. The charging booth was converted to assemble the button, insulator and primer cup; and 170,000 of these assemblies were produced. Design rate of 50,000 assemblies per shift was achieved.

Hob Industries is behind schedule in producing sample components due to the interference of their other production demands. If no substantial progress is shown in their effort by January 1, termination of their contract will be considered. Initial investigation indicates that components can be fabricated on existing plant equipment with new die sets and tooling. Design and fabrication times of the die sets and tooling will be determined prior to any decision to terminate Hob. Sufficient components to meet first quarter 1981 requirements have been produced on research equipment and are on hand.

Shotshell Load and Pack Optimization - Bridgeport Plant

A program to upgrade and optimize the Bridgeport Plant's shotshell load and pack equipment systems is in progress. The scope of work includes the conversion and upgrading of loading machines and packers for added operating flexibility and improved equipment performance. All engineering development and design work is nearing completion. Full program implementation is scheduled for third quarter, 1981.

30 Cal. ACCELERATOR®

Due to excessive sprue lengths on molded polycarbonate sabots, the use of LEXAN® 141 is being considered as a direct replacement for LEXAN® 191. During an experimental molding run at the vendor's plant, this polyethylene-free material totally eliminated the long sprues on molded product. To determine the compatibility of this resin with the single base powder (DuPont 4198) used in the ACCELERATOR® products, testing after severe

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30 Cal. ACCELERATOR® (Cont'd.)

environmental storage was conducted. The most recent series of tests which were completed after a six month, 150°F storage period have indicated no detectable degradation of the LEXAN® 141 resin based on test firing and inspection of recovered sabots. Flexure tests of loose sabots stored directly in contact with the 4198 powder at the elevated temperature also showed acceptable results. A series of accuracy tests will be conducted with test and control ammunition stored under severe conditions, and based on those results, recommendations concerning the material change will be developed.

7mm Bench Rest Remington Case

An experimental run to produce the case was completed. Taper-trim of 30,000 cases was accomplished with 15% scrap rate versus 50% predicted. Nine new tools, five new gauges, and a new mouth anneal screw are required for production of this case. A comprehensive product evaluation program has been defined and responsibilities have been assigned. Goal date for completion of all testing and documentation is February, 1981.

7mm Mauser 140 Grain PSP

A second experimental run was conducted to verify that specified pressure and velocity levels could be met. Production start-up for this cartridge is being delayed until pressure reading differences between Process Engineering and Research can be resolved.

7mm 140 Grain PSP Bullet

Upon receipt of the forming dies, experiments were conducted on laboratory equipment to develop proper jacket and core sizes. Ten thousand cores and jackets were subsequently made on production equipment, and Production has been requested to provide machine time to conduct an experimental assembly run.

357 Rem Max 158 Grain SJHP

A case for this cartridge has been developed. It is made in a three-draw process and does not require a stress relief anneal. The case which has a thicker wall construction in the head and body than the standard 357 Magnum product has not split when fired in a handgun at proof pressure. Production has been requested to conduct an experimental loading run. The resulting product will be tested for creep and accuracy in handguns in addition to the normal tests, and a quantity will be made available for Ruger evaluation.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130001027

"Scorpion" Rim Fire Cartridge

Ballistic results from an experimental autoloader run of the "Scorpion" rim fire cartridge indicated that average velocity, using DuPont 8159 propellant, was approximately 30 feet per second below the 1440 ft/sec goal. DuPont, Hercules and Olin were contacted in an attempt to identify a powder with improved ballistic properties. Hercules has agreed to forward three experimental samples of rim fire propellants for preliminary handloading tests. Because of requests by Remington and other rim fire cartridge manufacturers, Hercules is making a concerted effort to increase the efficiency of their rim fire propellants. To date, no propellant samples have been received from DuPont although they have agreed to forward a modified version of 8159. Olin has no propellant available that would be compatible with our high speed equipment. Product evaluation tests on available powders will be conducted in January, 1981.

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KINZER V. REMINGTON

BARBER - 1.30.130001028

F

REMINGTON ARMS COMPANY, INC.
ILION, NEW YORK

CONFIDENTIAL

October 14, 1993

TO:	ILION	WILMINGTON	LONOKE
	J. F. WINSKE	A. W. WHEATON	T. C. DOUGLAS
	E. S. RENSI	V. M. ROMANO	C. P. BIRCH
	J. M. FLOYD	J. M. SUNTING	
	R. J. ORF	J. R. BALIO	
	R. A. JACKSON	J. M. DWYER	
	D. P. CHRISTIE	J. H. CHISNALL	
	K. D. GREEN	W. H. FORSON	

FROM: K. W. SOUCY

SEPTEMBER PROGRESS REPORT
FIREARMS TECHNICAL SECTION

REPORTS OF INDIVIDUAL ENGINEERS ARE ATTACHED. DISTRIBUTE TO YOUR ORGANIZATIONS AS YOU DEEM APPROPRIATE. WHILE DISTRIBUTING AND DISPOSING OF THIS REPORT, RECIPIENTS ARE REMINDED OF THE PROPRIETARY NATURE OF THE CONTENTS.

IF YOU ARE LOOKING FOR A PARTICULAR REPORT OR TOPIC, REPORTS ARE ATTACHED IN THE FOLLOWING ORDER:

* RIFLE ENGINEERING
* SHOTGUN ENGINEERING
* TEST AND MEASUREMENTS LAB
* METALLURGY
* TECHNICAL SERVICES

10-4-93

TO: K. W. SOUCY

FROM: R. J. ORF

MONTHLY REPORT FOR OCTOBER 1993
SHOTGUN ENGINEERING

ENCLOSED PLEASE FIND OUR DETAILED MONTHLY REPORT FOR OCTOBER OF 1993.

KEY ITEMS WORKED ON DURING THE MONTH:

- OVER AND UNDER (PEERLESS)
  - -CONNECTOR / TRIGGER PULL FORCE
  - -"C" STYLE FORE END IRONS
  - -FAILS TO EJECT
  - -30" BARRELS (FRONT SPACER)
- NEW CANTILEVER FOR 1994
- VAXCAMPS / AMAPS INTERFACE
- 23" SPECIAL FIELD T&P FOR 1994
- FLAT RECEIVER TRANSFER MACHINE
- ALMCO REPLACEMENT PROJECT
- 20GA. FULLY RIFLED YOUTH EXPRESS
- 74-7600 RECEIVERS ON CONVENTIONAL LINE
- MIM EXTRACTORS
- WOOD TOOLING AND PROGRAMMING FOR THE 700 DM
- SYNTHETIC STOCK AND FORE END FOR M/870-1187
- SYNTHETIC TRIGGER PLATE FOR M/870

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KINZER V. REMINGTON

30 Sep. '93

To: K.W.Soucy
From: J.R.Snedeker

Ref: September Progress Report

Safety, Health and Housekeeping:

Our noise reduction efforts in the test lab shooting room are essentially completed. All tubes have now been fitted with baffles and this along with the sound proofing materials have significantly reduced the level of noise in the area. One sprinkler head needs to be relocated and sound-proofing baffles need to be hung from the grid work and that will complete the work scheduled to date. We will schedule sound level measurements as soon as these last items are completed.

Maintenance:

The cost estimates and the write-up for the proposed changes to the shooting booth air handling system have been turned over to Dan Shumway for project economics and project submittal.

Test Programs:

Work continues on the Peerless. Various field function testing, high speed videos for the purpose of evaluating ejection and miscellaneous testing.

Testing continues on the Detachable Magazine Box project involving endurance testing, dry cycle testing and function testing.

A test is underway to determine if the heavy trigger pull on the Viper can be reduced.

The first of the new cantilever shotguns are being shot for accuracy, these guns will be going to the writer's seminar if acceptable.

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KINZER V. REMINGTON

CC: Ken Soucy
Don Lewis

To: Bob Orf ✓
From: Ken Rowlands/Tom Bauman

MONTHLY REPORT - SEPT. 1993: OVER/UNDER SHOTGUN

A number of the new bevelled MIM safety switches have now been successfully molded and sintered. Some minor changes to the frame tang will be required to accomodate the new safeties, which sit a little higher because of the addition of the bevelled surfaces. A few parts have been assembled into frames and there is no indication that the black oxide finish is wearing off the top tang.

The first draft of the Field Service Manual is now complete. A number of copies are being circulated for comments among personnel with in-depth knowledge of the Peerless, as well as those with customer service and product liability expertise.

A persistant problem of trying to maintain a maximum trigger pull of six pounds has been solved by a minor redesign of the hammer, sear and trigger. A gun with parts made to the new dimensions has been successfully drop tested from 48 inches with the safety in the "off" position.

Ejection problems are still being experienced when firing some Winchester rounds. Competative shotguns do not appear to have this problem. An investigation is under way to determine the cause and correct it.

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KINZER V. REMINGTON

29 Sept. '93

To: Bob Orf
From: Tom Powers
Subject: Monthly Report for September '93

M/OU

Production & Process Engineering will be building 30" barrel assemblies, with the new front spacer, for trial & pilot. Design work on the new Peerless Sporting Clays has been redirected toward a simplified version for 1995 introduction. The new recoil pad design is out for quoting .

M/870 FBI

We cut our price by 5% & 6% on the plain & rifle sight models respectively and have been notified we will be get the contract.

M/11-87 DEA

We expect to receive notification concerning the endurance shooting by Oct. 15, pending the results of the Phase 1 testing.

20 Ga. Rifled Barrel

The prototype ammunition made in Lonoke for the trial & pilot test has been received. Testing of the new ammunition in Lonoke has shown inconsistencies between the test barrel and the M/870 barrel we sent them. The cause of this is being investigated.

Shotgun FOI

Our front sight vendor is making prototypes of a vertical front bead which are .030 inch lower than our current sight. Samples are due by Oct. 8. We will not be able to make a new vent rib from our current blank.

10 Ga. IC Choke Tube

Complete. This tube seems to shoot rifled slugs well also.

12 Ga. Rifled Choke Tube for Sabot Slugs

Testing has shifted to Lonoke, where a UR barrel which accepts choke tubes is available. The 3" tube outperformed the 5" tube. Additional testing with a 3.5" tube will be conducted.

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KINZER V. REMINGTON

To : Bob Orf 29-Sep-1993
From : Vineet Vermani
Subj. : Monthly report for Sep., 1993

- Added operation to inspect 26 degree angle on O/U hammers.
- New Comparator layout for O/U hammers(w/ 26 deg. angle) is being used.
- Design changes on gage # D-49517 used to match O/U hammers at the grind operation are complete. The gage is being built.
- Design changes on Gage # D-49616 used to match O/U sears at the grind operation are complete. Gage is being built in the tool room.
- Design changes on gage D-49438 used to match O/U hammers and sears at the final assembly area are complete. Gage is being altered.
- Design changes on fixture # D-49582 used to finish mill and grind right O/U hammers is complete. Fixture in tool room to be altered.
- Design changes on fixture # D-49583 used to finish mill and grind left O/U hammers is complete. Fixture in tool room to be altered.
- Added op. to put 12 degree angle on the connector surface of O/U sears.
- New comparator screen for sear is being used.
- Design changes on the final assembly trigger assembly fixture (D-41046) are complete. Fixture is currently being altered in the tool room.
- Design changesxon fixture D-39766 used to mill connector slot on the trigger are complete. The fixture is currently being altered.
- Design changes on gage # D-39766 used to gage connector slot on the trigger are complete. The fixture is currently being altered.
- Tapping fixture (C-40996) used to tap trigger adjusting screw hole on the O/U trigger in tool design. Fixture altered with marked up prints.
- Drill fixture (D-39761) used to drill trigger adjusting screw hole on the O/U trigger in tool design. Fixture altered with marked up prints.
- Changed process records for O/U connectors to reflect the new inspection procedure set up to inspect the secondary connector surface.
- Changed process records for O/U triggers. Added operation to put an ID mark on the new trigger to distinguish them from the old ones.
- Design changes on gage C-39777 used for measuring the location of the trigger adjusting screw hole on O/U triggers in tool design. Gage being altered in tool room with marked up prints.
- Looking into fixture / gage / cutter changes required to put the connector surface on the O/U sears at 12 degrees instead of 5 degrees.
- Design changes on jigs (D-49318 & D-49319) for drilling and reaming sear pin holes on O/U sears (left and right) complete. Jigs to be altered.
- Design changes on gages to measure the position of sear pin hole on O/U sears (left and rights) in tool design.
- All old style O/U sears (w/ connector surface at 5 deg) sent for repair.
- All old style O/U hammers (w/ 28 degree angle) to be put under material review status to investigate if any can be salvaged.
- All old style O/U triggers in final assembly crib.
- Working with vendor to grind 15,000 hammers on the creep feed grinder.
- Working with vendor to get a sample of 100 hammers for model 870 12 Gage with the sear notch ground on the High Efficiency Deep Grinding (HEDG).
- Working with vendor to wire EDM O/U sears.
- Set up alternate grinding process to grind the sear notch on the 870 12 Gage hammers and common sears.
- 24 fire controls (870 12 GA.) with R&D with combinations of ground hammers and sears and only ground hammers.
- Corrected part # in Sp10 trigger plate assembly process record.

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KINZER V. REMINGTON

BARBER - 1.30.130001034

TO: R. J. ORF, TECHNICAL SUPERVISOR, SHOTGUNS

FROM: T. W. HAWKINS, AREA ENGINEER

MONTHLY REPORT - SEPT. 93'

UPON RE-ASSIGNMENT FROM THE AMAPS SECTION TO PROCESS ENGINEERING, I HAVE BEEN WORKING ON THE ALMCO VIBRATORY FINISH REPLACEMENT PROJECT. WE HAVE FOCUSSED ATTENTION TOWARD COMPLETING THE PROCESS WORK ASSOCIATED WITH OUR SHOTGUN AND RIFLE RECEIVER LINE. JACK FITZER, JOE MURRAY AND MYSELF VISITED ALMCO INC. IN ALBERT LEA, MINNESOTA TO WORK ON THE RECEIVER PROCESS, DISCUSS CELL TECHNOLOGY ASSOCIATED WITH VIBRATORY FINISH, AND WHAT IS NEEDED AT OUR FACILITY TO IMPLEMENT THE INSTALLATION OF NEW EQUIPMENT IF AND WHEN WE HAVE PROJECT APPROVAL.

THE TRIP TO ALMCO WAS CONCLUDED WITH AN ACCEPTABLE VIBRATORY PROCESS (BOTH INTERNAL DEBURRING AND EXTERNAL FINISH) OF OUR RECEIVERS. WE HAVE ALSO REDUCED OUR TIME CYCLES OF WET AND DRY VIBRATORY FINISH BY 33%. PRESENTLY, I AM IN THE PROCESS OF ESTIMATING MEDIA USAGE, TIME CYCLE AND MATERIAL HANDLING STUDIES AND LAYOUT WORK FOR POSSIBLE SITE SELECTIONS.

WE WILL INITIATE PROCESS DEVELOPMENT WORK ON OUR SHOTGUN BARRELS DURING THE MONTH OF OCTOBER WITH ANOTHER TRIP TO ALMCO. WE SHOULD COMPLETE ALL NECESSARY DEVELOPMENT WORK FOR PROCESS, SITE AND ESTIMATES BY THE END OF NOVEMBER IN AN EFFORT TO READY A PROJECT DRAFT IF NEEDED.

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KINZER V. REMINGTON

Monthly Report - September

To: Bob Orf
From: Jason Baumgart
Date: September 29, 1993

FLAT RECEIVER TRANSFER LINE

Most of my time has been spent preparing information regarding the proposed transfer line. I am almost finished with the illustrations of the operations needed for each model of receiver, and have been preparing a written description as well. On Wednesday the 15th, I was at a tool show in Rochester learning more about possible transfer line manufacturers and their machinery. I have met with representatives from several of these companies to introduce to them our requirements for this transfer line.

"B-S-T" STAMPING ON PEERLESS

I have placed an order for a new stamp holder and stamps to imprint the B-S-T marking along the top tang of the Peerless frame. This new stamping tool moved the B and T 0.100" closer to the S, and should eliminate the ripple that occasionally forms beneath the B and the T upon stamp impact. I expect this stamp holder to have been delivered to me by the last week in October.

ARMORERS SCHOOL

During the week of the 13th through the 17th, I was in Armorers School. During this time, I learned how to disassemble and assemble the 870 12 Ga shotgun and the 700 Rifle. My absence on the 15th (tool show) caused me to miss the instructions on the 1187, but I have been invited to attend this portion of the schooling on a later date. Through this training, I feel I have become more familiar with components of these weapons, and how they function together.

7400/7600 CONVENTIONAL RECEIVER LINE

I have been assisting Jack Fitzer solve any problems which turn up in the 7400/7600 receiver line as it is being brought back into operation.

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KINZER V. REMINGTON

J.B. KROZ 9/30/93

PROGRESS REPORT

- Purchase Parts Quality Presentation - Was made to the Technical Groups to help define what is being done currently to improve incoming parts quality. Further communications are planned to continue this effort.

- Purchase Parts Quotes Routing - Is being developed to improve communications on vendor changes. R.A. Jackson has reviewed a tentative form.

- Student/Mentor Program - A presentation on attribute gaging was developed and presented. A presentation on process records is being developed for the next class.

- XP100 Walnut & Laminated Stocks - Continue to review progress on this issue, still having clearance problems. Contacted Bobby Dye (Remington, NO), will work with our engineering to make at S&K.

- X/700 Bolt Handles - Working with FMI to alleviate polishing problems caused by heat sinks in parts.

- Nexus - Attended training session on capital project work orders and purchase req.

- Developing further sessions on geometric tolerancing for the remainder of the Technical Group & Production.

JBN:cat

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TO: R.A. Jackson September 29, 1993
FROM: W.A. Warren, Jr.

PROGRESS REPORT September, 1993

M700 VS, "Sendero Special"

Rifle Eng. and the R&D Lab. have completed additional follow-up to quality-of-workmanship issues raised last month. All remaining rifles were disassembled and inspected. Examples of specific opportunities for improvement were reviewed with the shift foreman for corrective action with the one (new) assembler who built all of them.

I made others aware of "when produced" questions on field reports of sub-standard quality on H-S stocks and additional processing steps likely to result from substituting a McMillan for an H-S stock.

FLUTED BARRELS

1994 VS SS (PI-2 8-6-93) Flute depth mimics the regular barrel contour. Flute dimensional calculations were completed on AUTOCAD. Marked drawings to implement this are complete. These have been provided to make samples during the "Engineering run" window on the Monarch VMC. Due to urgent work on the Peerless, a CV detailer is not yet available to complete/update model drawings.

SPECIAL ORDER FOR "HICKS" (jobber)

o VS and VS Sendero This is a limited run. barrels. Both will be fluted the same-to mimic magnum profile. This provides a common appearance. Only the magnum will be marked "SENDERO". Calculations were completed on AUTOCAD. Marked drawings have been recently provided to run samples on the Monarch VMC.

o BDL These will be fluted to mimic the "Mountain Rifle" contour. Flutes will be narrower, shallower and shorter than on the VS versions. Information necessary to run samples is 15% complete. My current top priority is to complete this information for the sample run on the Monarch.

BASIC RESEARCH-RELEASE MECHANISMS

Measurement Apparatus: Changes are indicated where the previous month's value appears in parentheses.

Status:	Percent complete
o purchasing major components	95
o purchasing, designing and fabricating small components	15(10)
o learning the operation and setup of the force transducer	10(0)
o " " " " " " displacement "	60(20)
o linking above to the Tektronics transient data capture device	10
o learning the programming and operation of the motor-driven motion control system	5
o integrating the components and debugging their operation	0

DESIGN-RELATED

On an ongoing basis, I am assisting R. Keeney with his NSAR process-design integration program.

SAFETY

R&D safety committee: Members of the Tech Staff have accepted my charter proposing improvements. I have agreed to act as Resource to the new group-if they so request. Their first Safety Meeting went very well. The committee members showed much initiative in obtaining and presenting additional timely information and promoting audience participation.

TRAVEL FOLLOW-UP

We still have not received the information produced during July's trip to Houston, TX.

END

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SEPTEMBER 30, 1993

TO : R. A. JACKSON
FROM : GAYLE M. UCASZ

* FINISHED DESIGN AND BUILD WORK ON 320 OU COLOR RACKS FOR THE BLACK OXIDE COLOR LINE ELG.66- 1. THE NEW RACKS ARE FOR THE BARREL, FRAME AND SIDE PLATES. THESE RACKS ARE CURRENTLY BEING USED IN PRODUCTION. IN THE FUTURE A RACK DESIGN FOR THE 522 BARREL WILL BE COMPLETED AND IMPLEMENTED. I AM ALSO WORKING ON GETTING DRAWING NUMBERS ISSUED ON THE RACKS FOR FUTURE REFERENCE AS WELL AS GETTING THE RACKS STAMPED WITH THAT NUMBER.
* HAVE WORKED WITH ED MURRAY, JODIE GRIPPE, AND PEOPLE FROM NIAGARA CUTTING TOOLS TO SET UP AN INTRODUCTORY CLASS CLASS ON CUTTING TOOLS FOR OUR NEW TECHNICIANS AND ENGINEERS.
* HAVE INVESTIGATED, AND WILL CONTINUE TO WORK ON, BROACH ISSUES IN THE RECEIVER SHOP, WITH TOM LECLAIRE & ED MURRAY, CONCERNING BREAKAGE, VENDORS, AND DESIGN. WE LOCATED AN ERROR WITH OUR RE-GRIND PROCESS AND HAVE CHANGED IT, WHICH HAS PROVEN, SO FAR, TO HAVE TAKEN CARE OF SOME PROBLEMS WITH BREAKAGE ON OUR THIRD PASS BROACHES. WE ARE ALSO CONSIDERING THE POSSIBILITY OF TRYING A NEW DESIGN FOR ALL THREE BROACHES IN THE FUTURE AND ARE NOW ATTEMPTING A PROCESS WHICH MAY LEAD TO US BEING ABLE TO SALVAGE BROACHES THAT WOULD HAVE ORDINARILY BEEN SCRAPPED.
* STARTED TO TRACK 5.5 X 55 SWEDISH 700 CLASSIC INCLUDING VERIFYING DRAWINGS AND ORDERING TOOLING. THE CHAMBER TOOLING FOR THE SWEDISH CLASSIC HAS BEEN REVIEWED AND ORDERED AS HAS MOST OF THE GAGES, PLUGS ...
* STARTED INVESTIGATION INTO MODEL 7 & 700 RECEIVER ISSUE. I HAVE PULLED BOTH PROCESSES AND HAVE BEEN REVIEWING AND HIGHLIGHTING THEIR DIFFERENCES IN ORDER TO SEE IF IT WOULD BE FEASIBLE TO CHANGE THE MODEL 7 RECEIVER TO THE SAME PROCESS AS THE MODEL 700. THIS WILL, HOWEVER, ALSO POSSIBLY CHANGE THE XP100R RECEIVER.
* VERIFIED WHAT WE DO HAVE AND ORDERED WHAT WE DO NOT HAVE ON SITE IN ORDER FOR THE (2) DEHOFF GUNDRILL MACHINES TO STAY FULLY OPERATIONAL, DRILLING ANY CALIBER. THIS HAS BECOME QUITE A PROJECT SEEING AS DEHOFF HAS YET TO GIVE US A MANUAL ON THE MACHINE OR A COMPLETE PARTS RECORD.
* WENT TO CINCINNATI TO A PRACTICAL MACHINING PRINCIPLES COURSE.
* MISC. EVERYDAY OCCURRENCES

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

01 Oct. 93

To: K.W. Soucy

From: R.A. Jackson

PROGRESS REPORT

Detachable magazine box

* The Phase I T&P rifles (reference report of 9/1/93) were built and tested with the following difficulties identified:

a) Cartridges jumped out of the magazine during cycling of the bolt causing inability to feed properly.
--> THIS IS BEING CORRECTED BY A REDESIGN OF THE MAGNUM MAGAZINE BOX. Twenty each of three types of slightly modified magazine boxes have been ordered from our vendor. After testing these, the best will be selected and specified as our new design. Trial and pilot quantities of this new box will then be ordered with the magnum T&P scheduled in November 1993.

b) About 30% of the test rifles failed our normal Gallery testing because of "bolt over-ride". This means that the bolt passed over the next round in the magazine without feeding it up and into the chamber. Of those 70% that passed our normal in-process testing, all performed well in subsequent Phase I T&P testing in the Test Lab.
--> THIS CONDITION IS BEING CORRECTED THROUGH CHANGES TO OUR STOCK INLETTING AND TRIGGER GUARD PROCESSING.

c) Black color was found to wear off the bottom of the magazine latches during normal cycling. This has been corrected through authorization of the Product Team allowing all silver colored latches. This not only looks fine but saves us $0.30 - $0.60 per rifle depending on the process required to make them a lasting black.

d) Over-spray of black powder coat was found on the upper lip of the magazine box bottom. This is being corrected by additional masking of this surface during p-coat.

e) Trigger guards protruded above the stock surface at the front nose by about 0.060". This is being corrected by changing the molding die. For the first ~ 4500 parts, we will mill the correct fit and configuration so that tooling change will not hold up production of product.

* Phase 2 T&P rifles will be built during the first week of Oct.

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KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.
ILION, NEW YORK

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9mB

CONFIDENTIAL

July 15, 1993

TO:

PITTSBURGH	ILION	WILMINGTON
B. R. BROWN	J. F. WINSKE	A. W. WHEATON
R. F. RIESMEYER	E. S. RENSI	V. M. ROMANO
	J. M. FLOYD	J. M. BUNTING
LONOKE	R. J. ORF	J. R. BALIO
P. E. OTTO	R. A. JACKSON	J. M. DWYER
R. S. TOULSON	D. P. CHRISTIE	J. H. CHISNALL
J. R. PRUITT	K. D. GREEN	W. H. FORSON
C. P. BIRCH		
T. C. DOUGLAS		

FROM: K. W. SOUDY

JUNE PROGRESS REPORT
RESEARCH & DEVELOPMENT
FIREARMS/AMMUNITION

THIS WILL BE THE LAST FIREARMS/AMMO JOINT REPORT.

REPORTS OF INDIVIDUAL ENGINEERS ARE ATTACHED. DISTRIBUTE TO YOUR ORGANIZATIONS AS YOU DEEM APPROPRIATE. WHILE DISTRIBUTING AND DISPOSING OF THIS REPORT, RECIPIENTS ARE REMINDED OF THE PROPRIETARY NATURE OF THE CONTENTS.

FIREARMS HIGHLIGHTS

THE *PEERLESS* O/U PRELIMINARY TRIAL AND PILOT TESTING CONTINUES WITHOUT MAJOR INCIDENT.

THE *M/700 DETACHABLE MAGAZINE BOX* DESIGN ACCEPTANCE TEST WAS TEMPORARILY HALTED DUE TO MALFUNCTIONS. BASED ON ANALYSIS OF THE PROBLEM THE MAGAZINE BOX WAS MOVED HIGHER TO PRESENT MORE OF THE SHELL TO THE BOLT FACE. THIS APPEARS TO HAVE SOLVED THE PROBLEM AND TESTING HAS RESUMED.

AMMO HIGHLIGHTS

DEVELOPMENT OF *20GA COPPER SOLID* AND *12GA 3" MAG COPPER SOLID* PRODUCTS IS PROCEEDING WELL. TWO VERSIONS OF THE 10GA MAGNUM ARE BEING DEVELOPED. (SEE SCARLATA REPORT)

RELOADABILITY PROBLEMS STILL EXIST IN THE *.410 ROTARY CAM*. THESE WILL PREVENT THE TIMELY INTRODUCTION OF THIS PRODUCT. (SEE BASZCZUK REPORT)

A TRIAL AND PILOT RUN OF *.223 REM 40gr JHP* WAS COMPLETED. RESULTS WERE EXCELLENT. (SEE HERRING REPORT)

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

1 July '93

To: Ken Soucy
From: Tom Powers
Subject: Monthly Report for June '93

M/OU Barrels

Two additional sets of 30" barrels (with the current front barrel spacer) were received from production for pattern testing. These were assembled to two frames and shot for POI in the test lab. The bottom barrel shot considerably lower than the top one for both guns. A new front spacer will be designed to make both barrels shoot to the same POI.

Design of the barrel assembly for the new Peerless Sporting Clays has begun. The parts of the barrel assembly which must be redesigned for this model are: barrel, barrel spacers (front & middle), vent rib and the fore-end lug. The barrel design is complete. The other items have yet to be addressed.

M/870 & M/11-87 Upgrades

Need to issue new drawings for the barrel assembly.

New PEERLESS Recoil Pad

Result of the analysis of the Pachmayr Decelerator pad material (which sands nicely) was received from the Experimental Station. A specific material was not identified, but rather a list of ingredients which comprises the material was provided. We have not been able to get the material identified. The drawings have been completed and sent to Jerry Helmer for vendor quoting.

M/870 Mil-Spec 3443E

John Rogers is attempting to get the testing specifications from the government so we may conduct an in-house test of the 26 guns we built.

M/11-87 DEA

We have received an Invitation For Bid from the DEA. If we wish to respond, we have to provide five samples by August 24th. We need to make some engineering changes before submitting bid samples.

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KINZER V. REMINGTON

M/870 FBI

In the space of two weeks we successfully built, tested and shipped six prototypes for bid samples, in conjunction with a solicitation. These guns had a number of non-standard parts & features, the completion of which required much cooperation and quick response at many levels within the company and by vendors. If we pass the FBI's preliminary tests, we will have to provide a shooting team to conduct endurance testing at their facility in Quantico, VA. The estimated date for awarding the contract is September 30th.

20 Ga. Rifled Barrel

The drawings have been transmitted. When prototypes of our new slug, with molded sabot's, become available, they will be sent to us. The ECM mandrel and gauging to rifle the barrels has been ordered, and will be ready to produce prototype barrels shortly after shut-down.

Shotgun FOI

We will investigate using a Krieghoff-style globe front sight and retapering the vent rib within the confines of the current blank. On hold pending other priorities.

10 Ga. IC Choke Tube

Pattern testing is complete and the results are acceptable. Endurance testing remains to be shot.

12 Ga. Rifled Choke Tube for Sabot Slugs

Testing was begun with our prototypes and competitive rifled chokes. We then had to postpone testing due to accuracy problems with our 12Ga. sabot slugs. The new lot of ammunition from Lonoke did not shoot much better than the previous lot we had. The Winchester sabot ammo grouped at approximately 2" with our experimental choke tube.

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KINZER V. REMINGTON

F

REMINGTON ARMS COMPANY, INC.
ILION, NEW YORK

CONFIDENTIAL

September 10, 1963

TO:	ILION	WILMINGTON	LONOKE
	J. F. WINSKE	A. W. WHEATON	T. C. DOUGLAS
	E. S. RENSI	V. M. ROMANO	C. P. BIRCH
	J. M. FLOYD	J. M. BUNTING	
	R. J. ORF	J. R. BALIO	
	R. A. JACKSON	J. M. DWYER	
	D. P. CHRISTIE	J. H. CHISNALL	
	K. D. GREEN	W. H. FORSON	

FROM: K. W. SOUCY

AUGUST PROGRESS REPORT
FIREARMS TECHNICAL SECTION

REPORTS OF INDIVIDUAL ENGINEERS ARE ATTACHED. DISTRIBUTE TO YOUR ORGANIZATIONS AS YOU DEEM APPROPRIATE. WHILE DISTRIBUTING AND DISPOSING OF THIS REPORT, RECIPIENTS ARE REMINDED OF THE PROPRIETARY NATURE OF THE CONTENTS.

9-1-93

TO: K. W. SOUCY

FROM: R. J. ORF RJO

MONTHLY REPORT FOR AUGUST 1993

ENCLOSED PLEASE FIND OUR DETAILED MONTHLY REPORT FOR AUGUST OF 1993.

KEY ITEMS WORKED ON DURING THE MONTH:

- OVER AND UNDER (PEERLESS)
  - -CONNECTOR / TRIGGER PULL FORCE
  - -"C" STYLE FORE END IRONS
  - -FAILS TO EJECT
  - -EJECTS LIVE ROUND
  - -30" BARRELS (FRONT SPACER)
- NEW CANTILEVER FOR 1994
- VAXCAMPS / AMAPS INTERFACE
- 23" SPECIAL FIELD T&P FOR 1994
- FLAT RECEIVER TRANSFER MACHINE
- 20GA. FULLY RIFLED YOUTH EXPRESS
- FBI / DEA GUNS AND FIELD TEST
- M/700 SS PROCESS OPTIMIZATION
- WOOD TOOLING AND PROGRAMMING FOR THE 700 DM
- SYNTHETIC STOCK AND FORE END FOR M/870-1187
- SYNTHETIC TRIGGER PLATE FOR M/870

To : Bob Orf
From : Vineet Vermani
Subj. : Month report for August, 1993
Date : 30-Aug-1993 Mon 08:17

- O/U Pre Play Gage designed. Currently building (2) in Tool Room.
- New program for machining trigger plates for extended action bar locks has been completed.
- Added temporary operations to O/U selector block, connector and rear connector to bring parts to model drawing..
- Added dial base gage (D-49617) to gage O/U hammers at the grind op'n. Gage is in addition to the existing comparator screen.
- Added dial base gage (D-49615) to gage O/U sears at the grind operation. Gage is in addition to the existing comparator screen.
- Changed reamer and plug gage for hammer pin hole and the cocking rod hole in the O/U hammer. This was done to get the diameters towards the higher side of the tolerance with a new set of reamers.
- New cutter for carrier dog slot on carrier dogs. Done to get the slot towards the higher side of tolerance with a new cutter.
- Meeting with Gray Syracuse to resolve issue around the taper over the width of the O/U hammers.
- Added surface grind operation to the O/U hammers to bring them to model drawing till vendor corrective action is taken.
- Repaired safety actuating rod to model drawing in the tool room.
- New Comparator fixture for extended action bar lock. Fixture also sent to H&P (vendor).
- To resolve O/U heavy trigger pull, the following done for experimental purposes
  - modified connector surface on sear at different angles.
  - modified primary and secondary connector surface on the connec
  - Modified sear plunger spring
- Modifying drill jig and gage to drill & ream sear pin hole on O/U sear. Currently in tool design.
- Conducted tests on creep feed grinding 870 hammers and common sears.
- Working with vendor to Wire EDM the O/U sear.
- Quote for wiring Smith & Wesson trigger and hammer for MIM.
- Design to split O/U hammer fixture to finish mill and grind sear notch is complete.
- Working on eliminating the operation to file the burr on the connector surface of the right hand sear for the O/U.
- Updated O/U hammer, sear, selector block, rear connector and connector process records to reflect the changes made.
- Six 1187 fire controls with special hammers built for R&D guns.
- New common trigger plate assembly fixture ready for build.
- Working with H&P on the project to rework and rebuild tools for the 870 12 Ga. carriers.
- Will be working on the guns in the lab which came back from the gallery because the safety did not work.

Thanks

Vineet Vermani

Vineet Vermani

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

To: Jim Snedeker
From: Edward Ford
Subject: August Monthly Report

Shotgun Product Improvement - New Cantilever Design

Impact tests were performed on two Remington cantilever scope mounts and one Mossberg cantilever scope mount. The tests were used to determine which process, welding or brazing, offers similar strength characteristics as the Mossberg. The tests showed that the brazed joint had equivalent impact strength characteristics as the Mossberg and over ten times the impact strength then the welded joint.

A high speed video of a M/870 with this new cantilever scope mount was taken to see if the scope mount would stay attached to the barrel during a blowup. The scope mount did stay attached, however the scope mounting rings fractured allowing the scope to fly rearward towards the shooter. David Findlay will add additional clearance to the scope mount to eliminate any forces on the scope and scope rings during a blowup.

Centerfire Product Improvement - New Crown

A new crown similar to the mountain rifle crown was added to the standard barrel and magnum barrel contours and a new "dish" crown was added to the varmint barrel contour. The drawings were transmitted on August 26, 1993.

Bolt Velocity Software

Currently developing a software program to use the Compaq Personal Computer to control the Tektronix 2520 Data Acquisition System to automate the bolt velocity test. The program is written in Visual Basic and uses "pull down" menus to input data. The program is approximately 90 percent complete with one subroutine remaining to be debugged.

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Monthly Report For August 1993
Joseph P. Mead

M/700 Detachable Items:

*Investment Cast Mag Latches (left and right): The molds have been approved for production. The fixtures and programs for secondary operations have been completed, CMCI is machining the parts due to capacity constraints.

*Investment Cast Followers (long and short): Approximately 400 long action Followers have been received and were modified for use on the T&P. The mold is being corrected and we are due to receive 2,100 more. The short action mold has been tried. The parts required some modifications before they could be used. The mold is being modified, with parts due the first week of September. The fixtures and programs for secondary operation were also completed. The parts will be machined at CMCI.

*Trigger Guards (long and short): A T&P quantity of 220 long actions were cast and machined at Product Technologies. A first article layout has been completed on the castings and they have been approved for production. The trim tool is being completed and powder coated and the latch cuts were finished machined. A T&P quantity of approximately 300 short actions have been cast. The trim tool will be completed by the second week in September. After trim, the 300 parts will be used for T&P. We are awaiting samples for first article layout. The die caster is experiencing problems with both the long and short action dragging / sticking in the mold. We are working on a modification to the mag box cores for both, that should solve the problem.

*Synthetic Stock: Sixty Stocks have been inlet for the T&P. A new rotating fixture adapter for the existing inlet fixture is being completed in the Tool Room. The material savers are being implemented for both the long and short actions. We are awaiting a quotation to mark all four barrel channels with the Remington logo and barrel type identification.

M/700 Recoil Pad: We have had some difficulties in molding these parts in-house. We opened the gates in the Tool Room and are currently running three of the four cavities and glass beading for cosmetics. Designs have been submitted to Three Rivers Tool to modify the vents and coring in the parts to maximize flexure. We will modify one of the four cavities and run parts for marketing approval before proceeding with the balance of the cavities. This modification should also help fill all four cavitites.

M/522 Synthetic Mag Box: Four new materials were molded with the experimental mold. One sample consistently went over 800 rounds. The parts were examined and modifications to the mold have been determined that will strengthen the design. A quote has been received and the work will be completed within the next three weeks. We will run again at this time. We are also investigating chrome plating the parts to improved surface toughness. The next samples should be ready for test by the end of September.

Synthetic Common Trigger Plate: Modifications have been made to our single cavity experimental mold that included strengthening the bow. Sample parts will be molded by the first week in September for testing in the lab.

Synthetic Short Stock & Fore Ends: The designs for both M/870 and 1187 Fore Ends have been completed and approved by Marketing. Another version of the common short Stock has been modeled by Dave Findlay and is being cut by Bob Senco to determine integrity of the surfaces. When complete, this cut sample will be shown to Marketing for approval.

Mold Shop Project: A project has been submitted that will allow us to move the mold shop from 76-2 to 66-1 N. We would also install a new 500 ton molding machine along with central mixing and drying capabilities. We are waiting for approval.

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TO: RICHARD JACKSON
FROM: MICHAEL KEENEY

Date: 08/27/93

TOPIC: AUGUST 1993 PROGRESS REPORT

o PROCESS DEVELOPMENT/RESEARCH OF NBAR:

Seven receiver blanks were shipped to ELMASS on 08/20/93. Elmass will produce the bolt lug clearance slots. An evaluation report and the machined samples are expected by 09/30/93.

A comparison of the M/700 and the proposed NBAR firing pin assemblies have shown the NBAR assembly to be 68% lighter than the current M/700 assembly. As a result, there is a 50% reduction in lock time as compared to the M/700, while maintaining a comparable bolt lift force over the shorter 67 deg. rotation.

In the past there have been evaluations of a cantilever centerfire extractor that will function within the bolt shroud. The previous testing has been very positive. This style of an extractor is under consideration for use in the NBAR. The Tool Room is currently machining a sample lot for further evaluation.

The research and marketing departments are currently utilizing an industrial design consulting firm to develop proposals for the external cosmetic features. Various two dimensional paintings and one three dimensional model of a synthetic stock have been produced. The results of which have been very intriguing. Due to the success of the encounter, the three dimensional model will be fitted with an actual receiver/barrel (RECBAR) assembly and become a focus panel model. After further development, a wood model will be produced and included in the focus panel.

o XP-100 WOOD STOCK:

Due to the higher trigger pull force specifications for the Hunter version, a secondary trigger spring is required. The initial sample of 200 pcs. is due by 09/17/93.

The Silhouette offering does not require the additional trigger spring. Therefore, the trial and pilot testing will proceed.

Bishop, the stock vendor, has begun to process the second order for XP-100 stocks. To insure proper inletting, John Mroz and myself visited Bishop. The visit proved to be very beneficial for Bishop as well as us. The current setup does meet all inletting requirements.

o M/7400 M.I.M OPERATING HANDLE/BOLT CARRIER ASSEMBLY:

Five M.I.M. operating handles were submitted for endurance testing. Typical endurance testing for a M/7400 is 2000 rounds . Of the five, two failed at approximately 1000 rounds. The failure appears to be due to an insufficient corner radius. Frank Ogrodnik will have the tool altered and process another sample for testing.

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To: R.A. Jackson August 31, 1993

From: R.S. Murphy

Subject: August Monthly Report

o The 700 Detachable Box Magazine continues to lead my priority list as we are beginning to machine trial and pilot components. The tabletop 3-axis NC mill has been useful here and I have acquired a working knowledge of it's operation. Eighty-eight long action guards have been finish machined for the first phase of T&P testing.

The fourth axis fixture has been received from Brookfield Machine and preliminary inspection is done. Final inspection will be done as soon as it can be mounted on the Bridgeport mill so the fourth axis can be indexed, (expected about Sept. 7). I have a concern that contact pressures between powder coated guards and the fixture may cause marring. A new simple fixture may be required for this second cut. Development of the program to mill the guards will be completed by Sept. 20.

o The Quail Unlimited laser engraved sample gun was completed for the August Product Team Meeting and the decision was made not to pursue this business. A local artist was used to develop the final artwork with excellent, but expensive, results and the laser engraving has been developed to a point where it is a viable marking process. Perhaps when the Product Team meets in the future, this process and product can be more properly evaluated.

o 90-T support is continuing. I have rewritten the adjustable rib owners manual insert in response to feedback from the field. A top lever return spring will be redesigned and a DCR will be done for the locking bolt to reduce the occurrences of the top lever opening on firing.

o The design of a palletized fixture to drill and tap 541 receiver scope holes is continuing.

o The balance of my time was applied towards plant support activities too numerous to itemize but too important to ignore. As always, additional time could be spent in this area as there are many opportunities for process improvements.

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KINZER V. REMINGTON

AUGUST 31,1993

TO: R.W.SOUCY
FROM: D.R.LEWIS

AUGUST MONTHLY REPORT

TOOL DESIGN GROUP

PEERLESS

THE TOOL DESIGN AREA CURRENTLY HAS 8 TDR'S FOR THE PEERLESS.

DETACHABLE MAGAZINE BOX

TOOL DESIGN HAS RECEIVED 46 TDR'S FOR A TOTAL OF 1582.5 ESTIMATED HOURS OF TOOL DESIGN WORK. TO DATE, 39 OF THE 46 TDR'S HAVE BEEN COMPLETED. THE REMAINING TDR'S ARE COMPARATOR SCREENS AND FIXTURES, WHICH WILL BE DONE IN-HOUSE.

PROGRAMMING GROUP

PEERLESS

THE PROGRAMMING FOR THE NEW T10 HAS BEEN COMPLETED AND THE MACHINE HAS RELEASED TO PRODUCTION.

MODEL 700 DETACHABLE MAGAZINE BOX

THE NC SHOP HAS COMPLETED 40 TRIGGER GUARDS FOR THE DESIGN ACCEPTANCE TEST GUNS.

PRODUCT DESIGN GROUP

PEERLESS

THE MODEL DRAWINGS ARE BEING PREPARED FOR FINAL TRANSMITTAL.

MODEL 700 DETACHABLE MAG. BOX

INTERIM TRANSMITTALS HAVE BEEN COMPLETED ON ALL COMPONENTS. REVISIONS ARE BEING HANDLED ON AN AS NEED BASIS. THE STATUS OF THE DETACHABLE MAGAZINE BOX COMPONENTS,FOR T&P, ARE BEING REVIEWED IN A DAILY MEETING.

TECHNICAL MANUALS

MODEL 522 VIPER

THE FIELD SERVICE MANUAL HAS TO BE REWRITTEN BEFORE LEGAL WILL APPROVE IT. DAVE FINDLAY WILL BE REWRITING THE MANUAL.

PEERLESS

THE FIELD SERVICE MANUALS IS STILL NEEDED.

MODEL 700 MANUAL

THE 700 MANUAL HAS BEEN RE-WRITTEN WITH ALL THE LATEST WARNINGS AND HAS BEEN PRINTED. CURRENTLY THE MANUAL IS BEING UPDATED TO INCLUDE THE NEW PRODUCTS FOR 1994. (ie. 700DM, SENDERO, 700 VS SS, etc.)

MODEL 7

THE MODEL 7 MANUAL IS BEING UPDATED TO INCLUDE THE NEW SAFETY WARNINGS AND THE STAINLESS STEEL SYNTHETIC.

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KINZER V. REMINGTON

AUGUST 31, 1993

TO : R. A. JACKSON
FROM : GAYLE M. UCASZ

* BEGAN WORKING WITH JIM RABBIA ON DESIGNING NEW RACKS FOR THE BLACK OXIDE COLOR LINE BLG.66- 1. THE NEW RACKS ARE WANTED TO INCREASE THE CAPACITY OF PARTS COLORED, AS WELL AS, THE QUALITY OF COLOR DUE TO LOADING OF THE NEW RACKS.
  - DESIGN & BUILD WORK COMPLETED ON THE FOLLOWING :
    (4) 320 OU BARREL
    (4) 320 OU SIDE PLATE
  - DESIGN WORK COMPLETED FOR 320 OU FRAME RACKS AND BUILDING OF (2) IN PROCESS
  - DESIGN WORK IN PROCESS FOR 522 BARREL RACK
* INVESTIGATED ISSUE ON XP100, XP100R RECEIVER PROCESS IN WHICH THERE WAS CONFUSION AS TO WHICH LENGTH EACH RECEIVER BLANK IS AND WHICH EJECTION PORT CUT IS NECESSARY FOR EACH. PROCESS RECORD CHANGE WAS FOUND TO BE NECESSARY AS WAS GAGE LABELING MODIFICATION. BOTH CHANGES ARE IN THE PROCESS OF BEING IMPLEMENTED.
* CHECKED INTO SENDERO ROLLMARK ISSUE, CHANGED DWG., ISSUED NEW DWG. TO VENDOR, BUYER, AND STORES. ALSO TRACKED THE REST OF THE ORDER WHICH WAS ALSO INCORRECT.
* HAVE INVESTIGATED, AND WILL CONTINUE TO WORK ON, BROACH ISSUES IN THE RECEIVER SHOP, WITH TON LECLAIRE & ED MURRAY, CONCERNING BREAKAGE, VENDORS, AND DESIGN.
* WORKED ON STRAIGHTENING OUT THE DWG. FOR DN TEMPLATE GAGES AND GETTING THEM RE-ORDERED.
* STARTED TO TRACK 6.5 X 55 SWEDISH 700 CLASSIC INCLUDING VERIFYING DRAWINGS AND ORDERING TOOLING.
* CHECKED INTO THE 700 SS BARREL BRACKET ISSUE IN WHICH HEAT TREATED BRACKETS ARE BEING MIXED UP WITH BRACKETS NOT YET HEAT TREATED. WILL MEET WITH JOHN MROZ IN ORDER TO CONFIRM A SOLUTION.
* STARTED INVESTIGATION INTO MODEL 7 & 700 RECEIVER ISSUE.
* VERIFIED WHAT WE DO HAVE AND ORDERED WHAT WE DO NOT HAVE ON SITE IN ORDER FOR THE (2) DEHOFF GUNDRILL MACHINES TO STAY FULLY OPERATIONAL, DRILLING ANY CALIBER.
* INVESTIGATED ROLL PIN AND BOLT PROBLEM IN FINAL ASSEMBLY WHICH WERE DUE TO A CHANGED PROCESS AND OPERATOR ERROR.
* LEARNED ABOUT, AND HOW TO, PUT IN WORK ORDERS, PURCHASE ORDERS AND REQS, WITH HELP FROM ED MURRAY.
* KEITH SULLIVAN, GEORGE STICKLES, BILL VANSICKLE, & MIKE URTZ EACH TOOK ME THROUGH THEIR PROSPECTIVE DEPARTMENTS IN ORDER FOR ME TO UNDERSTAND PRODUCT FLOW THROUGH THEIR DEPARTMENT. THEY LET ME MOVE FROM STATION TO STATION, JUST AS THE PRODUCT DOES, MEETING THE OPERATOR AND DEVELOPING AN IDEA OF WHAT EACH STATION IN A PARTICULAR PROCESS DOES. I STILL HAVE TO MEET WITH SOMEONE FROM THE BOLT AREA IN ORDER TO MORE FULLY UNDERSTAND THEIR OPERATION.
* MISC. EVERYDAY OCCURRENCES

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KINZER V. REMINGTON

Gary Barnes

MONTHLY REPORT FOR AUGUST 1993

* M/700 DM - The program has been written and debugged with the assistance of Joe Mead to machine the latches and follower complete from the investment casting. The machining has since been moved to Cedarville Manufacturing because of manpower and machine constraints.

- Developed polishing samples for both the latches and the follower to establish the standards for production.

- Magazine assembly fixture fabrication will not be complete for the phase I trial and pilot. Manual assembly utilizing the development mandrel will enable us to have magazine assemblies on time.

- The cams to manufacture the altered receiver magazine box opening and the bevel cut for the TR 124 Tri-Ordinate were received the week of the 22nd. The receiver did not meet the overall length gage. Both the manufacturer and myself are reviewing the calculations and the setup to correct the length. The manufacturer is continuing with the TR-133 cams using the same dimensions as the TR-124 because of the delivery time constraint. He has the capabilities to alter the 'Y' cam to bring the length to dimension if no setup error was involved.

- The quote for the short action receiver cams has been received with a 6-8 week delivery. This makes the October build schedule very tight. I gave Hogland a verbal okay to start the design August 31 with a 7 week due date. The gages have been designed with build to be complete by mid September.

* Classic - All TDR's have been submitted to date. The cutters are 90% designed and are under review currently. The P.O.'s will be in place by September 3. This again will be a constraint to the early November T&P. The gage designs will follow the cutter designs with the fabrication performed in-house.

* DeHoff - The second gundrilling machine was received in July with the installation being completed mid August. The first machine has been shut down to update the tailsocks to the improved design. The development of the feeds and speeds for the different calibers are 75% complete. The perishables are currently stocked in stores. The machine setter is fully trained on the operation and setup of the machine. The novice operators are to receive their training from the machine setter with the assistance of the S.O.P.,

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KINZER V. REMINGTON

The August 1993 Monthly Report for James A. Love

Looking back over the month of August I can report significant progress on the projects assigned. These projects consists of making M/700 receiver from 788 steel, powder coating the detachable magazine parts, marking of the 700 bolt body, a re-design of the 522 sear left heat striating fixture, fitting the Miyano with an ejector drilling system, the infrared oven project, tooling improvements for the 522 breech bolt, powder coating the M/7 SS trigger guard assembly, cleaning of the powder coating racks, and assisting production with machine difficulties.

Making the M/700 receiver from 788 Steel: This project is complete. Production now has the ability to supplement receiver production with the 788 steel when the need arises. The advantage of this process is to drill the 0.703 Dia. hole off-line. This removes the most time consuming machining operation, thus increasing overall output.

Powder Coating of the Detachable Magazine Parts: The parts that need to be coated are the trigger guard and the magazine box. The process to coat the trigger guard is complete. The viability of the process was proven during the T&P and was verified by coating 201 parts. The coating quality and thickness were within specification. The process for the magazine box will require some work. A method for preventing the coating from getting on the underside of the floor plate needs to be found. I am currently looking at using a high temperature vinyl gasket.

Marking of the M/700 Bolt Body: This project is complete. The last 4 digits of the serial number will now be marked on the bolt body using the Dot Peen Marking Machine. The necessary changes to the Process Records are under-way and will be complete in the next few weeks.

Design of the 522 Sear Left Heat Striating Fixture: This project is complete. The fixture is being made. The design was done so that the fixture could be placed into production. The old fixture had small hand wheels and did not provide room to remove the parts. Completion of the fixture should be in the next few weeks.

Fitting the Miyano With an Ejector Drilling System: The project proposal was written and given to Dan Shumway. The Miyano will require a new coolant pump and tool holders. This project will decrease total cycle time by about 2 minutes per part.

Infrared Oven Project: The project proposal was written and given to Dan Shumay. This project will increase line speed by about a factor of 3. This project consists of a infrared oven and new application equipment. It is my hope that the oven will be installed during the December shutdown.

Tooling Improvements for the 522 Breech Bolt: I am currently trying to find a new tool used for drilling the 0.313 holes. The current tool is expensive and hard to re-grind. I hope to complete this project by the end of September.

Powder Coating the M/7 SS Trigger Guard Assembly: The process for coating the assembly has been developed and was tested using 20 parts. The T&P of the M/7 SS will verify the process using a larger number of parts. The process records have been changed.

Cleaning of the Powder Coating Racks: I am currently finding a method to meet the particle emission requirements and re-formulating the powder. I hope to have a solution and final proposal by the end of October.

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KINZER V. REMINGTON

Date: August 31, 1991

To: R.A. Jackson
From: J. A. Rabbia

Monthly Report for August 1993

The month of August had several planned and unplanned activities listed as follows:

* Process development is underway with respect to the Model 700 ss varmint fluting process. Contact, and progress, has been made with Mr. Warren in research in an effort to finalize the process. Presently 50 barrel blanks are in the line to begin sample processing.

* Model 700 ss upset process was worked on to a great extent. With the guidance of Mr. Sietsema and Mr. J. Picket a repeatable and viable process is near completion. Finalization of this process is within a week.

* Work has begun in reducing frictional forces in the Model 522 in an effort to reduce trigger pull. Various samples are being built and assemblies will be ready for test by 09/06.

* Development is ongoing to achieve a no-finish turn barrel process for the following: All Model 700 magnums, Model 552 and 572, and model 541 and 581 barrels. Development of this is not progressing at a expeditious rate due to other priorities.

* Problems have occurred reaming Model 700 ss gfm barrel blanks. The problem is mainly evident in the smaller calibers. The cause or the cure of the problem is not yet apparent.

* Samples for the Model 541 heavy barrel ss are underway.

In addition there were a multitude of other day to day occurrences too numerous to list. Unfortunately many of these were also too numerous to address.

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KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

September 1, 1993

TO: R.A. JACKSON

FROM: J.B. MROZ

SUBJECT: MONTHLY REPORT - AUGUST 1993

Roughly 30% of the month was spent learning our present systems for purchase parts inspection, receiving and storage (Crib 31) to better understand what improvements are needed and be able to fill in for L.B. Ferreira in his absence. Many of the technical routine tasks such as reviewing PPI process records I have taken over.

Hitchner (Investment Caster) was visited in an effort to bring them on-line with parts pulled from Vestshell. A 'Supplier Quality System Audit' was given to both of Hitchner's plants, Littleton and Nashau, NH. Both plants appeared very qualified. (8/10, 11, 13, 1993)

Goodyear Plant Quebec City, Canada, was visited to evaluate Remington's tooling for manufacture of recoil pads and review present and past technology. One tool was found to be deficient. We are awaiting quotes from the vendor before deciding on a course of action. (8/16, 17 & 18, 1993)

Bishop Gun Stocks was visited on 8/26 & 8/27 to review gaging of inletting on Model XP100 wood stocks to clarify problems vendor was having. Also, we adjusted shipping method of stocks to use Remington stock boxes to eleviate shipping damage.

Conducted make up safety meeting for PPI Tech. and receiving person for July. Conducted department August Safety Meeting.

Ron George, L.B. Ferreria and myself have initiated a regular meeting to make improvements on our current quality methods and systems.

A procedure to pre-qualify vendor materials is being set up.

JBM:cat

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KINZER V. REMINGTON

To: K.W. Soucy
From: R.A. Jackson

01 Sept. 93

PERIODIC REPORT - AUGUST 1993

The Trial and Pilot of the Detachable Magazine box M/700 will progress through three phases. This will enable us to gather much processing information without waiting for all tooling to be completed.

PHASE 1 ---> * Rifles assembled and Gallery testing complete 9/2/93.
* Test Lab complete 9/20/93.
(25) .30-06; (25) .280 Rem;
(25) 7mm RemMag. (25) .300 W'byMag.

Exceptions: a) Mag. boxes are wire-cut but formed on std. tooling
b) Box floor plates are carbon steel (not stainless)
c) Mag. followers were trimmed by Tool Room
d) All actions are carbon steel (none stainless)
e) Trigger guards were partially machined off-site
f) All trigger guards are gloss black powder coated
g) Finishing of latch cuts on synthetic stocks was done off-line
h) No MIM latches; No MIM followers
i) Receiver clearances were partially cut off-line
j) Mag. latches assembled by hand
k) Some of the followers were mistakenly glass beaded.

PHASE 2 ---> * 200 more rifles to be built by 9/30/93:
(25) .30-06 carbon; (25) .30-06 stainless
(25) .280 carbon; (25) .280 stainless
(25) 7mm RemMag. carbon; (25) 7mm RemMag stainless
(50) .300 Weatherby Mag. stainless
* Use 100 mag. boxes from Phase 1 rifles in test to verify everything but the mag. boxes.

Exceptions: a) Still use wire-cut boxes
b) No MIM latches; No MIM followers.

Purpose: A) Better, more complete test of the planning system
B) A closer look at mag. box interchangeability
C) Everything except the boxes will be std. production parts run using std. processes and equipment.

PHASE 3 ---> * Build 200-400 fully production mag. boxes as soon as they arrive from the vendor (~ Oct. 8th).
* 25% cast latches, cast followers
25% cast latches, MIM followers
25% MIM latches, MIM followers
25% MIM latches, cast followers.
* Use Phase 2 rifles.

Exceptions: NONE.

Purpose: A) A full look at all possibilities in totally production mag. boxes
B) All rifles totally production tooling produced.

PRODUCTION BUILD TO BEGIN 1ST WEEK OF NOVEMBER 1993

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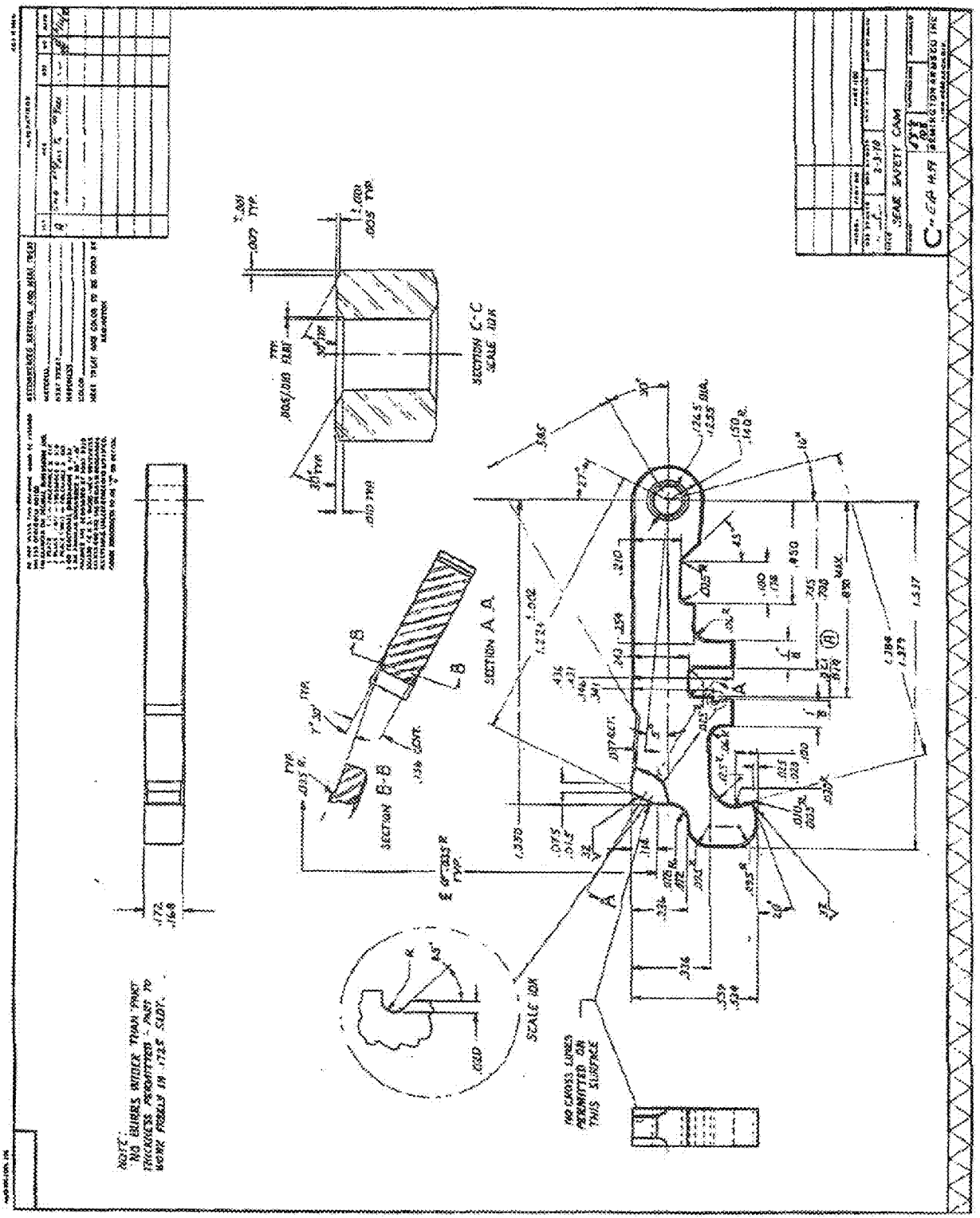
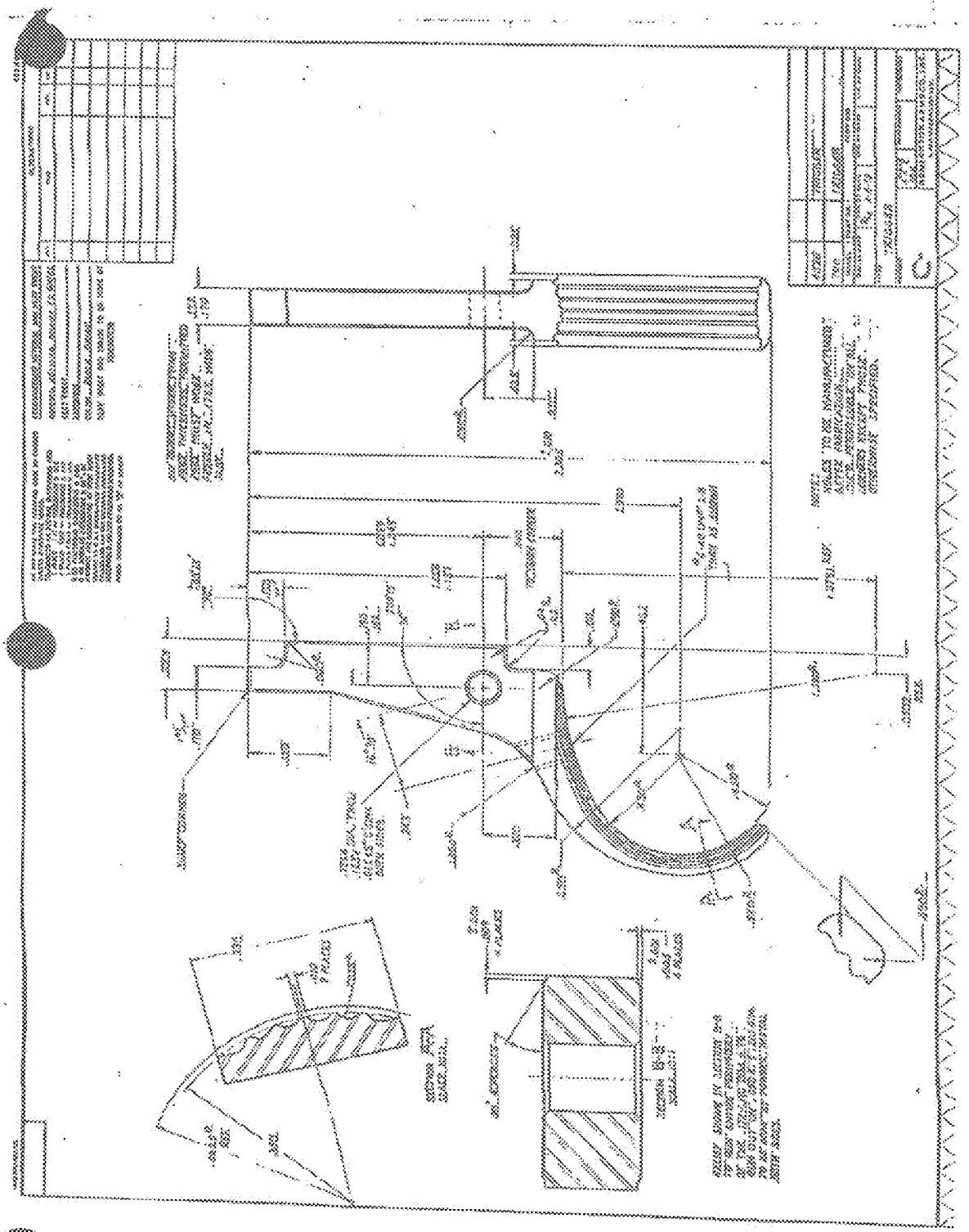
KINZER V. REMINGTON





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KINZER V. REMINGTON

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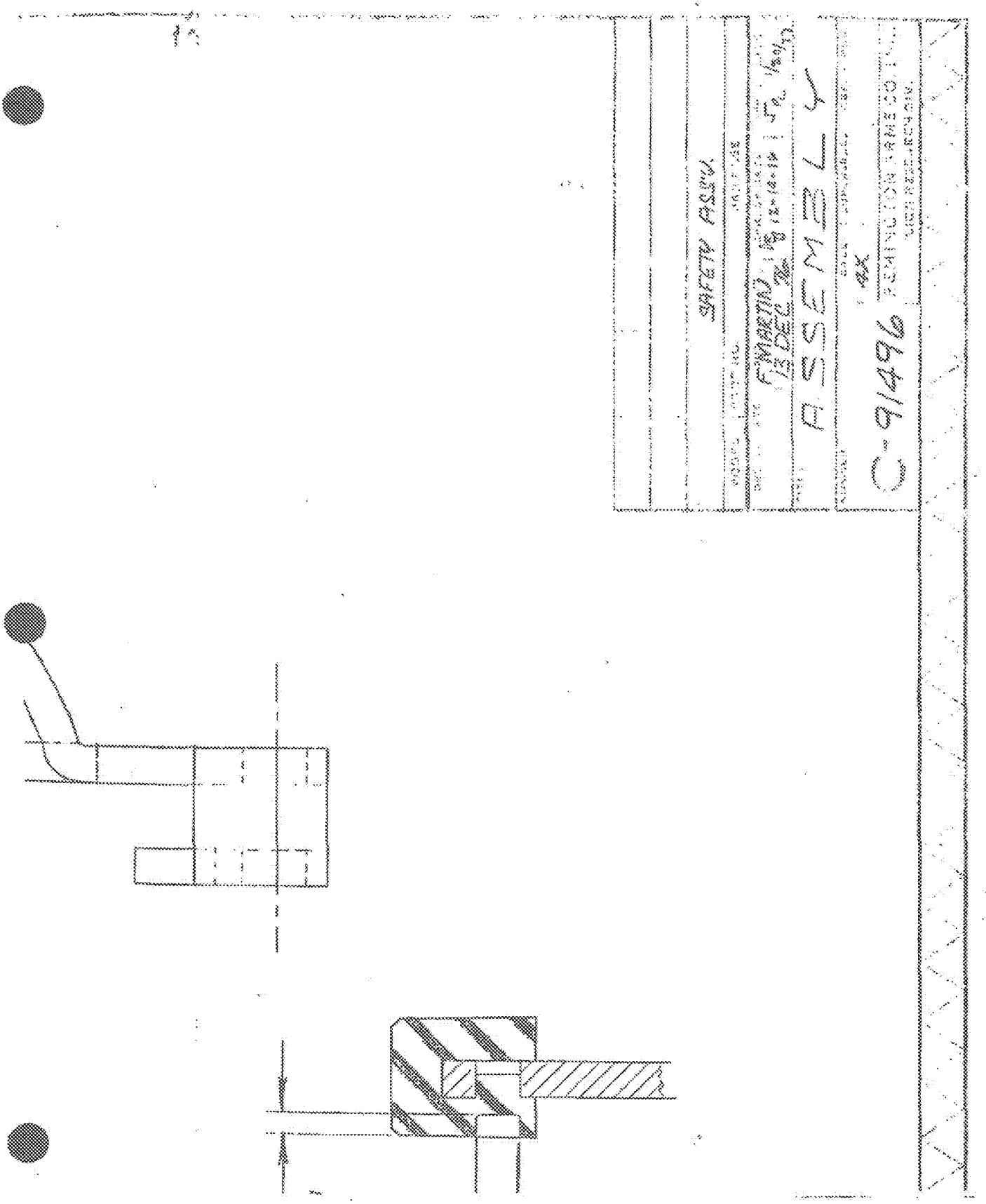

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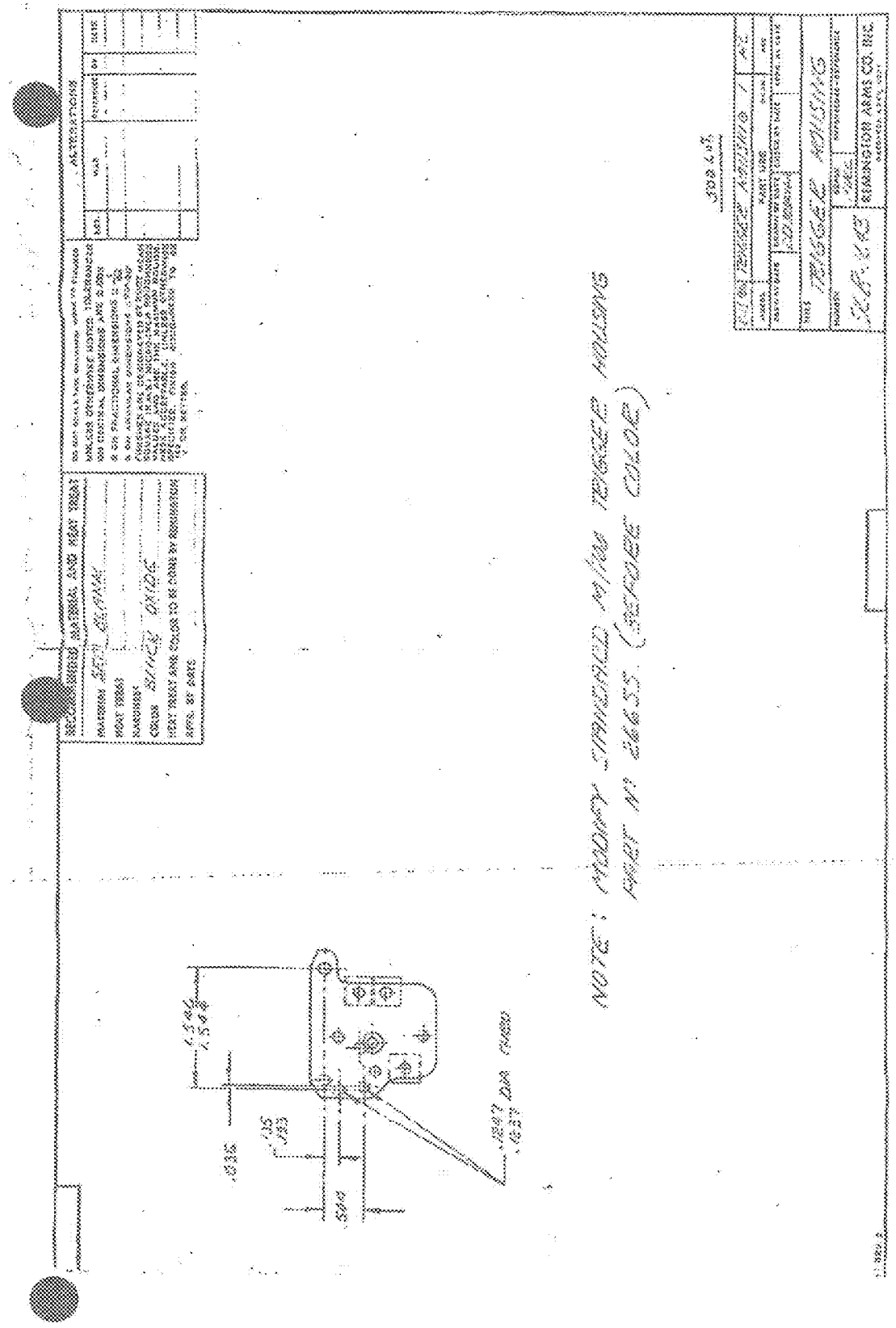
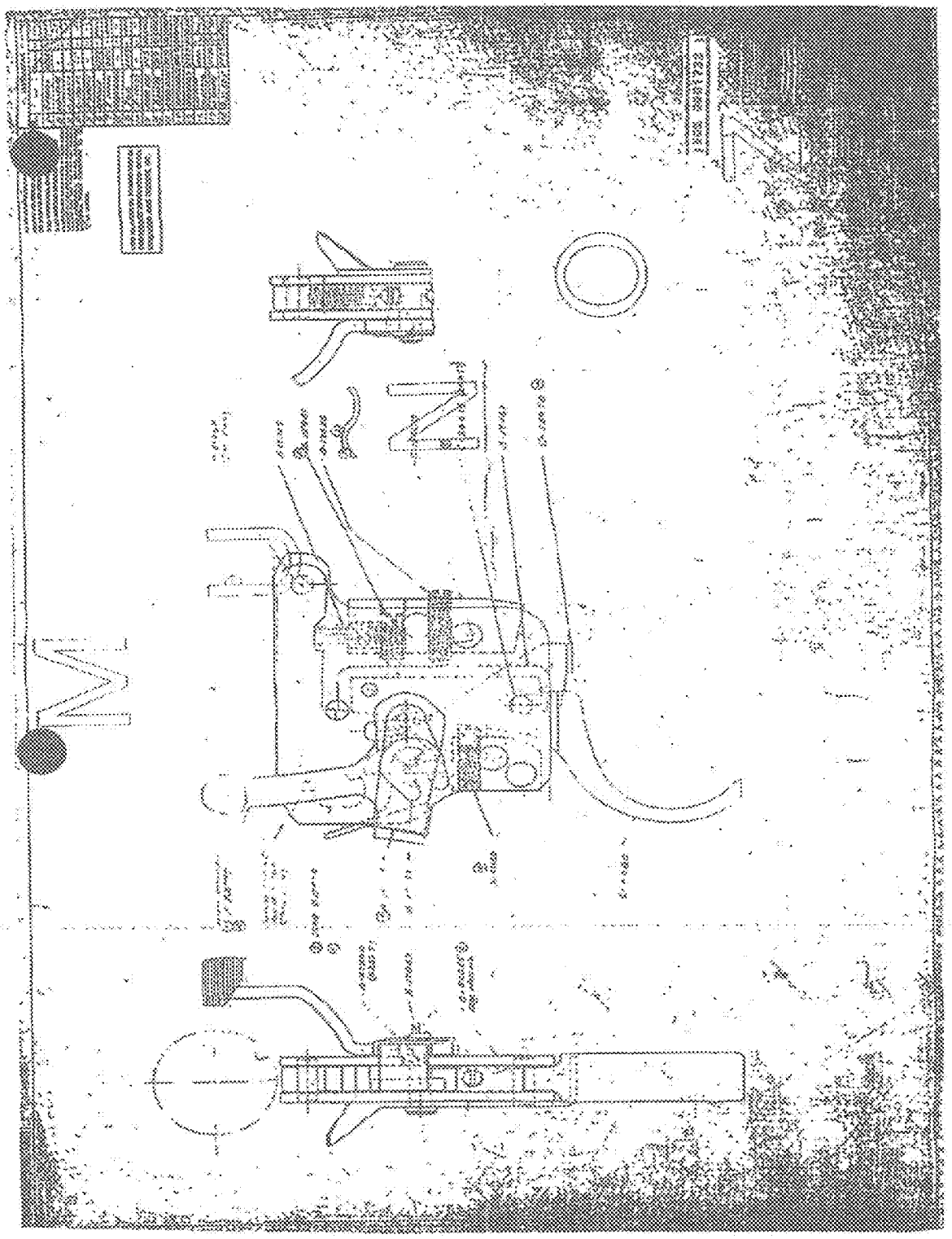
KINZER V. REMINGTON

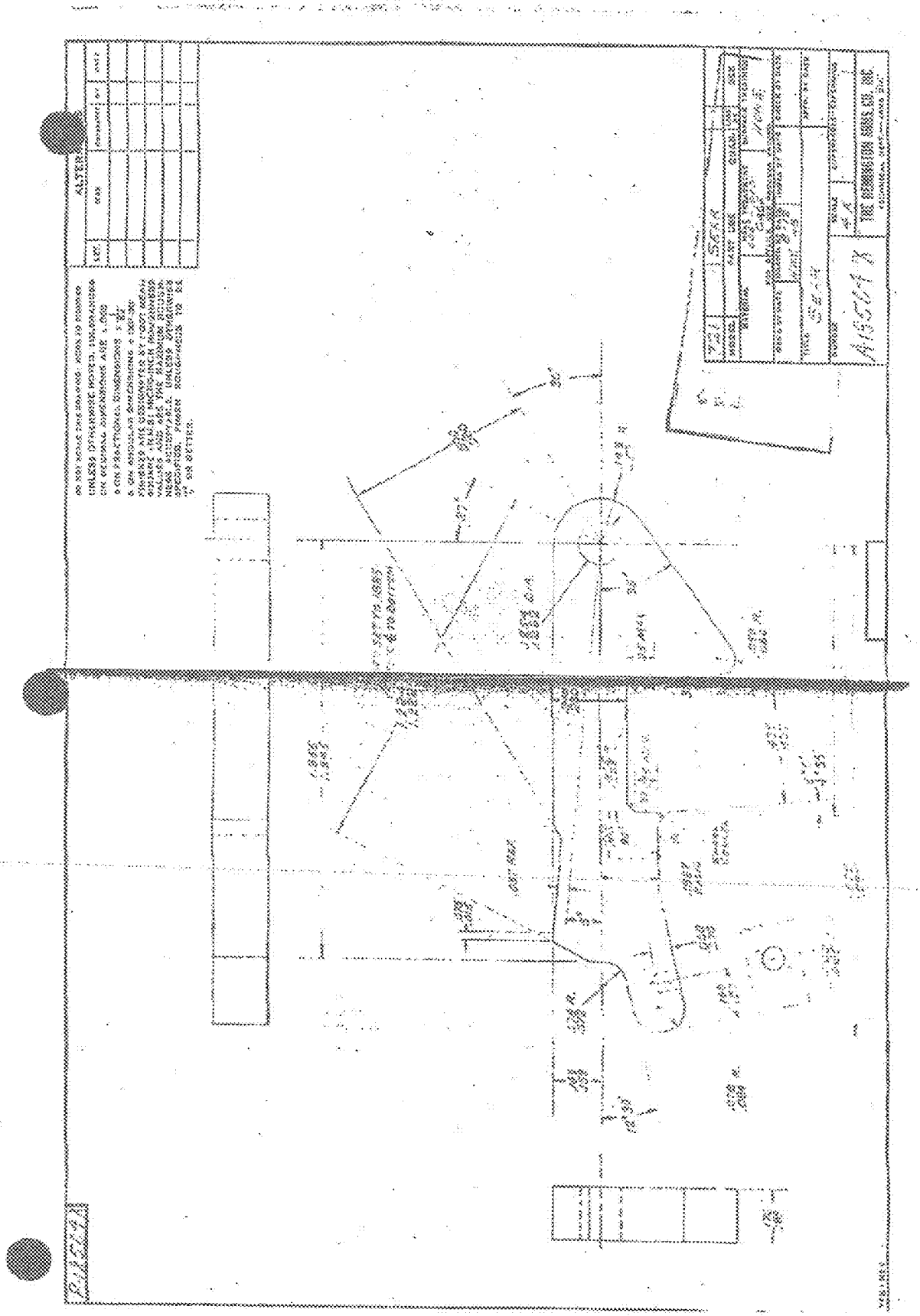


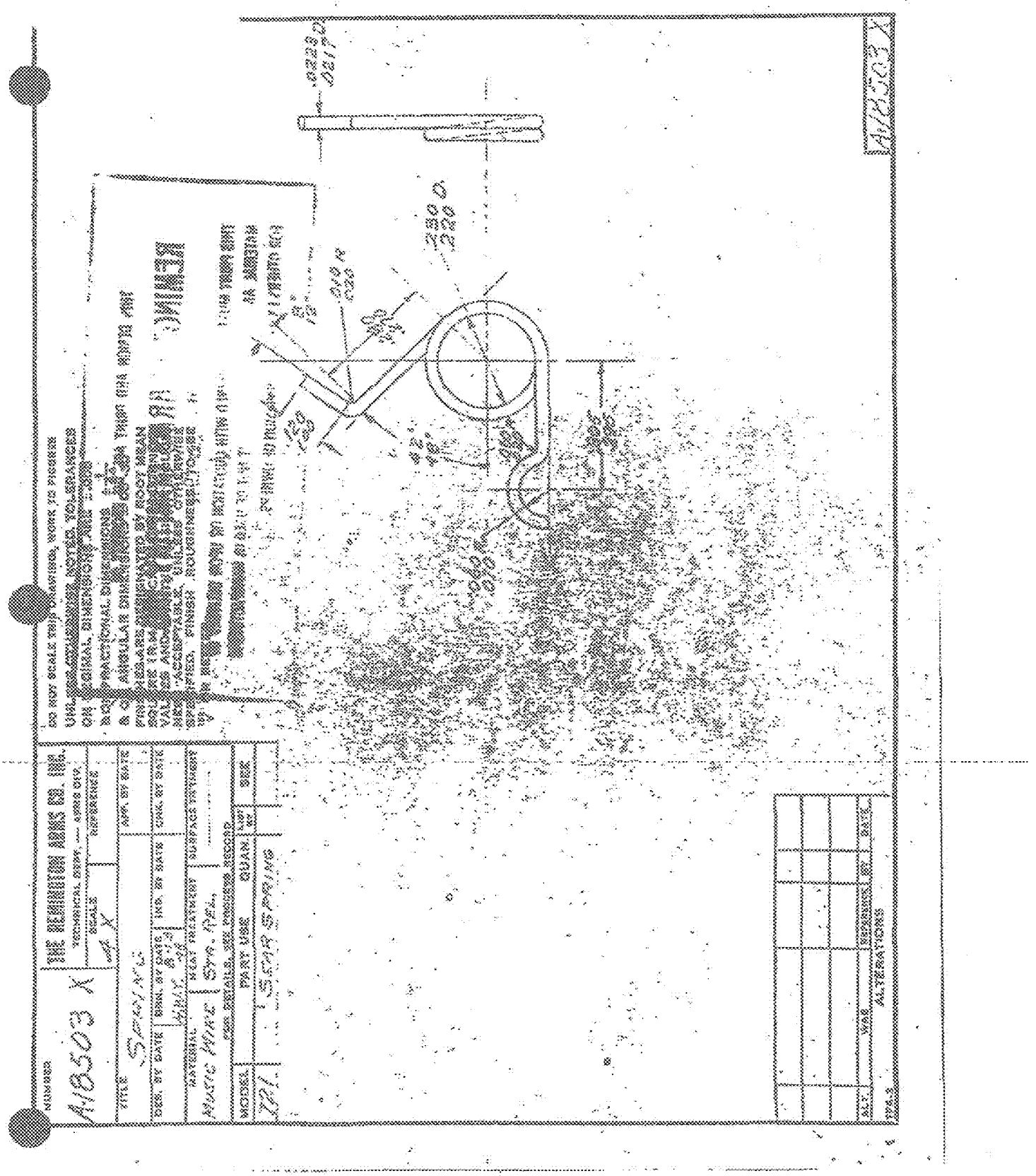
R2522840

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

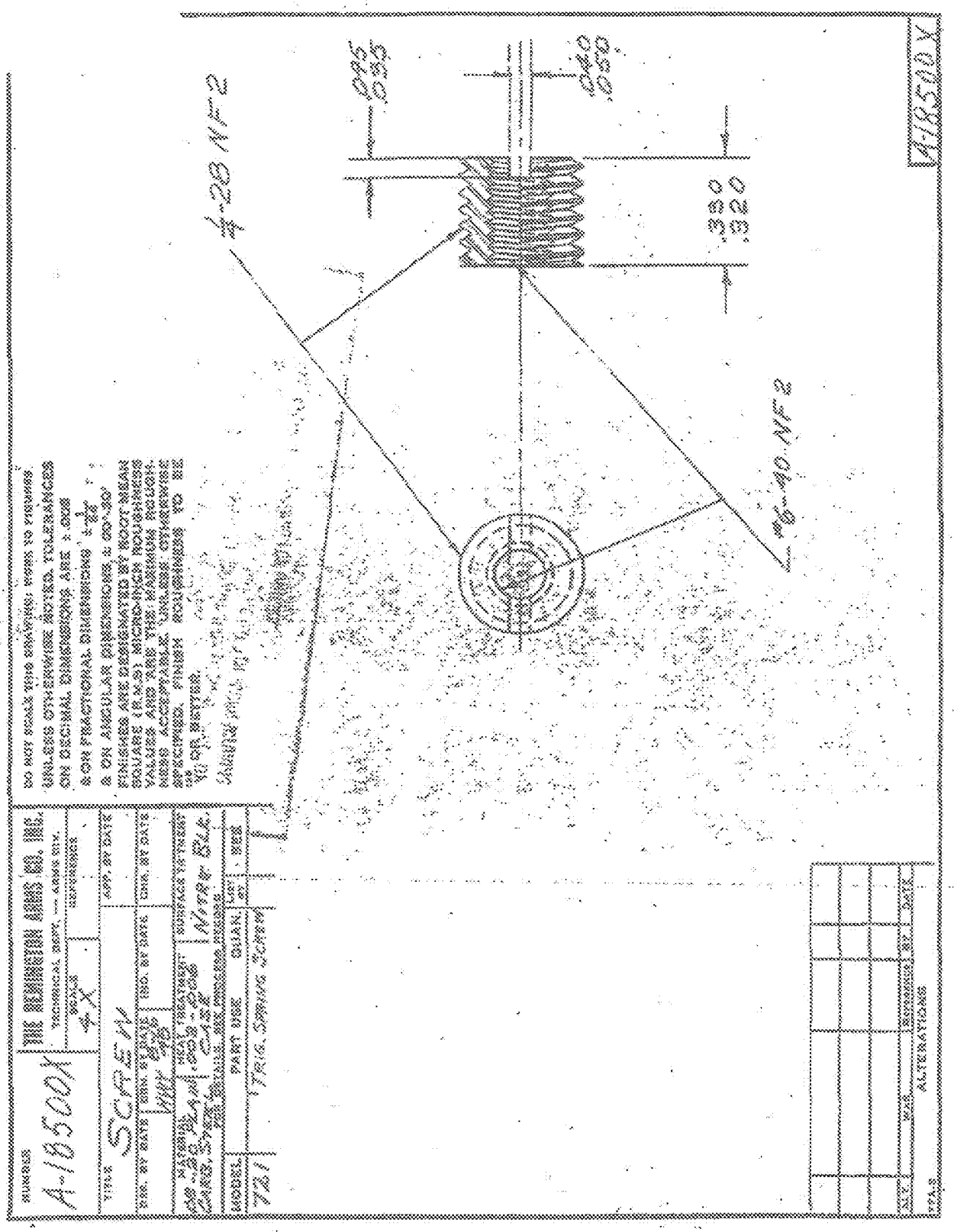


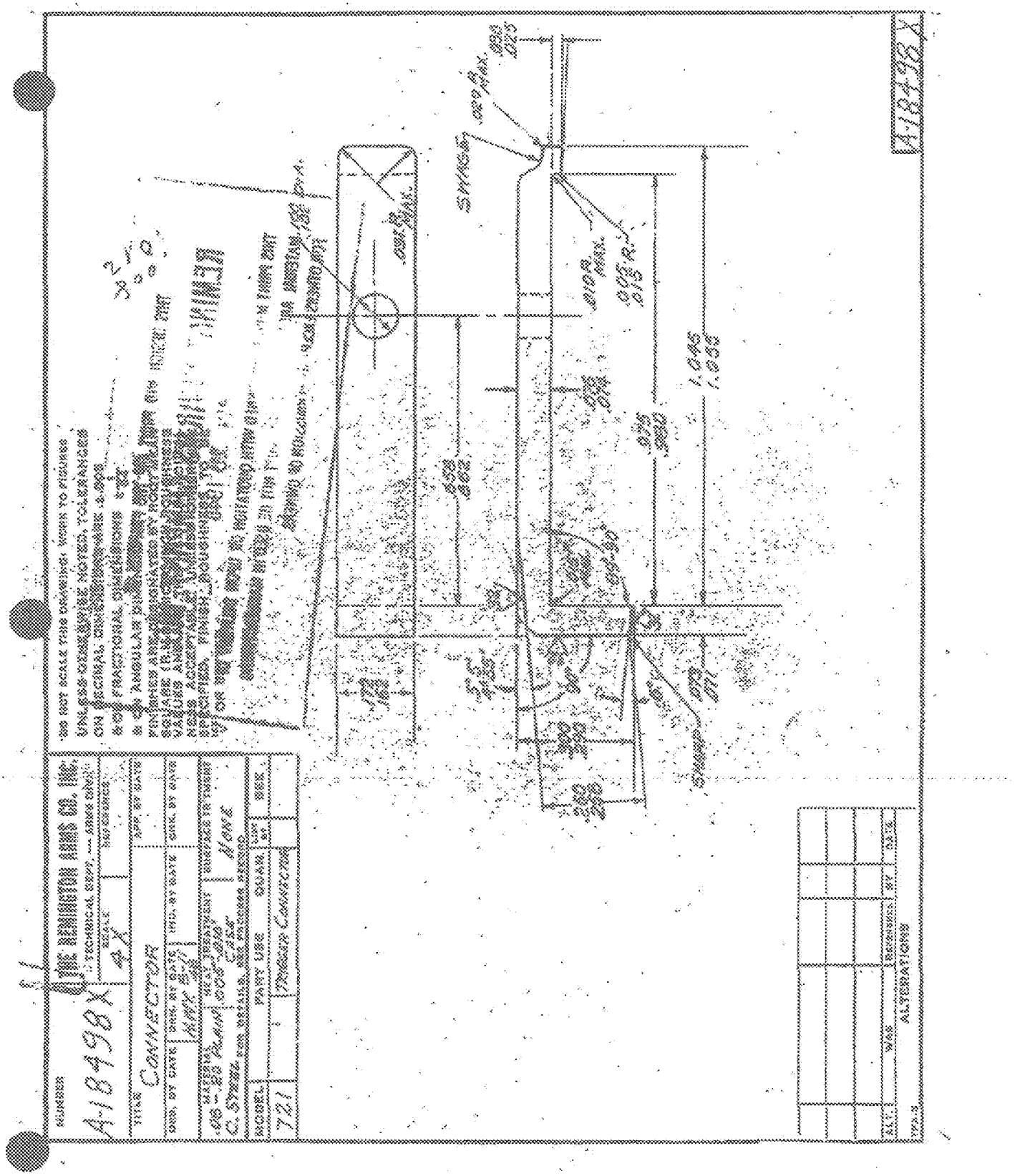
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

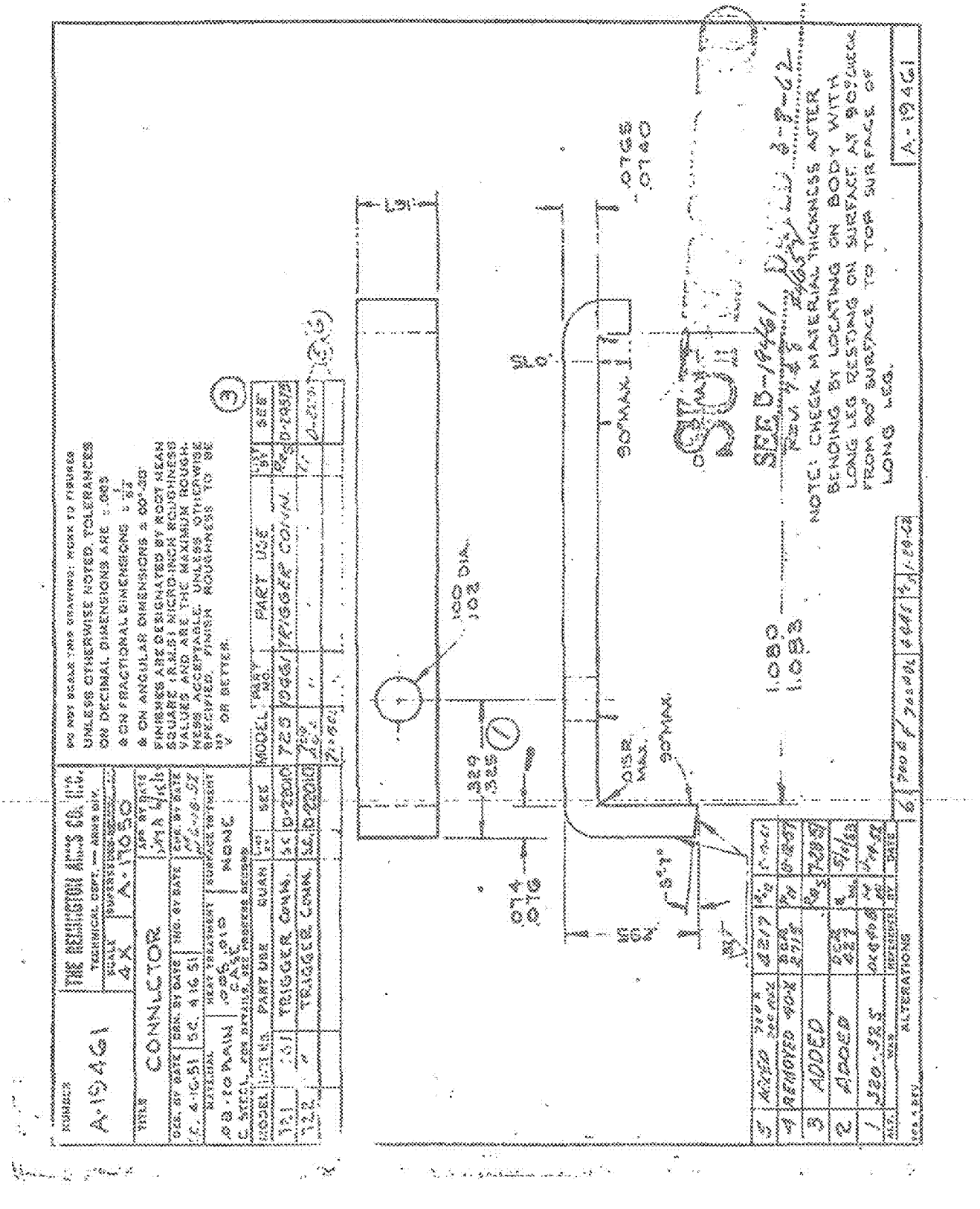




CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON


A-18500 X
.315
.335
.040
.060
.320
.300
4-28 NF-2
16-40 NF-2
THE REMINGTON ARMS CO., INC.
A-18500X
4X
SCREW
TRIG. SPRING SCREW
7121


THE REMINGTON ARMS CO., INC.
A-104981X
Connector
721
A184382X



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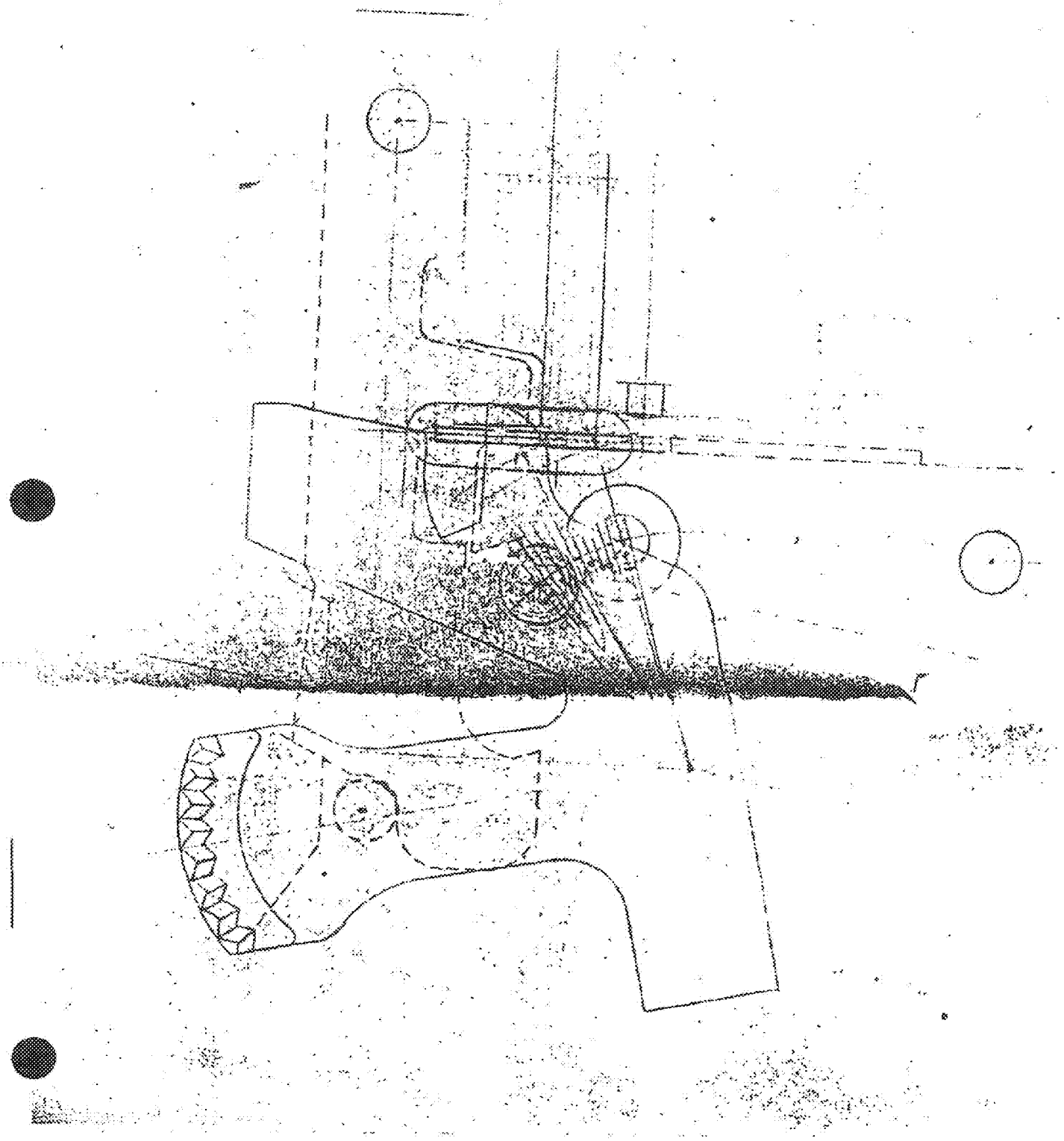
KINZER V. REMINGTON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2522583

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
R2522592



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KINZER V. REMINGTON

721 Fire Control
By C.C.O 11-19-46

Model #3
Double 10 x size

L-439

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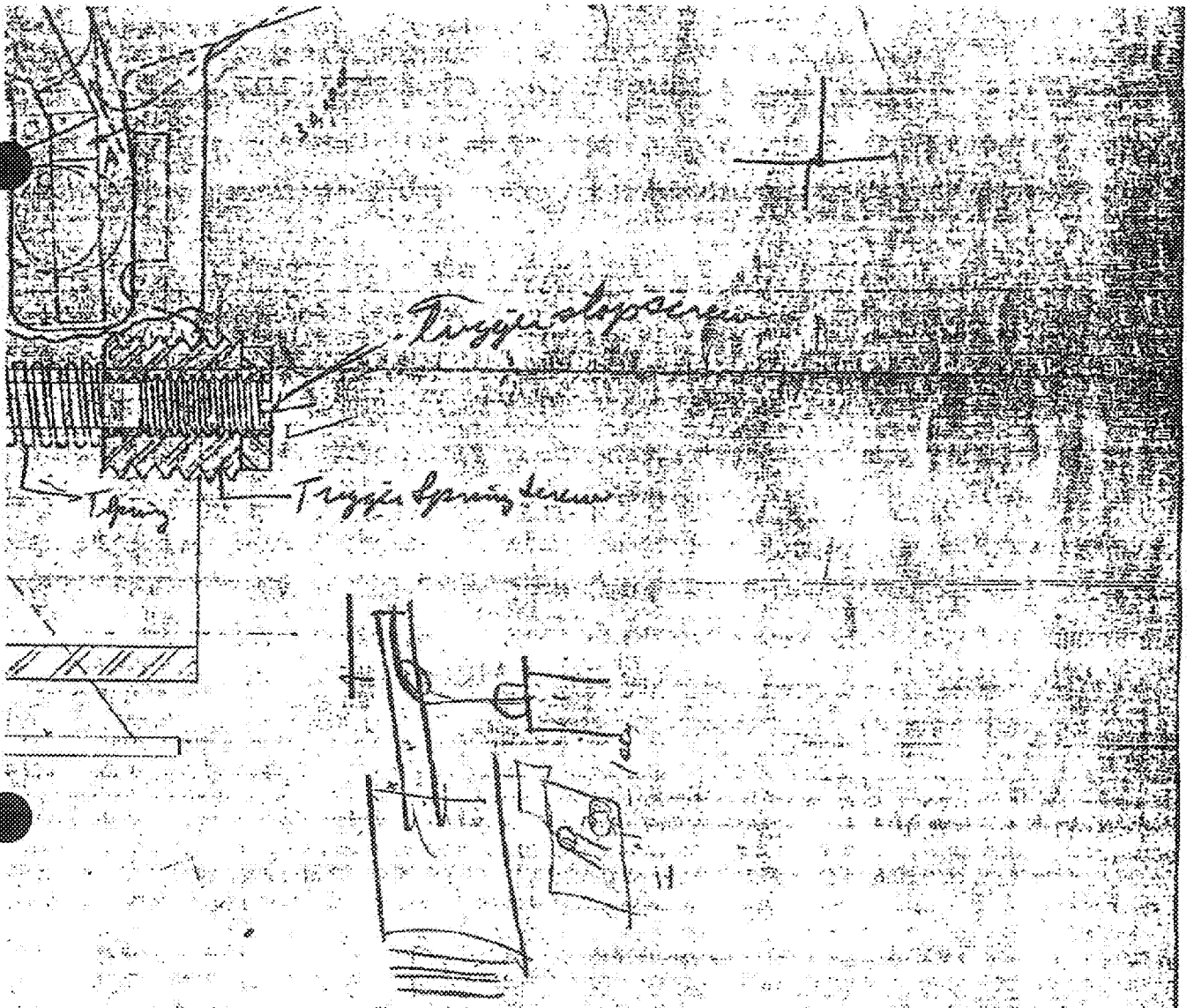
KINZER V. REMINGTON



Type 1 Safety
L-615
SAFETY M.721
H.W. YOUNG 7-27-4

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KINZER V. REMINGTON

L-420- M1721 Fire Control "Model #2
Scale = 4x size By C.C.O
Date 10-22-46

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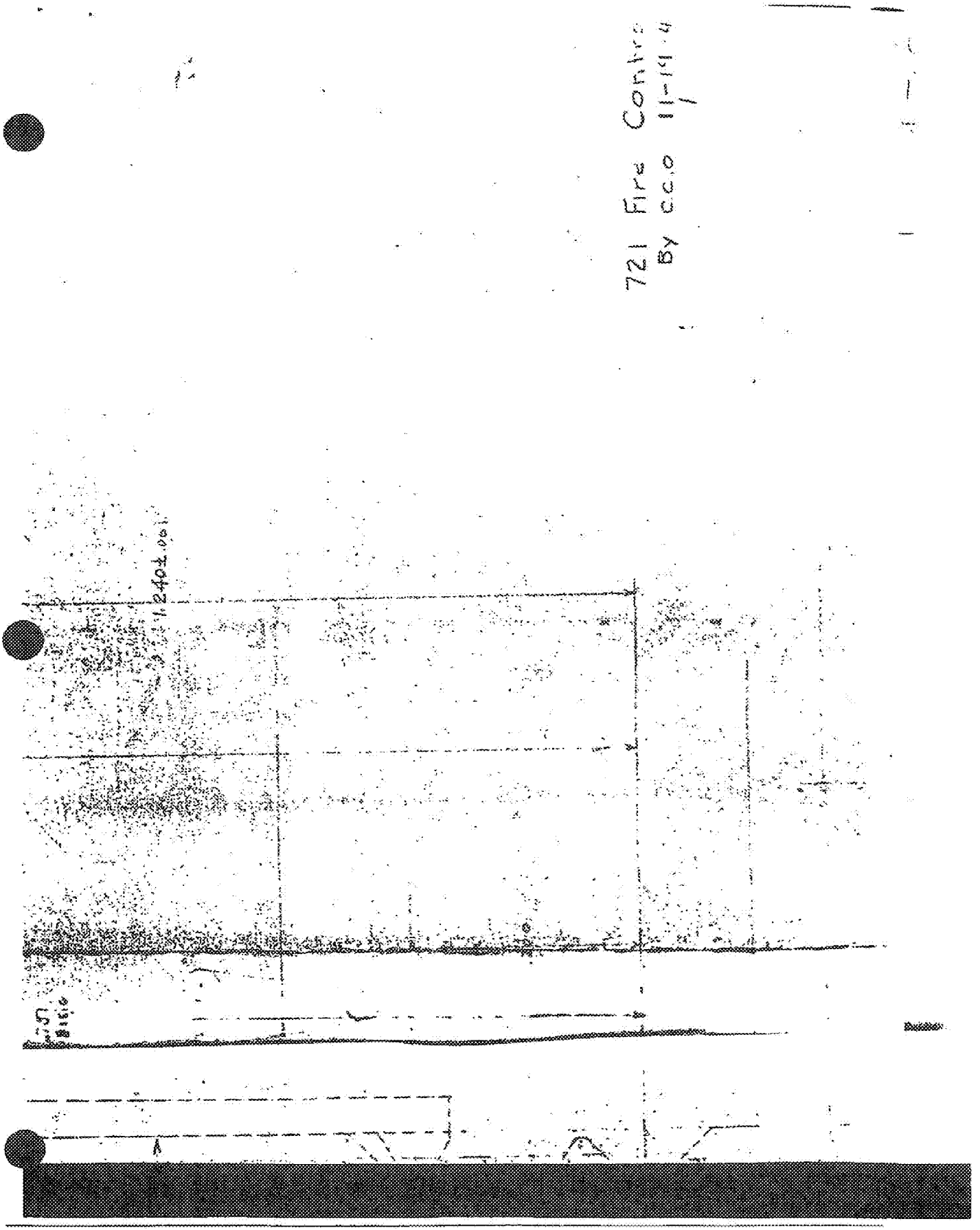
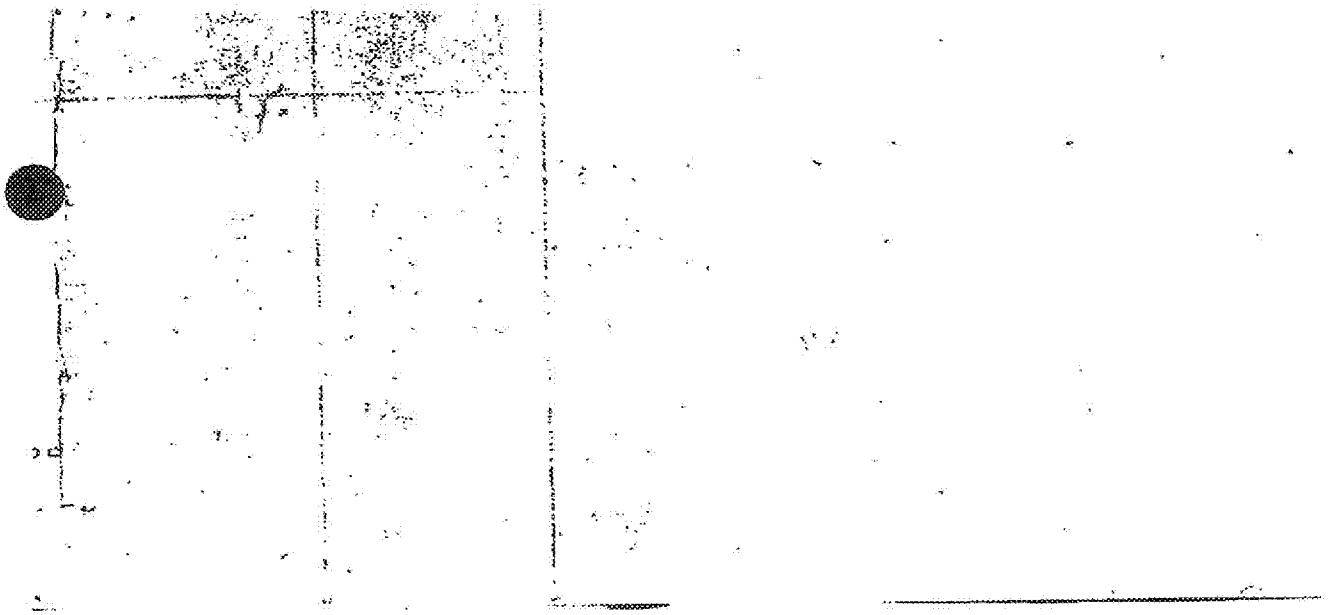
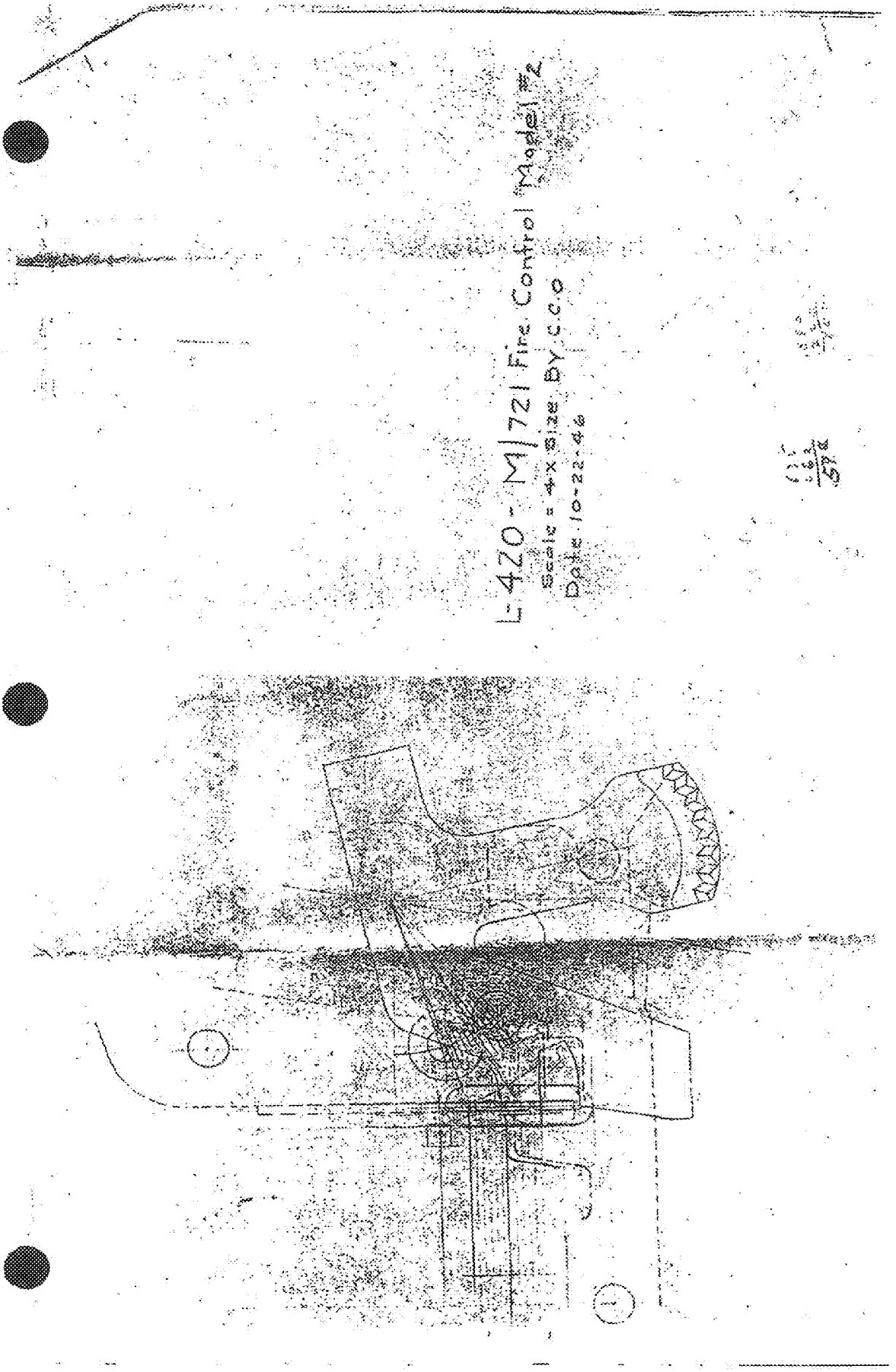
KINZER V. REMINGTON

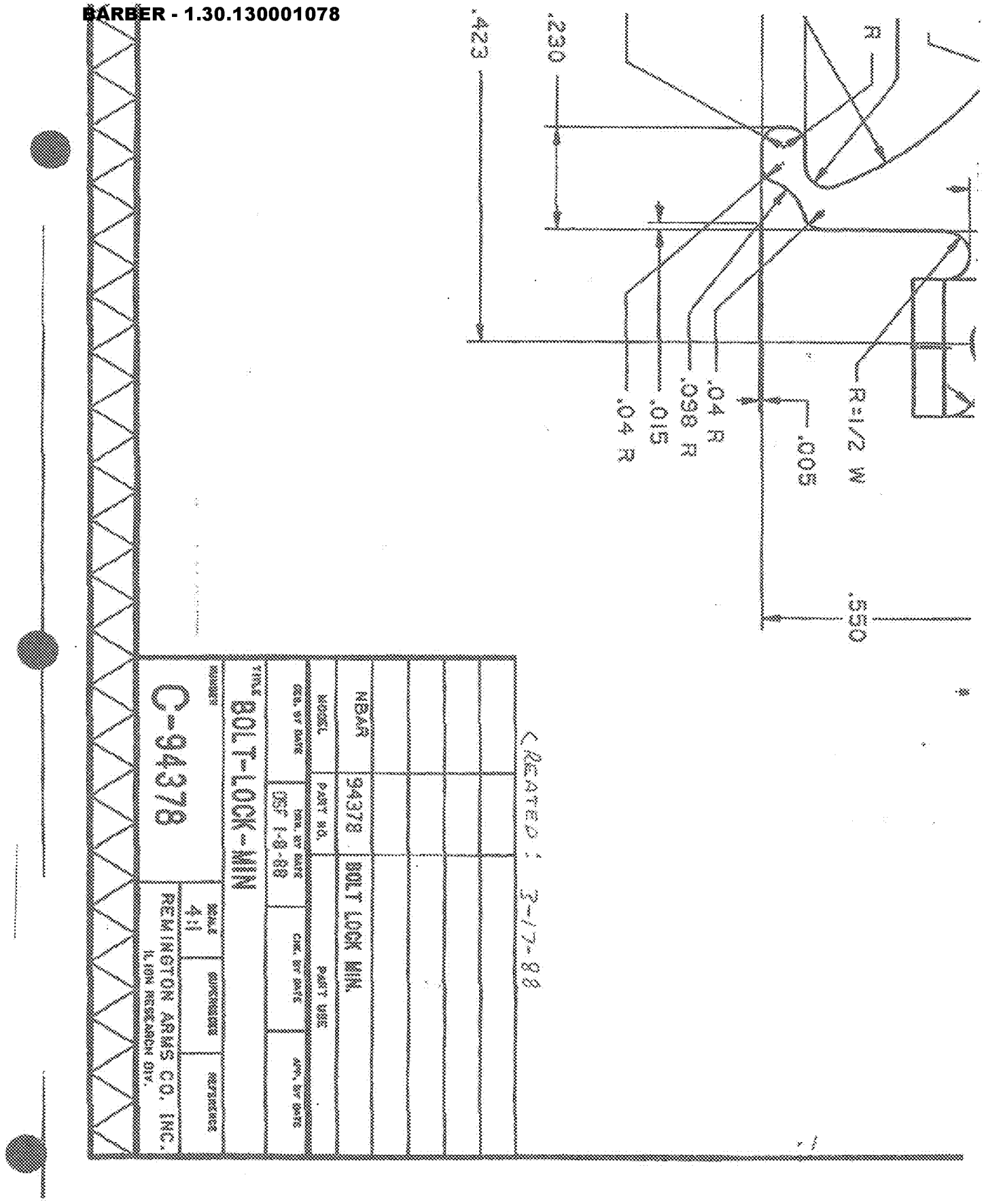


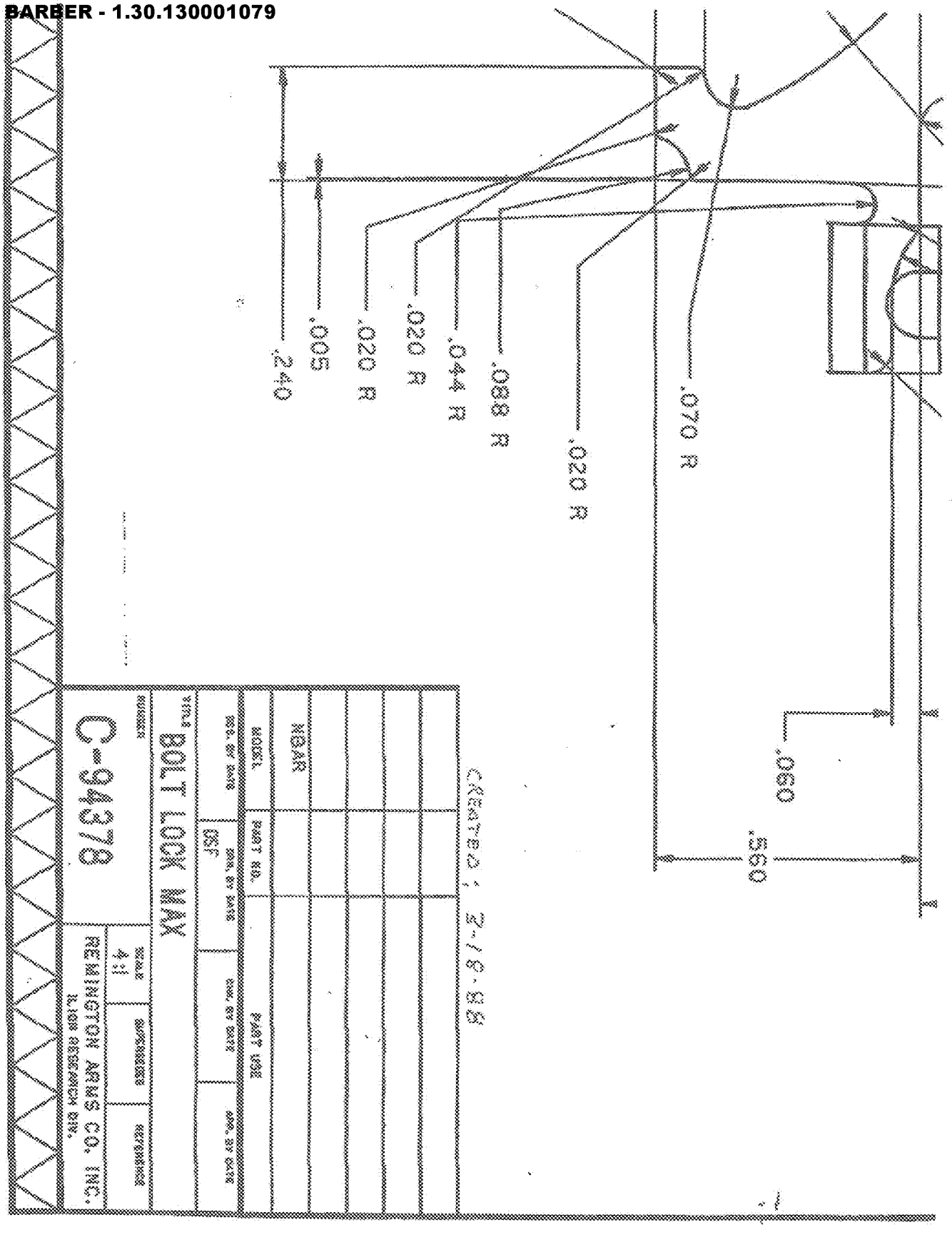
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

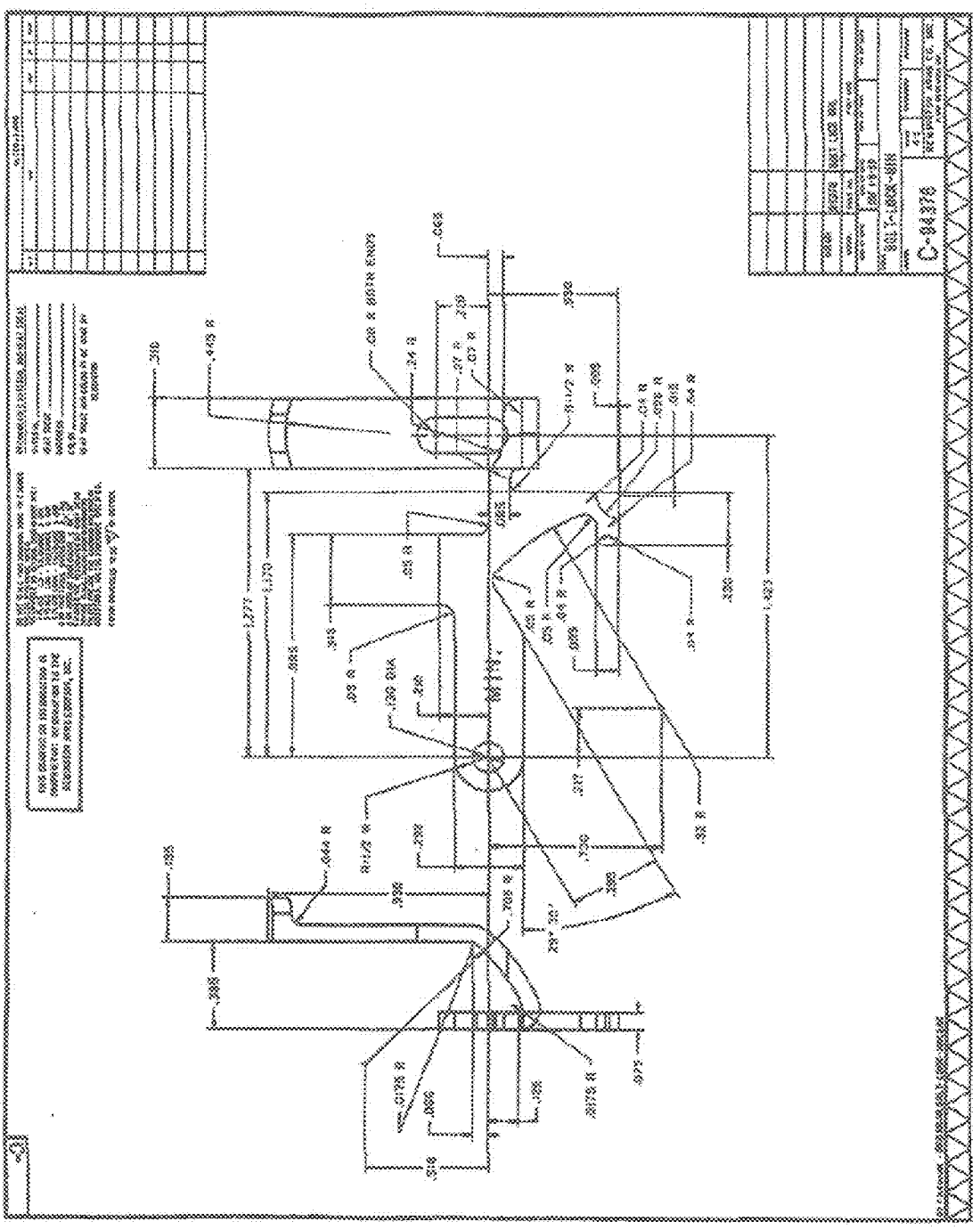




CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

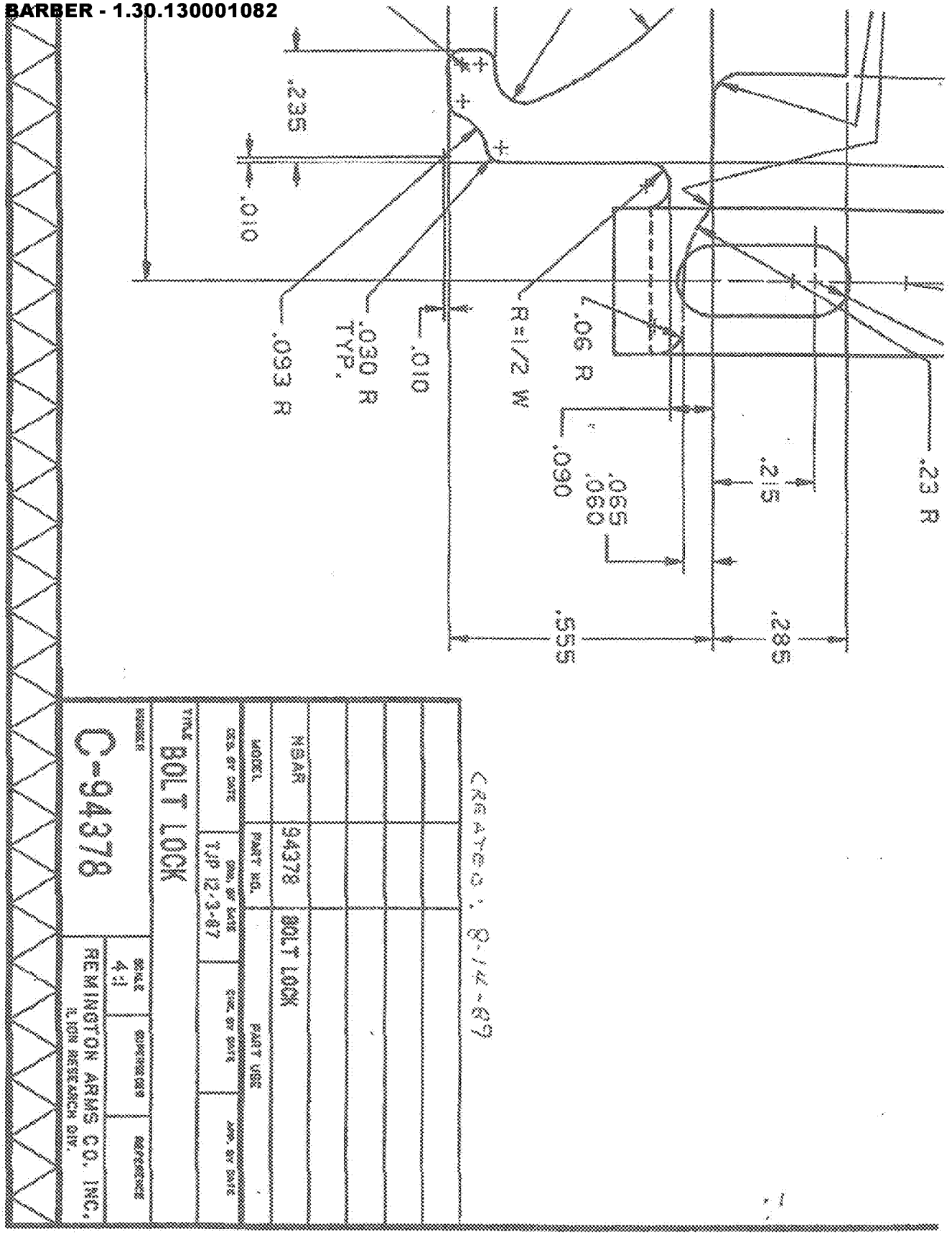

.423"
.230"
R
.04 R
.015"
.030 R
.04 R
.005"
R=1/2 W
.550"
C-91378
MIN-LOCK-MIN
BOLT-LOCK-MIN
REMINGTON ARMS CO., INC.
ILION, NEW YORK 13357
91378
BOLT LOCK MIN.
NEAR
MODEL
PART NO.
DSF 1-8-88
SER. OF MFR.
SER. OF MDL.
PART SER.
MFR. SER. NUMB.
SCALE
1:1
MATERIAL
REFERENCE
CHECKED
DRAWN
3-7-88
CREATED

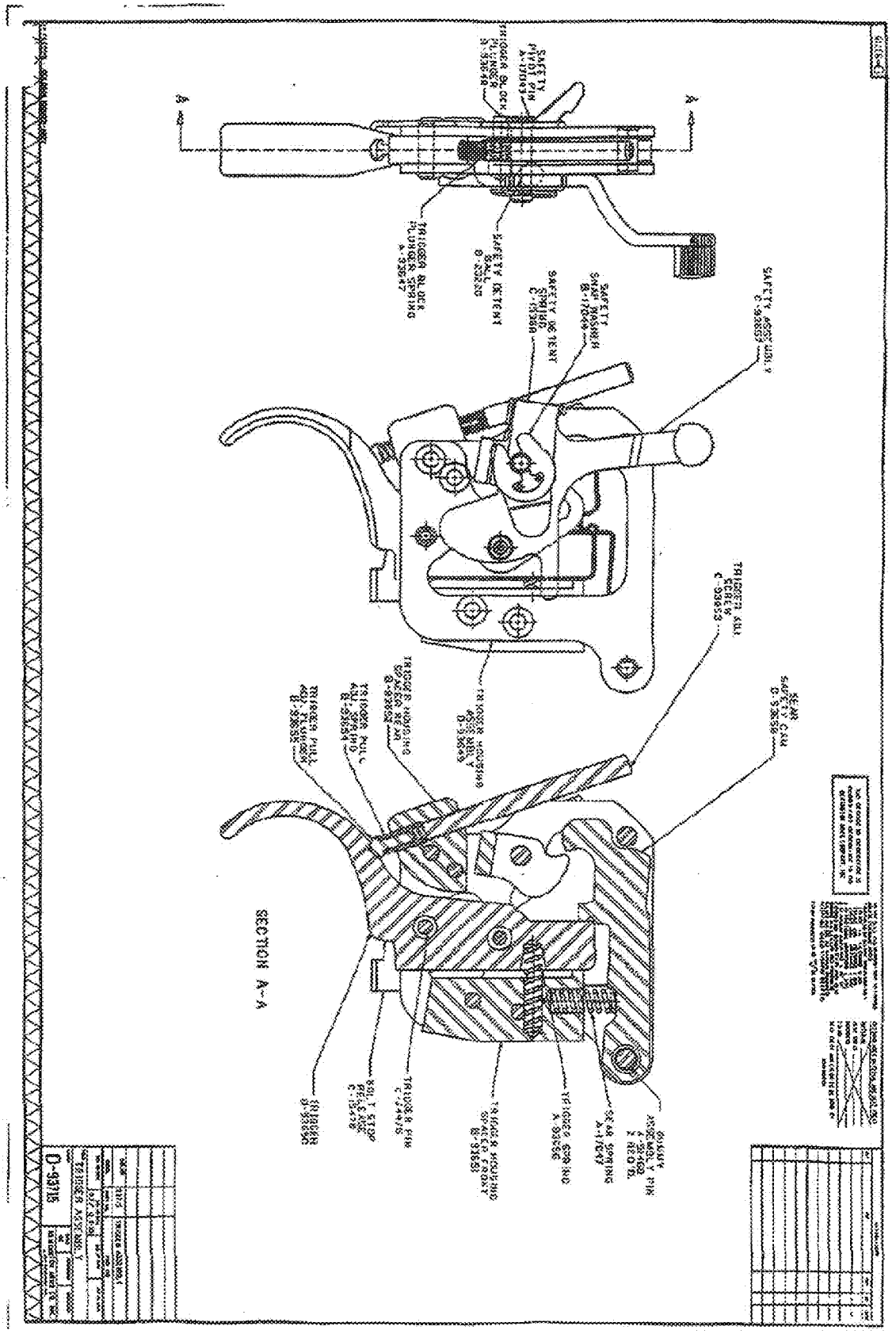

.240
.005
.020 R
.020 R
.044 R
.080 R
.020 R
.070 R
.060
.560
C-94378
BOLT LOCK MAX
REMINGTON ARMS CO., INC.
MBAR
Created: 2-18-98



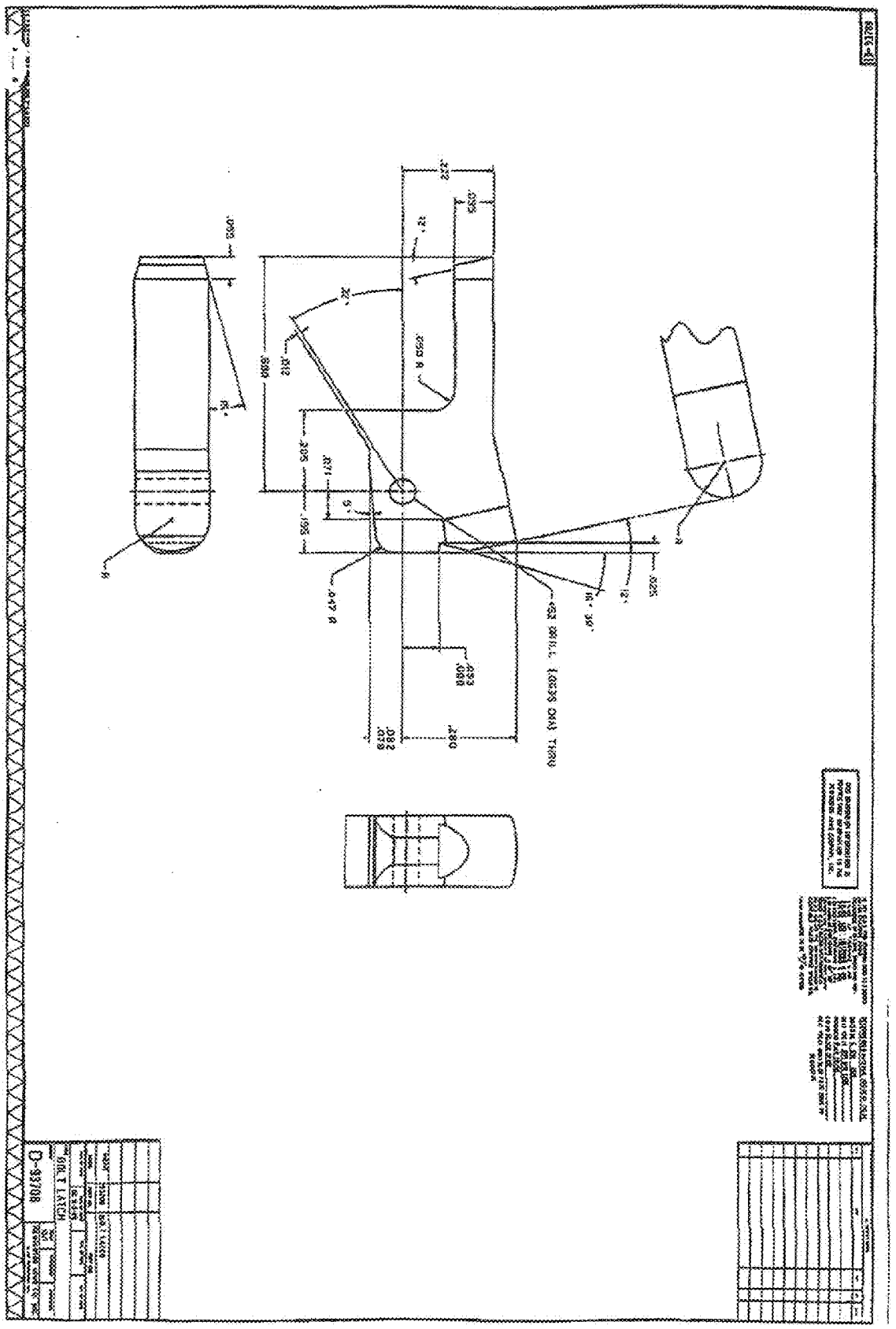
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2522962


.235
.010
.093 R
.030 R TYP.
.010
R 2.1/2 M
.09 R
.090
.060
.065
.215
.23 R
.555
.285
C-64378
THE BOLT LOCK
REMINGTON ARMS CO., INC.
ILION, NEW YORK
SCALE 4:1
DRAWING NO.
REVISIONS
DATE
BY
CHK.
APPD.
PART NO.
64378
NEXT ASSY
PART USED
BOLT LOCK
MATERIAL
REAR
Created: 8-14-87



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
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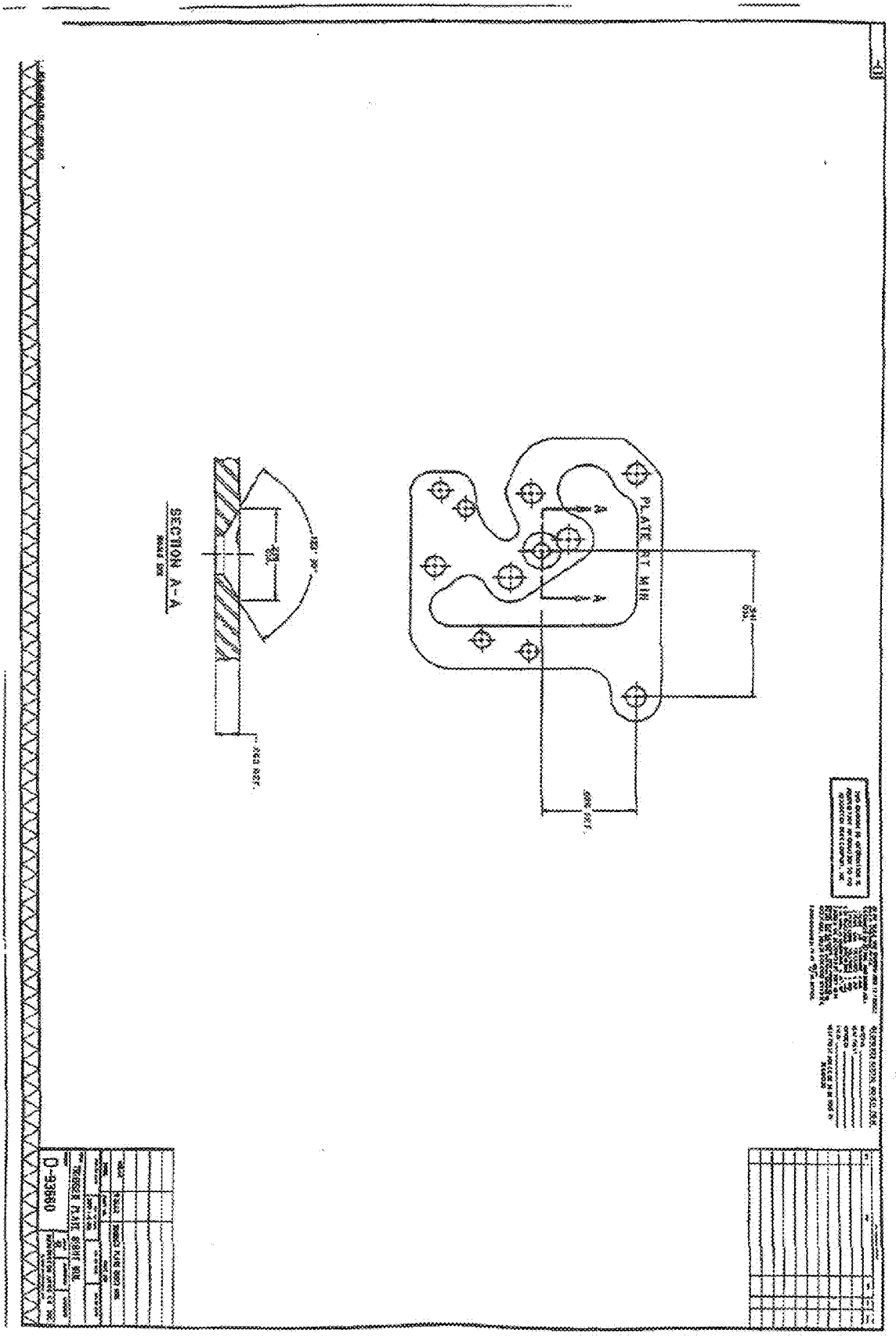

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
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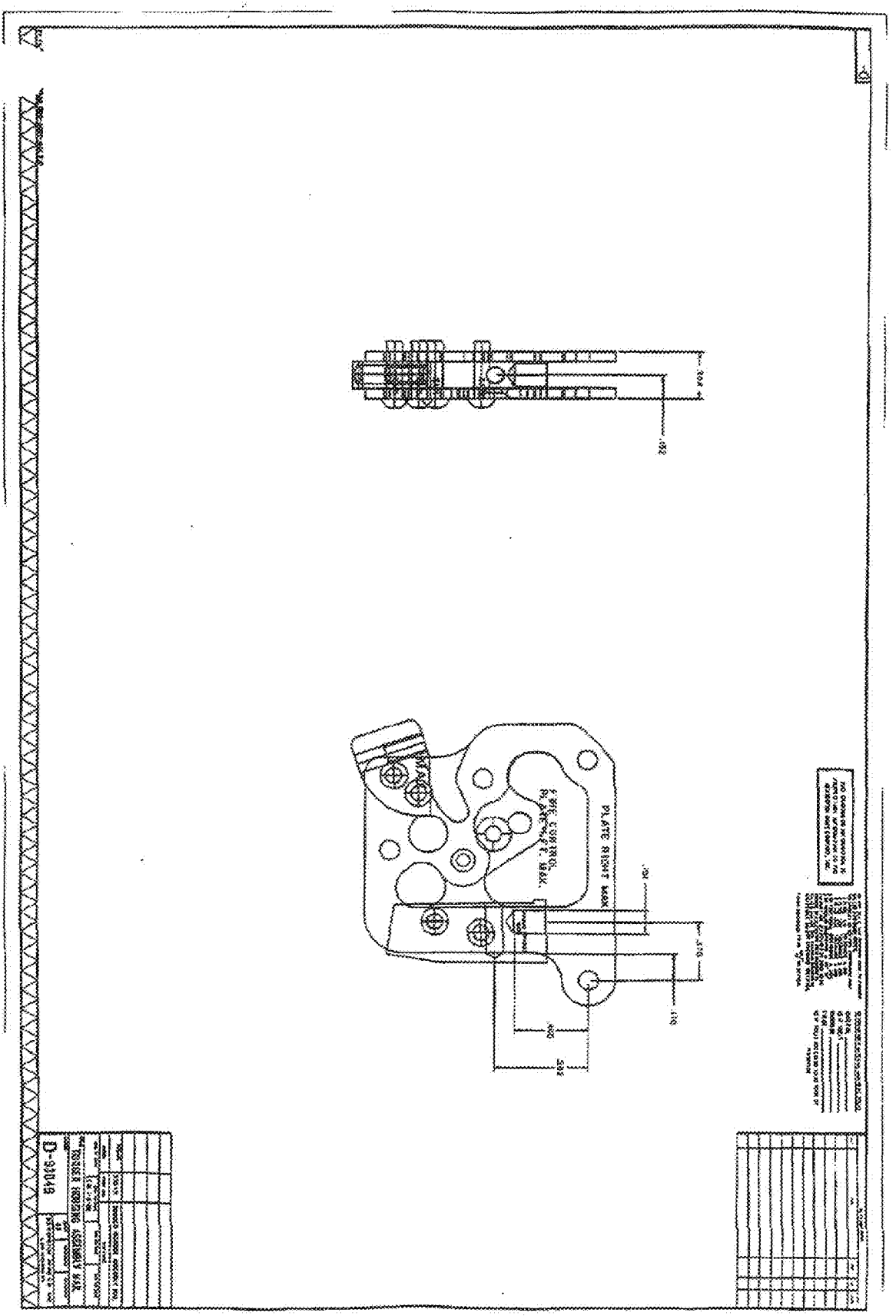

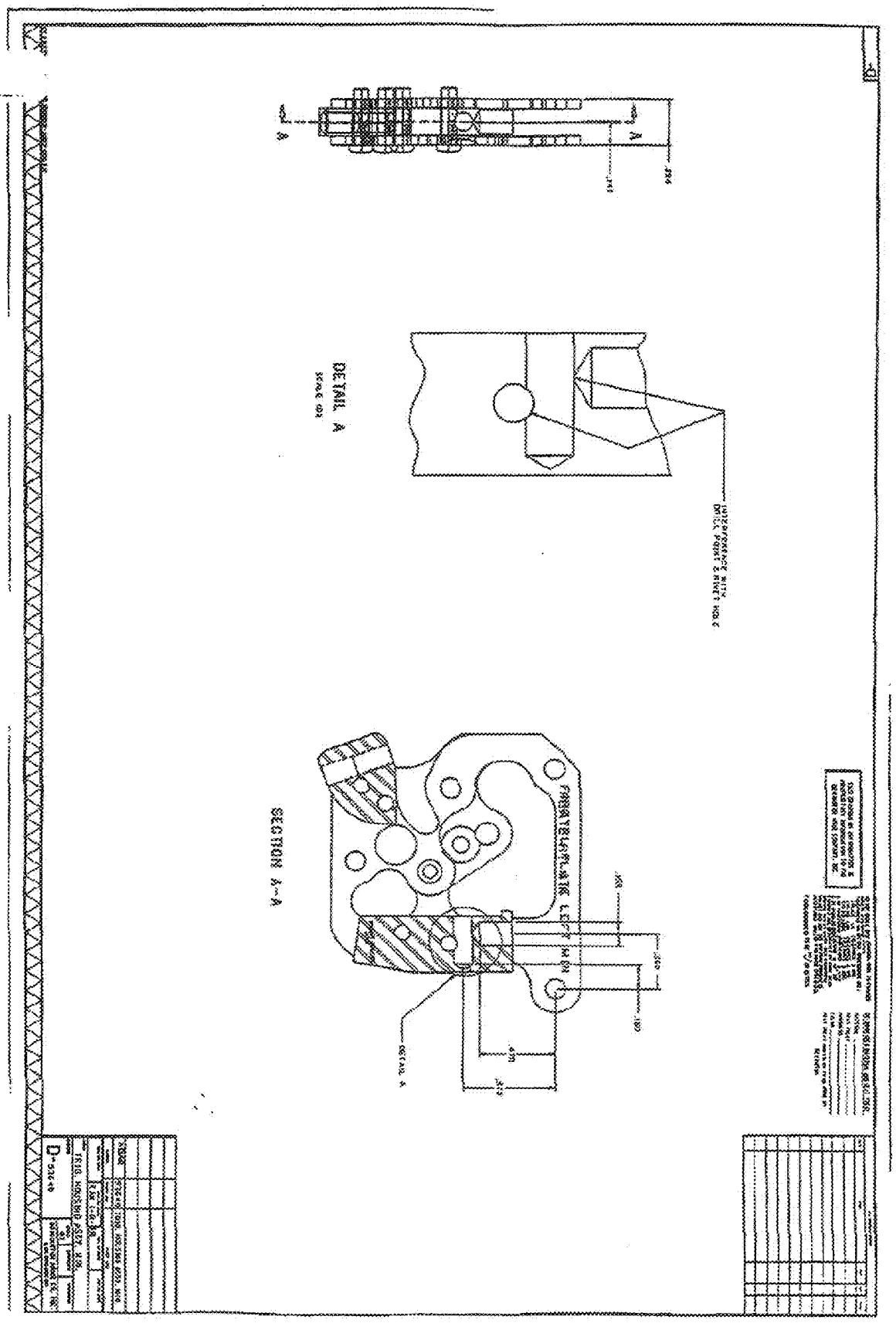

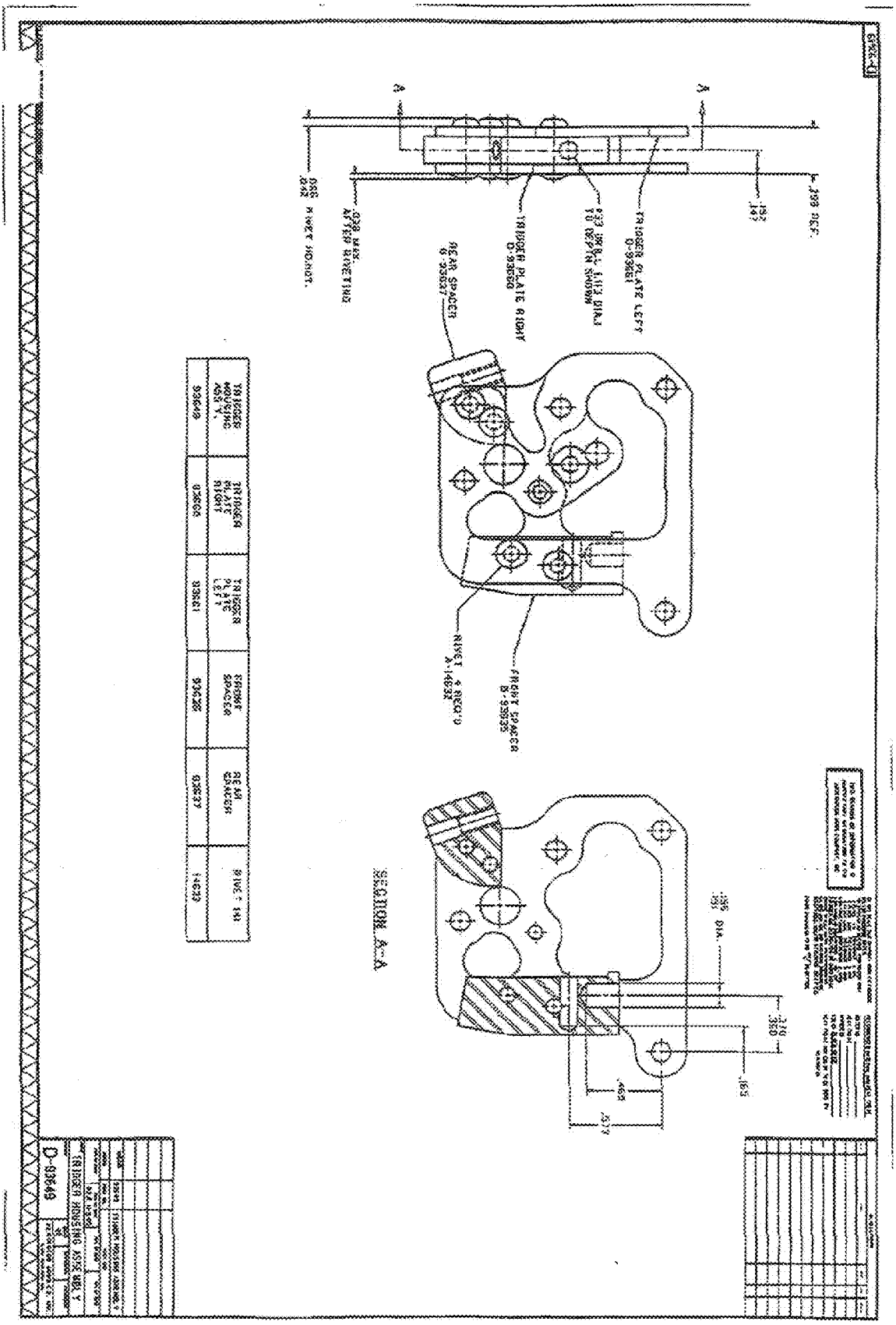

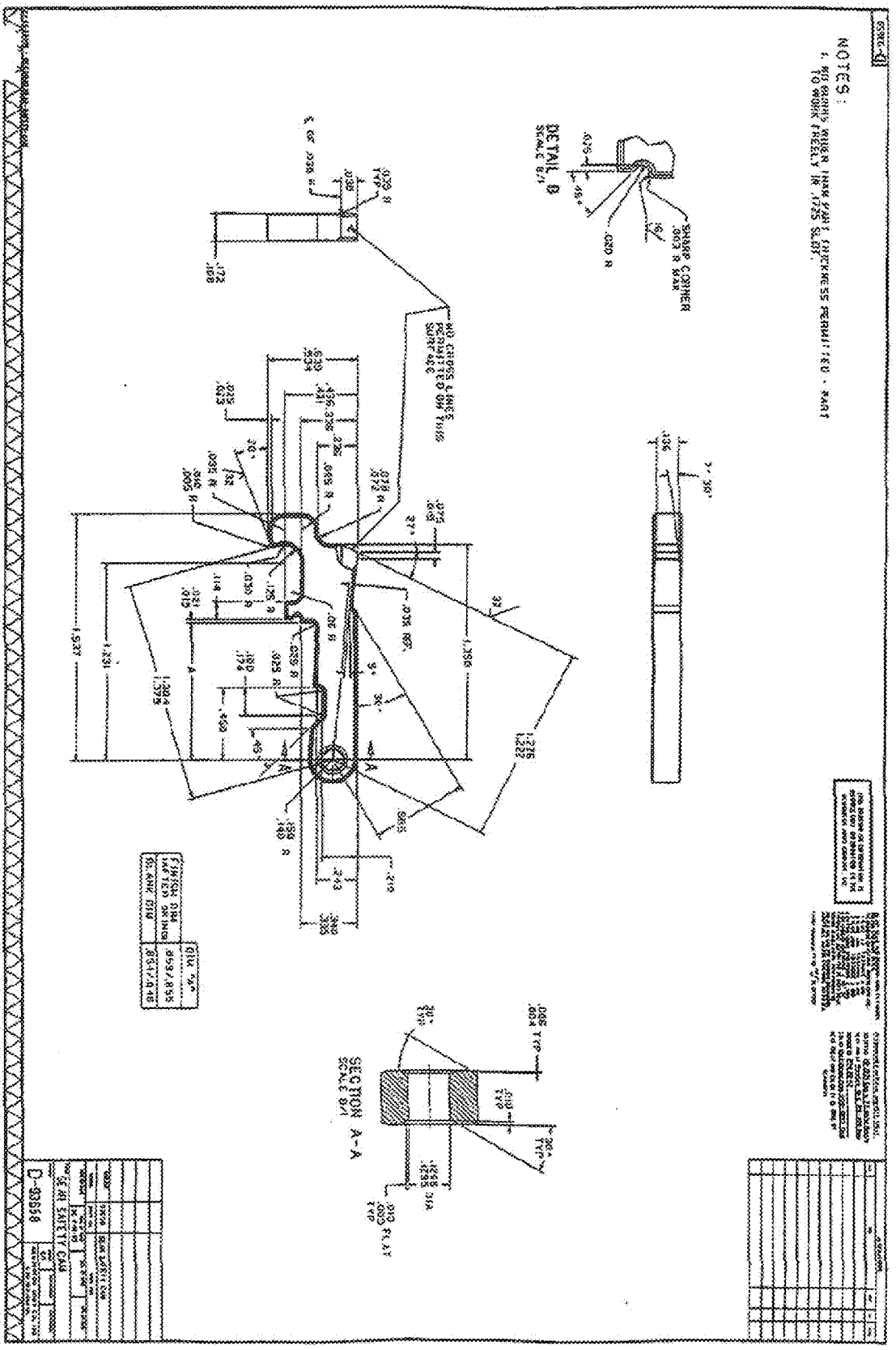

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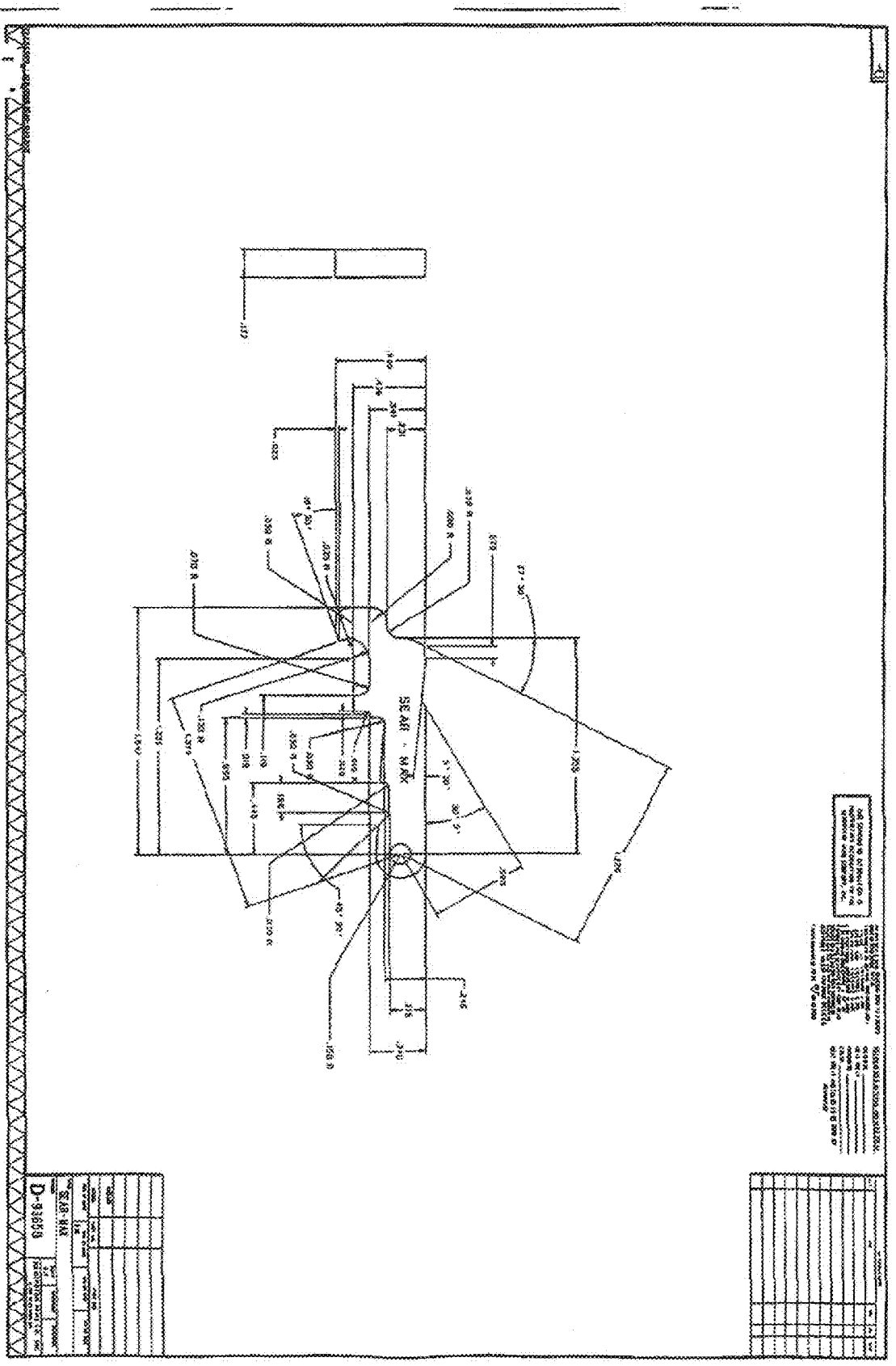
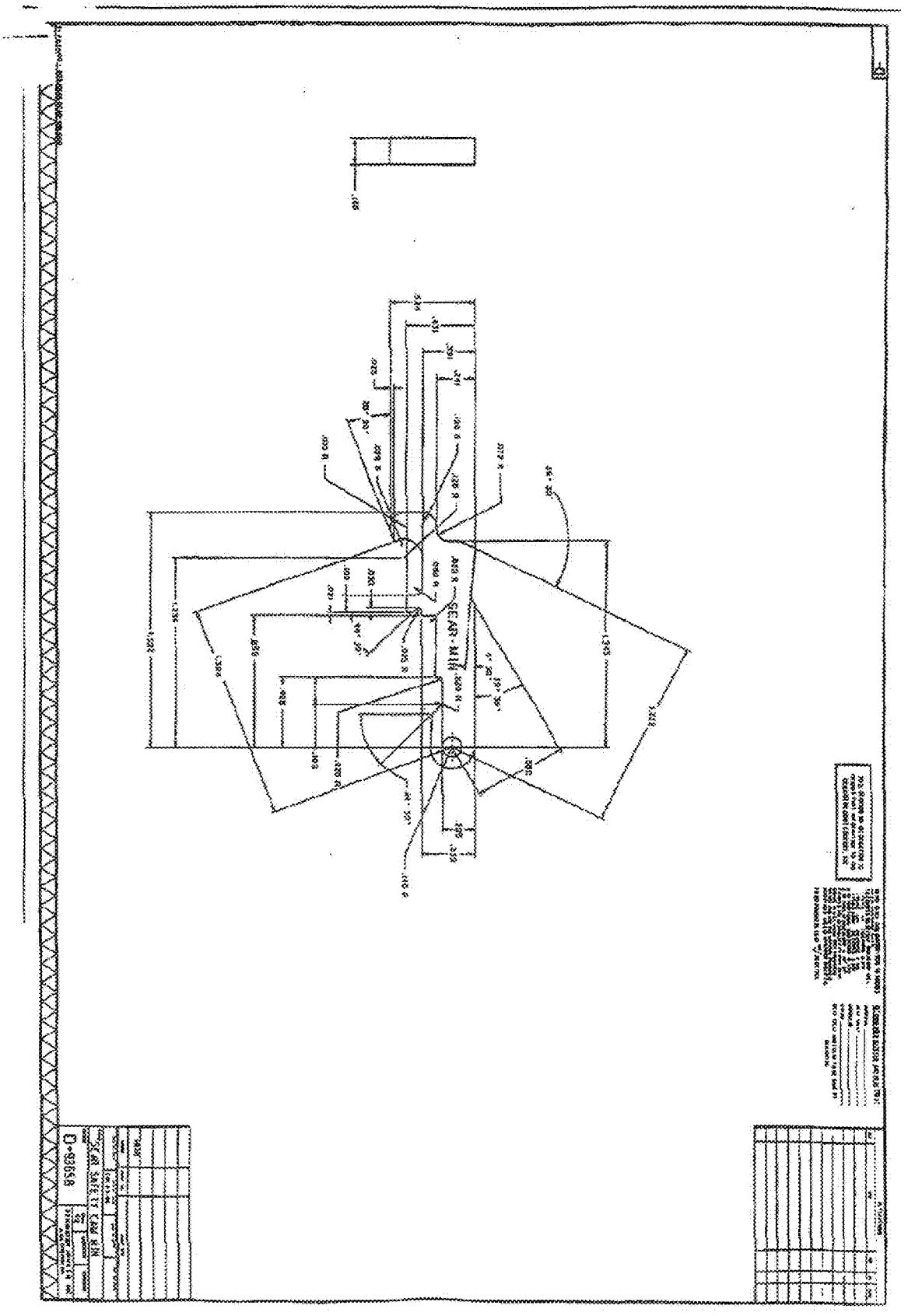
KINZER V. REMINGTON





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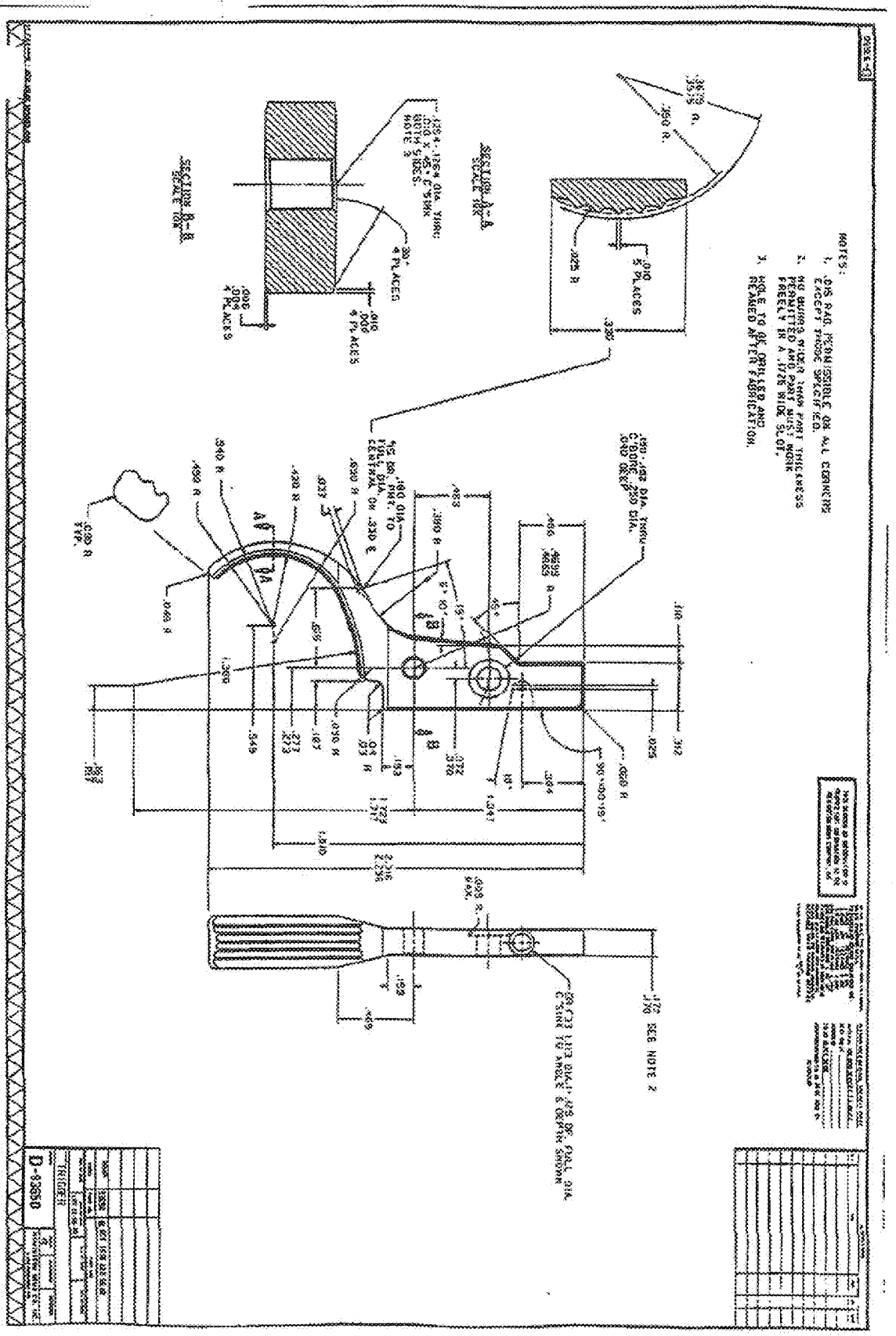

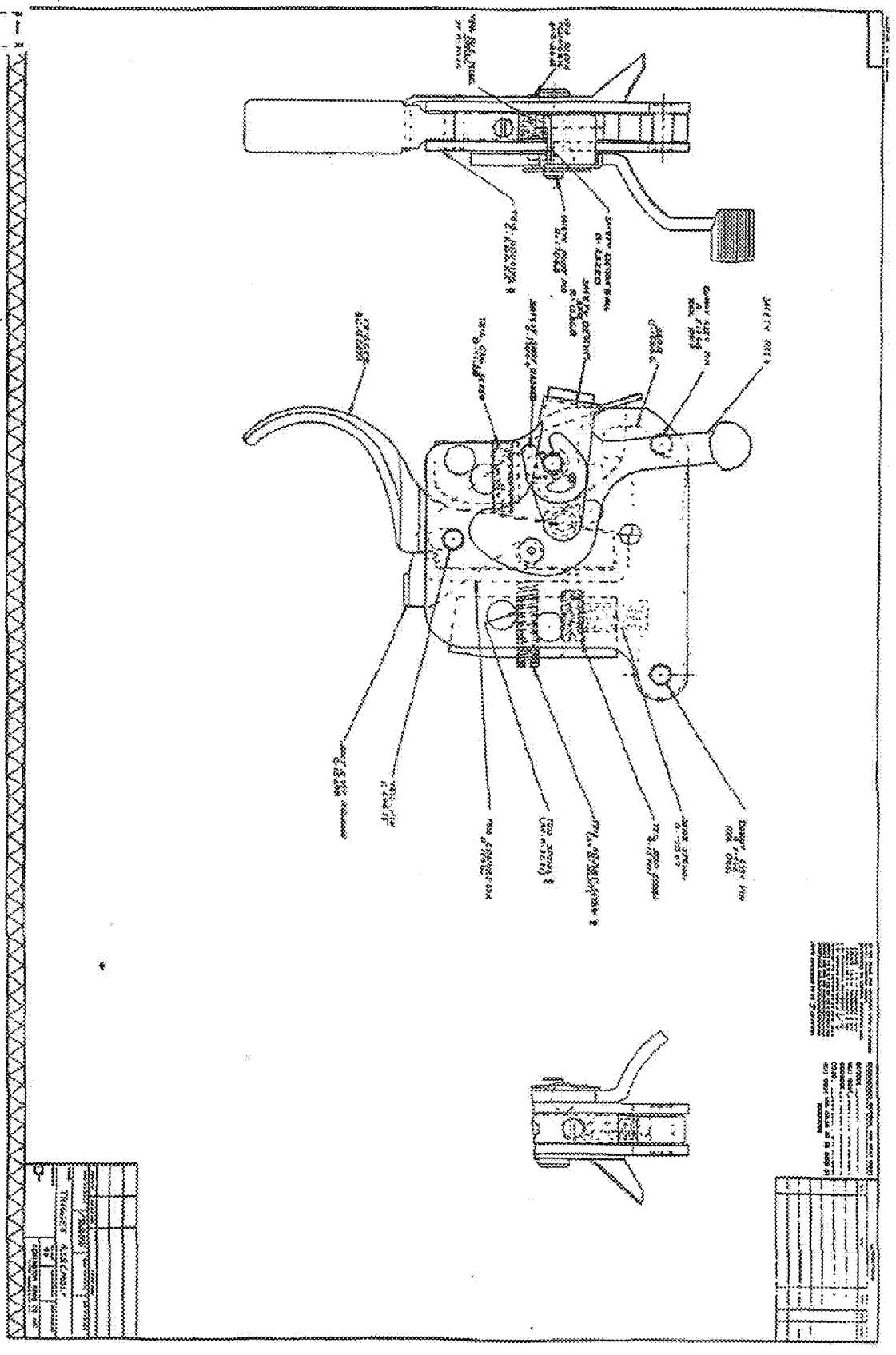

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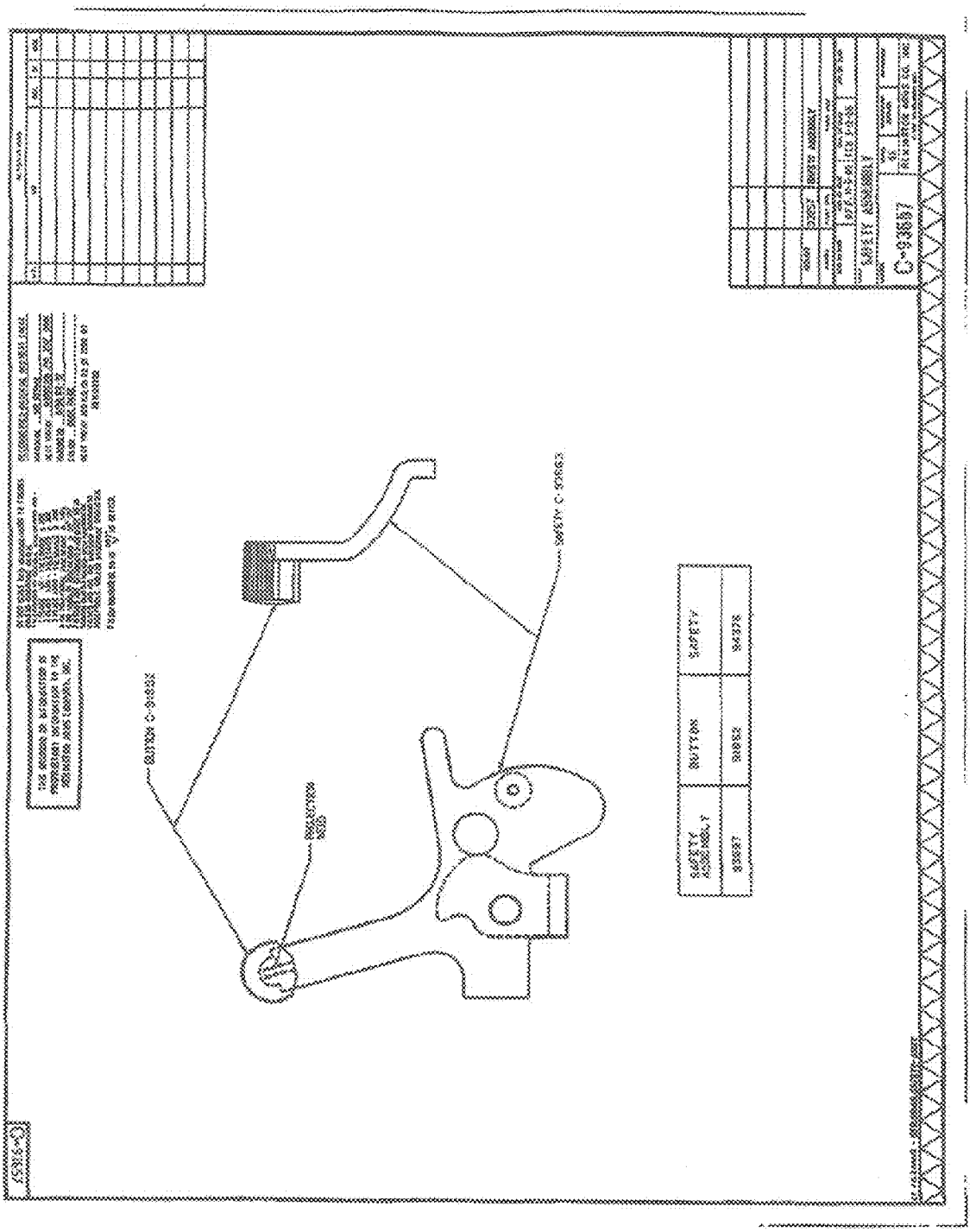
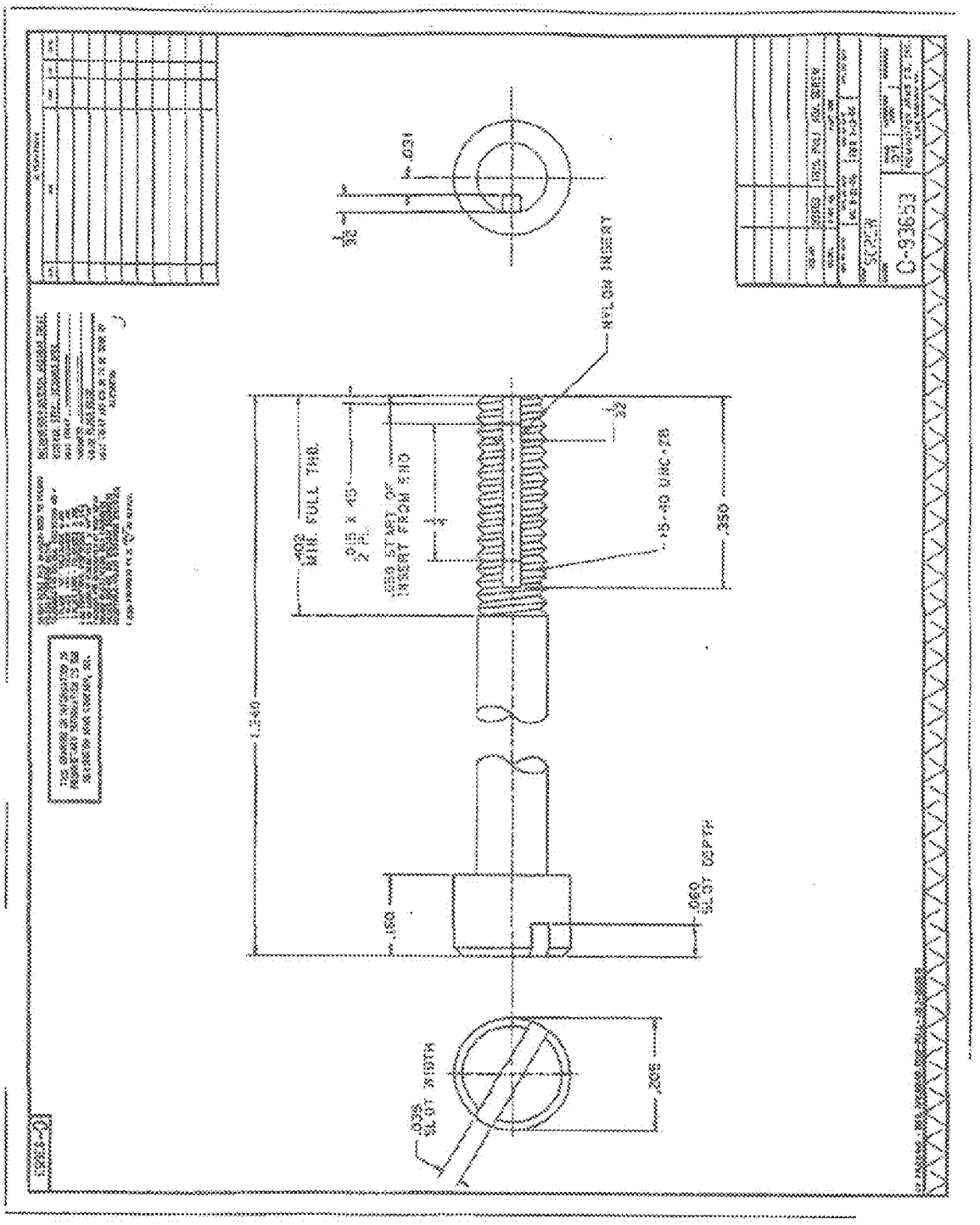
KINZER V. REMINGTON



BARBER - 1.30.130001095

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2522945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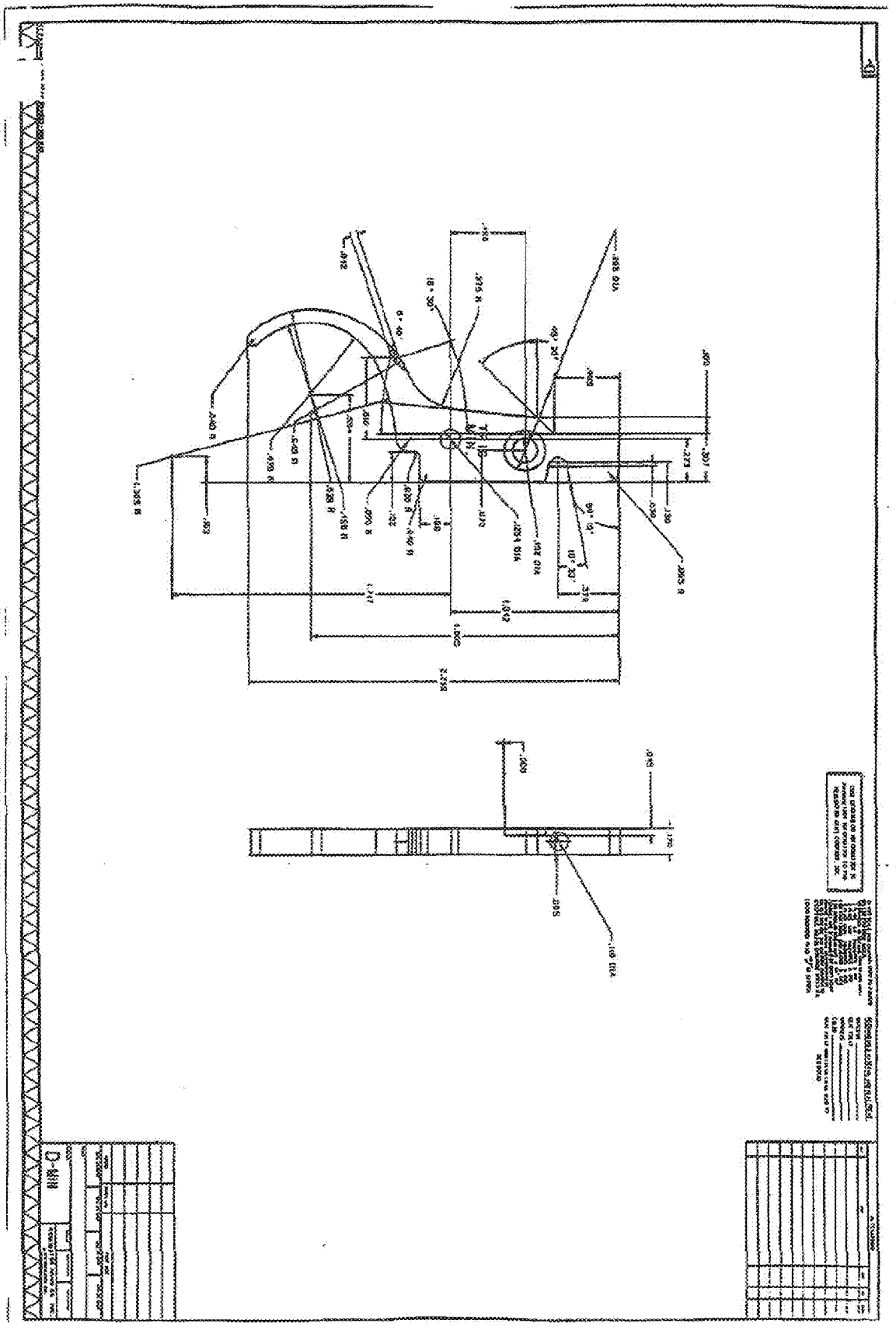
.350
.160
.206

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2523074



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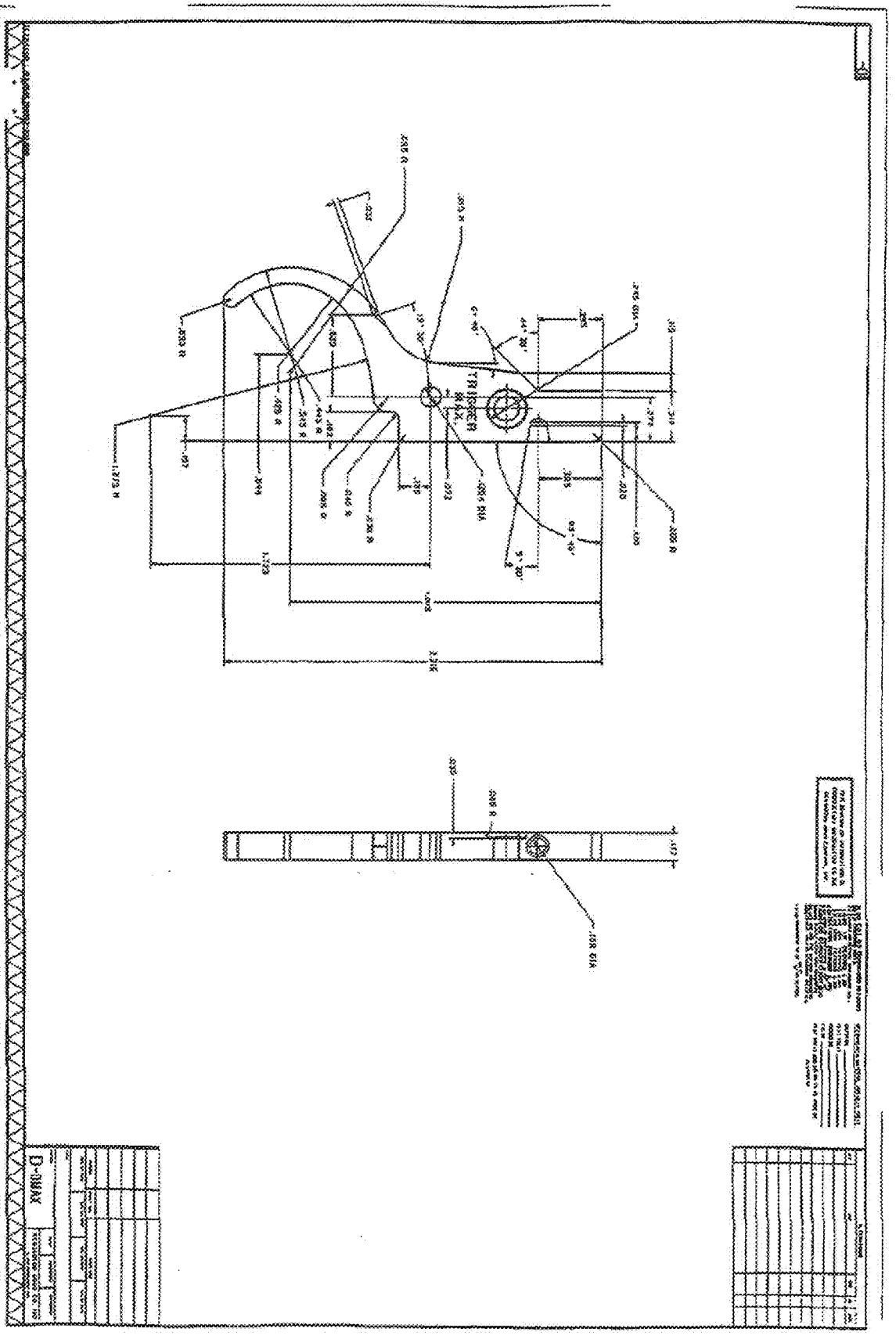

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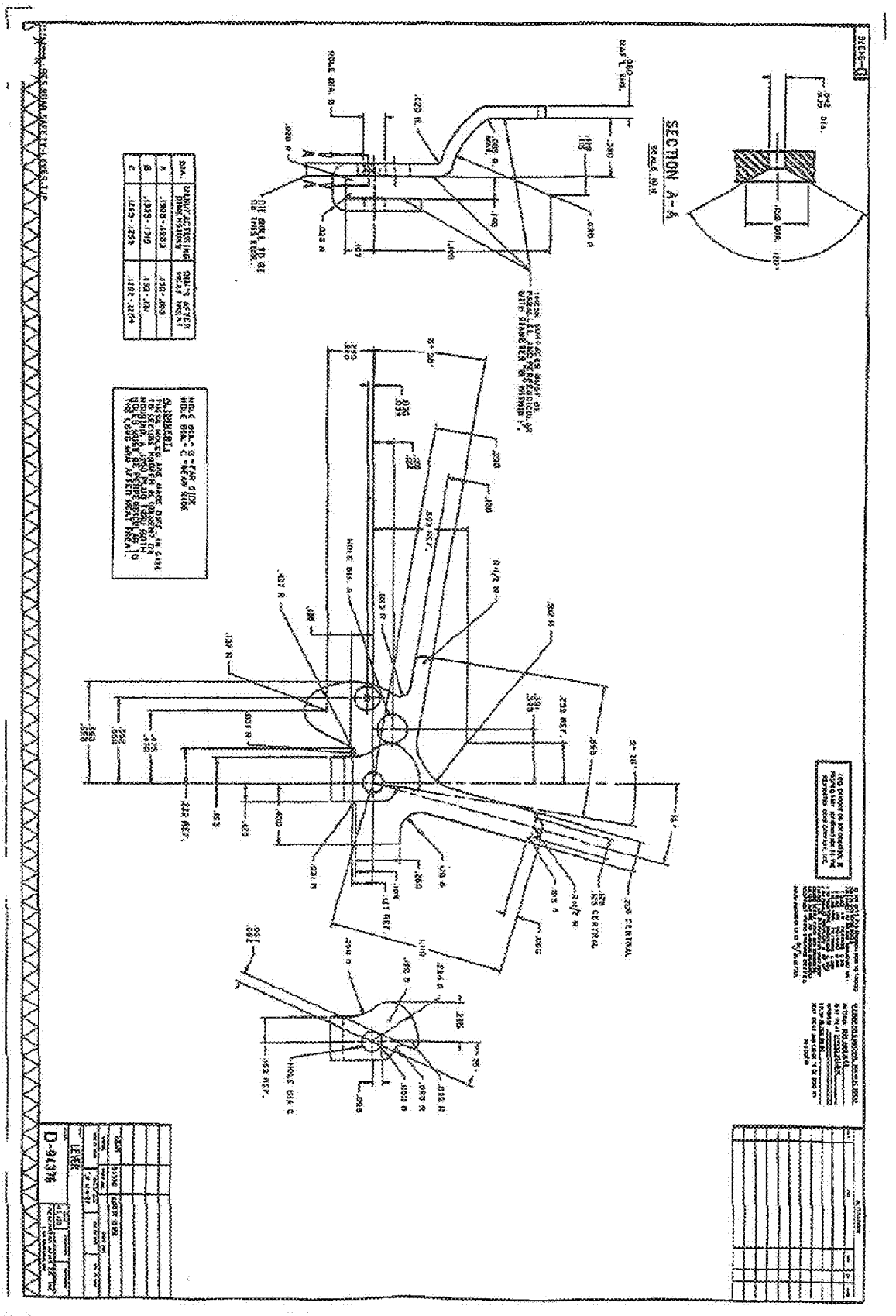
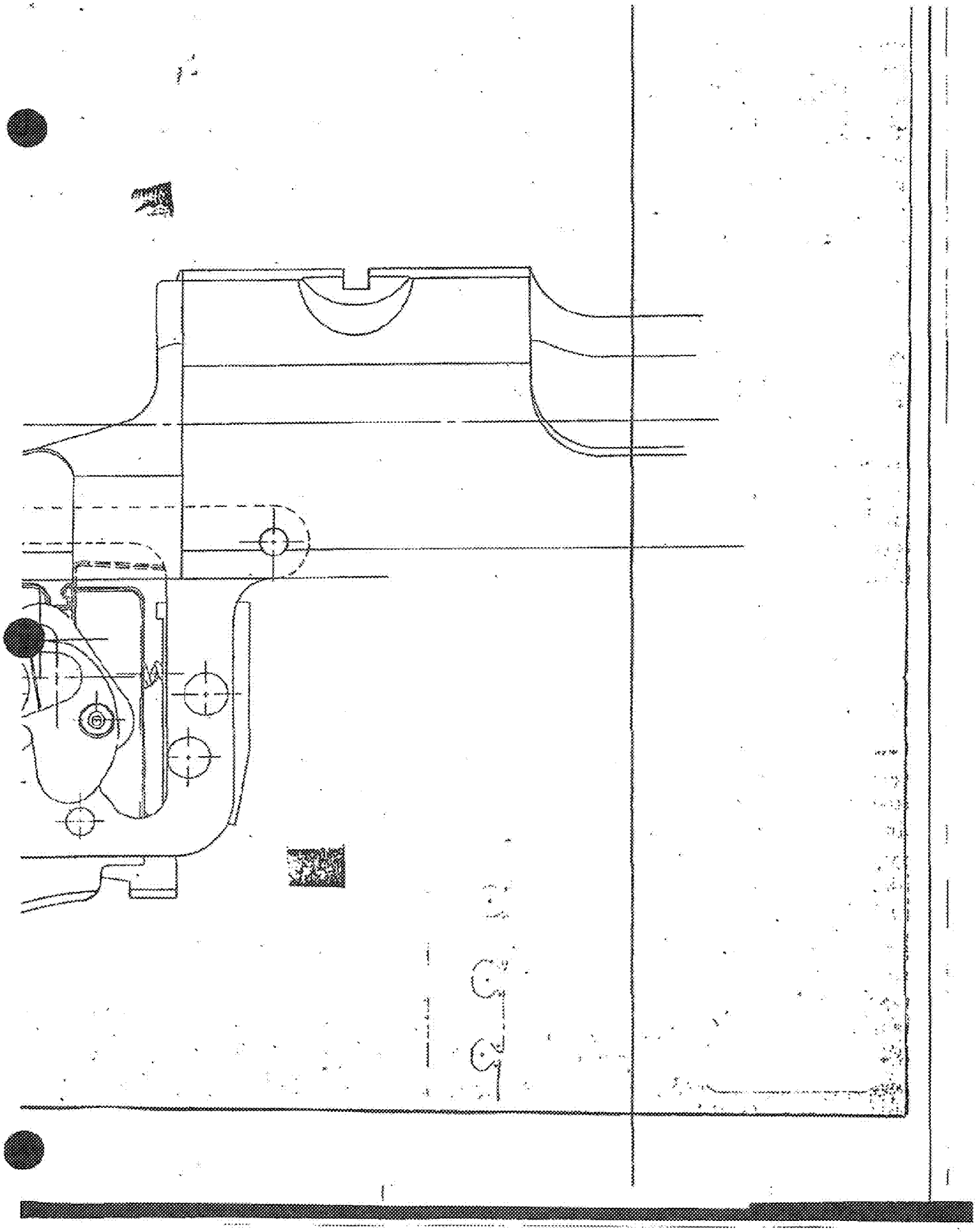
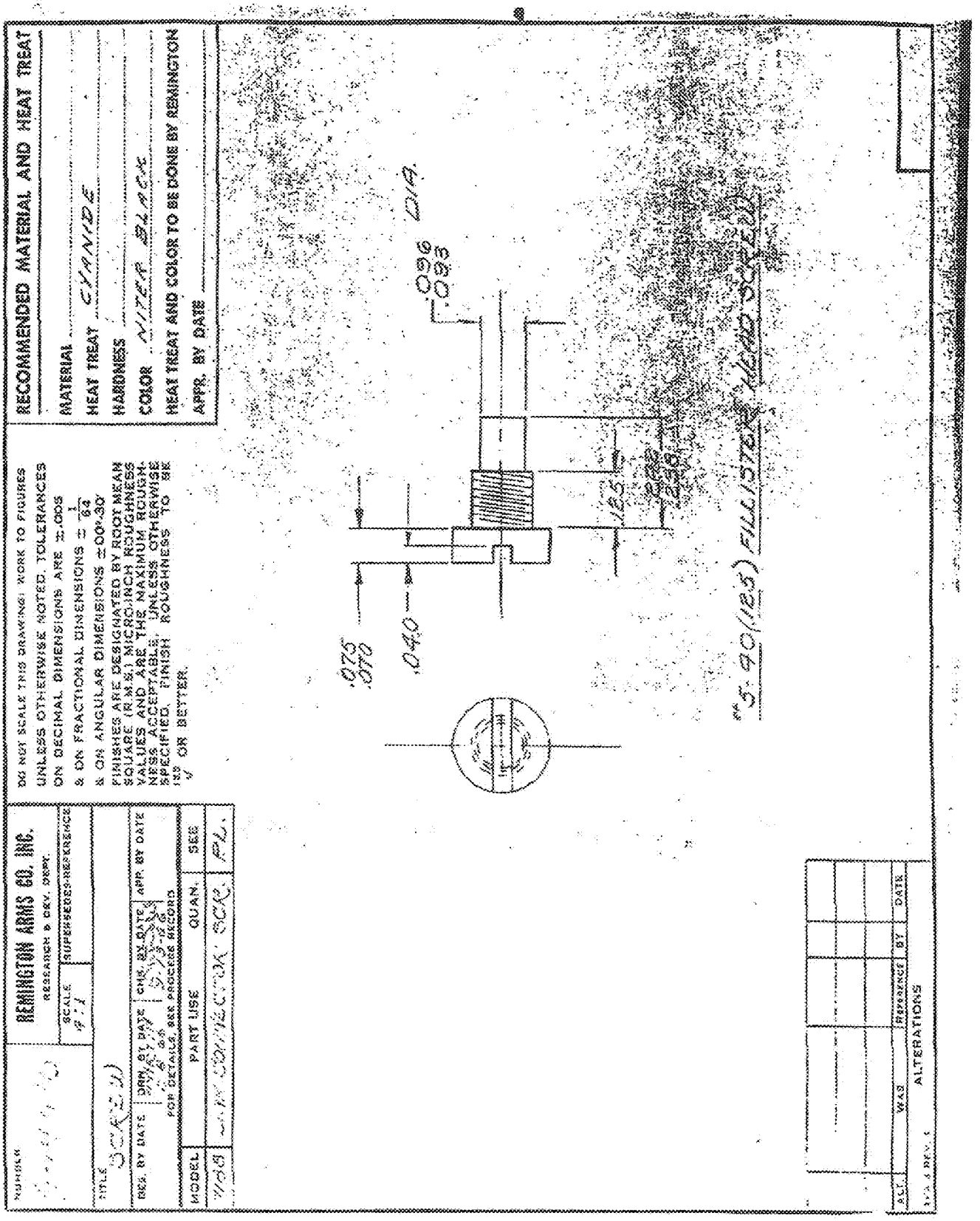
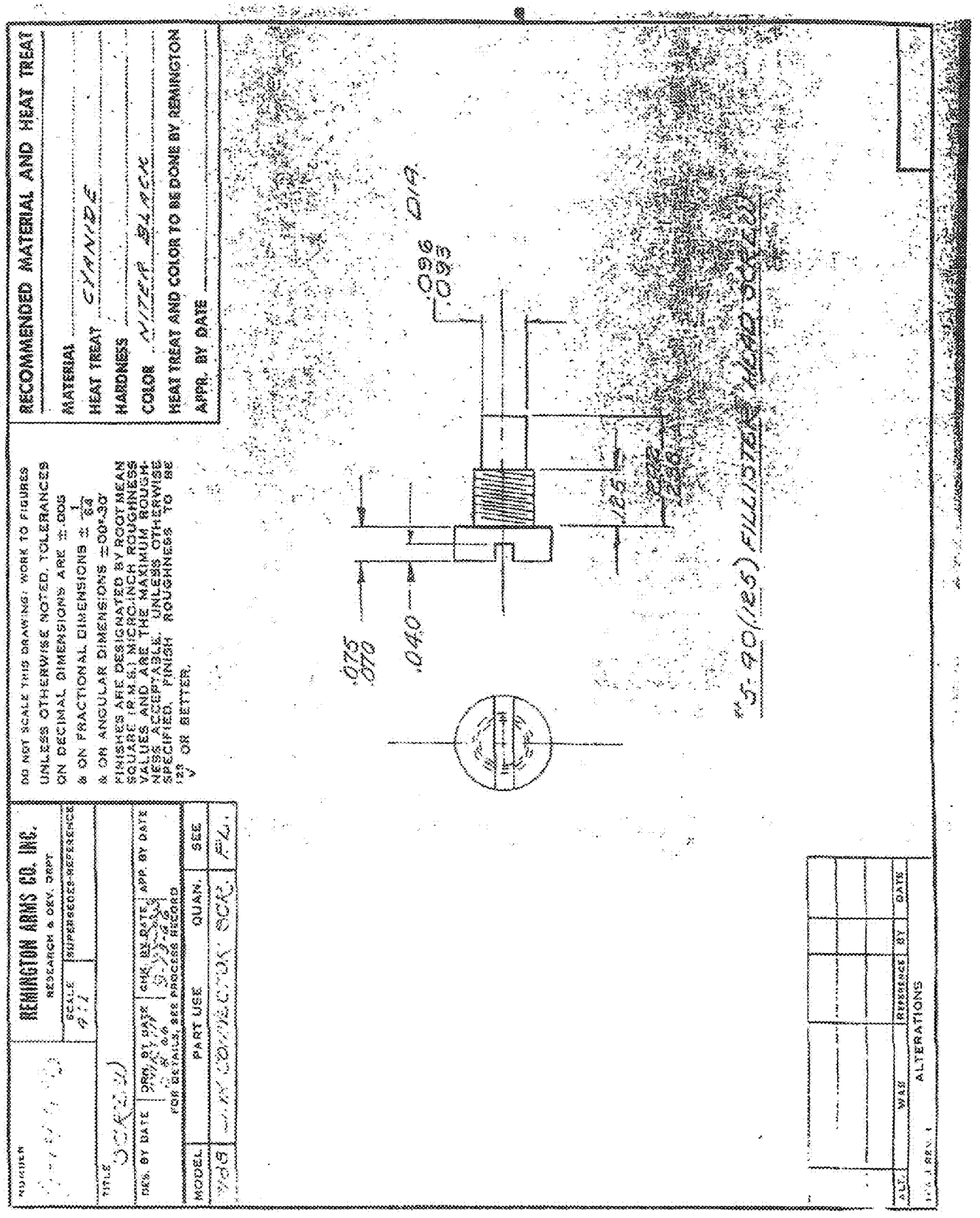


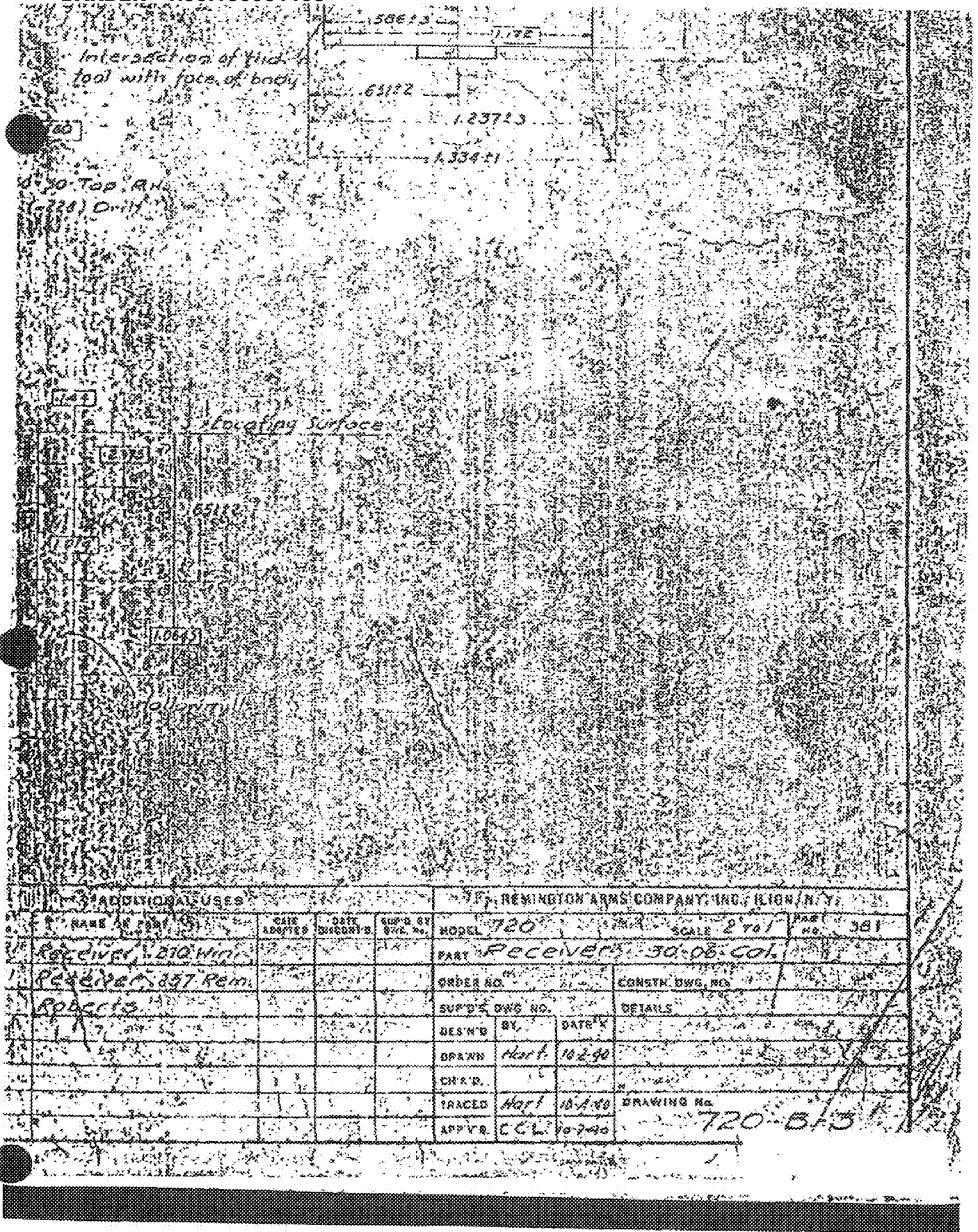


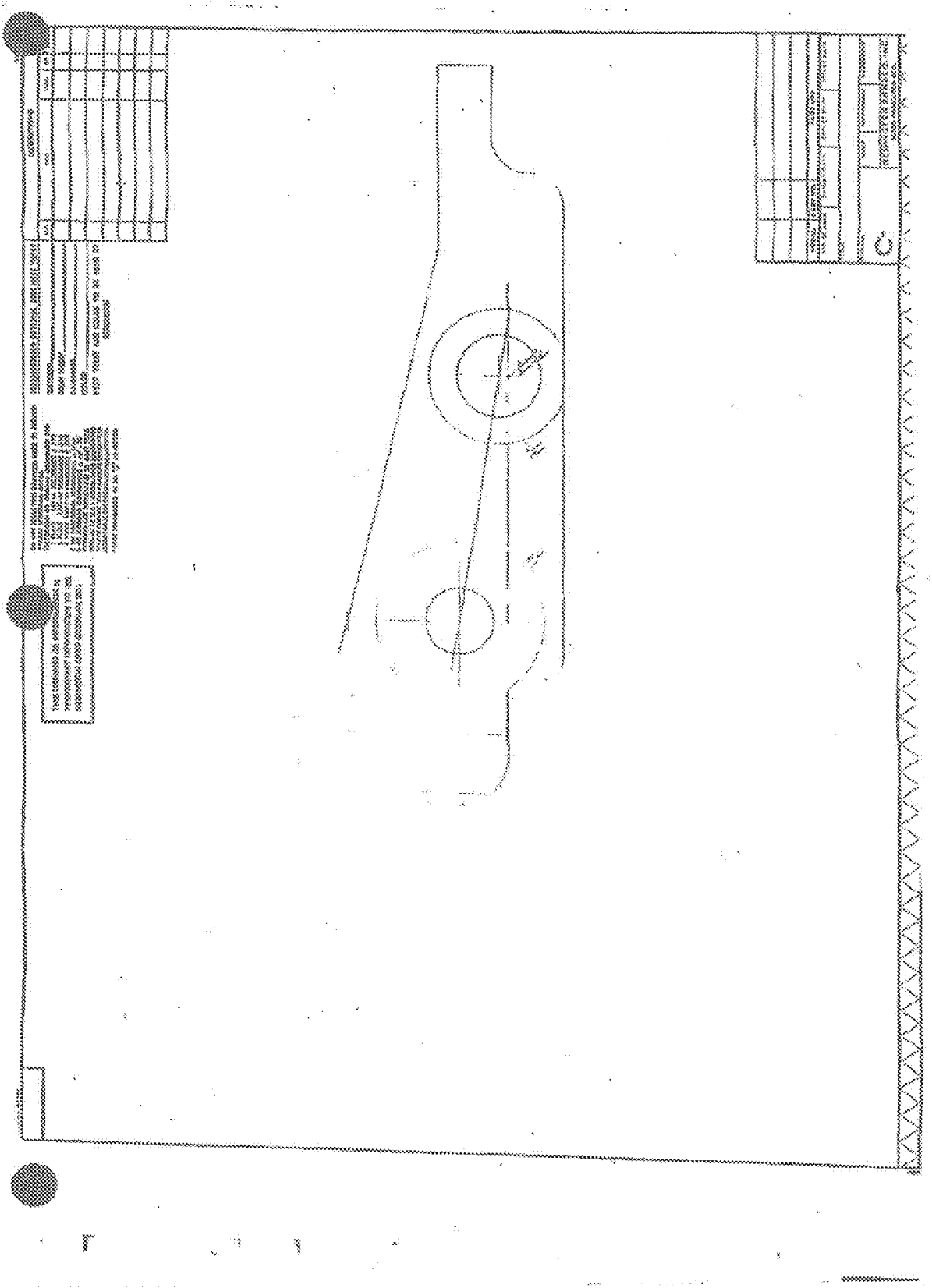
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON


REMINGTON ARMS CO. INC.
RESEARCH & DEV. DEPT.
DO NOT SCALE THIS DRAWING! WORK TO FIGURES
UNLESS OTHERWISE NOTED, TOLERANCES
ON DECIMAL DIMENSIONS ARE ±.005
& ON FRACTIONAL DIMENSIONS ± 1/64
& ON ANGULAR DIMENSIONS ±00°30'
FINISHES ARE DESIGNATED BY ROOT MEAN SQUARE (R.M.S.) MICRO-INCH ROUGHNESS VALUES AND ARE THE MAXIMUM ROUGHNESS ACCEPTABLE, UNLESS OTHERWISE SPECIFIED, FINISH ROUGHNESS TO BE 125 OR BETTER.
RECOMMENDED MATERIAL AND HEAT TREAT
MATERIAL
HEAT TREAT CYANIDE
HARDNESS
COLOR NITRE BLACK
HEAT TREAT AND COLOR TO BE DONE BY REMINGTON
APPR. BY DATE
.096 DIA.
.086
.040
.075
.070
.125
.250
.240
"S" 90 (.125) FILLISTER HEAD SCREW
ALTERATIONS
DATE
BY
REFERENCE
WAS


REMINGTON ARMS CO. INC.
RESEARCH & DEV. DEPT.
RECOMMENDED MATERIAL AND HEAT TREAT
MATERIAL
HEAT TREAT
HARDNESS
COLOR
HEAT TREAT AND COLOR TO BE DONE BY REMINGTON
APPR. BY DATE
DO NOT SCALE THIS DRAWING! WORK TO FIGURES
UNLESS OTHERWISE NOTED, TOLERANCES
ON DECIMAL DIMENSIONS ARE ± .005
ON FRACTIONAL DIMENSIONS ± 1/64
ON ANGULAR DIMENSIONS ± 00°30'
FINISHES ARE DESIGNATED BY ROOT MEAN SQUARE (R.M.S.) MICRO-INCH ROUGHNESS VALUES AND ARE THE MAXIMUM ROUGHNESS ACCEPTABLE, UNLESS OTHERWISE SPECIFIED. FINISH ROUGHNESS TO BE 125 OR BETTER.
.096
.093
.040
.125
.200
.230
.875
.870
"S" .40 (.125) FILLISTER HEAD SCREW
MODEL
PART USE
QUAN.
SEE
ALT.
WAS
REVISIONS
BY
DATE
ALTERATIONS

ALTERATIONS
ALT.
WAS
REF.
BY
DATE
RECOMMENDED MATERIAL AND HEAT TREAT
MATERIAL 4620
HEAT TREAT MICROCAM28
HARDNESS Rcon 66-69
COLOR NONE
HEAT TREAT AND COLOR TO BE DONE BY REMINGTON
DO NOT SCALE THIS DRAWING. WORK TO FIGURES UNLESS OTHERWISE NOTED.
TOLERANCES ON DECIMAL DIMENSIONS ARE:
1 PLACE (.1) — TOLERANCE ± .010
2 PLACE (.01) — TOLERANCE ± .010
3 PLACE (.001) — TOLERANCE ± .005
& ON FRACTIONAL DIMENSIONS ± 1/64
& ON ANGULAR DIMENSIONS ± 00°-30'
FINISHES ARE DESIGNATED BY ROOT MEAN SQUARE (R.M.S.) MICRO-INCH ROUGHNESS VALUES AND ARE THE MAXIMUM ROUGHNESS ACCEPTABLE, UNLESS OTHERWISE SPECIFIED.
FINISH ROUGHNESS TO BE 125 OR BETTER.
.012
.015
.052
.050
Dia.
.055
.053
.029
.022


Intersection of Rad. tool with face of body
.63112
1.23713
1.33451
.10 Top, RH
(10) Drill
Locating Surface
.0645
.0645
.10
.10
.10



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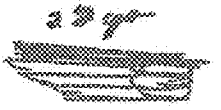
KINZER V. REMINGTON



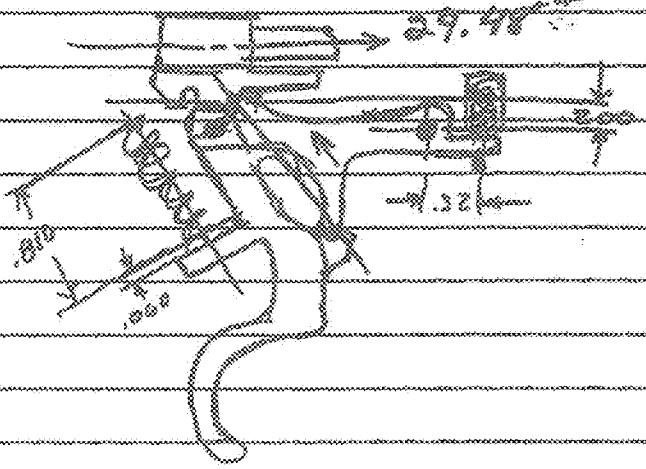
Gas Recoil

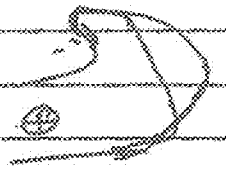
Gas Spring - 6"-7"

.05 Deceleration

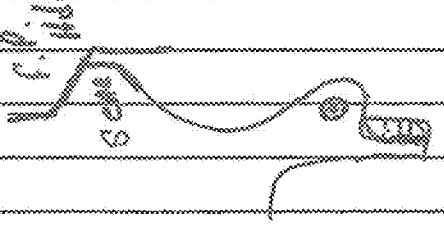
.22 Dia Rod

.32 Working Length





Design



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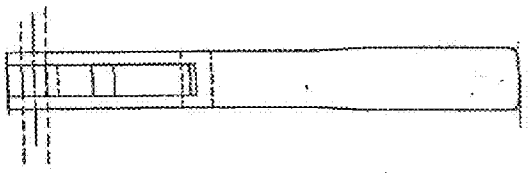
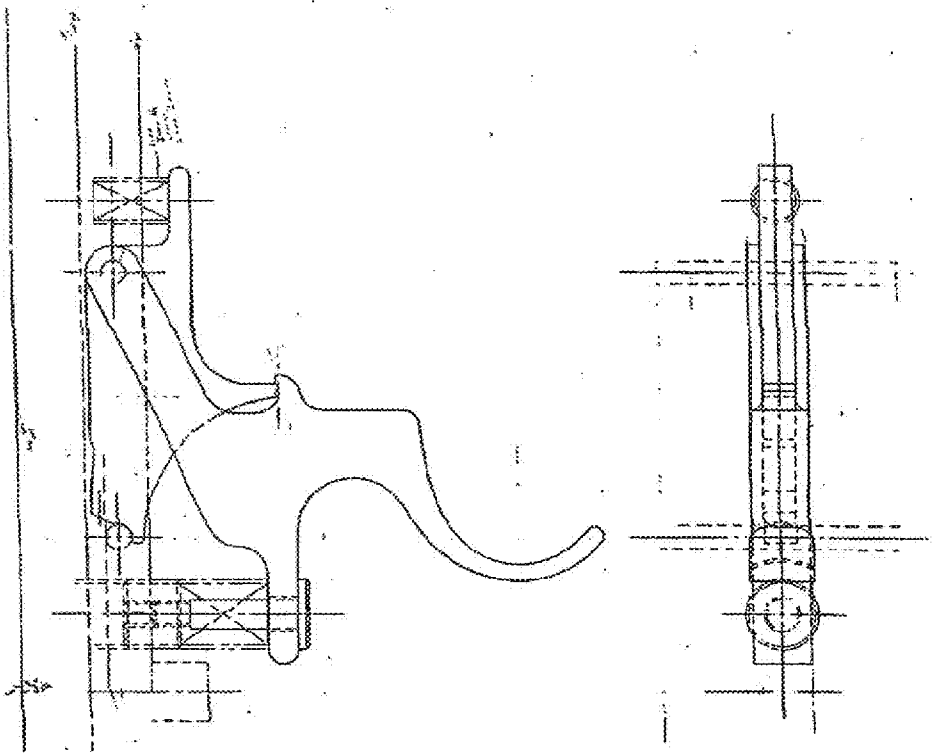
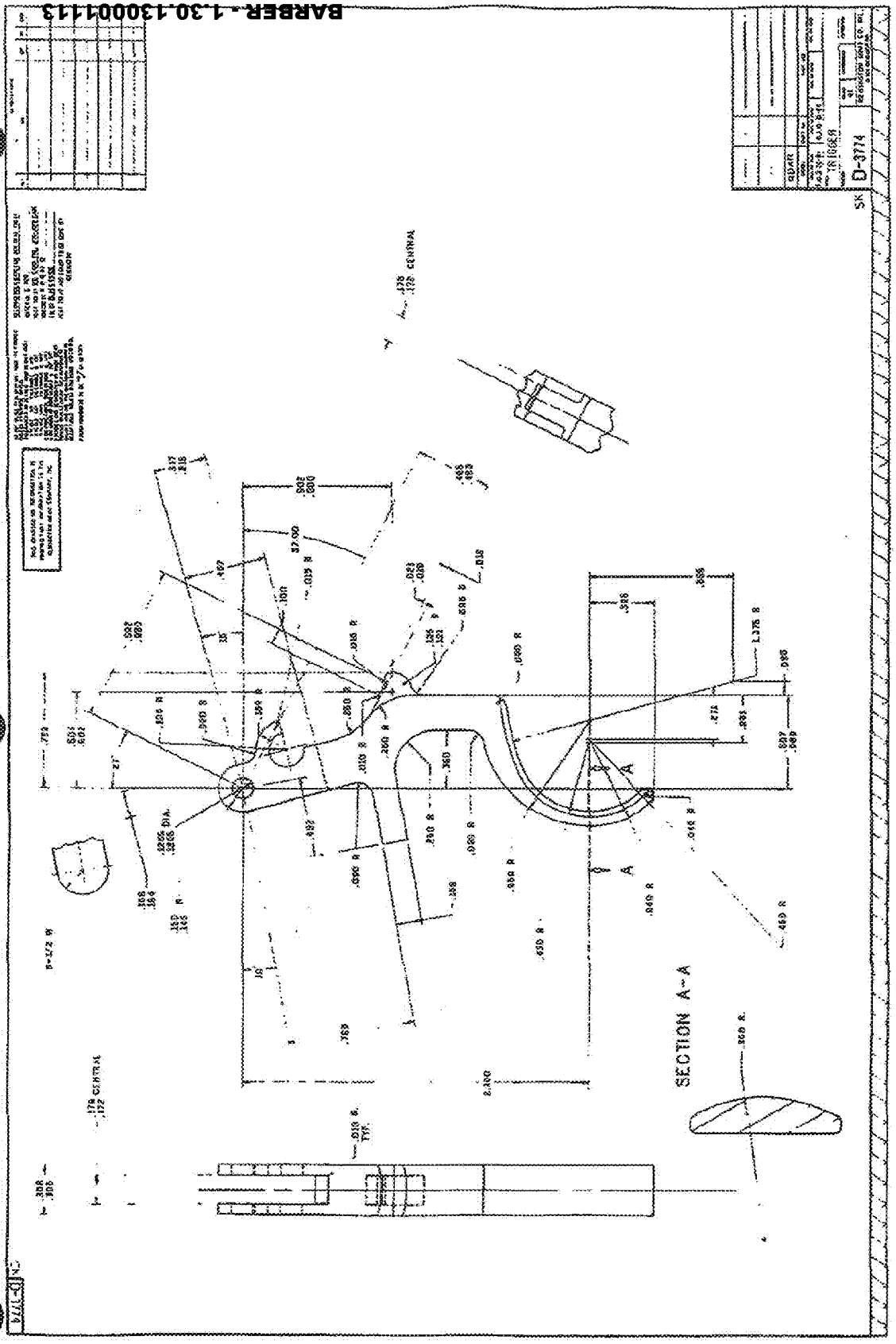
KINZER V. REMINGTON

R2552806

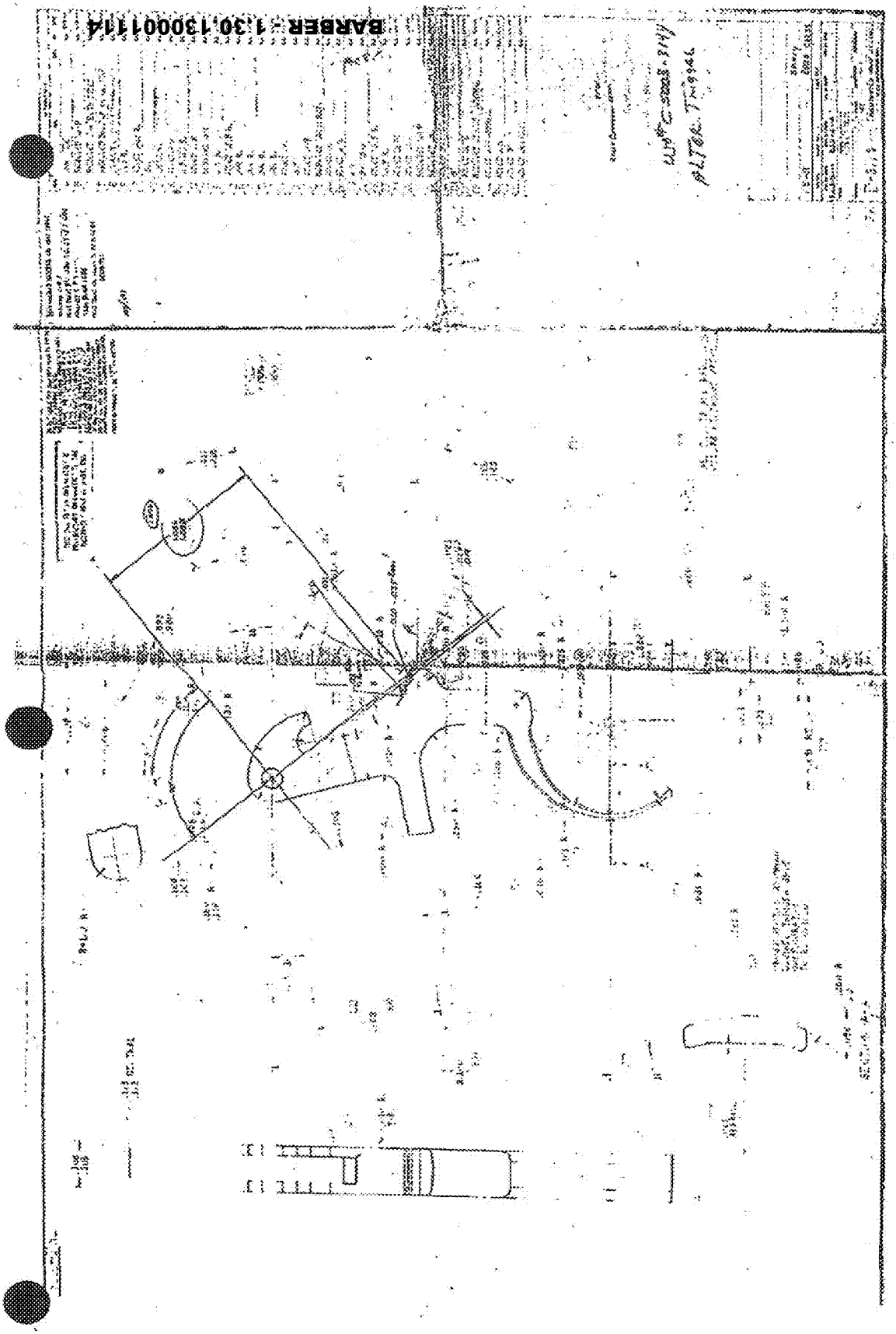


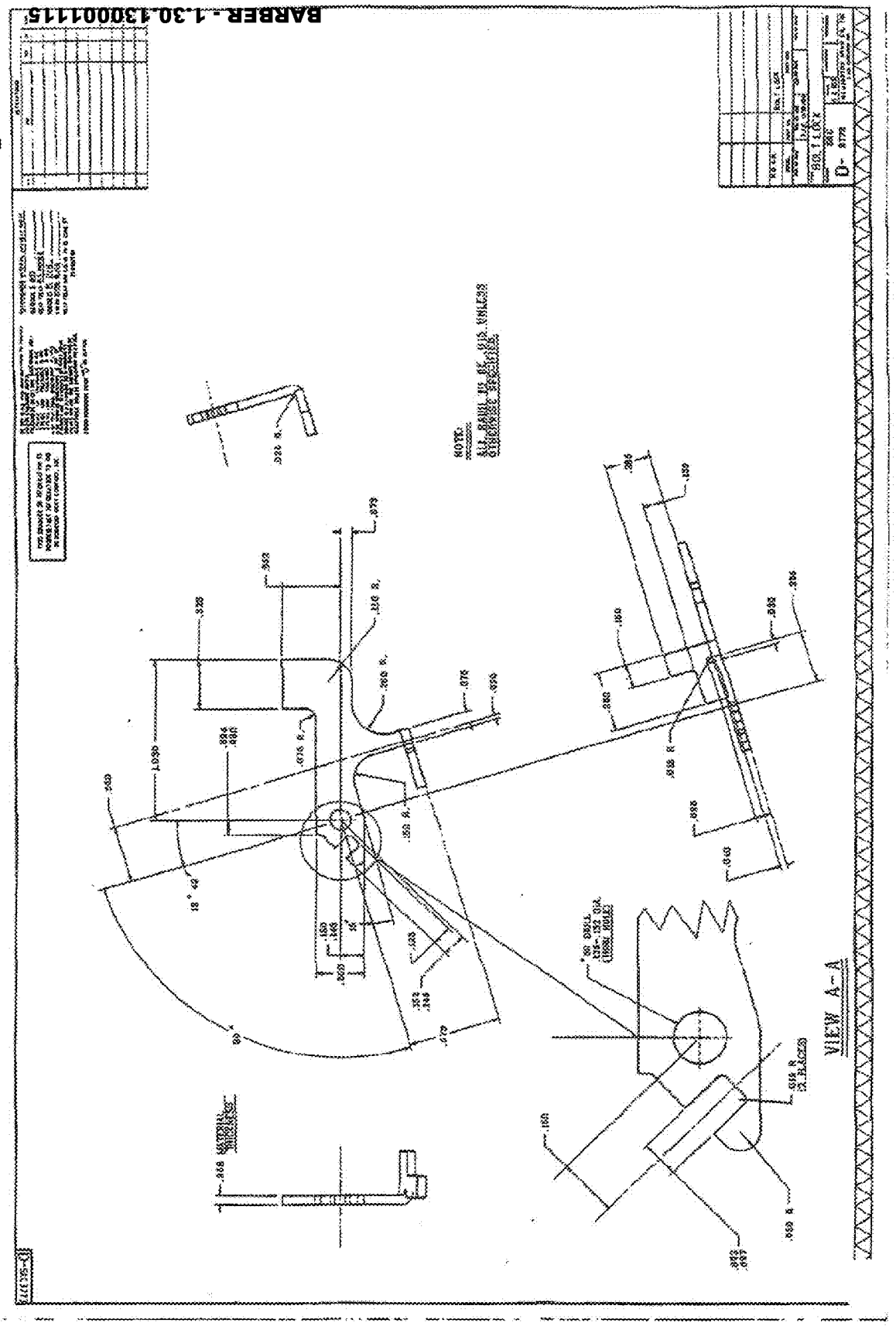




CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

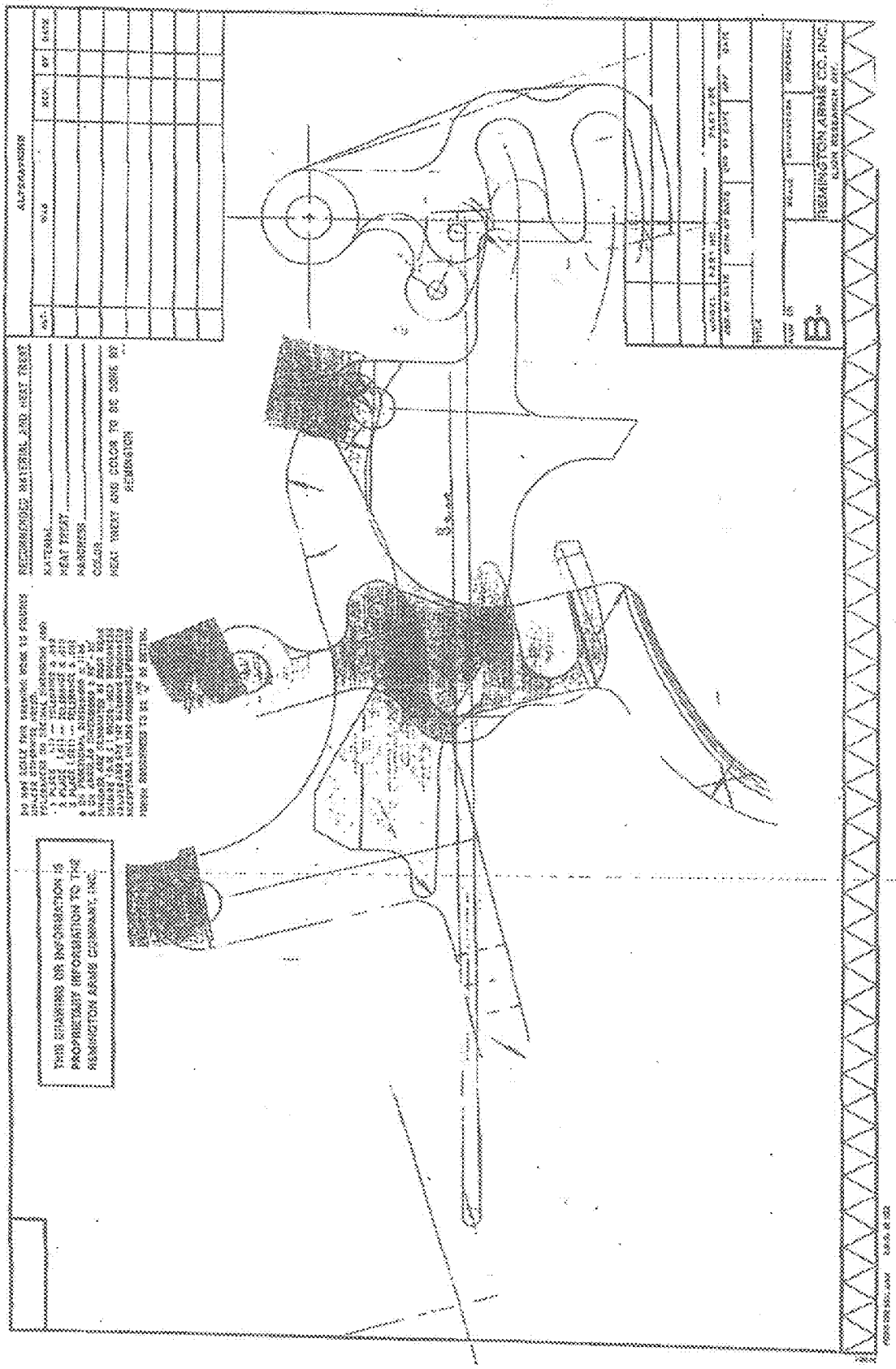
BARBER - 1.30.13000113

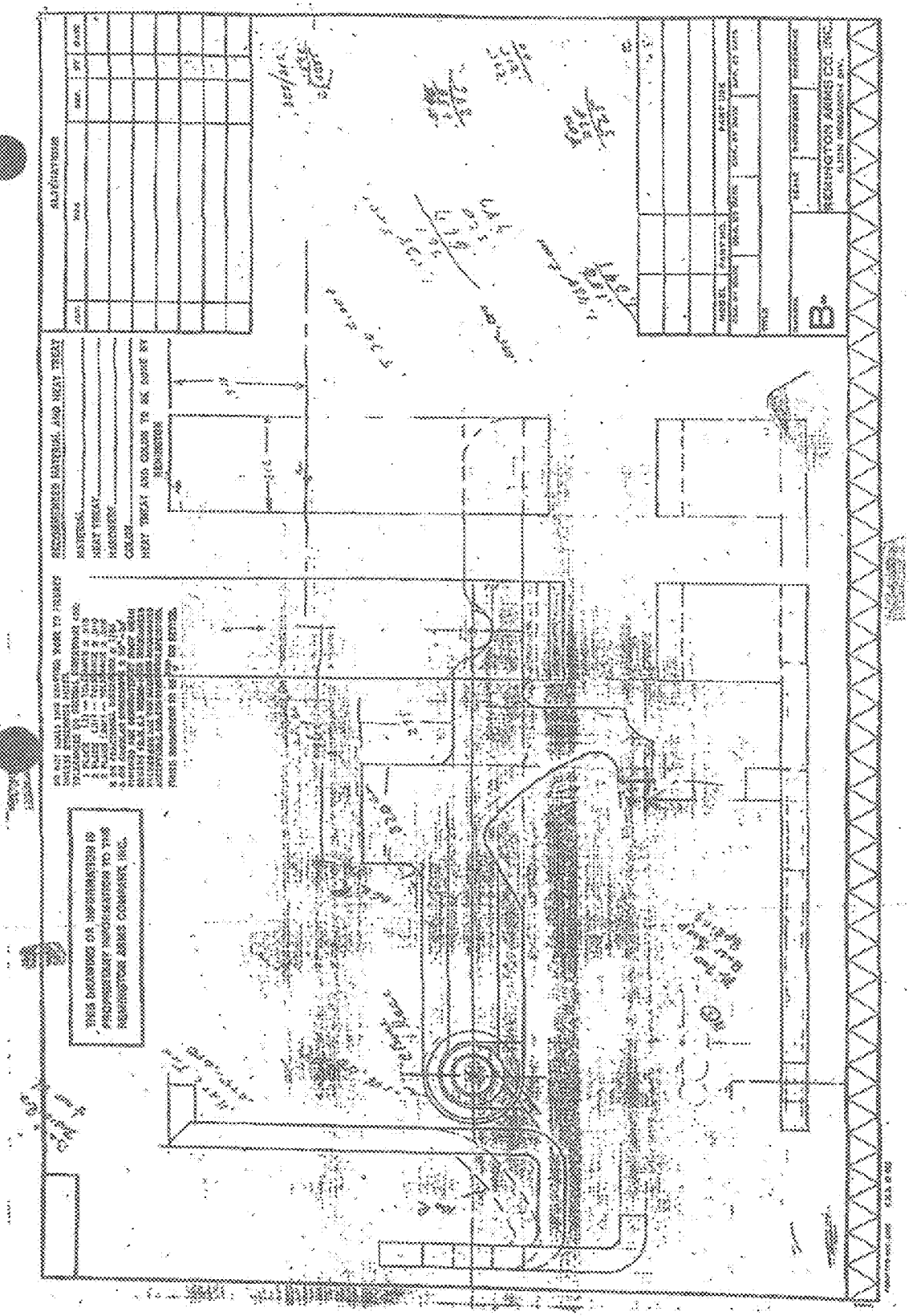



VIEW A-A

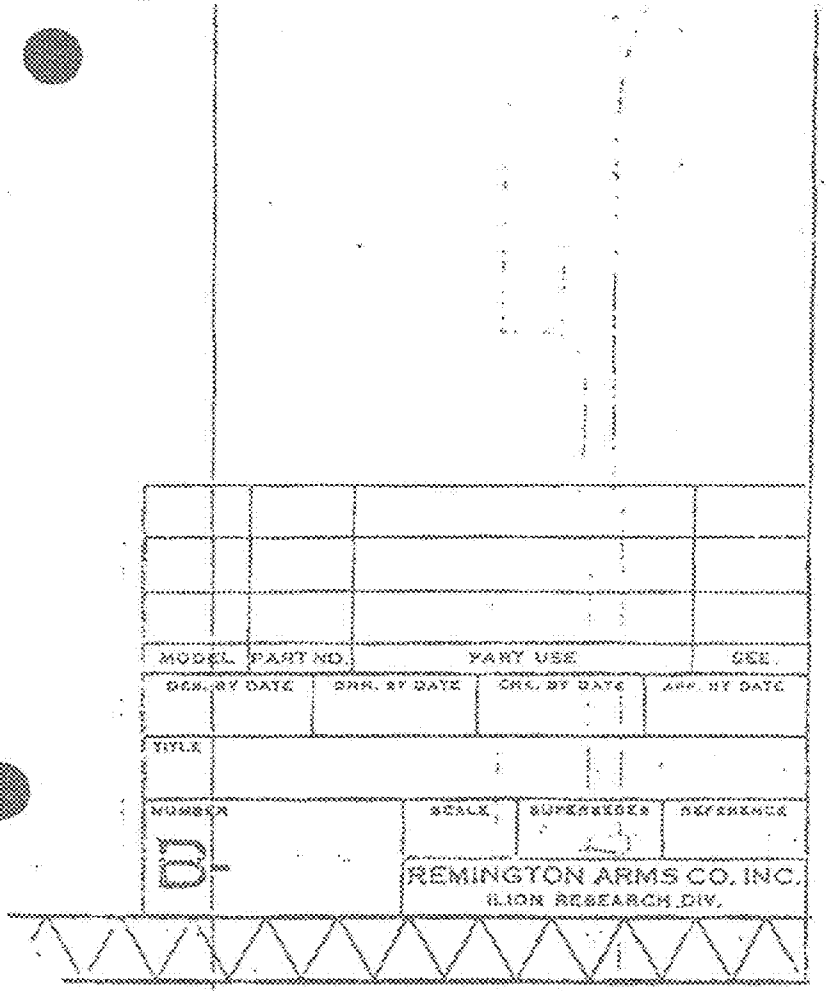
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2523000

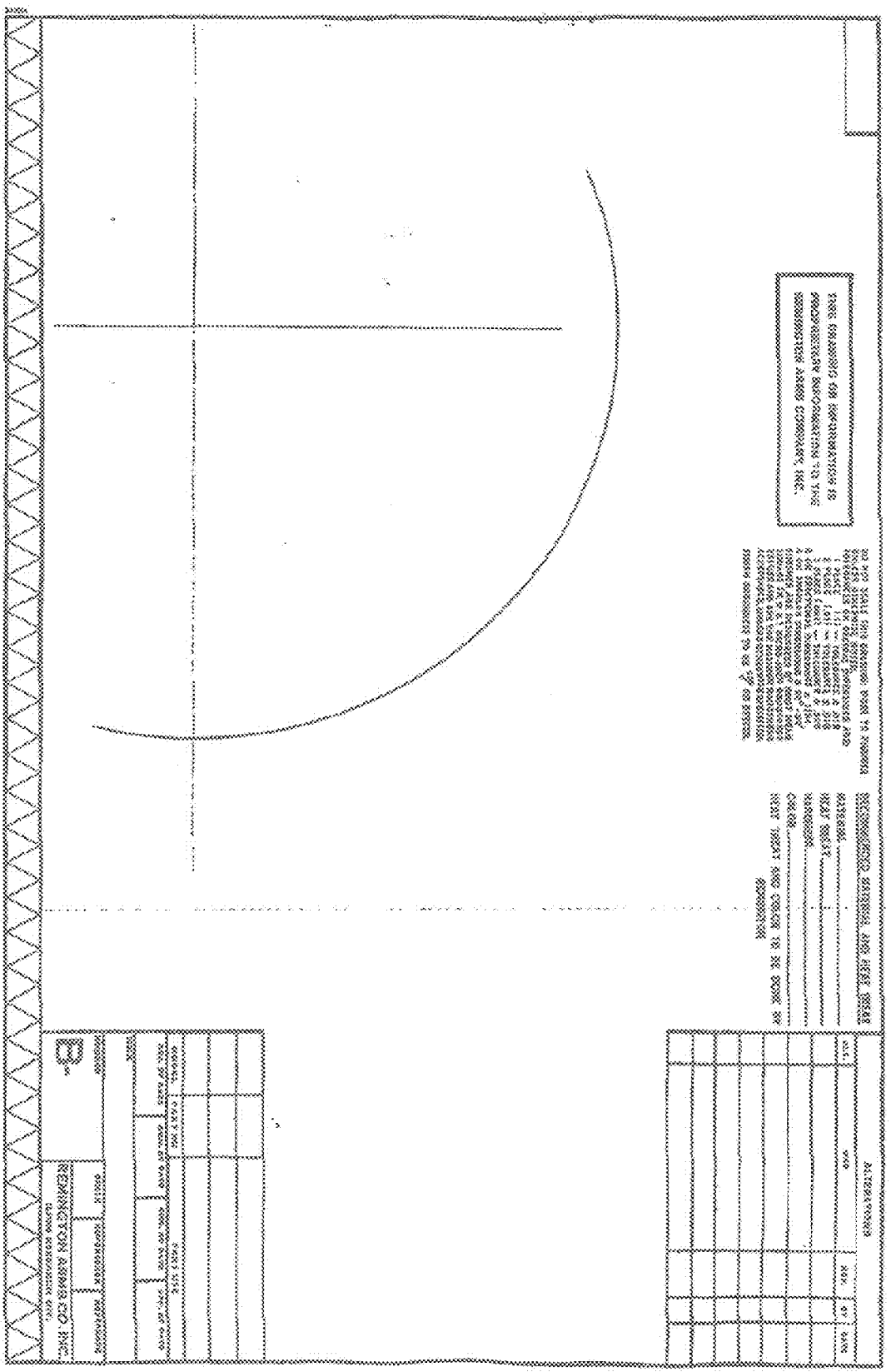




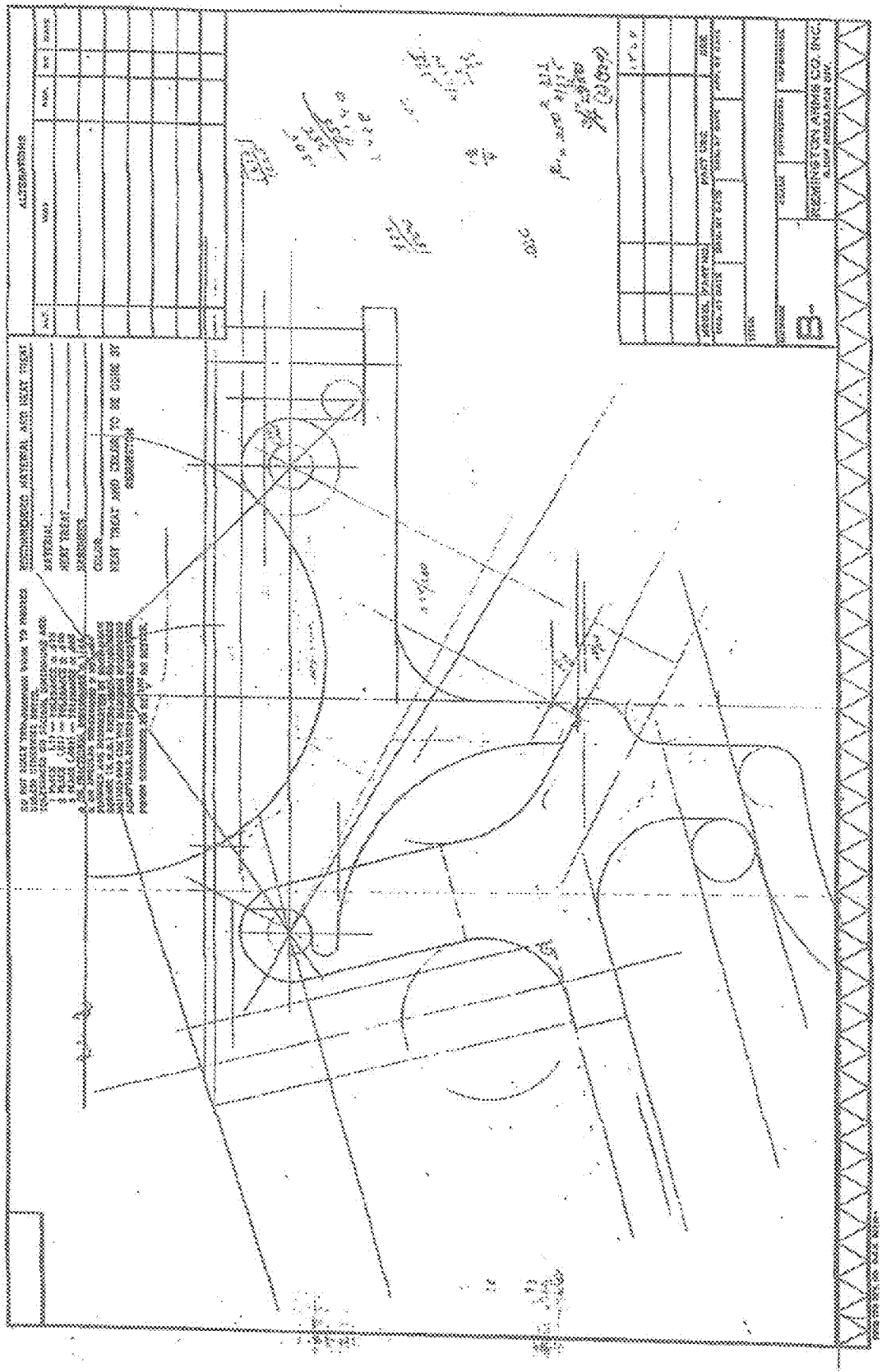
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

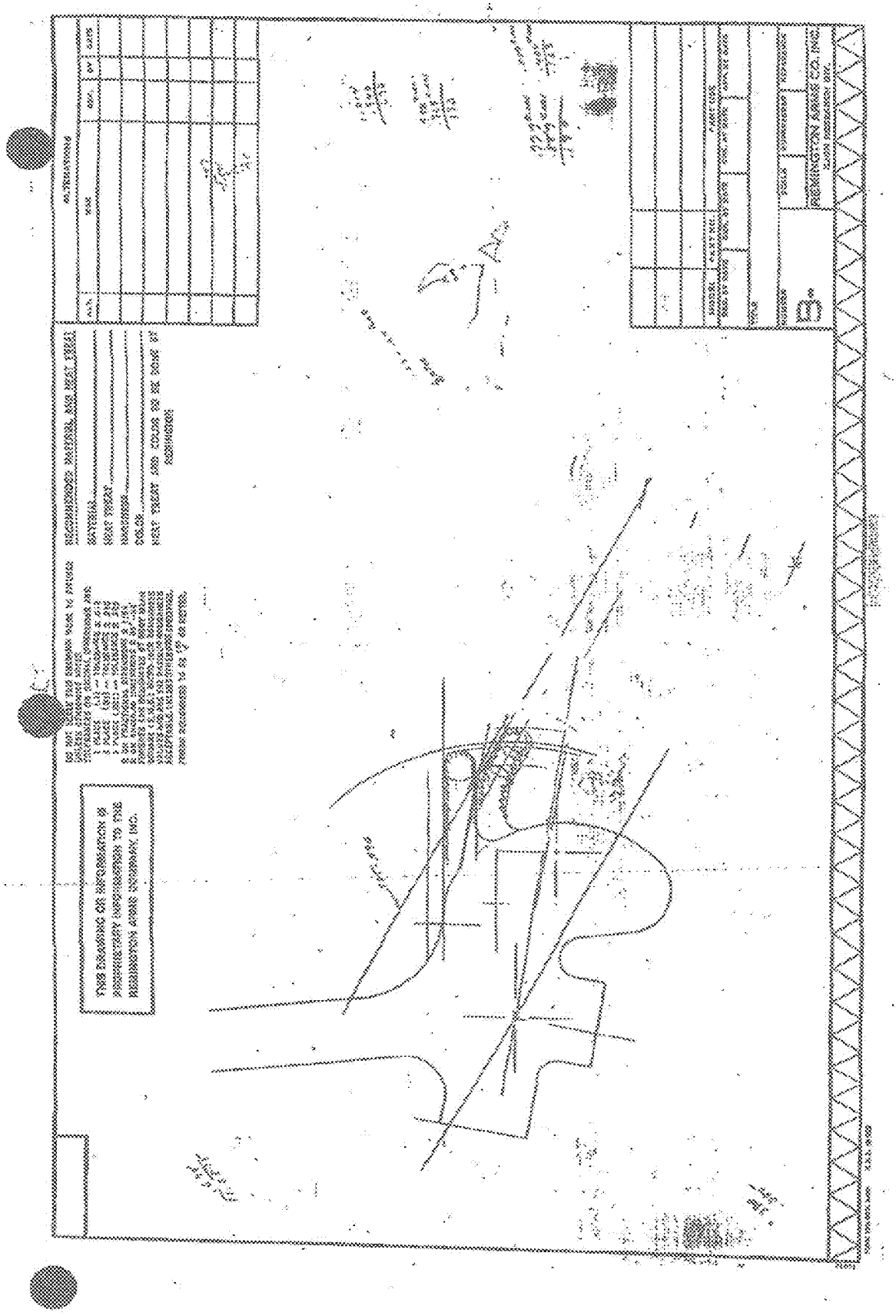


CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON





R2522614

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

CONFIDENTIAL SUBJECT TO PROTECTIVE ORDER

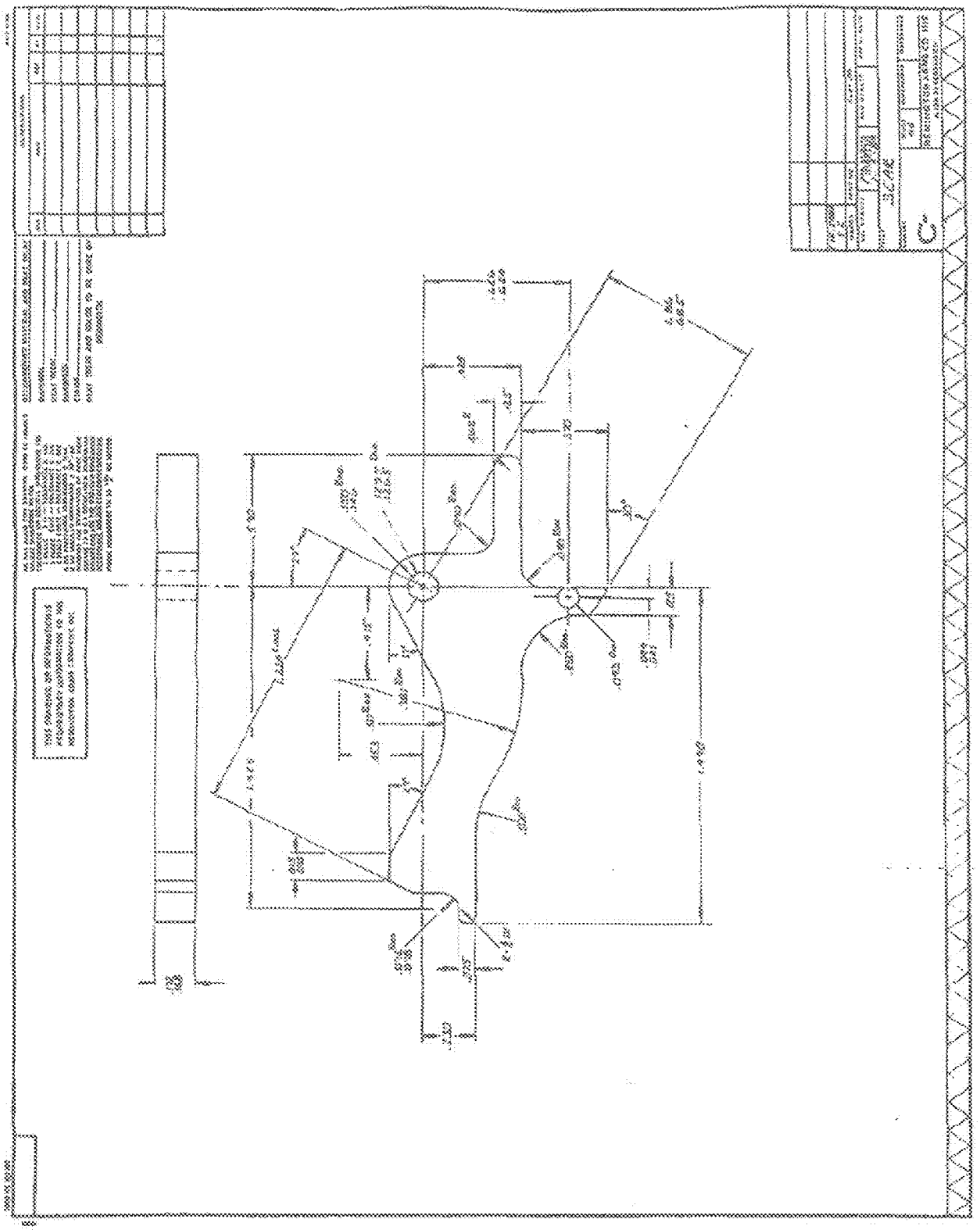
KINZER V. REMINGTON

R252769

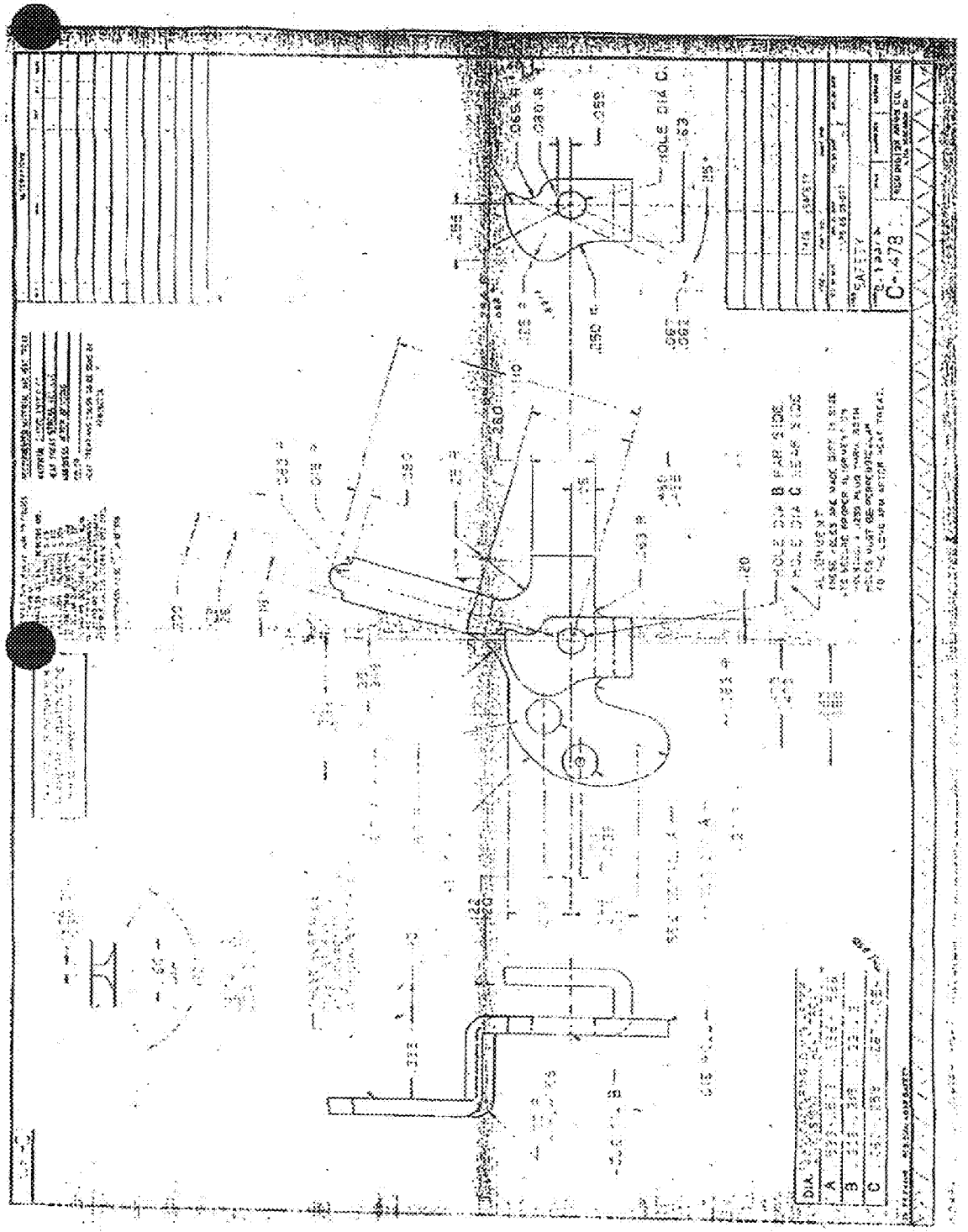
CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

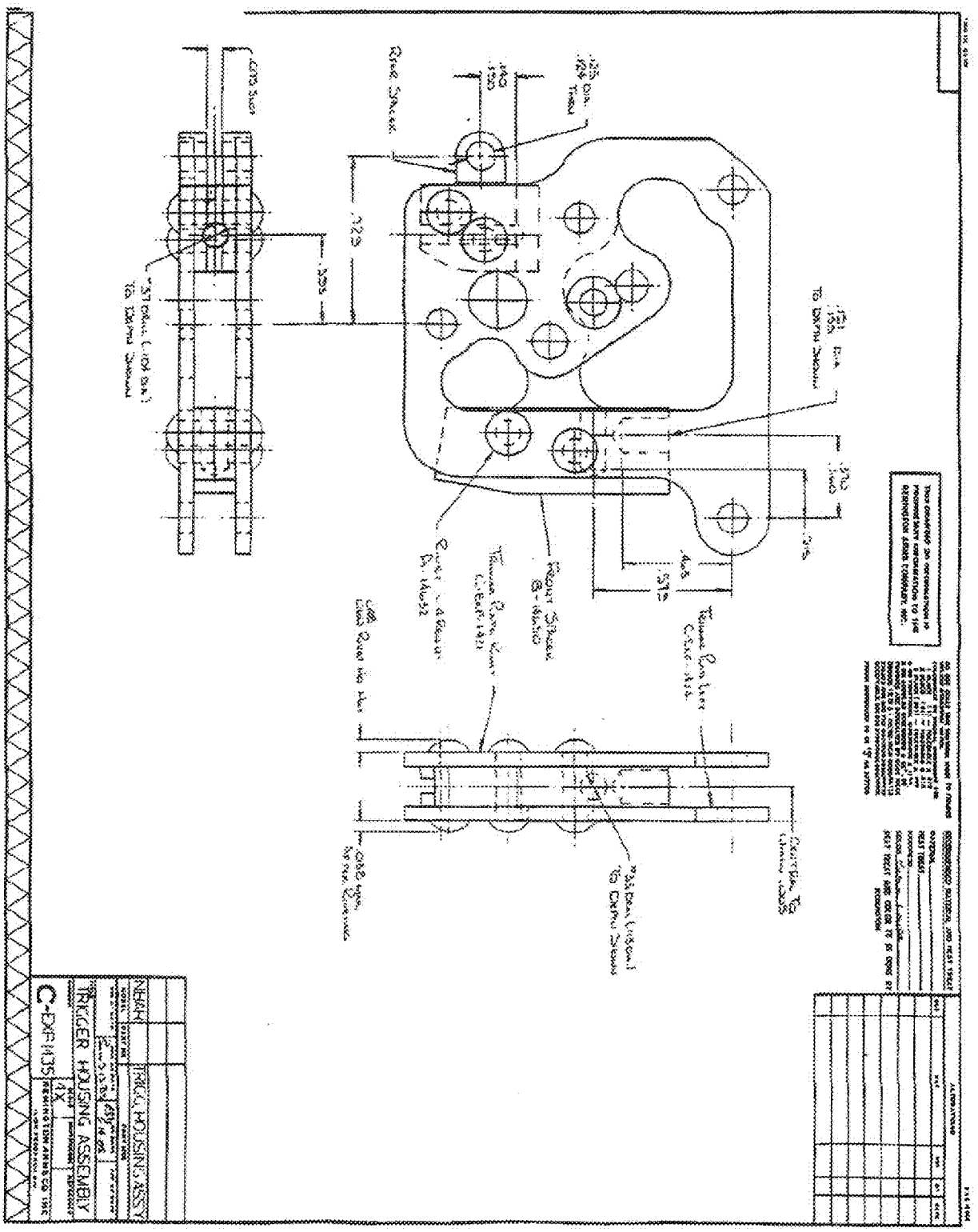
R2522800

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
R2522803

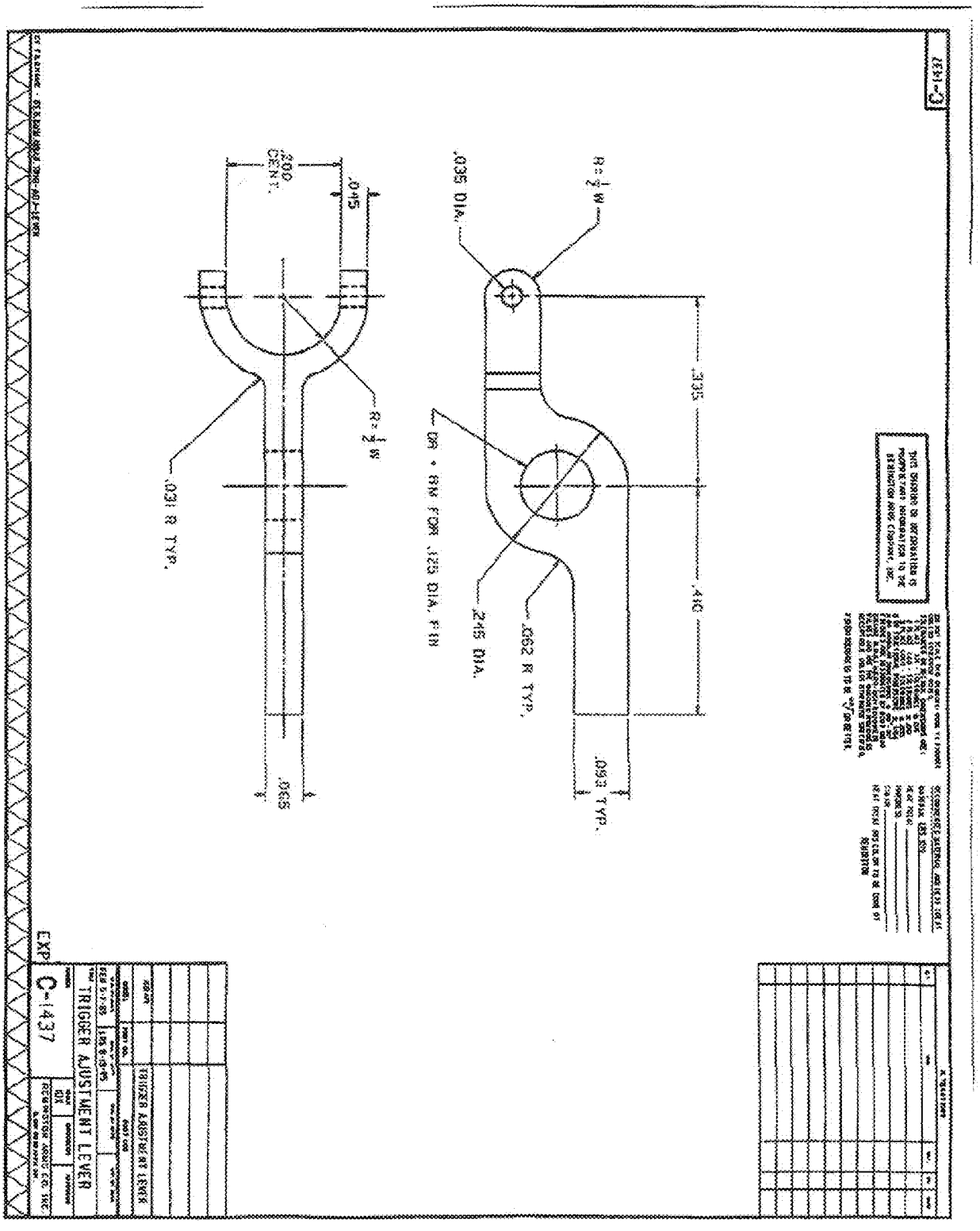


CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON




TRIGGER HOUSING ASSEMBLY
C-DRAWINGS

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
R2522807


C-1437
.200 CENT.
.045
R = ½ W
.031 R TYP.
.035
.335
.410
.035 DIA.
R = ½ W
.062 R TYP.
.245 DIA.
.093 TYP.
EXP
C-1437
TRIGGER ADJUSTMENT LEVER

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
R2522825

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

REMINGTON ARMS COMPANY, INC.
INTER-DEPARTMENTAL CORRESPONDENCE

Remington

RECEIVED
APR 7 1980
R. B. SPERLING

Bridgeport, Connecticut
April 3, 1980

TO: R. B. SPERLING

FROM: J. R. CHISNALL

SUBJECT: SLATTER V. REMINGTON INTERROGATORY

Has Remington received a customer complaint or a suit alleging that a Model 700 discharged when a live round was chambered? If so, please provide name and address of claimant, the nature of the claim and the court in which the claim was brought, if any.

C. V. Tompkins
803 Avenue J
South Houston, Texas 77587

M/700 - 30-06 — Pushed safety off and shot his right foot.

Gerald Hanson
Great Oaks Blvd.
Orlando, Florida

M/700 - 30-06 — Rifle discharged, hit Hanson in the knee.

JoAnn Gregory
Coeur d'Alene, Idaho

M/700 - 270 Win — Unloading rifle, it discharged and hit Mrs. Gregory in the knee

Larry Lange
Carbondale, ILL
62901
M/700 - 243 — Unloading rifle, it discharged hitting Mr. Lane in the foot.

Circuit Court of Jackson County, ILL - Murphysboro

Gregg R. Parker
Box 462
Sonora, Texas 76950

M/700 - 243 Win. Unloading rifle, it discharged hitting plaintiff.

112th Judicial Court, Sutton County, Texas (Case dismissed)

James Shutts
RD #1
Sandy Creek, N.Y.

M/700 - 270 Win. Plaintiff shot through both knees while rifle was being unloaded

Supreme Court of New York - County of Oswego

Thomas J. Spease, Jr.
1806 Morgan Street
Parsons, Kansas

M/700 - 22-250 Accidental discharge causing severe injuries

U. S. Dist. Court of Kansas - Wichita, Kansas

Jackson Stark
Hopwood, Fayette County PA

M/700 - 222 Rem. Unloading, discharged striking left leg

Court of Common Pleas Allegheny County, PA, Pittsburg, PA

T. J. Brown
107 E. Second St.
Dewey, PA

M/700 Discharged - shot in foot

R. Hickman
Odessa, Texas

M/700 30-06 Discharged - hit in leg

U.S. Dist. Court, Western District Midland - Odessa, Texas

Glenn Goss 1081 Forest Dr. Casper, Wyoming 82601	
M/700 - 30-06	Discharged accidentally Nothing wrong with rifle, as a gesture of goodwill, replaced trigger assembly.
W. Spraggin San Angelo, Texas	
M/700	Discharged hitting mohter-in-law in foot Settled for $2071.00 and a new rifle
W. E. Hearn St. Louis, MO	Shot in leg - (No claim)
M/700 - 30-06	
W. S. Monteville Vidor, Texas	
M/700	Fired on closing - gesture of goodwill, replaced rifle.
J. Brown, Jr. Ludlow, KY	
M/700 - 30-06	Rifle went off, bruised hand
Fred Tucker Box 1 Finley, OK 74543	
M/700	Accidental discharge
Steven Voos 21062 Thomas Dr. Bend, Oregon 97701	Accidental discharge
Chas. B. King c/o Widener Firearms 3030 Milledgeville Rd	
M/700	Accidental discharge
C. Barry Witmer Bomberger's Elm, PA 17521	
M/700 - 30-06	Accidental discharge

Gerald L. Bathurst
628 N. Woodward Drive
Baltimore, MD 21221

M/700 Accidental Discharge

Thomas Blumenshine
Route 6, Box 4100-52
Juneau, Alaska 99803

M/700 - .270 Win. Accidental Discharge

K. A. Brown
Rt. 7 Box 191
New Castle, PA 16102

M/700 - 30.06 Accidental Discharge

Richard Cilley
P.O. Box 27
Searsmont, ME 04973

M/700 Accidental Discharge

Ralph H. Connelly
General Delivery
Lodge, SC 29082

M/700 - 30.06 Accidental Discharge

Remo J. Costello
314 Alder Lane
Four Seasons Park
Port Angeles, Washington 98362

M/700 - 22-250 Accidental Discharge

Melvin Dalbey
Rt. 4
Mora, MN 55051

M/700 - 6mm Accidental Discharge

William H. Davidge
Rt. 1, Box 361
Crottoes, VA 24441

M/700 - .308 Win. Accidental Discharge

Stanley Dembosky
955 Personium Road
Pine City, NY 14871

M/700 - 30.06 Accidental Discharge

Dennis Diaz
1809 So. 15th Ave.
Yakima, Washington 98902

M/700 Accidental Discharge

Paul H. Foster
6400 Gentele Ct.
Alexandria, VA 22310

M/700 - 30.06 Accideatal Discharge

H. W. Gilliam
Vice-President, UNIFAX
7966 Beverly Blvd.
Los Angeles, CA 90048

M/700 - 22-250 Accidental Discharge

William Goetz
11 Poplar St.
North East, PA 16428

M/700 - 30.06 Accidental Discharge

Frank S. Goodwin
Perdido Realty, Inc.
Rt.1, Box 1040
Pensacola, FL 32507

M/700 - 7mm Accidental Discharge

Clay Hall
6131 N. 36th Drive
Phoenix, AZ 85019

M/700 - 30.06 Accidental Discharge

George A. Henderson
3580 Regal Road
Fort Worth, TX 76111

M/700 - 8mm Accidental Discharge

Mr. Pete Hexdall
533 Oak
Morris, Illinois 60450

M/700 - 30.06 Accidental Discharge

Jim Bullster
8323 E. Via De Serena
Phoenix, AZ 85258

M/700 Accidental Discharge

Mr. Francis J. Jeschke
P.O. Box 216
Glenn Allen, Alaska 99588

M/700 Accidental Discharge

Richard Jett
123 North Spring Street
Tyler, TX 75702

M/700 - .243 Win. Accidental Discharge

Thomas G. Johnson
Rt. 1 Box 878A
Anacoco, LA 71430

M/700 Accidental Discharge

Mr. George E. Jorgenson
981 Cedarwood Drive
Dunedin, FL 33528

M/700 - .308 Win. Accidental Discharge

Richard E. Kajut
519 Arizona Drive
Lower Burrell, PA 15068

M/700 - .243 Win. Accidental Discharge

Henry J. Kisiel
3087 Countryside Dr.
Allison Park, PA 15101

M/700 - 30.06 Accidental Discharge

George M. Kolar
7106 Pomona Road
Boise, Idaho 83704

M/700 - 30.06 Accidental Discharge

Richard Lienti
Rt. 1, Box 308A
Maitland, Florida 32751

M/700 - .270 Accidental Discharge

Neal L. Locke
P.O. Box 89
Flatwoods, West Virginia 26621

M/700 Accidental Discharge

J.C. Long
Route 3, Box 1218
Marble Falls, TX 78654

M/700 - 30.06 Accidental Discharge

John Mahstaller
10444 Pottinger Rd.
Cincinnati, Ohio 45239

M/700 - .243 Win. Accidental discharge

Ralph J. Marino
2036 Driftwood
Pueblo, CO 81005

M/700 - 30-06 Accidental discharge

O. K. Baxley
Lamar University
P. O. Box 10003
Beaumont, TX 77710

M/700 - 6mm Accidental discharge

Monte McGinnis
Town Point Road
Chesapeake City, MD 21915

M/700 - 22-250 Accidental discharge

Mike H. Mirelez
Investigator
P. O. Box 1374
Uvalde, TX 78801

M/700 - .243 Win Accidental discharge

George W. Moyer
P. O. Box 343
La Marque, TX 77568

M/700 - .270 Accidental discharge

Burbank Murray, Jr.
371 Armour Road
Oconomowoc, WI 53066

M/700 - .308 Win. Accidental discharge

Harold M. Nix
8400 S. 4000 W. #110
West Jordan, Utah 84084

M/700 - 30-06 Accidental discharge

Alvin H. Nuthak
R. R. 1, Box 91
Rollingstone, MN 55969

M/700 - .17 Accidental discharge

Wesley L. Parkins
1544 Crestview
Brownsville, TX 78520

M/700 - 30-06 Accidental discharge

Donald J. Pitzen
Box 205
Stacyville, Iowa 50476

M/700 Accidental discharge

Gary Poindexter
Box 8064 NRB
Kenai, Alaska 99611

M/700 - 30-06 Accidental discharge

Martin J. Ringstaff
P. O. Box 45
Pounding Mill, VA 24637

M/700 - .243 Win. Accidental discharge

Frank Robbins
1201 Cullers Cove
Austin, TX 78745

M/700 - .270 Accidental discharge

Pasqual V. Santarelli
230 Paxson Avenue
Glenside, PA 19036

M/700 - .308 Accidental discharge

Rodney W. Satterwhite, Esq.
Stubbeman, McRae, Sealy, Laughlin & Browder
300 West Wall Street
P. O. Box 1540
Midland, Texas 79701

M/700 Accidental discharge

Gerald Sawyer
12141 Hart St.
No. Hollywood, CA 91605

M/700 - 7mm Accidental discharge

Richard Schlager
Route 1, Box 75A
Morrill, Nebraska 69358

M/700 Accidental discharge

David Sipes
Box 180
Grace, Idaho 83241

M/700 Accidental discharge

Malcolm T. Smith
103 Beryl
Los Alamos, NM 87544

M/700 - .270 Accidental discharge

Howard D. Sorensen
General Electric
112 Andover Park East
Seattle, WA 98188

M/700 - 30-06 Accidental discharge

John A. Stevens
3507 Covey Trail
Missouri City, TX 77459

M/700 - .243 Win. Accidental discharge

Marvin W. Stracke
R. R. 1
Dawson, Iowa 50066

M/700 - .243 Win. Accidental discharge

Elbert Suthard
Rt. #9, Box 358
Reidsville, NC 27320

M/700 - 30-06 Accidental discharge

Norman H. Tenney, Jr.
70 Chambers Village
White River Junction, VT 05001

M/700 - .222 Mag. Accidental discharge

Gerald E. Thayer
566 N. Stadium Rd.
Oregon, Ohio 43616

M/700 - .222 Accidental discharge

Curtis Thompson
310 B Street
Lexington, KY 40505

M/700 - 30-06 Accidental discharge

Bruce E. Timberman
R. D. 1, Box 407
Monroeville, NJ 08343

M/700 - 7mm Accidental discharge

The following are complaints that have been received on accidental firing for the M/700

[illegible] M. Connelly
General Delivery
Lodge, South Carolina 29082

Neil L. Hegglund
P.O. Box 1744
Steamboat Springs, Colorado 80477

J.W. Neal
1804 Arbor Lane
Arlington, Texas 76010

Sydney V. Jackson
2296-A 36th St.
Los Alamos, New Mexico 87544

Kendrick Buckwalter, Jr.
The Country Gallery
1000 Marshallton Rd.
West Chester, Pa. 19380

Barham Bratton, Esq.
Clark, Thomas, Winter's Shapiro
12[illegible] Floor Capital National Bank Bldg.
[illegible]in, Texas 78767

[illegible]m J. Baroch
1579 Doxbury Rd.
Towson, Maryland 21204

Ken V. Dunn
4001 W. Paradise Lane
Phoenix, Arizona 85023

John DiCostanzo
8 South Brisco St.
Monsey, New York 10952

Jon Hooton
Hooton Insurance Agency
P.O. Box 686
Kingwood, W. Va. 26537

Dennis L. Clark
1000 Paddock
Beatrice, Nebraska 68310

Hal's Gun & Supply Company
[illegible] 2nd Ave. S.E.
[illegible]lman, Alabama 35055

[illegible]st Products Co.
10765 Kingspoint Rd.
Houston, Texas 77075
Customer - Mr. Larry Puccetti

he following are complaints that have been received on accidental firing for the M/700

...., Thompson, Jr.
2004 10th St. Place, N.W.
Hickory, North Carolina 28601

Carroll N. Bjornson
Stolt-Neilsen Inc.
One Greenwich Plaza
Greenwich, Connecticut 06830

Augusta Bumper & Glass, Inc.
Mr. David Edens
1424 Broad St.
Augusta, Georgia 30900

Ronald Bercume
Wm. Casey Rd.
Spencer, Massachusetts 01562

Fire Points Sport Shop
John L. ZeRuth, Mgr.
P.O. Box 132, Route 512
Bangor, Pa. 18013

. Burkey
urkey Lumber Company
ighway 92
Delta, Colorado 81416

Dr. Sydney V. Jackson
2296-A 36th St.
Los Alamos, New Mexico 87544

Mr. Dennis Diaz
1808 South 15th Avenue
Yakima, Washington 98902

Randy Stanfill
R.R. #3
Columbia, Tennessee 38401

C.A. Hernandez
6430 Newborn Dr.
College Park, Georgia 30337

Tommy's Marine & Sporting Goods
427 Hoody Bridge Rd.
LaGrange, Ga. 30240

enneth L. Arnold
401 Rustwood
Lufkin, Texas 75901

Raymond Benjamin
710 W. Third, P.O. Box 276
McCook, Nebraska 69001

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

The following are complaints that have been received on the K/700.

Robert Christensen
5116 Elm St.
Houston, Texas 77007

Albert R. Noon
Clover Valley
Wells, Nevada 89835

William R. Stresky
Rte. 2, Box 16A
Terra Alta, W. Va. 26764

Yeager's Incorporated
P.O. Box 2549
3101 Northwest Ave.
Bellingham, Washington 98225

Steve Moore
6206 Washtch Way
Sacramento, California 95842

Dave's Gun Corral
6971 Brookville-Salem Rd.
Brookville, Ohio. 45309

James K. Meher, Jr.
Bostick Oil and Tire Distri.
P.O. Box 726
Estill, So. Carolina 29918

Glenn E. Lairmore
1380 Cresthaven Dr.
Pasadena, California 91105

W. Paul Seago
6253 Thrusheross
Memphis, Tennessee 38134

Edgar Collins
3301 Temple St.
Muskegon Heights, Michigan 49444

Dennis M. Ottem
140 Rickard Rd., N.E.
Fridley, Mn. 55432

Carter Botkin
Box B
Bixby, Missouri 65439

Sportsmen's Den
1805 Boston Ave.
Bridgeport, Ct. 06610

R2523203

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

The following are complaints that have been received on accidental firing for the M/700

[illegible] Foster
400 Gentele Ct.
Alexandria, Virginia 22310

Larry Simmons
Box 291
Park River, No. Dakota 58270

Gerald E. Thayer
366 N. Stadium Rd.
Oregon, Ohio 43616

Dennis Diaz
1808 S. 15th Ave.
Yakima, Washington 98902

H. Mack Breedlove
Breedlove Realty
3415 Greystone Dr. Suite 301
Austin, Texas 78731

Howard C. Swann, Jr.
Route 4, Box 347A
Ba[illegible]y, Georgia, 31513

[illegible]ual V. Santarelli
200 Paxson Ave.
Glenside, Pennsylvania 19038

Dewey Godfrey
313 Meadows Bldg.
Dallas, Texas 75220

Ronald L. Shreve
Box 120A
Burlington, W. Va. 26710

Ed Enlow
1074 Brookley St.
Jackson, Mississippi 39213

[illegible] Edwards
P.O. Box 173
Big Wells, Texas 78830

Roger Demaris
19285 Dusty Loop
Bend, Oregon 97701

[illegible] Huelster
[illegible]3 E. Via De Sereno
Scottsdale, Arizona 85258

Williams Gun Sight Co.
Davison, Michigan 48423

The following are complaints that have been received on accidental firing for the M/700

Wallace Gibbs
207 Pennsylvania
Big Lake, Texas 76932

Frank Gannon
5 Wyeth St.
Malden, Massachusetts 02148

Rich Nalli, Jr.
716 N.W. 32nd Place
Gainesville, Florida 32601

Rodney W. Satterwhite, Atty.
300 W. Wall St, P.O. Box 1540
Midland, Texas 79701

Tom Bolek
T.G.Y. Guns & Ammo.
Rte. 2, Box 969
Gladstone, Michigan 49837

Donald Chalfant
[illegible] 2
[illegible]thric, Iowa 50115

J.C. Penny's
Customer - W. Grubbs
Lynchburg, Virginia

Richard Lientz
Rte. 1, Box 308A
Maitland, Florida 32751

Malcolm T. Smith
103 Beryl
Los Alamos, New Mexico 87544

Wm. D. Mckelvey
7661 Milldale Circle
Elverta, California 95626

Vernon Ray Phillips
2205 Rolling Rd.
Greensboro, No. Carolina

Howard Gabauer
824 3rd St.
[illegible]chester, Pa.

John L. Bauer, M.D.
555 W. Adams
Burns, Oregon 97720

Following are complaints that have been received on accidental firing for the M/700

Sporting Goods
O N. Side Dr.
nnington, Vermont

rald L. Bathurst
8 N. Woodward Dr.
ltimore, Md. 21221

cil Schneider
te. 1, Box 211
eorgetown, Tx. 78626

r. Morrison
02 S Hill St.
rant, Oklahoma 74761

r. Dillar
7857 Lasslett
oseville, Michigan 48066

r. Clavin
evit, Texas

Chapman
1, Box 59A
sboro, Texas 75756

Robert O'Neal
Washington, No. Carolina

K.B. Dunn
4001 W. Paradise Lane
Phoenix, Arizona 85023

E. A. Alawan
7725 Normile
Dearborn, Michigan 48126

Mr. Scaeitinger
Arch Bridge Rd.
Ghent, N.Y. 12075

Terry Jackson
8149 Franciscan Way
Sacramento, California 95823

W. Creasey
Room 204, Cyclops Bldg.
/ Washington Rd.
tsburgh, Pa. 15228

Dr. Arlen R. Schade
1821 Marshall Court
Richland, Washington 99352

The following are complaints that have been received on accidental firing for the M/700

J Jell
[illegible] Roaring Springs Dr.
Joshua, Texas 76058

E.W. Gilliam, Vice President
Unifax
7966 Beverly Blvd.
Los Angeles, Ca. 90048

Neal L. Locke
P.O. Box 89
Flatwoods, W. Va. 26621

Frank S. Goodwin
Perdido Realty, Inc.
Rte. 1, Box 1040
Pensacola, Florida 32507

Mike H. Mireles
Investigator
P.O. Box 1374
Uvalde, Texas 78801

H[illegible]y J. Kisiel
[illegible]7 Countryside Dr.
[illegible]ason Park, Pa. 15101

Mr. Tinari
New Haven, Ct.

Pete Hexdall
533 Oak
Morris, Illinois 60450

Wm. M. Davidge
Rte. 1, Box 361
Grottoes, Va. 24441

Richard Cilley
P.O. Bx 27
Searsmont, Maine 04973

David Sipes
Bx 180
Grace, Idaho 83241

John A. Stevens
3507 Covey Trail
Missouri City, Texas 77459

Glenn P. Voss
Kelliher, Mn. 56650

Robert O'Neal, Jr.
Rte. 1
Bath, No. Carolina

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The following are compliants that have been received on accuracy firing for the M/700

Ed D. Sorensen
General Electric
112 Andover Park East
Seattle, Washington 98188

Richard Jett
123 N. Spring St.
Tyler, Texas 75702

Harold M. Nix
8400 S. 4000 W #110
W. Jordan, Utah 84084

Frank Robbins
1201 Cullers Cove
Austin, Texas 78745

John A. Stevens
3507 Covey Trail
Missouri City, Texas 77459

John M. Fuller
Dist. #22
Fuller Guns and Components
Stamford, N.D. 58448

Monte McGinnis
Town Point Rd.
Chesapeake City, Maryland 21915

A.H. Nuthak
R.R. 1; Box 91
Rollingstone, Mn. 55969

Burbank Murray, Jr.
971 Armour Rd.
Oconomowoc, Wisconsin 53066

Thomas Blumenshine
Rte. 6, Box 4100-52
Juneau, Ak. 99803

Wm. Goetz
11 Popular St.
North East, Pa. 16428

Donald G. Jansen
2610 15th Ave.
Greeley, Colorado 80631

Clarence Fisher
340 No. 102nd St.
Seattle, Washington 98133

Maudie Pallar
4415 McCleester

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Following are complaints that have been received on accidental firing for the M/700

. Roberts
45 No. 70th Terrace
nsas City, Kansas 66109

rry R. White
719 Shady Knoll
press, Texas 77429

mes Poeschel
07 B-Lincoln St.
wnee, Illinois 62558

m Sherman
R. 2, Box 128
rie, Kansas 66732

ke Born
ntucky

ichard E. Kajut
19 Arizona Dr.
ower Burrell, Pa. 15068

. J. Ringstaff
Box 45
ding Mill, Va. 24637

eo. M. Kolar
106 Pomona Rd.
oise, Idaho 83704

I.R. White
16227 Hickory Remull Dr.
ouston, Tx. 77059

lay Hall
5131 No. 36th Drive
Phoenix, Arizona 85019

K.A. Brown
Rte. , Box 151
New Castle, Pa. 16102

Bruce Timberman
R.D. 1, Box 407
Monroeville, N.J. 08343

Norman B. Tenney, Jr.
Chambers Village
te River Junction, Vt. 05001

Mr. Curtis Thompson
310 B Street
Lexington, Kentucky 40505

Following are complaints that have been received on accidental firing for the M/700

). Sorensen
ieral Electric
2 Andover Park East
attle, Washington 98188

C. Long
:e. 3, Box 121M
:rble Falls, Texas 78654

teve Voos
1062 Thomas Dr.
end, Oregon 97701

eo. E. Jorgenson
81 Cedarwood Dr.
unedin, Florida 33528

Gary Poindexter
Box 8064 N R B
Kenai, Alaska 99611

Geo. A. Henderson
35f Regal Rd.
North, Tx. 76106

Thomas G. Johnson
Rte. #1, Box 878A
Anacoco, La. 71430

C. Barry Witmer
Sporting Goods Mgr.
Bomberger's
Elm, Pa. 17521

Geo. M. Davis
400 Bird Lane
Waxahachie, Tx. 75165

Clay Hall
6131 N. 36th Drive
Phoenix, Arizona 85019

John Hahstaller
10444 Pottinger Rd.
Cincinnati, Ohio 45239

Donald J. Pitzen
x 205
Lacyville, Iowa 50476

Fred Tucker
Box 1
Finley, Oklahoma 74543

Frauen Fur Company

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BARBER - 1.30.130001153

The following are complaints that have been received on accidental firing for the M/700

[illegible]dwards
.O. Box 173
ig Wells, Texas

learfield Hdwe.
14 N.W. 4th St.
learfield, Pa.

awrence Brockmann
lroy, Wisconsin

d Sharpnack
ranklinville, N.J.

amble Store
yoming, Illinois

J. Camerato
Cleveland, Ohio

Firearms Unlimited
Pittsburgh, Pa.

L [illegible] Sport Goods
[illegible] Fischer Ave, Box 2456
[illegible] Pas, Manitoba, Canada

Judges Gun Shop
Rte. 3
Winchester, Tn.

Ahlman's, Inc.
Rte. 1, Box 20
Morristown, Mn.

Chet Paulson
935 Fawcett Ave.
Tacoma, Washington

Charlies Sptg. Gds.
[illegible]
N.S. [illegible], N.M.

Pete's Gun Shop
P.O. Box 268
Lee, Florida

W.G.S., Inc.
200 John R St.
[illegible]etroit, Michigan

H.S. Arnold
1375 Hemingway Court
Dixon, California 95620

[illegible] Blaskenship

Following are complaints that have been received on accidental firing for the M/600 & M/660

Rudy A. Pfennig, Jr.
1304 Elizabeth Ave.
Laureldale, Pa. 19605

Ray's Howe. & Sptg. Gds. Co.
Attn: Jim Corder
730 Singleton
Dallas, Texas 75212

Carl W. May
Star Rte. B
Lometa, Tx. 76853

John W. Duttenhofer
805 Bonnie Doon
Friendswood, Tx. 77546

Ted Carney
220 Ayrshire Dr.
Ft. Collins, Colorado 80526

Bendor Nash
If Sully
amie, Wyoming 82070

W.C. Perez
Box 1968
Alamo, Texas 78516

Jones, Jones & Baldwin
300 W. Austin
Marshall, Tx. 75670

Whites Auto Store
Box 333
Santa Rosa, N. M. 88435

Clarence Brick
Ruffsdale, Pa. 15676

Warden E. Schoeff
R.R. #4
Albion, Indiana 46701

Edmond Peloquin
2755 Hinda Rd.
Lake Park, Florida 33403

usan McGinnis
Star Rte., Box A-8 I.H.
Cuba, Missouri 65453

Ted Simmonson
714 Bailey Ave.
[illegible] 57701

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The following are complaints that have been received on accidental firing for the M/700

Geiser
Box 228
Potlatch, Idaho 83855

Philip B. Reed
Rte. 4, Scotch Settlement Rd.
Gouverneur, N.Y. 13642

Don S. Weaver
P.O. Box 1151, 500 Cherry St.
Jamestown, N.Y. 14701

Outdoor Sportman
1602 N. Division
Spokane, Washington

Otasco
108 E. Center
Sheridan

Braverman Arms Co.
912 Penn Ave.
Wilkinsburg, Pa.

[illegible]ey's Sport Shop
[illegible]75 Hooksett Rd.
Hooksett, N.H.

Benton County Co Op
P.O. Box 278, Hwy. 5 N.
Ashland, Mississippi

H.G. Bentlin
2646 Jackson Dr.
Falls Church, Va.

Ed Hart's Gun Supply
Route 415
Bath, N.Y.

Gibson's Discount
[illegible] Main Ave.
Hereford, Tx.

John Hooton
Kingwood, W.V.

Hal's Gun & Supply Co.
[illegible]20 2nd Ave.
S.E. Cullman, Alabama 35055

Louisiana Wilderness Supply, Inc.
P.O. Box 2961, 402 N. Roderick St.
Morgan City, Louisiana

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The following are complaints that have been received on accidental firing for the M/700

The [illegible]portster
[illegible] Finnas St.
[illegible], Tx.

W.A. Thompson J.R.
2004 10th St. Place
S.W. Hickory, N.C.

Best Products Co., Inc.
8075 Kings Port Rd.
Houston, Tx.

Jerry Cunningham
5140 Freedon Rd.
Farmington Hills, Michigan

Glass Master Corp.
2008 Warfield
San Antonio, Tx.

Huntin Hut
3224 Market
Hannibal, Mo.

Central Gun Shop
[illegible]4 Wall St.
[illegible] Scott, Kansas

Bob Burkly
Hwy. 92
Delta, Colorado

Marco Sptg. Goods
0 N. Side Dr.
Flmington, Vt. 05201

James Shutts Jr.
Prego, N.Y.

Justa Bumper & Glass
[illegible]4 Broad St.
[illegible]nsera, Ga.

Ward's
[illegible]4 E. Billings
[illegible]a, Arizona

Her Arms
[illegible]5 Ay St.
Lincoln, Nebraska

[illegible] nts Sport Shop
[illegible] 2
Major, Pa.

[illegible]r Stores Inc
U.S. Hwy 90 West
[illegible]

R2523214

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The following are complaints that have been received on accidental firing for the M/700

k Franz
Ennis, Texas

G.A. Nermander
College Park, Ga.

Warshal's
Seattle, Washington

Dennis Diaz
1808 South 15th Ave.
Yakima, Washington

Rush's Hdwe.
122 Live Oak
Marlin, Texas

Randy Stanfill
R.D. 3
Columbia, Tennessee

Jackson, S.V.
411 Connie
Lc Alamos, N.M.

[illegible]en C. Ardell
[illegible]14 Yale St.
Endwell, N.Y.

Ozark-Shooters Inc.
1719 College
Springfield, Missouri

J.C. Penny
213 S. Main St.
Salt Lake City, Utah

Bostick Oil & Tire Dist.
P.O. Box 726
Estill, So. Carolina

Craig E. Hall
405S. Green Pl.
Kennewick, Washington

Robertson, Williams, & Lewis, Pa.
Attorneys At Law
538 E. Washington St.
C[illegible]ando, Florida

[illegible]ark, Jackson P.
R.D. #2
Lemont Furnace, Pa.

Robert J. Blakenship
[illegible]

The following are complaints that have been received on accidental firing for the M/700

. Michael
R. . #i. Box 218
Stephens City, Va.

J. Buelster
8323 E. Viade Serene
Scottsdale, Arizona

Yeager's
3101 N.W. Ave.
Bellingham, Washington

Dave's Gun Corral
6971 Brookville Salem Rd.
Brookville, Ohio

Tony Varnum
Rte. #2, Box 194
Supply, No. Carolina

Steve Moore
6206 Wastchway
Sacramento, California

c Mart
E. 2nd St.
Arksdale, Mississippi

R. Harrison
1312 Roundelay St.
Bastrop, La. 71220

Robert Christensen
5115 Elm St.
Houston, Texas

William R. Stresky
Rte. 2, Box 16A
Terra Aha, W.V.

J.C. Penny
5200 Norwood Ave
Jacksonville, Florida

J.D. Mills
Box 155
Dodd City, Tx.

T Shooting Shop
. Box 191
ferson City, Tn.

The following are complaints that have been received on accidental firing for the M/700 :

...ith Arnold
Paul Rustwood
Lufkin, Tx.

J.E. Eby
122 N. Railroad St.
Palmyra, Pa.

N.Y. Bargain Store
Whitaker & Tilley St.
Enfield, N.C.

N.L. Heggland
Box 1744
Steamboat Springs, Colorado

J.C. Penny
Pittman Plaza Shop Center
Lynchburg, Va.

Ray Benjamin
710 W. 3rd.
McCook, Nebraska

...rt Moon
...over Valley
Wells, Nevada

Ken Dunn
4001-W Paradise Lane
Phoenix, Arizona 85023

Fred J. Avila
Tuttle Rd.
Walton, N.Y.

R.J. Jones
9196 Beega Ave
Westminster, California

Leb Geier
Box 228
Potlatch, Idaho

Tommy's Marine
427 Moody Bridge Rd.
LaGrand, Ga.

...nk Wehner
...ltimore, Md.

K-Mart Enterprise Inc.
Casper, Wyoming

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he following are complaints that have been received on accidental firing for the M/600 & M/660

l Mattern
3. 7
Orchard,Nebraska 68764

Robert I. Valentich
3116 Wood St.
Saresota, Florida 33577

Larry Mattern
Box 7
Orchard, Nebraska

Anchor Marine & Sptg. Gds.
4217 Canyon Dr.
Amarillo, Tx.

Gary Kalishek
R 2, Box 422
Glad Stone, Michigan

Gary Kalishek
R. #2, Box 422
Gladstone, Michigan

s Hdwe Spt Gds.
Singleton
llas, Tx.

Grice Gun Shop, Inc.
114 N. 3rd. St.
Clearfield, Pa.

Wichita Gun Craft
414 Callfield Rd.
Wichiga Falls, Tx.

Remington Arms of Canada
172 Sheldon Dr.
Cambridge, Galt, Ont., Canada

Bob Bangs
Camp, Colorado

Donald F. Rinhart
11641 W. Co. Rd. 10
Alvadn, Ohio

Martin Greenfield
6^58 Sunny-Brae Rd.
a Diego, California

yers, John
909 N. 13th St.
Estherville, Iowa

Rem-Arms of Canada

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The following are complaints that have been received on accidental firing for the M/600 & M/660

an McGinnis
.ar Rte., Box AB
I.H. Cuba, Missouri

Snappy Servisenter
1400 Hwy. 2 East
Kalispell, Montana 59901

Simms Hdwe. Company
2801 J St.
Sacramento, California

David Cunningham
1102 E. 14½ Street
Cameron, Tx.

Thelma Simonson
714 Halley Ave.
Rapid City, So. Dakota

Simms Hdwe.
2801 J St.
Sacramento, California

~ ~z Holman
(~. Box 38
.pine, Tx.

Jerry L. Anthony
~~7306 Bets Ave.~~
Baltimore, Maryland

A.H. Tschritter
General Delivery
Hillcrest, Alberta, Canada TRO-1G0

Margie McCarthy
Rt. 1, Box 13
Poteet, Texas

Rem. Arms Of Canada
RDL3369
180 Sheldon Dr.
Cambridge, Galt, Ont., Canada

Dennis J. Cufford
Santa Fe,
New Mexico

BARBER - 1.30.130001163

Dun's Review

A RECORD YEAR FOR RECALLS

The government is getting tougher on product safety, and liability suit awards are soaring. One expert sees the number of product recalls growing at a 10%-to-15% annual clip.

At the recent *Financial Follies*, an annual black-tie spoof of business put on by the New York Financial Writers' Association, the opening number depicted Chairmen Henry Ford of Ford Motor Co. and Richard A. Riley of Firestone Tire & Rubber Co. singing (to the tune of *Feelings*), "Recalls! They're bugging us with recalls . . ."

It is nothing for businessmen to sing about, for as Jimmy Durante might phrase it, industry ain't seen nothing yet.

Last year, a record total of more than 50 million products—from foods, drugs and cosmetics to autos, appliances and toys—were recalled by their manufacturers, either voluntarily or under pressure from one of the four major government agencies empowered to police the marketplace for dangerously defective products. (Products that are defective but not hazardous are not recalled.) And the prospect is for an even bigger recall year in 1979. One expert predicts that over the next five years the number of recalls will not only grow at an annual rate of 10%-to-15%, but that all automakers and perhaps half the manufacturers of TV sets and electric appliances will recall at least some of their products.

Management Migraine

As it is, next to profit, recall is probably the most spoken six-letter word in executive suites nowadays. The Conference Board reports that a significant number of the 50,000 information requests it receives from business each year now deal with recalls, though some companies euphemistically call them "distribution in reverse" or "strategic withdrawal." By any name, the complex and costly process of bringing a defective product back to the plant for repair or replacement is now a top-drawer management migraine, from which no industry can see any relief. How bad is it? Says E. Patrick McGuire, a project director at The Conference Board: "If you're a major manufacturer, you know you're going to get a recall."

The company that receives a dreaded recall notice from a government agency also knows that it is bad news. For the procedure, which costs the consumer nothing but the cost of shipping, can be forbiddingly expensive for the manufacturer. Depending upon the product, how widely it is distributed and the extent of the correction, the bill can run from thousands of dollars into the tens of millions.

To fix the pollution-control systems on 270,000 of its 1976-model cars, American Motors Corp. figures it will spend around $3 million—including close to $40,000 just for first-class postage to notify the car owners. For Firestone, the cost of replacing 7.5 million steel-belted radial tires in its notorious recall case, in which 41 deaths and 65 injuries were allegedly connected with the tires, may run upwards of $135 million after taxes—more than the company's net income in fiscal 1977. It could be worse, however. When the presence of botulism showed up in Bon Vivant mushroom soup several years ago, the financial and public relations trauma of the subsequent recall proved so devastating for its maker that the company went bankrupt.

To the consumer, recalls have become synonymous with cars, which accounted for a huge share of all the products called back by manufacturers in every industry last year (*table, page 31*). But the automakers have no corner on problem-prone products. The roster of recalled products in 1978 alone includes a smoke detector that could overheat and start a fire, defibrillators (devices for treating heart attacks) that could fail, a baseball pitching machine with a propensity for hitting people instead of balls, even in the "off" position; beetle-infested Easter baskets; a rifle that may fire without anyone pulling the trigger; ping-pong tables prone to collapse; a cookbook containing a recipe for "silky caramel slices" that omitted an ingredient (water) and thus might cause a crockery cooker to explode and another book with a recipe calling for a variety of rhubarb that could be poisonous.

Fire Drills

Not unwisely, a number of companies not yet hit with recalls are gearing up for a procedure that is becoming practically inevitable by conducting mock recall exercises. As part of its annual plant audit system, Pillsbury Co. selects a product at random and launches a "trace" to find out specifically where an entire production run may be in the distribution pipeline. "We don't call it a recall," cautions Vice President John Haaland. "That's a federal word." At General Mills, which claims that it has never had a food recall, a similar "dry run" is conducted periodically, but plant and distribution personnel are never told if the operation is real or merely a fire drill. Says Warren Schwenke, director of quality control of the consumer foods group: "I hope we never have to use the procedure for real."

He may be whistling in the dark. According to The Conference Board's McGuire, who monitors the action in product safety, the inevitability of mounting recalls is due to "a confluence of several factors in an equation that guaran-

Emergency recall. The FDA once sent sound trucks through Philadelphia streets, warning of tainted fish

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R2543286
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BARBER - 1.30.130001164

Despite the proliferation of recalls, Made-in-America products are safer and of better quality than goods produced five years ago, according to one authority on safety.

tees more recalls." Products are becoming more complex, government regulations more encompassing and confusing and jury awards in product liability cases more and more generous. (*Item:* a California jury recently awarded a staggering $125 million to a youth who was severely burned in a Ford Pinto.) As a result, says McGuire, manufacturers in every industry are becoming increasingly defensive about products whose performance and safety may only be suspect, let alone demonstrably dangerous. They would rather initiate a voluntary recall than risk even costlier liability suits, with all their attendant bad publicity.

Recall City

But that is just prologue to the enormous problems of carrying out a recall. Manufacturers must put aside public relations considerations and broadcast the fact that a defect exists in a product to a wide public, including shippers, distributors, wholesalers, retail outlets and the ultimate consumer. The procedure is not only difficult, but it can be dramatic. When the Food and Drug Administration discovered several years ago that a shipment of flounder fillets in Philadelphia was contaminated and posed an immediate health hazard, it sent sound trucks throughout the city streets, blaring a warning about the tainted fish.

Although no industry can boast zero defects in its products, Detroit especially is beginning to resemble Recall City. Last year, the automakers processed more than 265 different safety and emission-related recalls involving about 14 million cars. The plight of the car manufacturers was dramatized recently when a Hicksville, Long Island, housewife telephoned her Ford dealer's service department to arrange for an appointment to correct a reported defect in a Ford product. Asked the harried service manager: "Which one?"

In the great auto recall rally, there is no manufacturer that does not have several entries. Even regal Rolls-Royce has not escaped the recall rolls. The haughty British car builder, which never admits that its autos can break down but allows that occasionally they may "fail to proceed," is recalling 2,000 of the most expensive cars ever built. To correct a defect in their cruise controls, Rolls-Royce has called in all the $50,000-Silver Shadows, $80,000-Camargue convertibles and $92,000-Camargues it produced last year.

Yet no automaker has been more wracked by recall problems than Ford. Following nasty publicity involving the potentially hazardous positioning of the gas tank in its early model Pintos, Ford recently undertook a massive recall of some 1.5 million of the cars manufactured between 1971 and 1976. Assuming a 100% recall return (most auto recalls generate a return of less than half that), the job could conceivably cost Ford as much as $40 million.

Even that tab could prove to be comparative small change, however, if the National Highway Traffic Safety Administration rules that enough Ford C6 and FMX transmissions made since 1970 tend to slip into reverse spontaneously that a recall is merited. The company steadfastly maintains that it can find no defect in the transmissions. But a contrary finding by NHTSA could result in a recall of as many as 10 million cars at a cost that Ford cannot begin to estimate. Says Herbert Misch, vice president of environmental and safety engineering: "How can we estimate the cost if we haven't been able to identify the defect?"

At first glance, the burgeoning number of product recalls suggests that U.S. industry, which once prided itself on quality and craftsmanship, is becoming a *shlock* shop of shoddy merchandise. But as Conference Board safety expert Pat McGuire puts it, "Nothing could be further from the truth. U.S. products are generally safer and of better quality than five years ago."

The fact is that every product unit withdrawn from the market in a recall is not necessarily defective. To find a few suspected faulty ones, manufacturers must call in an entire production run. An auto company, for example, may have to recall a run of 100,000 cars just to locate 15,000 defective ones. When Chrysler Corp. recently called back 1.3 million Dodge Aspens and Plymouth Volarés to check out reported problems in their front-end suspensions, it identified only 13,000—just 1%—as defective. Unfortunately, consumers assume that every apple in a barrel of recalls is rotten.

Even the regulatory agencies, which at best enjoy an adversary relationship with the manufacturers they monitor, insist that no negative implications about the quality of Made-in America goods should be drawn from the record number of recalls. The reason recalls are on the rise, says Robert Hellmuth, chief of NHTSA's defects evaluation division, is that the agencies have grown mightily since 1973 with "more people, testing labs and complaint-reporting resources. So we're able to find more problems." Too, the trend to commonality of parts, especially in the auto industry, means that a fault in one model run may also turn up in another. Consequently, instead of a 500,000-unit recall, says Hellmuth, "you've got maybe 5 million cars to check out."

A case in point is Ford, which happens to have had more emission-related recalls than any other automaker since 1973 (nearly 5 million vehicles versus only 818,000 for GM). But as Morton Cohen, acting chief of the Environmental Protection Agency's mobile source enforcement division, points out, "Ford also has the largest number of voluntary recalls. Hence, you might say that Ford has been more diligent about emission defects than the other makers." Says one Ford executive: "That's the only decent thing those guys have ever said about us."

For all their recent notoriety, product recalls are as old as commerce, and then some. Historian Wallace F. Janssen of the Food and Drug Administration suggests that the earliest example of a recall can be found in the sixth chapter of *Genesis*, which, as he interprets it, tells how "the Lord saw that his most important product had become corrupted, and took steps to recall all the contaminated lot—but not the family of the good man Noah." Less spectacularly, the first recorded recall in the U.S. was initiated back in 1903 by Packard ("Footnote," *page 117*).

The Government's Business

Yet early callbacks of everything from cars to Fletcher's Castoria were what the regulatory agencies call "silent" recalls. They were undertaken by manufacturers who considered the actions nobody's business but their own. What happened to change that was a flurry of legislation, beginning with the Food, Drug and Cosmetics Act of 1938, which made potentially dangerous products the government's business as well. Dealing with flammable fabrics, poison prevention packaging, the labeling of hazardous substances and mandatory inside latches on refrigerator doors, the laws empowered federal agencies to police industry for violations of safety standards, and further gave them teeth to force compliance. They also led to the creation of new agencies with jurisdiction over specific industries.

The four major watchdog agencies with powers of recall, and how they approach their task:

■ **The Food and Drug Administration,** oldest of the regulators in the consumer safety field, monitors the introduction into interstate commerce of misbranded or adulterated foods, drugs and cosmetics. Currently led by Commissioner Donald Kennedy, the FDA can seize unsafe

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R2543287
BARBER - 1.30.130001164

Apart from the almost total recall of Detroit's automotive products, scarcely [illegible] industries were not affected by recall actions in 1978. Herewith a roster of the year's representative recalls.

Product	Manufacturer	Units Recalled
Breakfast bars	Carnation Co.	14.1 million
Water Wiggle toys	Wham-O Mfg. Co.	2.8 million
Riviton construction toys	Parker Brothers	900,000
Stuffed animals	Knickerbocker Toy Co.	500,000
Extension cords	Black & Decker Mfg. Co.	200,000
Rifles	Remington Arms Co.	200,000
Smoke detectors	Pittway Corp.	115,000
Skin creams	Avon Products	104,000
Slide projectors	Eastman Kodak Co.	100,000
Rock polishers	Martin Yale Industries	50,000
Mayonnaise	Kraftco	48,000
Ping pong tables	Sears, Roebuck & Co.	38,000
Refrigerator defrosters	Chadwick-Miller Inc.	23,600
Diet supplements	Peerpark Corp.	12,500
Hair relaxers	Revlon, Inc.	11,000
Sunlamps	General Electric Co.	9,000
Stepladders	Sears, Roebuck & Co.	8,000
Baseball pitching machines	Master Pitching Machines, Inc.	7,500
Stuffing mixes	Stop and Shop Inc.	7,400
Newman's Day Cookery Cuisine	Random House	3,000

Although 90% of all product recalls are considered "voluntary" actions by manufacturers, most are "influenced" by the four major federal agencies empowered to monitor products for dangerous defects. Their growing influence over the past five years is seen below.

Agency	Recall Campaigns 1973	Recall Campaigns 1978	Product Units Recalled 1973	Product Units Recalled 1978
Food and Drug Administration	1,353	1,112	N.A.	N.A.
National Highway Traffic Safety Administration	281	241	7,001,000	8,490,000
Environmental Protection Agency	11	29	87,750	5,328,382
Consumer Products Safety Commission	3	178	39,999	33,972,380

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R2543288

BARBER - 1.30.130001165

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It may begin with a letter from an irate consumer to the company that made the lemon or with an angry phone call to a government agency hotline. It can start with complaints from dealers about an unusual number of returns from customers, in mounting accident reports or significant increases in liability suits. Manufacturers themselves may alert the proper agency to a defect in a product. If checking and testing shows it to be potentially hazardous, the result can be a product recall.

In making that final determination, each of the watchdog agencies that can compel a company to recall or replace a dangerously defective product—whether it is a car or a candy bar—has its own procedures. The Environmental Protection Agency, for one, routinely tests 2,500 autos a year for possible emission-related problems at agency shops in six cities. (It borrows the cars from individual motorists, who are compensated with a $50 U.S. savings bond, an engine tune-up and a full tank of gas.) But no agency is more thorough in evaluating a recall than the National Highway Traffic Safety Administration, whose concern is automotive hazards. Indeed, some consumer protection groups contend that it is too thorough.

As part of its data-gathering apparatus, NHTSA relies heavily on more than 5,000 letters it receives each month from car owners and as many as 500 calls a day that flood into its national Hotline (800/424-9393). More than 400,000 consumer complaints about cars have already been fed into the agency's computer, which is programmed to spot trends.

Complaints about a particular car or component are transmitted to NHTSA's engineering analysis group. Cars with suspected defects are then obtained and tested in the agency's specially equipped shop in East Liberty, Ohio.

If a defect is detected, an engineering analysis report recommending a recall investigation is put before a defects review panel, which must decide whether the case is serious enough to pursue. If so, the manufacturer is informed that an investigation is [illegible] and is expected to a [illegible] "voluntary" recall [illegible] on the [illegible]

[illegible] evidence of a dangerous defect is overwhelming, an "initial determination letter" from the enforcement division is dispatched to the manufacturer together with a copy of the report, which can be six inches thick. The automaker has the right to refute its findings in a NHTSA hearing. If it loses there, the next step is a "final determination letter" signed by NHTSA Commissioner Joan Claybrook, ordering the company to correct the problem. In other words: recall!

Most manufacturers are quick to comply and hence may claim, with full NHTSA approval, that they are conducting a "voluntary" recall. Yet how many recalls might be initiated without agency prodding is anybody's guess. Nevertheless, the problems of compliance are formidable. The company must inform all owners of the vehicle in a first-class postage letter that the defect exists and can pose a danger. Since cars change hands frequently, the maker must search dealer files and those of state motor-vehicle bureaus to find current owners.

To affect a "proper" correction of the defect, the company is also responsible for supplying dealer service shops with sufficient supplies of necessary parts. Though free to the car owner, recall repairs are billed by the dealer to the manufacturer and can run as much as $20 per hour per car—and may well involve millions of cars.

But that is not the end of the affair. Under NHTSA regulations, the company is also charged with following through on the recall. It must file completion reports with NHTSA every quarter for six quarters. The agency recognizes that, depending upon the severity of the defect, not every motorist relishes the inconvenience of running his car over to the dealer. But if the completion rate is unusually low (and it generally runs around 50% to 60% for late model cars and as little as 10% for old ones), NHTSA may examine the manufacturer's procedures. If the agency finds them unsatisfactory, it can order a "re-recall" campaign.

Although the regulatory bite of the [illegible] days, the NHTSA [illegible] that there is [illegible] "Although we [illegible] the threat [illegible]"

or contaminated products or obtain a court injunction to halt their distribution. But according to historian Janssen, "The trend is definitely toward preventive, rather than punitive, regulations. We use the voluntary recall more than court-enforced seizures because it is quicker and less expensive to administer. Also, firms are under great pressure to comply when we request a voluntary recall. Refusal is pretty bad public relations, you see."

As the agency with the longest recall experience, FDA puts most of its thrust where the priorities are. "If it's just a misprint on a label, we usually don't bother with it," explains Gary Dykstra of the compliance section. "But if it's a hazard to health, we go all out." Although the agency deals with one of two Class I critically-dangerous-product situations a year, indicating evidence of an imminent health hazard, most of its recalls fall in the Class III variety: products that violate certain regulations, but pose no threat to health (example: insects in a Thanksgiving stuffing mix). The agency is also moving toward more active company involvement in recalls. Under previous FDA procedures, the company was responsible for the recall, but not for checking on the recall's effectiveness. Now, says William Bryant, the agency's emergency operations coordinator, "We're saying that the complete recall responsibility lies with the firm."

■ **The National Highway Traffic Safety Administration,** set up in 1966, is authorized to compel an auto manufacturer to conduct a defect notification campaign if the agency discovers, through testing or overwhelming consumer complaints, the existence of a defect. Headed by Administrator Joan Claybrook, NHTSA (pronounced *nitza* in Washington bureaucratese) has become such a powerful force in Detroit that an "initial determination letter" from the agency advising a manufacturer of a defect almost invariably results in a "voluntary" recall.

Unreasonable Risk

Empowered to levy a top fine of $800,000 for noncompliance (which it was mulling slapping against Firestone last month), NHTSA has had to go to court only six times over contested recalls—and it won all six cases. Says defects evaluation chief Hellmuth: "We only go to court over what we consider to be an unreasonable risk of accident, injury or death." The agency claims to be fully sensitive to the enormous costs of auto recalls, but insists that none of its determinations is frivolous. As Hellmuth puts it, "We're merely fulfilling our mandate from Congress. Where real safety is involved, with people being incinerated in unsafe cars, how can we worry about

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
R2543289
BARBER - 1.30.130001166

the cost? Somebody's got to eat it."

■ **The Environmental Protection Agency** was set up in 1972 with a special interest in air-pollution emission standards, not only for autos but for plants and utilities as well. Under EPA's recall authority, Administrator Douglas Costle can require the manufacturer of any vehicle or engine that does not conform to emission regulations "to submit a plan for remedying the nonconformity" within 45 days.

Sharp Teeth

A watchdog with sharp teeth, EPA categorizes its recalls as "voluntary, influenced and ordered." Unlike NHTSA, which credits auto manufacturers with "voluntary" recalls in 90% of the cases, EPA last year "ordered" recalls for about 25% of the 4.6 million vehicles brought back for correction. "We are not out to 'get' the auto manufacturers," says Morton Cohen. "The recalls we have ordered have not been for minor infractions, but for those far in excess of emission standards. Our job is to clean up cars that are polluting the air and make it so burdensome on manufacturers that they will crank into the manufacturing processes additional costs to prevent recalls." In fact, adds Cohen, EPA encourages manufacturers to "get out in front" and design engines that more than meet minimum emission standards. One example of an out-in-front automaker, according to Cohen: Japan's Datsun.

■ **The Consumer Products Safety Commission** was created in 1972 as the result of landmark legislation in the history of the consumer movement. For the first time, a government body was set up to protect the public, not merely from potentially hazardous products made in one industry, but (with certain exceptions) those made by all industries whose goods are normally used by the consumer. Headed by Commissioner Susan King, CPSC can mandate safety standards and labelling of myriad consumer products and ban or remove any product it finds to be an "imminent" or "substantial" health hazard.

Unlike some agencies, whose own investigations of suspected defective products trigger recalls, virtually all CPSC callbacks originate with manufacturers, who are required to report any safety defects to the agency as soon as they are discovered. As Catherine Cook, director of the product defect correction division puts it, "It is not a violation of any law to make a dangerous product, unless a standard has been violated"—but failure to report a discovered defect to CPSC is unlawful. As a result, of the more than 600 different recalls overseen by CPSC since 1973, only about a dozen had to be ordered by the agency.

Oddly enough, the word recall is nowhere to be found in the legislation. What agencies have is the power to compel companies to correct potentially dangerous defects. The only method that a manufacturer can employ in compliance is to send out a dragnet to get the affected products back. Says the FDA's Gary Dykstra: "We have no legal authority to order a recall. The thing we have in our hip pocket when we request a recall is the veiled threat that if the company's doesn't recall, we'll be forced to go to court for an order to seize the merchandise."

By the same token, none of the laws say anywhere that a manufacturer must correct a defect at no cost to the purchaser. That, too, is a phenomenon of the recall revolution. Costly as the process is, no manufacturer has even been known to levy even a service charge on a recalled product. It is not due to any corporate altruism, but is rather an attempt to redress the poor publicity that is a by-product of any recall. "Manufacturers are afraid of recalls and they hate the public notice," says CPSC's Catherine Cook. "Especially if they've never been involved in a recall before, they think it's the end of the world. That's a shame, because it's not. The fear that companies have of publicity is groundless." Indeed, adds director Cook: "We've had so many recalls that the public hardly notices them any more."

> "We don't expect companies to stand up and say, 'I sinned,'" says one agency official. "They may even come out of it smelling like good guys."

What companies fear most is that sales, not only of the recalled product but of all their branded goods, will suffer if the general public gets wind of a recall. Yet as historian Jaussen points out, "It's possible to convert a callback into a goodwill gesture." When Fletcher's Castoria, a children's laxative, returned to dealers' shelves following a celebrated recall for contamination in 1943, sales continued brisk as though nothing had happened. Says Jaussen: "Mothers thought as highly of the product as before. They seemed to be impressed by the company's directness and integrity in voluntarily recalling the product."

More recently, when the Corning Glass Works discovered in 1976 that some handles on its model E-1210 Corning Ware coffee percolator tended to come loose because of faulty epoxy, the company went all out to put into operation "a model recall," according to Robert McCleary, manager of consumer affairs. It not only spent about $1 million on point-of-purchase tent cards, urging customers to return the defective pots for a free replacement, but saturated the media with news releases alerting consumers to the defect. In all, Corning got back 105,180 of the 360,500 percolators in dealers' and consumers' hands, a return of about 30%—or nearly double the average for such products. Better still, according to Hal Warner, manager of products information, sales of Corning Ware percolators have actually increased since the recall.

But Corning also got something it never bargained for: a $325,000 fine from CPSC, the biggest penalty ever imposed by the agency, for allegedly failing to fulfill the "timeliness" requirement. CPSC claims that Corning was lax in not alerting the agency to the defect within the prescribed 24 hours. For its part, Corning retorts that it was impossible to make a defect determination in so short a time. And considering that CPSC has since extended the notification period to fifteen days, the glass company not unreasonably contends that it got a bum rap.

Another recent recall that drew the wrath of CPSC was the smoke detector that was itself a fire hazard because of the possible malfunction of a resistor. In a way, muses defect corrections director Catherine Cook, "it was rather funny." Not funny, however, was the $100,000 fine that CPSC slapped on its manufacturer, Pittway Corp., for allegedly failing to report the defect to the agency.

The Language of Recalls

Nevertheless, to hear the agencies tell it, they bend over backwards to make certain that a recall notice does not result in a bad press for the company or, worse, grounds for a liability suit. "The language of a recall notice is very important to manufacturers," CPSC's Cook explains. "They fear anything that can be construed as an admission of guilt." In phrasing a joint news release on a safety recall, for example, the agency—not the company—asserts that the product is a hazard. "We don't expect companies to stand up and say, 'I sinned,'" says Cook. "Certainly, it's no harm to the image of a firm to admit it is being cooperative with the Commission. They may even come out of it smelling like good guys. And that's all right by us as long as the word gets out."

Even so, many companies are extremely touchy about discussing recalls. Firestone has put out the word that it will not comment on any facet of its massive tire recall. And asked about the effect on sales of its Mr. Coffee automatic coffeemaker following a recall of 3.1 million machines in 1977 for defective Teflon-

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KINZER V. REMINGTON

R2543290

BARBER - 1.30.130001167

Consumer protection groups want the government to get a lot tougher on recalls. One critic, claiming that no agency is doing a fabulous job, gives them a grade of only B—.

coated wiring. James Yurak, vice president of sales and marketing of Ohio's North American Systems Inc., curtly replies: "We have filed all the necessary papers with the CPSC. And that's how we prefer to leave the matter."

For that matter, Ford is one company that took a public relations bath last summer when it challenged a NHTSA recall notice with a flight of fanciful statistics. Called upon to recall 150,000 Mercury Capris for repair of a suspected windshield-wiper defect, Ford lawyers went into federal court in Washington to argue that, on the basis of empirical statistical data, motorists driving their Capris to dealers for the repair would run the risk of twenty accidents, whereas only two accidents would be likely to result from the defective wipers. "It was just a case of statisticians talking to each other," grumbles Ford Vice President Herbert Misch. "The whole thing was taken out of context."

Ford's Flap

Still, Ford reaped a whirlwind of poor press from the flap. NHTSA rejected the company's reasoning as "ludicrous" and *The New York Times*, while appreciating "the charm of this line of argument," editorialized: "The ultimate logic of the Ford lawyers' argument will triumph when statistics prove that no driver ought to venture anywhere and there will be no recalls ever again."

Not surprisingly, relations between the auto companies and NHTSA and EPA are proper, but cool. Some manufacturers complain that they are unduly harassed by a recall-happy bureaucracy more concerned with "imposing its will" than correcting defects. Not so, replies EPA's indignant Mort Cohen: "I don't think we are overzealous. But we are extremely cautious when it comes to automotive safety." At NHTSA, Robert Hellmuth points out that his defects-evaluation division is manned by only 35 of the agency's 900 employees. But because it has sparked the recall of 74.2 million vehicles since 1966, he says, "We just seem to catch more hell than anyone else."

Yet for all their growing reach and clout, even the agencies admit that their defect-detection apparatus could stand improvement. Despite the risk of fines for negligent reporting, many small companies and importers shrink from the expense of a recall. Among larger corporations, says Catherine Cook, "foreign manufacturers are at least as good about recalls as the domestic ones because they value their name. But if your name doesn't appear on the product, you're not going to care about conducting the recall." Moreover, while the agencies' punitive powers have improved the rate of defect reporting, Cook complains that "even now we're only hearing about a fraction of the cases that require recall, maybe way less than half—but that's only a guess."

The agencies also get something less than high marks for their efforts from environmentalists and consumer protection groups that would like to see them get a lot tougher. One outspoken critic is Clarence Ditlow, director of the Center for Auto Safety, who does not think "any agency is doing a fabulous job of recalls." As head of the organization founded by Ralph Nader, whose *Unsafe At Any Speed* helped to inspire the creation of NHTSA, Ditlow necessarily speaks as a devil's advocate where the auto agencies are concerned. Says he: "I'd have to say they are working at a B— level."

Critical of NHTSA's reliance on consumer complaints as the basis of many recall investigations (*page 32*), Ditlow also charges that the agency is too slow in launching investigations. He points to the low number of NHTSA investigations during the Nixon years 1973-74 and concludes: "They must have taken a lot of long lunch hours." He acknowledges, however, that "since [Administrator Joan] Claybrook came in, they've improved sharply."

Carl Nash, special assistant to Claybrook, sardonically suggests that the B-grade is "very charitable" of Ditlow and is "certainly higher than he would have given us in the past." Preferring not to comment on the work of NHTSA's previous administration, Nash points out that "under Mrs. Claybrook, we have expanded the definition of a safety-related defect"—for example, a propensity for engine stalling in some Plymouth Volarés. He concedes, however, that "given the resources, I'm sure we could find other cases worthy of recalls." As for the agency's "Hotline" for receiving consumer complaints, which Ditlow denounces as "a real disaster," Nash points out that its twelve operators are frequently overwhelmed by incoming calls, "particularly when a case like the Firestone 500 tires comes up." But the agency is computerizing information so that callers can get prompt answers to their questions about auto recalls.

At the same time, considering that NHTSA no longer has to prove injury from a defect but need only determine the likelihood of one happening, Ditlow thinks the agency lacks aggressiveness. Specifically, he charges NHTSA with dragging its feet over the Ford transmission case now under investigation, which Ditlow claims was sparked by a letter from his organization. He also charges that in replying to NHTSA's requests for information on its transmissions, "Ford stalled for three months on the question of including trucks in its data, and it is still fighting the investigation tooth and nail." Stunned by Ditlow's accusations, Ford's Misch told DUN'S REVIEW: "We are not! He's crazy! We have cooperated fully with the agency and will continue to do so. The only thing we ask is that facts should be separated from allegations."

Stretching the Bounds

The undeniable fact about recalls is that they are bound to increase. Not only are the agencies flexing their muscles more vigorously but, in liability cases, courts are stretching the bounds of normal and intended use, making manufacturers responsible for the use of their products in ways never dreamed of by their designers. *Item:* The housewife who was nearly electrocuted when she put an electric crockery pot inside her tub to heat the bath water. And in California, a woman settled out of court after suing a chemical company because she received a rash while sunbathing nude on a lawn she had just sprayed with its insecticide. Companies are also being burned by absurd rulings by the agencies themselves. Pennsylvania's Standard Novelty Works was nearly forced to call back 100,000 sleds because paint on the runners contained lead. Claiming that "kids don't bite their sleds," President Norman Rosen won a one-year exemption, but has nevertheless switched to using more expensive non-leaded paint.

To guard against recalls, urges The Conference Board's Pat McGuire, companies should "learn a lot more about how their products are used, build safety into everything they make and worry less about styling." Says McGuire: "Nobody ever recalled a product for being ugly."

Meanwhile, the ultimate recall may have surfaced recently when the University of North Carolina called back the 3,100 diplomas it awarded to the class of 1975. It seems that more than 1,000 graduates had complained to the school that the ink on their sheepskins is fading. Which only goes to show the degree to which recalls have become part of the American condition.

—ROBERT LENZNER WITH MARK LEVENSON

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
R2543291
BARBER - 1.30.130001168

Remington

PETERS

REMINGTON ARMS COMPANY, INC.

MANUFACTURERS OF
SPORTING FIREARMS. AMMUNITION

SPORTING FIREARMS, TRAPS, ILION, NEW YORK
AMMUNITION, BRIDGEPORT, CONNECTICUT
LONOKE, ARKANSAS
CABLE—HARTLEY, BRIDGEPORT
TELEX: 964-291 STRATFORD, CONN

TRAPS TARGETS

BRIDGEPORT, CONNECTICUT 06602

PETERS CARTRIDGE DIVISION
BRIDGEPORT, CONNECTICUT
TARGETS, FINDLAY, OHIO
ADA, OKLAHOMA
ATHENS, GEORGIA

January 15, 1979

bcc: P.H.Burdett
J.P.McAndrews
E.S.McCawley

Dun's Review
Editorial Office
666 Fifth Avenue
New York, New York 10019

Attention: Mr. Clem Morgello, Editor

Gentlemen:

I just read your article "A Record Year for Recalls" in the January 1979 issue of Dun's Review, and I wish to bring to your attention a defective statement contained therein which is unreasonably hazardous to Remington's business reputation.

I am referring to the reference on page 28 to "a rifle that may fire without anyone pulling the trigger". (The listing of "rifles" and "Remington Arms Co." under "product" and "manufacturer" under the "Recall Roll Call" on page 31 leaves little doubt that the manufacturer of the rifle referred to on page 28 is Remington.)

The fact is, the Remington rifles being recalled will not fire without pulling the trigger. As stated in our recall notice, under unusual circumstances the safety selector and trigger of certain of these rifles can be manipulated in such a way that subsequently moving the selector to the fire position could result in accidental discharge. However, at some point in this sequence the trigger must be pulled or the gun will not fire. It is a gross misrepresentation of the facts to say the rifle may fire without anyone pulling the trigger.

May I suggest a recall of your statement, with appropriate notice to assure that the message is adequately disseminated.

Very truly yours,

R A Partnoy

R. A. Partnoy
General Counsel

RAP:CK

Mr. Clem Morgello, Editor
Dun's Review
Editorial Office
666 Fifth Avenue
New York, New York 10019

Dear Mr. Morgello:

Thank you for your response to my letter of January 15 concerning DUN'S REVIEW's recent article on product recalls.

The facts of the situation are as stated in my letter. The rifles in question will not fire without someone at some point pulling the trigger. What makes the situation unusual is that by pulling the trigger while the safety selector is in a certain position that is neither "on" nor "off", these rifles can be made to fire when the safety selector is then released to the "off" position. That is what we meant by our reference to manipulation of the safety selector and trigger. Firing under such circumstances would constitute accidental discharge, but it is a far cry from the situation when the rifle fires without the trigger ever being pulled. The difference in the degree of hazard involved is significant. That is why I consider your statement to be "defective".

Very truly yours,

/s/

R. A. Partnoy
General Counsel

RAP:CK
2/9/79

Dun's Review 666 Fifth Avenue, New York, N.Y. 10019 (212) 489-2525

Clem Morgello
Editor

RECEIVED
FEB - 1 1979
R. A. PARTNOY

January 30, 1979

Mr. R.A. Partnoy
General Counsel
Remington Arms Company, Inc.
Bridgeport, Conn. 06602

Dear Mr. Partnoy:

Thank you for your letter of January 15, calling to our attention an allegedly "defective statement" about Remington rifles in DUN'S REVIEW's recent article on product recalls.

In reviewing the accuracy of our statements, however, I do not see that the story deviated from the facts at all. We correctly showed in our table on Page 31 that Remington Arms had recalled certain defective rifles in 1978. Elsewhere in the text we noted that among many different products recalled for correction during the year were rifles that "may" fire without anyone pulling the trigger.

In that context, we did not name Remington as the manufacturer. Nor did we point out that, according to a story carried by the Associated Press in October, 1978, Remington had settled for $6.8 million a suit brought by a Texas man who claimed that he was shot by a Remington rifle, whose trigger had not been pulled.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Evidently, there is some misunderstanding between us over what constitutes the accidental discharge of a firearm. You state that "under unusual circumstances...moving the safety selector to the fire position could result in accidental discharge." But you add that at some point in this sequence the trigger must be pulled. I do not see how this squares with your admission that the safety selector and trigger "can be manipulated in such a way" that accidental discharge can occur.

It seems to me that the problem here is one of semantics. Nevertheless, if Remington wishes to state its position publicly, we have no objection to publishing appropriate portions of your letter in the Letters section of a forthcoming issue of DUN'S Review. However, our policy is to reserve the right to comment editorially on all letters printed in the section.

Please advise if this is the course that Remington wishes to pursue.

Sincerely,

Dun's Review 666 Fifth Avenue, New York, N.Y. 10019 (212) 489-2525

Clem Morgello
Editor

RECEIVED
FEB - 1 1979
R. A. PARTNOY

January 30, 1979

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Please advise if this is the course that Remington wishes to pursue.

Sincerely,

Alan Mayfield

Mr. Clem Morgello, Editor
Dun's Review
Editorial Office
666 Fifth Avenue
New York, New York 10019

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Very truly yours,

/s/

R. A. Partnoy
General Counsel

RAP:CK
2/9/79

P. H. BURDETT
J. P. McANDREWS
E. S. McCAWLEY

DON'T SAY IT—*WRITE IT*

RECEIVED
FEB 9 1979

To _____ Location _____

From R. A. PARTNOY Location _____ Phone R A PARTNOY

Subject _____ Date 2/9/79

Note enclosed letter from DUN'S REVIEW and my proposed response. Would appreciate any comments you may have.

CVK Pls type letter for transmittal

R a Partnoy

R. A. Partnoy

RAP:CK
Enclosure

RECEIVED
FEB 9 1979
J.P. McANDREWS

88 778

STOP, LOOK, AND LIVE

DON'T SAY IT—*WRITE IT*

To P. H. BURDETT
J. P. McANDREWS
E. S. McCAWLEY Location

From R. A. PARTNOY Location Phone No.

Subject Date 2/9/79

Note enclosed letter from DUN'S REVIEW and my proposed response. Would appreciate any comments you may have.

R a Partnoy

R. A. Partnoy

RAP:CK
Enclosure

RD 770 STOP, LOOK, AND LIVE

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KINZER V. REMINGTON

Remington

REMINGTON ARMS COMPANY, INC.

PETERS

MANUFACTURERS OF
SPORTING FIREARMS, AMMUNITION

SPORTING FIREARMS, TRAPS, ILION, NEW YORK
AMMUNITION, BRIDGEPORT, CONNECTICUT
IONOKE, ARKANSAS
CABLE---HARTLEY, BRIDGEPORT
TELEX: 964-201 STRATFORD, CONN.

TRAPS TARGETS

BRIDGEPORT, CONNECTICUT 06602

PETERS CARTRIDGE DIVISION
BRIDGEPORT, CONNECTICUT
TARGETS, FINDLAY, OHIO
ADA, OKLAHOMA
ATHENS, GEORGIA

February 13, 1979

Mr. Clem Morgello, Editor
Dun's Review
Editorial Office
666 Fifth Avenue
New York, New York 10019

Dear Mr. Morgello:

Thank you for your response to my letter of January 15 concerning DUN'S REVIEW's recent article on product recalls.

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Very truly yours,

R A Partnoy

R. A. Partnoy
General Counsel

RAP:CK

File: Public Relations (Supporting back-up materials)

Cross Ref: Recall 600 (See PR file)

DRAFT

LETTERS TO THE EDITOR

This is in response to Blake C. Erskine's letter in the February 23, 1979, issue. On behalf of Remington, I would like to set the record straight on several points. First of all, the 6.8 million dollar product liability settlement was negotiated by Remington's insurance companies, who have full authority to settle cases without Remington's approval, and who consider many factors in addition to the merits of the case when making their decision on settlement. Remington never believed, nor does it believe now, that the accident paralyzing the Austin, Texas, claimant was caused by a defective product. Remington believes the accident was the result of unsafe gun handling; the act of attempting to unload a gun in a vehicle, with the safety c f and the muzzle pointed in the direction of someone or something the gun handler did not intend to shoot.

It is not true that a Remington official handled the accident rifle in the same manner as the plaintiff's son said he handled it, and the gun discharged. In fact, if the son's deposition is correct on how he handled the rifle on the day of the accident, the gun could not have fired without the trigger having been pulled immediately before discharge. Remington has recalled the model rifle under discussion, primarily because the publicity given the Texas case has undercut the public's confidence in the

Remington

REMINGTON ARMS COMPANY, INC.

SPORTING ARMS-AMMUNITION-TARGETS-TRAPS
ILION, NEW YORK 13357
TELEPHONE 315 895-3200

March 11, 1983

Mr. Phil Mucke
Box 25
Mound Valley, Kansas 67354

Dear Mr. Mucke:

Your recent letter that was sent to our Bridgeport, Connecticut facility, regarding the accidental firings you have experienced with your Model 700 30-06 caliber rifle, has been forwarded to this office for handling.

We were indeed sorry to learn of your having a problem of the nature you described, as it is not representative of Remington quality, nor characteristic of the Model 700 rifle.

Generally, the type of incident you described results from either improper adjustment of the trigger assembly outside our factory, foreign material, such as excessive lubrication, inside the trigger assembly, or, from pressure being inadvertently applied to the trigger while the safety is in the "fire" position.

Please, at your convenience, return the rifle via insured and collect transportation, to:

Remington Arms Company, Inc.
Arms Service Division
Ilion, N.Y. 13357

Upon receipt, we will have our technicians thoroughly examine your rifle and, if it is found to be factory faulty, any necessary repairs or other corrections will be made on a no-charge basis. If otherwise, a repair quotation will be sent for your approval prior to effecting any repairs.

Thank you for bringing this matter to our attention, Mr. Mucke, and for having afforded us this opportunity to be of assistance to you.

Sincerely,

J.A. Stahl, Supervisor
Firearms Product Service

JAS:tpp

RECEIVED

MAR 10 1997

J. A. SIEKL

Remington Arms Co., Inc.
Bridgeport, Conn.

Dear Sir:

I am writing this letter in regard to a problem I have had with the bolt and safety action on my Remington model 700 BDL in the 30-06 caliber.

I have had the gun discharge while taking off the safety when I slipped and my fingers on the trigger pulled back on the trigger.

The first time this happened the gun was laying across the seat of my pickup and struck a large bolt in the seat and another time in the passenger door.

I have had 2 other 700 BDL's with this same problem, and was wondering if there was a method for correcting this situation. If so, please send me the information. Thank you for your time and I look forward to hearing from you.

Yours Truly,
Phil Hinkle

P.S. My return address is

Phil Hinkle
Box 25
Mound Valley, Kansas
67354

R2517727

March 18, 1983

Mr. Henry D. Fernandez, Jr.
Ameh Termite & Pest Control
1102 Clark Blvd.
Laredo, Texas 78040

Dear Mr. Fernandez:

Thank you for your letter of March 14, 1983, which further outlines the accidental firing you have experienced with your Model 700 243 Win. caliber rifle, serial number A6373493.

To reiterate, Mr. Fernandez, once we have received your rifle, it will be thoroughly examined and tested according to your description of the incident. If the rifle is found to be defective in any way, the necessary corrections will be made on a no-charge basis.

We will await receipt of your rifle and will notify you of our findings immediately following our examination.

Sincerely,

J.A. Steil, Supervisor
Firearms Product Service

JAS:cpp

R2517728

Asash Termite & Pest Control
"I'm Making Lunch an Even Better Place to Live"
1100 CLARK BLVD. LAREDO, TEXAS 78040
726-4128

RECEIVED
MAR 10 1983
J.A. STEKL

March 14, 1983

J. A. Stekl, Supervisor
Firearms Product Service
Remington Arms Co.
Ilion, New York 13357

Dear Mr. Stekl,

I received your letter of February 23, 1983, and need to once again make reference to my previous letter.

I realize that you can not diagnose the problem without examining the rifle, and I intend to send it as soon as some very important points are clarified so you can rule out some of the possibilities that you enumerate in your letter.

Most important is that the rifle fires sometimes after moving the safety from safe to fire repeated times.

This has happened to me after deliberately moving the bolt and safety countless times back and forth until the rifle has fired.

I want you to be aware of these facts and send me further instructions so that I can take the necessary action.

Your truly,

Henry B. Fernandez, Jr.

HBF/ca

DON'T SAY IT—WRITE IT

To _____ Date _____

From _____

Excuse me for coming to Training

Field simulation test

Training will be applied to my

Safety Department

"YOUR SAFETY ATTENTION MEANS ACCIDENT PREVENTION"

R2517732

Dennis:
When (if) rifle is received, forward to P.I. Committee immediately.
JMS

bcc: E.F. Sienkiewicz
J.R. Snedeker
D.J. Sanita

February 23, 1983

Mr. Henry B. Fernandez, Jr.
Asash Termite & Pest Control
1102 Clark Blvd.
Laredo, Texas 78040

Dear Mr. Fernandez:

Your letter of February 10, 1983 that was sent to our Bridgeport, Connecticut facility, regarding the accidental firings you have experienced with your Model 700 243 Win. caliber rifle, serial number A6373693, has been forwarded to this office for handling.

We were indeed sorry to learn of your having had a problem of the nature you described, as it is not representative of Remington quality, nor characteristic of the Model 700 rifle.

Generally, the type of incident you have described results from either improper adjustment of the trigger assembly outside our factory, foreign material, such as excessive lubrication, inside the trigger assembly, or, from pressure being inadvertently applied to the trigger while the safety is in the "fire" position.

Please, at your convenience, return the rifle via insured and collect transportation, to:

Remington Arms Company, Inc.
Arms Service Division
Ilion, New York 13357

Upon receipt, we will have our technicians thoroughly examine your rifle and, if it is found to be factory faulty, any necessary repairs or other corrections will be made on a no-charge basis. If

February 23, 1983

otherwise, a repair quotation will be sent for your approval prior to effecting any repairs.

Thank you for bringing this matter to our attention, Mr. Fernandez, and for having afforded us this opportunity to be of service.

Sincerely,

J.A. Stahl, Supervisor
Firearms Product Service

jas:tpp

R2517731

Aaapli Termite & Pest Control
"Pest Raiting Leads"
to Even Better Places to Live"
1102 Clark Blvd.
Laredo, Texas 78040
(956) 724-6120

RECEIVED
DATE 9-27-13
BY Mary Alice Gonzalez
Real Estate Title
Webb County, Texas

TO T.A. Steel
Rawleigh Man Co. of A. Steel
Laredo, New Mex. 13357

Mr. O. A. Steel, Laredo, Texas
Yours of the 2nd inst. at hand
1st May 1913 and have duly noted
contents, and in reply would say
that we are quite sorry that
Mr. Chas. Hall has not paid
you the money for the
Mule which he bought
from you, but we
have written him
several times
about it and
he promised
to pay it
but has
not done
so yet.

R2517735

DON'T SAY IT—WRITE IT

To: D.O. Smith Date: Ans service 52-4

From: J.A. Brito, Phone: service 52-4 Ans

Subject: REMOVE M/700 Adj. 140 Rem. S.N. A0173493 Date: 10-24-03

Please replace the trigger assembly on the subject rifle with a new-style assembly (no hole-lock) at no-charge.

Keep the old assembly for future reference.

Please expedite the work and the rifle's return to sender. A Model's, Laredo, Texas.

Thank you!

Jan Brito

attach.

cc: file, Bros, Leon, And Lyn

Asash Termite & Pest Control

"You Making Lunch an Even Better Place to Eat"

[illegible] Texas [illegible]

RECEIVED
OCT 24
[illegible]
[illegible]

October 17, 1983

J. A. Stahl, Supervisor
Firearms Product Service
Remington Arms Co.
Ilion, New York 13357

Dear Mr. Stahl:

I received your correspondence on the Remington ADL 700, 243 rifle, serial number A 6373493.

I will go along with your recommendations and will agree on your repaleing the assembly with your new style assembly.

Please take care of this for me and thank you very much for solving this problem.

Yours truly,

Henry B. Fernandez, Jr.

HBF/ef

RECEIVED
OCT 20 1983
ARMS SERVICE

R2517736

bcc: D.F. Sanita
R-13810
Hold for reply
Mr. Moore's

October 10, 1983

Mr. Henry B. Fernandez, Jr.
Ranch Termite & Pest Control
1102 Clark Blvd.
Laredo, Texas 78040

Dear Mr. Fernandez:

Examination has been completed on the Model 700 ADL 243 Win. caliber rifle, serial number A6373493, that was returned to us by Moore's, because of the accidental firings you and your family experienced.

The returned rifle, which was produced in October of 1976, has been examined by our firearms experts who report that it contained our high-pressure proof test, gallery test, and final inspection stampings, indicating that it had successfully passed all our necessary tests prior to shipment.

The general condition of the gun appeared to be good, but it was noted that the stock contained numerous small dents and scratches, and bluing was worn off the muzzle and upper portions of barrel.

Examination of the trigger assembly disclosed the following:

1. Trigger pull was measured at 2½ pounds. This is well below our minimum specification.

2. The trigger connector sear engagement was measured at .012". This is much less than our minimum factory setting.

3. The trigger connector had too much clearance on the trigger, allowing excessive vertical movement of the connector. While you did not mention what your gunsmith did to the rifle in an attempt to fix it initially, indications are that the trigger assembly was improperly adjusted, at some time, after the rifle left our factory.

We are able to duplicate the malfunctions you described by abnormal manipulation of the trigger safety. However, normal operation of

R2517737

October 10, 1983

the rifle did not produce any problems and, we can attribute the malfunctions to the facts that the trigger was out of adjustment and that the trigger connector-fit on the trigger was not correct.

We trust that we have clarified the circumstances that may have caused the accidental firings and, to insure that your faith in the rifle is restored, we would like to replace the trigger assembly, at no-charge, with the new-style assembly that is found on our current Model 700 rifle which does not have the bolt lock feature. This trigger design will allow the bolt to be opened with the safety switch in the "safe" position. Or, if you so desire, we can replace the assembly with a new one of the same design that is presently on your rifle. We will await your decision and reply.

We apologize for the inconvenience caused you and your sons, Mr. Fernandez, and thank you for having afforded us the opportunity to examine the rifle and to be of service to you.

Sincerely,

J.A. Stehl, Supervisor
Product Service

JAS:cpp

Asash Termite & Pest Control
"Our Motto: Leads us Ever Better Plans to Live"
1108 CLARK BLVD. LAREDO, TEXAS 78040

February 10, 1983

RECEIVED
FEB 14 1983
PRODUCT SERVICE
BRIDGEPORT

Remington Arms Corp.
936 Barnum Ave.
P. O. Box 1939
Bridgeport, Ct. 06601

Attn: Warranty Dept.

Gentlemen:

I have a collection of over 30 rifles and pistols.

Included in this collection is a Remington Model 700 Ser. No. A6373493, 243 Cal. rifle that was bought in the Laredo, Texas area a few years ago from a new gun dealer.

The rifle has been used on and off during our South Texas deer hunting season.

About four or five seasons ago my son Henry III age 13 at the time had an accidental firing of this rifle in my presence. Luckily, he was following all safety criteria, and the bullet did not strike anything. Being a hunter all my life, I did not accept this incident and took drastic action under the assumption that this incident was due to carelessness on the part of the boy and consequently did not let him hunt for the rest of the season so as to drive home a point.

Since he did not hunt, the rifle was not used again for a few years.

Two years ago while hunting and instructing my younger son Carlos on how to unload a rifle before getting on a blind, the rifle went off in my hands. Since I was instructing him on safely the rifle was pointed up. The bullet did not strike anything, and I passed it off as I just must have accidentally pulled the trigger during my demonstration. It was such a shock that I convinced myself that I was responsible for the accidental firing.

The rifle was handed over to Carlos, and he proceeded to climb the deer blind. As I drove off, I heard a shot and immediately returned and was informed by my son that all he had done was loaded the rifle flipped the safety from on to fire once or twice, and the rifle discharged going through the roof of the blind.

Since this happened to a youngster, I still did not believe in a mechanical problem and proceeded to work the bolt and safety until it finally discharged. This happened after 20 or 30 openings closing off the bolt and flipping from safety to fire.

I took the rifle to a very reputable gunsmith in Laredo, Mr. Humberto Acevedo, and he explained to me that it was possible and he supposedly fixed it for me.

This season while hunting with my father-in-law (who has also hunted all his life) in my presence the rifle went off, and we had a close call but luckily the bullet did not strike anything. He at first commented that he had hunted all his life and this was the first time this happened to him, and he must have accidentally pulled the trigger before he was ready to fire.

I, somewhat shaken sat down and asked him to carefully go over the motions that led to this incident.

After he did, I got the rifle and worked the bolt and safety many times until it went off in my hands without pulling or touching the trigger. I must also add that the trigger pull has never been adjusted or tampered with other than by Mr. Acevedo when he fixed it, and the pull is a normal hunting pressure pull.

A life or lives could have been lost because of this malfunction and now I have lost all faith in that particular rifle, and I do not care to get it fixed by a gunsmith, the factory or anyone. I also do not want to sell it as it is because I do not want to have the responsibility of an accident.

I feel we have been more than lucky in not having any injury with so many accidental firings of this particular rifle and I am calling this to your attention with a request that you take this rifle back and send me either a refund or replace it with a new and safe equivalent rifle.

Yours truly,

Henry B. Fernandez, Jr.

HBF/ca

bcc: D.J. Sanita
SN27018 (1981)
Hold for reply

March 28, 1984

Mr. Lee Conroy
3571 Main Dr.
Sterling Heights, Michigan 48077

Dear Mr. Conroy:

Examination has been completed on the Model 700 BDL 30-06 caliber rifle, serial number 6280288, that you returned to us because of firing malfunctions you experienced.

The returned firearm, which was produced in September of 1969, has been thoroughly examined by our firearms experts who report that it contained our high-pressure proof test, gallery test, and final inspection stampings, indicating that it had successfully passed all our necessary tests prior to shipment.

The general condition of the gun appeared to be good, and it was noted that the stock had been refinished and scope mounts added after the rifle left our factory.

Examination of the trigger assembly disclosed the following:

1. Trigger pull was within Remington specifications.

2. The sear-connector engagement was measured to be .007". This is much less than our minimum factory setting.

3. The trigger assembly housing and some of the internal trigger parts had a lot of sticky brown substance on them, that appeared to be partially dried gun oil.

Following the visual examination, the rifle was subjected to a cold box test, i.e. the rifle was stored below 32° F for a number of hours. Upon removing the rifle from the cold atmosphere, it was noted that the gummy substance present on the sear caused it to stick to the inside of the housing, resulting in abnormal operation of the rifle.

R2517741

-2-

In summary, it appears that over the years excessive lubrication was allowed to accumulate in the trigger assembly. Under certain circumstances this accumulation could cause the internal parts to hang-up, causing the malfunctions you experienced. In future use, we recommend that oil be used sparingly and not let accumulate in or on the trigger assembly.

We trust that we have clarified the circumstances that may have caused the accidental firings and, to insure that your faith in the rifle is restored, we are replacing the trigger assembly in your rifle at no-charge.

Thank you for having afforded us this opportunity to be of service to you, and we trust that our handling meets with your approval.

Sincerely,

J.A. Steki, Supervisor
Product Service

JAS:tpp

Date: 1-25-84

To: Jim Bob

From: Bubba

m/hm Tue 30-06 [Insurance Date 9/87]

Serial # 123021

Sun-someone enlargement = 0.007"

See-see (sun-sun) = 0.0025"

Try ball o.k.

Fatal flaw on 10 caustic drops at -40°.

Fit by fit at hr-hr-hr on April

Mill-bill white coil Au to dull & long.

BARBER - 1.30.130001196

R2617744

BARBER - 1.30.130001196

11-17-83

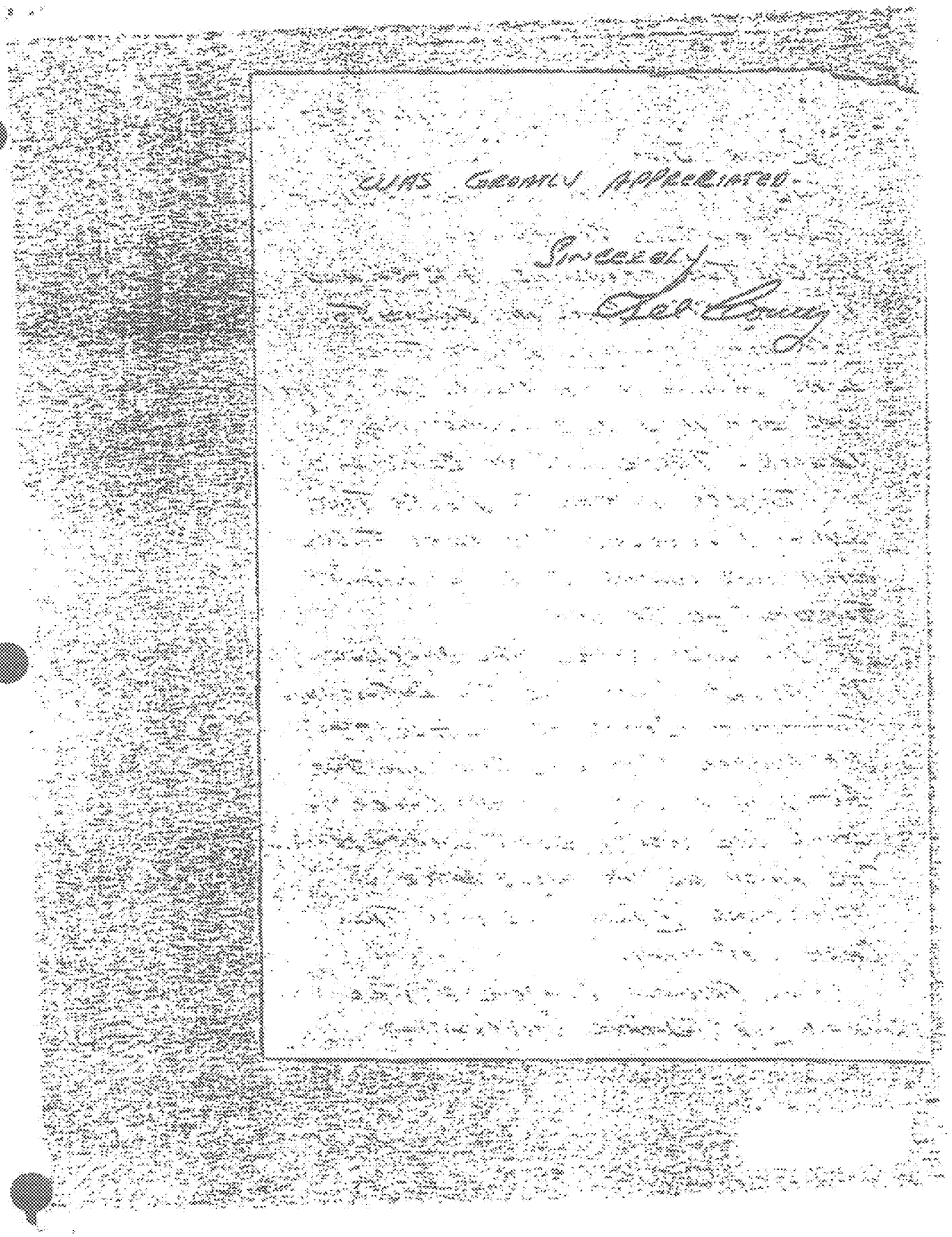
Dear Jim

This is the one we talked about today on the telephone.

On two occasions, 11-15-82 and 11-15-83, this rifle has failed to operate Reliably. Both times I was aiming at a deer. The safety was off and I could not pull the trigger. There was no give and no trigger movement. Both times when I lowered the rifle to see what was wrong it fired without touching the trigger.

You will note the engraving is almost gone due to removing the wood. If it is possible to recover the wood send me the cost and I will make a check to cover the work. Don't worry about the finish on the wood after engraving (I'll take care of that.

Your former courteous attitude during our telephone conversation



Duval County Appeared -

Sincerely

Geo Long

bmc: D.J. Sanita
Please clean rifle and install new-style trigger assembly at no-charge.
JAS

May 17, 1984

Mr. Dennis Vlaering
SR Box 141
Michigamme, Michigan 49861

Dear Mr. Vlaering:

Examination has been completed on the Model 700 BDL 30-06 caliber rifle, serial number 6715148, that you returned to us a short time ago.

The returned rifle, which was produced in March of 1974, was found to contain our high-pressure proof test, gallery test, and final inspection stampings, indicating that it had passed all our necessary tests prior to shipment from our factory.

Removal of the barreled-action from the stock revealed that the under-side of the barrel and receiver (including the trigger assembly) were coated with a combination of partially dried lubrication and dirt. This material was also visible on the internal parts of the trigger assembly. It is entirely possible that this accumulation on the trigger parts caused the malfunction you experienced.

As a gesture of customer good-will, we will give the rifle a thorough cleaning and install one of our new style trigger safety assemblies that will allow the bolt to be opened with the safety in the "on-safe" position, at no-charge.

We trust that our handling meets with your approval, and thank you for allowing us to examine the rifle and report our findings.

Sincerely,

J.A. Stehl, Supervisor
Product Service

JAS:cpp

R2517748

Remington.

REMINGTON ARMS COMPANY, INC.

SPORTING ARMS-AMMUNITION-TARGETS-TRAPS

ILION, NEW YORK 13357

TELEPHONE 315 895-3301

March 30, 1984

Mr. Dennis Visscring
SR Box 141
Michigamme, Michigan 49861

Dear Mr. Visscring:

Your letter of March 19, 1984 that was addressed to our Bridgeport, Connecticut facility, regarding the malfunctions you have experienced with your Model 700 BDL 30-06 caliber rifle, has been forwarded to this office for handling.

We were indeed sorry to learn of your having a problem of the nature you described.

Please, at your convenience, return the rifle via insured and collect transportation, to:

Remington Arms Company, Inc.
Attn: J.A. Stekl
Ilion, New York 13357

Please mark "Stekl" on the outside of both ends of the box. If, upon receipt, the rifle is found to be factory faulty, we will gladly make any necessary corrections on a no-charge basis.

Thank you for bringing this matter to our attention and for having afforded us this opportunity to be of service to you.

Sincerely,

J.A. Stekl, Supervisor
Product Service

JAS:tpp

R2517750

3-19-84

RS 1429 RECEIVED

MAR 26 1984

J.A. SIEKER

DEAR REMINGTON ARMS,

I HAVE USED AND ENJOYED MY MODEL 700 ADL 30-06 (SERIAL NO 1376) FOR MANY YEARS. THIS WINTER I'VE SHOOTING A HAM PUNKIN PATTERN WITH MY MODEL 700 ADL 30-06 (SERIAL NO 1376). BARREL CALLING AT THE LAND RESTRICTION OF PROJECTILE IS VERY DIFFICULT DUE TO THE HONEY WAD. FIRE IS STARTED ONLY ONCE IN 15-20 SHOTS. IF ANY MISFIRE COMES IN, HAVE TO EJECT IF IT BECOMES THAT ONLY WAY IF FIRE THE SECOND TIME OUT THIS SIDE I CAUSE A BIG CONCERN. THE PRIMER DID NOT HIT THE FIRING PIN DEEP ENOUGH TO MAKE IT GO, AND I PREFERRED HAVE TO SHOOT HIM WITH A RUGER 10-22 SEMI-AUTO CARBINE!

THIS HAPPENED IF HUNTING ALONE WITH WHITE TAILS. AFTER THE FIRST MISFIRE, I REMOVED THE SHOT AND UNLOAD THE REMAINS AMOUNT OF SHOT AND THE PRIMER WITH WHITE GAS. BE A GOOD CLEANING, I SET THE SHOT OUTSIDE OVERNIGHT AT A TEMP OF -35°F. IT DIDN'T DO ANY IMPROVEMENTS. THE WEATHER IT WAS ONLY ZERO. I HAD A NICE COYOTE IN THE SIGHT IT TAKES TWO MISFIRES BEFORE I UNLOAD A NEW ROUND IN SLOWLY AND QUIETLY, AND THE SO NEW COYOTE. TWO MORE ROUNDS WAS NOT FIRE AND THE FOURTH ROUND FINALLY WENT OFF WITH NO RESULTS. I HAVE HUNT THE TOO AND TURNED IT A RUGER NO.1 WHICH HAS NO BOLT!

THIS COMMENT OF MY BOLT ACTION IS VERY SERIOUS. ANOTHER SUGGESTION POINT IS THAT IT MAY BE LOADED OR UNLOADED WHEN THE SAFETY IS ON.

CAN YOU HELP ME WITH THESE PROBLEMS? MAY BE YOU HAVE A BETTER METHOD THAN I AM USE. I USED TO HAVE SAME CASE FOR 2000 YEARS, IT USED TO BE MY FAVORITE RIFLE.

PLEASE HELP ME RETURN MY TOO TO ITS ORIGINAL OF PERFORMANCE. THANK YOU.

FRUSTRATED,

DENNIS VISSERING
SR. BOX 191
MICHIGAN CITY, IN 46360

RECEIVED
MAR 27 1984
CONSUMER SERVICE

R2517751

cannot replace the trigger assembly at no charge

January 27, 1984

Mr. Robert E. Marcuiller, Jr.
P.O. Box 56233
North Pole, Alaska 99705

Dear Mr. Marcuiller,

Examination has been completed on the Model 700 ADL 270 Win. caliber rifle, serial number 6836381, that you returned to us a short time ago because the rifle fired when you moved the safety from the "safe" to "fire" position.

The returned firearm, which was produced in April of 1983, has been thoroughly examined by our firearms experts who report that it contained our high-pressure proof test, gallery test, and final inspection stampings, indicating that it had successfully passed all our necessary tests prior to shipment.

The general condition of the gun appeared to be used, and it was noted that a recoil pad, sling swivel studs, and scope mounts had been added after the rifle left our factory. In going over the individual parts, it was noted that the stock contained numerous scratches and mars.

Initial testing of the rifle indicated that if the bolt was closed rapidly, with the safety in the "safe" position, subsequent movement of the safety would cause the firing pin to fall. Further investigation, which included disassembly of the trigger mechanism, disclosed that the trigger connector was broken. Additionally, removal of the firing pin showed burn marks and powder residue on the firing pin tip and shoulder and brass particles in the bolt threads.

Based upon the powder burns and residue present on the firing pin, the trigger connector breakage resulted from pierced primers. When a primer pierces, an escape of propellant gas blows rearward through the firing pin hole in the bolt, causing the firing pin to be driven rearward. Upon moving rearward, the cocking piece of the firing pin hits the trigger rear-safety cam which in turn strikes the connector and breaks it.

-1-

R2517752

January 27, 1984

This type of problem is generally associated with high-pressure reloads.

Remington Arms Company, Inc. does warranty its products against any defects in materials and workmanship. However, under the circumstances when the damage resulted from a condition beyond our control, we cannot of course, assume any responsibility or liability for the present condition of the rifle, or for your missed trophy. However, we do want to be as helpful as possible to you and, as a gesture of customer good-will, are replacing the trigger assembly in your rifle at no-charge.

Thank you for having afforded us this opportunity to be of service to you, and we trust that our handling meets with your approval.

Sincerely,

J.A. Staki, Supervisor
Product Service

JAS:tpp

RS# 1359

September 9, 1983

Remington

To Whom It May Concern:

I am an avid hunter (have been for almost 25 years). In the fall of 1982 I hunted Dall Sheep in the Alaska Range with my Browning 30-06. After the hunt, I asked my father (who owns a sporting goods store in northern Wisconsin for 35 years and has been selling firearms of all makes since that time) to send me a flat shooting rifle, preferably a 270 caliber. He sent me a Remington Model 700 saying that this is just the weapon I needed. I was pleased with his choice because we had both used Remington firearms for many years and had been satisfied with their performance.

This fall I spent $600.00 to fly in to the Alaska Range after many months of preparing for the hunt. My partner and I hiked approximately 5 to 6 miles where the sheep were bedded and made our stalk. I spotted a trophy ram (with about a 40 inch curl) and was sighting him in. Once I had him sighted in, I eased off the safety and immediately the rifle discharged scattering the sheep. Fortunately, neither my partner nor I was seriously injured, but this incident caused a large gash over my eye, scattered the sheep and, needless to say, ended my hunting trip. I was severly upset not only at the (probable once-in-a-lifetime) chance of "bagging" a trophy, but at the serious danger involved in the mis-firing of this weapon. I am thankful that no lives were lost in this incident. The rifle had never been used before except for target shooting which I did before the hunt to sight it in.

When I arrived back in North Pole, Alaska (my home), I found out that another person had the same experience with his Remington rifle. I wish to have my rifle repaired and $500.00 reimbursed to me for expenses. I've lost one year of Dall Sheep hunting as well as a trophy ram. I will carry a scar over my eye for the rest of my life as a reminder of this incident.

Sincerely,

Robert R. Marcouiller Jr.
P.O. Box 56233
North Pole, AK 99705

cc: R. Marcouiller Sporting Goods & Hardware
Niagara, Wisconsin

R2517754

RECEIVING AND ESTIMATING REPORT

ORDER R 01692

FROM, DATE

DATE RECEIVED 6-8-64 ESTIMATED

DATE OPENED 6-8-64 VIA

MODEL AND GRADE SERIAL NO.

DATE CODE

FROM:

Robert M. McCollum Jr.
P.O. Box 56239
North Pole, AK 99705

REPAIR CHARGE

INS.

UPS

PARCEL POST

TOTAL $

GUN CONDITION: (NEW) (SLIGHTLY WORN) (VERY WORN) (ABUSED) (CUSTD)

CUSTOMER'S COMPLAINT RT cocking

MAIN FAULT

CREDIT CARD

PARTS

FOR COMPUTER REPAIR ONLY

PROOF

(CLEAN) (TEST) (TARGET)

4/7

R2517765

bcc: D.F. Polley
R-01234 (1982)
Please replace the trigger assembly with a new style (no bolt locks) & return to sender.

August 2, 1983

Outdoors Unlimited
Attn: Mr. Gary Hollmeier
1401 E. Abram
Arlington, Texas 76010

Dear Mr. Hollmeier:

Examination has been completed on your customer's Model 700 ADL 30-06 caliber rifle, serial number 6359346, which you returned to us because it allegedly fired when the safety was released to allow the bolt to be opened to eject a cartridge from the chamber.

The returned firearm, which was produced in July of 1969, has been examined by our firearms experts who report that it contained our high-pressure proof test, gallery test, and final inspection stampings, indicating that it had successfully passed all our necessary tests prior to shipment from the factory.

The general condition of the gun appeared to be slightly worn, and it was noted that scope bases had been installed after the rifle originally left our factory. In going over the individual parts, we found the headspace to be normal, recoil shoulders normal and chamber dirty.

Examination of the rifle and trigger assembly could not duplicate the malfunction that was reported. All parts tolerances and dimensions were found to be normal. Also, factory seals were intact on the trigger adjustment screws, indicating no alterations were made on the trigger outside our company. Trigger pull was well within specifications at 4-3/4 pounds. However, it was noted that the trigger assembly contained a mixture of oil and a sandy, gritty material. It is possible that under the right circumstances, the foreign material might have caused the internal trigger parts to hang-up and resulted in the accidental firings.

-1-

R2517756

August 2, 1983

-2-

To insure that your customer maintains confidence in his rifle, we are replacing the trigger assembly with the new style assembly that is found on our current model which does not have the bolt lock feature. This trigger design will allow the bolt to be opened with the safety switch in the "on safe" position.

We apologize for the delay in this matter and will expedite replacement of the trigger assembly and return shipment of the rifle to you.

Sincerely,

J.A. Steki, Supervisor
Product Service

JAS:tpp

[illegible]

[illegible] ON SUBJECT LINE: [illegible] NOTE: [illegible]

TO OFFICE: [illegible] I.P.: [illegible]

TO YOU: [illegible] DATE: [illegible]

FROM: [illegible]

MAG TYPE: [illegible]

CONDITION: [illegible] CAT #: [illegible]

[illegible] SER #: [illegible] VOL: [illegible]

TO: [illegible] CAL/CAL.: [illegible]

FROM OFFICE: [illegible] CHECKED BY: [illegible]

SECURITY: [illegible] APPROVED: [illegible]

TO: [illegible] APPROVED: [illegible]

APPROVED: [illegible]

TEXT CONTENT: (Bengal, Times, Old Style) APPROVED: [illegible]

[illegible]

[illegible]

[

Page (1) of (4)

Mod. 700 ADL Stock
Ser. No. K2598346
Rec'd. 1-6-83
Checked By Richard Patterson
Notes

R# 01225
Pg. N3
WO. 2469

COMMENTS: 6-20-83

Examined the firearm. The bolt was unlocked when attempted to eject the live ammo and could be pushed the safety forward. The extra load into the magazine was not observed to happen.

The following measurements were observed:

Sear Set (Safety on "S") = 0.065 inch } In-House Gage
Sear Set (Normal position) = 0.062 inch } (5-2-83 GB)
Trigger Pull (Safety Off) ... = 4½ lbs.
Trigger Pull (Safety Engaged in "S") = 6 lbs.
Safety Arm Working Force } Spring Scale
From "S" to "F" ... = 4 lbs.
From "F" to "S" ..... = 3½ lbs.
Engagement of sear to
Trigger Contact ... = 0.012 inch } Optical Comparator 50 X

R2517759

Page (2) 7(4)

Mod. Zoo
Ser No. 623934
Recd. 4-6-83
Issued By PC Eglin
Number 1

R# 21234
P.E. N.
Mfg. 2-69

6-20-83

COMMENTS:

THIS GUN WAS CHECKED, ITS SAFETY WAS SHIFTED TO THE "FIRE" POSITION, AND IT WAS PLACED INSIDE A COLD BOX (INSIDE THERMOMETER INDICATED -30°F) AT 8:33 a.m. ON 06 APR 83. UPON REMOVAL OF THIS GUN FROM THE COLD BOX (INSIDE THERMOMETER INDICATED -29°F) AT 9:40 a.m. ON 07 APR 83, THE FOLLOWING TEST WAS IMMEDIATELY PERFORMED:

① Pull trigger to see if firing pin is cocked back — It is cocked.

② Hold safety in "F" position — It does not fire-down.

③ Open bolt and check for round — none.

④ Close bolt and work trigger — no problem, positive detent.

⑤ Hold safety in "S" position, pull back hard on trigger. Release trigger, shift safety to "F" position. Repeat this three times. — The firing pin does not fire-down.

⑥ With safety switched to "F", point, pull trigger. — The firing pin does fire-down. Satisfy.

⑦ Point the bore and squeeze the entire trigger. — No problems encountered and no F.S.R. generated.

⑧ Perform "Drop Test". — Gun passed the "drop test".

ONE
FIRED

Res (3) q(4)

Mod. 2a
Sur No. 4228/2/5
Area. 1-16-23
Classed By [illegible]
Notice

R/W Clear
P.E. Nil
Mes. Nil

COMMENTS: 7-12-93

[illegible]

(1) There exist a deep [illegible] at the [illegible] of the Plot Bldg. Adjacent to 4th plot of the road has been [illegible].

(2) The [illegible] of the [illegible] is [illegible] to the [illegible].

(3) There exist [illegible] (Tamarind) on the [illegible] of the Plot Bldg. adjacent.

(4) Some [illegible] are [illegible] at the [illegible] of the [illegible] of the [illegible].

1 Plot Bldg. adjacent [illegible] 2 the [illegible]

(5) The [illegible] to [illegible] [illegible] [illegible] [illegible].

(6) A [illegible] exist [illegible] the [illegible] (Locals like it + Dirt).

(7) Also [illegible] Plot Bldg. [illegible].

[illegible]

(8) There exist a [illegible] of the [illegible] the [illegible] and the [illegible] of the [illegible] [illegible].

R2517781

Page (4) of (4)

Mec. [illegible]
Spec No. [illegible]
Rec. [illegible]
Check By [illegible]
Notes [illegible]

R* [illegible]
P.E. [illegible]
WO. [illegible]

COMMENTS:

(9) The [illegible] not allow it [illegible] to the [illegible]

(10) [illegible] [illegible] [illegible]

HUGHES THORSNESS
GANTZ POWELL & BRUNDIN
ATTORNEYS AT LAW

Reply to: Anchorage

November 25, 1992

Mr. Ed Anderson
c/o Seahawk Air
P.O. Box 3561
Kodiak, AK 99615

Re: Remington Model 700, 300. Winchester Classic

Dear Ed:

Thanks for your help and hospitality during our recent travels on Seahawk. Pursuant to our discussion, I am enclosing the name and address of the Remington Arms contact. What you described to me is a very dangerous situation and, although this is Remington's busiest time of year and it may take some months for them to return your rifle, it is very important that your rifle be returned to the factory for inspection and any necessary repairs.

As I understand the situation, you bought the rifle new for your father and it has, since that time, occasionally discharged when the safety is released. You explained that spraying the rifle with WD-40 and working the action, temporarily remedies the problem, but that it eventually reoccurs.

The weapon should be sent to:

Remington Arms Co., Inc.
Attention: Jim Stekl
Product Service
14 Hoefler Avenue
Ilion, New York 13357

HUGHES THORSNESS
GANTZ POWELL & BRUNDIN
ATTORNEYS AT LAW

I am sending a copy of this letter to Mr. Stekl, however, you should also send a letter containing a complete explanation of the situation with your rifle.

If you have any questions, please contact me at the Anchorage address on this letterhead or at my home number 696-4892. Collect calls are welcome.

Again, Thanks for your hospitality.

Sincerely,

HUGHES, THORSNESS, GANTZ, POWELL & BRUNDIN

Lewis E. Baker, Paralegal

cc: R. Craig Hosear, Esq.
Dale Willis, Esq.
Jim Stekl, Remington Arms Co., Inc.

tlb/997

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Jim Steki
Remington Arms Co., Inc.
Product Service
14 Hoefler Avenue
Ilion, NY 13357
HUGHES THORSNESS
GANTZ POWELL & BRUNDIN
ATTORNEYS AT LAW
ANCHORAGE, ALASKA 99501-2273

Remington

REMINGTON ARMS COMPANY, INC.
SPORTING ARMS-AMMUNITION-TARGETS-TRAPS
BRIDGEPORT, CONNECTICUT 06602

May 17, 1983

K mart
Sporting Goods Dept. 7018-80
2403 Missouri Boulevard
Jefferson City, MO 65101

ATTN: Sporting Goods Manager

Gentlemen:

The Model 700 repair you wrote Mr. Ferguson about is being done at no charge.

When a gun is returned to us with no explanation of the problem, it is assumed to be a regular repair request. If, in the future, you have a problem with a Remington gun, please include a note stating what the difficulty is.

Thank you for your continued support of Remington products. If I can be of any help to you at any time, please let me know.

Very truly yours,

A. D. Russo, Jr.
Assistant Manager
National Sales Area

ADR:ank

cc: Mr. R. Miron, K mart Enterprises, Inc.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

The following are the mailing control headers

To: SALICJR@SLINK:John R. Salic
Copies-To: BUNTINJN@SLINK:Jay N. Bunting
: BROWNJC@SLINK:Jon C. Brown
: WISEAD@SLINK:Andrea (Angie) D. Wise
: POWELLWW@SLINK:William W. Powell
From: POWELLWW@SLINK:William W. Powell
Subject: PROBLEM WITH A 41A REM
Date: 6-Nov-1993 11:28:08
Date-delivered: 6-Nov-1993 15:30:57
Date-received: 8-Nov-1993 08:18:11

Subject: PROBLEM WITH A 41A REM

AN ALASKAN GUIDE JUST RETURNED YESTERDAY FROM THE BUSH WITH A MAJOR COMPLAINT A #6159 700 KS SS 41A REM THAT WAS SHIPPED TO BOONDOCK ON 9-20- 93. WHEN THE GUN WAS ORIGINALLY RECEIVED IT HAD A BAD BOLT SO IT WAS SENT BACK TO THE CUSTOM SHOP FOR REPAIR.

THE CUSTOMER THEN TOOK THE GUN OUT INTO THE FIELD FOR BEAR HUNTING WITH HIS CLIENTS. ON THEIR FIRST ENCOUNTER HE WAS ATTEMPTING TO BACK UP HIS CLIENT BUT COULD NOT RELEASE THE SAFETY. FORTUNATELY THE CLIENT PUT THREE SHOTS INTO THE BEAR SO THE BACK UP WAS NOT NECESSARY.

HE DID GET THE GUN TO FIRE SO HE TOOK IT OUT AGAIN ON ANOTHER HUNT. THE SAFETY WOULD NOT RELEASE FOR THE SECOND TIME SO HE HIT IT HARD WITH THE PALM OF HIS HAND. THE SAFETY DID RELEASE AND THE GUN DISCHARGED FORCING THE SAFETY INTO TH PALM OF HIS HAND. THIS REQUIRED A TRIP OUT TO GET MEDICAL HELP AND HE RETURNED TO HIS CAMP.

WITH THE SAFETY BROKEN HE WAS ABLE TO USE THE GUN FOR AWHILE, BUT ON LATER HUN HE FOUND THAT THE GUN WOULD NOT FIRE AT ALL. AT THIS TIME HIS CONFIDENCE IN THIS GUN IS AT A LOW POINT.

I AM SCHEDULED TO MEET WITH THIS CUSTOMER ON TUESDAY AT 1:00PM TO DISCUSS HIS PROBLEM. HE HAS TWO REQUESTS. FIRST, HE WOULD LIKE US TO REPAIR HIS GUN. WOULD IT BE BETTER TO SEND IT BACK TO THE CUSTOM SHOP OR HAVE RED, OUR LOCAL WARRANTY GUNSMITH REPAIR IT? SECOND, HE WOULD LIKE SOME ADDITIONAL AMMO TO SIGHT THE GUN IN AGAIN. ABOUT $200 WORTH WOULD KEEP HIM HAPPY.

THIS COULD POTENTIALLY BE A MAJOR PROBLEM IF WE DO NOT HANDLE IT RIGHT. I BELIEVE THAT IF WE REPAIR HIS GUN IN A TIMELY MANNER AND SUPPLY HIM WITH A QUANTITY OF AMMO, HE WILL BE SATISFIED AND REMAIN A GOOD SUPPORTER OF REMINGTON PRODUCTS.

THANK YOU FOR YOUR ADVISE AND HELP IN SOLVING THIS SITUATION.

Item E

Facsimile Cover Sheet

To: Tim McCormick
Company:
Phone:
Fax:

From: Jay Bailey
Company:
Phone:
Fax: 773-1225

Date: 11/8/93
Pages including this cover page: 2

Comments:

Attached is a complaint on a M700 KS SS. The problem sounds severe and deserves factory attention. I have requested that the gun be returned to you.

274 02

Exhibit 45

Box 73
King Salmon, Alaska 99613
July 5, 1983

Remington Arms Company, Inc.
Bridgeport, Connecticut 06602

Dear Sirs:

Enclosed are copies of documents which show dates that have to do with correspondance between me and your company.

To explain: you received my rifle on the date of December 27, 1982 (see attached copy of return receipt requested). Then in February, I received a "receiving and estimating report" from you with the date of February 7, 1983 as date of opening, a span of about six weeks. In April, I received a bill for the amount of $24.69. On April 23, 1983, I wrote a check for that amount (attached copy). I got the check back in May with my bank statement and it had a clearance date of May 2, 1983.

As of yet, I do not have my rifle (a model 700 BDL 7mm Rem Mag Serial #6658200). I would appreciate it if you could advise me of the whereabouts of my rifle. You can reach me at 246-3453 during the day and 246-3029 after 6 p.m.

I can't understand the delay between December and now (a delay of over six months). Please respond as soon as possible.

Sincerely,

George M. Riddle

George M. Riddle

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

LM:EL 3-2-83 02 AMAIT PPLX & CASH

Remington

REMINGTON ARMS COMPANY, INC.

SPORTING FIREARMS, AMMUNITION, TARGETS AND TRAPS

Remington

☐ BRIDGEPORT, CONN. 06602
PLEASE MAIL REMITTANCE TO BOX CHECKED ☒ ILION, N. Y. 13357

INVOICE NO. R-5129
INVOICE DATE
SHIP TO

SOLD TO
GEORGE M. RIDDLE
BOX 73
KING SALMON, AK 99613

OUR ORDER NO. R-5129 M/700 OUR ORDER NO.

SHIP: VIA PARCEL POST Air Mail

M/700 BDL 7MM REM MAG #6658206 LY
L/SIGHT
W/STUDS

COMPLAINT: FAIL TO FIRE, MALFUNCTION OF SAFE
MAIN FAULT: CUSTOMER HAS ADJ TRIGGER ASSEM SO FAR OUT THAT IF IS LOCKI
HE DIDN'T GET HUNT. SEAR HAD OIL SUBSTANCE ON EACH SIDE THAT IS COLD
! TO STICK

OR NEW STYLE (OPENS ON SAFE)

New Ser # B6391632

GEORGE M. RIDDLE
BOX 73
KING SALMON, AK 99613

OUR ORDER NO. R-5129 M/700

TOTAL REPAIR CHARGE	21.00
INSURANCE	
PARCEL POST	3.63
TOTAL CHARGES	24.63

Shipped 7/19/83

HRED

IF LISTED ABOVE IS SATISFACTORY PLEASE APPROVE BY SIGNING BELOW RETURN FIRST COPY TO REMINGTON ARMS CO., INC., ILION, N. Y. RETAIN SECOND COPY AS YOUR RECEIPT REPAIR TO TAKE ABOUT THREE WEEKS AFTER RECEIPT OF APPROVAL

CUSTOMERS SIGNATURE ▶

(CLEAN) (TEST) (TARGET)

REPAIRMAN Lyle

cc: E.F. Sienkiewicz
J.E. Preiser
E.G. Larson
R.G. Sherman
J.H. Chisnall

December 11, 1978

Mr. O.K. Baxley
Vice President for Finance
Lamar University
P.O. Box 10003
Beaumont, Texas 77710

Dear Mr. Baxley:

Examination has been completed on your returned Model 700 ADL 6mm caliber rifle, serial number 307270.

We found the trigger assembly to be well within manufacturing specifications and we could not duplicate the problem that you had experienced. However, we did find excessive oil within the trigger assembly and strongly recommend that oil be used sparingly on the rifle with no lubrication added to the trigger mechanism.

In most of our investigations, concerning the problem that was experienced, we have found that the safety was pushed to the fire position with a finger on the trigger.

As a gesture of good will, we are replacing the entire trigger assembly, at no charge, and the rifle will be returned via Blue Label U.P.S.

Thank you for having afforded us this opportunity to be of service.

Sincerely,

E.F. Sienkiewicz

E.F. Sienkiewicz, Supervisor
Firearms Product Service

EFS:tpp

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SAN ANT

RECEIVED
FEB 28 1979
ARMS SERVICE

February 28, 1979

Mr. C. M. Hunter
4211 Vantage View
San Antonio, Texas 78228

Dear Mr. Hunter:

We are in receipt of your letter dated 2/15/79 in which you indicate you are in possession of (1) Model 721, Serial No. 100786.

This gun is not under recall. Due to your problem involved with the safety, please return the gun, transportation collect, to our Ilion Firearms Plant in New York. At this time, our expert gunsmiths will repair your rifle on a no-charge basis. The address in Ilion is as follows:

Remington Arms Co., Inc.
Arms Services Division
Ilion, New York 13357
Attention: Mr. Dennis Sanita

In answer to your question regarding an updated gun stock for the Model 721, please call our gun parts supervisor, Mr. Vic Kertesz in Ilion, N.Y. (315) 894-9981.

If we can be of any further service, please call us on our toll-free WATS number 1-800-243-9275.

Best regards,

R. G. Sherman
Product Service Coordinator

RGS/ac

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

P.I. YES ... NUMBER: 65 MODEL: 660

GENERAL CONDITION: GOOD R #: 02787

OUTSIDE WORK: FRONT & REAR SIGHTS AND SCOPE DATE: 1-18-79

SCREWS MISSING RECOIL PAD ADDED FROM: MRS SUSAN MC GINNIS STAR RT BOX 18

FIRED AMMO TYPE: UNKNOWN IN CUBA MO.

& CONDITION: — GUN #: 108687

PROOF: YES INSP.: 9 TEST: 57 CODE: LR = 2-68

HEADING: OK GA./CAL.: 243

BREECH OPENING: OK CHECKED BY: M. HARDY

RECOIL SHOULDERS: OK APPROVED: [signature] 3/16/79

CHAMBER: GOOD APPROVED: [signature] 3/16/79

TEST: APPROVED: [signature] 2-16-79

COMPONENT CONDITION: (Damaged, Broken, Old Style) APPROVED: [signature] 3/16/79

SLIGHT DENTS IN WOOD

BOLT SHOWS COLER WORN OFF

BBL BRIGHT AT MUZZEL

COMPLAINT: IF TRIG. IS DEPRESSED WHILE SAFETY IS ON GUN WILL DISCHARGE WHEN SAFE IS MOVED

INCIDENT: SHOOT HOLE IN FLOOR OR PICK UP TRIG

COMMENTS: Gun involved in recall program. Gun can be fired when safety & trigger are manipulated.

Copy

February 26, 1979

Mr. C. M. Hunter
4211 Vantage View
San Antonio, Texas 78228

Dear Mr. Hunter:

We are in receipt of your letter dated 2/15/79 in which you indicate you are in possession of (1) Model 721, Serial No. 100756.

This gun is not under recall. Due to your problem involved with the safety, please return the gun, transportation collect, to our Ilion Firearms Plant in New York. At this time, our expert gunsmiths will repair your rifle on a no-charge basis. The address in Ilion is as follows:

Remington Arms Co., Inc.
Arms Services Division
Ilion, New York 13357
Attention: Mr. Dennis Sanita

In answer to your question regarding an updated gun stock for the Model 721, please call our gun parts supervisor, Mr. Vic Rostohar in Ilion, N.Y. (315) 894-9961.

If we can be of any further service, please call us on our toll-free WATS number 1-800-243-9275.

Best regards,

R. G. Sherman
Product Service Coordinator

RGS/ec

Jack, This is what I was talking about with Ed Lenberg, and why he want Ed Lenon a letter. See letter of 11/21-722 other repairs always required. D. Sanita

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

JOHN RALSTON

February 10, 1975

Remington Arms Inc.
% Jack Chisnell
939 Barnum Ave.

coming

Dear Sir:

Subsequent to our conversation on Tuesday, Feb. 4, 1975, I have gone to Temple and picked up the 243 Mohawk. I also have pictures of the damage to the sert cover and an estimate to have the damage repaired. These are enclosed.

Two gunsmiths have checked the gun and they have confirmed that there is a default in the gun causing it to discharge as I explained in our conversation of last week. For the gun to discharge, the safety has to be put between safety and fire. Pull on the trigger and a small click can be heard. Pulling it all the way back to safety, the gun will then go off when it is put on fire. The gun is now on safety with no shells in the gun. After unpacking the gun, without pulling the trigger, the gun will fire if you push it to fire.

Subsequent to our conversation, I have discussed this with my nephew and he would rather have the 25/06.

Enclosed are the pictures, estimate, and a copy of the BankAmericard charge.

I'm very grateful for the co-operation shown me by you after I could get no co-operation from Carter's in Houston.

If anything else is needed, please contact me.

John W. Ralston

John W. Ralston
3026 Larknolls
Houston, Texas 77018
Area Code 713 686-3400

RECEIVED
FEB 18 [illegible]
PRODUCT SERVICE

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Returned this file / corp. 7
JOHN RALSTON Tom Kinsella
10-7-75
GUN COMPLT '75 La. dy

April 1, 1975

AIR MAIL

Mr. John Ralston
3026 Larknolls
Houston, Texas 77018

Dear Mr. Ralston:

Enclosed is our check to you for $68.29 to cover the cost of repairs to your car.

On March 17 we entered an order for a new Model 700 ADL 25-06 caliber rifle, and have asked our Firearms Division to expedite shipment to you as soon as possible.

Thank you, Mr. Ralston, for giving us this opportunity to be of service, and we trust yournew rifle will be satisfactory in every respect.

Sincerely,

REMINGTON ARMS COMPANY, INC.

J. H. Chisnall
Supervisor, Product Service

SENDER: Be sure to follow instructions on other side

PLEASE FURNISH SERVICE(S) INDICATED BY CHECKED BLOCK(S)
(Additional charges required for these services)

☐ Show address where delivered ☐ Deliver ONLY to addressee

RECEIPT
Received the numbered article described below.

REGISTERED NO. 50 329
CERTIFIED NO.
INSURED NO.

SIGNATURE OR NAME OF ADDRESSEE *(Must always be filled in)* Lynn Allen Ralston
SIGNATURE OF ADDRESSEE'S AGENT, IF ANY

DATE DELIVERED APR 3 - 1975
SHOW WHERE DELIVERED *(Only if requested, and include ZIP Code)*

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

JOHN RALSTON
GUN COMPANY

REMINGTON ARMS COMPANY, INC. BRIDGEPORT, CONN. 06602 M 85473

VENDOR'S DATE	VOUCHER NUMBER	VENDOR'S NUMBER	AMOUNT	DISCOUNT	FREIGHT	NET AMOUNT
03/21/75	32538		68.29			68.29

68.29 *

ALWAYS REFER TO OUR CHECK NUMBER IN YOUR CORRESPONDENCE
PROPER ENDORSEMENT ON CHECK WILL BE SUFFICIENT ACKNOWLEDGMENT OF RECEIPT OF PAYMENT
DETACH BEFORE PRESENTING FOR PAYMENT

RD-1341

"IF IT'S REMINGTON – IT'S RIGHT"

REMINGTON ARMS COMPANY, INC. M 85473 1-23/210

Remington DUPONT

SPORTING FIREARMS · AMMUNITION · TRAPS · TARGETS

BRIDGEPORT, CONN. 03/25/75

PAY REMINGTON ARMS CO.INC. 68 AND 29 CTS 68.29

TO THE ORDER OF

MR. JOHN RALSTON
3026 LARKNOLLS
HOUSTON, TEXAS 77018

REMINGTON ARMS COMPANY, INC.

AUTHORIZED SIGNATURES

MORGAN GUARANTY TRUST COMPANY OF NEW YORK

⑆021000023⑆ 051 57 508⑈

JOHN RALSTON

GUN COMPLT '75

1.) C. W. Roney
2.) Accts. Pay.

3-17-75

Mr. John Ralston

3026 Larknolls

Houston, Texas 77018

Product Liability claim: To cover cost of repairs to car which was damaged while claimant was using a M/600 rifle.
OUR FILE: Mr. John Ralston
3026 Larknolls
Houston, Texas 77018

$68 29

49-18346-001

(713) -686-3400 Houston, Texas

11-14-78

Ms. Fran Cotton
Clifton Holmes Law Firm
Kilgore, Tex

Their client, R. R. Tucker called here Nov. 1 re his 30/30 cal. 270 which fired with safety on & blew hole in carpet. Took it to Tony's who said he could not fix it.

Looks good for hunting end of this month.

Would like to call C. F. A. at Irvin & make arrangements & have you repaired.

(Pg 1) P.J.

11-14-78

Call received from:
Paul Gustafson
Lou's Sport Shop
717 10th Ave
Menomonie, Wisc. 54858

Sold this customer,
David Beal
Rt 1 - Box 260 A
Porterfield, Wisc.
a used M/760 Carbine, cal. 30-06 (He fired 4 shots in it the day before he sold it & it was O.K.) Mr. Beal changed the rings on it, took one of our shells (that is all he had) & fired it in woods. To try out — gun blew up — head of shell is still in gun — gun is gutted & receiver spread. Shooter was cut on arm — several stitches. He sold gun to Lou's, who sold him a new gun for $40 more.

Gustafson will return gun to us — no other shells available.

Got Info
11-14-78

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2544578

P. D.

11-14-78

Dewey Godfrey called re:

Newell Baker
610 E. Bonnie
Falfurrias, Tex 78355
512-325-5279

Dealer: McAlaster Lumber Co. (Base)
Falfurrias, Tex
512-325-2571

M/700 17 cal. - H03L D4029 (10/77)

Wholesaler Perry Shankle asked Dewey what he should do with the ammo he has in stock.

Called Baker 4 times - line busy - wanted him to return gun & ammo.

3:30 PM 1/20/78

Personal Injury Rem-1100 Cal 308
S/n 900760

Gun owner K.A. Sandstrom
11630 South East 5th
Bellevue, Wash. 98006
Home phone 206-747-1757
office 206-237-9253

Man injured - M. Jack Keller
7940 122nd Ave. S.E.
Renton, Wash. 98055
Home phone 206-255-8783
office " 206-593-1069

Truck owned by Dick Haynes
206-392-2328

M. Sandstrom's son was unloading gun in truck (4 wheel dr.) pick up. Gun fired when the boy claimed he pushed the safe forward - M. Sandstrom claims he boy not seen any adults in pasture or TV or R Mark prior to accident

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

11/30/78

Wayland Shubb
113A Mountain Lake Rd
Lynchburg, Va 24505
804-239-0138
Mod 700 BDL 30/06

Father-Son
Gun purchased at K mart.
Gun purchased at J.C. Penny.

Gun Fired on closing day out man windshield & dash. No personal injury reported. Will ship gun & Boatwright ammo if he can find box

Art Lw.
4

4/8/15

1 — M/700 — 24" Barr.

Russ Heaney
Washington N.C.
919-946-4988

Need by when Barb's return
Jones Track.

STLR
AP3645 1-78

4 —

AIDIR

777700 - DDL - A6353770

Robert O'Neal Jr
421
Bath NC.
27505

S Zeb Sanchez
2545 APT.
Green Cove
Springs

600 - A-6425768
A-6425744

11/1
B.W. Cordell - 15712 Tee Pr. Quinlan
700-210 67600 ST Mfg. 67152
Ref. Line, Cook & Kelly
402 - 330 - 1726

Call 1/9/75

1- M/700

Fired when left Dallas

Bought in 1971

Lee Harvey Oswald

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

SPEED MESSAGE

TO REMINGTON ARMS COMPANY
Arms Service Division
Ilion
New York 13357

Attn: Jim Stekl

FROM Snappy ServiSenter

1400 HIWAY 2 EAST — PHONE 406-257-7525

KALISPELL, MONTANA 59901

SUBJECT Warranty Repair of Remington Model 600, serial # 71789

DATE November 19, 1979

Dear Mr. Stekl:

Please find enclosed subject firearm which I am returning for my customer, Mr. Michael [redacted] OF Kalispell, Montana. Mr. Harvey returned this firearm to me recently, and asked that I return the firearm to you for inspection and repair of the hammer, sear, and safety assembly. Mr. Harvey feels that this firearm is one of those to which the Model 600 recall applies. I have confirmed this.

Mr. Harvey had a bad experience with this firearm, when it accidently discharged as he was unloading the rifle. I have enclosed a note from Mr. Harvey.

Please repair this firearm under warranty, thoroughly function check and test fire, and return at your very earliest convenience to us at the above address.

Thankyou for your attention to this matter.

Sincerely,

W. J. LUPTON

SIGNED

Carbonless "SNAP-A-WAY" FORM 44-900 2-PARTS
WILSON JONES COMPANY © 1981 PRINTED IN U.S.A.

1074

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Kalispell, Mont.
Nov. 3, 1979.

Remington Arms Co.

Dear Sirs:

This gun discharged accidentally in the process of unloading. The bolt was open and the shell showing when it discharged, the butt coming back and hitting me in the face, also powder burns on the face. Haven't felt safe with this gun since.

Sincerely
Michael Garney
3005 Foothills Rd.
Kalispell, Mont. 59901

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

RD-6542-1 Rev. 2-15-61

P.I. YES GUN EXAMINATION REPORT NUMBER: 186 MODEL: 600

GENERAL CONDITION: FAIR R #: 3161

OUTSIDE WORK: RECUT O.D. + SLING STRAP DATE: 11-29-79

STUDS ADDED - stock refinished outside FROM: SIMMS HARDWARE CO.

FIRED AMMO TYPE: NOT KNOWN Remington 2801-J-37 SACRAMENTO CA.

& CONDITION: GUN #: 73633

PROOF: REP INSP.: M TEST: 114 CODE: BP 1-67

HEADING: OK GA./CAL.: 30T

BREECH OPENING: OK CHECKED BY: M-HARDY

RECOIL SHOULDERS: OK APPROVED: GDH 12/21/79

CHAMBER: OK APPROVED: [illegible]

TEST: APPROVED: C.J.B. 12-21-79

COMPONENT CONDITION: (Damaged, Broken, Old Style) APPROVED: [illegible] 12-21-79

BRIGHT METAL ON REC. & BBL. WAW 12-21-79 [illegible] 12/21/79

RE FINISHED TRIGGER GUARD AND ALL

4½ LB TRIG PULL

COMPLAINT: FIRED WHEN UNLOADING

INCIDENT:

COMMENTS: passed Trick test. Trigger Pull 4½ #

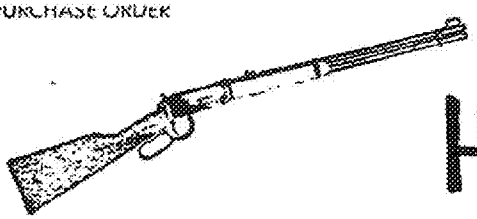
Gun involved in recall program.

Replace fire control, under recall program

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2543244

PURCHASE ORDER



SIMMS HARDWARE CO.

RT: 2553
2244

2801 J STREET
(916) 442-3894
SACRAMENTO, CALIF. 95816

TO Rem. Arms ATTN: James Stekl DATE 11-19 19 79

ADDRESS Service Dept WHEN SHIP ASAP

CITY Ilion New York 13357 HOW SHIP B/U

QUANTITY	PLEASE SUPPLY ITEMS LISTED BELOW	PRICE	UNIT
1	Subject 600 308 Win.		
2	S/N # 73633		
3	Safety Check.		
4			
5			
6	MR. Stekl,		
7	This is the Rifle I Talked		
8	With You About, The same date		
9	The customer brought This one		
10	in And asked if This gun was on		
11	A Recall. I checked the S/N and told		
12	Him it was. He Then Told me That the		
13	Rifle had gone off when His son		
14	was unloading it in The Car Port. He		
15	Claims That when it ~~fell~~ went off The		
16	bullet went Through a Laundry Room		
17	Causing about $250.00 worth of damages.		
18	Customer is:		
19	MR. George McCauley		
20	4554 Amberley Way		
21	Sac., Calif. 95821		
22			
23	THANK You,		
24	Rich		
25			

PLEASE SEND COPIES OF YOUR INVOICE WITH ORIGINAL BILL OF LADING

PURCHASING AGENT

PLEASE PUT PURCHASE ORDER NUMBER ON ALL PACKAGES

MOORE BUSINESS FORMS, INC. 44

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

DON'T SAY IT -- WRITE IT

To _____ Date _____

From _____

MODEL	CALB.	R-NO.	PICK UP NO.	SER. NO	DATE
600	308	31610	186	73633	12-6-79

RIFLE PASSED ON TRICK TEST AND SCREW DRIVER TEST. 4½ LB TRIG PULL, TRIG CLEAR OF TRIG GUARD WHEN RECEIVED.
RIFLE APEARS TO BE UP TO REM SPEC.
OLD STYLE FIRE CONTROL
NO. PI MARKER ON WORK ORDER. LETTER STATES THAT IT IS. Marshall Hall

SAFETY IS A WISE INVESTMENT

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON
R2543246
BARBER - 1.30.130001242

BARBER - 1.30.130001242

Snapply Servicenter
(Michael Harris)

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

RECEIVED

FEB 1 1980

Ilion, New York
January 17, 1980

TO: J. A. STEKL
~~J. H. GHISNALL~~
BRIDGEPORT, CONN.

FROM: D. J. SANITA

Model 600 Remington Rifle 71789
Repair Order R 31624-600

Dear Jack:

We have completed our examination of the above Model 600, which was returned to us by Snapply ServiSenter.

For completion of your files, we are attaching the gun examination report and customer's correspondence.

There were no pictures taken of the gun.

Due to the customer's reference to a personal injury, we will hold the above and await your reply as to its disposition.

Best Regards,

D. J. Sanita

D.J.Sanita:tc
attach.

Supervisor, Arms Service Division

Remington Arms Company
870 Remington Dr.
P.O. Box 700
Madison, NC 27025-0700
(800) 243-9700

10-28-2010

Dear Remington Customer Service,

This is a follow up to an email which I sent to Remington Customer Service on 10-18-10. You have not acknowledged my email or responded to it in any way. Please let me know when you get this letter as this is an extremely important safety matter having to do with my recently purchased Remington 700P .308 rifle. You can contact me either via regular mail or Oli_Lama@Comcast.net.

Fortunately I was practicing with snap caps rather than real bullets when I discovered that my Remington 700P can fire when the trigger isn't pulled. After experiencing this problem with the safety a number of times I spent some time on the internet and found the links below to information on thousands of other people having their Remington 700's fire when the safety is moved from on to off.

I've only had my Remington 700P for three months—which means it's still under warranty. It was purchased July 29th, 2010 at a local gun shop I have had wonderful dealings with for many years. I did not pick this gun up as a used gun at a gun swap. It's a new gun and has not been altered in any way. The gun shop I purchased my Remington 700P from is:

NOV 04 2010
Received Date:
CSR: Foster
Response Date:
Reviewed By:

Cascade Arms 3959 Martin Way E, #C
Olympia, WA 98506
(360) 451-1039

Date of purchase: 7-29-2010

Serial Number: G6976960. Bolt action Remington 700P center fire rifle. 26" barrel. .308 win.

I have had nothing but the most professional service from Cascade Arms for many years and in no way hold them responsible for the problem I am having with my Remington 700P.

I'm sure Remington will deal with this situation promptly, and I have the utmost respect for Remington firearms--as did my father.

You will find the links I found on the internet concerning the problem I have had with my own recently purchased Remington 700P immediately below.

http://www.drinnonlaw.com/Texas-Defective-Remington700.php

http://tvbythenumbers.com/2010/10/11/cnbc-presents-"remington-under-fire-a-cnbc-investigation"/67474

http://www.tacticaladv.com/showthread.php?1471-Remington-700-recall-notice

http://www.cbsnews.com/stories/2001/07/17/eveningnews/main301947.shtml

Respectfully,

Dr. Oliver Newsome, Owner
Oli Lana Film Productions
1291 Bay Loop SW
Olympia, WA 8512 98512
(360) 451-1039

CC

U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814
(301) 504-0025

Consumer Protection
Washington State Office of the Attorney General
800 5th Ave, Suite 2000
Seattle, Wa 98104-3188

Federal Trade Commission
600 Pennsylvania Avenue
NW Washington DC 20580
(202) 326-2222

Cascade Arms 3959 Martin Way E, #C
Olympia, WA 98506
(360) 451-1039

5093

5217
325 RP

Allison & Carey
17311 SE Stark
Portland, OR 97233
(503) 256-5166

ALLISON

P

Serial G6976960
Model: 700

RE00211509

11-10-2010

Dear Allison & Carey,

Remington Arms referred me to your establishment as the closest Authorized Service Center to my home in Olympia, Washington. And they were gracious enough to send a mailing label to ship my Remington 700P to you at their expense. My recently purchased Remington 700P is still under warranty.

After a speaking with Remington Arms directly, it was clear that the solution to the problem I'm having with my Remington 700P is replacement of the original trigger and safety assembly (the "Walker tigger") with the newer X-Mark Pro trigger and safety assembly.

Fortunately I was practicing with snap caps rather than real bullets when I discovered that my Remington 700P can fire when the trigger isn't pulled. The firing pin doesn't strike every time the safety is moved from on to off (in fact, most of the time that doesn't happen), but a firing pin should never strike when the trigger isn't pulled.

My Remington was purchased July 29th, 2010 at a local gun shop I have had wonderful dealings with for many years. I did not pick this gun up as a used gun at a gun swap. It's a new gun and has not been altered in any way. No adjustments whatsoever were made to the trigger. The gun shop I purchased my Remington 700P from is:

Cascade Arms 3959 Martin Way E, #C
Olympia, WA 98506
(360) 451-1039

Date of purchase: 7-29-2010. Serial Number: G6976960.

I'm sure Remington will deal with this situation promptly, and I have the utmost respect for Remington firearms--as did my father.

Respectfully,

Dr. Oliver Newsome, Owner
Oli Lama Film Productions
1291 Bay Loop SW
Olympia, WA 98512
(360) 451-1039

Install X-Mark Pro trigger as requested. Under Warranty.

Fred 11/29/10

ALLISON & CAREY GUN SHOP, LLC.
17311 S.E. Stark
Portland, Oregon 97233
(503) 256-5166

Remington Arms Co., Inc.
Product Service
Legal Case #:5217

Case Information

RE#	Date Opened	Date Opened(PS)	Date Closed	Incident Date	Pre Lit	Lit	Obsolete
211509	11/24/2010	11/29/2010	12/6/2010				

Customer Information

Type	Business	First Name	Last Name	Street	City	State	Zip	Age	Contact
Reporter	Allison & Carey	---	Allison & Carey	17311 SE Stark	Portland	OR	97233		W 503-256-5166
Incident		Oliver	Newsome	129 Bay Loop SW	Olympia	WA	98512		H 360-451-1039

Incident Information

Claims	Codes	Repair Est.	Medical Treatment	Medical Status
PI				
PD	Cause:4038 Could Not Duplicate Concern		Unknown	
S Fired when safety was moved	Concern:1007 Fired on Safe Release			
C				

We will do as requested under warranty even though we could not duplicate the concern. fls

Firearm Information

Mfg.	Type	Model/Ga.	SKU	Serial	Bbl.	DOM
Remington	CF/BA	700/308 WIN	25709	G6976960	LE	6/16/2010 7:55:37 AM
Date Purchased	**Where Purchased**	**Accessories**	**Original Owner**			
7/29/2010	ACUSPORT (OH) CORP (WL)	two-piece scope base	Y			

Ammunition Information - None Defined

Other Products Information - None Defined

Settlement

Remington/700/CF/BA

Settlement	Release of Claims	Release Date	Reimbursement	Cash Settlement	Reim. Date APV	Cash Date APV
Replace TA under warranty						

Repair/Replacement Cost	Repair/Replacement Date
$52.52	12/6/2010

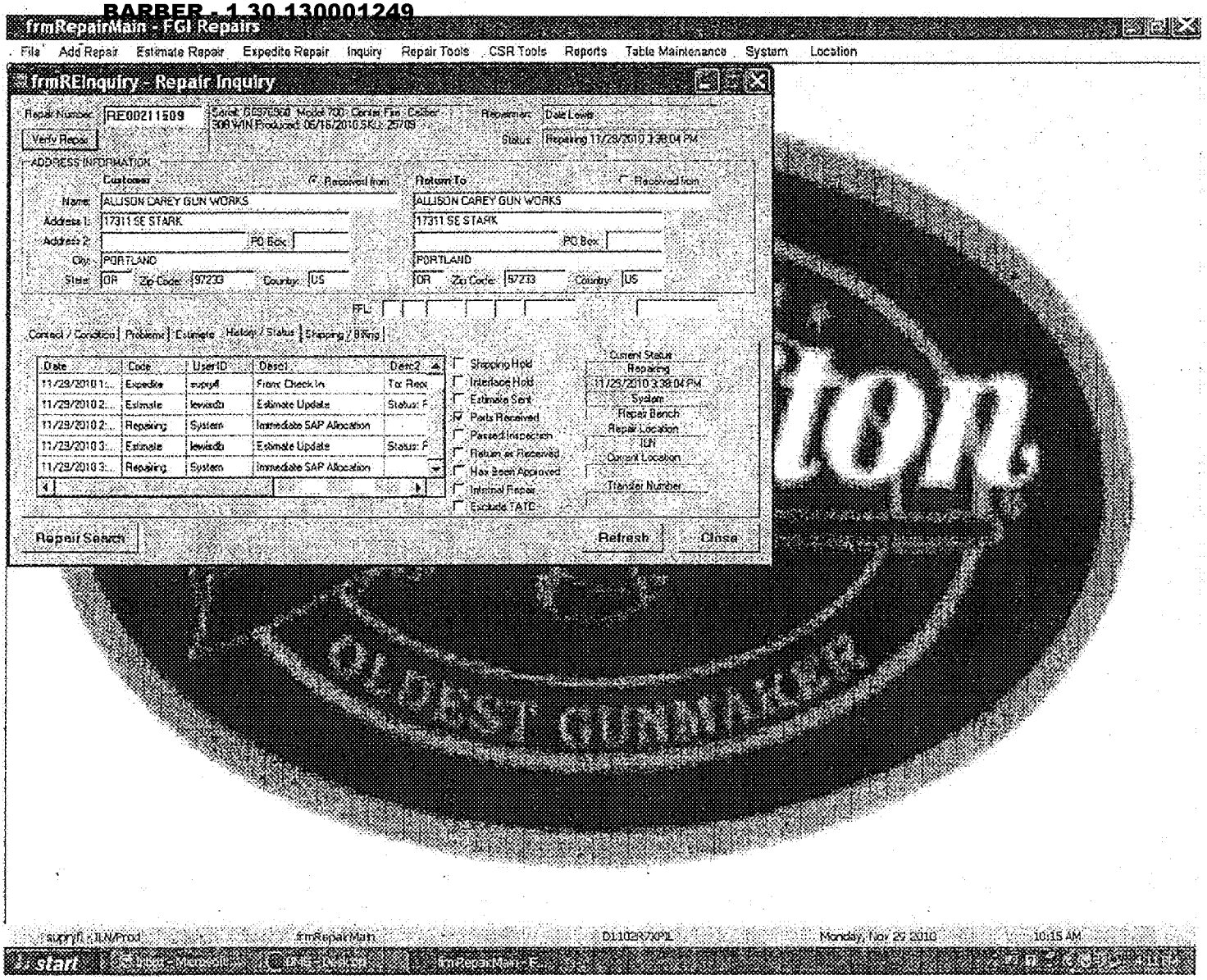
12/6/10: Per Fred S. - Could not duplicate concern. Install x-mark pro trigger as requested by customer under warranty. df

Examination[Remington/CF/BA]

Part	Sub-Part	Code	Comment
Examination	Examiner		supry
	Exam Date		11/29/2010
	Product Type		RF
	Action Type		A
	Assigned To		Supry
Cause	4038	Could Not Duplicate Concern	Could not get the rifle to fire unless the safety was off and the trigger pulled.
Barrel	Description		M/700 26" HB 308
	Date Code		PE
	Bore Plugged	False	
	Bulged	False	
	Fired	False	
	Fired while Obstructed		
	Muzzle/Crown		

	Condition	Like new; Functioning	
Bolt	Firing Pin	Like new; Functioning	
	Shroud	Like new; Functioning	
	Face	Like new; Functioning	
	Handle	Like new; Functioning	
	Stop	Like new; Functioning	some oil visible from possible over oiling
Extractor	Condition	Like new; Functioning	
	Cut Condition	Like new; Functioning	
	Ext/Eject Test	True	
Locking	Block Condition	---Select---	
	Lug Condition	Like new; Functioning	
	Notch Condition	---Select---	
Magazine	Condition	---Select---	
	Box Condition	Like new; Functioning	
Overall	Exterior Condition	Like new; Functioning	
	Stock Condition	Like new; Functioning	
	Fore End Condition	---Select---	
Receiver	Condition	Like new; Functioning	
	Bulged	False	
Safety	Description		Model 700 - 40X trigger system
	Function	Like new; Functioning	
	Sub-Assembly	Non-ISS	
Sear	Lift	---Select---	not measured
	Notch	Like new; Functioning	
Trigger		Condition	Like new; Functioning
Pull		---Select---	3.25 lbs
Altered		False	
Sub-Assembly		Other Remington	

BARBER - 1.30.130001249



RECEIVED
NOV 2010
BY:

PUBLIC JUSTICE, P.C.
AMERICA'S PUBLIC INTEREST LAW FIRM

March 16, 2011

VIA EMAIL & U.S. MAIL

Dale G. Wills
Swanson, Martin & Bell, LLP
330 North Wabash Ave., Ste. 3300
Chicago, IL 60611
dwills@smbtrials.com
(312) 923-8266

Re: Document Subpoena to Richard Barber in *Stanley v. Remington Arms Co., Inc.*, W.D. La. No. 1:10-CV-01719-DDD-JDK

Dear Mr. Wills.

Public Justice has been retained by Richard Barber to represent him in connection with the subpoena issued from the U.S. District Court for the District of Montana and served by you on Mr. Barber, seeking production of documents in relation to litigation in the above case. By your previous agreement with our cooperating counsel Rick Ramler, the time for serving objections to the subpoena was extended to March 16, 2011. This letter constitutes Mr. Barber's written objections, pursuant to Fed. R. of Civ. P. 45(c)(2)(B), to production of the documents designated in the Rider to the subpoena.

Mr. Barber objects to the subpoena on the following grounds, which are applicable to each of the five numbered document requests in the Rider:

1. The information sought from Mr. Barber is not relevant to the *Stanley* litigation and is not reasonably calculated to lead to the discovery of admissible evidence. Fed. R. Civ. P. 26(b)(1). It is therefore outside the proper scope of discovery. Remington asks Mr. Barber to produce "all documents and records" that the company *itself* has "created or maintained," which relate to an entire category of products Remington *itself* manufactures.[1] These are documents that, by definition, Remington already possesses. Obviously, Remington does not need to rummage through Mr. Barber's files in order to "discover" its own documents. The only conceivable purposes of Remington's subpoena, then, would be to enable the company to identify which Remington documents and communications Mr. Barber has in his archive, or to harass Mr. Barber in an attempt to chill his advocacy efforts. To begin, no disputed fact in the *Stanley* matter will be resolved by determining what documents Mr. Barber, a stranger to that case, has or does not have. However, such knowledge can help Remington subvert the discovery process in the *Stanley* case. If Remington determines that

[1] "Remington" is used herein to refer to both Remington Arms Company, Inc., and Sporting Goods Properties, Inc.

NATIONAL HEADQUARTERS
1825 K Street NW, Suite 200
Washington, DC 20006
202.797.8600 FAX 202.232.7203

WEST COAST OFFICE
555 Twelfth Street, Suite 1620
Oakland, CA 94607-3614
510.622.8150 FAX 510.622.8155

www.pjus

Mr. Barber has certain documents, it will know that it cannot deny such documents exist when responding to discovery requests in *Stanley*. Likewise, if Remington determines that Mr. Barber does not possess certain documents, the company will know that it is free to withhold documents that are responsive to discovery requests from the *Stanley* plaintiffs without fear of court sanctions.

Moreover, the timing of the subpoena suggests that its primary purpose is to harass Mr. Barber in an attempt to chill the increased publicity surrounding his efforts to educate the public about the fire control defects. Courts are loathe to enforce discovery requests that are imposed not to gain access to relevant information but to achieve other improper purposes. *See* Rule 26(g)(1)(B)(ii). It is no secret that Mr. Barber has actively campaigned to educate the public about the Remington fire control defects that caused his son's death, and that he has been an outspoken advocate against Remington's efforts to hide the truth about that fire control. Most recently, in October 2010, Mr. Barber was interviewed for a nationally-broadcast CNBC special investigation, "Remington Under Fire." Given that Remington representatives have known of Mr. Barber's interest in gathering documents about its rifle's fire control for several years, the fact that Remington has chosen to serve its subpoena now strongly suggests that its primary goal is to harass Mr. Barber into silence. In short, to the extent that the subpoena is an attempt to thwart the discovery process, to silence or harass Mr. Barber, or to distract Mr. Barber from his efforts to educate the public, it is unrelated to the *Stanley* litigation and is manifestly improper.

2. Even if the information requested were somehow relevant to the *Stanley* litigation, compliance with the subpoena would unavoidably subject Mr. Barber—a non-party who has already incurred a significant burden in retaining counsel to object to the subpoena—to an extreme and unreasonable burden. It would not be possible for Mr. Barber to identify which documents would be responsive to the subpoena without conducting a page-by-page search of his entire research archive. That archive—which Mr. Barber has compiled through his own efforts and at his own expense over the past decade—contains millions of pages and fills literally hundreds of banker's boxes. The documents in Mr. Barber's archive are not limited to Remington bolt-action centerfire rifles or even to Remington products. Nor are they organized in a way that would enable Mr. Barber to determine which of those millions of pages might be responsive to the subpoena in any other way than by conducting a page-by-page review. This would be a Herculean task requiring thousands of hours over many months. Furthermore, because of the immense size of Mr. Barber's archive, it would not be practical to physically move all or part of the archive from the location at which it is housed.

The burden on Mr. Barber would be particularly oppressive given that he is not a party to the *Stanley* case and has no interest in its outcome. Courts have consistently held that a person's status as a non-party is a significant factor in determining whether a subpoena imposes an undue burden. Moreover, this extreme and unreasonable burden on Mr. Barber would not be justified by any genuine need Remington could have for these documents or communications. Under Fed. R. Civ. P. 26(b)(2), discovery must be limited if the burden of the proposed discovery outweighs its likely benefit, considering the needs of the case, the parties' resources, the importance of the issues at stake in the action, and the importance of the discovery in resolving

the issues. *See also* Fed. R. Civ. P. 45(c)(3)(iv) (courts must quash subpoenas that would subject a person to an undue burden). Here, given Remington's resources and its ability to obtain whatever documents it wants through other means, and given the fact that most of the requested documents were generated by and are within the possession of Remington itself, the subpoena is plainly unreasonable. Mr. Barber should not be required to spend the countless hours it would require for him to search through his archive to find copies to produce to the very manufacturer that created the documents, and which presumably has possession of the originals. The subpoena would subject a non-party to an unjustifiable burden for no legitimate purpose, and is therefore improper under Fed. R. Civ. P. 45(c)(1).

3. Under Fed. R. Civ. P. 26(b)(2), discovery must be limited if the information sought is reasonably obtainable from some other source that is less burdensome. Here, the subpoena seeks information that is readily obtainable from other sources, including Remington itself. Remington, a large, powerful corporation, cannot credibly claim that it has no other means of obtaining *its own records and documents* than to require Mr. Barber, an individual, to comb through his archive. Likewise, Remington has had ample opportunity to obtain communications with *its own employees* and documents related to experts in cases where *it was a party* directly from those witnesses; after all, the company was represented at previous depositions of those same witnesses and employees. Thus, to obtain the documents it seeks, Remington representatives need only review the company's own files or, to the extent it has not already done so, depose its own current or former employees between now and when discovery must be completed in February 2012. *Stanley* Plan of Work, Dkt. No. 25, at 2. Moreover, Remington cannot justify its subpoena on grounds that it needs access to Mr. Barber's archive in order to prepare for trial. After all, any documents on which the *Stanley* plaintiffs intend to rely must be disclosed to Remington pursuant Fed. R. Civ. P. 26(a)(3)(A)(iii). Remington simply has no need to obtain these materials from Mr. Barber.

4. The subpoena is also improper because Mr. Barber has a First Amendment privilege against compelled disclosure of the documents and information Remington seeks. Since 2001, Mr. Barber has played a crucial role in disseminating information to the public about Remington's fire control defects and, most recently, was an instrumental resource for CNBC's 2010 investigative special, "Remington Under Fire." It is well established that individuals like Mr. Barber who collect a body of data, documents, interviews, or other materials for the purpose of disseminating information to the public have a First Amendment privilege against compelled disclosure of their collection or sources. This privilege protects against unnecessary intrusion into the newsgathering process, and applies equally to journalists and non-journalists alike, regardless of whether the materials collected have been kept confidential. The only way Remington could overcome this privilege would be to show that the requested material is unavailable despite exhaustion of all reasonable alternative sources, is noncumulative, and is clearly relevant to an important issue in the underlying dispute. As explained above, Remington cannot make this showing. Remington plainly has not exhausted all alternative sources of the information it seeks, especially given the fact that discovery in *Stanley* will proceed for at least another year. *Stanley* Plan of Work, Dkt. No. 25, at 2. Moreover, to the extent Remington seeks information that it already has in its possession from other lawsuits or that originated from

Remington itself, Remington will be hard-pressed to argue that obtaining the contents of Mr. Barber's collection would be noncumulative. Finally, as explained above, the information sought from Mr. Barber is simply not relevant to the *Stanley* litigation.

The First Amendment also affords Mr. Barber two related privileges against compelled disclosure of his archive, the first of which applies to Mr. Barber in his capacity as a researcher who gathers data to compile, analyze, and report significant findings to relevant industries, which is similar to the newsgatherer's privilege described above. Second, compliance with the subpoena would infringe and burden Mr. Barber's First Amendment right to petition the government insofar as the documents requested are specifically targeted at compelling the production of information concerning Mr. Barber's participation with other persons and groups in activities aimed at promoting legal reform and protection of the rights of citizens and consumers. For all of these reasons, the First Amendment provides Mr. Barber with a privilege against the compelled disclosure of the contents of his archive.

5. Montana's "Media Confidentiality Act," Mont. Code § 26-1-902, additionally protects Mr. Barber from compelled disclosure of the information Remington seeks in its subpoena. As explained above, Mr. Barber's newsgathering efforts have been pivotal in attracting the attention of both the public and the press to the fire control defects in Remington's rifles. Accordingly, the Media Confidentiality Act provides that Mr. Barber may not be examined or compelled to disclose *any* information obtained or prepared in the course of his newsgathering efforts.

6. The subpoena is blatantly overbroad. It purports to require Mr. Barber to produce "all" documents "related to" a vast category of products that Remington and other arms manufacturers have manufactured over at least half a century. Moreover, the subpoena seeks materials without regard to when they were created or even whether they are within Mr. Barber's possession or control. Courts do not enforce requests for documents that are so sweeping they constitute a fishing expedition.

7. Finally, Mr. Barber also objects to Remington's subpoena to the extent that it calls for the production of documents and communications that: (i) are protected from disclosure under the attorney-client privilege; (ii) are protected from disclosure under the work-product doctrine; (iii) were prepared in anticipation of litigation; (iv) disclose the mental impressions, conclusions, or legal theories of Mr. Barber's attorney(s); (v) would violate Mr. Barber's and/or others' right of privacy; or (vi) are otherwise privileged or exempt from discovery. Although the subpoena does not request that a privilege log be provided, it would nevertheless be unduly burdensome to require Mr. Barber and his counsel to review the vast universe of documents potentially responsive to the subpoena and create a privilege log for all protected materials within any reasonable time period. Where, as here, a subpoena is so broad that providing full information regarding privilege or work product protection claims would be extremely burdensome, the responding party is entitled to object to the subpoena pursuant to Rule 45(c)(2) without providing a privilege log. Fed. R. Civ. P. 45 advisory committee's notes (1991 Amendments, Subdivision (d)).

In addition to the foregoing objections, Mr. Barber specifically objects to the following aspects of the particular document categories requested.

Objections to production of specific categories of documents:

1. Request No. 1: "All documents and records (including copies thereof) created or maintained by Remington Arms Company, Inc. ('Remington') and/or Sporting Goods Properties, Inc. ('SGPI') which relate to bolt-action centerfire rifles manufactured by Remington or SGPI."

Mr. Barber objects to this request on the grounds stated in paragraphs 1 through 7 above. In particular, the request is overbroad; it imposes an undue burden on Mr. Barber; it seeks information not relevant to the *Stanley* litigation; it seeks materials obtainable from other sources; and it seeks materials that are protected and/or privileged under the First Amendment, Montana law, and/or federal law. Remington's request that Mr. Barber produce "[a]ll" documents "related to" a vast category of products that Remington has manufactured would impose an enormous burden on Mr. Barber to conduct a page-by-page review of his archive of millions of pages of documents, which is especially improper given that Mr. Barber is not a party to the underlying litigation. Moreover, the subpoena purports to require Mr. Barber to produce materials "created or maintained by Remington" itself, which Remington can obtain from other sources (namely, itself). Given that this request would only lead to production of materials that Remington already possesses, the information sought—identification of which materials Mr. Barber has and does not have—cannot be said to be reasonably calculated to lead to admissible evidence in the *Stanley* litigation. Finally, the request is improper because it seeks materials from Mr. Barber that are protected by Mr. Barber's First Amendment privilege against compelled disclosure of information gathered for the purposes of public dissemination, research, and/or to petition the government, and likewise requests privileged information under Montana and federal law.

2. Request No. 2: "All documents, communications, letters and correspondence, including e-mails and audio recordings, to or from Richard Barber and any past or present employees of Remington or SGPI, including, but not limited to, Merle ('Mike') Walker, which relate to bolt-action centerfire rifles manufactured by Remington or SGPI."

Mr. Barber objects to this request on the grounds stated in paragraphs 1 through 7 above. In particular, the request is overbroad; it imposes an undue burden on Mr. Barber; it seeks information not relevant to the *Stanley* litigation; it seeks materials obtainable from other sources; and it seeks materials that are protected and/or privileged under the First Amendment, Montana law, and/or federal law. Remington's request that Mr. Barber produce "[a]ll" correspondence to or from "any past or present employee[] of Remington" would impose an enormous burden on Mr. Barber to conduct a page-by-page review of his archive of millions of pages of documents, which is especially improper given that Mr. Barber is not a party to the underlying litigation. Moreover, the request purports to require Mr. Barber to produce correspondence to and from individuals whom Remington either has already deposed in prior

lawsuits, or whom it will have the opportunity to depose over the course of the next year as discovery in the *Stanley* litigation progresses. This request would further require Mr. Barber to redact all portions of his correspondence with Remington employees that are not "relate[d] to" the broad category of Remington products listed, which would be virtually impossible to complete given the volume of materials Mr. Barber has collected. Additionally, given that this request would only lead to production of materials that Remington can obtain through the depositions of its own past and present employees, the information sought cannot be said to be reasonably calculated to lead to admissible evidence in the *Stanley* litigation. Finally, the request is improper because it seeks materials from Mr. Barber that are protected by Mr. Barber's First Amendment privilege against compelled disclosure of information gathered for the purposes of public dissemination, research, and/or to associate with others to petition the government, and likewise requests privileged information under Montana and federal law.

3. Request No. 3: "All documents, communications, letters, and correspondence, including e-mails and audio recordings, to or from Richard Barber and any witness in any past or present lawsuit against Remington or SGPI involving alleged accidental discharges of Remington bolt-action centerfire rifles."

Mr. Barber objects to this request on the grounds stated in paragraphs 1 through 7 above. In particular, the request is overbroad; it imposes an undue burden on Mr. Barber; it seeks information not relevant to the *Stanley* litigation; it seeks materials obtainable from other sources; and it seeks materials that are protected and/or privileged under the First Amendment, Montana law, and/or federal law. Remington's request that Mr. Barber produce "[a]ll" correspondence to or from "any witness in any past or present lawsuit against Remington" would impose an enormous burden on Mr. Barber to conduct a page-by-page review of his archive of millions of pages of documents, which is especially improper given that Mr. Barber is not a party to the underlying litigation. Moreover, the request purports to require Mr. Barber to produce correspondence to and from individuals whom Remington either has already deposed in prior lawsuits, or whom it will have the opportunity to depose over the course of the next year as discovery in the *Stanley* litigation progresses. As such, the material sought is obtainable from other sources, and need not be produced by Mr. Barber here. Additionally, as was the case with Remington's Request No. 2 above, this request is improper because it would require Mr. Barber to redact all portions of his correspondence with "any witness" that are not "relate[d] to" the broad category of Remington products listed, which would be a virtually impossible task given the volume of materials Mr. Barber has collected. Furthermore, given that this request would only lead to production of materials that Remington already possesses or can obtain through its own efforts, the information sought cannot be said to be relevant to the *Stanley* litigation. Finally, the request is improper because it seeks materials from Mr. Barber that are protected by Mr. Barber's First Amendment privilege against compelled disclosure of information gathered for the purposes of public dissemination, research, and/or to associate with others to petition the government, and likewise requests privileged information under Montana and federal law, which includes, but is not limited to, attorney-client privilege and work-product doctrine.

4. Request No. 4: "All documents, communications, letters, and correspondence, including e-mails and audio recordings, to or from Richard Barber and any expert witness, including, but not limited to, Henry Jackson Belk, Jr. and/or John T. Butters which relate to bolt-action centerfire rifles, including, but is not limited to, those manufactured by Remington or SGPI."

Mr. Barber objects to this request on the grounds stated in paragraphs 1 through 7 above. In particular, the request is overbroad; it imposes an undue burden on Mr. Barber; it seeks information not relevant to the *Stanley* litigation; it seeks materials obtainable from other sources; and it seeks materials that are protected and/or privileged under the First Amendment, Montana law, and/or federal law. Remington's request that Mr. Barber produce "[a]ll" correspondence to or from "any expert witness" would impose an enormous burden on Mr. Barber to conduct a page-by-page review of his archive of millions of pages of documents, which is especially improper given that Mr. Barber is not a party to the underlying litigation. Moreover, the request purports to require Mr. Barber to produce correspondence to and from individuals whom Remington either has already deposed itself in prior lawsuits, or whom it will have the opportunity to depose over the course of the next year as discovery in the *Stanley* litigation progresses. As such, the material sought is obtainable from other sources, and need not be produced by Mr. Barber here. Additionally, as was the case with Remington's Requests No. 2 and No. 3 above, this request is improper because it would require Mr. Barber to redact all portions of his correspondence with "any expert witness" that are not "relate[d] to" the broad category of Remington products listed, which would be a virtually impossible task given the volume of materials Mr. Barber has collected. Furthermore, given that this request would only lead to production of materials that Remington already possesses or can obtain through its own efforts, the information sought cannot be said to be relevant to the *Stanley* litigation. Finally, the request is improper because it seeks materials from Mr. Barber that are protected by Mr. Barber's First Amendment privilege against compelled disclosure of information gathered for the purposes of public dissemination, research, and/or to associate with others to petition the government, and likewise requests privileged information under Montana and federal law, which includes, but is not limited to, attorney-client privilege and work-product doctrine.

5. Request No. 5: "All documents, communications, letters, and correspondence, including e-mails and audio recordings, to or from Richard Barber and any person which relate to any of the following: (a) alleged accidental discharges of Remington bolt-action centerfire rifles; (b) claims or lawsuits against Remington or SGPI involving alleged accidental discharges of Remington bolt-action centerfire rifles; and (c) design or manufacturer of bolt-action centerfire rifles manufactured by Remington or SGPI."

Mr. Barber objects to this request on the grounds stated in paragraphs 1 through 7 above. In particular, the request is overbroad; it imposes an undue burden on Mr. Barber; it seeks information not relevant to the *Stanley* litigation; it seeks materials obtainable from other sources; and it seeks materials that are protected and/or privileged under the First Amendment, Montana law, and/or federal law. Remington's request that Mr. Barber produce "[a]ll" correspondence to or from "any person" about a wide variety of Remington products would

impose an enormous burden on Mr. Barber to conduct a page-by-page review of his archive of millions of pages of documents, which is especially improper given that Mr. Barber is not a party to the underlying litigation. Moreover, the request purports to require Mr. Barber to produce correspondence to and from individuals whom Remington either has already deposed itself in prior lawsuits, or whom it will have the opportunity to depose over the course of the next year as discovery in the *Stanley* litigation progresses. As such, the material sought is obtainable from other sources, and need not be produced by Mr. Barber here. Additionally, as was the case with Remington's Requests No. 2, 3, and 4 above, this request is improper because it would require Mr. Barber to redact all portions of his correspondence with "any person" that are not "relate[d] to" the categories of items listed, which would be a virtually impossible task given the volume of materials Mr. Barber has collected. Furthermore, given that this request would only lead to production of materials that Remington already possesses or can obtain through its own efforts, the information sought cannot be said to be relevant to the *Stanley* litigation. Finally, the request is improper because it seeks materials from Mr. Barber that are protected by Mr. Barber's First Amendment privilege against compelled disclosure of information gathered for the purposes of public dissemination, research, and/or to associate with others to petition the government, and likewise requests privileged information under Montana and federal law, which includes, but is not limited to, attorney-client privilege and work-product doctrine.

In light of the forgoing objections, Mr. Barber will not produce any documents in response to the subpoena unless he is compelled by a court to do so. *See* Fed. R. Civ. P. 45(c)(2)(B). Please feel free to contact me if you have any questions about Mr. Barber's position or if there are any other issues you would like to discuss.

Sincerely,

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IN THE UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF LOUISIANA
ALEXANDRIA DIVISION

JIM STANLEY INDIVIDUALLY AND DENISE STANLEY, INDIVIDUALLY AND AS NATURAL TUTRIX OF HER DAUGHTER AMANDA LAND, A MINOR,	)	
Plaintiffs,	)	
v.	)	No. 1:10-cv-01719-DDD-JDK
REMINGTON ARMS COMPANY, INC.,	)	
Defendant.	)	

DEFENDANT REMINGTON ARMS COMPANY, INC.'S MEMORANDUM OF LAW IN SUPPORT OF REMINGTON'S RULE 12(b)(6) AND 12(f) MOTION

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BACKGROUND

None of the three counts in Plaintiffs' First Amended Complaint (Doc. 19-1)[1] state a claim upon which relief can be granted. This is a product liability action against Remington Arms Company, Inc. ("Remington"), a firearms manufacturer, arising out of an alleged accidental shooting. The shooting occurred in Louisiana, and plaintiffs are Louisiana residents. Plaintiffs' exclusive remedy, therefore, is under the Louisiana Product Liability Act (the "LPLA"), La. R.S. §§ 9:2800.51-59. Yet, only Count I of the amended complaint is purportedly brought under the LPLA. Even then, however, plaintiffs fail to state a viable claim and impermissibly seek the benefit of the doctrine of *res ipsa loquitor*. Count II is brought by plaintiff Denise Stanley, individually, under LSA-C.C. Art. 2315.6 for damages she allegedly incurred witnessing the incident. The LPLA does not, however, permit damages under Art. 2315.6. Plaintiffs attempt to state a claim for spoliation in Count III, seeking punitive damages. That count, too, fails to state a claim upon which relief can be granted. Accordingly, pursuant to Federal Rule of Civil Procedure 12(b)(6), defendant Remington moves to dismiss the First Amended Complaint in its entirety.

Additionally, Plaintiffs' First Amended Complaint contains numerous paragraphs (13, 15, 31, 34, 51, 82) claiming entitlement to punitive damages and paragraphs (12-17, 20-27, 29-40, 44, 47-51, and 57-58) which are immaterial to any claim under the LPLA. Plaintiffs are not entitled to punitive damages as a matter of law, and all these paragraphs are intended to incite, containing more argument than facts. They are impertinent and scandalous. Accordingly,

---

[1] The amended complaint is attached as Exhibit A.

pursuant to Rule 12 (f), defendant Remington moves to strike these paragraphs contained in the complaint.[2]

I. RULE 12(b)(6) - LAW AND ARGUMENT

To avoid dismissal under Rule 12(b)(6), the factual allegations of a plaintiff's complaint "must be enough to raise a right to relief above the speculative level." *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544, 555 (2007); *Cuvillier v. Taylor*, 503 F.3d 397, 401 (5th Cir. 2007). A plaintiff's obligation to provide the grounds for his entitlement to relief requires more than labels and conclusions. *Twombly*, 550 U.S. at 555. A complaint must contain sufficient factual matter to state a claim to relief that is plausible on its face. *Ashcroft v. Iqbal*, --- U.S. ---, 129 S.Ct. 1937, 1949 (2009). Where a complaint pleads facts that are merely consistent with a defendant's liability, it stops short of the line between possibility and plausibility of entitlement to relief. *Ashcroft*, 129 S.Ct. at 1949.

A. Count I Does Not State a Viable Claim Upon Which Relief Can Be Granted Under the Louisiana Product Liability Act.

The LPLA "establishes the exclusive theories of liability for manufacturers for damage caused by their products," and a plaintiff may not recover from a manufacturer for damage caused by a product on the basis of any theory of liability not set forth in the LPLA. La. R.S. § 9:2800.52; *Jefferson v. Lead Industries Ass'n, Inc.*, 106 F.3d 1245, 1250 (5th Cir. 1997). The LPLA provides that a manufacturer of a product is liable to a claimant for damage "proximately caused by a characteristic of the product that renders the product unreasonably dangerous when such damage arose from a reasonably anticipated use of the product by the claimant or another person or entity." La. R.S. § 9:2800.54(A).

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[2] The motion to strike is brought in the event the Court allows plaintiffs leave to amend so that plaintiffs can tailor their pleading accordingly on their third attempt to craft a complaint.

Thus, a plaintiff must show his damage resulted from a "reasonably anticipated use" of the product. *Carter v Louisville Ladder Group, LLC*, 2005 WL 3088613 at *3 (W.D. La. Nov. 17, 2010). The standard for reasonably anticipated use is objective and made from the manufacturer's standpoint at the time the product was produced. *Id.* at *5. Whether a use was foreseeable is not the question. *Id.* A manufacturer is not responsible for every conceivable foreseeable misuse. *Kampen v American Isuzu*, 119 F.3d 1193, 1198 (5th Cir. 1997). Rather, reasonably anticipated use is more narrow than reasonably foreseeable use and focuses on the manner or method of use. *Id.* at 1197-98.

Plaintiffs do not allege that the use, i.e., the method and manner of use, of the rifle at the time of the shooting was a reasonably anticipated use of the rifle, measured from Remington's standpoint when the subject rifle was produced (which is not alleged, either). Only at paragraph 9 do plaintiffs allege anything about the use of rifle -- that the user was "in the process of stowing" the rifle "into a rifle case." There is no detail provided about how that was being done, other than the obvious conclusion that the user was in the process of "stowing" a *loaded* rifle into the case, suggesting a use that was not reasonably anticipated as a matter of law. This allegation does not meet the requirements established by *Twombley* or the LPLA. In fact, despite a volume of conclusory allegations, plaintiffs do not allege anywhere that the rifle was being put to a "reasonably anticipated use" at the time of the shooting. Thus, for this reason alone, Count I should be dismissed.

In addition, plaintiffs fail to allege sufficient facts to support a claim under the LPLA that the subject rifle was unreasonably dangerous. "A product is unreasonably dangerous if an only if:" (1) it is unreasonably dangerous in construction or composition; (2) it is unreasonably dangerous in design; (3) it is unreasonably dangerous because of inadequate warning; or (4) it is

unreasonably dangerous because of nonconformity to an express warranty. La. R.S. § 9:2800.54(B)(1-4).

"A product is unreasonably dangerous in construction or composition if, at the time the product left its manufacturer's control, the product deviated in a material way from the manufacturer's specifications or performance standards for the product or from otherwise identical products manufactured by the same manufacturer." La. R.S. § 9:2800.55. Plaintiffs do not allege the subject rifle, at the time it left Remington's control, deviated from Remington's specifications, performance standards, or from identical products.

"A product is unreasonably dangerous in design if, at the time the product left its manufacturer's control: (1) There existed an alternative design for the product that was capable of preventing the claimant's damage; and (2) The likelihood that the product's design would cause the claimant's damage and the gravity of that damage outweighed the burden on the manufacturer of adopting such alternative design and the adverse effect, if any, of such alternative design on the utility of the product." La. R.S. § 9:2800.56. While plaintiffs allege that alternative designs were investigated over the years and that other manufacturers utilized other designs on *their* firearms, plaintiff fail to allege when the subject rifle left Remington's control or that, at the time it left Remington's control, an alternative design existed for *this* rifle. In fact, plaintiffs allege that an alternative design for this model rifle was found not to be economically feasible. (*See, e.g.*, ¶ 44)

"A product is unreasonably dangerous when it does not conform to an express warranty made at any time by the manufacturer about the product if the express warranty has induced the claimant or another person or entity to use the product and the claimant's damage was proximately caused because the express warranty was untrue." La. R.S. § 9:2800.58. Plaintiff s

do not allege any express warranty, that any express warranty induced anyone to use the rifle, or that any express warranty was untrue.

In sum, plaintiffs have not adequately alleged facts supporting the required element that plaintiffs' damages were caused from a reasonably anticipated use of the rifle and have failed to allege the subject rifle was unreasonable dangerous. Therefore, Count I should be dismissed.

B. The Louisiana Product Liability Act Does Not Permit a Claim For Damages Allegedly Caused By Injury To Another, And, Therefore, Count II Does Not State a Claim Upon Which Relief Can Be Granted.

In Count II, plaintiff Denise Stanley seeks damages under Louisiana Civil Code Article 2315.6, providing for damages caused by witnessing injury to another. As noted, a plaintiff may not recover from a manufacturer for damage caused by a product on the basis of any theory of liability not set forth in the LPLA. La. R.S. § 9:2800.52; *Jefferson v. Lead Industries Ass'n, Inc.*, 106 F.3d 1245, 1250 (5th Cir. 1997). The LPLA limits "damages" to those allowed under Civil Code Articles 2315 (general provision), 2315.1 (survival action), and 2315.2 (wrongful death). La. R.S. § 9:2800.53 (5). The LPLA does include Article 2315.6 damages as those recoverable against a product manufacturer and does not allow for damages for a bystander's mental anguish or emotional distress. *See* La. R.S. § 9:2800.53 (5); *Ivory v. Pfizer Inc.*, 2009 WL 3230611 at *7 (W.D. La. Sept. 30, 2009); *Maurice v. Eli Lilly & Co.*, 2005 WL 3542902 at *5 (E.D. La. Nov. 7, 2005). Count II of the First Amended Complaint should be dismissed with prejudice and without leave to amend.[3]

C. Count III, Purportedly Seeking Punitive Damages For Spoliation Of Products Rejected and Destroyed During Remington's Routine Inspection Process, Fails To State a Claim Upon Which Relief Can Be Granted.

[3] Furthermore, in order to recover under Article 2315.6, a plaintiff's mental anguish or emotional distress must be "severe, debilitating, and foreseeable." LSA-C.C. Art. 2315.6(B). Plaintiff Denise Stanley fails to allege any facts to support the notion her purported mental anguish and emotional distress rose to such a level.

In Count III of their amended complaint, plaintiffs allege a novel theory -- that the alleged destruction of the so-called "Walker" fire control systems *in other rifles* during Remington's own pre-sale, quality control "testing" constitutes spoliation. For this, plaintiffs seek punitive damages. This Count does not state a claim upon which relief can be granted, and plaintiffs are not entitled to punitive damages.

First, as noted in sections A and B above, a plaintiff may not recover from a manufacturer for damage caused by a product on the basis of any theory of liability not set forth in the LPLA, and the LPLA limits "damages" to those allowed under Civil Code Articles 2315 (general provision), 2315.1 (survival action), and 2315.2 (wrongful death). La. R.S. §§ 9:2800.52, .53 (5). The LPLA does not recognize a cause of action for spoliation and does not permit recovery of punitive damages. *See id.* For this reason alone, Count III should be dismissed without leave to amend.

Furthermore, under Louisiana law, punitive or other "penalty" damages are not allowed unless expressly authorized by statute. *Int'l Harvester Credit Corp. v. I.T. Seale*, 518 So.2d 1039, 1041 (La. 1988). Punitive damages are not allowed under the LPLA. La. R.S. §§ 9:2800.52, .53 (5); *Ivory v. Pfizer, Inc.*, 2009 WL 3230611 at *8 (W.D. La. Sept. 30, 2009); *Bladen v. C.B. Fleet Holding, Co.*, 487 F.Supp. 2d 759, 770 (W.D. La. Apr. 25, 2007); *Cooper v Wyeth, Inc.*, 2010 WL 2653321 at *2 (M.D. La. June 25, 2010).[4]

[4] Apparently recognizing this fatal flaw, plaintiffs suggest in paragraph 82 of Count III that choice of law provisions should be invoked with regard to the spoliation claim and punitive damages, such that other states' laws may apply to the issue of punitive damages. This Court's Shreveport Division recently rejected this ploy in *Ivory v. Pfizer, Inc.*, 2009 WL 3230611 at *8 (W.D. La. Sept. 30, 2009). Addressing a Rule 12(b)(6) motion, the Court noted that Civil Code Article 3545 "unambiguously provides that Louisiana law governs 'liability for injury caused by a product, as well as damages, whether compensatory, special, or punitive,' when the injury is sustained in Louisiana by a Louisiana domiciliary or resident or when the product was manufactured or acquired in this state and caused injury to a Louisiana domiciliary." *Id.* Plaintiffs allege they are all citizens and residents of Louisiana and that the shooting incident occurred in Louisiana. *See* First Amend. Compl. ¶¶ 5, 6, 7 and 9. Thus, Article 3545 applies, Louisiana law applies, and plaintiffs have no claim for punitive damages.

Even apart from the LPLA, Count III does not state a viable claim. Although the Louisiana Supreme Court is yet to address the issue of whether spoliation of evidence constitutes a separate cause of action rather than an evidentiary presumption, the Louisiana Circuit Courts of Appeal have recognized spoliation as a valid tort claim where the *actual object at issue in the pending litigation* has been lost or destroyed. *See, e.g.*, *Randolph v. General Motors Corp.*, 646 So.2d 1019, 1026 (La. App. 1st Cir. 1994) (failure to produce original governor which was in the subject engine at the time of the accident), *writ denied*; *Carter v. Exide Corp.*, 661 So.2d 698, 700 (La. App. 2d Cir. 1995) (failure to preserve remains of exploding battery alleged to have caused plaintiff's injury); *Bethea v. Modern Biomedical Services, Inc.*, 704 So.2d 1227, 1230 (La. App. 3d Cir. 1997) (failure to preserve plug alleged to have caused electrical shock to plaintiff); *Williams v. General Motors Corp.*, 607 So.2d 695, 696 (La. App. 4th Cir. 1992) (failure to preserve allegedly defective rack and pinion steering assembly removed from automobile involved in accident which gave rise to the lawsuit), *writ denied*; *Pham v. Contico Int'l, Inc.*, 759 So.2d 880, 884 (La. App. 5th Cir. 2000) (failure to preserve the particular collapsible crate at issue in the lawsuit). Recently, the United States District Court for the Western District of Louisiana held that the Louisiana Supreme Court would likely recognize the tort of spoliation of evidence based on the intentional destruction of evidence. *Union Pump Co. v. Centrifugal Tech., Inc.*, 2009 WL 3015076 at *5 (W.D. La. Sept. 18, 2009). None of these cases recognize a claim for punitive damages under a spoliation claim.

The imposition of liability under the theory of spoliation of evidence is inappropriate when there is no intentional destruction of evidence for the purpose of depriving the opposing party of its use. *Randolph*, 646 So.2d at 1027. Under well-established Louisiana law, where a lawsuit has not been filed and there is no evidence that a party knew a lawsuit would be filed

when the evidence was discarded, the theory of spoliation of evidence does not apply. *Guillory v. Pellerin*, 2009 WL 690543 (W.D. La. Mar. 6, 2009); *Desselle v. Jefferson Parish Hosp. Dist. No. 2*, 887 So.2d 524, 534 (La. App. 5th Cir. 2004); *Quinn v. RISO Inv., Inc.*, 869 So.2d 922, 927 (La. App. 4th Cir. 2004); *Smith v. Jitney Jungle of America*, 802 So.2d 988, 995 (La. App. 2d Cir. 2001).

In addition, a claim for spoliation of evidence under Louisiana law requires a showing of bad faith or bad conduct. *King v. Ill. Cent. R.R.*, 337 F.3d 550, 556 (5th Cir. 2000); *Guillory v. Pellerin*, 2009 WL 690543 (W.D. La. Mar. 6, 2009). A corporation, upon recognizing the threat of litigation, need not preserve every shred of paper that may be relevant to future litigation. *Consolidated Aluminum Corp. v. Alcoa, Inc.*, 244 F.R.D. 335, 339 (M.D. La. July 19, 2006). Further, a corporation cannot be said to have acted with a culpable state of mind where the destruction alleged is a matter of routine. *Consolidated Aluminum Corp.*, 244 F.R.D. at 344.

Plaintiffs do not allege that Remington has destroyed or done anything with *the fire control in the subject rifle or the subject rifle itself.* Plaintiffs do not (and cannot in good faith) allege that plaintiffs' lawsuit was pending or even threatened, much less known to Remington, when the company allegedly destroyed other fire control systems following pre-sale, quality control "testing" in Remington's own factory. In fact, plaintiffs do not allege when the so-called destruction occurred in relation to when Remington ever became aware of plaintiffs' injuries or lawsuit. There is not and cannot be any allegation that Remington intended to destroy these other fire control controls to deprive these plaintiffs from their use. Furthermore, plaintiffs do not allege there was any law, regulation, or industry standard requiring any firearm manufacturer, much less Remington, to maintain products or parts rejected during the routine manufacturing production process, including those firearms that are reported to have discharged

without a trigger pull, or that there has ever been such a requirement. As a matter of law, Remington's alleged destruction of fire control systems as part of its routine, quality control, pre-sale testing and production process does not evidence bad faith.

Defendant has not been able to locate one court decision, from this or any other jurisdiction, recognizing a claim for spoliation against a product manufacturer for discarding or destroying parts rejected during routine, quality control inspections *during* the production process and *before* the product leaves the manufacturer's control. Remington simply had no duty to maintain quality control rejected parts discarded or destroyed during routine "testing" and manufacturing processes.

Two United States District Courts recently considered, and rejected, the same claim for spoliation of evidence (seeking sanctions and not stated as a cause of action) as set forth in this lawsuit. *See Hull v. Remington Arms Co., Inc.*, No. CV-10-05010 RBL, 2011 WL 338803 (W.D. Wash. Feb. 3, 2011); *Bledsoe v. Remington Arms Co. Inc.*, No. 1:09-CV-00069 (WLS), Document No. 110 (M.D. Ga. Feb. 9, 2011).[5] Both Courts found persuasive and relied on the fact that the discarded fire control systems were not the actual (allegedly defective) product at issue in the lawsuits. *See Hull*, 2011 WL 338803 at *4; *Bledsoe*, No. 1:09-CV-00069 (WLS), Document No. 110 at p.8. Judge Sands in *Bledsoe* refused to impose a duty to maintain these other products discarded during factory testing and inspection. *Id.* at 7-9.

Count III should be dismissed with prejudice and without leave to amend.

II. RULE 12(f) - LAW AND ARGUMENT

A court may strike from a pleading any immaterial, impertinent or scandalous matter. F.R.C.P. 12(f).

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[5] The *Hull* and *Bledsoe* decisions are attached as Exhibits B and C, respectively. It is also worth noting that plaintiffs' attorneys in present action, Stephen W. Drinnon and Jeffrey W. Hightower, Jr., are the plaintiffs' attorneys in the *Hull* and *Bledsoe* matters.

A. The Court Should Strike Any Paragraphs Claiming Punitive Damages and Any Claim For Punitive Damages.

A product liability action is governed by the Louisiana Product Liability LPLA. La. R.S. § 9:2800.52. Under Louisiana law, punitive or other "penalty" damages are not allowed unless expressly authorized by statute. *Int'l Harvester Credit Corp. v. I.T. Seale*, 518 So.2d 1039, 1041 (La. 1988). Punitive damages are not allowed under the LPLA. La. R.S. §§ 9:2800.52, .53 (5); *Ivory v. Pfizer, Inc.*, 2009 WL 3230611 at *8 (W.D. La. Sept. 30, 2009); *Bladen v. C.B. Fleet Holding, Co.*, 487 F. Supp. 2d 759, 770 (W.D. La. Apr. 25, 2007); *Cooper v Wyeth, Inc.*, 2010 WL 2653321 at *2 (M.D. La. June 25, 2010). *See also* footnote 4, *supra.*

Plaintiffs assert in paragraph 13 that "[e]xemplary damages should be assessed against Remington to punish and penalize the Defendant . . ." and make similar allegations regarding exemplary or punitive damages in paragraphs 15, 31, 34, 51, and 82. Because punitive damages are not allowed under the LPLA, all of these paragraphs should be stricken.

B. The Court Should Strike Paragraphs 12-17, 20-27, 29-40, 44, 47-51, and 57-58.

Plaintiffs flout applicable law and include an assortment of inappropriate allegations in their amended complaint. They include allegations of conscious disregard, negligence, and motive -- all immaterial to plaintiffs' product liability claims under the LPLA. They also include references to testimony from and results in other cases. Most of these paragraphs are argumentative and intended to incite. These paragraphs contain rhetoric that is immaterial to plaintiffs' LPLA claims (paragraphs 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 35, 37, 38, 39, 40, 44, 47, 48, 49, 50, 51, 54, 57, 58) and/or that is impertinent and scandalous (paragraphs 13, 14, 15, 16, 17, 27, 30, 34, 37, 38, 39, 44, 47, 49, 50, 51, 57, 58). They should be stricken under Rule 12(f).

C. The *Res Ipsa Loquitor* Doctrine Does Not Apply to Plaintiffs' Claims And, Therefore, Paragraph 68 Should Be Stricken.

Plaintiffs allege in paragraph 68 that the doctrine of *res ipsa loquitor* "may be used to prove causation under the Louisiana Product Liability Act." This particular paragraph is conclusory and contains no factual allegations and does not (nor could it in good faith) set forth the elements of the doctrine. This paragraph demonstrates the very sort of inadequate pleading contemplated by the Supreme Court in *Twombly* and *Iqbal*.

Under Louisiana law, application of the *res ipsa loquitor* doctrine requires proof of three specific elements: (1) that the circumstances surrounding the accident create a presumption of negligence on the part of the defendant; (2) that the defendant has exclusive control and management of the instrumentality causing the accident; and (3) the plaintiff's position is such that he is unable to obtain information regarding the cause of the accident. *Smith v. Xerox Corp.*, 866 F.2d 135, 140 (5th Cir. 1989).

Plaintiffs have failed to allege the existence of any of these three required elements. In fact, as to the second element -- that the instrumentality be under the exclusive control of the defendant -- paragraph 9 of the amended complaint affirmatively alleges that the instrumentality, i.e., the rifle, was in the possession and control of Richard Lee Durison and not of Remington. Accordingly, plaintiffs have failed to plead *res ipsa loquitor*, and paragraph 68 should be stricken.

CONCLUSION

For all the reasons set forth herein, Remington Arms Company, Inc. respectfully requests that the Court grant its Rule 12(b)(6) Motion to Dismiss and dismiss Plaintiffs' First Amended Complaint without leave to amend. If the Court allows Plaintiffs leave to amend or does not grant the Rule 12(b)(6) motion in its entirety, Remington Arms Company, Inc. respectfully

requests that this Court also grant its Rule 12(f) Motion to Strike by striking paragraphs 12-17, 20-27, 29-40, 44, 47-51, 57-58, and 68 of Plaintiffs' First Amended Complaint, and precluding Plaintiffs from asserting these allegations, in form or in substance, in subsequent pleadings.

Respectfully submitted,

By: */s/ Thomas R. Juneau*
THOMAS R. JUNEAU, SR., T.A., ID No. 23153
JOSHUA K. TRAHAN, ID No. 30766

One of the Attorneys for Defendant,
REMINGTON ARMS COMPANY, INC.

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(312) 321- 0900 fax
dwills@smbtrials.com
alothson@smbtrials.com
Admitted Pro Hac Vice

CERTIFICATE

I HEREBY CERTIFY that a copy of the foregoing has this day been filed using the CM/ECF system, which will provide notice to all counsel of record, and has also been served on all

counsel of record by depositing a copy in the United States Mail, properly addressed and postage prepaid.

Lafayette, Louisiana, this 23rd day of February 2011.

/s/ Thomas R. Juneau
THOMAS R. JUNEAU, SR.

EXHIBIT 26

May 7, 1993

TO: R.W. Soucy
FROM: W.A. Warren, Jr. WAW

PROGRESS REPORT April, 1993

M700 VS. Long Action "Sendero Special"

We are continuing to inspect and report on samples from each vendor-owned mold before releasing it to run production. Samples have now been approved from molds #1-#6. Samples from the last two molds are expected the week of 5-10-93. This is labor-intensive. The pay-back is that this vendor has been responsive to identified quality issues before we have stockpiled large quantities of stocks and/or started production. Barrel centrality specifications have been developed for this and similar current models. These will reconcile differences in inspectors' qualitative judgments.

Due to a structuring error, trial and pilot has been delayed from week of 5-3-93 to week following. Production has been rescheduled to begin in June. I will remain active in any technical issues thru successful T&P testing.

BASIC RESEARCH-RELEASE MECHANISMS

Measurement Apparatus: This project was approved 3-25-93. Requisitions for all major or long-lead-time purchased components have been entered. The last of these to arrive will be the table-drive motor-programmable controller system. It is expected the 3d week of June.

The next steps are:

- purchasing, designing and fabricating small components
- learning the operation and setup of the force and displacement transducers and linking them to the new Tektronics transient data capture device
- learning the programming and operation of the motor-driven motion control system

Much of this activity can take place before the table-drive system arrives.

Benchmarking: competitive purchases-no change

Nbar: Effective 3-1-93, my release mechanism activity has become focused on developing a new fire control for this model.

DESIGN-RELATED

On an ongoing basis, I am assisting M. Keeney with his NBAR process-design integration program.

SAFETY

RSD safety committee: 18 hours. This includes assisting with the first plant-wide voluntary off-the-job safety meeting (hunting). It was scheduled to accommodate 1st and 2nd shifts; on equal parts of company and employee time.

MISC

I assisted with a review of Op. Com. meeting minutes seeking specific information on a requested topic.

I attended a local one-day overview course on "Geometric Dimensioning and Toleranceing". A more intensive 24-hour course begins in June.

END

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

EXHIBIT 23

February 5, 1993

To: K.W. Soucy
From: W.A. Warren, Jr.

PROGRESS REPORT Jan., 1993

M700 VS Long Action "Sendero Special"

More than 3000 have been ordered. Marketing has told customers, "Delivery mid 2nd quarter." The current schedule has production starting (500 units) in mid-April.

- 2000 stocks are on order with the vendor
- Master stock for vendor mold-building is expected at Remington for approval during the week of 2-8-93. I will do this.
- Information package will be transmitted to plant during the week of 2-8-93

BASIC RESEARCH-RELEASE MECHANISMS

Benchmarking: Competitive purchases

1992: We spent $2675 of $3000 budgeted. Six competitive bolt action centerfires were purchased. One we wanted we didn't get; a new version of the Savage M110 bolt action centerfire. It was cataloged but not available.

1993: We will continue trying to obtain the new Savage and propose purchasing other relevant models when they become available.

Measurement Apparatus: This is my main assignment. Work is continuing to specify components in some detail and work with vendors to provide suggestions and quotes for a project cost estimate. I expect this package to be submitted for cost analysis and write-up for management by 3-23-93.

DESIGN-RELATED

On an ongoing basis, I am assisting M. Keeney with his process-design integration project.

SAFETY

I have been appointed a member of the five-man 1993 R&D Safety Committee. We are now 40% complete with the ("quarterly") Safe Gun Handling Review for all dept. employees.

ATO

I have provided requested assistance to the current common fire control engineer on carry-over opportunities for quality improvement and cost reductions on some stamped components.

I have been asked by a foreman to assist with technical support for a grievance over quality-of-execution on the common fire control. I will assist in this during the week of 2-8-93.

MISC

I have been asked by an employee to help a local college student who is doing course work on the topic of manufacturing quality systems. I would provide her with one week's edited final inspection report information from 1991. I will delete all labels which would be likely to identify company, product, model or nature of nonconformity-while preserving the statistical nature of the data. I will submit this to KWS and/or JCH for review beforehand.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

EXHIBIT 24

March 5, 1993

TO: K.W. Soucy
FROM: W.A. Warren, Jr. WAW

PROGRESS REPORT Feb., 1993

R700 VS Long Action "Sendero Special"

- o The vendor's master stock was approved 2-12-93.
- o The first "production" stock from vendor's (H-S Precision) new tooling was reviewed 3-3-93. The vendor felt this sample was representative of his production process and quality system. Three significant opportunities for improvement were identified and communicated to the vendor. A duplicate inletting gauge and various "try" gun parts have been provided to him.
- o We have requested a sample from each of the six new molds being built before each is used for production. The vendor says that it takes him 2-3 days to complete a new mold.

BASIC RESEARCH-RELEASE MECHANISMS

Measurement Apparatus: The detailed cost estimate for this project was completed on 3-3-93 and submitted for financial analysis and write-up. Most of the expenditures will be in 2Q93. This apparatus will provide an objective way to measure the force vs. displacement behavior of user-operated firearms' devices.

Benchmarking: competitive purchases-no change. Savage model 116FCS (stainless steel, synthetic stock, detachable box magazine) is cataloged in '93, but not yet available.

Change in activity focus: Effective 3-1-93, my release mechanism activity has become focused. This is now directed toward the specific objective of developing a fire control system for the current NBAR program.

DESIGN-RELATED

On an ongoing basis, I am assisting M. Keaney with his NBAR process-design integration program.

The Customer Repair computer data base, now being used by repairmen, has the potential to provide additional insight into customers' field experience with our products. I have requested of plant systems a systematic ranking/sorting of the data to look for patterns which might reveal opportunities to improve. This initial inquiry would be applicable to NBAR.

SAFETY

Monthly time invested in the R&D safety committee was 19 hours.

The quarterly Safe Gun Handling Review for all R&D employees is 95% complete.

ATO

I completed a technical briefing for a production foreman to help him with a 3d step grievance over a quality-of-execution issue on the common fire control.

I assisted ATO Engineering and Design with a cost saving opportunity (on a high-volume common fire control component) identified as a result of a need for new vendor tooling.

END

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

EXHIBIT 44

M. Keeney
9/24/92

Bill,

Remarks from Barb about Fire Control:

Facts:

- Customer Advantage: Must remove stock to adjust
  Must not be able to adjust Sear
  Reminston must spec. (TRIGGER PULL)
- Need a Bolt lock:
- No Thin safety (SLIDING)

Personal Preference:

- Block Firing Pin w/ safety or Bolt Lug (OPINION)

Note: Barb discussed items w/ legal, Follows what we were told and reviewed w/ legal.

EXHIBIT 45

Comments 3/18/93

W. BAR WEINSTEIN Reporter

(1)
8.12.92

WHAT DO WE CHANGE THE EXTRACTOR SYSTEM ON NBAR FROM THAT OF THE 2002.

- ALTER CUSTOMER "PERCEPTION" OF INFERIORITY TO OTHER (CLAMP, CONTROLLED FEED) SYSTEMS.

- MIKE'S EXPERIENCE WITH M 700 SYSTEM:
  (1) • MACHINING UNDERCUT IN SHROUD (NOW ON PRODUCT)
  (2) • MEASURING UNDERCUT IN SHROUD
  (3) • FITTING EXTRACTORS TO BOLT.

(IF ~~NBAR~~
- REDUCING DEPTH OF SHROUD TO PERMIT FLANGE OF BOLT FACE TO BE WITHIN BARREL C' BORE. (IS THIS A GREATER STRENGTH ADVANTAGE THAN ALTERNATE EXTRACTOR SYSTEM IS A DISADVANTAGE?) PORTION

(1) THERE IS NO UNDERCUT IN BOLT FACE. SHROUD IS PROFILED FROM FRONT.
(2) PER ABOVE
(3) TO BE DETERMINED.

EXHIBIT 52

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 2
To Mike Keeney	From John Balio
Co.	Co.
Dept. R&D	Phone #
Fax # Ilion # 6	Fax #

FOCUS PANEL

10/1/92

cc: J. M. Bunting
K. W. Soucy
T. R. Rusz

TO: M. D. KEENEY

FROM: J. B. BALIO

SUBJECT: NBAR PROTOTYPE SPECIFICATIONS

The market research study for NBAR will be scheduled starting in January 1993. The characteristics I am interested in determining customer preference on are:

- Barrel profile
- One piece vs. two piece action design * * *
- Ejection port configuration *
- Scope mount design
- Stock configuration
- Recoil pad style
- Wood finish gloss
- Bolt handle styling
- Overall appearance *

Three prototypes will be needed for this study. Below are the specifications for the prototypes we discussed. Please let me know when you expect to have them ready. Call me with any questions you have. Thanks.

OUR DESIRE IS TO NOT DICTATE PROCESS/NOR TECHNOLOGY EXPLICITELY.

COMMON ATTRIBUTES:

- 24" Barrel
- Long action
- Receiver drilled and tapped for new scope base
- Jeweled bolt
- Appearance of a magazine box
- Sling swivel studs
- Free floated barrel
- No safety or bolt lock (use current guns for discussion)
- Non-functional

DETAILS

ULTIMATE VALUE OF FOCUS PANEL: REASSESS NUMBERS OF NEW PROTOTYPES.

* KEYS, I THINK

UPDATE: 1-7-93 WORK LIMITED FOCUS

(1) SLEEK REC BAR (2) EJECTION PORT VS. STEPPED REC BAR

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

September 30, 1992

Proposed objective statement for new process technology Focus Panel groups proposed for 4th quarter of 1992:

OBJECTIVES

Primary: to explore potential market reaction to a new manufacturing technology which provides a one-piece barrel/receiver for a new line of Remington bolt action centerfire rifles;

Secondary: to determine overall customer reaction to the (non-functional) mockup rifle and aesthetic preferences toward selected elements.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

EXHIBIT 53

35-2

GATHER

THIS IS WHAT IT IS AND THIS IS HOW IT WILL CONTRIBUTE TO RIFLE PERFORMANCE.

NEW TECHNOLOGY

→ INTERNAL B R

"FIRST" IMPRESSIONS

LIKE
DISLIKE
} WHAT?

EXPLANATION OF TECHNOLOGY & BENEFIT TO USER

- CONCENTRICITY
  TOLERANCES
  RIGIDITY
  STRENGTH
  COMPACT
  WEIGHT

THEN

CONSIDERED OPINIONS

LIKE
DISLIKE
} WHY

ADVANTAGES
DISADVANTAGES

(80%) OF REMAIN REAL THIS.

METHODOLOGY

- SELECT FROM AMONG PRELIMINARY ATTRIBUTES
- ANYTHING YOU LIKE NOT HERE

AWARENESS →

GUN 1:

- o New sleek barrel/receiver profile - clean barrel
- o Flat crown with counterbore - Mountain Rifle style
- o Oval ejection port
- o High polished (better than 320 oil) blue
- o New bolt handle style
- o High gloss stock with black fore-end tip, grip cap and plugs with white line spacers
- o Monte Carlo
- o Black vented recoil pad
- o Stock shape to be between the BDL and MTR

GUN 2:

- o New barrel profile with step at receiver - clean barrel
- o Round crown - Current BDL style
- o Traditional ejection port
- o High polished (better than 320 oil) blue
- o New bolt handle style - different from GUN 1
- o Mid gloss stock with "B" grade fore-end tip & grip cap and black plugs
- o Classic shape stock with cheek piece
- o Black solid recoil pad

GUN 3:

- o New sleek barrel/receiver profile - with new style sights
- o Custom shop crown
- ? o Traditional ejection port
- o Glass bead, blue finish
- o New bolt handle style - your recommendation
- o Black "synthetic" stock with beavertail fore-end and palm swell
- o Straight comb with cheek piece
- o Black solid recoil pad
- o Stock shape to be between the BDL and MTR

ARE WE KEEPING MANUFACTURER UNKNOWN?

WHAT WILL BE THE CORRECT GUNS?

COMPETITIVE INFLUENCE — USES

EXHIBIT 54

→ MUST BE A DISCONTINUITY! TO STIMULATE BUY/REC DECISION.

JIM CARMICHAEL COMMENTS WERE POSITIVE ON REC-BAR CONCEPT.

2-93 ⇒ THIS HAS BEEN MET FROM FOCUS GROUPS ON CONCEPT.

September 30, 1992

Proposed objective statement for new process technology Focus Panel groups proposed for 4th quarter of 1992:

OBJECTIVES

Primary: to explore potential market reaction to a new manufacturing technology which provides a one-piece barrel/receiver for a new line of Remington bolt action centerfire rifles;

Secondary: to determine overall customer reaction to the (non-functional) mockup rifle and aesthetic preferences toward selected elements.

1-7-93

OUR PREMISE: THE ~~[illegible]~~ BENEFITS TO THE BUSINESS OF ~~[illegible]~~ NBAR LIE IN THE NEW PROPRIETARY PROCESSING OF REC/BAR AND SHORTER LEAD TIMES AND REDUCED INVENTORY TO SERVE THE CUSTOMER.

⇒ NBAR RESOURCES FOCUS ON DEVELOPING THIS CONCEPT.

⇒ WE WANT TO KNOW INITIAL CUSTOMER PERCEPTIONS TO ADDRESS DESIGN STAGE

PURPOSE FOR MARKETING: THEY WANT TO GET A FEEL FOR RESTYLING OPTIONS FOR M700.

2-93 cool @ AMO

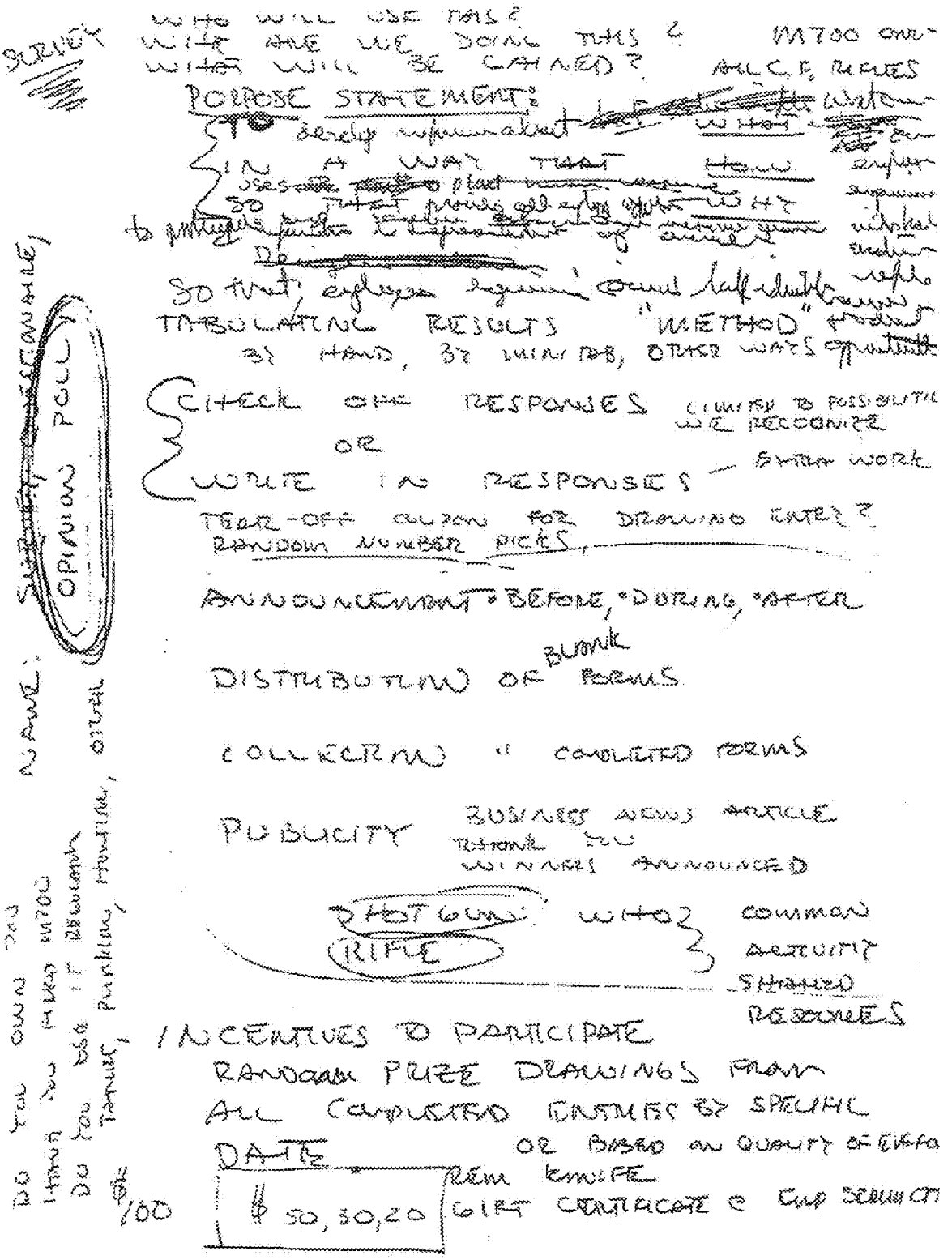
EMPLOYEE OPINION POLL

TO PROVIDE AN ~~ASSESS~~ ORGANIZED WAY FOR WILLING SITE EMPLOYEES TO SHARE THEIR OPINIONS ABOUT BOLT ACTION RIFLES;

IN A WAY THAT ENCOURAGES ~~ASSURE~~ EMPLOYEES ~~PARTICIPATE~~ TO ACTIVELY AND MAKES IT EASY TO ~~INTERPRET~~ THE RESULTS; UNDERSTAND

SO THAT A WIDER VARIETY OF KNOWLEDGE AND EXPERIENCE CONTRIBUTES TOWARD IDENTIFYING NEW PRODUCT OPPORTUNITIES.

WMW
MK
7.8.92


SURVEY
WHO WILL USE THIS?
WITH WHAT WE DOING THIS &
WHEN WILL BE CHANGED?
PURPOSE STATEMENT:
TABULATING RESULTS
"METHOD"
BY HAND, BY MACHINE, OTHER WAYS
CHECK ONE RESPONSES
OR
WRITE IN RESPONSES
TEAR-OFF COUPON FOR DRAWING ENTRY?
RANDOM NUMBER PICKS,
ANNOUNCEMENT - BEFORE, DURING, AFTER
DISTRIBUTION OF BLANK FORMS
COLLECTING - COMPLETED FORMS
PUBLICITY
BUSINESS NEWS ARTICLE
WINNERS ANNOUNCED
PHOTOGRAPH
RIFLE
WHO?
COMMON SECURITY
STRATEGIZED RESOURCES
INCENTIVES TO PARTICIPATE
RANDOM PRIZE DRAWINGS FROM
ALL COMPLETED ENTRIES BY SPECIFIC
DATE
OR BASED ON QUALITY OF ENTRY
REM KNIFE
$ 50, 50, 20
GIFT CERTIFICATE
NAME: SURVEY, OPINION POLL, OTHER
DO YOU OWN A GUN?
DO YOU HUNT?
DO YOU BELONG TO A GUN CLUB?
DO YOU PLAN HUNTING, FISHING, CAMPING TRIPS?
$100

RESPONDENT ESTABLISH:

- HOW ACTIVE A USER
- HOW EXPERIENCED " "
- HOW FAMILIAR WITH OTHER BRANDS OR FORMATS

TONE:

- NON - THREATENING
- NON - PERSONAL
- RESPONDENT WOULD BE ID'D FOR AN INCENTIVE PRIZE

NOTE

- PROVIDE AMPLE ROOM FOR WRITTEN COMMENTS ENCOURAGE THIS

INFO ABOUT RESPONDENT

experience — our product

" comp. product

frequency of use

(Looks)

OPINIONS ON FINISHES

METAL
- LUSTER
- MATERIAL
- COLOR
- JEWELING

WOOD
- LUSTER

SYNTHETIC
- COLOR
- TEXTURE
- NON-SLIP MEANS

SURVEY

LIKES ?
DISLIKES ? WHY ?

700 ADL, BDL, MTN, STAINLESS, VARMINT

WHAT FEATURES WOULD YOU ADD
" " " " OMIT

WHAT FEATURES DO YOU ESPECIALLY LIKE ON OTHER RIFLES FROM MANUFACTURERS WITH WHICH YOU THINK WOULD IMPROVE THE M700?

DO YOU OWN OTHER NON-REMINGTON CENTERFIRE RIFLES

C.F. RIFLE
R.F. RIFLE
SHOTGUN

WHAT DO YOU LIKE AND THINK ABOUT USE, OPERATION OR PERFORMANCE OF REM C.F. RIFLES WHICH YOU ESPECIALLY LIKE OR DISLIKE

Rem better or much worse than competitive models you're familiar with?

EASE OF USE

OPINIONS ON FEATURES

- LOADING/UNLOADING

RESULTS

OPINIONS ON PERFORMANCE

ACCURACY

STRENGTH

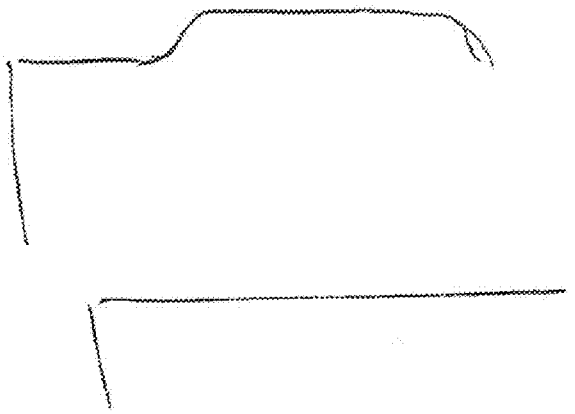


EXHIBIT 55

cc: J. M. Bunting
K. W. Soucy
T. R. Musz
D. M. Fransico

2/25/93

TO: M. D. KEENEY

FROM: J. R. BALIO

SUBJECT: REVISED NBAR PROTOTYPE SPECIFICATIONS

Mike,

As we discussed, I have committed to having two prototypes complete for June 1993. These do not need to be functional, but they must be finished gun quality cosmetic samples. The characteristics I am interested in determining customer preference on are:

- o Barrel profile
- o One piece vs. two piece action design
- o Ejection port configuration
- o Scope mount design
- o Stock configuration
- o Recoil pad style
- o Wood finish gloss
- o Bolt handle styling
- o Bolt body styling
- o Bolt plug styling
- o Overall appearance

The two prototypes should be configured as follows:

COMMON ATTRIBUTES:

- o 24" Barrel
- o Long action
- o Receiver drilled and tapped for new scope base
- o Appearance of a magazine box
- o Sling swivel studs
- o Free floated barrel
- o No safety or bolt lock (use current guns for discussion)
- o Non-functional

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

TRIGGER ASSEMBLY:

1. TWO POSITION SAFETY WITH RELEASABLE BOLT LOCK
2. CUSTOMER ADJUSTABLE TRIGGER PULL ABOVE SAFE LIMIT
3. WIDE TRIGGER

STOCK ASSEMBLY:

1. ALUMINUM RECOIL/BEDDING INSERT EPOXIED OR MOLDED INTO STOCK (FRONT AND REAR ALUMINUM BEDDING)
2. FUTURISTIC SYNTHETIC STOCK WITH INSERTABLE PADS
3. CLASSIC WALNUT STOCK

Lock Time : ~30% Reduction in lock time from M1/M60 (3.0 ms → 2.1 ms)

5–10% quicker than M1/788 (788 = 2.3 ms)
→ that is for long action !!
→ short action might possibly under 2 ms

GUN 1:

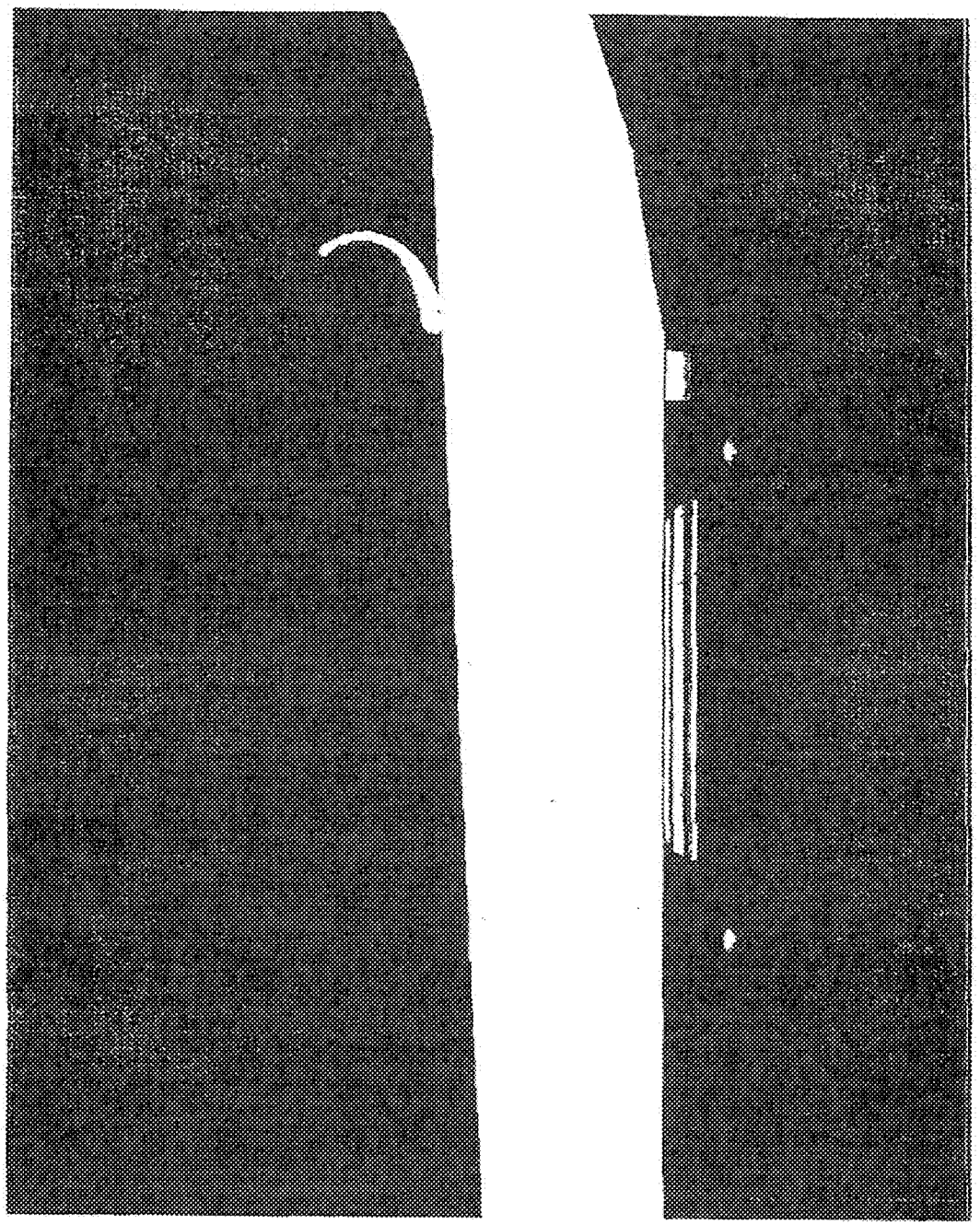
- New barrel/receiver profile with transition at receiver
- Clean barrel
- Flat crown with counterbore - Mountain Rifle style
- Oval ejection port
- High polished (better than 320 oil) blue
- New bolt handle style
- Jeweled bolt body
- New bolt plug style
- High gloss stock with black fore-end tip, grip cap and plugs with white line spacers
- Monte Carlo with cheek piece
- Black vented recoil pad
- Stock shape to be between the BDL and MTR

GUN 2:

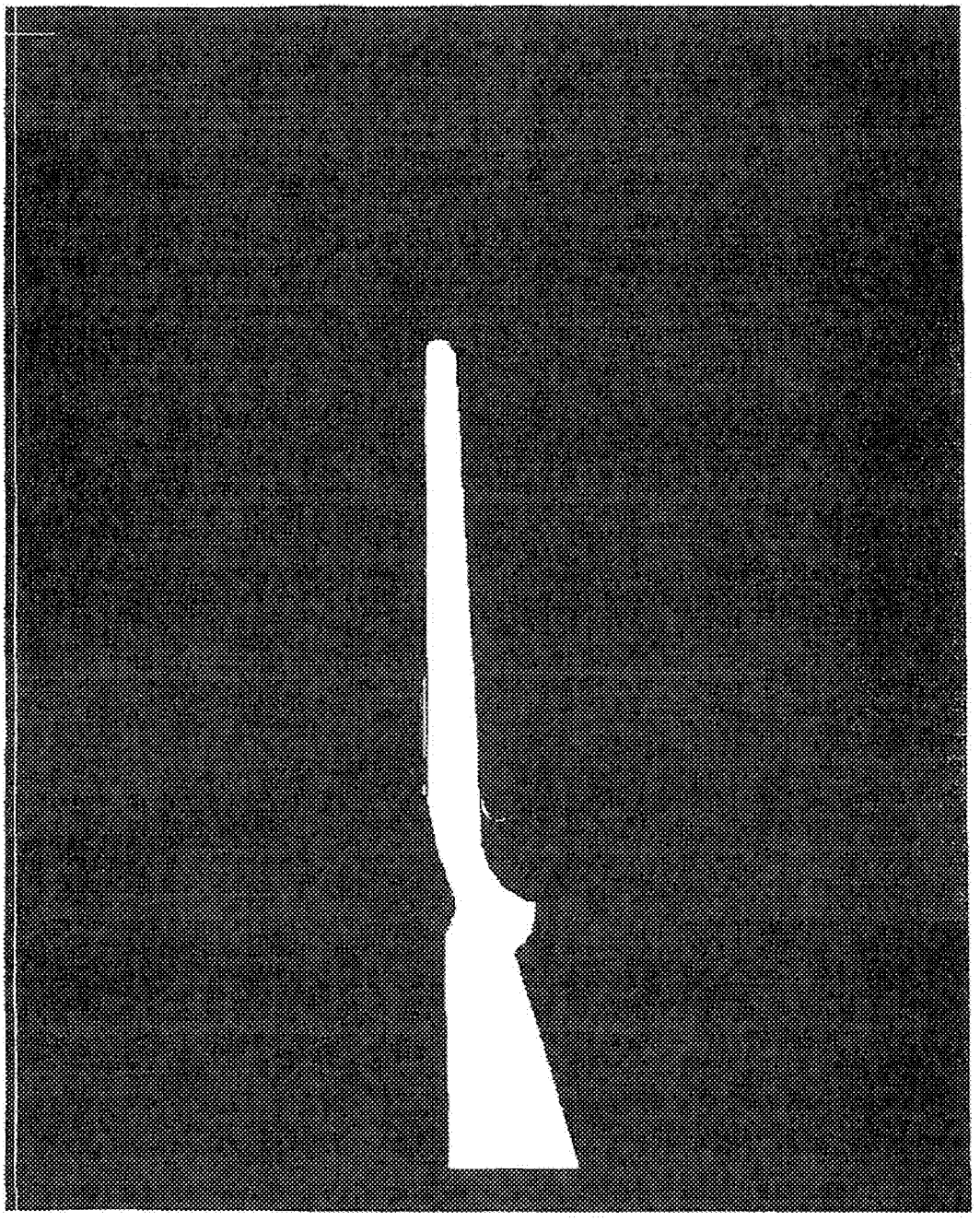
- New barrel/receiver profile with altered transition at receiver
- Clean barrel
- Round crown - Current BDL style
- Traditional ejection port
- High polished (better than 320 oil) blue
- New bolt handle style - different from GUN 1
- Fluted bolt body - high polish OD - black flutes?
- New bolt plug style - different from GUN 1
- Mid gloss stock with "B" grade fore-end tip & grip cap with spacers and black plugs
- Classic shape stock with cheek piece
- Black solid recoil pad

The competitive guns we will use are:

A-Bolt Medallion w/o sights
77 RS MKII
A-Bolt Stainless Stalker
Weatherby Mark V
70 SM
700 BDL
Sako



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

EXHIBIT 56

SPECIFICATION PROPOSALS
NBAR VS. EXPRESS RIFLE — Sauer 5/92

	NBAR	EXPRESS RIFLE
BARRELED ACTION MATERIAL	BLUED/MATTE STAINLESS	BLUED CARBON STEEL
SCOPE MOUNTING	INTEGRAL BASE	RECEIVER DRILLED & TAPPED
SAFETY TYPE	THREE POSITION ON BOLT SHROUD	TWO POSITION ON RECEIVER TANG
BOLT LOCKING LUG TYPE	DUAL OPPOSED	DUAL OPPOSED
LOCKING LUG LOCATION	FRONT OF BOLT	FRONT OF BOLT
BOLT HANDLE	M700 TYPE	M700 TYPE
EXTRACTOR TYPE	PRE 64 M70~~0~~	M700 TYPE
EJECTOR TYPE	M700 TYPE	M700 TYPE
BOLT RELEASE	MAUSER TYPE	M700 TYPE
BOLT ~~SHROUD~~ Tang	CLOSED AT REAR	OPEN AT REAR
BOLT BODY STYLE	NON FLUTED	NON FLUTED
BOLT BODY FINISH	POLISHED & JEWELED	BLUE/BLACK
BOLT HANDLE KNOB STYLE	CHECKERED SURFACE	SMOOTH SURFACE
MAGAZINE	DETACHABLE	BLIND
OPEN SIGHTS ON BBL	NO	YES
STOCK MATERIAL	WALNUT/SYNTHETIC ATTRACTIVE	SYNTHETIC
STOCK STYLE	CLASSIC	CLASSIC
RECOIL PAD	SOLID	SOLID

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KINZER V. REMINGTON

BARBER - 1.30.130001309

	M8AE	EXPRESS RIFLE
RECOIL PAD COLOR	BLACK	BLACK
CHEEKPIECE	YES	YES
WOOD FINISH	SATIN	-
SYNTHETIC STOCK FINISH	SMOOTH TEXTURE	ROUGH TEXTURE
SYNTHETIC STOCK COLOR	BLACK/CAMO	BLACK
STOCK/ACTION BOLT TYPE	HEX	HEX
LEFT HAND ACTION	YES	NO
SHORT ACTION AVAILABLE	YES	NO
CARBINE AVAILABLE	YES	NO
BBL LENGTH OF CARBINE	20"	-
CUSTOM/IMPROVED BEDDING	YES	-
IMPROVED FIT & FINISH	YES	-

CONSIDERATIONS MOST IMPORTANT TO THE PURCHASE OF A BOLT ACTION BIG GAME RIFLE (PRIORITIZED).

1. ACCURATE
2. RELIABLE
3. STRONG
4. HANDSOME
5. AVAILABILITY OF CALIBERS
6. FIT/FEEL, HANDLING

EXHIBIT 57

MDK
08/09/93

NBAR FEATURES:

RECBAR:

1. INTERGAL BARREL AND RECEIVER
2. FORGED BARREL AND RECEIVER
3. 5R RIFLING
4. FORWARD LOCKING, THREE LUG
   (67 DEG. BOLT ROT.)
5. ACTION LENGTH .5" SHORTER THAN M/700
   (RIGID)
6. GREATER LOCKING STRENGTH THAN M/700
   (BEARING AND SHEAR AREA)
7. COMMON BARREL CONTOUR (MAG AND REG)
8. DETACHABLE MAG. BOX, STAGGERED BOX/INLINE FEED
9. COMMON SCOPE MOUNTING SURFACES
10. REMINGTON ONE PIECE SCOPE MOUNTS RADIALLY FASTENED
    TO RECEIVER

BOLT ASSEMBLY:

1. ENCLOSED BOLT SHROUD
2. CLAW EXTRACTOR
3. COCKING INDICATOR
4. ENCLOSED BOLT PLUG ??????
5. FIELD STRIPPABLE

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TRIGGER ASSEMBLY:

1. TWO POSITION SAFETY WITH RELEASABLE BOLT LOCK
2. CUSTOMER ADJUSTABLE TRIGGER PULL ABOVE SAFE LIMIT
3. WIDE TRIGGER

STOCK ASSEMBLY:

1. ALUMINUM RECOIL/BEDDING INSERT EPOXIED OR MOLDED INTO STOCK (FRONT AND REAR ALUMINUM BEDDING)
2. FUTURISTIC SYNTHETIC STOCK WITH INSERTABLE PADS
3. CLASSIC WALNUT STOCK

Lock Time : 30% Reduction in lock time from M/700 (3.0 ms → 2.1 ms)

5–10% quicker than M/788 (788 = 2.3 ms)
- that is for long action !!
- short actn NEAR possibly under 2 ms

EXHIBIT 60

N 380 E.C. 8.9.93 WAW

INTERLOCK SO THAT GUN WILL NOT FIRE (OR SAFETY CANNOT BE MOVED) IF FORCE IS APPLIED TO TRIGGER AS SAFETY IS MOVED (ATTEMPTED TO BE MOVED) FROM S TO F POSITION.

ONLY MODELS NOW KNOWN ARE N66, 380 REVOLVERS, S200.

ANY BOLT ACTION C.F.?

· COLT SAUER

FINGER PLACE BOTH DIRECTIONS

cc: Doyle Long
R. G. Sherman

RD-88 REV. 2-58

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

File M1600

RECEIVED
APR 10 1979
J. A. STEKL

April 6, 1979

To: J. A. Stekl

From: E. G. Larson

Jim:

Enclosed are two trigger assemblies that were recently sent to Doyle Long for use in replacement of triggers in recalled guns. These were part of 10 triggers he received.

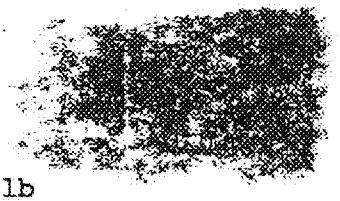
On one, the detent ball is missing, and the safety just flops back and forth. Doyle found the fold on the upper section of the retainer was broken off. In looking at it with a low power glass, it appears to have been an old break.

The second trigger assembly, which has tape on it, when used as a replacement in the gun Doyle was repairing, would fire on closing whenever the bolt was opened and retracted, and then moved forward and closed.

The only way he could prevent it from firing on closing was to lift the bolt handle gently, and then close it gently without retracting it at all.

Doyle called me, and I asked that he return these two to me as received, so that we could determine the cause.

Please have these examined by plant and/or R. & D., and advise as to their findings.



E. G. Larson

EGL:lb
Encl.

PLAINTIFF'S EXHIBIT 3016

AL 0014714

TO: G. J. HILL

5-17-79

FROM: BILL WARREN

I RETURNED MAGNUM TRIGGER ASSEMBLIES FROM DOYLE LONG

1ST UPPER LOCATING TAB OF SAFETY DETENT SPRING IS BROKEN OFF. I EXAMINED IT UNDER 23 X STEREO MAGNIFICATION. THE BREAK IS BRIGHT — NO EVIDENCE OF HEAT TREAT COLORATION @ FRACTURE.

FOR A SHORT TIME, THIS SPRING WAS RESHAPED BY SUB-ASSEMBLERS TO IMPROVE BOLT LOCK ARM OPERATION.

THE TAB MAY HAVE BROKEN DURING THIS RESHAPING.

2ND THERE IS NO OBVIOUS EXPLANATION HERE. SEAR ENGAGEMENT IS CORRECT.

REAR SEAR PIN HOLES ARE CORRECT DIAMETER. THEY ARE SLIGHTLY MIS-ALIGNED SIDE TO SIDE. LEFT SIDE HOLE PERIMETER IS SLIGHTLY DAMAGED THIS COULD BE CAUSED BY:

- RECEIVER HOLE SPACING INCORRECT OR/AND
- STARTING NON-CHAMFERED END OF SEAR PIN.

THESE CAN CAUSE THE LEFT SIDE OF THE HOUSING TO BOW-IN SLIGHTLY ADJACENT TO THE HOLE AND BIND THE SEAR

AL 0014715

IN THE DOWN (FIRED) POSITION, ANY SUCH BINDING WOULD TEND TO SELF-CORRECT AS THE PIN WAS DRIVEN THE OPPOSITE DIRECTION TO REMOVE TRIGGER ASSEMBLY FROM RECEIVER.

~~THE SEAR~~ FREEDOM CHECK IS A ROUTINE PART OF FINAL ASSEMBLY SAFETY CHECKS. THIS CHECK, AND THE CORRECTIVE ACTION, WERE COVERED VERBALLY BY REMINGTON PEOPLE DURING THEIR RECALL INSTRUCTION VISITS TO GUNSMITHS.

ASK SIC H

EXHIBIT 63

GOALS COST SAVER
- TEST BOLT LOCK
- TOGGLE TRIGGS

CHANGE S. U. F. SEQUENCE OF 3 POS SAFETY

U S F

COMP RATE SPRING

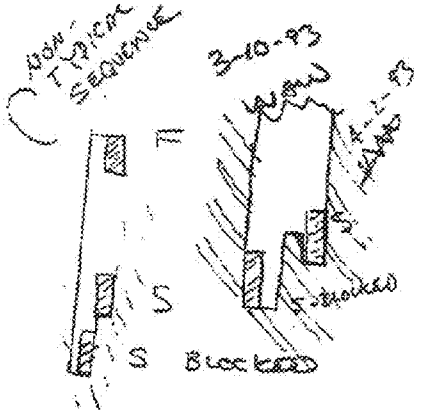
BOLT LOCK / INTERRUPT OF SAFETY
LOCKED WHEN BOLT CLOSED DISABLED BY A DN FALL
OR QUICK-RIDE BUTTON.

TRIGGER BLOCK SAFETY. HOW TO MAINTAIN
TRIGGER/SAFETY RELATIONSHIP WHEN ADJUSTING
TRIGGER/SEAR RELATIONSHIP.

TRIGGER BLOCK
FIRST THING TO BE BLOCKED (F→S)
CAMMED INTO SUPPORT POSITION OR SAFETY WON'T WORK
LAST THING TO BE FREED (S → F)

F → S
- CAM TRIGGER INTO SUPPORT POSITION
- BLOCK IT THERE
- CAM SEAR UP OFF OF TRIGGER
- CAM F.P BACK

S TO F
- RELEASE SEAR TO CONTACT TRIGGER
- UNBLOCK TRIGGER


3-10-93
S
S

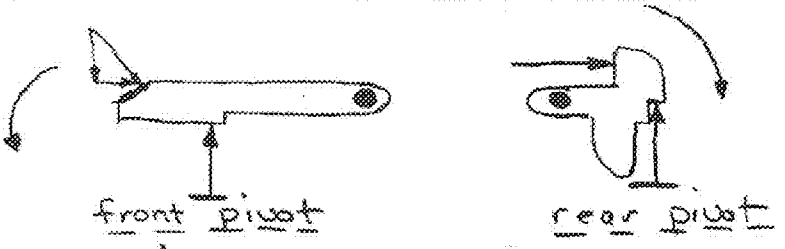
INSERT THREADED STEM SUPPORT SURFACE
SPECIAL SET USE SMALL SCREW MINUS STEM
PAD ASSEMBLY AND AC M96652.

EXHIBIT 66

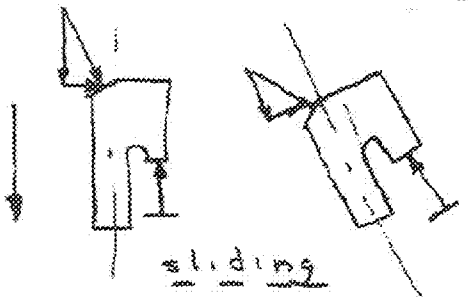
10-13-93

CUBE SIDE SLEAD MOVEMENT MOTIONS

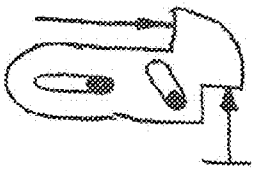
ROTATION:



TRANSLATION:



BOTH ROTATION & TRANSLATION:



TOGGLE

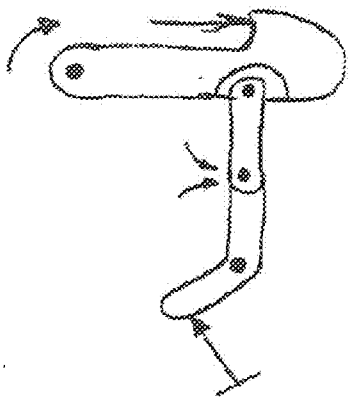


EXHIBIT 61

2-17-93

NO BAR

DESIGN CONSIDERATIONS - GENERIC

SAFETY
- ULTIMATE STRENGTH
- ROBUST TO ENVIRONMENT
- FAILURE MODE(S)
- IMPACT RESISTANCE
- ROBUST TO TAMPERING

ACCURACY
- LOCK TIME
-

MANUFACTURABILITY

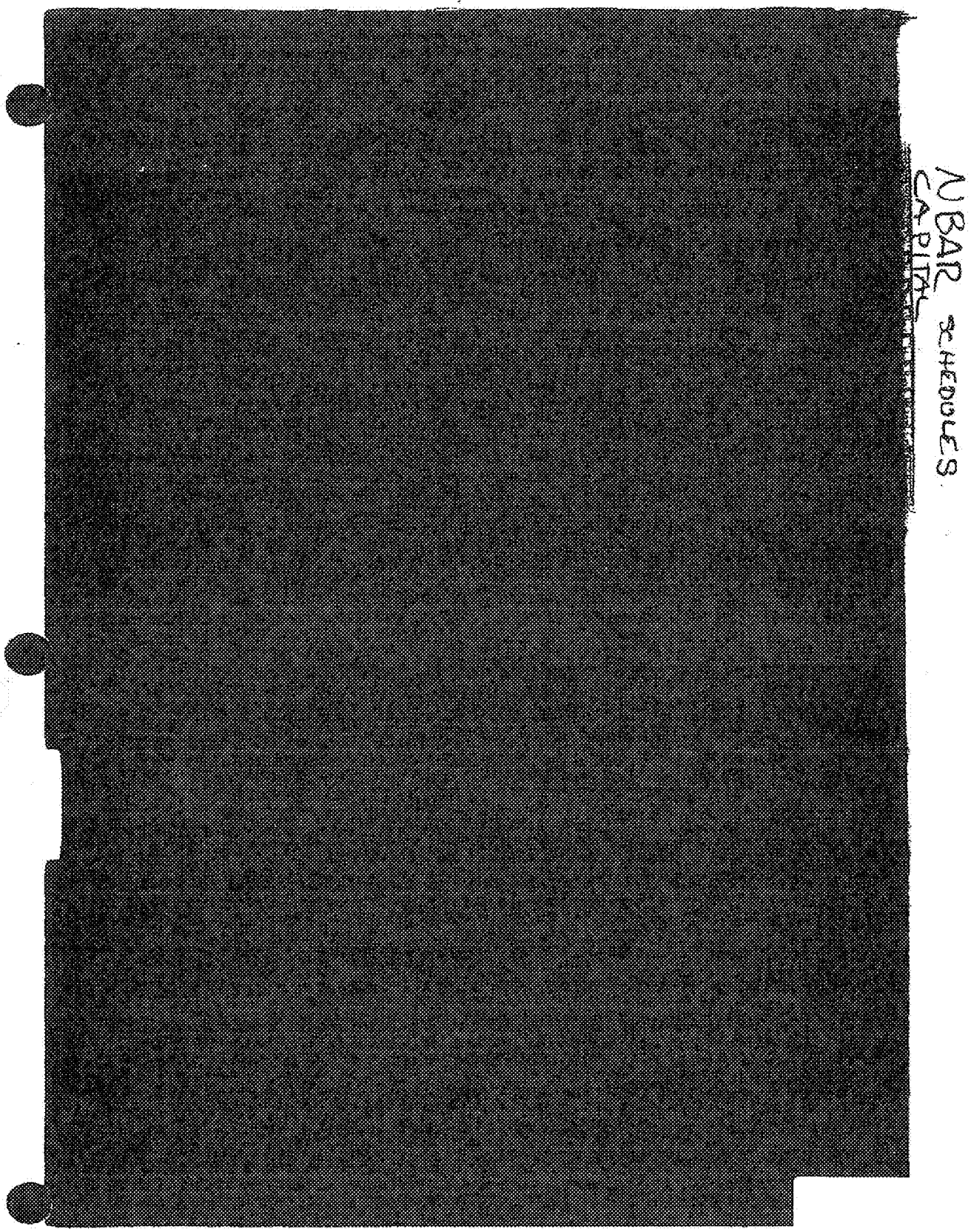
APPEARANCE

EASE OF USE

RELIABILITY / DURABILITY

PERCEPTION VS. REALITY

EXHIBIT 61a



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

DON'T SAY IT - WRITE IT

1994 CAPITOL PROJECTS

To: _____ Date 6-22-93

From: QUICK REVIEW

KEENES NBAR ESTIMATE DID NOT INCLUDE FIRE CONTROL:

	1994	1995	
WAS	2.5×10^6	?	} LESS FIRE CONTROL
NOW	1.75×10^6	$.75 \times 10^6$	}
FIRE CONTROL (ADDED)	$.25 \times 10^6$	?	} NEW

"ACCIDENT PREVENTION IS REMINGTON'S INTENTION"

EXHIBIT 62

6.93 WAW

N BAR FIRE CONTROL

TRIGGER RETRACTION UPON PARTIAL PULL IS IMPORTANT:

* M700 RELIES ON POWDER SPRING; NOT MAINSPRING

* THIS WOULD BE A CONCERN IN ANY SYSTEM WHERE FRICTION CAN'T FORCE OPPOSING TRIGGER PULL IS GREATER THAN THE SPRING COMPONENT OPPOSING TRIGGER PULL.

EXHIBIT 68

CLIENT SAFETY

WHAT WE WANT MECHANISM TO DO VS HOW

PERMITS FIRING WANTED TRIGGER

PREVENTS UNWANTED FUNC. SAFETY

PREVENTS UNWANTED BOLT ROTATION BOLT LOCK

PERMITS WANTED BOLT OPERATION

SAFETY: → "F" POSITION

SEPARATE VS INTEGRAL (LOCATION)/(MOTION) PERMITS (RE)LOAD VIA BOLT

INDEPENDENT VS INTERACTIVE (INTERRUPTION) BOLT LOCK RELEASE

INDEPENDENT OPERATION/INTERRUPTION	LOCATION: SEPARATE	LOCATION: INTEGRAL
INDEPENDENT		
INTERACTIVE		

PERMITS elevating bolt w.th SAFETY in S condition.

SAFETY & TRIGGER CAN BE SEPARATE AND INDEPENDENT M70

OR

INTEGRAL AND INTERACTIVE INDEPENDENT SYSTEMS

OR

SEPARATE AND INTERACTIVE

RUGER M77

INTEGRAL AND INTERACTIVE

PREVENTS A BOLT

Barber-B-1 of 6

WAW 10-15

A CUSTOMER POINT OF VIEW

HIGH "EASE OF USE"

- QUICK TO FIND
- EASY TO OPERATE
- EASY TO UNDERSTAND
- RELIABLE TO OPERATE
- EASY TO USE WITH 'SCOPE
- CRISP TRIGGER PULL
- MINIMUM CREEP
- HIS OWN PERCEPTION OF "WHAT IS"

MEDIUM

- QUIET OPERATION
- MINIMUM BACKLASH (feedback)
- SINGLE STAGE PULL
- EASILY KNOWN STATUS ("S" OR "F")
- PLEASING APPEARANCE
- ADJUSTABLE FOR WEIGHT OF PULL

LOW

- LOCATION OF SAFETY (CONSISTENT WITH EASE OF USE)
- HOW MECHANISM PREVENTS UNINTENDED FIRING - WHAT IT BLOCKS
- MINIMUM TRIGGER OVER-TRAVEL

H

PLAINTIFF'S EXHIBIT 3122

1 of 6

AL 0023960

10/5/93
WAW

MARKETING POINT OF VIEW

HIGH

- RESPONSIVE TO THEIR ASSESSMENT OF WRITERS' & CUSTOMERS' PERCEPTIONS OF REALITY.
- AVOID MULTIPLE FEATURE OPTIONS WHICH WOULD COMPOUND/CONFUSE SALES/INVENTORIES
- PRESERVE PRODUCTION CAPABILITY TO SATISFY M700 DEMAND
- EASY TO UNDERSTAND AND USE
- USER ABLE TO OPEN [AND CLOSE] BOLT IN A SAFE CONDITION ("3-POSITION SAFETY")
- BOLT LOCKED DOWN IN "S" CONDITON

MEDIUM

- CUSTOMER-ADJUSTABLE TRIGGER PULL FORCE ONLY DOWN TO MINIMUM SATISFACTORY LEVEL
- NOT ADJUSTABLE EXTERNALLY
- BOLT STOP RELEASE AWAY FROM "IN FRONT OF TRIGGER"
- NO SAFETY ON TANG
- LEFT-HAND VERSION (12-15% OF MARKET)

LOW

- FIELD-CONVERTIBLE FOR OPERATIONS WITH OR WITHOUT BOLT LOCK

NOT

- MAGAZINE-BOX DISCONNECT SYSTEM

AL 0023961

WAW
10.15.93

MANUFACTURING POINT OF VIEW

HIGH

- INTERCHANGEABILITY OF COMPONENTS AT SUB-ASSEMBLY AND FINAL ASSEMBLY.
- SATISFACTORY PERFORMANCE WITH NORMALLY-ACHIEVED TOLERANCES
- ONLY NORMAL TRAINING AND DEXTERITY REQUIRED TO PROCESS

MEDIUM

- READY-TO-ASSEMBLE SUB-ASSEMBLIES AT FINAL ASSEMBLY
- DESIGNED TO PREVENT INCORRECT ASSEMBLY OF COMPONENTS

LOW

- READILY REWORKABLE/SALVAGEABLE

3 of 6

AL 0023962

10-15-93
WAW

LIABILITY

POINT OF VIEW

HIGH

- AVOID PATENT INFRINGEMENT
- NOT INTERCHANGEABLE OR RETROFITTABLE TO M700
- TWO POSITION "S" & "F"
- SEALED UNIT REQUIRING NO ORIGINAL OR FIELD LUBRICATION
- ROBUST AGAINST IMPACT - EXCEED SAAMI/ANSI RECCOMENDATIONS BY WIDE MARGIN
- USER OPERATION CONSISTENT WITH PRECEDENT AND CONVENTION.
- ROBUST AGAINST EFFECTS OF TAMPERING/ ADJUSTING
- HIGHLY INTUITIVE OPERATION

MEDIUM

- READILY DEFENSIBLE REASONS FOR DEPARTURE FROM CURRENT DESIGN

? • CONVERTIBLE & REVERSIBLE BOLT LOCK

? • INTERLOCK: WILL NOT FIRE IF TRIGGER IS PULLED AND HELD AS SAFETY S → F

AL 0023963

4 of 6

10-15 93
WAW

ENGINEERING PROCESSING POINT OF VIEW

HIGH

- SHORT RECEIVER
- MACHINES, TOOLING, PROCESSES CONSISTENT WITH EXPECTED VOLUME
- HIGH-YIELD OPERATIONS
- MAINTAIN MAX PRODUCTION CAPACITY

MEDIUM

- DESIGN TO INHIBIT/PREVENT INCORRECT ASSEMBLY OF COMPONENTS
- DESIGN TO PERMIT REWORK/SALVAGE

BASIC

AL 0023964

5 of 6

10·15·93
WAW

ENGINEERING DESIGN POINT OF VIEW

HIGH

- SHORT DIMENSIONS PARALLEL TO CL BRL
- AVOID ANY REASON TO PUT FINGER WITHIN TRIGGER GUARD EXCEPT TO INTENTIONALLY FIRE
- EASY TO UNDERSTAND - HIGHLY INTUITIVE OPERATION
- REALITY VS PERCEPTION RECONCILED THRU ACTUAL TESTING PERFORMANCE
- PRESERVE ADVANTAGES OF RESILIENT CONNECTOR FUNCTION
- DO NOT USE GEAR AS BOLT STOP OR APPLY BOLT STOP IMPACT TO ASSEMBLY
  - REDUCED LOCK TIME
- ACTUATE SAFETY WITH BOLT OPEN

MEDIUM

- QUIET OPERATION
- ENHANCED CORROSION RESISTANCE
- COMPEL TRIGGER TO SUPPORT POSITION IN MOVING SAFETY F→S
- FULL TRIGGER RETRACTION UPON PARTIAL PULL
- MEANS TO PREVENT INCORRECT ASSEMBLY/RE-ASSEMBLY OF COMPONENTS

AL 0023965

1 of 1

EXHIBIT 69

N 388 F.C. 8.9.93 WRW

INTERLOCK SO THAT GUN WILL NOT FIRE (OR SAFETY CANNOT BE MOVED) IF FORCE IS APPLIED TO TRIGGER AS SAFETY IS MOVED (ATTEMPTED TO BE MOVED) FROM S TO F POSITION.

ONLY MODELS NOW KNOWN ARE N66, 310 PEERLESS, S200.

ANY BOLT ACTION C.F.

· COLT SAUER

FINGER PLACE BOTH DIRECTIONS

EXHIBIT 25

April 2, 1993

TO: R.W. Soucy
FROM: W.A. Warren, Jr.

PROGRESS REPORT March, 1993

M700 VS Long Action "Sendero Special"

On 3-24, we approved production samples from the vendor's first two stock molds. It appears that he has corrected the conditions observed on the previously-submitted samples from mold #1. These four sample stocks, however, display a condition not observed on previous samples:

- o the left fore-end rail is very close the the barrel rollmark.

To the degree observed, it is not a cause for rejection. It does mean that there is no additional margin to accommodate any other influences tending to cover the barrel rollmark. A sample has been returned to vendor for his review.

Mr. Houghton, president of of R-3 Precision, indicated to me on 3-24-93, that he has been making production quantities of these stocks (before we approved samples).

We received samples from mold #3 on 3-26-93; we expect samples from mold #4 late the week of 3-29. The interval between samples from successive molds is closer to 1 1/2 weeks than the 2-3 days previously indicated by the vendor.

BASIC RESEARCH-RELEASE MECHANISMS

Measurement Apparatus: This project was approved on site during the week of March 15. It has been sent to Pittsburgh.

Benchmarking: competitive purchases-no change

NBAR: Effective 3-1-93, my release mechanism activity has become focused on developing a new fire control for this model.

I have reviewed the indices of the AFTE (Association of Firearms and Tool Examiners) Journal going back to the organization's beginning in 1969. Several Remington-specific and general interest articles were found.

DESIGN-RELATED

On an ongoing basis, I am assisting M. Keeney with his NBAR process-design integration program.

The Customer Repair computer run "Top 10 faults by model" was reviewed for the Model 700 rifle. The two most frequent faults are "stock cracked" and "return for update." The balance of the top ten items appear to have more to do with gun abuse than with design. A more comprehensive "Top 50" has been requested for the M700 only.

SAFETY

R&D safety committee and site audit: 10 hours.

MISC

I have reviewed my previous process engineering files to prepare for probable document production, in April, on the common fire control.

Fred Supry and I sorted the contents of the R&D library prior to it being moved back upstairs. Much obsolete information was discarded; some reference books predated WWII.

I completed the 15-week on-site course, "Metallurgy for the non Metallurgist."

END

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KINZER V. REMINGTON

EXHIBIT 42

TIN BAR MEETINGS WITH
PRODUCT MARKETING
POSITIONING

Carmo 3/18/93

WIN REMINGTON SAVAGE/10.

8.19.92

N'BAR WITH MARKETING

BOWMAN WANTS TO AVOID MULTIPLE OPTIONS; CONCERNED FROM SALES PERSPECTIVE

WILL THE MARKET SUPPORT A DIFFERENT PRICE FOR A MORE SOPHISTICATED FIRE CONTROL BY GRADE OR GUN?

BO DOESN'T WANT A LOT OF OPTIONS LIKE THE ST90.

ADL BDC PERCEPTIONS

SP 78 I 700 ADL

example:

- CUSTOMER CHOICE OF BOLT LOCK OR NOT - CHANGE IN FIELD AT LOW COST
- TARGET TOLERANCE ON WT. OF POLE
- OPTIONAL FEATURES PACKAGE

ALL WANTS FEATURE

RELATIVE WT / CREDIBILITY:

NO DEFINITIVE ANSWER.

- TO C. SIMPSON'S INFO / SURVEY
- OUR CUSTOMER SATISFACTION SURVEY JUST REVIEWED
- OTHERS UNKNOWN TO ME

ENG. GOALS

- CONSUMER ACCEPTABLE
- DRAG [illegible]

FOCUS GROUP N'BAR

TIED UP IN TRADE

NOT A FIRE CONTROL DESIGN FOR N'BAR.

N'BAR DATA IS SOFT.

N'BAR IS PROBLEM FOR BASIC RESEARCH.

N BAR

HIGH END ENTRY = (parallel) TO 700

LET MARKET TELL US IF 700 IS TO BE DISPLACED.
PRESERVE CAPACITY TO SATISFY M700 CUSTOMERS.

N' BAR TO BE LOWER COST TO MFG FOR MARKET STRATEGY.

N' BAR COULD BECAME TOP LOW END GUN → 700 STAYS HIGH END.

EXHIBIT 43

Sept. 30, 1992

DRAFT

These are generic design guidelines intended to establish prioritized criteria for any actual design to meet and to promote awareness and establish direction in design tradeoffs between alternatives.

In general, measured performance of any proposed new design is to be equal to or superior to that of the comparable system in the product currently produced.

BOLT PLUG

Priority	Characteristic
	Minimize adverse affects of rearward gas flow (pierced primer, etc.).First, on shooter. Then on product.
	Impede flow traveling rearward:
1	o within bolt possible strategy: stack firing pin spring solid before full diameter portion of firing pin head is fully rearward of corresponding hole in bolt plug o how to assemble?
2	o around circumference of bolt
3	Exposed firing pin head o provides visual indication of cocked status without adding extension/mass to firing pin system which would increase lock time
4	Protected firing pin head o bolt plug to absorb any impact from the rear and prevents it from being imposing on the release mechanism
5	Relationship to rear of receiver o Front of bolt plug will be noticeably forward of (within) rear of receiver when bolt assembly is fully locked up o cosmetic

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EXHIBIT 70

8.27 FL
WAW

RELEASE MECHANISMS

THINGS WE THINK WOULD LIKE TO AVOID: ASSOCIATING BOLT STOP FUNCTION OR LOCATION WITH ELEMENTS OF SAFETY POSITIVE OR PHYSICAL OF MECHANISM

BOLT STOP FUNCTION:

RELEASE NOT BY POLLING TRIGGER BEYOND NORMAL SEAR RELEASE:

- HOW TO GET POSITIVE OVERTRAVEL STOP?
- AVOID ASSOCIATING ANY FUNCTION EXCEPT FIRING WITH TRIGGER MANIPULATION.

RELEASE BY MOVING SAFETY ACTUATION MEANS (TO EXTREME STROKE BEYOND NORMAL POSITIONS) M S81-S

- AVOID USING SAFETY FOR MORE THAN FIRE/NO FIRE, MULTIPLE POSITIONS,
- MOVE OUT OF SAFE CONDITION TO REMOVE A (POSSIBLY CLOSED) BOLT.

RELEASE BY ACTUATING OTHER MEANS WHICH IS PART OF RELEASE MECHANISM: (M700, M725):

- NO INTRINSIC ADVANTAGE TO THIS.

+ THE DEMONSTRATED REPRODUCIBLE ~~RESULTS OF~~ TEST RESULTS

THE "REALITY" OF REPRODUCIBLE TEST RESULTS BECOME A STRONGER DRIVEN INFLUENCE ~~BRIGHTENS~~ THE "REALITY" OF CUSTOMER PERCEPTION.

HIGH CONFIDENCE OF INTENDED OPERATION WITH REDUCED LIKELIHOOD OF ~~USE~~ INADVERTENT ACTIONS.

DEGREE OF ADJUSTABILITY

WHERE MADE

NO ADJUSTMENTS

FACTORY ONLY ONCE TIME DEDICATED LOCKED THROUGH NON-ADJUST-ABLE

FACTORY ONLY PROFESSIONAL MEANS TO ADJUST TOOLS SCREWS ETC.

FACTORY FOR CUSTOM GUNSMITH TO ADJUST

FACTORY

DEDICATED ONLY TIME ONCE BY NATURE

ADJUSTABLE "PERMANENT SETTING"

ADJUSTABLE VERSION GUNSMITH MAY MODIFY

SERVICE CENTER

TALENTED AMATEUR

UNSKILLED AMATEUR

MORON

WHAT NOT TO DO

O.T. (ENGRAVING, CHECKERING)

ASSUMED PRIORITIES

(1) W700 SERIES TRIGGER (PROACTIVE) SPECS COMPLETION; SUCCESSFUL END OF ARMY ACTIVITIES ON (LONG LEAD TIME) ITEMS; THE NEXT MILESTONE (CONTRACT AWARD)

(2) DEFINE W[illegible] NEXT GEN F.C. CONTRACT.

[illegible] SYSTEM REQUIREMENTS DEFINED.

OBTAIN NEXT GEN F.C. TIMETABLE ON DEFINITION OF TIMETABLE

ARMY TIMETABLE ON TIMETABLE SUB GOALS TIMETABLE OF MILESTONE

ULTIMATE: TIMETABLE ON DEFINITION OF F.C.

PRIOR N'GEN REVIEWS

WHY WAS PRIOR SYSTEM ACQUISITION (AROUND 200 - MILLION?) OR COMPETITIVE PRODUCT WAS IT REVIEW

SYSTEM REQUIREMENTS

STRENGTHS / WEAKNESSES

- IN-DEPTH LITERATURE REVIEW
  S. ORTIZ'S BOOK(S)
- [illegible] / LITIGATION / AUTOPSY DISTRIBUTORS SUMMARIES — DISEASE MECHANISM MILESTONES OR TIME WITH HUMAN DEFICIENCIES.

Proto C

W. Wagman

AJ Bar

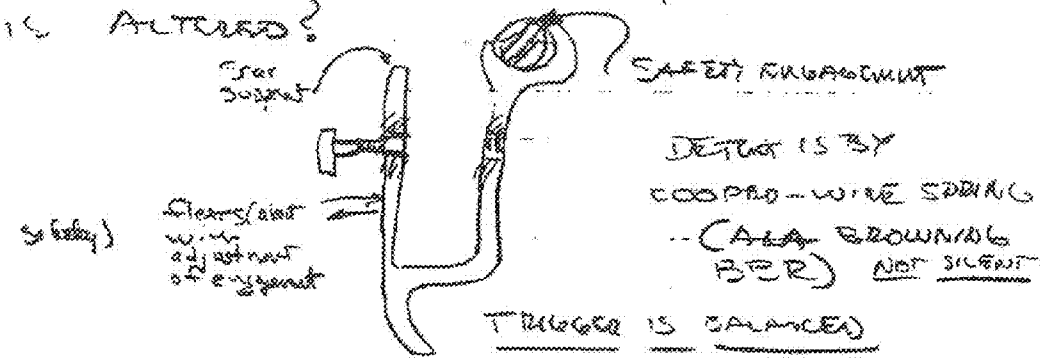
Query other "minimum material removed" CF reader in a rear lockup.

Avoid a "50 pound" preload on F.P spring ⇒ this load is applied on fire control disengagement surfaces.

Avoid Texas Magnum condition
- Applying safe (Crossbolt) in fired condition will not allow firing pin to retract

Binding notches in head of hammer screw(s) (RH engagement) 40 pitch with 12 ⇒ .002 engagement steps.

How do you accommodate a trigger pull safety without decreasing an adjustment if trigger safe engagement is altered?



TEST REQUIREMENTS

WILL EXCEED SAAMI
DROP TEST FOR NEW PRODUCT
BY CONSIDERABLE MARGIN.

EQUAL TO OR BETTER THAN MIZZO
DROP TEST PERFORMANCE

GOALS

CONSUMER ADJUSTABLE

STRATEGY

- "GRIP" SAFETY
- TRIGGER - REMOVAL (SAFE)

EXHIBIT 67

8-9-93
WALL

LOOKING FOR A WAY TO*

PRESERVE ADVANTAGES OF CONNECTOR = ACCOMMODATES / IMPERFECT ENGAGEMENT SURFACES & SLIGHTLY REWORKED CORNERS

DOES NOT FEEDBACK TO TRIGGER AS CONNECTOR CONTINUES TO MOVE

ACCOMMODATE DIFFT MATERIALS WITH STRENGTH & THICKNESS WHERE NEEDED.

SAFETY WHICH ALSO BLOCKS CONNECTOR/ TRIGGER & COUPLES THEM REGARDLESS AS SAFETY IS APPLIED.

BIGGEST CONCERN*

IF BIGGEST LIABILITY THREAT IS FSR TR. MUSCLE POTENTIAL, THEN ANY DEVICE WHICH ASSIST CLEARS OF SAFETY MANIPULATED BY THUMB IS UNACCEPTABLE* TO INADVERTENT TRIGGER ACTUATION BY TRAILING FINGER*

MOST SPORTING GUNS MAY DIFFER FOR DEVICE except crossbolt safety

⇒ START WITH TWO POSITION

FRONT/REAR on RIGHT REAR OF RECEIVER.

- ADD RELEASEABLE BOLT LOCK CLOSE TO SAFETY-MINIMUM LINKAGE
- ADD IT TRIGGER BLOCK. (DETER P.S.D. TRIGGER CONTACT)

PUSH BUTTON

EXHIBIT 71

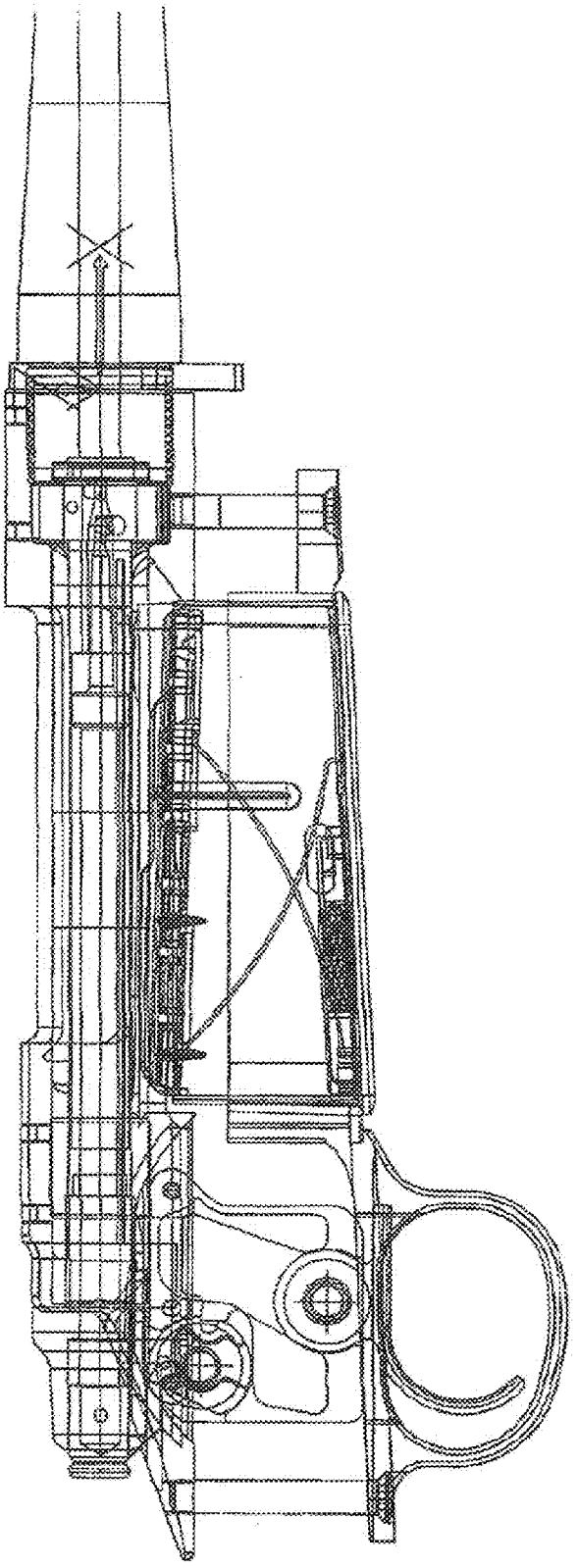
NBAR FIRE CONTROL DESIGN OBJECTIVES

- NON INTERCHANGABLE WITH M/700
- USER "FRIENDLY" DESIGN
- IMPROVED "TACTILE FEEL" OF THE TRIGGER
- IMPROVED "TACTILE FEEL" OF THE SAFETY (TWO POSITION)
- CUSTOMER ABLE TO OPEN AND CLOSE BOLT WITH SAFETY "ON"
- BOLT LOCKED DOWN IN A "S" CONDITION
- CUSTOMER ADJUSTABLE TRIGGER PULL FORCE ONLY WITHIN PRESCRIBED LIMITS
- BOLT STOP RELEASE RELOCATED WITH IMPROVE "TACTILE FEEL"
- LEFT HANDED VERSION TO BE DESIGNED
- DESIGN FOR MANUFACTURABILITY PRINCIPLES UTILIZED
- DESIGN FOR ASSEMBLY PRINCIPLES UTILIZED
- "SEALED" DESIGN ROBUST AGAINST TAMPERING
- RIFLE WILL NOT FIRE IF TRIGGER PULLED AND HELD AS SAFETY IS MOVED FROM "S" TO "F"
- ROBUST AGAINST IMPACT
- COMPEL TRIGGER TO SUPPORT POSITION IN MOVING SAFETY FROM "F" TO "S"
- "NO LUBRICATION" DESIGN
- ENHANCED CORROSION RESISTANCE

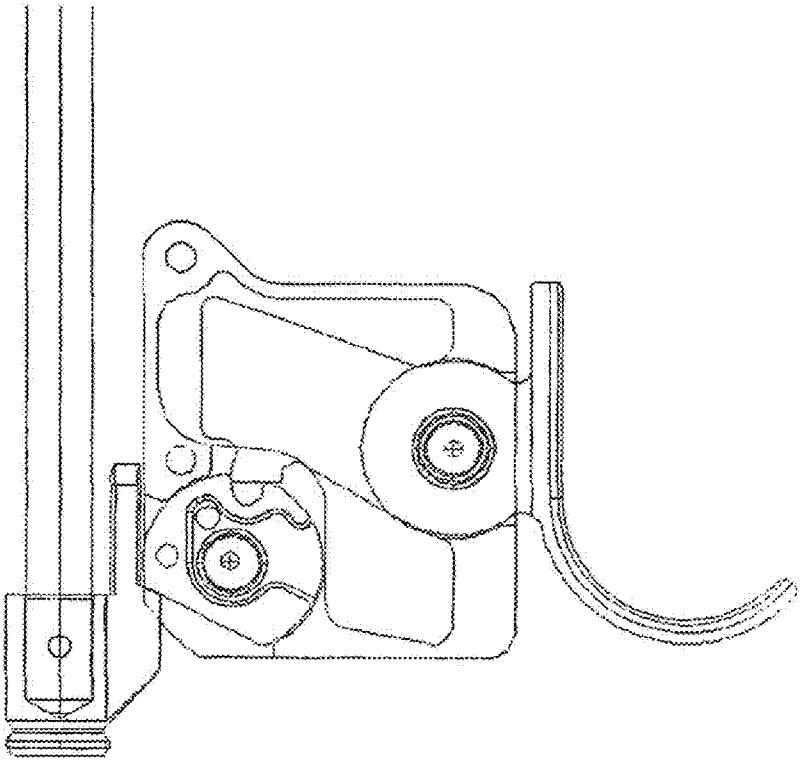
D.S Findlay
11-5-93

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

NBAR - DSF



CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON



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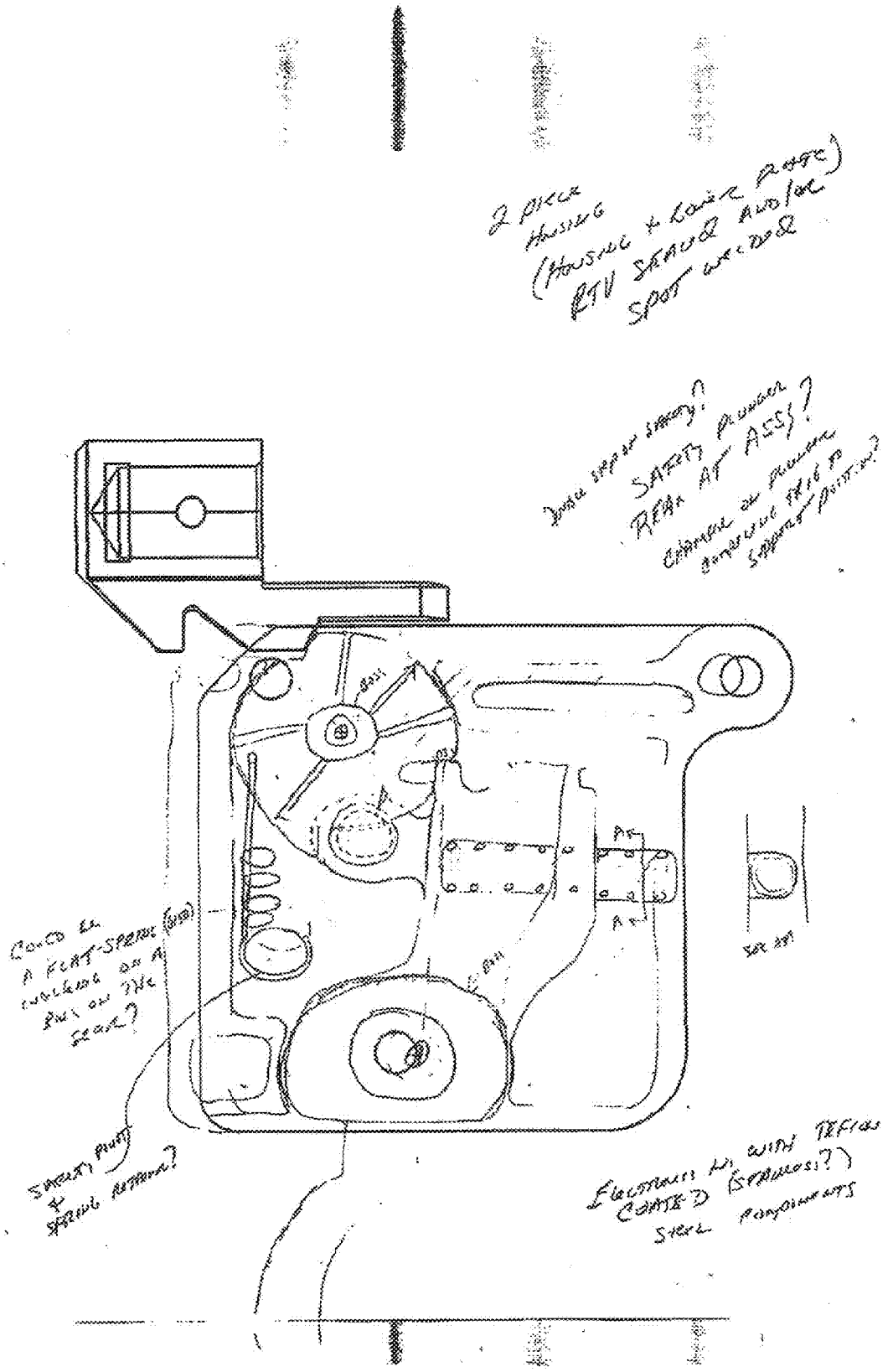
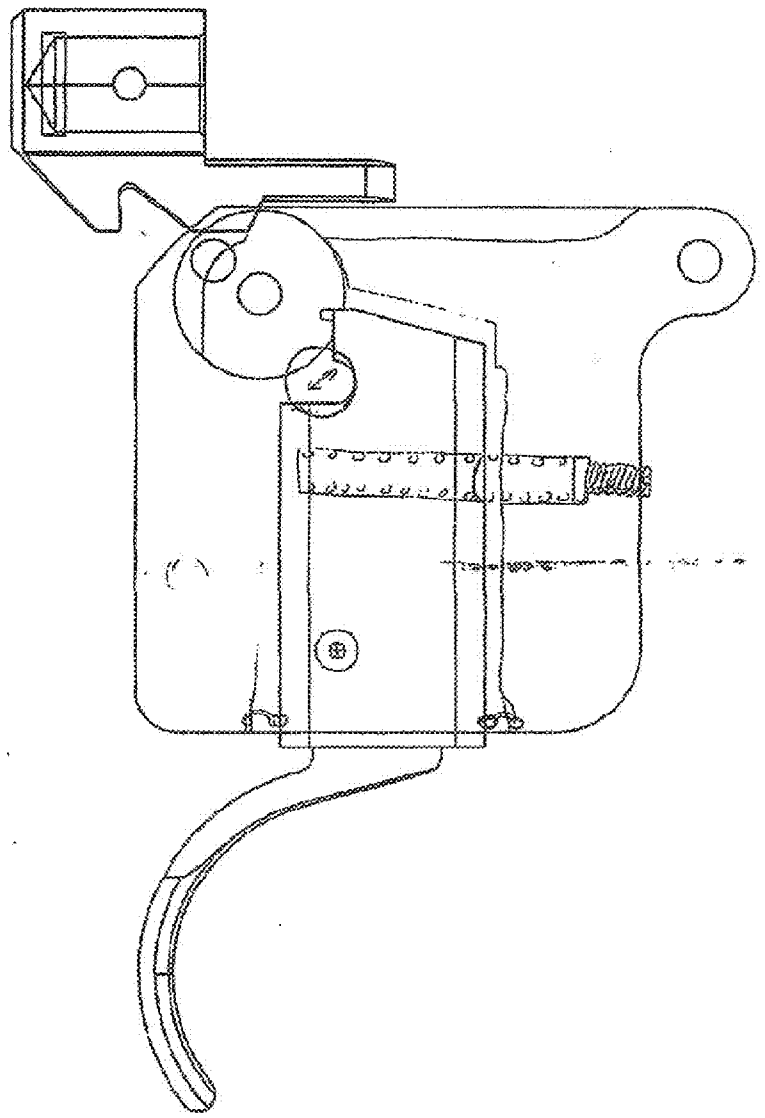
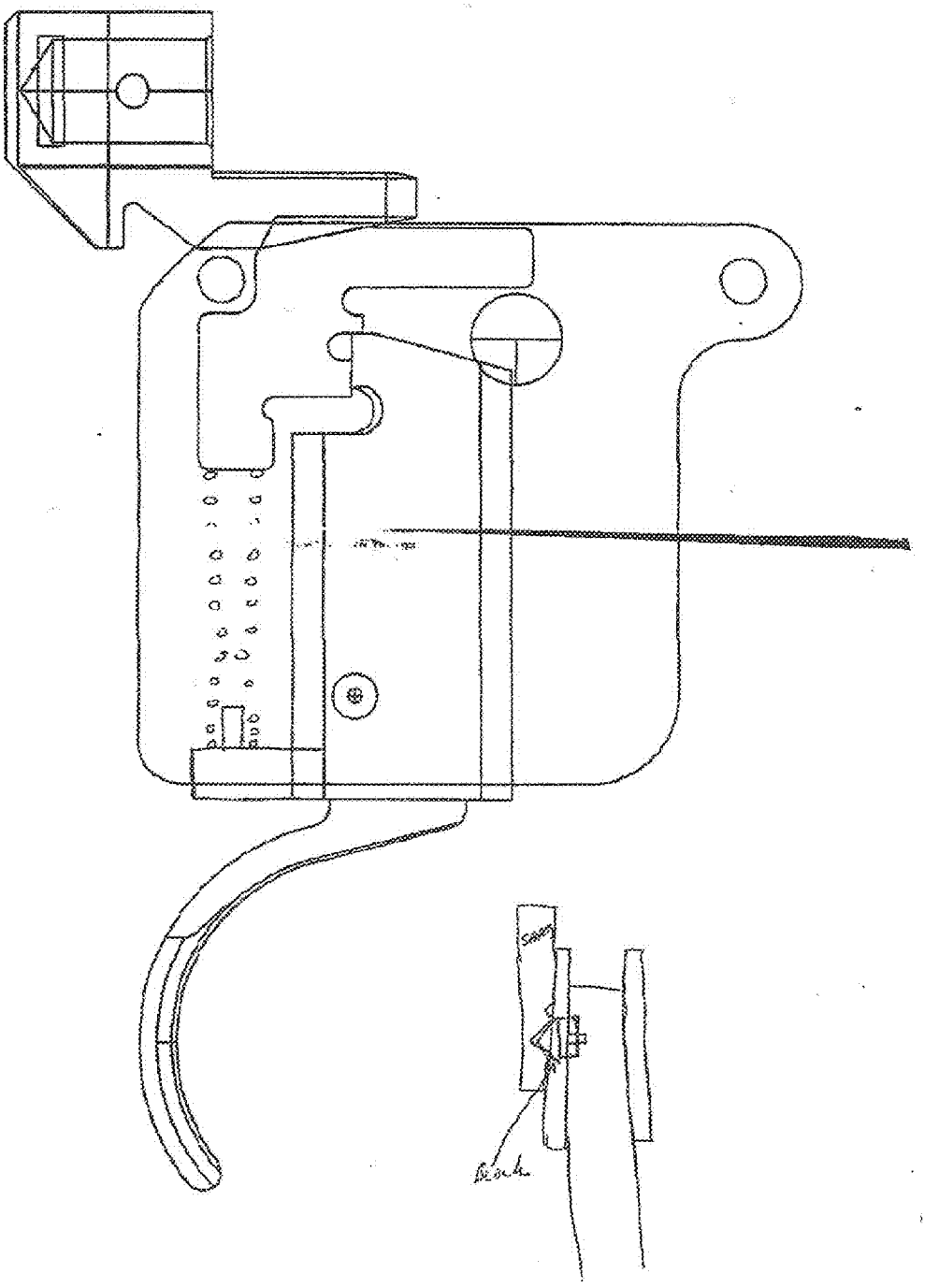
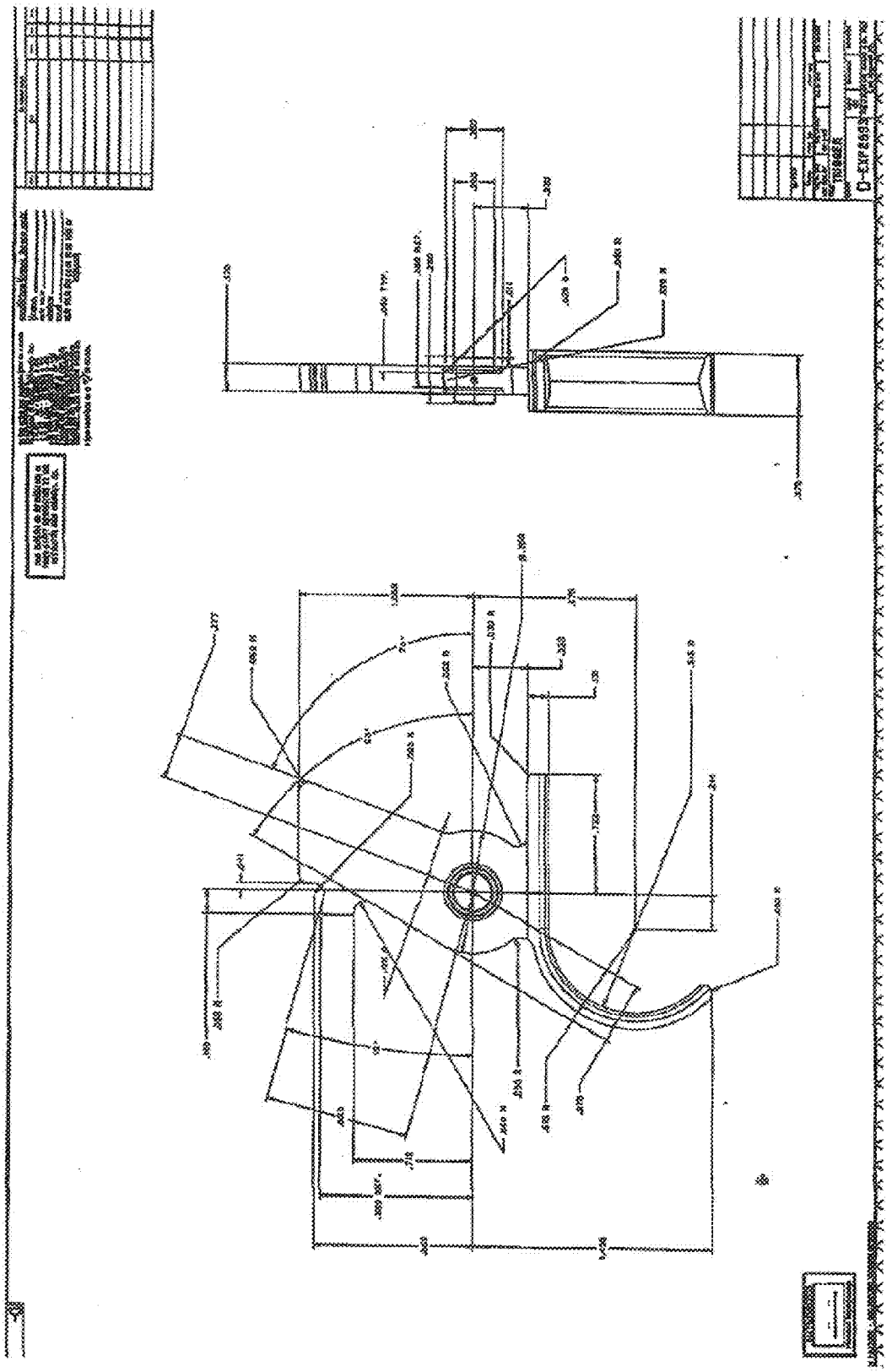
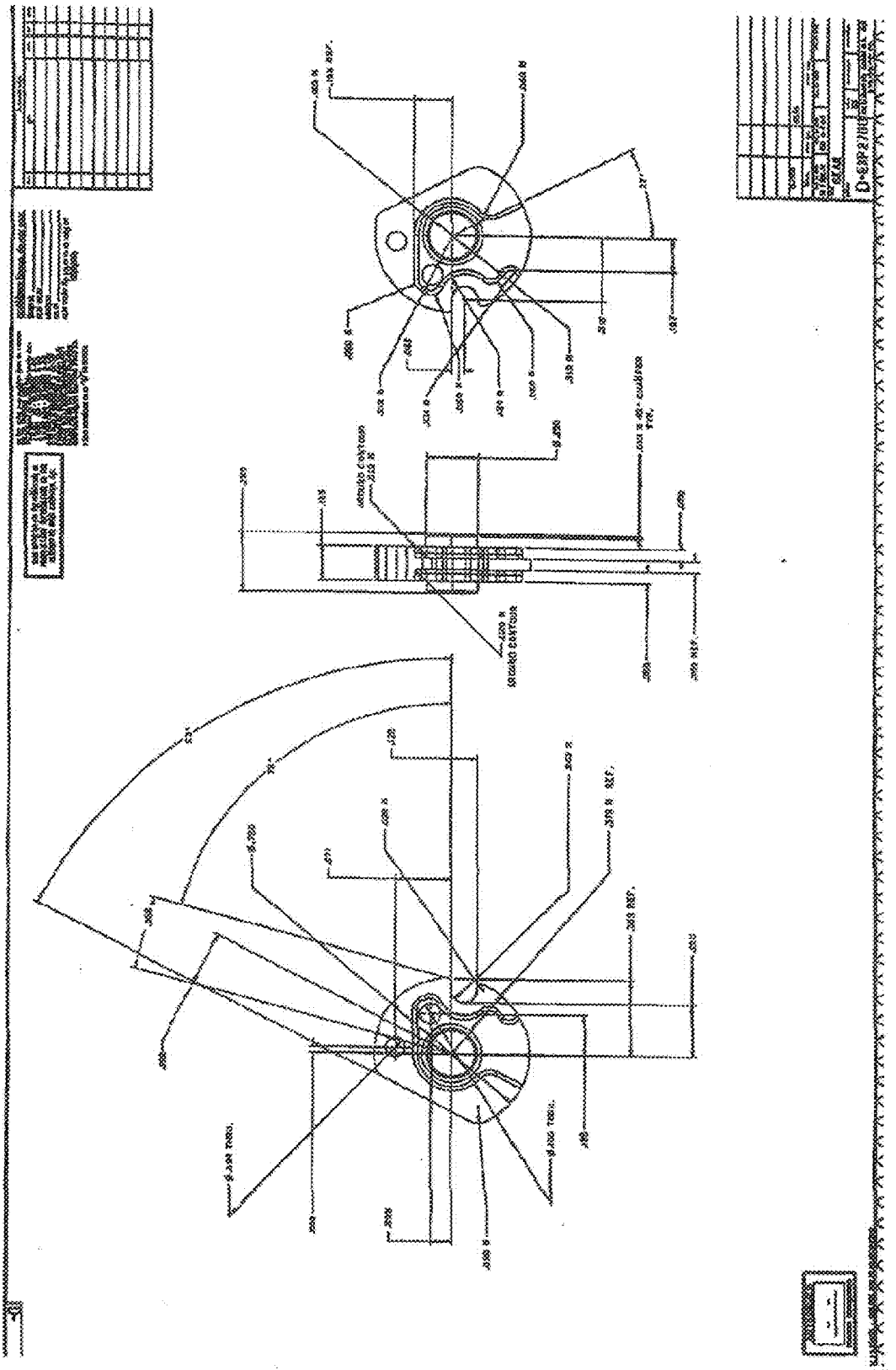
KINZER V. REMINGTON

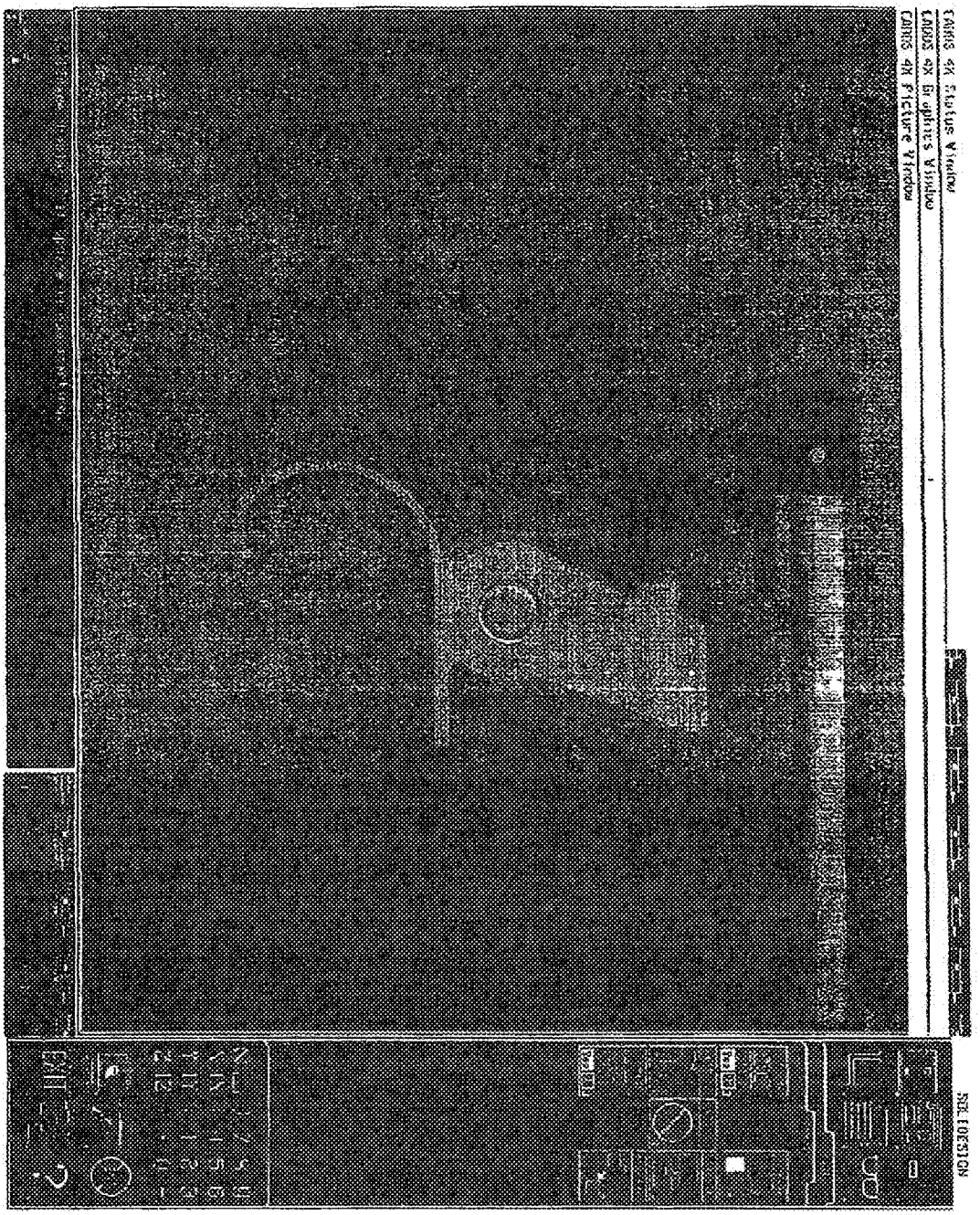

2 PIECE HOUSING (HOUSING + COVER PLATE) RTV SEALED AND/OR SPOT WELDED
DOES SPRING HANG? SAFETY PLUNGER REAR AT ASSY?
CHANGE TO PLUNGER SIMILAR TO #1 TO SUPPORT SPRING?
CAN BE A FLAT-SPRING (LIKE) CANTILEVER ON A PIN ON THE SEAR?
SAFETY PLUNGER & SPRING REMOVED?
ELECTRONICS W/ WIRE LEADS COATED (PARYLENE?) STEEL COMPONENTS

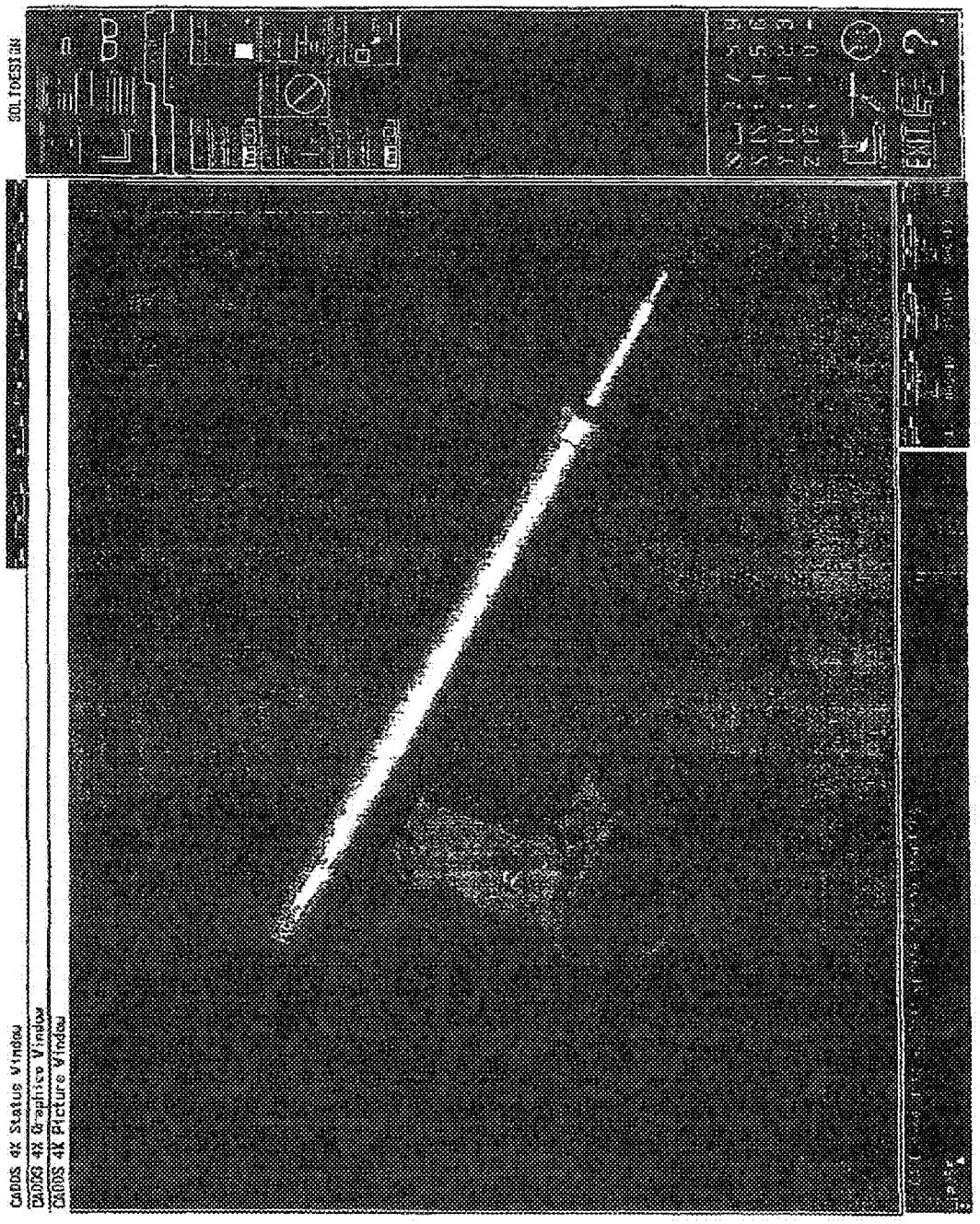




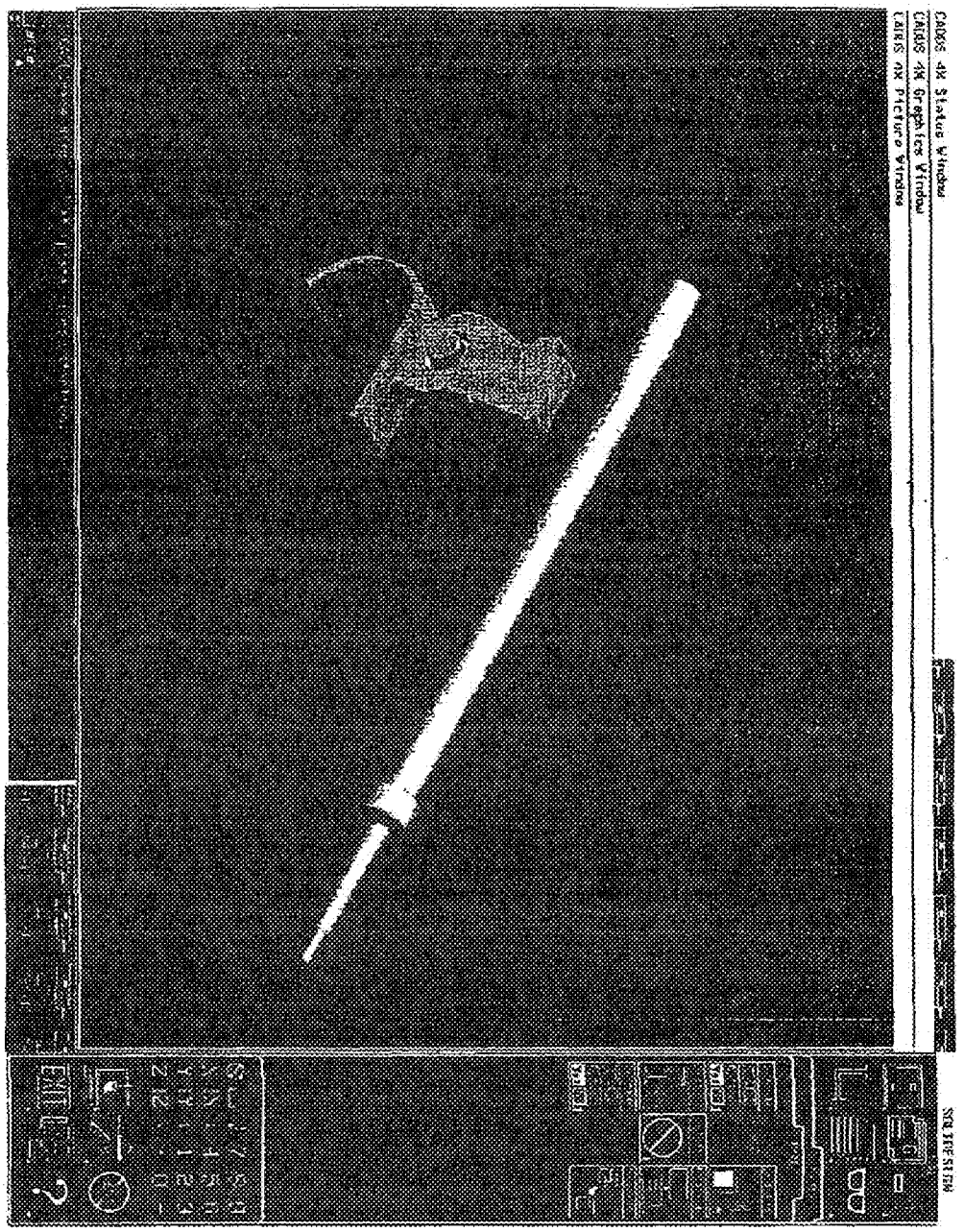


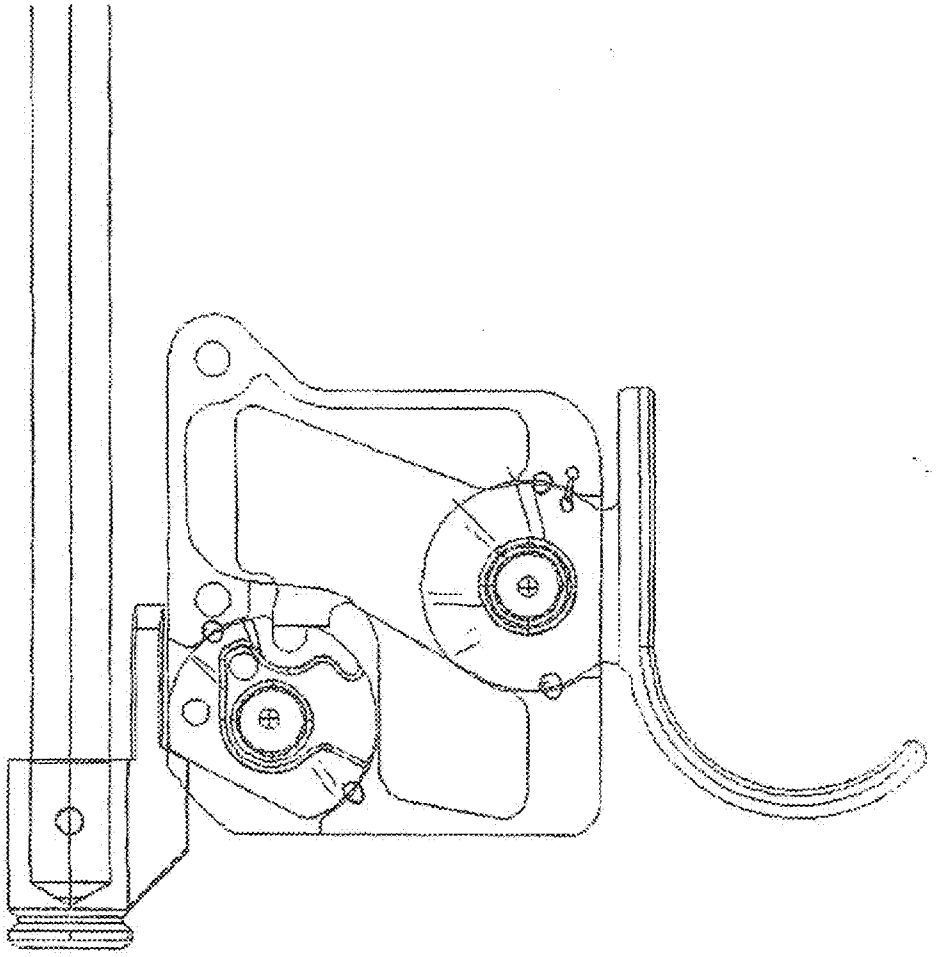






CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON





CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

EXHIBIT 72

CENTER FIRE RIFLES - 1994

RIFLE MODEL	LOCATION AND TYPE OF SAFETY	BOLT LOCK	TRIGGER BLOCK	SEAR BLOCK	STRIKER BLOCK	TRIGGER PULL ADJ.	OVER TRAVEL ADJ.	ENGAGE ADJ.
WINCHESTER M/70	ROTARY WING RH SIDE 3 POSITION	YES			YES	YES	NO	NO
RUGER M/77 MARKII	ROTARY WING RH SIDE 3 POSITION	YES	YES		YES	NO	NO	NO
REMINGTON M/700	SWING RH SIDE 2 POSITION	NO		YES		YES	YES	YES
BROWNING A-BOLT II	SLIDING CENTER TANG 2 POSITION	YES		YES		YES	NO	NO
SAVAGE M/110	SLIDING CENTER TANG 3 POSITION	YES	YES			YES	YES	YES
SAKO	SWING RH SIDE 2 POSITION	NO	YES			YES	YES	NO
WEATHERBY MK5	ROTATING RH SIDE 2 POSITION	YES			YES	YES	NO	YES
WEATHERBY VANGARD	SWING RH SIDE 2 POSITION	YES	YES			YES	NO	YES

RESURF.CF-RIFLE-SURVEY

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KINZER V. REMINGTON

BARBER - 1.30.13001374

EXHIBIT 73

Jan 11, 1994

BOLT ACTION RIFLE MEETING

I. WHERE ARE WE NOW? HOW DOES THE M/700 STACK UP TO THE COMPETITION? WHAT IS OUR CURRENT MARKETING APPROACH?

- PRICE
- CUSTOMER CONCERNS/FEATURES

DOES THE RIFLE FEEL GOOD?
- STYLING
- STOCK FIT
- LEFT HAND VERSION
- FIT AND FINISHES
- RECOIL FEEL (MUZZLE BRAKE)

DOES THE RIFLE COME IN THE CALIBER I WANT?

DOES THE RIFLE FIRE WHEN I PULL THE TRIGGER?
- FEEDING RELIABILITY
- DETACHABLE MAGAZINE BOX FLOOR PLATE/BLIND MAGAZINE
- BOLT LOCK
- EXTRACTOR DESIGN

CAN I HIT WHAT I AM AIMING AT?
- ACCURACY
- LOCK-TIME
- FIRECONTROL FIRING "FEEL"
- FIRECONTROL ADJUSTMENTS
- SCOPE MOUNTING PROVISIONS

CAN I OPERATE THE RIFLE EASILY AND IS IT SMOOTH?
- DEGREES OF BOLT ROTATION
- BOLT LIFT FORCE
- "NO DRAG" FOLLOWER

IS THE RIFLE EASY TO MAINTAIN?
- EASY DISASSEMBLY OF THE BOLT
- SYNTHETIC STOCK VERSION
- STAINLESS STEEL VERSION
- CORROSION RESISTANCE

IS THE RIFLE SAFE?
- COCKING INDICATOR
- REPUTATION (PRODUCT LIABILITY)

II. WHERE DO WE WANT TO BE?
WHAT IS OUR MARKETING APPROACH (LOW END/HIGH END)?

III. WHAT ARE OUR OVERALL RIFLE OBJECTIVES?
WHAT ARE OUR FIRECONTROL OBJECTIVES?

IV. HOW DO WE ACHIEVE OUR OBJECTIVES?

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KINZER V. REMINGTON

EXHIBIT 74

There are many more considerations in designing a safety mechanism than in the one that is alleged here. Some of the considerations are:

- How will the mechanism work? * FLUPPIN * SEAR * TRIGGER
- What part will it block, lock or separate to disengage the mechanism?
- Where will the safety be located in respect to the shooter's hand and visual position?
- In so doing the work required to disarm the gun, will the safety forces be reasonable; that is, can you actuate the safety to the "on safe" and "off safe" with a reasonable force?
- Are the safety detents, that is, positions - clearly defined and understood?
- Is the mechanism safe and foolproof if the gun is dropped?
- Is the mechanism easy to understand?
- Will the mechanism when actuated, disturb game within a reasonable distance?
- Does the design follow the standard convention or practices developed over the years, in such that the experienced shooter can pick up the rifle and readily understand how the mechanism works?

The Trigger mechanism on a Bolt Action rifle by its customer expectations, must be a mechanism which is free of creep, with an excellent Trigger pull. To develop this, the amount of engagement between

3-10-93

AFTE JOURNAL ON IMPACT TORQUES CIRCA, 1985

GENERAL AREAS OF COST REDUCTION
FROM MOST REDUCTION OF COST TO LEAST EFFECT

1. USE A SYNTHETIC STOCK MOLDED IN HOUSE (APPROX. 3-5$) WITH NEW OUTSIDE CONTOUR TO MAKE THE GUN LOOK DIFFERENT WITH NO GRIP CAP AND NO RECOIL PAD (LIKE M/522 STOCK)

2. LOOK AT THE ENTIRE M/700 MANUFACTURING LINE WITH THE IDEA OF REPROCESSING IT TO REDUCE FACTORY COST.
   - CNC STAND ALONE MACHINE CENTERS
   - CHANGES TO GPM FORMING
   - ECM RIFLING/BUTTON RIFLED AT THE VERY END OF THE PROCESS

3. RE-DESIGN OF THE BOLT HANDLE AS A STAMPING/FORGING TO REDUCE ITS COMPONENT PRICE.

4. USE SYNTHETIC PLASTIC FOR THE FOLLOWING COMPONENTS
   1. MAGAZINE FOLLOWER
   2. TRIGGER GUARD (NEW CONTOUR-DIFFERENT THAN ADL) OR TRIGGER GUARD/FLOOR PLATE COMBINED INTO ONE COMPONENT
   3. MAG. BOX BODY

5. RECEIVER CUTS/DESIGN CHANGED TO REDUCE OPERATIONS AND CHANGE COSMETICS
   1. "ONE CUT" PORT CUT
   2. "FULL ROUND" RECEIVER

6. REDUCED SHIPPING CARTON AND PACKING REQUIREMENTS

7. RE-DESIGN THE HOUSING ASSEMBLY FOR THE M/700 AS A MIM COMPONENT WITH A STAMPED COVER PLATE. THIS MIM COMPONENT WOULD COMBINE THE ONE SIDE PIECE (STAMPING) THE TWO SPACERS AND ELIMINATE THE 4 RIVETS.

8. RECOIL LUG ELIMINATED BY HAVING THE STOCK PERFORM THAT FUNCTION (STOCK COMES UP INTO THE RECEIVER (2 PLACES?) RATHER THAN THE LUG COMING DOWN INTO A CAVITY IN THE STOCK

9. ONE PIECE BOLT
   COMBINE THE BOLT BODY AND BOLT HEAD INTO ONE COMPONENT

10. BOLT PLUG RE-CONTOURED AND DESIGNED AS A SIMPLER SCREW MACHINE COMPONENT

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

EXHIBIT 75

3-22-67

W' BAR MEETING WITH LEGAL DEPT. - J.C. HUTTON
R.S. MOONEY & T.G. BARNES

TOPIC - DEFINE LEGAL'S POSITION AS FAR AS FIRE-
CONTROL M/700 RE-DESIGN FOR NEW BOLT ACTION
RIFLE & BEING ABLE TO DEFEND EXISTING
M/700 F. CONTROL AS WELL AS NEWLY DESIGNED
F. CONTROL FOR NEW RIFLE.

J.C. HUTTON STATED THE FOLLOWING CRITERIA BE
FOLLOWED FOR DESIGN & INTRODUCTION FOR NEW
FIRECONTROL:

- MUST NOT BE BETTER SUITABLE WITH EXISTING
M/700 OR M/7 RIFLES
- MUST ELIMINATE CONFUSION BOTH OF CURRENT
M/700 DESIGN
- NEW RIFLE MUST HAVE A DIFFERENT MODEL
DESIGNATION
- FIRECONTROL TO HAVE A MINIMUM ADJUST-
MENT FOR TRIGGER PULL OF NO LESS
THAN 3# & NOT BE ABLE TO BE
ADJUSTED ANY LOWER THAN 3# EVEN IF
trigger adjustment screw is adjusted loosened
or removed
- ENCLOSED FIRECONTROL HOUSING TO PREVENT
DEBRIS FROM ENTERING & UN-NECESSARY
LUBRICATION FROM BEING APPLIED
- RELIEVED INTERNAL PARTS - SEAR, TRIGGER
OR CLEARANCE IN SIDE PLATES TO REDUCE
BINDING AREAS FOR PIVOTING MEMBERS
TO ALLOW FREE MOVEMENT & REDUCE
BINDING OR DRAG FROM CAKE OF LUBRICANT

R2519701

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

N' BAR MEETING WITH LEGAL DEPT. (CONT'D) (2)

FIRE CONTROL:

- SAFETY TO BLOCK SEAR AND TRIGGER
- TRIGGER RETURN SPRING
  - TO HAVE LOW RATE/LONG FREE LENGTH TO ALWAYS ASSURE RETURN OF TRIGGER AT ANY TRIGGER PULL WITH GRIP MOVEMENT
- BOLT LOCK TO BE INDEPENDENT OF SAFETY LEVER
- PRESET ENGAGEMENT AND OVERTRAVEL
- NEW TECHNOLOGY NEEDS TO BE EMPLOYED, EX; HIM, ARC DEPOSITION COATINGS, ETC.
- THE MOTION TO AUTOMATED ASSEMBLY AUTOMATED TESTING (AND ASSEMBLY) WAS DEEMED TO BE DESIRABLE

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KINZER V. REMINGTON

(3)

FOR THE ABOVE FIRE CONTROL FEATURES TO BE REVIEWED, WILL ALSO REQUIRE THE FOLLOWING REVIEW OF THE M24 RSI:

- RECEIVER - REDESIGN OF MODIFICATIONS DUE TO NEW INTERCONNECTABILITY OF 5 COMPONENTS, & ENLARGED - SEALED ASSEMBLY TO ENVIRONMENT AND WATER.
- BOLT, BOLT PLUG, FIRING PIN & SPRING (BOLT ASSY) RE-REVIEW DUE TO BOLT LOCK BEING INDEPENDENT OF SAFETY LEVER

cc. Dave
Pete

REMINGTON ARMS COMPANY, INC.

INTEROFFICE COMMUNICATION

TO:

FROM:

DATE: May 14, 1992

SUBJECT: Sporting Arms Support Costs

The attached exhibit shows by major (1989 through the 1992 Rev 1 estimate) a breakdown of administrative support costs for Sporting Arms. Total support costs have increased from $24.6 million in 1989 to $26.2 million forecasted for the 1992 Rev 1. The $1.6 million increase in cost has been due to a $3.1 million increase of inside/outside legal expense and a $1.0 million increase in system development costs. These cost increases were partially offset by a $2.5 reduction in all other support costs. The decrease in all other support costs was primarily due to a $4.4 million reduction in DRCS/administrative charges from DuPont/Conoco partially offset by the increase in costs associated with the functions acquired from the DuPont staffs.

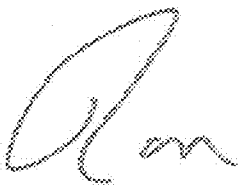
Excluding legal costs and systems development costs, total support costs as a percent of sales declined from 5.6% in 1989 to 4.6% in 1992 Rev 1. The following table compares 1989 support costs by function with 1992 Rev 1:

	1989	1992 Rev 1	Increase (Decrease) $	Increase (Decrease) %
		$MM		
Sales	355.9	377.6	21.7	6
Finance Function	4.9	4.4	(0.5)	(10)
Human Resources	2.9	3.1	0.2	7
ML&S	3.0	2.2	(0.8)	(27)
Information Systems^	5.4	4.8	(0.6)	(11)
Admin & Services	1.8	1.1	(0.7)	(39)
Customer Services	1.7	1.7	-	
External Affairs	0.1	-	(0.1)	(100)
Subtotal	19.8	17.3	(2.5)	(13)
System Development	-	1.0	1.0	-
Legal	4.8	7.9	3.1	65
TOTAL	24.6	26.2	1.6	6

Support costs for Sporting Goods include the administrative expenses at Wilmington and the plants. Data for the years 1989-1991 was reconstructed based on the 1992 organizational structure and accounting practices, i.e., sales forecasting costs are part of Marketing Department expense in 1992; therefore, these expenses were excluded from the study of administrative costs. System development costs have been highlighted in this study to show the one-time cost of obtaining self-sufficiency.

Based on our experience to date, we should be able to further reduce our administrative costs as we become self-sufficient. Our ability to reduce legal costs will be a key cost reduction factor. Approximately $6.4 million or 80% of our total legal costs are for outside expenses. Product liability expenses account for about 62% of total legal costs.

If you have any questions concerning this analysis, please advise.



RMS/kg

Attachment

cc:

EXHIBIT 77

8.10.92

CUSTOMER PERCEPTION OF CLOSED END BOLT PLUG IS BETTER.

THE REAL QUALITY/PERFORMANCE CHARACTERISTIC IS SHOOTER PROTECTION FROM LEAKING PRIMER FLUID

M700 HAS ONE; M700 STYLE IS DIFFICULT TO FIELD STRIP — F.P.A. ASS'Y. [COIN SLOT ON F.P. HEAD]

MARKETING WOULD LIKE TO SEE THIS CHANGED. HOW IMPORTANT IS THIS TO THE AVE CUSTOMER?

YOU WANT A BOLT LOCK MEANS.

YOU WANT TO OPEN BOLT WITH GUN ON SAFE.

ERGONOMIC ISSUES OF EASE OF USE & NO CONFUSION.

→ BOLT RELEASE AWAY FROM IN FRONT OF TRIGGER.
- PUSH ON SIDE OPPOSITE BOLT -

JPB NON-OBJECTION TO CLOCK-TYPE TRIGGER LEVER - SOCK LIKES CONCEPT. LEADING TO CUSTOMER-ADJUSTABLE TRIGGER.

8.10.92
(1)
JB, MK, KS, WW

WILL BE CALLED
SINGLE PORT ON NCS;
R/L V BT. BOLT HANDLE CUT AND PORT
(same) Determined

Dedicated by port & bolt handcut.
BUNK CAN BE COR? ⇒ STANDARDIZATION ABOUT CENTRAL CL OF 2 NR/REC BARREL (REC BAT)

[1995 volumes NCS
3 YR " BOARDING TO PRESENT

DUAL LINE NOW & THROUGH FIST YR OF TWO DO LOW PRICE 700 AS LOW LOW COST PRICE GOW (ADL) TO KEEP TOOLING ACTIVE. 700 LATER 96 ENT 97. NCS IS TO BE A MED/HIGH REAL FOR 700 BDL.

[Let the market decide preserve.]

(WE CAN DOWNSCALE A TOP END PRODUCT BUT MORE DIFFICULT TO UPSCALE AN INITIAL LOW-PRICE ENTRY).

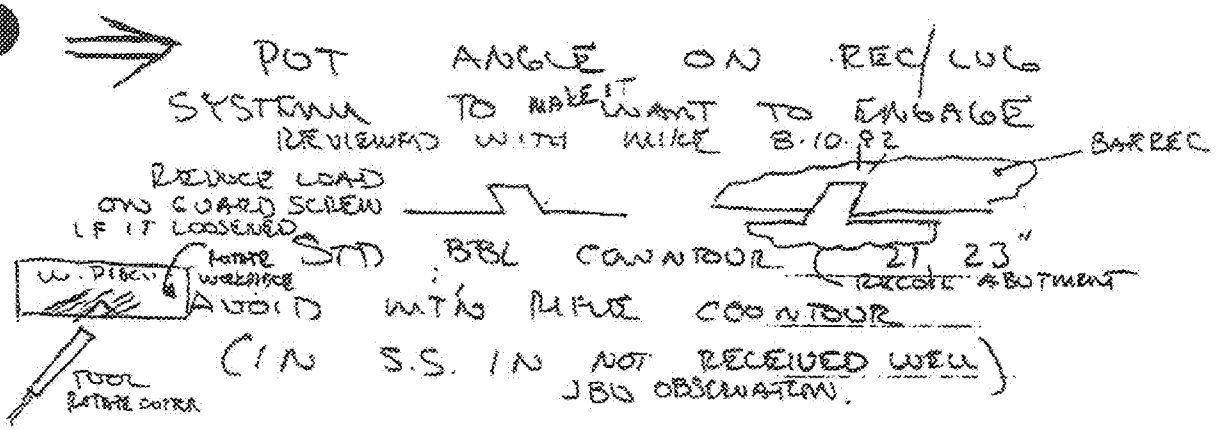
ELIMINATE PHASE OUT 700.
AT CREATE TWO/THREE ZONES
BOTH LINE WITH 700/NBAR.
700'S THEN PHASED OUT BY 1997.

M700 MATCH $180 $175 TOTAL (M700)
NBAR $5 LESS MATERIAL

MOST N'BAR COST REDUCTION WILL BE IN BR/REC MATERIAL.

(2)
8.10.92

→ POT ANGLE ON REC/LUG
SYSTEMS TO MAKE IT EASIER TO ENGAGE
REVIEWED WITH MIKE 8.10.92



(IN S.S. IN NOT RECEIVED WELL)
JBG OBSERVATION.

USSR 18 HEAVY STD/MAG
BBL CONTOUR) ONE SIZE FITS ALL
MAG WILL USE 4100 MAG'L TO
PROVIDE ADDTL BBL CONTOUR OPTIONS.
BARREL

2. MIKE TO GET COPY
— SATISFACTION SURVEY —
("BEST SATISFIED" M200 BBL)
RECENT RESULTS COMING BACK.

COPY

WANT DETACHABLE BOX; DIFFT FROM
M700 SINGLE PIECE TYPE SPRING-LOADED
BOX EJECTION FROM RIFLE. AKA SAVAGE?

REDUCE DIMENSION BOLT FACE TO BACK
OF TANG .8 — .7"

BUTTON: VERTICAL PLUNGER SCAR
(OMIT LONG S.S.C) AKA SAKO

FIRECONTROL SLOT + MAG BOX SLOT ADDITIVE
MACHINED FROM

EWS → WALKER PATENTS (3)

8-10-92

3 LIFTERS

JBO DISCUSSION: WANT TWO: DON'T LIKE SHORTENING FRONT STROKE ON SINGLE CAMMED. ACTION LENGTHS

ONE

VARIOUS trunk BOTH/ COMMON SEES

50-06

We need something new & diff't for scope bases. C"/NTEGRAL" — ALA RUGER) NO OPEN SIGHTS ON THE GUN/BBL. MAKE IT look SEXY.

GRAFTED — NOT AS AN ATTACHMENT. THIS MEANS OMIT THE PART BETWEEN RECEIVER AND RING — RING ATTACHES TO RECEIVER —

OUR SYSTEM HAS A → PERCEPTION OF EXTRACTOR PROBLEM. DESIRABLE, BUT NOT NUMBER ONE, TO REFINE THIS. BY JBO & EWS trying to clarify.

ADDRESS THIS WITH CONSUMER EDUCATION.

(5)

8.10.92

NO NEED FOR MAG-BOLT DISCONNECT SYSTEM.

1992: 85 K M700 REGULAR
117 K LACL. STAINLESS

1995: NBAR 27,000 FIRST YEAR
"ROUGH" ESTIMATE

LET THE EXPRESS C'F'
DELAY A YEAR OR SO AFTER
INTRODUCING NBAR.

FOR SEMI-STOCK MOLDS: INSERT FOR BOLT HANDLE SLOT AND CHEEKPIECE TO FACILITATE R/LEFT MODELS.
L.H.: 12-15% OF BUSINESS.

MARKETING STEERING FOR
8-24-92.
DO GET ARTIST'S RENDERINGS.

- ADVERTISING
- MARKETING MISSARCET } 18 PEOPLE OR 80.
- ETC

(6)

8.10.92

J. Bu USES "3-POSITION SAFETY" DESCRIPTION.

-COPPER BULLETS-

AMMO MADE 12×10^6 IN 1991

1992: AMMO WILL MAKE TWICE WHAT GUNS WILL.

6×10^6 VS. 12×10^6

LOADER USES IMPORTANT HALF, INCLUDING SUBMISSIONS: UP TO 50.

BALLO IS OUT @ GRAND AMERICAN.

PERCEPTION OF EASILY ADJUSTABLE FINE CONTROL, IMPORTANT AT HIGH END BUYER PER A.W.S.

RETROFITTABLE TO 700 ?

TEST REQUIREMENTS

WILL EXCEED SAAMI
DROP TEST FOR NEW PRODUCT
BY CONSIDERABLE MARGIN.

EQUAL TO OR BETTER THAN M1200
DROP TEST PERFORMANCE

GOALS

CONSUMER ADJUSTABLE

STANDARD

- "GRIP" LENGTH
- TRIGGER - TRIGGER (CREEP)

N SER EC. 8-9-93 WAW

INTERLOCK SO THAT GUN WILL NOT FIRE (OR SAFETY CANNOT BE MOVED) IF FORCE IS APPLIED TO TRIGGER AS SAFETY IS MOVED (ATTEMPTED TO BE MOVED) FROM S TO F DOWNWARD.

ONLY MODELS NOW KNOWN ARE N66, 320 PEERLESS, S100.

ANY BOLT ACTION C.F.

· COLT SAUER

FINGER PLACE BOTH DIRECTIONS

ASSUMED PRIORITIES

(1) M700 SENDERO THRUST (PROACTIVE) SPECS CONSIDERATION: SUCCESSFUL END OF ARMY

(2) ACQUITTAL ON (LONG LEAD TIME) ITEMS NEW UNITS (CONTRACTED BY ARMY)

DEFINE (3) NEW BARREL CONTOUR.

FROM SYSTEM CONFIGURATION DEFINED.

OUTPUT TIMETABLE ON DEFINITION OF NEW BARREL CONTOUR. TIMETABLE

NOW TIMETABLE ON TIMETABLE

SUB GOALS: ~~PROOF~~ TIMETABLE OF ENVELOPE ~~TIMETABLE~~

ULTIMATE: TIMETABLE ON DEFINITION OF F.C

PRIOR NEW BARREL REVIEW

WHY WAS PROOF DESIGN ACCEPTABLE (ARMY TOO-SYSTEM?) OR WAS IT UNSATISFACTORY?

COMPETITIVE PRODUCT REVIEW

- SAMPLES
- SYSTEM CONFIGURATION

STRENGTHS / WEAKNESSES

- IN-DEPTH LITERATURE REVIEW
  - S. SMITH'S BOOK(S)
- LEGAL/LITIGATION/ANTITRUST DISTINCTIONS

SUMMARIES — DISCUSSIONS WITH OR THOSE WHO WROTE DOCUMENTS.

Proto C

W. WARREN

AR BAR

QUERY other "minimum material removed" CT reader in a rear lockup.

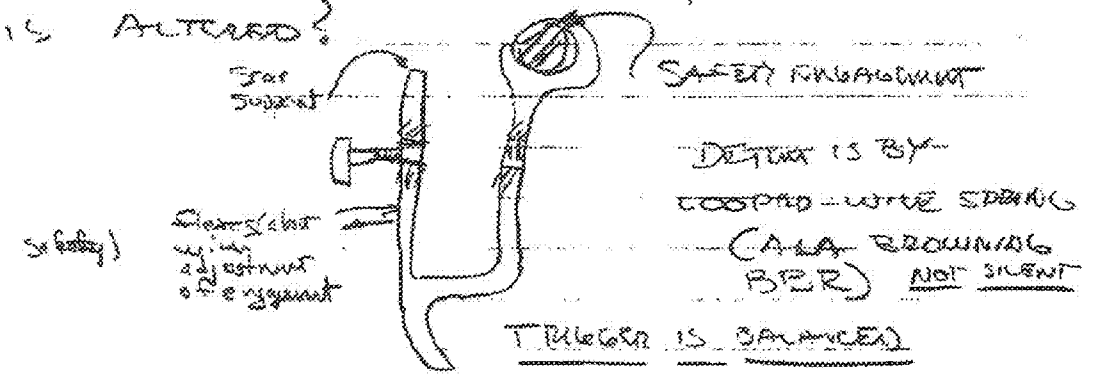
AVOID A "TOO HEAVY" PRELOAD ON F.P SPRING ⇒ THIS LOAD IS IMPACTED ON FIRE CONTROL DISENGAGEMENT SURFACES.

AVOID TETRIS MAGNUM CONDITION

- APPLYING SAFE (CROSSBOLT) IN FIRED CONDITION WILL NOT ALLOW FIRING PIN TO BLOCK

BINDING NOTCHES IN HEAD OF HOUSING SCREW(S) (R77 ENGAGEMENT) 40 PITCH WITH .12 ⇒ .002 ENGAGEMENT STRAIN

HOW DO YOU ACCOMMODATE A TRIGGER PULL SAFETY WITHOUT REQUIRING AN ADJUSTMENT IF TRIGGER/SEAR ENGAGEMENT IS ALTERED?



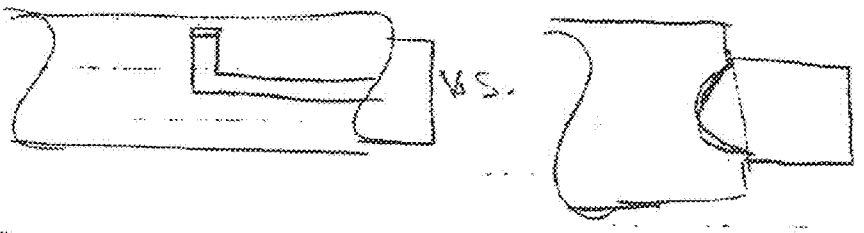
SILENCE OF LOOP WIRE SPRING IN SAFETY OR BBE of R77 ?

ROGER TANG SAFETY LOCKED CLEARANCE (WITH. ADVANTAGE) FOR CAM-BACK TYPE OF FIRING PIN BLOCK SAFETY.

CAN WE ADD A "RESILIENT" MEANS TO SEAR - INSTEAD - OF TRIGGER.
- MUST BE CORRECT POSITIVE RE ACTION OF PUT "CONNECTOR" ON THE SEAR

NO BATZ

ESCAPE RAMP for bolt stop plunger guide - L CUT for BOLT LOCKDOWN VOL III Pg 165



BOTH ROGER M77 AND CHARGERS REQUIRED REMOVABLE F.P. SPRING HOUSES WITH SOLID (INTEGRAL) ONES.

DEFINITION OF NEW SYSTEM

NO MENTION MADE OF ALTERNATE SAFE/REC CONCEPT - MANUAL SAFE

- TWO POSITION SAFETY
  SIMPLEST, REMINGTON TRADITION, EASY TO UNDERSTAND
- BOLT LOCK ON SAFE
- ** RELEASEABLE BOLT LOCK — DON'T NEED "OPTION" existing
  ALLOWS OPENING BOLT WITH SAFETY "ON"
- WILL BLOCK AND LIFT SEAR AS PRIMARY MEANS
- COULD BLOCK TRIGGER ALSO
  → NOT SAFER AS SUCH, BUT THIS MAY ADDRESS CUSTOMER PERCEPTION THAT IT IS BETTER IF TRIGGER DOESN'T MOVE.
- CONSIDERING VERTICALLY SLIDING SEAR
- SELF-CONTAINED SUB-ASS'Y MOUNTED RIGIDLY TO RECEIVER
- DIVORCE BOLT STOP/RELEASE FROM INSIDE TRIGGER BOW; NO OTHER REASON TO REACH INSIDE TR. GUARD BOW BUT TO PULL THE TRIGGER.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

BARBER - 1.30.130001398

10-15-93
WAW

ENGINEERING DESIGN POINT OF VIEW

HIGH

- SHORT DIMENSIONS PARALLEL TO ∠ BEL
- AVOID ANY REASON TO PUT FINGER WITHIN TRIGGER GUARD EXCEPT TO INTENTIONALLY FIRE
- EASY TO UNDERSTAND - HIGHLY INTUITIVE OPERATION
- REALITY VS PERCEPTION RECONCILED THRU ACTUAL TESTING/ PERFORMANCE
- PRESERVE ADVANTAGES OF RESILIENT (CONNECTOR) FUNCTION
- DO NOT USE SEAR AS BOLT STOP OR APPLY BOLT STOP IMPACT TO ASSEMBLY
- REDUCED LOCK TIME
- ACTUATE SAFETY WITH BOLT OPEN

MEDIUM

- QUIET OPERATION
- ENHANCED CORROSION RESISTANCE
- COMPEL TRIGGER TO SUPPORT POSITION IN MOVING SAFETY F→S
- FULL TRIGGER RETRACTION UPON PARTIAL PULL
- MEANS TO PREVENT INCORRECT ASSEMBLY/ RE-ASSEMBLY OF COMPONENTS

CAN WE:

APPLY THE SAFETY IMMEDIATELY AFTER FIRING; BOLT CLOSED F.P. FORWARD.

APPLY THE SAFETY WITH THE BOLT OPEN. WEATHER WOUND, COCKED, LOCKED

SHOULD WE BLOCK:

FIRING PIN
SEAR
TRIGGER
OTHER COMPONENT
MULTIPLES OF ABOVE

PROVIDE A ~~DISCONNECT~~ MEANS WHEREBY IF TRIGGER IS PULLED AND HELD WITH SAFETY ON, AND SAFETY IS PUSHED TO F POSITION, RIFLE WILL NOT FIRE. (COCK-SAFE)

AUBAR E.C. 8-9-93 WAW

INTERLOCK SO THAT GUN WILL NOT FIRE (OR SAFETY CANNOT BE MOVED) IF FORCE IS APPLIED TO TRIGGER AS SAFETY IS MOVED (ATTEMPTED TO BE MOVED) FROM S TO F DEMAN.

ONLY MODELS NOW KNOWN ARE AU66, 320 PEERLESS, S200.

ANY BOLT ACTION C.F.

· COLT SAUER

FINGER PICK BOTH DIRECTIONS

ASSUMED ① M700 SENDED THROUGH (PROACTIVE) SPECS
PRIORITIES ② ACQUITTAL ON (LONG LEAD ITEMS) COMPLETION: END OF APRIL (CONTINUED BY OTHER)

DEFINE W③ NAME FOR CAUTION.

FROM SYSTEM CONFIGURATION DEFINED.

OUTPUT TIMETABLE ON DEFINITION OF NAME F. CAUTION. TIMETABLE

NOW TIMETABLE ON TIMETABLE
SUB GOALS: ~~TIMETABLE~~ TIMETABLE OF FUNCTIONS

ULTIMATE: TIMETABLE ON DEFINITION OF F.C.

PRIOR NAME REVIEW

WHY WAS PRIOR DESIGN SECURITY (AROUND 700 - SYSTEM?) UNSATISFACTORY?
OR WAS IT
COMPETITIVE PRODUCT REVIEW
• SINGLES SYSTEM CONFIGURATION
STRENGTHS / WEAKNESSES
• IN-DEPTH LITERATURE REVIEW
S. OFFICIAL'S BOOK(S)
• LEGAL/LITIGATION/AUTHOR DISTRIBUTION
EXAMINERS — DISCARD WARNING METHOD
OR THOSE WITH MINOR DEFICIENCIES.

Proof

W. Warren

AJ BAR

Query other "minimum material removed" CP reducer in rear lockup.

AVOID A "TOO HEAVY" PRELOAD ON F.P SPRING ⇒ THIS LOAD IS IMPOSED ON FIRE CONTROL DISENGAGEMENT SURFACES.

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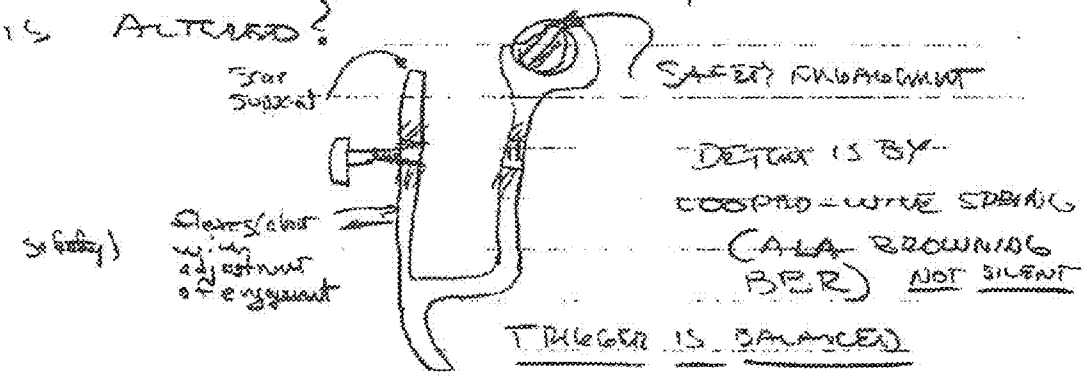

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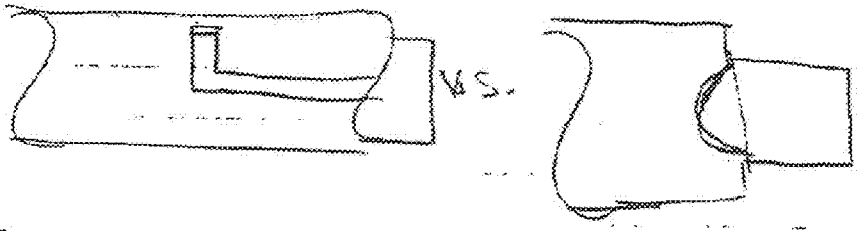
NO BAR.

ESCAPE ramp for bolt stop plunger avoids — L CUT for BOLT LOCKDOWN VOL III Pg 165



BOTH Ruger M77 AND CHAMPION REQUIRED REMOVABLE F.P. SPRING RETAINERS WITH SOLID (INTEGRAL) ONES.

TEST REQUIREMENTS

WILL EXCEED SAAMI
DROP TEST FOR NEW PRODUCT
BY CONSIDERABLE MARGIN.

EQUAL TO OR BETTER THAN M1200
DROP TEST PERFORMANCE

GOALS

CONSUMER ADJUSTABLE

STRAIGHT

- "GRIP" SAFETY
- TRIGGER - TRIGGER (SHOE)

DEFINITION OF NEW SYSTEM

NO MEANS MADE OF /ATEGRA EBL/ACC CONCEPT - ADAPTED FROM

- TWO POSITION SAFETY
  SIMPLEST, REMINISCENT TRADITION, EASY TO UNDERSTAND
- BOLT LOCK ON SAFE
- RELEASEABLE BOLT LOCK — Don't need existing "OPTION"
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1-18-89

NY BAR MEETING WITH FIELD REPS.

TOM LARSON
KEN WAITE
ART WILLSON
JIM PERRY
JOHN ACKLEY
ANGELO PALLARONI
VIC ROMANO

4 LBS. MAX. TRIGGER PULL (NOT 7 & 8 LBS AS REDUCED NOW)

MODEL 702

CRISP TRIGGER PULL
NO OVERTRAVEL.
NO CREEP.

Mag. box with plate on bottom to cover gap between box and floor plate.

Two separate beam instead of one piece bridged beam.

NYLON - DELRIN IMBEDDED INTO BBL CHANNEL

Extra pad material at front of stock for improved barrel bedding and accuracy.

Retain M/700 receiver configuration - no need to restyle or redesign it.
Re-try some restyling of receiver and bolt handle.

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

NBAR PROGRESS

- CONCEPT SKETCHES REVIEWED AND MODIFIED
- REVIEWED NEW CONCEPT SKETCHES AND PROTOTYPE
- REVISIONS TO BE MADE TO PROTOTYPE AS FOLLOWS:
  - MODIFIED BARREL CONTOUR, I.E. TRANSITION FROM BARREL TO CHAMBER.
  - RELIEF CUT AT TOP OF EJECTION PORT
  - CHANGE RADIUS OF FOUND
  - CROWN TRIGGER GUARD AT FRONT OUTSIDE
  - ADD MAGAZINE BOX
  - ADD RECEIVER MARKINGS
  - ADD SAFETY (POSITION & TYPE)
  - MODIFY BOLT HANDLE DESIGN

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FIREARMS MARKET OUTLOOK

- CANCELLATIONS ARE BEGINNING TO BE RECEIVED. THE TOTAL FIREARMS ORDER POSITION FELL 6M UNITS LAST WEEK. MOST ACTIVITY IS IN RIFLES. (2/3 R.F., 1/3 C.F.)
- FALSE DEMAND IS AN ISSUE WITH EXPRESS AND VIPER PRODUCTS. OPEN ORDERS IN THESE CATEGORIES ARE MOST VULNERABLE.
- DISTRIBUTOR INVENTORY IS A LITTLE HEAVIER THAN NORMAL, HOWEVER, IT IS NOT VIEWED AS UNCOMFORTABLE.
- DEALER INVENTORY IS LEAN, YET, THEY ARE DEMONSTRATING A CAUTIOUS APPROACH TO REORDERS.
- DEALERS HAVE AN OPTIMISTIC OUTLOOK FOR THE FALL BUSINESS, BUT LONGER TERM THE MARKET LOOKS PROBLEMATIC BECAUSE OF POLITICAL AND ECONOMIC TRENDS.
- THE SPORTING CLAYS MARKET IS STILL GOOD, HOWEVER, GROWTH HAS SLOWED DUE TO SATURATION OF PRODUCT IN THE MARKETPLACE.

BARBER - 1.30.13001410

NEW PRODUCT STATUS VIA TOTAL ORDER POSITION

	YTD ORDER NEW PRODUCTS	TOTAL ORDERS	NEW PRODUCTS % OF TOTAL
SHOTGUNS	22,623	397,701	6%
RIMFIRE	92,167	110,107	84%
CENTERFIRE	39,094	185,109	21%
TOTAL	153,884	692,917	22%

DISTRIBUTION CHANNEL ANALYSIS

	1991 ACT. %	1992 ACT. %	1993 P.O. %	1993 YTD ACT. %	1994 P.O. %
CHAINS	21.5	17.1	18.5	17.6	18.0
DEALERS	14.8	14.1	11.5	12.6	14.5
WHOLESALERS	63.7	68.3	70.0	69.8	67.5

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FIREARMS
YEAR TO DATE
FINANCIAL PERFORMANCE
(THRU JULY)

	P.O. $'s	REV. 2 $'s	CFI $'s	ACT. $'s	$VAR ACT. VS. P.O.	$VAR. REV. 2 VS. ACTUAL	$VAR CFI VS.ACTUAL
SALES	117,465	105,623	106,014	103,402	(14,063)	(2,221)	(2,612)
ATOI	12,283	7,196	7,593	6,448	(5,835)	(748)	(1,145)

YEAR END
FINANCIAL PERFORMANCE "PROJECTION"
(OVER THE TOP)

	P.O. $	REV. 2 $	PROJECTED $
SALES	169,796	168,367	166,503*
ATOI	11,300	8,654	8,065

*A FORECASTED REDUCTION OF $2MM IN SALES, RESULTING FROM A PRODUCTION SHORTFALL AND ORDER CANCELLATIONS HAS APPROXIMATELY A $600M NEGATIVE IMPACT ON EARNINGS.

BARBER - 1.30.13001412

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REVIEW
JULY 93 FINANCIAL PERFORMANCE
FIREARMS

	P.O. UNITS	P.O. $'S	REV.2 UNITS	REV.2 $'s	CF1 UNITS	CF1 $'s	ACTUAL UNITS	ACTUAL $'s
SHOTGUNS	37,078	8,905	31,410	7,643	31,540	7,512	25,441	6,076
RIMFIRE	5,476	608	5,675	621	6,100	709	4,315	468
CENTERFIRE	15,263	5,079	13,262	4,385	15,055	4,939	13,856	4,449
TOTAL FIREARMS	57,817	14,592	50,347	12,649	52,695	13,160	43,612	10,993
XBBLS	3,910	439	4,300	445	4,300	445	3,855	407
ALL FIREARMS		15,031		13,094		13,605		11,400
ATOI		1,322		392		645		(502)*

* $74M LOSS ON REGULAR OPERATIONS; $428M FIXED COST ADJUSTMENT.

BARBER - 1.30.13001413

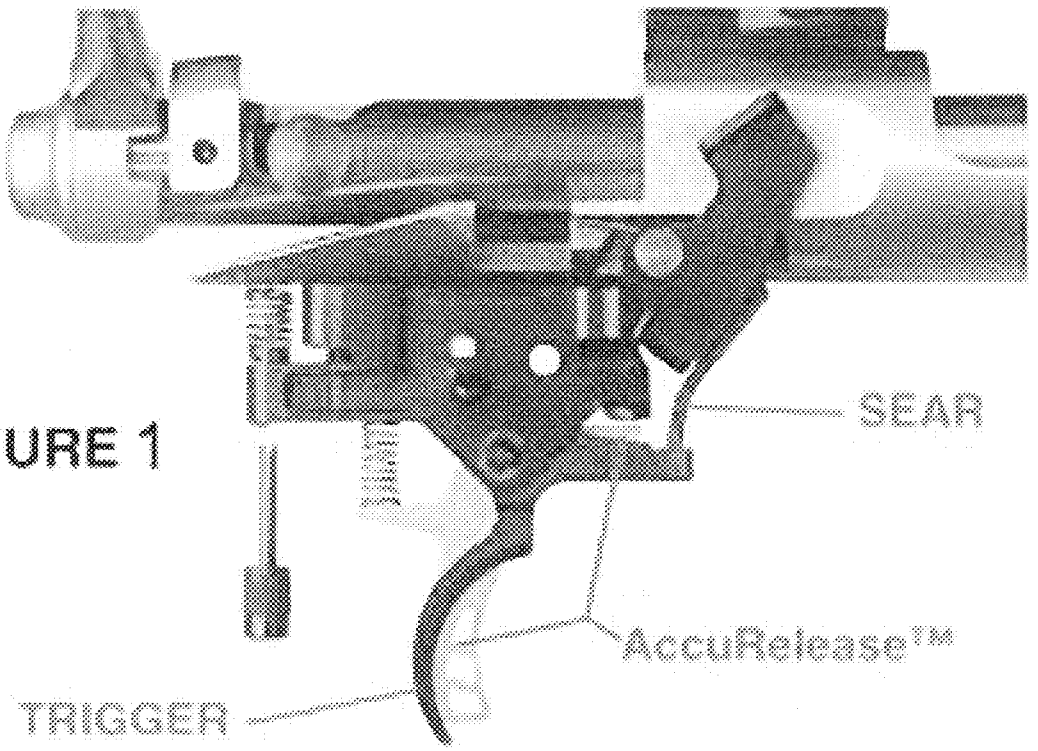

FIGURE 1

SPECIFICATION PROPOSALS
NBAR VS. EXPRESS RIFLE — Saucy 8/92

	NBAR	EXPRESS RIFLE
BARRELED ACTION MATERIAL	BLUED/MATTE STAINLESS	BLUED CARBON STEEL
SCOPE MOUNTING	INTEGRAL BASE	RECEIVER DRILLED & TAPPED
SAFETY TYPE	THREE POSITION ON BOLT SHROUD	TWO POSITION ON RECEIVER TANG
BOLT LOCKING LUG TYPE	DUAL OPPOSED	DUAL OPPOSED
LOCKING LUG LOCATION	FRONT OF BOLT	FRONT OF BOLT
BOLT HANDLE	M700 TYPE	M700 TYPE
EXTRACTOR TYPE	PRE 64 M70~~8~~	M700 TYPE
EJECTOR TYPE	M700 TYPE	M700 TYPE
BOLT RELEASE	MAUSER TYPE	M700 TYPE
BOLT ~~SHROUD~~ Plug	CLOSED AT REAR	OPEN AT REAR
BOLT BODY STYLE	NON FLUTED	NON FLUTED
BOLT BODY FINISH	POLISHED & JEWELED	BLUE/BLACK
BOLT HANDLE KNOB STYLE	CHECKERED SURFACE	SMOOTH SURFACE
MAGAZINE	DETACHABLE	BLIND
OPEN SIGHTS ON BBL	NO	YES
STOCK MATERIAL	WALNUT/SYNTHETIC ATTRACTIVE	SYNTHETIC
STOCK STYLE	CLASSIC	CLASSIC
RECOIL PAD	SOLID	SOLID

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	NBAR	EXPRESS RIFLE
RECOIL PAD COLOR	BLACK	BLACK
CHEEKPIECE	YES	YES
WOOD FINISH	SATIN	-
SYNTHETIC STOCK FINISH	SMOOTH TEXTURE	ROUGH TEXTURE
SYNTHETIC STOCK COLOR	BLACK/CAMO	BLACK
STOCK/ACTION BOLT TYPE	HEX	HEX
LEFT HAND ACTION	YES	NO
SHORT ACTION AVAILABLE	YES	NO
CARBINE AVAILABLE	YES	NO
BBL LENGTH OF CARBINE	20"	-
CUSTOM/IMPROVED BEDDING	YES	-
IMPROVED FIT & FINISH	YES	-

CONSIDERATIONS MOST IMPORTANT TO THE PURCHASE OF A BOLT ACTION BIG GAME RIFLE (PRIORITIZED).

1. ACCURATE
2. RELIABLE
3. STRONG
4. HANDSOME
5. AVAILABILITY OF CALIBERS
6. FIT/FEEL, HANDLING

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Comco 8/18/93

MARKETING
RELEASE MECH.
CONCEPTS

Copied 8/18/93

MARKETING RELEASE - MECH CONCEPTS

8·10·92

MARKING RELEASE MECHANISM CONCEPTS

- THEY WANT A BOLT LOCK (LOCK BOLT DOWN IN CARRY SAFE CONDITION)

AND

- THEY WANT TO OPEN/CLOSE BOLT IN A SAFE CONDITION; WHEREBY A PULL OF TRIGGER WILL NOT CAUSE DISCHARGE. THEY SAY "3 POSITION SAFETY"
- THEY WANT THE BOLT RELEASE AWAY FROM "IN FRONT OF TRIGGER"

M. Kenney
9/24/92

Bill

Reports from Range about rifle control:

Faults:

- Customer Complaints: Must remove stock to adjust
  Must not be able to adjust below
  Remington min. spec. (TRIGGER PULL) [redacted]
- Need a Gun Locks: (CSLID106)
- No thing safety

Personal Preference:

- Blue Finish Pin w/ safety on Back Plug (OPINION)

Note: Gun Locks come w/ keys, Feature what we
want the Reverse of keys.

Scan Two Specs

Please Mail

WAW 10/5

CUSTOMER POINT OF VIEW

HIGH "EASE OF USE"

- QUICK TO FIND
- EASY TO OPERATE
- EASY TO UNDERSTAND
- RELIABLE TO OPERATE

- EASY TO USE WITH 'SCOPE
- CRISP TRIGGER PULL
- MINIMUM CREEP
- HIS OWN PERCEPTION OF "WHAT IS"

MEDIUM

- QUIET OPERATION
- MINIMUM BACKLASH (feedback)
- SINGLE STAGE PULL
- EASILY KNOWN STATUS ("S" OR "F")
- PLEASING APPEARANCE
- ADJUSTABLE FOR WEIGHT OF PULL

LOW

- LOCATION OF SAFETY (CONSISTENT WITH EASE OF USE)
- HOW MECHANISM PREVENTS UNINTENDED FIRING - WHAT IT BLOCKS
- MINIMUM TRIGGER OVER-TRAVEL

10-15-93
WAW

MARKETING POINT OF VIEW

HIGH

- RESPONSIVE TO THEIR ASSESSMENT OF WRITERS' & CUSTOMERS' PERCEPTIONS OF REALITY.
- AVOID MULTIPLE FEATURE OPTIONS WHICH WOULD COMPOUND/CONFUSE SALES / INVENTORIES
- PRESERVE PRODUCTION CAPABILITY TO SATISFY M700 DEMAND
- EASY TO UNDERSTAND AND USE
- USER ABLE TO OPEN [AND CLOSE] BOLT IN A SAFE CONDITION ("3-POSITION SAFETY")
- BOLT LOCKED DOWN IN "S" CONDITION

MEDIUM

- CUSTOMER-ADJUSTABLE TRIGGER PULL FORCE ONLY DOWN TO MINIMUM SATISFACTORY LEVEL
- NOT ADJUSTABLE EXTERNALLY
- BOLT STOP RELEASE AWAY FROM "IN FRONT OF TRIGGER"
- NO SAFETY ON TANG
- LEFT-HAND VERSION (12-15% OF MARKET)

LOW

- FIELD-CONVERTIBLE FOR OPERATION WITH OR WITHOUT BOLT LOCK

NOT

- MAGAZINE-BOX DISCONNECT SYSTEM

R2521285

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KINZER V. REMINGTON

WAW
10-15-93

MANUFACTURING POINT OF VIEW

HIGH

- INTERCHANGEABILITY OF COMPONENTS AT SUB-ASSEMBLY AND FINAL ASSEMBLY.
- SATISFACTORY PERFORMANCE WITH NORMALLY-ACHIEVED TOLERANCES
- ONLY NORMAL TRAINING AND DEXTERITY REQUIRED TO PROCESS

MEDIUM

- READY-TO-ASSEMBLE SUB-ASSEMBLIES AT FINAL ASSEMBLY.
- DESIGNED TO PREVENT INCORRECT ASSEMBLY OF COMPONENTS

LOW

- READILY REWORKABLE/SALVAGABLE

10-15-93
WAW

LIABILITY POINT OF VIEW

HIGH

- AVOID PATENT INFRINGEMENT
- NOT INTERCHANGEABLE OR RETROFITTABLE TO M700
- TWO POSITION "S" & "F"
- SEALED UNIT; REQUIRING NO ORIGINAL OR FIELD LUBRICATION
- ROBUST AGAINST IMPACT - EXCEED SAAMI/ANSI RECOMMENDATIONS BY WIDE MARGIN
- USER OPERATION CONSISTENT WITH PRECEDENT AND CONVENTION.
- ROBUST AGAINST EFFECTS OF TAMPERING/ ADJUSTING
- HIGHLY INTUITIVE OPERATION

MEDIUM

- READILY DEFENSIBLE REASONS FOR DEPARTURE FROM CURRENT DESIGN

2. • CONVERTIBLE & REVERSIBLE BOLT LOCK

2. • INTERLOCK: WILL NOT FIRE IF TRIGGER IS PULLED AND HELD AS SAFETY S → F
(1) SAFETY WON'T MOVE IF TRIGGER IS HELD OUT
OR
(2) SAFETY WILL MOVE BUT FIRING PIN WILL NOT FIRE UNLESS RELEASED AND PULLED TO CAUSE FIRING.

10-15-93
WAW

ENGINEERING PROCESSING POINT OF VIEW

HIGH

- SHORT RECEIVER
- MACHINES, TOOLING, PROCESSES CONSISTENT WITH EXPECTED VOLUME
- HIGH-YIELD OPERATIONS
- MAINTAIN M200 PRODUCTION CAPACITY

MEDIUM

- DESIGN TO INHIBIT/PREVENT INCORRECT ASSEMBLY OF COMPONENTS
- DESIGN TO PERMIT REWORK/SALVAGE

BRIEFING: **RELEASE MECHANISM** 10.15.93

EXPAND KNOWLEDGE

AVOID DISADVANTAGES ← VULNERABLE INFO. ON CURRENT PRODUCTS. NOT: BAD TO GOOD

new excellent → moving toward perfection

(2) PROVIDE A FORUM TO DISCUSS FEATURES OF NEW DESIGN

(1) SHARE SOME INFORMATION WITH YOU FOUND IN MY RECENT STUDY OF RELEASE MECHANISMS

DEFINE PROBLEM

ASK: WHAT CURRENT IMPERFECTIONS ARE WE TRYING TO OVERCOME? WHAT ARE THE STRENGTHS OF THE CURRENT DESIGN.

– FSR –

DESCRIBE CHARACTERISTICS OF A SOLUTION.

LEADING TO A FRAMEWORK TO GUIDE mechanisms

THE TASK – CHOOSING ALTERNATIVES

OUTSIDE INFLUENCE TECHNOLOGY TREND

- PRIORITIZED LISTING OF OBJECTIVES TO SATISFY.
- DESCRIBE OBJECTIVES ACCORDING TO 5 POINTS OF VIEW: – DIFFERENT, SOME IN COMMON, SOME PERHAPS MUTUALLY EXCLUSIVE
  - CUSTOMER
  - MARKETING
  - ENGINEERING
  - DESIGN
  - PROCESSING
  - MANUFACTURING
  - LIABILITY

BEGIN • RECONCILE OBJECTIVES AMONG POINTS OF VIEW. AGREEMENT.

THEN

- DEVELOP STRATEGY(IES) TO MEET OBJECTIVES example: 3 POUND PULL
- SELECT STRATEGIES AND IMPLEMENT →

later NEWTON RIFLE: INTO SUF NEWTON FSV

LAST [illegible] [illegible]

OTHER RESOURCES - PRIOR INFORMATION

PATENTS

- PATENT ANALYSIS

ARTICLE JOURNAL ARTICLES

MAGAZINE ARTICLES

DEFINITIONS:

[illegible]

- DIRECT ACTION TRIGGER
- OVER-RIDE TRIGGER

RESILIENT TRIGGER

WHY OF M700 CONNECTION

- IMPERFECT EDGES NOT SQUARE
- TRIGGER STOPS MIN O.T. ACCOMMODATE CLOSURE FROM REAR
- REDUCE INTO COCKED POSITION ON BOLT OR SEAR DURING OVERRIDE
- ALLOWS DIRECT MANUAL USE @ TRIGGER SURFACE.

2ND

READ OTTESON ON PURPOSE OF M700 CONNECTOR:

130, 131

ON SAFETY: P 134

FIRST

M700 WEAKNESS:

F.S.R.

TWO EXPLANATIONS

OTHER OUTSIDE INFO: BRIEFLY not in detail, but make you aware of them.

MAIN TOPIC

BRIEFING: RELEASE MECHAN 10.15.93

EXPAND KNOWLEDGE

AVOID DISPARAGING *DISCOVERABLE INFO. ON CURRENT PRODUCTS. NOT BAD TO GOOD

now excellent → moving toward perfection

(2) PROVIDE A FORUM TO DISCUSS FEATURES OF NEW DESIGN

(1) SHARE SOME INFORMATION WITH YOU WE FOUND IN MY GRADUATE STUDY OF RELEASE MECHANISMS

DEFINE PROBLEM

ASK: WHAT CURRENT IMPERFECTIONS ARE WE TRYING TO OVERCOME?

WHAT ARE THE STRENGTHS OF THE CURRENT DESIGN.

— FSR —

DESCRIBE CHARACTERISTICS OF A SOLUTION.

mechanisms

Q

* Ability to return to ready position from any intended position

LEADING TO A FRAMEWORK TO GUIDE THE TASK - CHOOSING ALTERNATIVES

OUTSIDE LEARNING EXPERIENCE FOUND

* PRIORITIZED LISTING OF PROJECT OBJECTIVES TO SATISFY

* DESCRIBE OBJECTIVES ACCORDING TO 5 POINTS OF VIEW* - DIFFERENT, SOME IN COMMON, SOME PERHAPS MUTUALLY EXCLUSIVE
  - CUSTOMER
  - MARKETING
  - ENGINEERING
    - DESIGN
    - PROCESSING
  - MANUFACTURING
  - LIABILITY

BEGIN * RECONCILE OBJECTIVES AMONG POINTS OF VIEW. AGREEMENT.

THEN * DEVELOP STRATEGY(IES) TO MEET OBJECTIVES example: 3 POUND PULL

1st NEWTON RIFLE: M70 SUF NEWTON ESU

* SELECT STRATEGIES AND IMPLEMENT →

LAST EDUCATION? CHECKED 3 OR 4 YEARS

OTHER RESOURCES - PRIOR INFORMATION

PATENTS

- PATENT ANALYSIS

AFTE JOURNAL ARTICLES

MAGAZINE ARTICLES

DEFINITIONS:

~~BOLT CARRIER~~

- DIRECT ACTION TRIGGER
- OUTER-RIDE TRIGGER

RESILIENT TRIGGER

WAY OF M700 CONNECTOR

- IMPERFECT EDGES NOT SPRUNG
- TRIGGER STOPS MAIN O.T. ACCOMMODATE CLEANING STEM PIVOT
- REDUCED INNER CAMMING FUNC ON BACK OF SEAR JOINING OVERMOLD
- ALLOWS DIRECT METAL USE & TRIGGER SUPPORT SURFACE.

2ND READ OTTESEN ON PURPOSE OF M700 CONNECTOR: 130, 131

ON SAFETY: P 134

FIRST M700 WEAKNESS: F.S.R.

TWO EXPLANATIONS

OTHER OUTSIDE INFO: BRIEFLY not in detail, but make you aware of them.

MAIN TOPIC

Barber-B-7pss

Oct 23 WAW 10:15

CUSTOMER POINT OF VIEW

HIGH "EASE OF USE"

- QUICK TO FIND
- EASY TO OPERATE
- EASY TO UNDERSTAND
- RELIABLE TO OPERATE
- EASY TO USE WITH 'SCOPE
- CRISP TRIGGER PULL
- MINIMUM CREEP
- HIS OWN PERCEPTION OF "WHAT IS"

BASICALLY USER FRIENDLY = DESIGN OBJECTIVES

MEDIUM

- QUIET OPERATION
- MINIMUM BACKLASH (feedback)
- SINGLE STAGE PULL
- EASILY KNOWN STATUS ("S" OR "F")
- PLEASING APPEARANCE
- ADJUSTABLE (Especially weight of pull)

LOW

- LOCATION OF SAFETY (CONSISTENT WITH EASE OF USE)
- HOW MECHANISM PREVENTS UNINTENDED FIRING - WHAT IT BLOCKS
- MINIMUM TRIGGER OVER-TRAVEL

Improved Tactile Feel of Trigger

" " " of Safety

PLAINTIFF'S EXHIBIT 3123

BARBER - 1.30.130001432

10·15·93
WAW

MARKETING POINT OF VIEW

HIGH

- RESPONSIVE TO THEIR ASSESSMENT OF WRITERS' & CUSTOMERS' PERCEPTIONS OF REALITY.
- AVOID MULTIPLE FEATURE OPTIONS WHICH WOULD COMPOUND/CONFUSE SALES / INVENTORIES
- PRESERVE PRODUCTION CAPABILITY TO SATISFY M700 DEMAND
- EASY TO UNDERSTAND AND USE
- USER ABLE TO OPEN [AND CLOSE] BOLT IN A SAFE CONDITION (" 3-POSITION SAFETY")
- BOLT LOCKED DOWN IN "S" CONDITION

MEDIUM

- CUSTOMER-~~ADJUSTABLE~~ TRIGGER PULL FORCE ONLY DOWN TO MINIMUM SATISFACTORY LEVEL
- NOT ADJUSTABLE EXTERNALLY
- BOLT STOP RELEASE ~~AWAY FROM THE FRONT OF TRIGGER~~ RELOCATED "WITH ~~IMPROVED~~ METAL FEEL"
- NO SAFETY ON TANG
- LEFT-HAND VERSION (12-15% OF MARKET)

LOW

- FIELD-CONVERTIBLE FOR OPERATION WITH OR WITHOUT BOLT LOCK

NOT

- MAGAZINE-BOX DISCONNECT SYSTEM

2 of 7

WAW
10-15-93

MANUFACTURING POINT OF VIEW

HIGH

- INTERCHANGEABILITY OF COMPONENTS AT SUB-ASSEMBLY AND FINAL ASSEMBLY.
- SATISFACTORY PERFORMANCE WITH NORMALLY-ACHIEVED TOLERANCES
- FINAL ASSEMBLY WITH READY-TO-ASSEMBLE SUB-ASSEMBLIES

MEDIUM

- ONLY NORMAL TRAINING AND DEXTERITY TO PROCESS
- DESIGNED TO PREVENT INCORRECT ASSEMBLY OF COMPONENTS

LOW

- READILY REWORKABLE/SALVAGEABLE

DESIGN FOR MANUFACTURABILITY PRINCIPLES

DESIGN FOR ASSEMBLY PRINCIPLES

3 of 7

AL (X)23979

10-15-93
WAW

LIABILITY

POINT OF VIEW

HIGH

- AVOID PATENT INFRINGEMENT due to kinship
- NOT INTERCHANGEABLE OR RETROFITTABLE TO M700
- TWO POSITION "S" & "F"
- ROBUST AGAINST NO APPROPRIATE LUBRICATION
- ROBUST AGAINST IMPACT - ~~EXCEED~~ must pass a min of SAAMI/ANSI ~~RECOMMENDATIONS BY WIDE MARGIN~~ DRAO
- USER OPERATION CONSISTENT WITH PRECEDENT AND CONVENTION.
- ROBUST AGAINST EFFECTS OF TAMPERING/ ADJUSTING
- HIGHLY INTUITIVE OPERATION

MEDIUM

- READILY DEFENSIBLE REASONS FOR DEPARTURE FROM CURRENT DESIGN

?• CONVERTIBLE & REVERSIBLE BOLT LOCK

?• INTERLOCKS WILL NOT FIRE IF TRIGGER IS PULLED AND HELD AS ~~SAFETY~~ S → F

"SEALED" DESIGN

4 of 47 AL.0023980

10·15·93
WAW

ENGINEERING DESIGN POINT OF VIEW

HIGH

- SHORT DIMENSIONS PARALLEL TO CL BBL
- AVOID ANY REASON TO PUT FINGER WITHIN TRIGGER GUARD EXCEPT TO INTENTIONALLY FIRE
- EASY TO UNDERSTAND - HIGHLY INTUITIVE OPERATION
- REALITY VS. PERCEPTION RECONCILED THRU ACTUAL TESTING/ PERFORMANCE
- PRESERVE ADVANTAGES OF RESILIENT CONNECTOR FUNCTION
- DO NOT USE GEAR AS BOLT STOP OR APPLY BOLT STOP IMPACT TO ASSEMBLY
- NO LUBE "Lubricant" Design
  - REDUCED LOCK TIME
- ACTUATE SAFETY WITH BOLT OPEN

MEDIUM

- QUIET OPERATION
- ENHANCED CORROSION RESISTANCE
- COMPEL TRIGGER TO SUPPORT POSITION IN MOVING SAFETY F→S
- FULL TRIGGER RETRACTION UPON PARTIAL PULL
- MEANS TO PREVENT INCORRECT ASSEMBLY/ RE-ASSEMBLY OF COMPONENTS

5 of 67 AL 0023981

10·15·93
WAW

ENGINEERING PROCESSING POINT OF VIEW

HIGH

- SHORT RECEIVER
- MACHINES, TOOLING, PROCESSES CONSISTENT WITH EXPECTED VOLUME
- HIGH-YIELD OPERATIONS
- MAINTAIN M200 PRODUCTION CAPACITY

MEDIUM

- DESIGN TO INHIBIT/PREVENT INCORRECT ASSEMBLY OF COMPONENTS
- DESIGN TO PERMIT REWORK/SALVAGE

AL 0023982
BARBER - 1.30.130001437

NBAR FIRECONTROL DESIGN OBJECTIVES

- USER "FRIENDLY" DESIGN
- IMPROVED TACTILE FEEL OF THE TRIGGER
- IMPROVED TACTILE FEEL OF THE SAFETY
- CUSTOMER ABLE TO OPEN AND CLOSE BOLT WITH SAFETY "ON"
- BOLT LOCKED DOWN IN A "S" CONDITION
- CUSTOMER ADJUSTABLE TRIGGER PULL FORCE ONLY WITHIN PRESCRIBED LIMITS
- BOLT STOP RELEASE RELOCATED WITH IMPROVE TACTILE FEEL
- LEFT HANDED VERSION TO BE DESIGNED
- DESIGN FOR MANUFACTURABILITY PRINCIPLES UTILIZED
- DESIGN FOR ASSEMBLY PRINCIPLES UTILIZED
- "SEALED" DESIGN
- RIFLE WILL NOT FIRE IF TRIGGER PULLED AND HELD AS SAFETY IS MOVED FROM "S" TO "F"
- ROBUST AGAINST IMPACT
- COMPEL TRIGGER TO SUPPORT POSITION IN MOVING SAFETY FROM "F" TO "S"
- "NO LUBRICATION" DESIGN
- ENHANCED CORROSION RESISTANCE

SAMPLE

DRAFT

DEFINITION OF NEW SYSTEM

NO MENTION MADE OF SYSTEM BASIC CONCEPT - MOVING PARTS

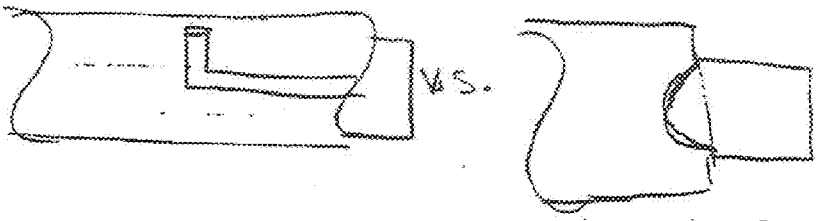
- TWO POSITION SAFETY
  SIMPLEST, REMAINING TRADITION, EASY TO UNDERSTAND
- BOLT LOCK ON SAFE
- RELEASEABLE BOLT LOCK — Don't need existing "OPENING"
  ALLOWS OPENING BOLT WITH SAFETY "ON"
- WILL BLOCK AND LIFT SEAR AS PRIMARY MEANS
- COULD BLOCK TRIGGER ALSO
  → NOT SAFER AS SUCH, BUT THIS MAY ADDRESS CUSTOMER PERCEPTION THAT IT IS BETTER IF TRIGGER DOESN'T MOVE.
- CONSIDERING VERTICALLY SLIDING SEAR
- SELF-CONTAINED SUB-ASS'Y MOUNTED RIGIDLY TO RECEIVER
- DIVORCE BOLT STOP/RELEASE FROM INSIDE TRIGGER BOW; NO OTHER REASON TO REACH INSIDE TR. GUARD BOW BUT TO PULL THE TRIGGER.

SILENCE OF LOCK WIRE SPRING IN LIEU OF 22 & 277 ?

ROGER THINKS SAFETY LACKED CLEARANCE (MECH. ADVANTAGE) FOR CAM-BACK TYPE OF FIRING PIN BLOCK SAFETY.

CAN WE ADD A "RESILIENT" MEANS TO SEAR — INSTEAD — OF TRIGGER.
* MUST BE CORRECTLY POSITIONED BY ACTION OF PUT "CONNECTOR" ON THE SEAR

NO BAR
Scrape ramp for bolt stop plunger avoid — L cut for bolt lockdown VOL III pg 165



BOTH ROGER M77 AND CHARDAN REQUIRED REMOVABLE F.P. SPRING PLUNGERS WITH SOLID (INTEGRAL) ONES.

WAW
8-10-93

IF BOLT LOCK / BOLT STOP ARE COMMON / INTER-RELATED PARTS, THEN IT SHOULD BE DONE IN A WAY THAT USER CAN ELECT NOT TO HAVE BOLT LOCK FUNCTION BUT RETAIN BOLT STOP FUNCTION.

- @ FACTORY
- @ GUNSMITH
- @ SELF

} BEST WAY WOULD INCLUDE REMOVING A PART

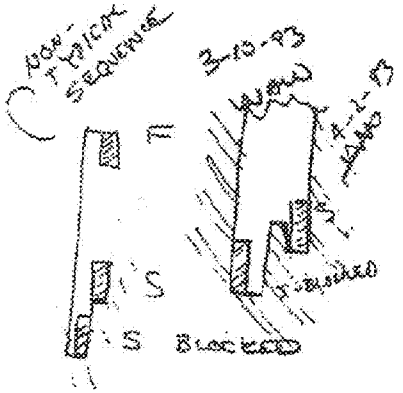
- LOST / MISPLACED
- ? THEN DIFFICULT TO RESTORE OTHER MODE

FOR MINIMUM (FLOOR) ON TRIGGER PULL:

- DUAL SPRING SYSTEM
  - 1 FIXED MINIMUM PERMANENT INSTALLATION @ MFG'T.
  - 1 ADDITIVE FOR ADJUSTMENT
- SINGLE SPRING WITH MINIMUM PRELOAD MAINTAINED WHEN ADJUSTMENT IS CONDUCTED TO MINIMUM EXTREME.

BROWNING BCA

- ACCESSIBLE WITHOUT RIFLE DISASSEMBLY
- ACCESSIBLE ONLY WITH RIFLE DISASSEMBLY.


NON-
TYPICAL
SEQUENCE
3-15-93
WORD
4-1-93
WORD
S
S
BLOCKED

3-10-93

CONCEPTS ON PREVENTING BOLT FROM LIFTING IN "S" POSITION.

THE MECHANISM:

- CAN BE USED BOTH WAYS, AT ANY TIME, DEPENDING ON ACTIONS TAKEN BY THE USER.
- CAN BE MODE SELECTED BY THE USER, AND WOULD BE

3-10-83

BALANCED TRIGGER SYSTEM.

- BALANCED & WITH NO MOVING PART ATTACHED TO TRIGGER.
- UNBALANCED TRIGGER-LINKAGE SYSTEM, WITH SUPPLEMENTARY DEVICE(S) ADDED TO AVOID JAR OFF IN REQD DIRECTIONS -XP-100 SYSTEM -

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6.93 MAW

N BAR FIRE CONTROL

TRIGGER RETRACTION UPON PARTIAL POLL IS IMPORTANT:

- M700 RELIES ON POWERFUL SPRING; NOT MAINSPRING

* THIS WOULD BE A CONCERN IN ANY SYSTEM WHERE FRICTION CAUSES POLICE OPPOSING TRIGGER POLL IS GREATER THAN THE SPRING COMPONENT OPPOSING TRIGGER POLL.

GOALS COLT SAFER
- TEST BOLT LOCK
- TOGGLE TRIGGER

CHANGE S. U. F. SEQUENCE OF 3 OF SAFETY

U S F

LONG RATE SPRING

BOLT LOCK INTERCEPTOR OF SAFETY =
LOCKED WHEN BOLT CLOSED DISABLED BY A PIN FALL
OF QUICK EJECT BUTTON.

TRIGGER BLOCK SAFETY. HOW TO MAINTAIN
TRIGGER/SAFETY RELATIONSHIP WHEN ADJUSTING
TRIGGER/SEAR RELATIONSHIP.

TRIGGER BLOCK
FIRST THING TO BE BLOCKED (F→S)
CAMMED INTO SEAR SUPPORT POSITION OR SAFETY WILL NOT
LAST THING TO BE FREED (S→F)

F→S

CAM TRIGGER INTO SUPPORT POSITION
BLOCK IT THERE
CAM SEAR UP OFF OF TRIGGER
CAM F.P BACK

S TO F
REARM SEAR TO CONTACT TRIGGER
UNBLOCK TRIGGER

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BARBER - 1.30.130001447

3-3-93

SAAMI ANSI Z 299.5-1990

DROP TEST:

4' DROP IN "SAFE CARRY'S CONDITION"

1" RUBBER BACKED BY CONCRETE.

MIN/MAX GUN WTS W/ & WITHOUT CHARGED MAGAZINE.

JAR-OFF TEST:

IN " CONDITION OF MAXIMUM READINESS"

12" FROM NEAREST POINT OF FIREARM.

ROTATION TEST:

leaning against a vertical surface

IN "SAFE CARRY CONDITION"

Inject on sides.

SAFETY AND TRIGGER MECHANISM AND BOLT LOCK

CAN BE SEPARATE & INDEPENDENT MECHANISMS

⇒ SAFETY WOULD LIKELY APPEAR IN SEQUENCE (MECHANICAL) CLOSER TO FIRING PIN TIP.

CAN BE COMMON & INTEGRAL MECHANISM

& INTERACTIVE

Barber b- 2 pgs

Barber b- a pgs

REMINGTON ARMS COMPANY, INC.
INTER-DEPARTMENTAL CORRESPONDENCE

Remington parkes

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

cc: File-Development Schedule

November 9, 1984

TO: R.R. Coleman, II

FROM: J.W. Bowen

UPDATE - DEVELOPMENT SCHEDULE ITEMS

1. Model 1100 Functional Improvements (1986)

Research is evaluating four improvements - in order of priority:

a. automatically compensating gas system
b. improved action smoothness
c. new carriers
d. stainless steel magazine tube.

Preliminary testing of a leaf spring - pressure vent gas system is very encouraging. Average terminal bolt velocities ranged from 178 in./sec with 1-oz. target loads to 295 in./sec with 3" magnums. This spread of 117 in./sec is well within our goal of 200 in./sec. We anticipate that fine tuning can produce further improvements.

An engineering test of the new carriers, stainless steel magazine tubes, and design changes to improve action smoothness, including cam angle changes on the disconnector and feed latch, will begin November 26.

2. Model 1100 Restyle (1986)

Research and Marketing agreed to final specifications on August 30. Research has transmitted these specifications to Production for estimating.

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Model 870 Rentzle - cont'd.

to have cut checkering, a solid recoil pad, an ivory bead front sight, 30 gloss wood finish, and choke tubes in 26" barrels. The 20 gauge will be offered in similar specs for 1986. The 28 and .410 gauge offerings, also in 1986, will be the rattyled version only, without choke tubes.

Research is working with Production and Planning to transmit the parts lists and drawings in the order that most fits their needs.

9. Mountain Rifle (1986)

The project has been approved. Research work is complete pending Production's trial and pilot run in 2085.

10. New Bolt Action Rifle (1990)

This rifle has been designed as replacement for the Model 700. Technical improvements include:

- a simplified fire control containing:
  - preset engagement and overtravel
  - customer adjustable trigger pull to a safe lower limit
  - steel trigger and sear
- a tang mounted safety that blocks both the trigger and sear
- a bolt lock which allows the customer to unload the gun with the safety on
- a fully enclosed claw-type extractor
- a fully enclosed bolt plug
- reduced lock time
- Remington scope mounts
- a detachable magazine box.

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FAX MESSAGE

TO: RICHARD S. HART

COMPANY: CONTOURS

FAX #:

FROM: JAY BUNTING JMB

DATE: March 29, 1993

MESSAGE: BOLT ACTION RIFLE PROJECT

Dear Dick:

Remington's Director of Research and Development is Mr. Ken Soucy. He will be the Contract Administrator for the project which Remington undertakes with Contours. His group will also be the best source for obtaining firearms parts and drawings necessary for the work to be completed by your company.

I would like to set up a conference call with you and Ken on Wednesday, March 31. When you return from your business trip, please call me so that the proper networking can be established.

Page 1 of 1 Pages

REMINGTON ARMS
1007 MARKET STREET B-6251 WILMINGTON DE
19898
Tel: (302) 773-5339 Fax: (302) 774-5776

FAX MESSAGE

TO: KEN SOUCY

COMPANY: REMINGTON ARMS R&D

FAX #: ON FILE

FROM: JAY BUNTING JMB

DATE: March 29, 1993

MESSAGE: CONTOURS

On Friday afternoon I spoke with Dick Hart, President of Contours and indicated that Remington was interested in contracting their services for concept design. Dick asked me about obtaining assembly drawings, layout drawings and various gun parts for their use in generating NBAR concepts. I suggested that this request would be best served if placed on the Research and Development group. In addition, we discussed work to be completed and Dick suggested that Remington consider paying Contours on a phase by phase basis. Frankly, this sounds good to me since we can pay as we go and can stop at any time.

I have arranged for a conference call with you and Dick Hart on Wednesday morning, March 31 to discuss required work, model parts, drawing availability and final contract approval.

Dick indicated that he has several drawings already initiated on this project. Let me know if you have a problem with Wednesday.

Page 1 of 1 Pages

REMINGTON ARMS
1007 MARKET STREET B-6251 WILMINGTON DE
19898
Tel: (302) 773-5335 Fax: (302) 774-5776

LG-6972 Rev. 10/81

DUPONT

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE 19898

Mr. Richard S. Hart
President
Contours Consulting Design Group, Inc.
864 Sterns Road
Bartlett, IL 60103-4508

CONFIDENTIAL INFORMATION AND INVENTION AGREEMENT

It is anticipated that Du Pont will from time to time disclose to you (meaning your Company if you represent a company) certain technical or business information and may also request that you develop information for Du Pont at Du Pont's expense. With respect to all such information we suggest an agreement on the following terms:

1. For a period of five (5) years following the date of each such disclosure or development you shall maintain such information confidential, except:
   a. information which is or becomes known publicly through no fault of yours,
   b. information learned by you from a third party entitled to disclose it, or
   c. information already known to you before receipt from or development for Du Pont, as shown by your prior written records.
2. You shall not, without prior written permission of Du Pont, furnish to any third party any equipment or material embodying or made by use of any information received or developed hereunder or use such information for purposes other than internal evaluation so long as such information must be maintained confidential; provided, however, that nothing herein shall prevent you from furnishing to third parties equipment or material embodying or made by use of any such confidential information furnished by the third party. All confidential information in tangible form, received or developed hereunder, shall be sent to Du Pont at Du Pont's request.
3. No right or license, either expressed or implied, under any patent is granted hereunder.
4. You shall not disclose confidential information received or developed hereunder nor assign work hereunder to anyone other than your employees who have agreed in writing to maintain the information confidential and to execute all documents deemed necessary by Du Pont to permit you to comply with all provisions of this agreement.
5. You agree to communicate to Du Pont any ideas and improvements that you conceive or make arising from your activities under this agreement and you hereby assign to Du Pont all rights and title to such ideas and improvements. If Du Pont considers any of them to be inventions on which Du Pont wishes to apply for United States or foreign patents, you shall at our request execute all papers we deem necessary or advisable for the filing and prosecution of such patent applications and for providing confirmation of Du Pont's legal title to the inventions, applications, and any patents granted. Du Pont shall bear all costs involved.
6. The relationship as described above between you and Du Pont will terminate ten (10) years from the date of your acceptance of this letter or may be earlier terminated by either party upon thirty (30) days' prior written notice to the other. Termination of this Agreement shall not relieve you of any obligation with respect to information disclosed or developed hereunder prior to termination and shall not affect Du Pont's rights with respect to ideas and improvements conceived or made prior to termination.

If the above is satisfactory to you, will you kindly indicate your acceptance by signing and dating the enclosed copy of this letter and returning it to me for our files. Thank you for your cooperation.

Very truly yours,
E. I. DU PONT DE NEMOURS AND COMPANY

Accepted Richard S. Hart
Title President
Date April 6, 1993

By [signature] 3/31/93
Title Research Manager

REMINGTON ARMS COPY

Wilmington, Delaware
April 1, 1993

B. R. BROWN

CONTRACT DESIGN PROPOSAL
CONTOURS DESIGN GROUP, INC.

BACKGROUND:

In June of 1993 Marketing will be conducting a focus panel on the new bolt action rifle. (NBAR) Panelists will compare and identify features and benefits of competitive samples as well as New Bar prototypes.

To supplement this effort it is proposed that Contours Design Group is contracted to provide aesthetic design input for the new rifle. Marketing Research recommended the outside services of Contours Inc. Marketing and R&D have met with Contours for the purpose of project briefing and concept exploration.

PROPOSAL:

The objective of Contours involvement in the NBAR project is to provide a fresh perspective on the stylization of the rifle. Costs are estimated to be approximately $10,000 excluding travel and time of Remington personnel. Both Marketing and R&D endorse the contracting of Contours. Your approval is requested, please.

J. M. BUNTING, JR.

BACKCONT.JMB/ame

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

Wilmington, Delaware
March 10, 1993

K. W. SOUCY

CONTOURS CONSULTING DESIGN GROUP

Attached please find a design proposal from Contours, Inc. The proposal addresses Remington's new bolt action rifle.

Marketing's primary interest with this consultant lies in the possibility of their assistance with the styling of our new rifle. Development of concept sketches, refined renderings and final layouts are covered in phases 1 through 4 in the proposal. The cost for this work would approximate $10,000 excluding travel and time of consulting Remington personnel. I do not see Remington participating in Phases 5 through 9 which entails prototype construction, modifications, engineering drawings and multiple prototypes. I believe we can execute this portion of the project more efficiently and effectively in house.

After reviewing the proposal, please call me at your earliest convenience to discuss the value of this initiative.

J. M. BUNTING

CONTOURS.JMB/ame

CONTOURS

CONTOURS DESIGN CONSULTING DESIGN GROUP INC.

March 4, 1993

Mr. Jay M. Bunting, Jr.
Marketing Manager - Firearms
Remington Arms Company, Inc.
Brandywine Building, B-6254
1007 Market Street
Wilmington, DE 19898

Dear Jay:

We appreciate you and your colleagues touring our facilities and reviewing our capabilities. We are anxious to demonstrate the many ways we believe we can assist Remington in their product development efforts. If, after reviewing our proposal, you have any questions concerning any aspect of our operation, please contact me.

As I mentioned in our quotation, it is very difficult to estimate prototyping costs, at this point, without a final design direction. There are so many variables. The number of parts, the type of detailing, the number of parts we can modify and the number of new parts that need to be made will impact on cost. Multiple castings can be less expensive, but like any other tooling, the more parts that are made, the greater the tooling amortization. RTV rubber is about $500 for 10 pounds, so a large part of the cost of these molds is material, especially on large dies. We always make an evaluation as to whether it is less expensive to fabricate or mold and cast for a given quantity of parts.

We hope this project initiates a long term working relationship between Remington and Contours. Thank you for considering Contours a potential member of your development team.

Best regards.

Richard S. Hart
President

RSH:jf

Enc.

FAX MESSAGE

TO: KEN SOUCY

COMPANY: REMINGTON ARMS

FAX #: ON FILE

FROM: JAY BUNTING

DATE: March 23, 1993

MESSAGE: CONTOURS PROPOSAL

By now I hope you've had the opportunity to discuss this proposal with Mike Keeney. I appreciate your prompt suggestion that we proceed, however, I believe we need to be in accord regarding the expected results, timing, available resources and fit with the overall project plans.

I will be in Ilion all day Wednesday and Thursday for a production scheduling meeting. Let's get together during this time to construct a path forward for Contours involvement in the rifle project.

Page 1 of 1 Pages

REMINGTON ARMS
1007 MARKET STREET B-9251 WILMINGTON DE 19898
Tel: (302) 773-5335 Fax: (302) 774-5776

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KINZER V. REMINGTON

CONTOURS CONSULTING DESIGN GROUP, INC.

TERMS & CONDITIONS INFORMATION

1. TRAVEL AND INCIDENTAL EXPENSES

All out-of-pocket expenses such as photostats, blueprints, films, silk screens, paint, model materials, composition and etched proofs, long distance phone calls, etc., will be billed as additional costs to the quotation unless otherwise noted. All out-of-town travel costs and expenses for trips authorized by the Client will be billed at our cost. Auto expenses between Contours Consulting Design Group, Inc. and the Client's office and return to Contours Consulting Design Group, Inc. will be billed at the rate of 20¢ per mile.

2. CONFERENCE

Insomuch as the frequency and duration of conferences are difficult to determine at this time, all conferences will be billed at the rate of $100.00 per hour for Principals of the studio and $75.00 per hour for Project Designers in addition to the amounts quoted in the foregoing proposal. Out-of-studio conferences are charged for on the basis of the time of departure to the time of return to our studio. Per diem charge is $800.00 for Principals and $600.00 for Project Designers.

3. ACCURACY OF QUOTATION

Because of the difficulty of quoting fixed costs for creative work, it must be understood that our quoted amounts are approximate and are to be considered subject to the normal professional tolerance of ±10%.

4. RIGHTS IN THE DESIGN

All designs executed and used in products of the Client during the period of this agreement shall become and remain the property of the Client and any designs, idea sketches, or suggestions of the Designer or his staff not used by the Client during the period of this agreement shall remain the property of the Client. The Designer will treat as confidential any information about manufacturing processes, trade secrets, plans of the Client, etc., disclosed by the Client. The Designer will cooperate with the Client in any patent, copyright, or trademark application made by the Client and in any suits for infringement, unfair competition, etc., brought by the Client, but all such cooperation shall be at the Client's expense. Nothing in this paragraph shall give the Client any rights in the name of the Designer.

5. DESIGNER'S NAME

The Client may use the name of the Designer in connection with its products only on the prior written consent of the Designer and his approval of the product, advertisement, release of publicity containing such name.

REMINGTON / BOLT ACTION RIFLE

DESIGN PROGRAM

PHASE 1: PROJECT BRIEFING

PHASE 2: CONCEPT EXPLORATION

PHASE 3: CONCEPT DEVELOPMENT

PHASE 4: PRELIMINARY LAYOUT DRAWINGS

PHASE 5: PROTOTYPE CONSTRUCTION

PHASE 6: MODIFICATIONS

PHASE 7: FINAL LAYOUT DRAWINGS

PHASE 8: ENGINEERING DRAWINGS

PHASE 9: MULTIPLE PROTOTYPES

PHASE 10: PRODUCTION ASSISTANCE

PHASE 11: GRAPHIC DESIGN

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KINZER V. REMINGTON

BARBER - 1.30.130001461

March 4, 1993

REMINGTON / BOLT ACTION RIFLE

DESIGN PROGRAM

PHASE 1: PROJECT BRIEFING

A Contours' representative will meet with the Client's project personnel to discuss the objectives and criteria that will form the context in which Industrial Design will operate. In addition, the scope of Contours involvement will be delineated relative to the Client's corporate capabilities. Pursuant to this meeting, Contours will prepare and submit a design proposal tailored to the needs of the Client's capabilities and specific requirements of the project. This proposal will segment the program development into a series of sequential phases defining the work to be accomplished, the time of completion, and the cost of each phase.

PHASE 2: CONCEPT EXPLORATION

Contours will prepare a series of sketches exploring form and detail options consistent with the criteria covered in the project briefing.

These sketches will be developed in elevation views, primarily illustrating the side profile of the gun as seen from the bolt action side. Additional views will detail specific areas of interest such as bolt details, scope mounts, grip area, butt plates, cheek blocks, receiver/barrel transistion, etc. In addition the drawings will show color, material, and finish options. Product will be illustrated approximately 1/2 actual size. Upon compition, a meeting will be scheduled with Remington personnel to review the sketches and select specific designs for further development.

PHASE 3: CONCEPT DEVELOPMENT

Contours will prepare final design renderings refining and expanding upon the concepts selected in Phase 2. Again, these will show side views and any other view or perspective appropriate to illustrate detail. These drawings will be full scale to approximate in two dimensions the form and detail of the proposed design. Color, material, and finish variations will be depicted. At the completion of this phase, a meeting shall be scheduled to review the designs and select a final design direction.

PHASE 4: PRELIMINARY LAYOUT DRAWINGS

Upon selection of final design direction, Contours will generate preliminary layout drawings. These drawings will be full scale, showing all pertinent views, sections, details, and contouring. They will be dimensioned only to the degree required to enable Contours' model shop to construct a prototype. These drawings will be submitted to Remington for review and approval prior to prototype construction.

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KINZER V. REMINGTON

PHASE 5: PROTOTYPE CONSTRUCTION

Upon approval, Contours will construct a visual prototype. This model will represent all visual aspects of the proposed design in form, color, finish and detail. Contours will use metal components generated by Remington or model these components as required. Wood material will be supplied by Remington for modeling of the gun stock. Upon completion, a meeting will be scheduled to review the model.

PHASE 6: MODIFICATIONS

If, as a result of the Phase 5 reivew, changes are required, Contours will modify the prototype and again submit the model for final approval.

PHASE 7: FINAL LAYOUT DRAWINGS

Upon approval of the prototype design, Contours will prepare full scale layout drawings. These drawings will show all views of the design. Enlarged details and sections will be employed where required. All views will be fully dimensioned. All finishes, colors, textures, and materials will be specified. These drawings will provide the data base for production engineering part drawings.

PHASE 8: ENGINEERING DRAWINGS

Should Remington require assistance in the preparation of engineering part drawings, Contours will generate these as required.

PHASE 9: MULTIPLE PROTOTYPES

If multiple prototypes are required, Contours will construct these models. RTV rubber dies and cast rigid polyurethane will be used where appropriate. This may be employed to produce barrels, receivers, stocks, triggers, bolts, etc. Models will be weighted as required to simulate proper balance and feel.

PHASE 10: PRODUCTION ASSISTANCE

Contours will be available to assist engineering and manufacturing as the product proceeds toward production.

PHASE 11: GRAPHIC DESIGN

Contours has the capabilities to prepare graphic design and production art work for corporate and product logo, brochures, sales materials, P.O.P. displays, packaging and signage should Remington have these needs.

March 9, 1983

REMINGTON / BOLT ACTION RIFLE
DESIGN PROGRAM

COST / TIME FACTORS

PHASE 1: PROJECT BRIEFING

Cost:	* $ 200.00
Completion:	Complete

PHASE 2: CONCEPT EXPLORATION

Cost:	$3,100.00
Completion:	7 - 9 Working Days

PHASE 3: CONCEPT DEVELOPMENT

Cost:	$2,700.00
Completion:	5 - 7 Working Days

PHASE 4: PRELIMINARY LAYOUT DRAWINGS

Cost:	$2,700.00
Completion:	5 - 7 Working Days

PHASES 6 THROUGH 9:

Until we find design direction is established, accurate quotations are extremely difficult. Cost and completion times could vary greatly depending upon detailing and the extent of our involvement. As a preliminary data base, we estimate a finished visual prototype of the Model 700 rifle would cost as follows:

1.	Stock (walnut)	$2,600.00
2.	Stock w/cheek piece (walnut)	$3,000.00
3.	Stock (synthetic stock appearance:	
	A. Without cheek piece	$2,100.00
	B. With cheek piece	$2,600.00
4.	Barrel (non-metal)	$1,800.00
5.	Complete rifle (wood stock with cheek piece, bolt, butt plate, sights, trigger and grip caps)	$6,500.00 - $7,500.00

If some components were modifications of existing parts, costs could be considerably lower. For example, existing barrels could be cast in urethane from rubber dies, then modified and painted. Existing stocks could be modified and use simulated wood grain and/or used as a pattern for multiples. A rubber die for an existing barrel would have an estimated cost of $1,000 - $1,300. Once this die is made, multiple units can be cast with a relatively low piece part cost. Finished, end bored and painted, we would estimate the part cost at approximately $500 - $600. Sights could be molded on. Our objective is to take the shortest, most economical path to achieve the goal.

PHASE 10: PRODUCTION ASSISTANCE

Cost: Consultation Rate
Completion: As Required

PHASE 11: GRAPHIC DESIGN

Quoted Upon Request

Please Note:

Due to the variation in location and duration of meetings, meeting time is not included in the above quotation. Please see Terms and Conditions information for current consultation rates.

* Project Briefing costs are not invoiced unless the project is approved.

It is the Client's option to purchase by phase or phase groups and to terminate work after the completion of any approved phase.

Client directed changes occuring during the course of an approved work phase will require interruption of that work until the Client can be informed of the economic and completion time impact of such changes. Work will proceed after Client approval of revised cost/time factor estimates.

CONTOURS CONSULTING DESIGN GROUP, INC.

TERMS & CONDITIONS INFORMATION

6. TERMINATION

This agreement may be terminated by the Client upon notice in writing, but such termination shall not release the Client from his obligation to pay the amounts due to date of such notice of termination.

7. ASSIGNMENT

Neither party hereto shall assign this agreement without the consent of the other but if neither party is succeeded by another operation of law, this agreement shall be binding upon and inure to the benefit of the successor.

8. INITIATION OF WORK

Contours requires a Purchase Order Number prior to initiation of work on a project phase. This protects both the Client and Contours. It assures that time/cost quotations have been accepted by both parties and that their Purchasing and Accounting departments are appraised of the contracted work.

9. BILLING IN PROGRESS

Specific project phases can require substantial time/cost commitments by Contours. When appropriate, Contours shall invoice on a weekly basis. Notice of such an invoicing structure shall be delineated on phase quotations prior to initiation of work.

10. PAYMENT TERMS

Invoices will be submitted for payment at the completion of each phase or on a weekly basis as is delineated. Terms are NET 30 DAYS. Payment is to be made in U.S. dollars. There is a 1½% finance charge for amounts due over 30 days.

11. ADVANCE PAYMENT

50% of prototyping tooling cost is due upon receipt of Purchase Order. Remainder is due upon tooling completion. In cases of outside services such as photography, typesetting, blueprints, etc. that require a prepayment, Contours shall request such prepayments from Clients.

12. CHANGES

Changes or additions initiated by the Client, subsequent to quotation and/or during work in progress, will require additional quotation by Contours. Work in progress, either in total or in part, shall be suspended until the quotation process has been completed and change orders have been issued by the Client.

Rev. 5/6/89

CONTOURS CONSULTING DESIGN GROUP, INC.

TERMS & CONDITIONS INFORMATION

13. QUOTATIONS

Quotations are operative for sixty (60) days from the date of quotation. After sixty (60) days, Contours reserves the right to confirm or adjust quotations still pending approval.

14. MODIFICATION OF AGREEMENT

This is the entire understanding of the parties and no modification or change herein shall be effective unless in writing and executed by both parties hereto.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the

_____ day of _____ nineteen hundred and _____.

SIGNED: _____ _____
For the Client Title

SIGNED: _____ PRESIDENT
For the Studio Title

WAW
8-10-13

IF BOLT LOCK/BOLT STOP ARE COMMON/INTER-RELATED PARTS, THEN IT SHOULD BE DONE IN A WAY THAT USER CAN ELECT NOT TO HAVE BOLT LOCK FUNCTION BUT RETAIN BOLT STOP FUNCTION.

- @ FACTORY
- @ GUNSMITH
- @ SELF

} BEST WAY WOULD INVOLVE REMOVING A PART

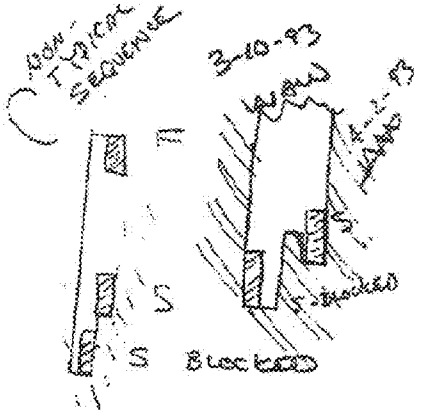
- LOST/MISPLACED
- X THAN DIFFICULT TO RESTORE OTHER MODE.

FOR MINIMUM (FLOOR) ON TRIGGER PULL:

- DUAL SPRING SYSTEM
  - 1 FIXED MINIMUM — PERMANENT INSTALLATION @ ASS'Y.
  - 1 ADDITIVE FOR ADJUSTMENT
- SINGLE SPRING, WITH MINIMUM PRELOAD MAINTAINED WHEN ADJUSTMENT IS CORRECTLY TO MINIMUM EXTREME.

BREAKING BEA

- ACCESSIBLE WITHOUT RIFLE DISASSEMBLY
- ACCESSIBLE ONLY WITH RIFLE DISASSEMBLY.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CONCEPTS ON PREVENTING BOLT FROM LIFTING IN "S" POSITION.

THE MECHANISM:

- CAN BE USED ~~EITHER~~ BOTH WAYS, AT ANY TIME, DEPENDING ON ACTIONS TAKEN BY THE USER.
- CAN BE MODE SELECTED BY THE USER, AND WOULD BE

3-10-93

BALANCED TRIGGER SYSTEM.

- BALANCED & WITH NO MOVING PARTS ATTACHED TO TRIGGER.

- UNBALANCED TRIGGER-LINKAGE SYSTEM, WITH SUPPLEMENTARY DEVICE(S) ADDED TO AVOID JAR OFF IN REQ'D DIRECTIONS -XP-100 SYSTEM -

N BAR

HIGH END ENTRY = TO 700 (PLUS REVEL)

LET MARKET TEST US IF 700 IS TO BE DISPLACED. PRESERVE CAPACITY TO SATISFY M700 CUSTOMERS.

N'BAR TO BE LOWER COST TO M'F'G FOR MARKET STRATEGY.

N'BAR COULD BECOME TOP LOW END GUN & 700 STAYS HIGH END.

July 1, 1993

TO: K.W. Soucy
FROM: W.A. Warren, Jr

PROGRESS REPORT June 1993

M700 VS. Long Action "Sendero Special"

Samples for the second Trial and Pilot test (these are the requested .300 Win. Mag.) were obtained by the Test Lab on 6-30-93. A minor design improvement to the magazine follower, the need for which was identified in the first T&P, was transmitted the week of 6-8-93.

I estimate my work on the 1993 version as now more than 95% complete and will follow-up any technical issues thru successful 300 Win. Mag. T&P testing.

1994 Modification: fluted barrel (PI-2 5-18-93)

This adds six cut longitudinal flutes in the barrel. The purpose of these is to reduce weight and enhance appearance. This will be done on the "Sendero Special" in a way that maintains the ultimate strength of the current Magnum barrel; flute depth will not extend below the current Magnum profile. Maximum weight reduction can be obtained by "contouring" flute depth (reducing the depth of cut as it extends toward the receiver) using an existing vertical spindle CNC mill with workpiece rotation. ATD Rifle Engineering is making up a catalog sample to this specification with the new crown.

BASIC RESEARCH-RELEASE MECHANISMS

Measurement Apparatus: All but one of the major or long lead time purchased components have arrived. The force transducer system was due June 8. Vendor has now indicated delivery will be July 9.

Status:	Percent complete
o specifying and purchasing major components	80
o purchasing, designing and fabricating small components	10
o learning the operation and setup of the force transducer	0
o " " " " " " displacement "	5
o linking above to the Tektronics transient data capture device	10
o learning the programming and operation of the motor-driven motion control system	5
o integrating the components and debugging their operation	0

NBAR: I have completed study of a two-volume reference on analysis of bolt action rifle actions. This has also been a useful source for identifying patents dealing with bolt action fire controls. I have requested copies of several of these for review.

DESIGN-RELATED

On an ongoing basis, I am assisting M. Keeney with his NBAR process-design integration program.

SAFETY

R&D safety committee: 17 hours. Current committee members have recommended that the one year term of service be shortened. The benefit will be to provide a more equal balance between new ideas and energy vs. experience. I have been asked to propose a charter for this committee.

TRAINING

This month I have completed taking 24 hours of classroom instruction on Geometric Dimensioning and Tolerancing.

END

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KINZER V. REMINGTON

EXHIBIT 58

N BAR

HIGH END RIFLE = TO 700 (parallel)

LOT NUMBER TEN US IF 700 IS TO BE DISPLACED.
PRESERVE CAPACITY TO SATISFY M700 CUSTOMERS.

N'BAR TO BE LOWER COST TO MFG FOR MARKET STRATEGY.

N'BAR COULD BECOME TOP LOW END GUN & TOP STATE HIGH END.

EXHIBIT 79

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington | PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

RESEARCH MEETING

November 1, 1978

SUBJECT: BOLT ACTION FIRE CONTROL

A meeting was held on the above subject with the following people in attendance:

C.B. Workman	E.J. Young	T.P. Powers
A.A. Hugick	D.E. Gullis	P.Nesypany
J. S. Martin	G.D.Bailey	J.W. Brooks

An explanation of the M/600 recall program was given by Clark Workman.

The present fire control was discussed using a diagram to explain its operation.

The various safeties, their positions on rifles and how they operated (what they blocked) were discussed. This included competitive models. The discussion then proceeded to what our future thinking should be on our fire controls. Is our present system satisfactory? Can we make a better system?

The outcome of the ensuing discussion produced the following criteria as a start for looking at future designs:

1. The mechanical lock type "ON SAFE" - "OFF SAFE" safety control should be retained.

2. Trigger must be pulled to fire rifle - pulling trigger is only way rifle will fire - rifle will fire immediately when trigger is pulled.

AL 0016418

BARBER - 1.30.130001478

3. Rifle (can - must) be unloaded with the mechanical safety (No. 1 above) in the "ON SAFE" position.

4. Bolt handle must be locked down with safety in "ON SAFE" position with round in chamber.

An example of No. 2 above that was discussed was to have a second trigger that had to be pulled before the primary trigger could be pulled. The secondary trigger would block the sear or other mechanism until pulled with a predetermined force through a specific distance and then continued movement would pull the primary trigger to fire the rifle.

In No. 3 above the discussion covered whether the rifle "can" or "must" be unloaded in the "ON SAFE" position. At the meeting of the Design Group on Nov. 7, opinions will be given for reaching a decision.

J. W. Brooks:T
Manual Firearms Design
Ilion Research Division

AL 0016419

BARBER - 1.30.130001478

CONFIDENTIAL TRADE SECRET

Remington®

FIREARMS DIVISION

AMERICA'S Remington® OLDEST GUNMAKER

FIREARMS THREE YEAR STRATEGIC MARKETING PLAN

(2009-2011)

Published By:

John Fink-Brand Manger/New Product Development-Rifles

SUBJECT TO PROTECTIVE ORDER - KINZER V. REMINGTON

Pricing Considerations – The key elements in pricing strategy for the Model 700 are to remain positioned competitively with respect to other product offerings within the category and to maintain margin positions. Internal factors taken into consideration for the upcoming year's pricing scenario are:

- Changes in raw material costs
- Changes in labor and overhead rates
- Capacity restraints/availability

External considerations are:

- Overall strength of the market
- General condition of the domestic economy
- Competitors strategies and past practices
- Inventory positions within the trade

Product Strategy 2010 – Model 700

The Model 700, while continuing to serve as the industry standard for modern day bolt-action centerfire rifles, is a product in the mature stage of its product life cycle. Focus within the category in the near future will be a proactive approach geared toward maintaining volumes at peak levels at attractive margins. This is accomplished primarily through incremental improvements to the product line to keep it fresh in the eyes of the consumer. The VTR/XHR line is a perfect example that is generating significant interest and volume.

Stainless steel versions will be introduced in 2010. This will provide manufacturing with ample time to understand what will be required from a process standpoint regarding the triangular barrel contour in stainless. This will allow Marketing and Sales to build and expand on a solidly built foundation. The 700 XCR will be maturing in its product lifecycle and the Sendero will be due for replacement. The XHR Stainless line will fill both of these needs. We will introduce a hunting line featuring the magnum contour barrel in stainless and a line fitted with 26" varmint contours as a replacement to our Sendero line. The 700 XCR replacement will maintain the patented TriNyte® finish starting with 416 stainless steel, a layer of nickel for weather/corrosion resistance, and a final layer of PVD (Physical Vapor Deposition) for wear/abrasion resistance. Barrels will be clean barrels with out integral muzzle break. Again, muzzle brakes will be offered as a customer special.

REM0010600

SUBJECT TO PROTECTIVE ORDER - KINZER V. REMINGTON

Model 700 Stainless XHR

Model	MSP	NSP	1st Year Volume
700 XHR SS 270 Win	$729	$656	1,200 Units
700 XHR SS 30-06 Rem	$729	$656	1,200 Units
700 XHR SS 7mm Rem Mag	$749	$674	1,000 Units
700 XHR SS 300 Win Mag	$749	$674	1,000 Units
700 XHR SS 7mm Rem Ultra Mag	$749	$674	750 Units
700 XHR SS 300 Rem Ultra Mag	$749	$674	1,400 Units

Model 700 Sendero XHR

Model	MSP	NSP	1st Year Volume
700 Sendero XHR 7mm Rem Mag	$839	$755	850 Units
700 Sendero XHR 300 Win Mag	$839	$755	1,000 Units
700 Sendero XHR 7mm Rem Ultra Mag	$839	$755	750 Units
700 Sendero XHR 300 Rem Ultra Mag	$839	$755	1,250 Units

Production/Quality Control – Focus must be maintained on the part of manufacturing on monitoring and insuring the quality and integrity of the Model 700 brand. Emphasis must be placed on consistency and standardization within manufacturing processes. Focus should also be placed on cost reducing measures which improve margins, but do not detract from the perceived quality of the product.

Pricing Considerations – Pricing will be reviewed annually in order to determine the most effective pricing strategy from year to year. Market dynamics and conditions are constantly changing, making meaningful forecasting models for pricing marginally effective at best. Pricing strategies will likely continue to be driven by necessity and opportunistic events and conditions.

Product Strategy 2011 & Beyond

2012

New Centerfire Bolt-Action Rifle (C-BAR) – While the Model 700 and Seven categories are still enjoying healthy volumes and profit margins, both products are very mature in their life-cycle. The Model 700 will certainly continue to occupy and drive a significant portion of the future of the

SUBJECT TO PROTECTIVE ORDER - KINZER V. REMINGTON

RE0010601

Remington Arms Company. However, Remington must be proactive and look to new technologies, materials, and manufacturing methods to design and implement a new product family that is cutting edge from an accuracy and performance perspective and more cost effective to manufacture than current products. Although current centerfire rifle order positions are solid with the Model 770 and Model 700, history in the autoloading shotgun market has taught us that displacement within the market is only as far away as the next major product innovation. Remington must be proactive in this regard. As the next generation of premium centerfire bolt-action rifles, the C-BAR's design should take the following into consideration:

- Rifle must be capable of delivering sub moa accuracy from the factory.
- Rifle must be equipped with an extraction system that provides the benefit of a "controlled round feed" design without sacrificing the strength of the Model 700 action, i.e. maintains "three rings of steel."
- Rifle must have a means to lock the bolt down when in the "safe" position to eliminate the bolt handle from opening when the rifle is carried yet still allow the rifle to be unloaded or the action opened in a safe manner.
- Rifle must be equipped with a fire control capable of external adjustment by the consumer for weight of pull and must be capable of being set at the factory between 3lbs-4lbs consistently. Trigger should be adjustable to 2lbs by the consumer. Single set trigger should be considered as an option as well.
- Rifle must be designed to eliminate concerns with bedding issues either through use of an integrated bedding system such as the TC Icon, or through the use of a new concept receiver design such as the Sauer 202.
- Rifle should feature a bolt to barrel lock up system to eliminate stresses between barrel and receiver and to ensure consistent headspace from rifle to rifle and ensure proper cartridge alignment relative to the bolt face and the bore.
- Barrel to receiver union should be designed for strength, rigidity, and to minimize movement, yet should be designed for manufacturability and barrel replacement with barrel interchangeability by the consumer being a design characteristic for consideration. See Mauser 03 and Sauer 202.

RR01060202

SUBJECT TO PROTECTIVE ORDER - KINZER V. REMINGTON

- Bolt head must be removable/interchangeable depending upon cartridge head size. See Mauser 03 and current Remington 770 platform for concepts.
- Bolt should feature 60 degree throw, but must be designed to translate smoothly through the action without any binding and should be designed to cock and cam into battery with equal or less force than is required in the current Model 700.
- Bolt body should be designed for jewelling and bolt handle should be designed for interchangeability and elimination of brazing. Bolt handle on base model to feature similarities to current Model 700 look.
- Product should utilize a magazine design that provides the flexibility of a detachable system, exhibits the clean lines of a hinged floor plate design and the infallible reliability of a blind magazine for dangerous game applications with the capability to "lock down" the magazine box, especially for dangerous game models.
- Rifle should be capable of reliably single loading a round from the ejection port as well as loading the magazine through the ejection port.
- Rifle should be designed for a "compact "platform capable of handling cartridges ranging from 17 Remington Fireball up through short magnums and a long action platform designed to handle cartridges based off of the 30-06 SPRG case up through the Remington Ultra Magnum family as well as a Dangerous Game action length capable of handling cartridges such as the 458 Lott and 338 Lapua Magnum with appropriate consideration given to recoil dynamics of dangerous game cartridges.

New Synthetic Stock-Remington currently purchases long gun stocks for the Sendero, certain varmint rifles, and Military/LE rifles. HS Precision, our principle supplier, is also a competitor in that they also make custom and tactical type rifles off of the 700 action. They in fact won the last FBI sniper rifle solicitation. In-conjunction with being a competitor, they are also expensive and traditionally slow on delivery. Remington currently pays $121 each for the Sendero stocks or nearly 32% of the standard cost of the complete rifle which is $383. Opportunity exists to develop our own line of stocks using similar type materials for weight reduction, strength, and

RR010603

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durability while combining the attributes of a solid bedding system. The following attributes should be taken into consideration:

- Utilize Aramid fiber (Kevlar®) material for strength and weight reduction
- Lightweight bedding block for free floated barrel
- Standard swivel studs anchored to not pull out or break stock
- Armor tough exterior
- Ability to add hardware for adjustable length of pull and comb height
- Significantly reduce cost and lead times positively impacting margins

SUBJECT TO PROTECTIVE ORDER - KINZER V. REMINGTON

RE0010604

EXHIBIT 59

WAW
8-10-13

IF BOLT LOCK/BOLT STOP ARE COMMON/INTER-RELATED PARTS, THEN IT SHOULD BE DONE IN A WAY THAT USER CAN ELECT NOT TO HAVE BOLT ~~&~~ LOCK FUNCTION BUT RETAIN BOLT STOP FUNCTION.

- FACTORY
- GUNSMITH
- SELF

} BEST WAY WOULD INCLUDE REMOVING A PART

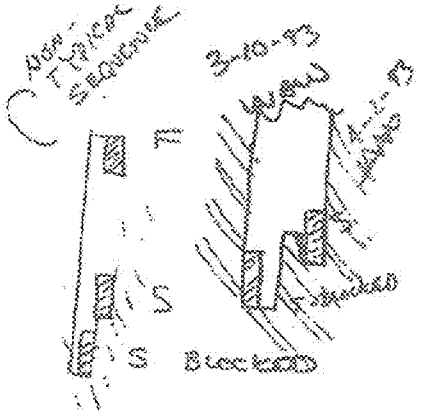
- LOST/MISPLACED
- MUCH DIFFICULT TO RESTORE OTHER MODE.

FOR MINIMUM (FLOOR) ON TRIGGER PULL:

- DOAR SPRING SYSTEM
  - 1 FIXED MINIMUM PERMANENT INSTALLATION @ ASS'Y.
  - 1 ADDITIVE FOR ADJUSTMENT
- SINGLE SPRING WITH MINIMUM PRELOAD MAINTAINED WHEN ADJUSTMENT IS CONVERGED TO MINIMUM EXTREME.

BROWNING BBA

- ACCESSIBLE WITHOUT RIFLE DISASSEMBLY
- ACCESSIBLE ONLY WITH RIFLE DISASSEMBLY.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3-10-93

CONCEPTS ON PREVENTING BOLT FROM LIFTING IN "S" POSITION.

THE MECHANISM:

- CAN BE USED BOTH WAYS, AT ANY TIME, DEPENDING ON ACTIONS TAKEN BY THE USER.
- CAN BE MODE SELECTED BY THE USER, AND WOULD BE

3-10-83

BALANCED TRIGGER SYSTEM.

- BALANCED & WITH NO MOVING PARTS ATTACHED TO TRIGGER.

- UNBALANCED TRIGGER-LINKAGE SYSTEM, WITH SUPPLEMENTARY DEVICE(S) ADDED TO AVOID JAR OFF IN REQ'D DIRECTIONS -XP-100 SYSTEM-

EXHIBIT 78

John Fink

From: Fink, John
Sent: 12/27/2006 09:45:06 AM
To: Trail, John
CC:
BCC:
Subject: FW: thoughts

John Fink

Problem Solving Strategies

PO Box 709

979 Remington Drive

Madison, NC 27025

336.548.8591 Phone

336.548.8594 Fax

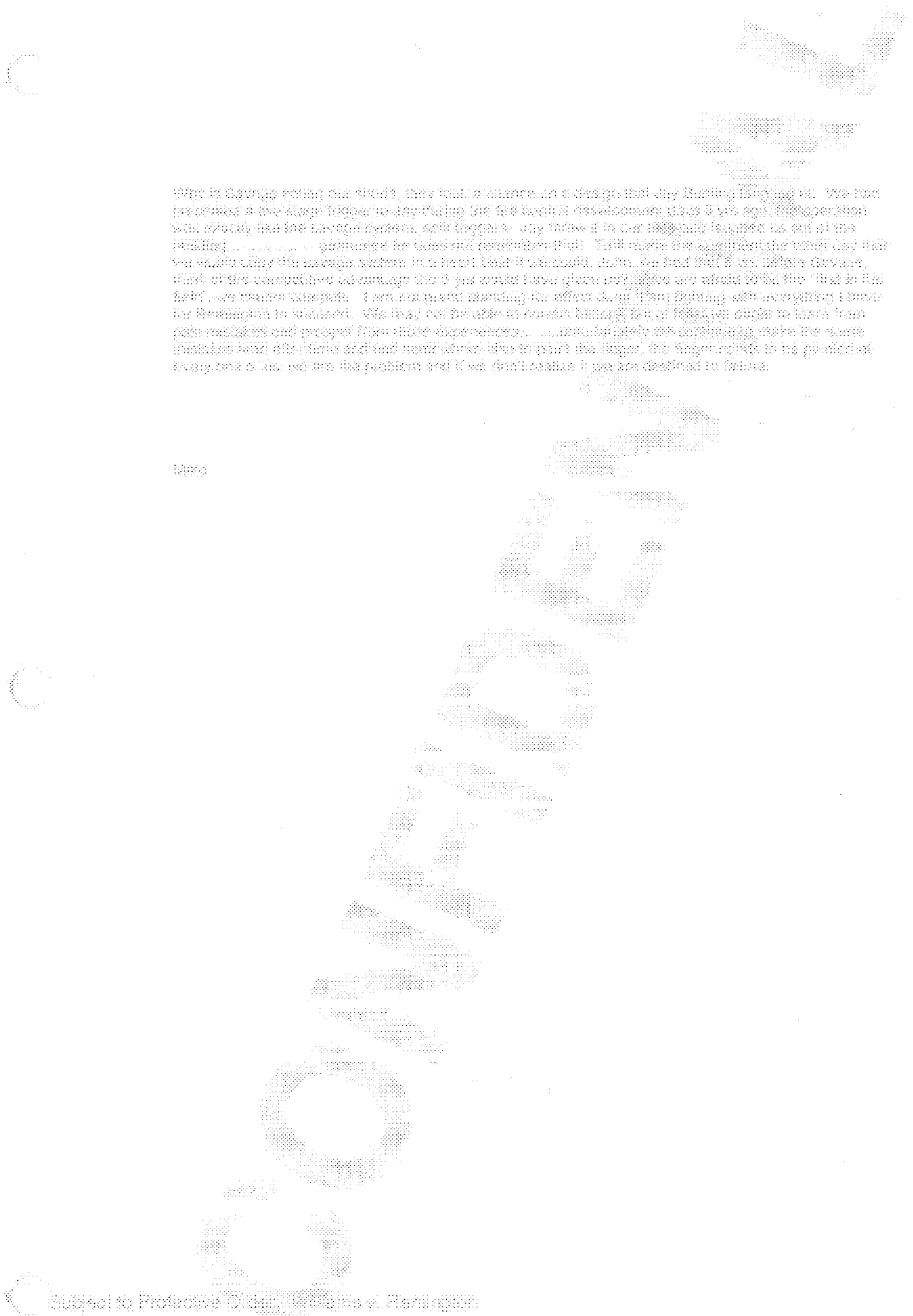
From: Ebersly, Mike
Sent: Thursday, December 07, 2006 [illegible]
To: Fink, John
Subject: thoughts

Of course I did not speak very well last night, ... you know the main point that really caught [illegible] ...this crucial Don't Of many! The guys competitive energy [illegible] performance and how they are but most of you [illegible] but we are going to [illegible] personality and feel, by giving to us are [illegible] a vehicle to [illegible]. How can we constructively allow that to happen? Regardless of [illegible] or truth, [illegible] the tolerances of the [illegible] will still change. They will still move to meet the [illegible] machining [illegible] ...Now if this is [illegible] and received the right to be [illegible], make sure we [illegible] a [illegible] [illegible]. For a [illegible] [illegible] strength to the [illegible] [illegible] [illegible] part on the tool that is to [illegible] [illegible] [illegible].

If you guys are [illegible] [illegible], the length of time required to [illegible] over the [illegible] will be [illegible], we have a [illegible] that [illegible] to build our [illegible] [illegible] and [illegible] accurately.

Remember that the guys for [illegible] the water, continue on the [illegible] [illegible] out, is that the way we want Remington to operate? How do we do the [illegible], ... not by allowing the [illegible] to win. John, [illegible] our Division [illegible], we are Gingivar right now and it [illegible], more than ever to the challenge. Certainly I have an say, but you guys (Fink and yourself) may have a valid [illegible]?

Subject to Protective Order, Higgins v. Remington



Subject to Protective Order, Williams v. Remington