

Arms Minute 3, 1956.

CENTER FIRE RIFLES1. MODEL 722 - 222 TARGET RIFLE

In a preliminary survey, Sales was unable to develop sufficient interest to indicate a substantial market for such a rifle. They pointed out that, in order to develop the full potential of such a rifle, it would be necessary to bring out a match grade of ammunition. It was agreed to drop this item.

2. MODEL 725

As a result of the subcommittee meeting, there has been some change in the thinking of the Sales Department with regard to the Model 725. It is now suggested that the Model 725ADL might be introduced at \$124.45 with a cast aluminum trigger guard, checkering, colored bolt handle, hinged floor plate, and sling swivels. The barrel length would be 22 inches except in the 222, 244, and 300 Magnum, in which it would be 24 inches.

A list price of \$94.95 was suggested for the Model 725A, which would have the features of the Model 725ADL, except that it would retain the stamped trigger guard and bright bolt, and would have no checkering. This grade would be available in all calibers except 300 H&H Magnum, which would be available only in grades ADL and higher. All grades of the Model 725 would have the new stock design with common sight line and a longer fore-end with more taper.

A major stumbling block has developed in the safety design, which is considered inadequate in the Models 721 and 722. Research and Development reported that redesign of the safety might involve a number of other design changes, and that it would be necessary to review the complete design.

In view of the importance attached by Sales to the improvement in the safety, Research and Development was asked to review the design and to meet again with the subcommittee following this review, in an attempt to establish which features will be offered in the various grades.

As soon as possible, costs will be provided to N. F. Larsen in order that he may determine selling prices which will give proper return. In the light of these revised selling prices, Sales will reconsider the forecast and make recommendations concerning the disposition of the Model 725 and the retention or abandonment of the Models 721 and 722.



NTBOOK001

IREM 002793

PROCESS RECORD CHANGE AUTHORIZATION

☒ PERMANENT CHANGE
☐ LONG DURATION ALTERNATE CHANGE
 ROUTE TO:

CHANGE NO.: 271095
 EXPIRATION DATE: _____
 INITIATED DATE: 2-2-73

CONTROL OFFICE BLDG, 462		APPROVALS	DATE
METHODS & STDS. LEADER	J. POLINKA		2-2-73
PROCESS ENGR. GROUP LEADER	J. BOWEN		2/2/73
PRODUCTION SUPERVISOR	C. PARDEE		3/6
AND PRODUCTION FOREMAN	G. CASALE		3/6
CHEM. & MET. SUPERVISOR			
OR PROCESS ENGR. SUPERVISOR	E.R. CARR		
CONTROL OFFICE BLDG, 462			
PROCESS RECORDS REVISED			

MODEL NO.: 700 REQUESTED BY: _____
 PART NAME: FINAL ASSEMBLY ENGINEER: G. PROSSER
 PART NUMBER: _____

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

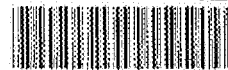
COMPONENT STATUS AS AFFECTED BY CHANGE - CHECK TYPE
☐ USE PRESENT PARTS ☐ HOLD FOR SALVAGE ☐ SCRAP PARTS ☐ REWORK PARTS

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		15000
STD. HRS. PER 100			STD. HRS. PER 100		1
DOLLARS PER 100			DOLLARS PER 100		11.10
REDUCTION DOLLARS	X		INCREASE DOLLARS	X	11.550.00
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

PLAINTIFF'S
 EXHIBIT



NTBOOK002

PROCESS RECORD CHANGE AUTHORIZATION

FEBRUARY 2, 1973

**"...POSSIBLE CONNECTOR-SEAR
INTERFERENCE. AT LEAST
TWENTY IN 1972, AND FOUR SO
FAR IN 1973 CUSTOMER
COMPLAINTS INCLUDING ONE
PERSONAL INJURY ARE
ATTRIBUTED TO THIS
INTERFERENCE."**



NTBOOK003

To R. P. KELLY

DATE February 21, 1972

FROM S. M. MIVIC

MODEL 700 - INSTRUCTION FOLDER

M.H. Walker has requested change to the folder to indicate "No Trigger Adjustments Are Recommended".

This is in accordance with his consultation with F.E. Morgan. It is understood that the need arises as result of significant increase in customer complaints of problem growing out of attempts to adjust trigger by shooters. The designers believe this condition arises as result of differences in parts as compared to earlier production, with the sear being a contributor.

M.H. Walker advises that F.E. Morgan desires to see proof copy of the folder change before printing, and advice as to inventory in terms of usage requirements and inventory cost in order to determine whether this should be made without obsolescence.

SMA:T

cc: M.H. Walker
F. E. Morgan



NTBOOK004

PLAINTIFF'S
EXHIBIT

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

RECEIVED

4-99
E. E. Morgan }
H. Chisnall } no
G. W. Martin } attachment
✓ M. H. Walker }

Bridgeport, Connecticut
May 6, 1974

F. HART - ILION

MODEL 700 OWNER'S MANUAL

This is to confirm our recent telephone conversation wherein it was decided to modify the instruction concerning the unloading procedure found in our current Model 700 Owner's Manual, copy of which is attached. The first six (6) sentences of the unloading instruction should be deleted and the following substituted therefor:

"TO UNLOAD - Hold rifle with muzzle pointed in safe direction. Move safety to OFF SAFE position and raise bolt handle. Move safety to ON SAFE position and pull handle rearward. Grasp cartridge and remove from action. Push bolt forward until next cartridge is released from magazine. Repeat until magazine is empty. CAUTION: Safety will be in the fire position during part of this operation, so keep muzzle pointed in safe direction."

During the time it will take for the Owner's Manual to be modified, an insert entitled "Alternate Unloading Procedure", containing the substance of the foregoing modification, should be packed with the current Manual.

RBS/rk
Attachment

R. B. Sperling
R. B. Sperling



PLAINTIFF'S
EXHIBIT

Copies to: R. L. Hall
G. E. Puckett
A. D. Kerr
C. B. Workman
W. E. Leek
J. J. Marley
J. Kowalski
Est. File #3401

March 21, 1975

J. H. SWEENEY

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 \$25,600 for new tooling and fixturing. The full book unit cost indicates a cost increase of \$.056 for each rifle.

METHODS & STANDARDS SECTION
F. G. Carlson, Superintendent

John Polivka

By: John Polivka

JP/mc



NTBOOK006

OPERATIONS COMMITTEE

ILION DIVISION

MARCH 21, 1975

The meeting convened at 9 a.m. at Ilion.

NOT FOR REPRODUCTION
OR FURTHER DISTRIBUTION

REMINGTON PRODUCT DEFICIENCIES KNOWN OR SUSPECTED

EASE OF OPERATION AND SAFE GUN HANDLING DEMAND A DESIGN
THAT ENABLES THE SHOOTER TO OPERATE THE ACTION WITH
THE SAFETY "ON".

PLAINTIFF'S
EXHIBIT

NTB 007

REM 0028223

REM 0027665



NTBOOK007

OPERATIONS COMMITTEE
ILION DIVISION

MARCH 21, 1975

REMINGTON PRODUCT DEFICIENCIES
KNOWN OR SUSPECTED

M/700 SAFETY

**EASE OF OPERATION AND SAFE GUN
HANDLING DEMAND A DESIGN
THAT ENABLES THE SHOOTER TO
OPERATE THE ACTION WITH THE
SAFETY "ON".**



Product deficiencies known or suspected in 1975 - Exhibit 15.

IREM 0018349

IREM 0027644

MINUTE #6 - 1975

-8-

March 21, 1975

BUSINESS MEETING - contd.RESEARCH PERFORMANCE - contd.ProgramRelease Design
Schedule

Model 788 Improvements -
Design will be released in the second
half of 1975.

April, 1975

Model 700 Improvements -
The three position Safety is being
reviewed. Recommendations will be
made in the second half of 1975.

January, 1975

EXHIBIT 16PRODUCT DEFICIENCIES (KNOWN OR SUSPECTED) 1975Remington 3200 -Model 1100 -Model 1100 and 870Model 742 -Model 700 - three position safety would be desirable.

NTBOOK009

FIREARMSMODEL 600 RIFLE

E.F. Barrett reported to the Subcommittee that Remington's examination of approximately 300 Model 600s, drawn from the stock of a Texas dealer, revealed that about 80% of the sample could be "tricked" (easing the safety to the midway position, then pulling the trigger) so as to cause the gun to fire when the safety is moved to the off position. Four guns were found to fire under the following sequence of events; the trigger is pulled with the safety on and then the safety is taken off (hereinafter referred to as the "full safe condition"). These four guns have been returned to Ilion for further examination. At Ilion, a recheck produced consistent repetition of the problem in only one of the four guns.

It was estimated that approximately 1,000 Model 600s were shipped from Ilion in January. The return from this quantity should provide an adequate sample to analyze the nature and magnitude of the problem, and to calculate the number of guns that may be out in the field in the "full safe condition".

COMMITTEE ACTION

An immediate request to all Remington wholesalers to whom the Model 600s were shipped in January 1975, to return said inventory to Ilion for a quality audit. Every gun Remington examines, and every gun which is returned to Ilion for any reason, will be modified by substituting a longer safety lever if it is found to be necessary to prevent the "tricking" of the gun or to correct the "full safe condition".

AMMUNITION

NTBOOK010

Sperling 5

LIMITED DISTRIBUTION

cc: J.P. McAndrews
E. Sparre
R.A. Partnoy
E.G. Larson
T.J. Sharpe
J.G. Williams

TO: R.L. HALL J.P. LINDE
C.B. WORKMAN J.S. MARTIN
R.B. SPERLING A.A. HUGICK
W.E. LEEK

FROM:

E.P. Barrett
E.P. BARRETT

SUBJECT: PRODUCT SAFETY MEETING - BOLT ACTION FIRE CONTROLS
APRIL 23, 1975

"This meeting was held to develop plans to conduct a safety analysis of bolt action fire controls."

The following is a summary of the status reports given by each Department and their plans for further action.

RESEARCH

The investigation to date has been largely confined to the Model 600. An investigation has also been made of the M/788 and the M/580 series fire controls. Research has completed an analysis of the design of the M/600 fire control and has -

1. Changed part dimensioning to insure adequate lift of the sear by the safety cam.
2. Specified hardening the fire control housing to minimize wear between the detents.
3. Increased the length of the safety lever cam.

These modifications are being tested to evaluate their effectiveness and to insure there is no interaction with the other aspects of fire control performance.

Research has concluded that the present design for a 3-position safety is inadequate and plans to begin a study during the second half of 1975 to develop a new safety mechanism.

MARKETING

Approximately 600 Model 600 rifles are expected to be returned to the Plant as the result of the special quality audit.

11



NTBOOK011



Product Safety Meeting
Bolt Action Fire Controls
April 23, 1975

Marketing will review the available information on bolt action rifles as it relates to the safety performance of bolt action fire controls. This will include gunsmith reports, arms repair data, parts usage, etc.

PRODUCTION

Inspection of 147 Model 600 rifles returned for the safety audit show the following.

1. Safety cannot be "tricked" - 103
2. Safety can be "tricked" but movement of safety lever to full "safe" position clears trigger connector and sear and gun will not fire when moved to "off" position - 40
3. Safety can be "tricked"; trigger connector remains disengaged from sear when moved to "safe" position and gun will fire when the lever is moved to "off" position - 4
4. Trigger can be set in unsafe condition when safety lever is in "safe" position - 0

Production is rejecting guns which fall in the #2, #3 and #4 categories. Indications are that this provides an ample safety factor that wear will not lead to the category #4 situation during the life of the gun.

A gauge is being developed that will permit checking for sear lift at assembly.

Production is analyzing variations in purchased and internally manufactured parts and reviewing quality control procedures and limits. A list of recommendations for improving quality performance will be developed and reviewed by the Product Safety Committee.

A follow-up meeting is scheduled for the week of May 19.

EFB/ab
4/25/75

E2



NTBOOK012

Marketing will review the available information on bolt action rifles as it relates to the safety performance of bolt action fire controls. This will include gunsmith reports, arms repair data, parts usage, etc.

PRODUCTION

Inspection of 147 Model 600 rifles returned for the safety audit show the following.

1. Safety cannot be "tricked" - 103
2. Safety can be "tricked" but movement of safety lever to full "safe" position clears trigger connector and sear and gun will not fire when moved to "off" position - 40
3. Safety can be "tricked"; trigger connector remains disengaged from sear when moved to "safe" position and gun will fire when the lever is moved to "off" position - 4
4. Trigger can be set in unsafe condition when safety lever is in "safe" position - 0

Production is rejecting guns which fall in the #2, #3 and #4 categories. Indications are that this provides an ample safety factor that wear will not lead to the category #4 situation during the life of the gun.

A gauge is being developed that will permit checking for sear lift at assembly.

Production is analyzing variations in purchased and internally manufactured parts and reviewing quality control procedures and limits. A list of recommendations for improving quality performance will be developed and reviewed by the Product Safety Committee.

A follow-up meeting is scheduled for the week of May 19.

EFB/ab
4/25/75



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

6



NTBOOK013

PLAINTIFF'S
EXHIBIT

"
This meeting was held to develop plans to conduct a safety analysis of bolt action fire controls."

The following is a summary of the status reports given by each Department and their plans for further action.

RESEARCH

The investigation to date has been largely confined to the Model 600. An investigation has also been made of the M/788 and the M/580 series fire controls. Research has completed an analysis of the design of the M/600 fire control and has:

1. Changed part dimensioning to insure adequate lift of the sear by the safety cam;
2. Specified hardening the fire control housing to minimize wear between the detents; and
3. Increased the length of the safety lever cam.

These modifications are being tested to evaluate their effectiveness and to insure there is no interaction with the other aspects of fire control performance.

Research has concluded that the present design for a 3-position safety is inadequate and plans to begin a study during the second half of 1975 to develop a new safety mechanism.

MARKETING

Approximately 600 Model 600 rifles are expected to be returned to the Plant as the result of the special quality audit.

Marketing will review the available information on all bolt action rifles as it relates to the safety performance of bolt action fire controls. This will include gunsmith reports, arms repair data, parts usage, etc.

PRODUCTION

Inspection of 147 Model 600 rifles, returned for the safety audit, show the following.

4 of 147 FSR

1. Safety cannot be "tricked" - 103
2. Safety can be "tricked" but movement of safety lever to full "safe" position clears trigger connector and sear and gun will not fire when moved to "off" position - 40

3. Safety can be "tricked"; trigger connector remains disengaged from sear when moved to "safe" position and gun will fire when the lever is moved to "off" position - 4
4. Trigger can be set in unsafe condition when safety lever is in "safe" position - 0

Production is rejecting guns which fall in the #2, #3, and #4 categories. Indications are that this provides an ample safety factor that wear will not lead to the category #4 situation during the life of the gun.

A gauge is being developed that will permit checking for sear lift at assembly.

Production is analyzing variations in purchased and internally manufactured parts and reviewing quality control procedures and limits. A list of recommendations for improving quality performance will be developed and reviewed by the Product Safety Committee.

A follow-up meeting is scheduled for the week of May 19.

T.J. Sharpe
Secretary

TJS:KLK



NTBOOK015

This meeting was held to develop plans to conduct a safety analysis of bolt action fire controls."

The following is a summary of the status reports given by each Department and their plans for further action.

RESEARCH

The investigation to date has been largely confined to the Model 600. An investigation has also been made of the M/788 and the M/580 series fire controls. Research has completed an analysis of the design of the M/600 fire control and has:

1. Changed part dimensioning to insure adequate lift of the sear by the safety cam;
2. Specified hardening the fire control housing to minimize wear between the detents; and
3. Increased the length of the safety lever cam.

These modifications are being tested to evaluate their effectiveness and to insure there is no interaction with the other aspects of fire control performance.

Research has concluded that the present design for a 3-position safety is inadequate and plans to begin a study during the second half of 1975 to develop a new safety mechanism.

MARKETING

Approximately 600 Model 600 rifles are expected to be returned to the Plant as the result of the special quality audit.

Marketing will review the available information on all bolt action rifles as it relates to the safety performance of bolt action fire controls. This will include gunsmith reports, arms repair data, parts usage, etc.

PRODUCTION

Inspection of 147 Model 600 rifles, returned for the safety audit, show the following.

4 of 147 FSR

1. Safety cannot be "tricked" - 103
2. Safety can be "tricked" but movement of safety lever to full "safe" position clears trigger connector and sear and gun will not fire when moved to "off" position - 40



NTBOOK014

3. Safety can be "tricked"; trigger connector remains disengaged from sear when moved to "safe" position and gun will fire when the lever is moved to "off" position - 4
4. Trigger can be set in unsafe condition when safety lever is in "safe" position - 0

Production is rejecting guns which fall in the #2, #3, and #4 categories. Indications are that this provides an ample safety factor that wear will not lead to the category #4 situation during the life of the gun.

A gauge is being developed that will permit checking for sear lift at assembly.

Production is analyzing variations in purchased and internally manufactured parts and reviewing quality control procedures and limits. A list of recommendations for improving quality performance will be developed and reviewed by the Product Safety Committee.

A follow-up meeting is scheduled for the week of May 19.

T.J. Sharpe
Secretary

TJS:KLK



NTBOOK015

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington



PETERS



03579

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
May 20, 1975

TO: E.F. BARRETT

FROM: G.W. MARTIN

SUBJECT: BOLT ACTION RIFLE SAFETIES

Since your last visit, and per your request, we have had the opportunity to look into three (3) different areas for information. The three (3) areas are as follows:

1. The computer
2. All available Gunsmith Call Reports
3. Arms Service Usage Report

The Computer Report is broken down into three (3) parts.

1. Safety malfunctions found in our gallery on new rifles.
2. The number of complaints coming into Arms Service
3. The number of actual justified complaints from number 2, preceding. A copy of these reports are attached.

The Gunsmith Call Reports date back as far as 1970. In these reports we find one (1) Model 600, two (2) Model 788, and thirteen (13) Model 700's with some sort or another of justified or unjustified malfunctions. The one that is the most concerning is Fred Woodrick's Call Report of March 5th. on Ewell Cross Gunshop, Ft. Worth, Texas. I personally called Malcom Cross to confirm that he did encounter six (6) Model 700's that were malfunctioning. He did verify that it was the Model 700, but that it was an educated guess on the number. He did say that this is the first that he had encountered this on the Model 700. He stated that it was because there was not enough clearance between the sear and the connector. He did not seem concerned, but promised to send us the very next one he gets into his Shop. Copies of these Gunsmith Call Reports are attached.

We are also enclosing the Arms Service Usage Report. Truthfully, I don't think we can get much meat from this report for our particular purpose. It would be too difficult to get factually why the various complaints were made.

Profile survey as of May, 1974. In addition to the guns already tested, we received, today, 220 additional rifles from Carter's Country in Houston, Texas.

010000147

03580

Bower

5/9/75

5-19-75

M/600 - SAFETY FUNCTION TEST - PRELIMINARY SUMMARY

Period - Start of Test 4/14/75 to 5/9/75

Total guns received 359

Guns received with box marked OK (previously tested) 88

Of 88 guns received with box marked OK - All guns passed both the worst test and trick test.

Of the remaining 271 guns:

- 1 failed the worst test
- 139 failed the trick test

Of the 139 guns which failed the trick test:

- 133 repaired by installing swaged Safeties
- 6 guns replaced by Custom Repair

Of the 1 gun which failed the worst test:

- 1 repaired by installing swaged Safety

010000148

DON'T SAY IT—WRITE IT

03582

TO GEORGE MARTINSAFETY MALFUNCTIONS
GALLERY 4DATE 5-2-75FROM GENE BULLIS

MODEL	MALFUNCTIONS															TOTAL SAFE MALFUNCTIONS BY MODEL
	FSR =			JO =			FD =			FOS =			SWW =			
40							4									4
P 100							3									3
540																
541								2	1							3
580													1			1
581							3	2	1							6
582																
600	1						10	74	55							140
700	9						7	19	10	1			1			47
788	4						3	9	3	2	9	4	14	95	53	196
ONLY MALF TOTALS	14						30	106	70	3	9	4	14	97	53	410

MALFUNCTION MEANINGS

FSR - FIRES WHEN SAFE IS RELEASED - SELF EXPL.

JO - JARS OFF (HAMMER FAILS TO STAY ENGAGED WITH SEAR AND FALLS DOWN WHEN GUN IS JARRED.)

FD - FOLLOWS DOWN (COCKING PIECE FAILS TO PROPERLY ENGAGE WITH SEAR AND FOLLOWS THE COCKING CAM SURFACE OF THE BOLT TO THE FIRED POSITION).

FOS - FIRES ON SAFE (GUN FIRES WITH SAFE IN "ON" POSITION WHEN TRIGGER IS PULLED).

SWW - SAFETY WON'T WORK - SELF EXPL.

010000150

* - 1975 DATA FROM DEC. 26, 1974 TO APRIL 29, 1975 ONLY.

1 : 541

Number of Complaints

Number of Justified Complaints

Complaint	107	108	109	110	107	108	109	110
100CL	11 12 21 30	14 21 31 30	14 12 21 30	14 12 21 30	14 12 21 30	14 12 21 30	14 12 21 30	14 12 21 30
46								
P 100	1 1 1				1 1 1			
540								
541								
580								
581								
582								
500	1 4 1 1 3	3	8 2 1	5 1	4 1 1 3	3	7 2 1	5 1
100	4 16 15 16 18	2 1 2 2	24 12 23 12 12	15 6 5 14	4 16 15 15 16	2 1 2 2	17 12 23 12 12	12 6 5 13
708	4 1 2	1 1 1	1 1 1 1	3 6	1 2	1 1 1	1 1 1 1	3 6
2010	5 24 17 19 24	5 1 3 1 4	33 14 23 16 13	23 1 7 8 10	4 24 17 18 24	5 1 3 1 4	25 14 23 16 13	26 1 7 8 14

010000151

03383

03584

Bower
6/2/75

M/600 - SAFETY FUNCTION TEST - PRELIMINARY SUMMARY

Period - Start of Test 4/14/75 to 5/30/75

Total guns received 585

Guns received with box marked OK (Previously tested) 88

Of 88 guns received with box marked OK - All guns passed both the worst test and trick test.

Of the remaining 497 guns:

2 failed the worst test
322 failed the trick test

Of the 322 guns which failed the trick test:

316 repaired by installing swaged Safeties
6 guns replaced by Custom Repair

Of the 2 guns which failed the worst test:

2 repaired by installing swaged Safeties

RECEIVED

JUN 03 1975

G. W. MARTIN

010000152

REMINGTON ARMS COMPANY, INC.

Field Servi
Bpt., Conn.

RECOMMENDED GUNSMITH CALL REPORT

63585

Mr. WHEEL CROSS GUN SHOP Reporter F. W. Woodruff Date Jan 26, 71
Address 4101 East Rosedale St. Fort Worth, Texas Zip 76105
Street City State
Type of Business Sale & repair Dealer (X) Large (X) Small ()

Persons Interviewed Mr. Wheel Cross Position Owner & Gunsmith

GENERAL DISCUSSION

This shop performs much of the warranty work for the Dallas office so had a few problems that have not been encountered before:

Had 2 M782's that would fire with the safety on--one from a Gibson Store which was Serial 035572, 30/30 and one from Nash Howe stock--a M782 6881 76003736 Code 0384--installed new fire controls in both and will return the defective ones to Ilion.

Mention was made of three M782's misfiring--the only thing Mr. Cross did to them was to adjust the bolt plug so they would thread in a half turn more--advised this does not govern the firing pin protrusion--although stated no more difficulty was encountered with them.

In the last two months have had about eight M1100's in which the gas cylinder has come loose from the barrel assembly. This past year has had about a 100 or more feed latches breaking.

Had a M591 in which the bolt latch tip was broken off--replacement corrected it so it worked properly--another in which the fired shell would not come out of the chamber--fired case showed marks from the chamber so recommended it be returned to the factory for SPECIFIC PROBLEMS barrel chamber check.

Past year have had about a dozen M700's that close hard over the shell--usually adjustment of extractor corrects the condition--also about eight to ten trigger connectors breaking--usually only after the customer has fired a few shots--(these fire controls have not been touched) also at least twice the above number when they have been adjusted by the customer improperly.

010000153

FIELD SERVICE
BRIDGEPORT, CONNECTICUT

03586

GUNSMITH CALL REPORT

CC: E B Spencer

DATE Feb 3, 1972

TO BRIDGEPORT Reporter F. T. Woodruff

Address 615 N. Valley Mills, Texa. 4 Zip 75710
Street City State

Order (X) Large (X) Small () Gunsmith on premises? Yes X No

Recommended List (X) Silent List () Other

SONS INTERVIEWED Mr. Leo Bradshaw Jr. POSITION Art Shop Mgr.
Mr. Wesley Priess Gunsmith

GENERAL DISCUSSION

This shop reported the usual run of minor problems with our guns, mainly on the M100 & 870 the breakage of fixed latches, where many come from the customers in trying to take the guns apart, have used about 18 to 20 this past season. Today had a M300 in which the left extr. was broken and ext. ring missing--Mr. Priess felt these parts should be made more substantial although has not had only a couple break since this model has been out. The bolt handles on the M783 were mentioned and has had a couple with very little brace contact--others were the result of hand loaded shells sticking with six handles broken this past year. Had a customers M700 6325977 in which was noted that customer wanted a new trigger assembly for the gun went off and shot him in the foot--at this stage the gun would only fire by holding the trigger and releasing the safety. In checking the gun found it completely out of adjustment with no seal left on the adjusting screws at all, the gunsmith will advise the customer on picking up the gun. I was handed a gun from the racks and asked if I could tell them the caliber, a new M700 with the code (C T 64) but without any marking of caliber on the barrel--this will be returned to Ilion for replacement. Mr. Bradshaw advised that in the last two years has sold over a thousand Rem. guns and is very pleased with our IFIC PROBLEMS line with very few problems or complaints.

010000154

GUNSMITH CALL REPORT

03587

Date April 24, 1975 Reporter E. Woodrick
Shop Name Tillman Gun Shop, Inc. Gunsmith's Name Mr. Ken Bearman
Address 1025 Maumee Ave. Port Wayne, Ind. Zip 46803
No. & Street City State
Gunsmith on Premises? X If not, give address below:
Gunsmith's Address _____ Zip _____
No. & Street City State
Recommended List (X) Open Acct. (X) 30% Disc. _____ Dealer (X) Large () Small (X)

PERSONS INTERVIEWED and POSITION:

1) Mr. Leonard S. Sieminski, Mgr. (2) Mr. Ken Bearman, Gunsmith
3) _____ (4) _____

PECIFIC PROBLEMS ENCOUNTERED:

1 M76 22 — Would not fire at times when safety was released.
1 N66 22 — Cartridges would jam (Cart. Stop Spring missing)
1 M700 BDL 25/06 6611418 Fired when safety was released—
(Trigger pull had been adjusted to 1#)
1 M742 30/06 7492056 PE Bolt would not unlock.

GENERAL DISCUSSION

010000155

Since my last visit to this shop both of the above men are new and was able to cover the above guns and assist in the repairs. The M76 had been in the shop for some time and was about to send it to the plant along with the new M742 in which the bolt could not be opened. This M742 had the tip of the bolt latch broken which was binding the bolt not allowing it to move, after getting the gun apart and replacing this latch the gun would operate. The M700 gun had been adjusted so the pull was only a pound and would follow down when the safety was released—after properly adjusting to 3½ the gun functioned properly and could not be tricked for any failure. In discussing the M100 nothing specific was brought out as causing trouble, was told the biggest trouble seems to be the customers use them and put the gun away without any cleaning allowing them to rust causing the gun to fail. Both men commented that Remington

GUNSMITH CALL REPORT

817 535-2670358

Date Mar. 5, 1975

Reporter F. Woodrick

Shop Name Evell Cross Gun Shop,

Gunsmith's Name Mr. Malcolm Cross

Mr. Lester Brooks

Address 4101 East Rosedale Street, Fort Worth Texas
No. & Street City State

Zip 76105

Gunsmith on Premises? X If not, give address below: #

Gunsmith's Address _____ Zip _____
No. & Street City State

Recommended List (X) Open Acct. (X) 50% Disc. _____ Dealer (X) Large (X) Small ()

PERSONS INTERVIEWED and POSITION:

1) Mr. Malcolm Cross, Owner & Gunsmith(2) Mr. Lester Brooks, Gunsmith

2) _____ (4) _____

SPECIFIC PROBLEMS ENCOUNTERED:

Hard opening on the L742 12 - 15 Guns this past year.

1 M 700 17 Rem 6543665 CW (New gun from the box) Showed discoloration on receiver--stock had slight chip out at fore end tip & finished over. Bolt slightly rusted from finger prints.

6 L700'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.

GENERAL DISCUSSION

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 L700'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 that we are giving the best service on parts for today received a shipment posted Feb. 28 from the plant.

*Ernie C. ...
Not given clearance*

010000156

GUNSMITH CALL REPORT

03589

Reporter _____

Feb. 22, 1972

Name _____

Gunsmith's Name _____

Address _____

Zip _____

No. & Street _____

City _____

State _____

Gunsmith on Premises? _____

If not, give address below:

Gunsmith's Address _____

Zip _____

No. & Street _____

City _____

State _____

Recommended List () Open Acct. () Disc. _____ Dealer () Large () Small ()

PERSONS INTERVIEWED and POSITION:

Mr. Chuck Martiny Gunsmith - GS (2)

(4)

CIFIC PROBLEMS ENCOUNTERED:

- 1 M 700 25/06 Code LW Shows rust around the front sight.
- 1 M 700 25/06 Code LW Stock damaged by the belt handle--~~a safety inoperative--~~
(Safety ball missing--which I replaced)
- 1 MB70 5197409 V Code JT poor patch in stock & color on barrel shows much discoloration & rust.
- 1 MB70 5326363 Code XT coloring coming off barrel & being spotted.
- 1 MB70 5658532 Code RW Poor polish in bore, (shows several rough spots half way in the bore)
- 1 MB70 5509795 V Code LW Barrel appears to be dry & sticky--in wiping it down much discoloration comes off and coloring is spotted.

(all above barrels will be returned for correction)

010000157

GENERAL PROBLEMS

This shop reported that a considerable number of feed latches are still showing up along with complaints on our wood & coloring. And a gun that could not be taken down as it need a new port cover & operating handle. I was able to remove the barrel take down nut. I was shown several guns with defective bluing & poor patch in the wood along with finish. I advised that if it was something I would not accept as satisfactory for a gun sold to return it to the factory for replacement. Showed the MB700 a little better than the others that showed the gun holding it

REMINGTON ARMS COMPANY, INC.

Field Serv
Bpt., Conn

GUNSMITH CALL REPORT

03590

m _____ Reporter _____ Date 12 22 70

Address _____ Zip _____
Street City State

Name of Business _____ Dealer _____ Large () Small ()

Persons Interviewed _____ Position _____
Mr. Harold Reichow Gunsmith

GENERAL DISCUSSION

At this shop I was handed a .270 in which would fire when the safety was released--the gun had just been received and Mr. Reichow had not been able to check it. In removing the action from the stock found that all the screws in the trigger assembly had been adjusted with the seals broken and in removing the assembly a broken piece of the connector fell out. After installing a new connector and adjusting the trigger corrected the condition. Also a .50 WSM gun that would only take one shell in the magazine--a piece of the follower latch had broken and lodged in the magazine--along with being one of the early types where the action spring stop was attached to not pinned gun. Mr. Reichow a problem for he had never attempted to change one of this type before to the SPECIFIC PROBLEMS. All the other items mentioned here were the usual--some signs of wear--and no parts breaking along with a few feed issues. This shop is a warranty repair shop for him, along with a couple of the other shops that have a large volume of work.

010000158

GUNSMITH CALL REPORT

03591

Date 1. 1977Reporter S. BourickCustomer Name Co.Gunsmith's Name W. Jim Craft1700 6th Street,Minneapolis,Minn.Zip 55425

No. & Street

City

State

Is on Premises? X

If not, give address below:

Address

No. & Street

City

State

Special List ()

Open Acct. () 50% Disc.

Dealer ()

Large ()

Small ()

INTERVIEWED and POSITION:

W. Jim Craft, Gunsmith

(2)

(4)

PROBLEMS ENCOUNTERED:

2 M190 extra barrels that the piston & seal would not go into until smoothed up.

010000159

DISCUSSION

Customer reported this past summer has had two M190 extra barrels that would not properly fit where the rings would go into the gas cylinder until he smoothed the cylinders. Today had a M76 in a box in which an attempted repair had been made on the trigger assembly along with the early style trigger, cocking lever which did not have enough clearance for release of the trigger. Also a M740 with a jamming problem which was corrected. During my visit a customer brought in a M700 in which he stated would fire when taken out the safe about once in twenty rounds. This gun was carefully checked out & found nothing wrong—good coverage on the sear & connector—due to the conclusion the customer was evidently holding his finger on the trigger & not realizing it as it would not be made to fire or jar off in any manner tested. The complaint on our past service for within three weeks the parts are resolved back here—none of the others come close to this service.

REMINGTON ARMS COMPANY, INC.

Bpt. 03592

RECOMMENDED

GUNSMITH CALL REPORT

CC: Hugh Heavers

m BOYER'S SPORT MARINE & GUN SHOP Reporter F. W. Woodruff Date 11 13 71
 Address 201 West Hwy 10 Stevens Point, Wisc. Zip 54481
 Street City State
 Nature of Business Sale & repair Dealer () Large () Small ()

Persons Interviewed Mr. Earl Boyer Position Owner & Gunsmith
Mr. Dan Boyer " "

GENERAL DISCUSSION

The men at this shop reported the usual problems with most of them being corrected without much trouble. This past year have gone thru about 18 to 20 feed latches and today had two M870's 20 Ga with the latches broken, used a dozen fore end supports and a few incidents of inter. latch spring problems. Had a customers M600 rifle in which the complaint was that it fired on closing—Mr. Earl Boyer stated that it was very dirty when received although he could not make it fire without pulling the trigger—to insure it I adjusted more contact with the connector & sear and gave it a good test. Had three 11-48's with functional problems and was able to get two working properly but the third would separate the heads and leave the body in the chamber which needed a factory overhaul. Parts arrive in about three weeks SPECIFIC PROBLEMS after ordering which is considered very good for the others always take several week.

010000160

REMINGTON ARMS COMPANY, INC.

03593 Field Serv
Bpt., Conn

RECOMMENDED

GUNSMITH CALL REPORT

CC: Gene Porter

rm LONG'S GUN SHOP Reporter P. W. Woodside Date 6/10/71

Address 3215 7th St. Lewiston, Idaho Zip 83501
Street City State

Type of Business Repair Dealer () Large () Small ()

Persons Interviewed Mr. James Long Position Gunsmith

GENERAL DISCUSSION

Mr. Long is employed as a tool and die maker at Spear and operates his shop evenings and week ends. At this time he has been advised by his doctor to let up on his activities and will close his shop temporarily except for his club members and friends. Items that he mentioned were: a M500 in which had a blown case in the chamber--after removing it and testing with Rem & Rem X ammo functioned properly although in testing with C&I ammo did get a couple of blown cases again and stated I've come to the conclusion this is just to hot for this gun. Also a fairly new L700 in which the customer stated went off while closing the bolt--Ed. stated that I checked this gun out good and you just could not make it go off unless you pulled the trigger. SPECIFIC PROBLEMS Adding I service all the guns at the plant we use in our testing--most of them are yours and we hardly ever have any trouble. I suggested if this trouble is encountered again we would like to have the gun returned to us for checking--this he assured me he would do. Showed me a new Speer 38 S&W cartridge with a plastic cup holding .9 shot --the cup part extends approx. 5/8" out from the case as bullet and about the same length within. Stated that these are just hittin' the head and at present have a large heading for them. Will remove this shop from our Recom. Listing although I was assured he would handle any Rem. work that was brought to him.

010000161

CC: E. P. Spencer;
B. G. Larson;

03594

Feb. 19, 1974

F. Woodrick

Custom Gun Service,

Mr. Jay Moore.

1104 Upas Ave,

Mo Allen,

Texas

78581

X

X

X 30

Mr. Jay Moore, Owner & gunsmith.

Mr. Romeo Garcia, Gunsmith

M3200 #17009 Lower barrel loose in the barrel band—equipped with M/C
band.

M1100 12 action bars breaking, slide coming loose, breaking at the front
section, breaking at operating handle slot & retainer.

50 fore end supports breaking, mostly blocks coming off

10 barrel supports breaking out of receiver.

8 inter. latch studs coming out.

24 of the locking blocks with studs coming out.

75 to 100 extractors replaced this past year in guns serviced at
shop—sold over twice the number over the counter.

On the above M3200 the owner is a Trap Shooter and advised that he will
will shoot the gun to such an extent that you can not put your hand on the
fore end section—this results in the cement we use in the barrel band
being out causing this looseness.

In questioning Mr. Moore about service problems the above items were
mentioned—adding that this shop repairs a lot of Remington guns but with
about 9/10 of the guns in the field being Remington is the reason.

Was told about a nearly new 1700 rifle that was being carried in a
truck last fall and in some manner accidentally went off shooting into the
transmission. The gun was brought to Mr. Moore for checking and he advised
the owner & lawyer that he found nothing wrong with it—did not take the
gun apart or touch the action or the trigger—advised them that it was doubtful
they had any type case as it appeared to him that the trigger was pulled.
Asked me if I knew about this & whether Rem. had been contacted yet? Mr.
Moore checked his repair tickets but could not supply me with any information
as to serial number or name. Does warranty work for Win & Nav. and
in asking about the normal labor charge on a new gun repair advised about
\$4.50 plus the parts. Was shown a letter from Win. Service and they request
that all guns serviced be tested to eliminate any second return on service

010000162

03595

ARM SERVICE USAGE REPORT
DATE: NOVEMBER, 1974 - MARCH, 1975

PAGE

MODEL	PART	DESCRIPTION	USAGE
	30515	STOCK ASSY MIL	9
	30960	SLIDE ASSY	8
	15072	BOLT	1
	28201		467
	90327	TOP LOCK LEVER PLGR ROD	50
N10	31626	STOCK ASSY	4
40	27465	FRONT RAIL SCREW	86
40	20070	SLING STRAP ASSY	83
40	15401	TRIG STOP SCREW	80
40	19792	FRONT SWIVEL	80
40	18870	FRONT SWIVEL WASHER	68
40	16114	RECEIVER FILLER SPRING	53
40	27595	FRONT SWIVEL ASSEM	50
40	16205	FRONT BASE SCREW FOR LIGH	42
40	27590	TRIGGER ASSEM	41
40	22555	FIRING PIN ASSEMBLY	36
48	32116	TRIGGER PLATE ASSY L.H.	1
51	15028	CARRIER RUBBER	44
51	25650	CARRIER TENSION FINGER BO	14
51	15029	CARRIER RUBBER STUD	9
51	25625	CARRIER BASE ASSEM FINDLA	6
51	17579	CARRIER TENSION FINGER SP	5
51	25635	MAIN SPRING ASSEM	1
58	16176	EXTRACTOR 12 16 20	8903
58	25390	OPER HOLE 12 16 20 ADL 31	6468
58	16791	OPERATING HANDLE SPRING	1058
58	15097	OPER HANDLE PLGR	973
58	16344	CARRIER LATCH SPRING	561
58	16966	CARRIER DOG FOLLOWER SPRI	528
58	19993	STOCK BEARING PLATE	473
58	25865	ACT BAR ADL MAG	460
58	19365	ACTION SPRING	396
58	16345	CARRIER LATCH PIN	395
59	30320	CLIP MAG	698
66	16550	BOLT HANDLE	1475
66	16968	FRONT SIGHT WASHER	1296
66	16892	FRONT SIGHT SCREW	1293
66	16515	COVER SCREW	703
66	24395	MAG TUBE ASSY	674
66	16545	FRONT SIGHT	473
66	28185	FIRING PIN	455
66	25540	BREECH BOLT ASSEM	430
66	18408	EXTRACTOR	401
66	16564	DISCONNECTER	334
68	15899	BARREL SEAL VITON 12.16 A	11154
68	17433	EXTR SPRING	3742
68	15335	PISTON SEAL A ADL	3094
68	15384	PISTON A ADL	2944
68	27415	FORE END SUPPORT ASSEM	2847
68	15393	LEFT SHELL LATCH SPRING A	2269
68	15702	FIRING PIN RETRACTOR SPRT	2130
68	15393	FEED LATCH 12 GA	2079
68	15398	LEFT SHELL LATCH RETAINER	1912
76	25870	STOCK ASSEMBLY HONAWK BRO	69
76	15102	BOLT PUSH ROD SPG	29
76	25871	STK ASSY APACHE BLACK	28
76	15070	EXTRACTOR	26
76	15264	TRIGGER CAP	24
76	15107	LOCKING BAR SPRING	20
76	28195	FIRING PIN	19
76	25710	DISCONNECTOR	

010000163

ARM SERVICE USAGE REPORT
DATE: NOVEMBER, 1974 - MARCH, 1975

03596

PAGE

MODEL	PART	DESCRIPTION	USAGE
77	32340	MAG ASS Y	906
77	14748	MAGAZINE GUIDE	334
77	14351	MAG LATCH	250
77	31625	STK ASSY	119
77	15994	EJECTOR	42
77	14354	MAG GUIDE SCREW	34
77	14957	MAG LATCH THUMBPIECE	24
77	24391	BOLT ASSEM	20
77	14349	TRIGGER GUARD	4
100	15417	RIB SCREW ADD USE 600	166
100	15654	MONTE CARLO STOCK ASSEM	100
100	15418	SIGHT SCREW AND 600 AND M	70
100	15728	REAR SIGHT LEAF ADD USE A	50
100	14904	CCR HOLE L H	39
100	15410	FIRING PIN ADD USE MODEL	34
100	15413	BOLT STOP SPRING ADD USE	32
100	30136	CARRIER ASSEM	31
100	26795	SAFETY ASSEMBLY ADD USE M	30
100	15450	REAR RECEIVER SCREW	29
3200	90297	BARREL BOND LOCK P	589
200	90307	TOP LOCK LEVER SCR	455
200	90332	YOKE ROD SPRING	369
200	90440	HAMMER COCKING ROD	360
200	90351	FORE END LATCH SPR	260
200	32235	FIRING PIN HOUSING	245
200	90380	EJECTOR STOP PIN	230
200	91012	SEAR SPRING	220
200	90356	TANG BLK SCREW	163
200	90535	EJECTOR HAMMER PIV	160
3200	90331	YOKE ROD NUT	770
320	32310	TOP LOCK LINER ASSEM	615
320	90304	FIRING PIN	606
320	90466	TRIGGER COUPLER SPRING	501
320	90501	FIRING PIN RET	362
320	90294	FORE END SCREW	295
320	32385	FORE END IRON ASSEM	291
320	32492		283
320	90309	FIRING PIN RETAINING YOKE	264
320	91026	YOKE ROD BUFFER SPRING WA	236
4100	90849	MAG INDEX CLUTCH ASSY	2
410	91064	REMOTE CENTRAL SWITCH	1
510	21076	FRONT SIGHT	1003
510	20433	SLING STRAP SWIVEL HOOK A	909
510	17229	OPEN SIGHT LEAF	370
510	17578	BUTT PLATE	362
510	438	TRIGGER SPRING PLUNGER	314
510	17577	TRIGGER GUARD SCREW	257
510	252	SAFETY SCREW	153
510	15871	TRIGGER GUARD	145
510	34	EXTRACTOR RIGHT	144
510	32	EXTRACTOR LEFT	113
511	2170	MAGAZINE ASSEM COMPLETE 1	1053
511	596	MAG LOCK	641
511	247	BOLT HOLE ASSEM	200
511	19634	MAG LATCH	126
511	891	TRIGGER ASSEM	120
511	105	MAGAZINE GUIDE PLATE	47
511	393	TAKE DOWN SCREW	47
511	595	REC INSERT REAR	42
511	21275	STK ASSY COMPLETE A	41
511	331	EJECTOR SCREW	38
512	499	SAFETY	180
512	18664	CARRIER TENSION SPRING	152
512	22791	INNER MAG TUBE ASSY	

010000164

ARM SERVICE USAGE REPORT

DATE: NOVEMBER, 1974 - MARCH, 1975

PAGE 3

MODEL	PART	DESCRIPTION	USAGE
512	20	CARTRIDGE STOP	68
512	19917	OUTER MAG TUBE	63
512	16739	MAGAZINE RING	48
512	14	CARRIER SPACER BUSHING	38
512	21	CARTRIDGE STOP PLUNGER	32
513	1010	MAG ASSEM	1606
513	22560	REAR SWIVEL SCREW ASSY	133
513	297	BOLT HOLE ASSEM	118
513	5	FRONT SWIVEL ASSEM	54
513	493	TRIGGER CUSHION SPRING AD	45
513	492	TRIGGER CUSHION SPRING SC	35
513	491	TRIGGER CUSHION SPRING	34
513	504	FRONT SIGHT RAMP SCREW	34
513	113	FRONT SWIVEL SCREW	31
513	822	TRIGGER ASSEM COMPLETE	27
514	17573	EXTRACTOR SPRING	907
514	15445	OPEN SIGHT SCREW	786
514	17233	EXTRACTOR	733
514	17576	EXTRACTOR PLUNGER	347
514	21075	FRONT SIGHT	336
514	17676	EJECTOR AND TRIGGER PIN	213
514	15396	OPEN SIGHT LEAF	175
514	22750	BOLT ASSY	114
514	17704	FIRING PIN	86
514	17572	EJECTOR SPRING	67
521	20895	REAR SWIVEL SCREW ASSY	1312
521	17815	FRONT SIGHT	28
521	20215	SLING STRAP ASSY 1 IN	11
521	17814	REAR SIGHT LYMAN 57 RS	5
521	21310	STOCK ASSEMB	4
521	22305	FRONT SWIVEL ASSY	4
521	710	BARREL	3
521	18666	REC SGT MTG SCREW	3
521	18667	REC SGT MT SCREW	3
521	22050	BARREL FILLER BLOCK	2
540	31600	SLING STRAP ASSEM MTGS CD	169
540	14509	BOLT STOP	117
540	14725	REDFIELD RECEIVER SIGHT	103
540	14804	FRONT SIGHT REDFIELD	97
540	14724	RECEIVER SIGHT BASE	62
540	31230	BUTT PL TUBE ASSEM	50
540	31245	BUTT PLATE ASSEM	42
540	14510	BOLT STOP REL	26
540	14650	FRT SWIV BUSH ASM	25
540	14518	TRIG HOUSING ASSY	18
541	32520	R SIGHT ASSEM	732
541	32125		7
541	32135	MAG LATCH ASSEM	5
541	14980	MAGAZINE PLATE	4
541	32130	TRIGGER HOUSING ASSY	3
541	14971	TRIGGER GUARD	1
541	15949	TRIGGER	1
541	29029	BBL & REC ASSY	1
550	17667	EXTRACTOR PLUNGER	845
550	18318	EXTRACTOR	746
550	20490	FIRING PIN ASSY	307
550	19470	ACTION SPRING	307
550	22792	INNER MAG TUBE ASSY	430
550	299	SEAR SPRING	418
550	19625	MAIN SPG	348
550	284	RECEIVER PLUG RETAINER SC	310
550	283	RECEIVER PLUG RETAINER	278
550	437	ACTION SPRING BUSHING	246
552	16463	BOLT LATCH SPG	525
552	16155	TAKE DOWN SCREW	416
552	22635	EXTRACTOR RIGHT	347

03597

010000165

ARM SERVICE USAGE REPORT

DATE: NOVEMBER, 1974 - MARCH, 1975

PAGE 4

MODEL	PART	DESCRIPTION	USAGE
552	16397	EXTRACTOR SPRING SEAT	174
552	23053	CARRIER	160
552	19948	CARRIER SPRING	147
552	19848	ACTION SPRING	126
555	25005	STOCK ASSY	308
572	25585	3PEN SIGHT STEP	2736
572	19813	FIRING PIN	1649
572	25225	FRONT SIGHT	1050
572	22790	INNER MAG TUBE ASSY	911
572	25105	MAGAZINE SCREW	719
572	25080	FORE SCREW	313
572	22645	FORE END ASSY	302
572	19912	EJECTOR	282
572	19826	FORE END SUPPORT	274
572	16759	FORE END HANGER	257
580	14001	FRONT SIGHT	518
580	14010	EXT SPRING	469
580	14011	FIRING PIN	404
580	14009	EXT R H	343
580	14008	EXT L H	300
580	29110	STRIKER ASSY	114
580	14059	REAR SGT EYEPiece	95
580	14034	REAR SIGHT SCREW	76
580	29100	REAR SIGHT ASSEMB	69
580	14039	EJECTOR	62
581	29075	MAG ASSEMB	1959
581	33000		1705
581	14048	MAG LATCH	82
581	14047	MAG GUIDE	74
581	14049	MAG LATCH SCREW	48
581	14071	TAKE DOWN SCREW	30
581	29056	STOCK ASSEMBLY	25
581	14042	TRIG GUARD SCREW	18
581	14495	MAG SLEEVE	11
581	29000	BOLT BODY ASSEMBLY	6
582	18382	BOLT ASSY PIN	220
582	29115	INNER MAG TUBE ASSY	156
582	14052	ELEVATION SCREW	69
582	14022	MAG FOLLOWER	31
582	14013	CARRIER SPRING	30
582	29090	SLING STRAP ASSY	29
582	29005	CART FEED INSERT	26
582	29057	STOCK ASSEMB	23
582	14020	CART FEED INSERT PIN	22
582	14043	TAKE DOWN SCREW	22
590	29001	BOLT BODY ASSY	40
590	14891	REAR SIGHT RIB	3
591	90532	EXTRACTOR	547
591	14469	FRONT SIGHT	206
591	14722	FIRING PINS	121
591	14730	LATCH	88
591	29116	INNER MAG ASSEM	74
591	90334	RECEIVER COVER SC	57
591	14735	FIRING PIN RETAINING PIN	38
591	14728	BOLT HEAD	26
591	14738	MAG GUIDE	23
591	14729	EJECTOR	12
592	14733	EXTRACTOR	52
592	29050	STOCK ASSEM	21
592	14813	MAG KING	10
592	29025	RECEVBL ASSY	8
592	14076	INNER MAG TUBE	4
592	14093	CART FEED INSERT	3
592	15891		4
600	15437	TRIGGER GUARD	20

03598

010000166

03599

ARM SERVICE USAGE REPORT
DATE: NOVEMBER, 1974 - MARCH, 1975

PAGE 1

MODEL	PART	DESCRIPTION	USAGE
600	26841	REAR SIGHT ASSEMBLY, 300.2	39
600	15488	RIB	29
600	16793		28
600	24484	BOLT STOP PIN	23
600	26730	TRIG ASSY	23
600	15726	REAR SIGHT EYE PIECE	22
600	15472	BOLT STOP	20
610	26465	FIRING PIN ASSEMBLY	145
610	15330	SEAR	118
610	26460	REAR SIGHT ASSEMBLY COMPL	104
610	15326	REAR SIGHT SCREW REAR	72
610	300	EJECTOR	68
610	15302	FIRING PIN CAM PIN	65
610	15325	REAR SIGHT SCREW FRONT	62
610	15866	SAFETY LEVER ADD USE 611	51
610	15881	FRONT SIGHT ADD USE 611 &	23
610	15311	RECEIVER INSERT REAR	21
611	330	EJECTOR	119
611	15307	MAGAZINE LOCK SCREW	104
611	15312	MAGAZINE LOCK SPACER	76
611	15755	REC INSERT	10
611	26571	STOCK ASSEMBLY	5
612	26470	INNER MAG TUBE ASSY	160
612	26570	STOCK ASSEMBLY	17
612	15250	BBL NEW STYLE	8
612	15391	MAGAZINE SPRING	7
612	15319	OUTER MAGAZINE TUBE	6
612	15313	MAGAZINE FOLLOWER	4
612	15315	TAKE DOWN SCREW	4
612	26510	BOLT ASSEMBLY	4
612	15766	REC INSERT	2
612	15305	MAG RETAINER SPG PIN	1
660	29890	BOLT FINAL ASSY	16
660	29835	STOCK ASSY	10
660	23600	FIRING PIN ASSEM	7
660	15673	FIR PIN HEAD	4
660	29865	BBL ASSY 243	2
660	15676	BOLT PLUG	1
660	29860	BOL ASSEM 308	1
660	29867	BBL ASSY 350 MAG	1
70	20062	CARRIER ASSEM LEFT HD	6
700	28505	REAR SGT RAMP SCREW N/S	2150
700	14669	EXT 30/06	2008
700	15373	FRONT SIGHT A ADL	1145
700	90904	WINDAGE SCREW	540
700	90906	ELEVATION SCREW	523
700	32510	R SIGHT APERTURE	511
700	26355	REAR GUARD SCREW ALL CAL	484
700	28510	FRONT SIGHT RAMP ADL ADD	382
700	27342	EXTRACTOR RIVET 222 R AND	375
700	15709	EXTRACTOR	373
721	23410	EXTRACTOR	555
721	20465	EJECTOR SPRING	388
721	17019	FRONT GUARD SCREW	351
721	22035	RECEIVER PLUG SCREW	348
721	17034	EJECTOR	311
721	17017	BOLT STOP PIN	191
721	24475	CENTER GUARD SCREW	183
721	17580	BOLT DETENT BALL	174
721	23222	MAGAZINE SPRING	158
721	17028		
722	22037	FRONT GUARD SCREW	140
722	17081	MAGAZINE COUPLING	

010000167

03690

ARM SERVICE USAGE REPORT
DATE: NOVEMBER, 1974 - MARCH, 1975

PAGE 6

MODEL	PART	DESCRIPTION	USAGE
722	17058	MAIN SPRING	14
722	22016	TRIG GUARD	14
722	22041	FIRING PIN ASSY	9
722	17970	MAGAZINE SPACER 222	7
722	17971	MAGAZINE 222	6
722	16794	MAGAZINE SPACER 222, MAG	3
725	16715	MAGAZINE 244 REM	56
725	19800	FLOOR PLATE LONG ACTION	55
725	16452	FLOOR PLATE LATCH SPRIN	36
725	16453	FLOOR PLATE PIVOT PIN	34
725	16451	FLOOR PLATE LATCH PIN	23
725	16434	FLOOR PLATE SHORT ACTION	19
725	16715	MAGAZINE 222 REM	13
725	16355	FRONT SIGHT COVER	12
725	16826	MAGAZINE SPACER 222 REM	6
725	16421	SAFE DETENT SPRING	3
740	21880	MAGAZINE ASSY 30 06	8378
740	23737	MAGAZINE ASSEM 308	3133
740	21832	MAGAZINE ASSY 35	2390
740	18326	FIRING PIN	799
740	16456	REAR SIGHT LEAF SCREW	788
740	16023	REAR SIGHT BASE SCREW	556
740	30495	FORE END ASSEMBLY	425
740	18334	ACTION TUBE	236
740	19673	CAM PIN	190
740	18357	DISCONNECTOR	89
742	23805	FRONT SIGHT BRASS POWDERE	3266
742	27340	EXTRACTOR RIVET ADD USE 7	2188
742	19946	EJECTION PORT COVER	1491
742	23706	FRONT SWIVEL ASSEM ADL	1343
742	24525	REAR SIGHT ASSY	1129
742	32815	STK ASSEM	957
742	23740	CLIP MAG	823
742	23739	MAGAZINE ASSEMBLY 6MM	698
742	28511	FRONT SIGHT RAMP	543
742	23223	SAFETY DEY BALL	533
760	23030	CLIP MAG 30/06	4481
760	28095	SIGHT STEP	3806
760	23033	MAGAZINE ASSEM 270	2719
760	23718	MAGAZINE ASSEM 308	822
760	23721	CLIP MAG 243	627
760	28097	SIGHT STEP	517
760	19945	EJECTION POT COVER	403
760	28096	SIGHT STEP	375
760	28093	SIGHT STEP	338
760	28590	STOCK ASSEM RIGHT BDL	332
788	29540	MAGAZINE ASSEMBLY 243	2165
788	29535	MAG ASSEMB	1576
788	29536	MAG ASSEMB	1563
788	29539	CLIP MAG 308	1400
788	29541	CLIP MAG 6MM	1072
788	14212	EJECTOR	261
788	29537	MAG ASSEMB	230
788	14236	ELEVATION SCREW	190
788	29350	REAR SIGHT BASE	164
788	29395	REAR SIGHT SCREW	140
851	17436	FIRING PIN	6436
851	17432	EXTRACTOR PLUNGER	3916
851	18097	MAGAZINE PLUG ADD 3 SHOT	1915
851	17437	FIRING PIN RETRACTOR SPRI	1340
851	17539	TRIG PLATE PIN DETENT SPG	1268
851	20501	TRIGGER PLATE PIN FRONT 1	1095
851	20535	FRICTION PIECE 12	1091
851	18781	CARRIER DOG PIN	999
851	20606	TRIGGER PLATE PIN REAR 16	991
851	17540	TRIG PLATE PIN DET SPG DE	221

010000168

03691

ARM SERVICE USAGE REPORT
DATE: NOVEMBER, 1974 - MARCH, 1975

PAGE 7

MODEL	PART	DESCRIPTION	USAGE
870	25375	MAG CAP	1330
870	18647	EJECTOR RIVET REAR	1228
870	20040	SHELL LATCH LEFT 12	1110
870	18646	EJECTOR RIVET FRONT	1094
870	14577	STOCK PRESS FORMED	1000
870	14532	MAIN SPG MIL	986
870	14405	ADAPTER SLEEVE SCREW	951
870	14696	MAG TUBE COUPLING	934
878	16909	SHELL LATCH LEFT 12 GA	207
878	25175	FORE END	134
878	25165	PISTON ASSEMBLY	103
878	25310	R SIGHT BASE 12GA	98
878	16965	R SIGHT BASE PIN	97
878	25860	ACT BAR ASSY	49
878	25170	BREECH BOLT ASSY COMPLETE	44
878	16967	BREECH BOLT 12 GA	24
878	19659	ACTION SPG STOP	21
878	16895	MAGAZINE CAP	19
879	16901	PISTON SPG BUSHING	25
879	14077	FORE END	4
879	29435	REC ASSY	1
88	30330	TRIGGER HOUSING ASSY L H	2

010000169

REMINGTON ARMS COMPANY, INC.

Field Serv
Bpt., Comm

RECEIVED GUNSMITH CALL REPORT

At WHEEL CROSS GUN SHOP Reporter E. W. Woodruff Date Jan 26, 1964
Address 4101 East Rosedale St. Fort Worth, Texas Zip 76105
Street City State
Type of Business Sale & repair Dealer ☒ Large ☒ Small ☐

Persons Interviewed Mr. Wheel Cross Position Owner & Gunsmith

GENERAL DISCUSSION

This shop performs much of the warranty work for the Dallas office so had a few problems that have not been encountered before:
Had 2 M788's that would fire with the safety on--one from a Gibson Store which was Serial 032572, 30/30 and one from Nash Rowe stock--a M788 6/11 36003736 Code 0324--installed new fire controls in both and will return the defective ones to Elion.

Mention was made of three M788's misfiring--the only thing Mr. Cross did then was to adjust the bolt plug so they would thread in a half turn more. advised this does not govern the firing pin protrusion--although stated no more difficulty was encountered with them.

In the last two months have had about eight M1100's in which the gas cylinder has come loose from the barrel assembly. This past year has had about a 10 or more feed latches breaking.

Had a M591 in which the bolt latch tip was broken off--replacement corrected it so it worked properly--another in which the fired shell would not come out of the chamber--fired case showed marks from the chamber so recommended it be returned to the factory for SPECIFIC PROBLEMS barrel chamber check.

Past year have had about a dozen M700's that close hard over the shell--usually adjustment of extractor corrects the condition--also about eight to ten trigger connectors breaking--usually only after the customer has fired a few shots--(these fire controls have not been touched) also at least twice the above number when they have been adjusted by the customer improperly.

[illegible][illegible]

cc: E. Sparre
J.G. Williams
R.H. Sperling

Bridgeport, Connecticut
June 23, 1975

SUBJECT: MODEL 600 FIRE CONTROL STUDY

The Product Safety Committee met June 20, 1975, in
Illion 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 recur-
rence 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.

EPB/eb

RDAL

7-2
MILITARY / FIRE COMPANY, INC.

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

August 27, 1975


C. E. WORMAN

M/600 SAFETY FUNCTION AUDIT - FINAL REPORT

During the past year the design of the M/600 Fire Control was revised because of the possibility of tricking the gun, and firing it when the Safety was released. An audit was made, in Ilion, from April 14, 1975 to June 19, 1975, to determine the reliability of the Safety on M/600's currently in the field. This audit consisted of inspecting 615 total guns returned from the field. This sample represents guns that were shipped from 1970 through 1975, and to dealers scattered throughout the United States.

Results:

1. 0.3% of the returned guns (2) failed the worst test, as defined in Appendix I.
2. 55.6% of the returned guns (342) failed the trick test, as defined in Appendix I.
3. A total of 90 guns were received with the box marked OK. This represents guns shipped after revised inspection procedures, to check for proper Sear lift, were instituted. Of these, all passed both tests. See Appendix III.


J. W. Bower, Supervisor
Process Eng. - Current Products

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 1 side of truck, remove Rifle (INSPECT FOR LIVE AMMO.)
 Unpack Bolt, A. Sear to Rifle, Rifle to Truck. Empty box returned to Case.
 Number case and truck section with same no.
 Verify Serial No. of guns - match serial nos. on cases.

INSPECT

Worse
Test

Pick Rifle, inspect for live ammo. Close and lock Bolt.

(Pull Safety back to "ON" position.
 (Pull Trigger, No Click, Trigger retracts.
 (Push Safety forward to "OFF" position.
 (Firing Pin remains cocked.

Try 3 times.

- 1 In addition to passing Worse and Trick Test, .006 shim must go freely between Sear and Trigger when Safety is on.

Trick
Test

(Pull Safety back to "ON" position.
 (Push Safety halfway off, pull Trigger.
 (Firing Pin remains cocked, no click, Trigger retracts.
 (Push Safety lightly, must spring forward 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 is and stays 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.

JWB

Rev. 1 4/25/75

REMARKS

1/1000 - 5/1000 - 1/1000

DATE OF REPLY

DATE

TEST NO.

RESPONSE CODE

PERIOD
TEST

PERIOD
TEST

PERIOD

PERIOD

APPENDIX III

Power
8/26/75

M/500 - SAFETY FUNCTION TEST - FINAL SUMMARY

Period - Start of Test 4/14/75 to 6/19/75

Total guns received 615

Guns received with box marked OK (Previously tested) 90

Of 90 guns received with box marked OK - All guns passed both the worst test and trick test.

Of the remaining 525 guns:

2 failed the worst test
342 failed the trick test

Of the 342 guns which failed the trick test:

335 repaired by installing swaged Safeties
7 guns replaced by Custom Repair

Of the 2 guns which failed the worst test:

2 repaired by installing swaged Safeties.

APPENDIX IV

Boxer
5/12/73

M/600 SAFETY FUNCTION AUDIT
(By Quarter)

<u>Shipping Date</u>	<u>Loaded Guns</u>	<u>Failed Worst Cast</u>	<u>Failed Critical Test</u>	<u>% Failed</u>
1st Quarter - 1975	119	-	32	27%
4th Quarter - 1974	216	-	99	46%
3rd Quarter - 1974	27	-	22	82%
2nd Quarter - 1974	10	-	8	80%
1st Quarter - 1974	22	1	16	77%
4th Quarter - 1973	187	1	144	76%
3rd Quarter - 1973	3	-	2	67%
2nd Quarter - 1973	11	-	7	64%
1st Quarter - 1973	-	-	--	--
All - 1972	5	-	2	40%
All - 1971	-	-	--	--
All - 1970	<u>15</u>	<u>-</u>	<u>10</u>	<u>67%</u>
Total	615	2	342	56%

APPENDIX V

Power
8/27/75

<u>DEALER OR WHOLESALER</u>	<u>TOTAL RETURNED</u>	<u>NO. FAILED TRICK TEST</u>	<u>NO. FAILED WORST TEST</u>
1. Carter's Country Houston, Texas	220	169	1
2. Sporting Goods, Inc. Houston, Texas	128	1	0
3. Sports South, Inc. Lake Charles, La.	70	39	1
4. Nationwide Sports Distributors Southampton, Pa.	62	39	0
5. Jensen-Byrd, Co. Spokane, Washington	24	19	0
6. Leslie Edelman of N.Y. Farmingdale, N.Y.	14	6	0
7. John's Sporting Goods Canton, Ohio	8	8	0
8. Grand National Sports Supply Buffalo, N.Y.	3	3	0
9. Edelman's of N.J. Saugen, N.J.	3	3	0
10. Leslie Edelman, Inc. Southampton, Pa.	7	3	0
11. Outdoor Sports Hdqts, Inc. Dayton, Ohio	5	0	0
12. Max L. Miller Sporting Gds. Boothwyn, Pa.	3	0	0
13. Edelman's Inc. Wayne, N.J.	5	3	0
14. Grand Nat'l Shooters Supply Tonawanda, N.Y.	1	1	0
15. All Sports Supply, Inc. Portland, Oregon	0	1	0

APPENDIX V (continued)

DEALER OR WHOLESALER	TOTAL RETURNED	NO. FAILED TRICK TEST	NO. FAILED VOICE TEST
16. Morse Hardware Bellingham, Washington	7	7	0
17. Manchesters Longview, Washington	2	1	0
18. Swanson's Hoquiam, Washington	5	5	0
19. Jerry's Gun & Supply Oregon, Mo.	3	0	0
20. Del Mar Distributing Co. Corpus Christie, Texas	6	3	0
21. La Verns Firearms Service Portage, Wisc.	1	0	0
22. Marlow's Custom Tackle	4	3	0
23. Mountainers Rod & Gun Club	1	1	0
24. Vernon S. Drake	1	1	0
25. Ackley & Son Westfield, Pa.	1	1	0
26. V. F. Grace, Inc. Anchorage, Alaska	4	3	0
27. Hughes Gun Repair	5	3	0
28. Katz's Gun Shop	3	2	0
29. The Gun Room, Inc.	6	4	0
30. Walborn Enterprises	1	1	0
31. Bob's Merchandise, Inc.	7	6	0
32. Disco Sporting Goods Coos Bay, Oregon	1	1	0

03581

CODE NO.CATEGORY & TYPEFIRING (100 to 199)

- 100 Fails to cock.
- 101 Fails to fire or misfires.
- 102 Firing Pin strikes light blow, poor point.
- 103 Firing Pin fell out.
- 104 Firing Pin or Spring binds, length incorrect, protrudes
- 105 Firing Pin strikes off center, marks shells.
- 106 Fails to connect.
- * 107 Jars off or fires closing.
- * 108 Fires on safe or safe doesn't hold.
- * 109 Fires when safe is pushed off.
- * 110 Follows down or Hammer falls.
- 111 Pieces or primer in action or Bolt.
- 112 Right Connector doesn't seat in sear notch.
- 113 Trigger binds.
- 114 Trigger pull heavy, light, creeps, long. Poor
- 115 Safe binds, loose, excessive play, double click.
- 116 Max. header.
- 117 Min. header.
- 118 Bolt catches on Receiver (M/721-722 only).
- 119 Fires automatic, doubles.
- 120 Improper Head Space
- 121 Safe goes on after firing.
- 122 Selector won't fire.
- 123 Selector works hard, binds.
- 124
- 125

* These are the complaint code numbers and meanings used on the attached report.

010000149

APPENDIX A (continued)

NUMBER OF VOUCHERS

<u>TOTAL RETURNED</u>	<u>NOT PAID WHICH WERE</u>	<u>NOT PAID WHICH WERE</u>
33. Boston W. Company	1	1
34. Frontier Sporting Cas.	6	1
35. Valley Sports & Hdwe. Shobomaker, Wash.	3	0
36. Stewart's Sport Shot Coos Bay, Oregon	2	1
37. Village Trading Post	2	2
Total	615	342
		2

Malfunction Index

CODE

1 of 5

Attach to previous report

1	AD	Action binds	29	CS	Cases swell (concave/convex)
2	ASFB	Action Spring Follower binds	30	CWSB	Cams wrong side of Bar
3	4HS	Bolt hits Safe	31	CTP	Creepy Trigger pull
4	BCUF	Bolt catches on Follower	32		
5	BAC	Burr at chamber	33	DYL	Don't Ext. Live Rd.
1	EB	Bolt binds/catches	34	DEB	Don't blow back
6	BBB	Barrel binds back	35	DE	Don't eject
7	BC	Blows cases	36	DEL	Don't eject live round
8	BOCBS	Bolt catches on Bolt Stop	37	DFB	Don't feed back
9	BOOE	Bolt catches on Ejector	38	DFU	Don't feed up
10	BCPS	Bolt catches rim of shell	39	ILB	Don't lock back
11	BDC	Bolt doesn't cam	40	DLO	Don't lock open (last shell)
12	ELOP	Bar Lock/Disc. out of position	41	DLU	Don't lock up
13	BPO	Bolt pulls out	42	DCU	Don't close up
14	BSSH	Bolt stems shell in Magazine	43	DO	Doubles (fires automatic)
15	BSB	Bolt Stop binds	44	DSM	Drops shells - Magazine
16	BHR	Bolt hits Receiver	45	DTL	Don't trip latch
17	BWCFM	Bolt won't close - full Magazine	46	DR	Don't release
18	KLJ	Barrel Support came out	47	DX	Don't extract
19	BLW	Barrel Lug shot off	48	DCT	Double click in Trigger
20	BRB	Breech Ring broken	49	DCS	Double click in Safety
21	CBS-F	Shells catch on Ebl. Support - feeding	50	FC	Fails to connect
22	CBS-L	Shells catch on Ebl. Support - loading	51	EIS	Extractor drops shell
23	CC	Carrier catches on shell in Mag., on Latches, on Receiver	52	ESB	Ejector sticks back
24	CH	Closes hard	53	ESCR	Empty shell catches Receiver
25	CHAB	Carrier hits Action Bar	54	ESS	Extractor stems shell
26	CLM	Can't load Magazine	55	FB	Follower binds
27	CO	Cut off			
28	CR	Cuts rim			



DEFINITION INDEX

CODE	DEFINITION	CODE	DEFINITION
56	FFA - Fails to fire	JO	Jars off
57	FFIL - Fails to feed from Magazine	85	
58	FFP - Flat Firing Pin	86	
59	FH - Feeds high	87	
60	FOS - Fires on safe	88	LB - Light blow
61	FPHB - Firing Pin hits Barrel	89	
62	FRO - Floor plate opens	90	
63	FROH - Floor plate opens hard	91	
64	FSA - Fires when safe is released	92	MAH - Magazine assembles hard
65	FT - Follower tips	93	MCL - Magazine capacity wrong
66	FUH - Feeds up hard	94	MF - Misfires
67	FD - Hammer follows down	95	MFOP - Magazine follower out of position
68	FPHI - Firing Pin hits inside rim	96	MH - Min. header
69	FA - Fires Automatically (See #43 DO)	97	ML - Magazine loose (falls out)
70	MBL - Heavy Bolt left	98	MLH - Magazine loads hard
71	MUE - Hard under Extractor	99	MRM - Magazine removes hard
72	MUR - Hard under rail	100	HX - Max. header
73	GRSO - Guide Ring shot off	101	MCSO - Magazine Cap shot off
74	GCSO - Gas Cylinder shot off	102	
75		103	MBP - No Barrel pin
76	ILOP - Interceptor latch out of position	104	
76	ILRI - Interceptor latch retainer missing	105	
76	ILSOP - Inter. latch spring out of position	106	OH - Opens hard
77	ILSB - Interceptor latch stud broken	107	OOS - Opens on safe
78		108	OR - Over rides shell
79		109	
80	JBS - Jumps Bolt stop	110	
81	JCS - Jumps cartridge stop	111	
82	JL - Jumps Latch	112	PH - Pulls heads
83	JH - Jumps Magazine	113	POR - Power over ride

MALFUNCTION INDEX

- 3 - of 5

<u>CODE</u>		<u>CODE</u>	
114		141	
115		142	TLDL Top lock doesn't latch
116		143	TD Tips down
117	RC Rough chamber	144	TU Tips up
118	RDW Release don't work		
119	RS Rim stem	145	TWW Trigger won't work
120		146	
121	SHIL Shell hits top lock	147	XH Extracts hard
122	SCX Shell catches extracting	148	XHB Extractor hits Barrel
123	SHI Short indent	149	
124	SBC Stems bottom chamber	150	Uncoded defects
125	SBE Stems Barrel extension	151	HI
126	SC Stems chamber	152	LOW
127	SCOD Shell catches on disconnecter	153	LEFT
128	SHFP Shell hits firing pin	154	RIGHT
129	SI Stems incline	155	DON'T GROUP
130	SL Shaves lead	156	OTHER (VISUAL)
131	SLC Stems left side of chamber	157	
132	SOR Stem over ride	158	
133	SP Stems port	159	
134	SRC Stems right side of chamber	160	
135	STC Stems top of chamber	161	
136	SSC Shells stem carrier	162	
137	SWE Safety works too easy	163	
138	SWH Safety works too hard	164	
139	SWV Safety won't work	165	BOE Burr on ejector
140		166	EHR Ejector Hammer releases

TARGET
SHEETS
ONLY

9/15/75
GWS

MALFUNCTION INDEX

- 4 - of 5

CCDE

167 FELI Fore End loose on iron
168
169 FESO Fore End shoots off
170
171 FPP Firing pin protrudes
172
173 TLB Top lock binds
174
175
176
177
178
179

700 = ADL

7001 = WINBDL - includes Classic

7002 = VARMINT

7003 = Left Hand

PROOF MALFUNCTIONS

- 5 - of 5

CIMDE

180	AI	Assembly incomplete - proof
181	BC-P	Blows cases at proof
182	BEB-P	Barrel extension broken - proof
183	BS-P	Barrel split - proof
184	DLOS-P	Doesn't lock over shell - proof
185	ESB-P	Ejector sticks back - proof
186	FF-P	Fails to fire - proof
187	GRSO-P	Guide ring shot off - proof
188	GCSO-P	Gas cylinder shot off - proof
189	BLSO-P	Barrel lug shot off - proof
190	BRB-P	Breech ring broken - proof
191	MCSG-P	Magazine cap shot off - proof
192	DLO-P	Doesn't lock open - proof
193	FESO-P	Fore-end shoots off - proof
194	PP-P	Pierced Primer - proof
195	BP-P	Blown Primer - proof
196		
197		
198		
199		
200		Uncoded proof malfunctions

D

C

C

C

Year	Number of Complaints										Number of Justified Complaints										Total				
	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126		127	128	129	130
1901																									
40																									
1900																									
540																									
541																									
582																									
581																									
582																									
1900																									
1901																									
702																									
TOTALS																									

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington
CUPERTINOPETERS
CUPERTINOXc: E.F. Barrett
A.A. Hugick

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Illion, New York
May 7, 1975

TO: W. E. LEEK

FROM: J. P. LINDE

SUBJECT: EVALUATION OF THE BOLT ACTION RIFLE SAFETY MECHANISMS
M/580s, 788, 600 and 700

13

~~This investigation was instituted when a Model 600 was returned from Texas by a customer who, in the process of unloading his gun, moved the safety lever from the on safe to off safe position (so the bolt could be actuated) and the gun discharged. Upon further investigation of the incident it was determined that he had pulled the trigger with the safe in the on position. It was also determined that some Model 600s could be tricked by putting the safety lever in an intermediate position half way between on safe and off safe, pulling the trigger, releasing the trigger, push the lever to the off safe position, and the gun will fire.~~

Model 600

The M/600 safety is a blocked sear design. The safety lever rotates a cam under the sear, lifting the sear off its contact with the trigger-connector. The trigger then can be pulled with no effect to the sear or firing pin assembly. ~~In the guns in question it was found that they had inadequate sear lift on both the on safe and intermediate positions.~~ The sear lift is the amount of clearance generated between the trigger-connector and the sear. The lifting action of the cam on the safety lever takes place when the safety lever is rotated to the on safe position. ~~On the guns in question there was very little clearance between the sear and trigger connector. Thus when the trigger was pulled in a certain way when the gun was on safe, the connector would not return with the trigger. In this case the safety cam is preventing the gun from firing, thus when the safety is moved to the fire position the gun will discharge.~~

The initial production remedy was to swage the cam on the safety lever provide greater lift on the sear. The greater lift provides a bigger clearance between the trigger connector and sear when the gun is in the on safe condition. The trigger can be pulled without any fear of the connector failing to return due to inadequate lift. The final inspectors, assemblers and customer repair people were reinstructed on what to look for. A test has been added at assembly to

To: W.E. Leek

5-7-75

From: J. P. Linde

-2-

Evaluation of the Bolt Action Rifle Safety Mechanisms - M/580, 788, 600 & 700

The guns are being checked to give at least .008 inches min. lift between the trigger-connector surface and the sear.

The holes on the fire control housing on some of the samples tested were out of control. Corrective action is being taken.

Proposed Design and Process Changes

Design

1. The safety levers have been redimensioned to give better manufacturing control of critical dimensions.
2. The dimensions on the safety lever cam were changed to give greater lift on the sear and maintain the lift longer when the safety is moved from "on safe" to "off safe".
3. The fire control housing will be changed to be common with the Model 700. It has two separate side plates which are riveted together, while the 600 has a folded assembly. The M/700 housing has a heat treated side plate with the detent hole, which gives more positive safety. The folded assembly is not heat treated and the detent holes wear and become less positive.
4. The sear has to be altered to eliminate a potential interference with the rear housing assembly pin.

Process

1. A production gage has been designed and is being built which will measure the sear lift due to the safety lever operation before the fire controls are assembled to the gun.
2. An inspection hole has been added to the new design safety lever so the cam form and its position on the safety lever can be readily inspected in purchase parts inspection.



NTBOOK019

From: J. P. Linde

5-1-75

-3-

Evaluation of the Bolt Action Rifle Safety Mechanisms - M/580, 780, 600 & 700

Test Program - M/600

The current M/600 being manufactured with the swaged safety levers are being tested. They are shot with live ammunition at the start of the test to check their function. The amount of sear lift from the safety operation is measured before the start of the test as well as the force to put safe on and off. The guns are being dry cycled safe on-safe off and cock and dry fire to 50,000 cycles each. The sear lift is being measured every 5,000 cycles to determine how wear affects the sear lift over the life of the gun. The wear on the detent system, trigger connector and sear surfaces also will be checked. The test is being duplicated in a dry and oiled (WD40) condition on the trigger mechanism.

The testing will be duplicated for the redesigned fire control. From this and the original testing it is being determined the minimum safe sear lift for new guns. This report will be followed by the test report.

Status of Design Change

The design has been determined and all drawings have been completed. Design test confirmation is under way. The new drawings have been submitted to P.E. & C. for estimating purposes and the appropriate vendors contacted. As soon as the design test is satisfactorily completed the drawings will be transmitted.

Proposed Future Plans - M/600 & 700

A design investigation will be started to determine the feasibility of changing the safety design from a blocked sear system to a blocked firing pin system. The benefits of a three position safety also are being investigated.

The spring force on the detent system on the M/600 & 700 varies due to the leaf spring design, which can vary the safety operating force. The design will be reviewed to see if the system can be altered to give a more constant operating force.

Model 788 and 580 Series

The problem came to light in February when the design was changed from a blocked trigger system to a blocked sear system similar to the 600 and 700 design. This design change was instituted to standardize parts in these guns with the 540 Series, to eliminate a high scrap operation, and to obtain a more positive safety.





NTBOOK021

To: W.E. Leek
From: J. P. Linde

5-7-75

-4-

Evaluation of the Bolt Action Rifle Safety Mechanisms - M/580, 788, 600 & 700

Model 788 and 580 Series Continued

When the problem appeared all the parts involved in the safety mechanism were measured to determine why there was insufficient sear lift. The following items were found:

1. The powder metal trigger was out of tolerance. Powder Metal has been contacted.
2. The safety lever dimensioning did not tie the critical dimensions together.
3. The holes in the trigger housing were not to locational dimension.

Corrective Action Taken to Maintain Production

1. The triggers were ground to provide more clearance when the safety was operated.
2. The gaging technique was established to measure the sear lift with the safety operation when the gun is assembled.
3. All the assemblers were reinstructed on what to look for -- proper lift and can the gun be tricked.

Corrective Action Being Taken

1. Correct the parts out of gage and establish controls.
2. Redimension safety levers for both the 580 Series and 788 to tie the critical surfaces together. The vendor has been contacted on what surfaces are critical and how they can best be maintained.
3. The dimensions on the safety lever were altered to give greater lift to insure in all tolerance conditions there is adequate lift with an allowance for wear.
4. Process Engineering is designing a gage to measure the sear lift from the safety lever operation to insure that the fire control will have adequate lift before it is assembled to the gun.

From:

J. P. Linde

5-7-75

-5-

Evaluation of the Bolt Action Rifle Safety Mechanisms - M/580, 788, 600 & 700

Corrective Action Being Taken Continued

5. The assemblers will use a feeler gage to measure sear lift to make sure a minimum lift is maintained.
6. The safety lever hold down screw has been deleted. The pin with the retaining ring presently used in the pivot pin will be used instead of the screw. The alteration was made after it was determined under some conditions the screw could back out and bind the safety operation.
7. The cut in the bottom of the M/788 receiver for safety lever clearance has been altered in the proposed design to eliminate any potential interference with the safety lever which could block the safety operation.
8. An inspection hole will be added to the M/788 fire control housing so the sear lift can be visually checked.

Test Program - M/580 Series and 788

Production guns with ground triggers are being tested to make sure there will be no field problems with the powder metal surfaces wearing down with usage. These guns are being tested in the following way.

1. The 580 Series are being shot to 20,000 rounds and dry cycled safe on - safe off to 400 cycles.
2. Another gun will be dry cycled to 50,000 safe on - safe off cycles and 50,000 cock and fire cycles.

The new design is being tested by swaging out and recutting the safety lever to the new dimension. The gun test will include;

1. One gun will be shot 2,000 times, with 500 safe on - safe off cycles, the sear lift being measured every 500 rounds as well as the safe on - safe off actuation load.
2. One gun will be cycled to 50,000 safe on - safe off cycles, and 50,000 cock and dry fire cycles.

These tests will be repeated with the design changes as they become available.



NTBOOK022

To: W.E. Leek

5-7-75

From: J. P. Linde

-2-

Evaluation of the Bolt Action Rifle Safety Mechanisms - M/580, 788, 600 & 700

The guns are being checked to give at least .008 inches min. lift between the trigger-connector surface and the sear.

The holes on the fire control housing on some of the samples tested were out of control. Corrective action is being taken.

Proposed Design and Process Changes

Design

1. The safety levers have been redimensioned to give better manufacturing control of critical dimensions.
2. The dimensions on the safety lever cam were changed to give greater lift on the sear and maintain the lift longer when the safety is moved from "on safe" to "off safe".
3. The fire control housing will be changed to be common with the Model 700. It has two separate side plates which are riveted together, while the 600 has a folded assembly. The M/700 housing has a heat treated side plate with the detent hole, which gives more positive safety. The folded assembly is not heat treated and the detent holes wear and become less positive.
4. The sear has to be altered to eliminate a potential interference with the rear housing assembly pin.

Process

1. A production gage has been designed and is being built which will measure the sear lift due to the safety lever operation before the fire controls are assembled to the gun.
2. An inspection hole has been added to the new design safety lever so the cam form and its position on the safety lever can be readily inspected in purchase parts inspection.



NTBOOK019

From: J. P. Linde

5-1-75

-3-

Evaluation of the Bolt Action Rifle Safety Mechanisms - M/580, 788, 600 & 700

Test Program - M/600

The current M/600 being manufactured with the swaged safety levers are being tested. They are shot with live ammunition at the start of the test to check their function. The amount of sear lift from the safety operation is measured before the start of the test as well as the force to put safe on and off. The guns are being dry cycled safe on-safe off and cock and dry fire to 50,000 cycles each. The sear lift is being measured every 5,000 cycles to determine how wear affects the sear lift over the life of the gun. The wear on the detent system, trigger connector and sear surfaces also will be checked. The test is being duplicated in a dry and oiled (WD40) condition on the trigger mechanism.

The testing will be duplicated for the redesigned fire control. From this and the original testing it is being determined the minimum safe sear lift for new guns. This report will be followed by the test report.

Status of Design Change

The design has been determined and all drawings have been completed. Design test confirmation is under way. The new drawings have been submitted to P.E. & C. for estimating purposes and the appropriate vendors contacted. As soon as the design test is satisfactorily completed the drawings will be transmitted.

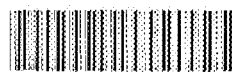
Proposed Future Plans - M/600 & 700

A design investigation will be started to determine the feasibility of changing the safety design from a blocked sear system to a blocked firing pin system. The benefits of a three position safety also are being investigated.

The spring force on the detent system on the M/600 & 700 varies due to the leaf spring design, which can vary the safety operating force. The design will be reviewed to see if the system can be altered to give a more constant operating force.

Model 788 and 580 Series

The problem came to light in February when the design was changed from a blocked trigger system to a blocked sear system similar to the 600 and 700 design. This design change was instituted to standardize parts in these guns with the 540 Series, to eliminate a high scrap operation, and to obtain a more positive safety.



NTBOOK020

Final results of the Model 600 quality audit revealed that a high percentage of the guns are subject to the "trick" safety condition--safety is put in midway position, trigger is pulled, then safety is put in "off" position and gun automatically fires. Newly-instituted check procedures have eliminated the "trick" safety condition in all bolt action guns now leaving the Plant. Design improvements, which should be in production within the next six months, give added insurance against recurrence of the problem.

The relatively few incidents of reported safety release firings reported from the field in the past few years give support to our conclusion that the shooter is not likely to place his gun in the "trick" condition. Examination also revealed that major competitive bolt action models can be "tricked," in one way or another, so as to fire upon movement of the safety.

After discussion, it was decided that John Linde take charge of revising the section in the Gunsmith Manual covering bolt action fire controls, so as to include (1) appropriate checks for the "trick" safety condition, and (2) recommendations for corrective action. As soon as the revision is completed, copies of the revised section will be distributed to all recorded holders of the Gunsmith Manual.

Another safety meeting will be held in about six weeks to hear a progress report on the Gunsmith Manual revision.

R.B. Sperling
Acting Secretary

RBS:TJS:KLK



NTBOOK024

Sperling 7

QUALITY REVIEW AT ILION - contd.COMPETITIVE POSITION - contd.

J. P. Linde reported the safety mechanisms on the bolt action rifles have been reviewed for performance. The safe operation, function and endurance over extended testing and environmental changes have been verified. The Models 600, 700, 788 and 580's were shot 33,000 times and dry cycled (Safe on - Safe off, and cock and fire) 1,659,500 dry cycles to determine the strength, wear factors and ease of operation of the safety mechanisms.

A number of model drawing changes were made to insure better control of the parts. A gage to measure the Sear lift of the assembly before it is installed on the gun has been completed and will be instituted into production as an additional safety check.

Designs are being analyzed to allow the customer to unload the Model 700 with the Safe in the ON position as an additional safety feature.

The meeting adjourned at 2:30 p.m. The next meeting will be October 23, 1975 at 8:30 a.m. at the Horizon Hotel, Oneida County Airport, N. Y.

JHS:I

Attached - Exhibits 1 thru 23

REM 0027630 1



NTBOOK025

OPERATIONS COMMITTEE

SEPTEMBER 19, 1975

**DESIGNS ARE BEING
ANALYZED TO ALLOW
THE CUSTOMER TO
UNLOAD THE MODEL 700
WITH THE SAFE IN THE
ON POSITION AS AN
ADDITIONAL SAFETY
FEATURE.**





12-H

NTBOOK027

xc: J. P. Linde
Lab File

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

REPORT

PETERS

REPORT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Illion, New York
December 15, 1975

TO: W. E. LEEK
FROM: A. A. HUGICK
DATE: DECEMBER 10, 1975
SUBJECT: M/700 SAFETY EVALUATION - REPORT #8

Work Order: E 0262

INTRODUCTION:

Design initiated a review of the bolt action rifle safety function. The final phase of this program involved the M/700 rifle. Consideration of standardizing on safety detent system between the 700 & 600 rifle control systems. Three M/700 rifles were delivered for safety dry cycle evaluation in the measurement and test dry cycle equipment. This allows M/700 trigger housings to be used in the M/600.

TEST OBJECTIVE:

Dry cycle test the sample M/700 rifles with safety detent system compatible with M/600 fire control system.

TEST RESULTS & OBSERVATIONS:

1. M/700 - S.N. 6898412 - Test Gun #1

Test Activity

- 50,000 Safe On - Safe Off cycles.
- 10,000 Cock and Dry fire Cycles.
- W. D. 40 lubrication.
- Design fabricated rifles.

Test Results

- Sear lift data showed variations Min. -.007 to max. -.009.
- Sear lift data indicated no trend.
- Safe on force variation ranged from 7.5 lbs. max. to 4.5 min.

To: W. E. Leek
From: A. A. Huglick
M/700 Safety Evaluation - Report #8

December 15, 1975
Page 27

TEST RESULTS & OBSERVATIONS: - Contd.

2. M/700 - S. N. 6898446 - Test Gun #2

Test Activity - 50000 Safe On - Safe Off cycles
- 10000 cock & dry fire cycles
- WD 40 lubrication
- Design fabricated rifles.

Test Results - Sear Lift data showed variations min .0048
to max .0073.
- Graphing of data indicated a sear lift decrease trend.
- Safe On force variation ranged from 6.0 lbs max.
to 3.25 min.
- Safe off force variation ranged from 6.5 lb max. to
3.50 min.
- Striker and fire control parts inspection indications
were good.

3. M/700 - S. N. 6897681 - Test Gun #3

Test Activity - 50000 Safe On - Safe Off cycles
- 10000 cock & dry fire cycles
- W D 40 lubrication
- Design fabricated rifles

Test Results - Sear lift data showed variations between min .0053
and max .0068 inches.
- Sear lift data indicate a minor trend of decreasing.
- Safe on force variation ranged from 6.0 lbs. max.
to 3.50 min.
- Safe off force variation ranged from 6.0 lbs max. to
3.75 min.
- Striker and fire control parts inspection indications
were good.

AAH:bd

Measurement/Test Lab
Illion Research Division



To: W. E. Leek
From: A. A. Hugick
M/700 Safety Evaluation - Report #8

December 15, 1975

BOLT ACTION RIFLE SAFETY EVALUATION PROGRAM
3 x M/700 RIFLES FOR DRY CYCLE EVALUATION

- A. Trigger pull, Safe On force, Safe Off force
Safe On - Lift of sear at trigger.
- B. Check function of safe.
- C. Clean and lubricate fire control (WD 40)
- D. 10,000 Safe on - Safe Off dry cycles.
- E. Repeat "A"
- F. Repeat "B", and "C"
- G. Repeat "D"
- H. Continue test to a total of 50,000
Safe On - Safe Off dry cycles.
- I. Repeat "A", "B", and "C"
- J. 10,000 cock and dry fire cycles.
- K. Repeat "A" and "B"
- L. End of Dry cycle test

9/17/75
A. A. HUGICK

AAH:bd



NTBOOK029

LIMITED DISTRIBUTION

OPERATIONS COMMITTEE

FIREARMS - TRAPS

MINUTE #2 - 1976

P. H. BURDETT
J. P. McANDREWS
J. G. WILLIAMS
E. HOOTON, JR.
J. R. MALLOY
R. A. PARTNOY
E. F. BARRETT
E. B. BEATTIE
L. FOX
L. J. SCOTT

F. E. MORGAN
J. C. CALLAHAN
R. L. HALL
J. H. HODGSON
A. J. HERMANDORFER
W. E. LEEK
D. S. FOOTE
T. J. SHARPE
J. H. SWEENEY

COPY NO. Book

OPERATIONS COMMITTEE
ILION DIVISION

JANUARY 23, 1976

MODEL 700 IMPROVEMENT

1. Model 700 Improvement

R & D reported they are investigating safety mechanism performance in all bolt action firearms, both Remington and competition. From this review, a design proposal is being developed to modify the safety mechanism in the Model 700 and Mohawk 600 rifles. The most important alteration would be a design change to allow the shooter to unload the rifle with the Safety in the ON position.

IREM 0027616 1

NOT FOR REPRODUCTION
OR FURTHER DISTRIBUTION

LIMITED DISTRIBUTION

OPERATIONS COMMITTEE

FIREARMS - TRAPS

MINUTE #6 - 1976

P. H. BURDETT
J. P. McANDREWS
J. G. WILLIAMS
E. HOOTON, JR.
J. R. MALLOY
R. A. PARTNOY
E. F. BARRETT
E. B. BEATTIE
L. FOX
L. J. SCOTT

F. E. MORGAN
J. C. CALLAHAN
R. L. HALL
J. H. HODGSON
A. J. HERMANDORFER
W. E. LEEK
D. S. FOOTE
T. J. SHARPE
J. H. SWEENEY

COPY NO. _____

OPERATIONS COMMITTEE ELION DIVISION

MARCH 18, 1976

PRESENT

Committee

J. P. McANDREWS, CHAIRMAN
J. G. WILLIAMS
E. HOOTON, JR.
J. R. MALLOY
E. F. BARRETT
E. B. BEATTIE
L. FOX
J. H. SWEENEY, SECRETARY

Others

L. J. SCOTT
F. E. MORGAN
H. D. ALBAUGH
R. L. HALL
W. E. LEEK
J. S. MARTIN
H. K. BOYLE
*H. L. HAMEISTER
*J. L. TEAL

*Departed at 2:00 p.m.

The meeting convened at 1:45 p.m. at the Horizon Hotel, Oneida County Airport, N. Y.

NOT FOR REPRODUCTION
OR FURTHER DISTRIBUTION

REM 0027614

PLAINTIFF'S
EXHIBIT

OPERATIONS COMMITTEE
ILION DIVISION

MARCH 18, 1976

PRODUCT DEFICIENCIES KNOWN OR SUSPECTED IN 1976

-2-

D. MODEL 700 SAFETY LEVER

- ° EASE OF OPERATION AND INTERESTS OF SAFE GUN HANDLING
DEMAND A DESIGN THAT ENABLES A SHOOTER TO OPERATE
THE ACTION WITH THE SAFETY "ON".



REM 0028348 1
REM 0027616 1

EXHIBIT 12-1

D. MODEL 700 SAFETY LEVER

- EASE OF OPERATION AND INTERESTS OF SAFE GUN HANDLING
DEMAND A DESIGN THAT ENABLES A SHOOTER TO OPERATE
THE ACTION WITH THE SAFETY "ON".

C
H
A
P
A

| REM 0027617 |

COMPETITIVE EVALUATION PROGRAM FOR 1976:

- . Bolt Action Firearms - A competitive test has been started to analyze the best "safety mechanism" characteristics on all bolt action rifles. Such things as safe on-safe loads, position of Safety on rifle, Bolt lock and three position Safeties are being analyzed.
- . Autoloading Shotguns and Center Fire Rifles - Exhibit 21

The April meeting was rescheduled from April 22 to Thursday, April 8, 1976 at 10:00 a.m. at Bridgeport.

The meeting adjourned at 3:30 p.m.

JHS:I
Exhibits 1 - 21

| REM 0028213 |

| REM 0027615 |

OPERATIONS COMMITTEE
ILION DIVISION

MARCH 18, 1976

PRODUCT DEFICIENCIES
KNOWN OR SUSPECTED IN 1976

MODEL 700 SAFETY LEVER

**EASE OF OPERATION AND
INTERESTS OF SAFE GUN HANDLING
DEMAND A DESIGN THAT ENABLES
A SHOOTER TO OPERATE THE
ACTION WITH THE SAFETY "ON".**



NTBOOK032

COMPETITIVE EVALUATION PROGRAM FOR 1976:

- . Bolt Action Firearms - A competitive test has been started to analyze the best "safety mechanism" characteristics on all bolt action rifles. Such things as safe on-safe loads, position of Safety on rifle, Bolt lock and three position Safeties are being analyzed.
- . Autoloading Shotguns and Center Fire Rifles - Exhibit 21

The April meeting was rescheduled from April 22 to Thursday, April 8, 1976 at 10:00 a.m. at Bridgeport.

The meeting adjourned at 3:30 p.m.

JHS:I

Exhibits 1 - 21

REM 0028213

REM 0027615



NTBOOK033

BUSINESS MEETING - contd.PRODUCTION PERFORMANCE - contd.Harbor Buff Vent Rib Barrels

R

OPERATIONS COMMITTEE
ILION DIVISION

November 18, 1976

RESEARCH PERFORMANCE

R & D reported status of the Semi-Annual Development Schedule (July, 1976). The item numbers below are as listed on the Schedule.

1. Model 700 Improvements

Five Model 700 rifles have been made with a classic style Stock for Research and Marketing inspection. From this analysis, a list of design parameters is being determined for a classic Remington Stock. This program is being undertaken to be able to offer a classic styled rifle to compete with the Ruger 77.

The design of the Trigger Mechanism is being analyzed. This analysis should lead to possible design options which will be pursued.

IREM 0028210

IREM 002760



NTBOOK034

CONFIDENTIAL

MINUTE #2 - 1977

Jan. 26, 1977.

FROM PAGE NUMBER

2

SUBJECT

M/700-600 Fire Control Improvement
(Item 1 - Dev. Sched.)

1. M/700-600 Fire Control Improvement

R & D reported that design changes are being developed to make the fire control more versatile. The preliminary design should be completed by September, 1977.

CONFIDENTIAL



NTBOOK035

11/4/77

NEW MECHANICAL TRAP - contd.OPERATIONS COMMITTEEILION DIVISION

APRIL 21, 1977

SPECIAL REPORTSMOHAWK 600 AND MODEL 700 FIRE CONTROL REVIEWMOHAWK 600 RIFLE

R & D reported that drawings have been transmitted to the plant to alter the Mohawk 600 Fire Control. The Fire Control Housing presently used on the M/700 has been modified so that it will fit the Mohawk 600. This change will yield a common Fire Control Housing for the Mohawk 600 and M/700 rifle. It will reduce cost, as the factory cost of the M/700 Fire Control Housing is less than the factory cost of the Mohawk 600 Fire Control Housing. This change should also improve the detent action of the Mohawk 600 Fire Control. The side plate on the M/700 Housing is heat treated. This is the surface the hardened steel detent ball is spring loaded against to obtain the two Safety positions.

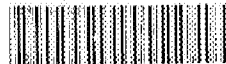
MOHAWK 600 AND MODEL 700 RIFLES FOR EXPORT TO AUSTRALIA

R & D reported that one thousand Mohawk 600 rifles were shipped to Australia and stopped by the customs officials as being unacceptable for importation. This action was taken because the customs officials claimed the trigger adjusting screws should have a mechanical locking means.

It has been our experience with the Mohawk 600, M/721, M/722 and M/700 rifles that the trigger adjusting screws stay in adjustment. The screws on the Mohawk 600, M/722, 721 were staked and sealed

IREM 0028207 1

IREM 0027509 1



NTBOOK036

NEW MECHANICAL TRAP - contd.OPERATIONS COMMITTEEILION DIVISION

APRIL 21, 1977

SPECIAL REPORTSMOHAWK 600 AND MODEL 700 FIRE CONTROL REVIEWMOHAWK 600 RIFLE

R & D reported that drawings have been transmitted to the plant to alter the Mohawk 600 Fire Control. The Fire Control Housing presently used on the M/700 has been modified so that it will fit the Mohawk 600. This change will yield a common Fire Control Housing for the Mohawk 600 and M/700 rifle. It will reduce cost, as the factory cost of the M/700 Fire Control Housing is less than the factory cost of the Mohawk 600 Fire Control Housing. This change should also improve the detent action of the Mohawk 600 Fire Control. The side plate on the M/700 Housing is heat treated. This is the surface the hardened steel detent ball is spring loaded against to obtain the two Safety positions.

MOHAWK 600 AND MODEL 700 RIFLES FOR EXPORT TO AUSTRALIA

R & D reported that one thousand Mohawk 600 rifles were shipped to Australia and stopped by the customs officials as being unacceptable for importation. This action was taken because the customs officials claimed the trigger adjusting screws should have a mechanical locking means.

It has been our experience with the Mohawk 600, M/721, M/722 and M/700 rifles that the trigger adjusting screws stay in adjustment. The screws on the Mohawk 600, M/722, 721 were staked and sealed

IREM 0028207 1

IREM 0027599 1



NTBOOK036

MOHAWK 600 AND MODEL 700 RIFLES FOR EXPORT TO AUSTRALIA - contd.

with Du Pont Duco cement. The M/700 trigger engagement screw is Loc-Tited and sealed with Du Pont Duco cement. All of these trigger adjustment screws will stay in adjustment if they are not tampered with by the customer. The Owner's Manual instructs the customer not to adjust the trigger engagement on the Mohawk 600 and Model 700 rifles.

All Mohawk 600 rifles and Model 700 rifles to be shipped to Australia will be assembled with lock screws in the trigger assembly. These modifications are being made so the rifles will pass their customs requirements and have nothing to do with the safety, function, or performance of the rifles.

FUTURE PROGRAM

R & D will do a complete design analysis on all the bolt action rifles and present a proposal to the Operations Committee. The areas of investigation will include:

1. Trigger Assembly adjustability
2. Increase commonality of parts in bolt action line
3. Allow M/700 to be unloaded with Safety in the "on safe" position
4. Improve the trigger pull characteristics
5. Reduce the cost of the Trigger Assembly

ITALIAN CHECKERING MACHINE

[REM 0028208-1]

[REM 0027400-1]



NTBOOK037

MOHAWK 600 AND MODEL 700 RIFLES FOR EXPORT TO AUSTRALIA - contd.

with Du Pont Duco cement. The M/700 trigger engagement screw is Loctited and sealed with Du Pont Duco cement. All of these trigger adjustment screws will stay in adjustment if they are not tampered with by the customer. The Owner's Manual instructs the customer not to adjust the trigger engagement on the Mohawk 600 and Model 700 rifles.

All Mohawk 600 rifles and Model 700 rifles to be shipped to Australia will be assembled with lock screws in the trigger assembly. These modifications are being made so the rifles will pass their customs requirements and have nothing to do with the safety, function, or performance of the rifles.

FUTURE PROGRAM

R & D will do a complete design analysis on all the bolt action rifles and present a proposal to the Operations Committee. The areas of investigation will include:

1. Trigger Assembly adjustability
2. Increase commonality of parts in bolt action line
3. Allow M/700 to be unloaded with Safety in the "on safe" position
4. Improve the trigger pull characteristics
5. Reduce the cost of the Trigger Assembly

ITALIAN CHECKERING MACHINE

IREM 0028808-1

IREM 0027400-1



NTBOOK037

MINUTE #13 - 1977

July 19, 1977

FROM PAGE NUMBER

12

SUBJECT

M/700-600 FIRE CONTROL IMPROVEMENTS
Chart 19M/700-600 FIRE CONTROL IMPROVEMENTS

Research is presently performing a design analysis on the M/700 - M/600 trigger assemblies to improve their performance and customer desirability. The development program is aimed at designing a trigger assembly with the following features (see Chart 19): 1) trigger externally adjustable for pounds pull within safe limits; 2) sear engagement and trigger over-travel 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; and 5) reduction of trigger assembly costs.

The Development Schedule states that prototypes with different design options will be available for inspection and testing by March, 1978. The preferred model will be ready for extensive testing in July, 1978; and the design will be complete in March, 1979.



NTBOOK038

CONFIDENTIAL

FIRE CONTROL IMPROVEMENTS

101736

M 700 - M 600

CONFIDENTIAL

RESEARCH IS PRESENTLY DOING A DESIGN ANALYSIS OF THE M 700 - M 600 FIRE CONTROLS.

THE DESIGN OBJECTIVE IS TO DEVELOP A NEW FIRE CONTROL WITH THE FOLLOWING FEATURES:

- TRIGGER EXTERNALLY ADJUSTABLE FOR POUNDS PULL WITHIN SAFE LIMITS
- SEAR ENGAGEMENT AND TRIGGER OVERTRAVEL DETERMINED BY DESIGN (NOT ADJUSTABLE BY CUSTOMER)
- RIFLE CAN BE UNLOADED IN THE "ON SAFE" POSITION
- IMPROVED TRIGGER PULL CHARACTERISTICS
- COST REDUCTION OF TRIGGER ASSEMBLY

DEVELOPMENT SCHEDULE:

- PROTOTYPES WITH DIFFERENT DESIGN OPTIONS AVAILABLE FOR ANALYSIS - MARCH 1978
- PREFERRED MODEL READY FOR EXTENSIVE TESTING JULY 1978
- DESIGN COMPLETE MARCH 1979

CHART 19

E

L

L



NTBOOK039

CONFIDENTIAL

CONFIDENTIAL

MINUTE #13 - 1977

July 19, 1977

FROM PAGE NUMBER

12

SUBJECT

M/700-600 FIRE CONTROL IMPROVEMENTS
Chart 19

M/700-600 FIRE CONTROL IMPROVEMENTS

Research is presently performing a design analysis on the M/700 - M/600 trigger assemblies to improve their performance and customer desirability. The development program is aimed at designing a trigger assembly with the following features (see Chart 19): 1) trigger externally adjustable for pounds pull within safe limits; 2) sear engagement and trigger over-travel 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; and 5) reduction of trigger assembly costs.

The Development Schedule states that prototypes with different design options will be available for inspection and testing by March, 1978. The preferred model will be ready for extensive testing in July, 1978; and the design will be complete in March, 1979.

CONFIDENTIAL



NTBOOK040

LIMITED DISTRIBUTION

OPERATIONS COMMITTEE

FIREARMS - TRAPS

MINUTE #15 - 1977

P. H. BURDETT
J. P. McANDREWS
E. F. BARRETT
E. HOOTON, JR.
J. R. MALLOY
J. G. WILLIAMS
R. A. PARTNGY
E. B. BEATTIE
L. FOX
J. E. PREISER
E. J. GINER

M. F. DE MAYO
W. J. BOETTNER
H. D. ALBAUGH
J. C. CALLAHAN
R. L. HALL
A. J. HERMANDORFER
G. E. PUCKETT
C. B. WORKMAN
D. S. FOOTE
T. J. SHARPE
E. M. DOUGLASS

COPY NO. Book

OPERATIONS COMMITTEE

ILION DIVISION

SEPTEMBER 20, 1977

PRESENT:

COMMITTEE

J. P. McANDREWS, CHAIRMAN
E. F. BARRETT
E. HOOTON, JR.
J. R. MALLOY
J. G. WILLIAMS
L. FOX
E. M. DOUGLASS, SECRETARY

OTHERS

H. D. ALBAUGH
J. E. PREISER
W. J. BOETTNER
J. C. CALLAHAN
G. W. HOWELL
L. L. PRESNELL
E. G. LARSON
N. SKOVAN
R. L. HALL
H. K. BOYLE
C. B. WORKMAN
J. S. MARTIN
J. P. LINDE
J. C. HUTTON
J. R. AYERS
R. J. CHESEBROUGH

The meeting convened at 11:45 a.m. at Ilion.

IREM 0027589 1



NTBOOK041

OPERATIONS COMMITTEE

INION DIVISION

SEPTEMBER 20, 1977

RESEARCH & DEVELOPMENT PRESENTATION

An active design program is being pursued to improve the function and reliability of our Bolt Action Fire Controls.

Mohawk 600

The detent safety action on the Mohawk 600 rifle has been improved by modifying the Model 700 Trigger Housing to fit both rifles. Trial and pilot operations are being run.

Model 700

The Model 700 Fire Control Assembly is also being redesigned to make it more competitive with improved features. The proposed Fire Control Assembly will be adjustable for pounds pull within safe limits without disassembling the rifle. The rifle will be able to be unloaded with the safety in the "on safe" position. The Trigger pull characteristics will be improved especially on varmint and target models. Design prototypes are scheduled to be ready June, 1978.

M/788, M/580's, 541-S and 540-XR

These Fire Controls are being redesigned to improve their functional performance. On the present design the force required in the "on safe" position varies with the tolerances of the component parts. The force to position the safety from the "on safe" to "off safe" is on the low side.

A new design is being worked on which will give us a safety with uniform "on safe" forces and increased "off safe" forces. The design will also improve the attachment of the assembly to the rifle. This Fire Control Assembly would be adaptable to all the above listed rifles. Design prototypes are to be ready in December. Drawings will be transmitted in the first quarter of 1978.

Trans

REM 0028206
REM 0027597



NTBOOK042

LIMITED DISTRIBUTION

OPERATIONS COMMITTEE

FIREARMS - TRAPS

MINUTE #19 - 1977

P. H. BURDETT
J. P. McANDREWS
E. F. BARRETT
E. HOOTON, JR.
J. R. MALLOY
J. G. WILLIAMS
R. A. PARTNOY
E. B. BEATTIE
L. FOX
J. E. PREISER
E. J. GINER

M. F. DE MAYO
W. J. BOETTNER
H. D. ALBAUGH
J. C. CALLAHAN
R. L. HALL
A. J. HERMANDORFER
G. E. PUCKETT
C. B. WORKMAN
D. S. FOOTE
T. J. SHARPE
E. M. DOUGLASS

COPY NO. Final

OPERATIONS COMMITTEE ILION DIVISION

NOVEMBER 16, 1977

PRESENT:

COMMITTEE

J. P. McANDREWS, CHAIRMAN
E. F. BARRETT
J. G. WILLIAMS
L. FOX
E. M. DOUGLASS, SECRETARY

OTHERS

H. D. ALBAUGH
J. C. CALLAHAN
L. J. SCOTT
G. W. HOWELL
J. E. PREISER
L. L. PRESNELL
E. B. BEATTIE
J. H. CHAMBERS
M. F. DEMAYO
W. J. WEEKS
C. B. WORKMAN
J. R. AYERS
H. K. BOYLE
J. P. LINDE
J. S. MARTIN
D. HARRISON

The meeting convened at 11:10 a.m. at Ilion.



NTBOOK043

1 REM 0027586

BUSINESS MEETING - contd.PRODUCTION PERFORMANCE - contd.RESEARCH PERFORMANCE

R & D reported status of the Semi-Annual Firearms Development Schedule (July, 1977). The item numbers below are as listed on the schedule.

1. Model 700 - Model 600 Fire Control Improvement

The development effort has been divided into two objectives. The first objective is developing a safety mechanism which is easy to understand, reliable, and will allow the shooter to unload the rifle in the "ON SAFE" position. Three prototype safety mechanisms have been completed and at least two more will be developed. The safety development will be completed in the first quarter of 1978. The various designs will be rated by Marketing to determine the one with the greatest consumer appeal.

The second objective is to improve and simplify the firing mechanism to give a Trigger with a better feel and which is externally adjustable within safe limits for pounds pull. Sample prototypes of the proposed new assembly with both improvements should be complete by April, 1978.

4. Model 600 Carbine

Six prototype carbines have been fabricated and are ready for Marketing and Production review. The rifles have design improvements and alterations to the Stock, Bolt Handle, Trigger Guard, Recoil Pad, Sights and Bolt Release.

IREM 0028203 T

IREM 0027567 T



NTBOOK044

RD-6738

DCR # 10521

DESIGN CHANGE REQUEST (DCR)

Sheet 1 of 1

~~PARTS LIST CHANGE NOTICE (PLCN)~~

OR

PARTS LIST TRANSMITTAL

J.P. LINDE

Requested By	Changed By	Date
K. B. J. J. J.	F. MARTIN	13 OCT 77
Originating Date	Transmittal Date	
	11-18-77	

TRANSMITTAL of DRAWINGS / PARTS LIST

Model	Part Name / List	Drawing No.	Part No.
M-700	TRIGGER	C-15280	~

Dwg. No.	Rev. No.	Design Change
C-15280	14	ADDED SECTION B-B
	15	CHANGED MAT'L. WAS POWDER METAL
	16	ADDED 90° ± 00° 15
	17	ADDED NOTE

Reason for Change: TO IMPROVE THE FUNCTION OF THE TRIGGER
 ASSEMBLY BY ELIMINATING INTER FRICTION BETWEEN
 TRIGGER AND HOUSING

Disposition of Parts on Hand (check below)

001703

☐ Scrap ☐ Alter ☐ Use Inventory

(PLCN) Use form below if part number is changed / add-used, or superseded.

	Drawing No.	Part No.	Part Name
Current Listing			C.B.W. EXHIBIT 4
New Listing			WITNESS W. B. J. J. J.
Current Listing			RPTG/REP. W. B. J. J. J.
New Listing			DATE 10-6-83

NOTE: Please mark your Parts List to agree ()

☐ Superseded Part is Obsolete (check disposition below)

☐ Use Up ☐ Scrap ☐ Service Repair ☐ Other Model Use

☐ New Part is: ☐ Steel ☐ Powder Metal ☐ Assembly ☐ Wood ☐ Purchased ☐ Other

APPROVED: J.P. 11/7/77 - CJ 11/18/77



RD-6738

DCR //

10524

DESIGN CHANGE REQUEST (DCR)

Sheet

1

of

2

PARTS LIST CHANGE NOTICE (PLCN)

OR

PARTS LIST TRANSMITTAL

J.P. LINDE

Requested By	Changed By	Date
RESEARCH	F. MARTIN	24 Oct. 77
Originating Date	Transmittal Date	
	11-18-77	

TRANSMITTAL of DRAWINGS / PARTS LIST

Model	Part Name / Det	Drawing No.	Part No.
M-700	SEAR SAFETY CAM	C-15666	~
M-600	SEAR SAFETY CAM	C-91470	~

Dwg. No.	Rev. No.	Design Change
C-15666	8	ADD NOTES
"	9	ADD DIMS. TO SECTION "C-C"
"	10	ADD DIM. TO CORNER * NOTE "AFTER GRIND"
"	11	REVISED MATERIAL * DENSITY SPEC.

Reason for Change: TO IMPROVE THE FUNCTION OF THE TRIGGER

ASSEMBLY BY ELIMINATING ENTER FEELANCE OF

CONTRAST

Disposition of Parts on Hand (check below)

00170;

() Scrap () Alter () Use Inventory

(PLCN) Use form below if part number is changed / add-used, or superseded.

	Drawing No.	Part No.	Part Name
Current Listing			
New Listing			
Current Listing			
New Listing			

CBW EXHIBIT 3
 WITNESS Westman
 RPTR/N.P.: Will
 DATE 10-6-83

NOTE: Please mark your Parts List to agree ()

() Superseded Part is Obsolete (check disposition below)

() Use Up () Scrap () Service Repair () Other Model Use

() New Part is: () Steel () Powder Metal () Assembly () Wood () Purchased () Other

APPROVED: JPL 11/7/77 CS 11/19/77



NTBOOK046

FIREARMS - Contd.MODEL 1100 LT-20 STOCK FINISH - Contd.SEMI-ANNUAL FIREARMS - TRAPS DEVELOPMENT SCHEDULE

Each item on the Development Schedule was reviewed.

1. M/700-600 Fire Control Improvements

R & D reported that the program objectives are to:

- a. Design a Trigger Assembly that is externally adjustable for pounds pull within safe limits.
- b. Sear engagement and Trigger overtravel to be determined by design and not adjustable by the customer.

In March, we will be ready to present Marketing with three samples.

2. M/700 - 7mm-06 Caliber

R & D reported that at Marketing's request, we will chamber the M/700 rifle for the 7mm-06 which is a 280 Rem. cartridge loaded to higher pressure and faster muzzle velocities. Design transmittal is scheduled for April, 1978.

[REM 0028200]

[REM 0027582]



NTBOOK047

**Operations Committee
Ilion Division
February 15, 1978**

**Fire Control Improvements
M 700-M 600**

Research is presently doing a design analysis of the M 700-M 600 fire controls.

The design objective is to develop a new fire control with the following features:

- ◆ Trigger externally adjustable for pounds pull within safe limits.
- ◆ Sear engagement and trigger overtravel determined by design (not adjustable by customer)
- ◆ Rifle can be unloaded in the "on safe" position
- ◆ Improved trigger pull characteristics
- ◆ Cost reduction of trigger assembly

Development Schedule:

- ◆ Prototypes with different design options available for analysis-March 1978
- ◆ Preferred model ready for extensive testing July 1978
- ◆ Design complete March 1979



DESIGN CHANGE REQUEST (DCR)

Sheet 1 of 1

PARTS LIST CHANGE NOTICE (PLCN)

OR

PARTS LIST TRANSMITTAL

S. K. ...

Requested By	Changed By	Date
PEAC	F. MARTIN	9 MAY 78
Originating Date		Transmittal Date
		5-9-78

TRANSMITTAL of DRAWINGS / PARTS LIST

Model	Part Name / List	Drawing No.	Part No.
MOHAWK 600	TRIGGER CONNECTOR	C-15436	—
M-700	"	C-19461	—

Dwg. No.	Rev. No.	Design Change
C-15436	2	ADD END VIEW AND NOTE "GROUND END MUST BE
C-19461	14	SQUARE WITH LEG WITHIN $\pm 1^\circ$. ADD NOTE 2" INSIDE
		SURFACE MUST BE SMOOTH, CLEAN AND FREE OF REND.
		AND NOTE 3" PART MUST NOT ROCK WHEN INSIDE
		SURFACE REST ON A FLAT SURFACE MAX. READ
		TWIST OR BOW ALLOWED .003"

Reason for Change:

TO CLARIFY FLATNESS REQUIREMENT

Disposition of Parts on Hand (check below)

001711

() Scrap () Alter (X) Use Inventory

(PLCN) Use form below if part number is changed / add - used, or superseded.

	Drawing No.	Part No.	Part Name
Current Listing			
New Listing			
Current Listing			
New Listing			

(BU) EXHIBIT 8A
WITNESS W. Martin
RPTR/N.P.: W. Martin
DATE 10-6-83

NOTE: Please mark your Parts List to agree ()

() Superseded Part is Obsolete (check disposition below)

() Use Up () Scrap () Service Repair () Other Model Use

() New Part is: () Steel () Powder Metal () Assembly () Wood () Purchased () Other



NTBOOK049

(Ilion Research Division presentation contd.)

MAJOR PRODUCT UPGRADING

The major items in this category are:

- 1.
- 2.
- 3.
4. Bolt Action Fire Control Refinements

REM 0028198

REM 0027575



NTBOOK050

(Ilion Research Division presentation contd.)

MAJOR PRODUCT UPGRADING

Bolt Action Fire Control

Although Remington Bolt Action Rifles have Fire Controls that have been in the line for many years, and have proven themselves to be safe and reliable, it was felt that these designs should be looked at and analyzed in light of new processing technology and materials. With this in mind, the following items were investigated. (Slide A23)

1. Improved Trigger Pull
2. Cost Improvement
3. Standardization of Operation

Improved Trigger Pull

The present Triggers at times have a variation in poundspull that can be distracting to the shooter. It was felt that improvements could be made by improving surface finish of mating parts and by the use of better materials. Grinding of surfaces and plating on parts are being investigated. Some redesign for elimination of parts should also help this problem and will now be covered under cost improvements.

Cost Improvements

The first thing to be looked at under cost improvement was simplification of design so that as many parts as possible could be used by each of the various models.

IREM 0028199-1

IREM 0027577-1



NTBOOK051

(Ilion Research Division presentation contd.)

MAJOR PRODUCT UPGRADING

Cost Improvements - Contd. (Slide A24)

The design of the Model 700 and Model 600 Sear Safety Cam is being altered so that the same part will be used in both assemblies and models will be in test by the end of July.

(Slide A25)

Consolidation of design, if and where possible, is being looked at to help cut down on the number of parts. The Trigger of the Models 700 and 600 Fire Control can presently be adjusted for engagement with the Sear Safety Cam and for overtravel. It can also be adjusted for pounds pull when the Action is removed from the Stock. Designs have been altered and test models made to incorporate these features.

This slide shows the present Fire Control and a newly developed test model.

1. Fixed Sear and Trigger engagement

On the present Fire Control this is accomplished by adjustment of the Trigger Engagement Screw. On the proposed assembly, this is accomplished by a shoulder on the Sear that stops the Trigger and gives fixed engagement.

2. Fixed overtravel

On the present assembly, this is accomplished by adjustment of the Trigger Stop Screw. On the proposed model, a shoulder near the rear of the Sear Safety Cam will stop the Trigger overtravel.

IREM 0027578 1



NTBOOK052

(Ilion Research Division presentation contd.)

MAJOR PRODUCT UPGRADING

Cost Improvements - Contd.

3. Trigger externally adjustable

The adjustment of the present assembly is done with the Trigger Adjusting Screw and Spring after removing the Action from the Stock. The proposed Screw and Spring for adjusting pounds pull will be placed in the Trigger so that adjustment can be made without removing the Action from the Stock.

Another feature being tested in this new model is removal of the present Connector.

The first designs will be ready for testing by the end of July. These designs eliminate one screw, a Connector and two drilled and tapped holes. If materials being investigated for these parts do not prove adequate, more expensive material may be required. This could negate some cost improvements; however, improved function in creep and Trigger pull would help outweigh the cost disadvantage.

Standardization of Operation

Presently, all of our shotguns and some of our rifles can be unloaded with the Safe in the "ON" position. The rest of our rifles must be unloaded with the Safe in the "OFF" position. This is, and has been, a normal practice for years on rifles sold to the trade by all manufacturers. Research feels that Remington should offer the customer the option of being able to unload their Bolt Action firearms with the Safe in the "ON" position, while at the same time if possible, retaining the Bolt Lock condition. Designs have been developed and some models built for testing. They have been given to Marketing for their evaluation in order to decide which type of design the customer would prefer.

IREM 0027579 1



NTBOOK053

(Ilion Research Division presentation contd.)

MAJOR PRODUCT UPGRADING

Standardization of Operation - Contd. (Slide A26)

One model is a three-position Safety. The "OFF" Safety position is forward. The middle position is "ON" Safe and the Bolt is locked. The rear position is "ON" Safe but the Bolt can be unlocked.

(Slide A27)

The other model is a Bolt Lock mounted on the Bolt Plug. It is used in conjunction with the present two-position Safety. When the Bolt is closed and cocked, the Bolt Handle is locked in the down position. With the Safe in the "OFF" position, the Trigger can be actuated to fire the rifle and this will automatically unlock the Bolt so that it can be opened. To open the Action with the Safe "ON", the Bolt Lock Lever on the Bolt Plug must be depressed, while at the same time, lifting the Bolt Handle. This can be done easily with a natural motion of the hand and thumb.

Prototypes of these designs are now in test. It is anticipated that final designs will be ready for acceptance by December 1978.

Guns with each of these design features are on display boards and can be examined after the presentations.

XSG

Because the autoloading shotgun market is such an important segment of the total industry, there has been heavy competitive pressure over the past few years. This can readily be seen in the quality and durability of our competitors' latest offerings. While we have not yet lost market share, the effects of the Browning 2000, Winchester SX-1 and Smith and Wesson 1000 will be felt.



NTBOOK054

IREM 002758C-1

cc: C. B. Workman
(no attachments)

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 T₂ 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.



NTBOOK055

TO: J. W. BROOKS
RE: THREE-POSITION SAFETY:
RELEASABLE BOLT LOCK

Page 2
Sept. 14, 1978

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



C

LIMITED DISTRIBUTION

OPERATIONS COMMITTEE

FIREARMS - TRAPS

MINUTE #15 - 1978

P. H. BURDETT
J. P. McANDREWS
E. F. BARRETT
E. HOOTON, JR.
R. W. STEELE
J. G. WILLIAMS
R. A. PARTNOY
E. B. BEATTIE
L. FOX
J. E. PREISER
E. J. GINER
L. L. PRESNELL

R

M. F. DE MAYO
W. J. BOETTNER
H. D. ALBAUGH
J. C. CALLAHAN
R. L. HALL
A. J. HERMANDORFER
G. E. PUCKETT
C. B. WORKMAN
D. S. FOOTE
R. B. HARTMAN
E. M. DOUGLASS

COPY NO. Book

OPERATIONS COMMITTEE ILION DIVISION

SEPTEMBER 20, 1978

PRESENT:

COMMITTEE:

J. P. McANDREWS, CHAIRMAN
E. F. BARRETT
E. HOOTON, JR.
J. G. WILLIAMS
L. FOX
E. M. DOUGLASS, SECRETARY

OTHERS:

H. D. ALBAUGH
J. R. AYERS
W. T. BOETTNER
D. C. BROOKS
J. W. BROOKS
J. J. BURNS
R. J. CHESEBROUGH
M. F. DE MAYO
W. H. FORSON, JR.
R. L. HALL
R. B. HURLEY
E. G. LARSON
J. P. LINDE
J. S. MARTIN
L. L. PRESNELL
L. J. SCOTT
R. S. SWARTZ
C. B. WORKMAN

The meeting convened at 11:45 A.M. at Ilion.

NOT FOR REPRODUCTION
OR FURTHER DISTRIBUTION



NTBOOK057

IREM 0027545 1

G

MODEL 700 - 600

Fire Control Assemblies for these models have been designed and fabricated that can be adjusted for pounds pull within safe limits, without having to remove the Action from the Stock. They also have a fixed Trigger and Sear engagement and a fixed Trigger overtravel. Assemblies are now in the Test Lab.

Four Bolt Locks were designed that will allow the rifles to be unloaded with the Safety in the "ON SAFE" position. Two of the designs were ruled out by the Patent Department because of possible infringement. The other two designs are satisfactory from this standpoint and models are being fabricated for testing. They will be ready in October for the Test Lab and Marketing evaluation.

MODELS 788, 580S, 541S and 540XR

A new design of the Fire Control for these rifles has been completed which will give improved functional performance. It has uniform "ON" and "OFF" safety forces, improved manufacturing tolerances, and a stronger attachment of the housing to the Receiver. Assemblies are in the Test Lab.

A metal Magazine Box for the Model 541S rifles has been designed for improving customer acceptance. A prototype model will be ready in October.

IREM 0027568 1



NTBOOK058

LIMITED DISTRIBUTION

PRODUCT SAFETY SUBCOMMITTEE MEETING
OCTOBER 23, 1978

PRESENT:

SUBCOMMITTEE

E. F. BARRETT, CHAIRMAN
R. A. PARTNOY
E. G. LARSON
E. HOOTON

OTHER

J. H. CHISNALL
J. E. PREISER
A. W. BELL
H. D. ALBAUGH
E. S. McCAWLEY
R. B. SPERLING, ACTING SECRETARY

MOHAWK MODEL 600, ETC.

The John Coates case, involving the accidental discharge of a Mohawk Model 600, was settled today for \$6,800,000. Remington's investigation into the case indicated that it was unlikely that the gun fired without the trigger being pulled, but that it was possible due to the fact that the safety selector and the trigger can be manipulated in a way that subsequently moving the selector to fire can lead to an accidental discharge. In light of the ramifications of this case, the Subcommittee decided to recommend to the President that the Mohawk Model 600, as well as the guns with similar trigger assemblies, Remington Model 600 and 660 and the XP-100, which were manufactured before February, 1975, should be recalled.

Since the guns can be fixed by the substitution of a new trigger assembly, the Subcommittee determined that the most expeditious method to affect this correction would be to refer gun owners to the nearest Remington recommended gunsmith in their area.



Sperling S

OCTOBER 23, 1978

The Subcommittee, therefore, adopted the following recommendations to implement the proposed recall:

1. Marketing should contact selected gunsmiths throughout the country and solicit their aid in the recall. Production should make available adequate supplies of trigger assemblies. Public Relations should prepare a news release to be delivered to the major wire services.
2. Marketing should prepare notices to Remington distributors and dealers soliciting their assistance in tracing gun owners.
3. A message center should be established in Atlanta, Georgia, with a toll-free number, which would refer callers to the nearest recommended gunsmith.
4. Research should begin an examination of all bolt action rifle trigger assemblies, including competitive models, to determine if there was a possible safety problem with other bolt action assemblies which had not yet come to Remington's attention.

(Secretary's Note: Subsequently on October 23, 1978, the President approved these recommendations.)

R. B. Sperling
Acting Secretary

RBS:hss



Sperling. 9

LIMITED DISTRIBUTION

MEETING CONCERNING RECOMMENDED GUNSMITHS
NOVEMBER 1, 1978

PRESENT:

SUBCOMMITTEE

E. F. BARRETT, CHAIRMAN
E. G. LARSON

OTHER

H. K. BOYLE
R. B. SPERLING, ACTING SECRETARY

MOHAWK MODEL 600, ETC.

After discussion concerning success of Remington Representatives' trip to Texas, it was determined that 10 to 15 additional Representatives should be sent across the country to visit all of the recommended gunsmiths participating in the Mohawk 600 recall. Representatives will be selected from Ilion personnel, who will be briefed on the questions and problems they might expect to encounter in the field.

R. B. Sperling
Acting Secretary

RBS:hss



NTBOOK061

Sperling 15

M

File NBAR

CONFIDENTIAL

Green Valley, Arizona
Jan. 15, 1982

To Clark Workman

From Wayne E. Leek *Leek*

Subjects: December 1981 report on Silhouette activities
and an outline on ideas to support a new bolt
action line of rifles and shotguns.

Matches attended: 22 RF Silhouette
Dec. 20 Nogales Rifle Club
Match Winner Leek 22/40
24/40
Dec. 27 Tucson Rifle Club
Match Winner Leek 27/40
29/40

Jan. 1982 report on more details supporting new
bolt action designs.

Suggestions to support new bolt action rifle designs:

I Analysis of M700 CF rifle

- A. Positive features
1. Superior strength.
 2. Adequate accuracy.
 3. General appearance satisfactory.
 4. Complete range of popular calibers.
 5. Priced competitively.
 6. Right and left-hand models.
- B. Negative features
1. Weak recoil bracket.
 2. Ring extractor (bad reputation).
 3. Round receiver (unreliable bedding).
 4. Trigger adjustment insecure and weak.
 5. Lock time (slow).
 6. Manual safety (inadequate).
 7. Scope base mounting (inadequate).
 8. Match rifles (not competitive).

MUR 0007698

II Proposed foundation for improved rifle.

- A. New bedding and recoil bracket.
- B. Redesigned claw extractor.

Y
ICAM 0002435 1
1 DF 0002436 1

NTBOOK161

13-6

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

PLAINTIFF'S
EXHIBIT

Bridgeport, Connecticut
November 6, 1978

R. R. INGHAM
FINANCE
E. I. DU PONT DE NEMOURS & CO., INC.
WILMINGTON, DELAWARE

COATES V. REMINGTON

You have inquired as to Remington's position with respect to the Mohawk 600 bolt action rifle.

Remington first became aware in 1975 that the safety selector and the trigger on the Mohawk 600 could be manipulated in such a way that subsequently moving the safety selector to the fire position could result in accidental discharge. The first complaint calling this condition to our attention was received early in 1975 from an individual in Texas who accidentally discharged his gun by putting it in the "trick" condition (safety selector is put in a mid-position between safe and fire detents of this two-position safety, trigger is pulled and subsequently the safety selector is pushed to fire position and the gun discharges).

Upon receipt of this complaint, which did not involve a personal injury, Remington conducted a quality audit on a sampling of Mohawk 600's obtained from wholesalers throughout the country, and it was determined that a significant percentage of these guns could be placed in the trick condition. Remington's Product Safety Subcommittee met several times on this matter while the audit was being conducted. At the completion of the audit, and after evaluating the results, the Product Safety Subcommittee concluded that the situation did not present a safety problem.

It was believed that the chances of a shooter putting his gun in the trick condition, intentionally or by accident, was extremely remote, let alone having the loaded gun pointing at someone while the safety selector of the gun was being taken off safe, thereby violating the most basic rule in hunting. Absence of complaints on the problem over the 12 years this gun had been on the market supported this conclusion. Remington did correct the condition



NTBOOK062

Jul

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

Copy to E. Schall 11/6
(As per RAP)

13-L
PLAINTIFF'S
EXHIBIT

Bridgeport, Connecticut
November 6, 1978

R. R. INGHAM
FINANCE
E. I. DU PONT DE NEMOURS & CO., INC.
WILMINGTON, DELAWARE

COATES V. REMINGTON

You have inquired as to Remington's position with respect to the Mohawk 600 bolt action rifle.

Remington first became aware in 1975 that the safety selector and the trigger on the Mohawk 600 could be manipulated in such a way that subsequently moving the safety selector to the fire position could result in accidental discharge. The first complaint calling this condition to our attention was received early in 1975 from an individual in Texas who accidentally discharged his gun by putting it in the "trick" condition (safety selector is put in a mid-position between safe and fire detents of this two-position safety, trigger is pulled and subsequently the safety selector is pushed to fire position and the gun discharges).

Upon receipt of this complaint, which did not involve a personal injury, Remington conducted a quality audit on a sampling of Mohawk 600's obtained from wholesalers throughout the country, and it was determined that a significant percentage of these guns could be placed in the trick condition. Remington's Product Safety Subcommittee met several times on this matter while the audit was being conducted. At the completion of the audit, and after evaluating the results, the Product Safety Subcommittee concluded that the situation did not present a safety problem.

It was believed that the chances of a shooter putting his gun in the trick condition, intentionally or by accident, was extremely remote, let alone having the loaded gun pointing at someone while the safety selector of the gun was being taken off safe, thereby violating the most basic rule in hunting. Absence of complaints on the problem over the 12 years this gun had been on the market supported this conclusion. Remington did correct the condition



NTBOOK062

Jul

November 6, 1978

on newly manufactured guns and did test and modify, if necessary, the guns sent into Remington for repair.

The next and only other complaint of this nature received by Remington concerning the Mohawk 600 was the Coates case. John Coates alleged that he was injured when his son, in the process of unloading his Mohawk 600 in the back seat of their jeep, pushed the safety selector to the fire position (safety must be in fire position before this Model can be unloaded) and the gun discharged.

Given the intricate maneuvering with the safety and the trigger that is necessary to set up the trick condition, we believe, although the Coates gun is one that can be tricked, that the accident most likely occurred because the boy inadvertently had his finger on the trigger when he took the safety off safe. Our ~~believed that there was a substantial risk of high compensatory and punitive damages being awarded, and consequently settled the case against Remington's recommendation.~~

Once the allegations of the case became public and the settlement given wide publicity, Remington had no other choice, regardless of our beliefs as to cause of the Coates accident, but to recall the Mohawk 600, and other models having the same trigger assembly (Remington Model 600 and 660 rifles and the XP-100 pistol). The day the settlement was announced, Remington was in the process of planning the recall, which was announced the following day.

It is believed that about 200,000 guns are involved. Remington issued news releases to the wire services, which contained a toll free number that could be called for recall information. A message center was set up in Atlanta, Georgia, which would refer callers to the closest recommended gunsmith capable of repairing the caller's gun. WATS lines were set up at Remington locations in Bridgeport, Connecticut, and Ilion, New York, to handle complaints connected with the recall. Remington personnel were dispatched to Texas, the origin of the majority of calls being received at the message center, in order to deliver replacement trigger assemblies and to instruct gunsmiths how to make the replacement. Remington representatives will visit other gunsmiths throughout the country reviewing gunsmith repairs.


All of our wholesalers who sold the suspect guns will be contacted for a list of the retail outlets to whom they sold the recall models. The dealers will be asked to review their records for the names and addresses of the customer to whom they sold the gun. Each such customer will then receive from Remington written notification of the recall. Similar appropriate steps are being taken in Canada and in other foreign countries where these guns were sold. It is expected that this recall campaign will take somewhere between 6 months to a year to complete.



NTBOOK063

November 6, 1978

To date, the Atlanta message unit has received about 5,000 calls. We have received responses from every state in the Union, which indicates our current releases have been given broad circulation. Remington is committed to a full, widely advertised recall, and we believe, at least from the initial public response, that it will be successful.


R. B. Sperling
Associate Counsel

RBS:hss



NTBOOK064

November 6, 1978

on newly manufactured guns and did test and modify, if necessary, the guns sent into Remington for repair.

The next and only other complaint of this nature received by Remington concerning the Mohawk 600 was the Coates case. John Coates alleged that he was injured when his son, in the process of unloading his Mohawk 600 in the back seat of their jeep, pushed the safety selector to the fire position (safety must be in fire position before this Model can be unloaded) and the gun discharged.

Given the intricate maneuvering with the safety and the trigger that is necessary to set up the trick condition, we believe, although the Coates gun is one that can be tricked, that the accident most likely occurred because the boy inadvertently had his finger on the trigger when he took the safety off safe. Our believed that there was a substantial risk of high compensatory and punitive damages being awarded, and consequently settled the case against Remington's recommendation.

Once the allegations of the case became public and the settlement given wide publicity, Remington had no other choice, regardless of our beliefs as to cause of the Coates accident, but to recall the Mohawk 600, and other models having the same trigger assembly (Remington Model 600 and 660 rifles and the XP-100 pistol). The day the settlement was announced, Remington was in the process of planning the recall, which was announced the following day.

It is believed that about 200,000 guns are involved. Remington issued news releases to the wire services, which contained a toll free number that could be called for recall information. A message center was set up in Atlanta, Georgia, which would refer callers to the closest recommended gunsmith capable of repairing the caller's gun. WATS lines were set up at Remington locations in Bridgeport, Connecticut, and Ilion, New York, to handle complaints connected with the recall. Remington personnel were dispatched to Texas, the origin of the majority of calls being received at the message center, in order to deliver replacement trigger assemblies and to instruct gunsmiths how to make the replacement. Remington representatives will visit other gunsmiths throughout the country reviewing gunsmith repairs.


All of our wholesalers who sold the suspect guns will be contacted for a list of the retail outlets to whom they sold the recall models. The dealers will be asked to review their records for the names and addresses of the customer to whom they sold the gun. Each such customer will then receive from Remington written notification of the recall. Similar appropriate steps are being taken in Canada and in other foreign countries where these guns were sold. It is expected that this recall campaign will take somewhere between 6 months to a year to complete.



NTBOOK063

November 6, 1978

To date, the Atlanta message unit has received about 5,000 calls. We have received responses from every state in the Union, which indicates our current releases have been given broad circulation. Hemington is committed to a full, widely advertised recall, and we believe, at least from the initial public response, that it will be successful.


R. B. Sperling
Associate Counsel

RES:hss



NTBOOK064

BUSINESS MEETING

INVESTMENT CASTING REVIEW - Contd.

RESEARCH PERFORMANCE

Research reported on the status of the items on the Semi-annual Firearms Development Schedule. The item numbers are as listed on the schedule.

1. Model 700 - Model 600 Fire Control Improvements

Sample Fire Controls are in test. A meeting is scheduled with Marketing on 11/14 to review the overall concept of Bolt Action Rifle Safeties.

3. Model 600 Carbine Styling

Samples will be supplied to Marketing for consumer surveys by December 1.

4. Model 788 Restyled

Two samples will be provided for Marketing review by December 1.

5. Model 788 New Calibers

Prints and updated parts lists have been sent to Production for the 30-30 Caliber.

The prototype of the 22 Hornet is scheduled to be completed by December 15.

IREM 0028194-1

IREM 0027540-1



NTBOOK065

CENTER FIRE RIFLES - contd.MODEL 700-600 FIRE CONTROL IMPROVEMENTS

Research reported that several prototype Fire Controls have been made that allow the user to open the gun with the Safety on, and yet still include the Bolt lock feature. Two of these have been given to Marketing for use with focus panels. Work is in progress to develop a revised design of a retrofittable Fire Control that will block both the Hammer and Sear. Research is also conducting a survey of competitive guns, and are developing a position on exactly what Bolt Action Safeties should do. This report should be ready for review at the January meeting.

MODEL 600 RESTYLING

Research reported that five (5) models, with various cosmetic changes to the Action and Stock, have been delivered to Marketing for a focus panel.

MODEL 788 RESTYLED

Research reported that a new Stock has been fabricated and accepted by Marketing. The drawings will be finished by December 15, and prints will be furnished to Production.

Further discussions are to be held with Marketing on December 18, about cosmetic changes on the Action.

MODEL 788 NEW CALIBERS

Research reported that updated drawings for the 30-30 caliber have been completed and turned over to Production for cost estimating. A prototype of the 22 Hornet is being chambered and will be ready by December 15.

Production reported that engineering estimates have been completed for the 30-30 caliber showing various process alternatives. Economics are being prepared and should be available in January.



NTBOOK066

IREM 0027537 1

OPERATIONS COMMITTEE

DECEMBER 13, 1978

**MODEL 700-600 FIRE CONTROL
IMPROVEMENTS**

**WORK IS IN PROGRESS TO
DEVELOP A REVISED DESIGN OF
A RETROFITTABLE FIRE
CONTROL THAT WILL BLOCK
BOTH THE HAMMER AND SEAM.**



NTBOOK067

CENTER FIRE RIFLES - Contd.MODEL 700 CLASSIC - Contd.

Currently, this process is being used on all Classics and will be introduced, across the board, on all Model 700's by mid-February.

Samples of new and old style Classics were shown to demonstrate the appearance difference of the clean Barrel and the improved metal finish.

SEMI-ANNUAL FIREARMS - TRAP DEVELOPMENT SCHEDULE

The items on the Development Schedule were reviewed.

ITEM 1 - BOLT ACTION FIRE CONTROL IMPROVEMENTS

Research reported that a program has been instituted to design new Fire Controls for the entire Bolt Action line. Three Fire Controls have now been developed that allow the Safety Arm to be in the "ON" position for unloading the rifle. Two have Bolt Locks that are independent of the Safety Arm. These Fire Controls are on prototype rifles that are to be shown to a Marketing focus panel. Research also has another design on the drawing board that includes a Sear Block and Trigger Block. It should be possible to define model requirements by March.

ITEM 2 - BOLT ACTION CARBINE STYLING

Research reported that six (6) rifles with new carbine styling have been furnished to Marketing for a January focus panel. Two (2) of these models were reviewed with the Committee. These models included some of the following proposed features:

- . Restyled Stock
- . Walnut or Birch wood
- . Improved wood finish
- . Checkering
- . Sling Strap and Swivel
- . New Sights
- . New metal Trigger Guard
- . New Bolt Handle
- . Improved metal finish



NTBOOK073

REM 0028074 1

Feb. 13, 1979

CENTER FIRE RIFLES - contd.MODEL 7400 - 7600 - contd.BOLT ACTION FIRE CONTROL

Research reported that prototype rifles with several different Safeties and Bolt locks have been shown to focus panels by Marketing. The results of the survey are being compiled. Model requirements will be defined in March.

April 18, 1979

BOLT ACTION FIRE CONTROL

Research reported that they plan to meet with the Product Safety Committee this month to review the results of the recent focus panel interviews on Bolt Action Safeties and Bolt Locks.

With regard to the program to design a new Bolt Action Safety, Research's approach is based on separating the Bolt Lock from the Safety, so that they can be operated independently. The focus panel results indicate that the customer generally prefers this approach as well.

*Report of
Gediman 3/19*

May 16, 1979

CENTER FIRE RIFLES - Contd.BOLT ACTION FIRE CONTROL

NTBOOK074

Research reported that top priority is on the Bolt Lock design separate from the Safety. Further information should be available by the June meeting on the direction Research will take. Research

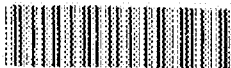
the Gerdman Research Group, Inc.

26 Sixth Street
Stamford, Connecticut 06905
203-348-0009

MARKET EVALUATION, POSITIONING,
AND FEATURIZATION
OF A
NEW BOLT ACTION CARBINE STYLE
CENTER FIRE RIFLE

For: Remington Arms Company, Inc.

March, 1979



NTBOOK075



Holbrook
512
4632/97

that feature (and thus without whatever price increment the grip cap would entail).

The recoil pad of Model M is favored, and could be adopted with reasonable confidence, though Models V, S, and R would likely also be acceptable.

Checkering is overwhelmingly preferred, with some slight favor for Model Q which has the checkering all around the fore-end. It appears that checkering (unlike such features as grip cap, bolt jewelry, or front bead color) is important enough to consumers to support a price increment. Pressed checkering is preferable to no checkering, but would not support as high a price increment as cut checkering.

Walnut is the preferred wood with Model V being the highly favored color and (non-)gloss level. A straight, not dog-legged, bolt handle contour with a knurled knob (Model V) is significantly more popular, as is a non-blued, jeweled bolt body.

After much discussion, the safety type of Model S (2-position safety with a separate push button bolt release mechanism located on the side) seems to win on the basis that it has the advantages of all or any of the other safety types, without the disadvantages.

#

#

#



NTBOOK076

pay between \$5.00 and \$10.00 for it:

~~"If it's a good manufacturer it should be standard with the gun."~~

~~"I think it looks nice but wouldn't pay more than \$10.00 for it. \$5.00 is more reasonable."~~

~~"I prefer jewelery but I wouldn't pay extra for it."~~

Type of Safety

The 2-position safety with a separate bolt release mechanism is clearly approved (in the S version, though, not the M). In effect, it offers the advantages of any or all of the others, without the disadvantages:

"I don't like the 3-position safety -- there's more to go wrong."

"I prefer a separate release on the other side of the bolt away from the safety location. This would never foul up."

"I like the bolt release completely separate from the safety -- less complications."

Between these two 2-position safetys with separate bolt release mechanisms, Model S with the button type bolt release is preferred much more strongly than M. The "rocking lever" treatment of M is actually the least preferred safety (of any and all types) in the entire test:

"It's a brush catcher. And it takes (too) little pressure to release it."



Between the two types of conventional 2-position safetys, opinion is divided, with just a slight edge for the type in which the bolt is locked down on safe. Each type has its supporters, though.

Model V (bolt locked down on safe):

"I have three teenage boys and I don't want them to have any choices."

Model Q (bolt can be opened on safe):

"I don't think most people find it that important for the bolt to lock down -- as long as the safety is still on and it won't fire. That's the main thing. With Q you are able to load and unload with the safety on."

In addition to the personal safety aspects of the above viewpoints, there is some preference for the lock-down treatment on grounds that it prevents accidental snagging and lifting of the bolt on a twig, unbeknownst to the hunter, thus possibly resulting in a missed opportunity.

There is some favor, as well, for the 3-position safety, but others feel it is too complicated -- just another thing to go wrong:

"I don't like the 3-position safety. There's more to go wrong. The simpler the better."

After a demonstration, however, several decided they like it:

"Maybe with a 3-position safety there is less of a possibility that the gun would go off when loading it."



"When I'm hunting with lots of people getting in and out of a car, I don't want it to go off. The 3-position safety would avoid this."

However, with all the different choices, there is a clear consumer preference in this research for a safety that has a separate bolt release mechanism that lets you "have it your way," whatever that way may be.

Location of Safety

The shroud location, as on the Winchester Model 70 fares poorly. The side locations on the test products are much preferred, especially Model V. A few respondents mention preference for the Remington Model 700 location.

Overall Preference

Respondents clearly prefer Model V by far when asked about overall preference; and this is supported by their strong preferences for Model V's fore-end contour design, bolt handle contour and styling, wood color, wood gloss, and location of safety. However, not too much importance should be attached to this particular finding, since the more detailed results on features, as discussed herein, suggest that some sort of "composite" model is called for, drawn from favored aspects of the various prototypes.



April 18, 1979

CENTER FIRE RIFLESBOLT ACTION FIRE CONTROL - Contd.

The present design has a mechanism to block the Trigger as well as the Sear. Research is also considering using an interceptor lever to support the Sear if the Trigger fails to reposition itself properly.

Research further reported that, if practical, they would like to design the Safety so it can be placed on "safe" at any point in the firing and cocking cycle. In the present rifle, this is impossible as the Sear cannot be blocked by the Safety because the Firing Pin Head is in the way.

Research plans to begin layouts of two designs in May, one of which will satisfy the preceding requirements, and begin fabricating model parts in June. It now appears that a prototype Fire Control will be ready for testing in September.

BOLT ACTION CARBINE

Research reported that the focus panel report has been received by Marketing, and a copy furnished to Research. Research is now waiting on Marketing's decision on what combination of features should be included in the final design prototype.

Marketing reported that they are presently working on a comprehensive Bolt Action marketing study that includes a carbine for future introduction. Based on the findings to date, Marketing sees a market position, and opportunity for Remington, for a carbine between the Model 788 and Model 700 ADL. When their Bolt Action marketing strategy is complete, Marketing will give a full report to the Committee.

Marketing's recommendations concerning desirable marketing features for a Bolt Action Carbine will be finalized and given to Research before the end of the month.



NTBOOK080

IREM 0028057 1

PRODUCT SAFETY SUB-COMMITTEE

MAY 16, 1979

CENTER FIRE RIFLES

BOLT ACTION FIRE CONTROL

RESEARCH REPORTED THAT TOP PRIORITY IS ON THE BOLT LOCK DESIGN SEPARATE FROM THE SAFETY. FURTHER INFORMATION SHOULD BE AVAILABLE BY THE JUNE MEETING ON THE DIRECTION RESEARCH WILL TAKE. RESEARCH EMPHASIS WILL BE ON THIS DESIGN, AND IT WILL SLOW, BUT NOT STOP.



NTBOOK081

REMINGTON ARMS COMPANY, INC.

PETERS
SUPPLY

MANUFACTURERS OF
SPORTING FIREARMS, AMMUNITION

SPORTING FIREARMS, TRAPS, ILION, NEW YORK
AMMUNITION, BRIDGEPORT, CONNECTICUT
IONOKE, ARKANSAS

TRAPS

TARGETS

CABLE—HARTLEY, BRIDGEPORT

BRIDGEPORT, CONNECTICUT 06602

TELEF 964-201 STRATFORD, CONN.

PETERS CARTRIDGE DIVISION
BRIDGEPORT, CONNECTICUT
TARGETS, FINDLAY, OHIO
ADA, OKLAHOMA
ATHENS, GEORGIA

R. L. ST. JOHN
SUPERVISOR-FIELD SERVICE
FIREARMS

REMINGTON ARMS COMPANY, INC.
ILION, NEW YORK 13357

June 20, 1979

TO: REMINGTON RECOMMENDED GUNSMITHS

We have been making an in depth study to determine the cause of all complaints on Remington firearms that are safety related. To make this study as complete as possible, we seek your cooperation.

In the future, would you please not attempt any repairs on a Remington firearm returned to your shop with a safety related complaint. Instead, please return, at our expense, the firearm in question to:

Arms Service Section
Remington Arms Company, Inc.
Ilion, New York 13357
Attn: Mr. Dennis J. Sanita

Please include a note with each firearm, fully explaining the customer's complaint. The type of complaint involved would be anything relative to the gun's safety, or any complaint which would bear on the shooter's or a bystander's safety, such as jar off, firing on closing, automatic firing, etc.

If there is any question as to whether or not a gun should be returned to us for examination, please call Mr. James A. Stekl on our toll free numbers:

Outside N.Y. State 1-800-448-5790
N.Y. State only 1-800-962-7211

for a final decision. When our examination has been completed, you will be advised immediately as to our findings by Mr. Stekl, and arrangements made at that time for any repair required.

Again, we ask for your fullest cooperation, and if you have any questions, please call immediately.

Cordially,

R.L. St. John, Supervisor
Field Service



NTBOOK082

SPECIAL NOTICE

PLEASE READ THIS PAGE BEFORE PLACING ANY PARTS ORDERS

Remington Arms Company, Inc., has a policy concerning the sale of certain firearms parts. These parts are divided into three categories:

- o Not for sale - factory installation only.
- o Sold only to gunsmiths with Federal Firearms Licenses on file with Remington.
- o Sold only to Remington Recommended Gunsmiths.

The following table lists all models and parts that are subject to these Conditions of Sale:

<u>Model</u>	<u>Part</u>	<u>Condition of Sale</u>
600, 660 Mohawk 600 XP-100	Trigger assembly All trigger assembly component parts Receiver assembly	Not for sale - factory installation only
700, 40XB 40XC 40XR	Trigger assembly All trigger assembly component parts Receiver assembly	Not for sale - factory installation only
1100, 870 58, 878 552, 572	Receiver assembly	Sold only to gunsmiths with FFL on file with Remington
	Trigger assembly with connectors	Sold only to Remington Recommended Gunsmiths
742, 760	Receiver assembly	Not for sale - factory installation only
	Trigger assembly with connectors	Sold only to Remington Recommended Gunsmiths
788	Trigger assembly All trigger assembly component parts Receiver assembly	Not for sale - factory installation only
581, 582 591, 592 540X, 541S	Trigger assembly All trigger assembly component parts Component parts Receiver assembly	Not for sale - factory installation only



NTBOOK083

FIREARMS LONG RANGE DEVELOPMENT PROGRAM - Contd.

NTBOOK084

LR

*This follows 4-18-79
note that RD to meet
w/ P55c*

Before getting into the individual reports, the Manager of the Ilion Research Division highlighted two items not scheduled for formal presentation - Bolt Action Rifle Fire Controls,

On the recommendation of the Product Safety Committee, Ilion Research is concentrating design efforts on relocating the Bolt Lock of the M/700, and separating its operation from the mechanism of the Safety. The objective is to provide the ability to unload the rifle with the Safety lever in the "ON" position.

*P55c
safe
process*

Two engineering prototypes of the new Bolt Locks should be ready for review with Marketing in early August. In addition, new Fire Control designs that allow the shooter to put the Safety "ON" at any time during the firing cycle, will follow shortly thereafter.

MINUTE #17 - 1979

-17-

October 18, 1979

CENTER FIRE RIFLESMODEL 700 BOLT LOCK
(1981 Introduction)

Research reported that two designs for a separate Bolt Lock are progressing. A model of each has been fabricated and assembled, but require revisions. The next samples of both designs will be ready for review in December.

MODEL 700 FIRE CONTROL IMPROVEMENT
(1982 Introduction)

Research reported that progress is continuing on both Fire Control designs. Detailing on one design is about 70% complete, with final completion in two weeks. The remaining design and detailing will take an additional 3 - 4 weeks. A completed prototype of both designs will be ready in January.

It was commented that Browning has now begun using a security mark on their products indicating that it has passed a battery of safety checks.

OPERATION COMMITTEE

DEVELOPEMENT PROGRAM

September 1979

M/700 BOLT LOCK DESIGN

The bolt lock is being designed to allow the user to lock the bolt handle independent from the fire control.

Two (2) designs are in process, one is now fabricated and assembled. The other is in the process of being fabricated. Both systems will be ready to review by the first of October.

M/700 FIRE CONTROL DESIGN

The concept of this design is to allow the operation of the safety to function in any condition.

Two (2) designs are in process of being detailed for Model Shop prototypes. Some parts have been completed. One design is scheduled to be complete in mid October, the second in January of 1980.

JSMartin:bd
Ilion Research Division
9-12-79

REM 0034023



NTBOOK085

oi

W. A. WARE

Requested By	Changed By	Date
PE+C	SA FAN#11	10-23-79
Originating Date	Transmittal Date	
	11-8-79	

Part Name / List

Part No.

700

Connector

C-1946

1946.

Dwg. No.	Rev. No.	Design Change
U-19461	16	ADDED NOTE: "PART MUST PASS FREELY BETWEEN PARALLEL SURFACES .1725 MAX APART."

() Functional Change
() Safety Mechanism Revision
() Appearance

001725

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

W. A. FANELL:

Designer Signature

Reason for Change: Requested by P.E-C to inspect width of part by use of width gage.

CCW EXHIBIT ~~11~~
WITNESS Weymann
RPTR/N.P.: Wife
DATE 10-6-83

Disposition of Parts on Hand: (check below)

() Scrap () Alter (✓) Use Inventory () RD 6589 Attached

APPROVED

N'TBOOK086

CENTER FIRE RIFLESMODELS 7400 - 7600 - Contd.MODEL 700 BOLT LOCK
(1981 Introduction)

Research reported that layouts of newly suggested designs are being made. Assembly of previous designs is scheduled for mid-December.

MODEL 700 FIRE CONTROL IMPROVEMENTS
(1982 Introduction)

Research reported that detailing of both systems have been completed, and 98% of the parts have been returned from the Model Shop. Assembly is anticipated for the first of the year. Prototypes will be available for review with the Committee at the January meeting.



NTBOOK087

[REM 0028327]

[REM 0029016]

PSSC
Jan. 22, 1980

-2-

Pending litigation involving claims against guns subject to recall was discussed. The current status of Remington's audit on the Model 700 was also presented, which showed that from June 13, 1978, to January 15, 1980, 3,376 Model 700's returned to Ilion for service were tested for the "trick" condition. Of this sample, 35 guns failed the "trick" test. But of these 35 guns, 22 guns were trickable because they had been altered or damaged out in the field. This means that the audit to date indicates that only about .4% of the audited Model 700's were susceptible to tricking due to causes not attributable to customer misuse. It is also known that only .4% of the guns manufactured before 1975 are so susceptible.

Since January of 1979, Ilion has added a new test to the Model 700 audit which involves turning the returned Model 700 on its back and inserting a screwdriver into the trigger assembly and attempting to trap the connector so that it cannot move freely back under the sear. In this condition, the gun will fire when the safety lever is moved to the "fire" position. This has been termed "firing off safe". Since the inception of the new test, 38 returned Model 700's were found to "fire off safe", but of this number, only 9 would do so because of causes not attributable to alteration or damage in the field--4 of which were guns manufactured before 1975.

Even if you combine the number of "trickable" guns with the number of guns that will "fire off safe", the figures indicate that approximately .6% of the Model 700's currently in the field will be susceptible to "tricking" or "firing off safe".



NTBOOK088

PRODUCT SAFETY SUB-COMMITTEE

JANUARY 22, 1980

**35 GUNS FAILED THE "TRICK"
TEST**

*** * * * ***

**38 RETURNED MODEL 700'S
WERE FOUND TO "FIRE OFF
SAFE"**



NTBOOK089

DESIGN CHANGE REQUEST (DCR)

Sheet 1 of 1

OR

SUBMITTAL OF DRAWINGS / PARTS LIST

Requested By	Changed By	Date
J. W. Brack	S. A. FANELL	1-30-80
Originating Date	Transmittal Date	
	2-1-80	

Model	Part Name / DIM	Drawing No.	Part No.
700	TRIGGER	C-15280	15280
700	SCAR SAFETY CAM	C-15666	15666

Dwg. No.	Rev. No.	Design Change
-15280	19	changed dimension from 1.076 to 1.077
-15280	20	changed dimension from .973 to .969
-15666	16	ADDED .197 DIM TO PRINT
-15666	17	REMOVED .346 DIM FROM PRINT

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.

☒ Other

CBW EXHIBIT 6A
WITNESS Norman
RPTR/N.P.: Wife
DATE 10-6-83

S. A. FANELL

Designer Signature

Reason for Change: Reduce overall tolerances of parts.

Closer fit of connector to trigger. No overall dimensions changed.

001733

Disposition of Parts on Hand: (check below)

☐ Scrap☐ Alter☐ Use Inventory☐ RD 6589 Attached

NTBOOK090

FEBRUARY 20, 1980

MODEL 700 FIRE CONTROL IMPROVEMENTS

**RESEARCH REPORTED THAT THE TWO
FIRE CONTROL DESIGNS HAVE BEEN
ASSEMBLED. THE DESIGN WITH A
SEAR BLOCK SAFETY IS COMPLETE
AND READY FOR TESTING. THE DESIGN
WITH A SEAR AND TRIGGER BLOCK
SAFETY IS STILL IN THE REVISION
STAGE. ALL COMPONENTS NECESSARY
FOR THE SECOND MODEL HAVE BEEN
MADE EXCEPT FOR THE SAFETY ARM.
SCHEDULED ASSEMBLY IS MID-MARCH.**

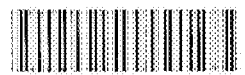


NTBOOK092

FEBRUARY 20, 1980

MODEL 700 BOLT LOCK

THE CHAIRMAN COMMENTED THAT, BECAUSE OF THE PURPOSE OF THIS CHANGE, IT IS IMPORTANT TO EMPHASIZE THIS ITEM. RESEARCH FELT THAT THEY COULD HAVE A PROTOTYPE AVAILABLE IN MAY.



NTBOOK093

CENTER FIRE RIFLESMODELS 7400 - 7600 - Contd.MODEL 700 BOLT LOCK
(1981 Introduction)

Research reviewed a design concept for a selective Bolt Lock that is independent of the Fire Control. This system allows the shooter the freedom to choose the type of Bolt Lock operation he desires and to operate the Safety in any condition the rifle may be in. This means the Bolt may be open or closed, and the rifle may be fired or unfired.

Exhibit 4-2 shows the Safety in the "ON SAFE" position with the Bolt locked and the Bolt handle down.

Exhibit 4-3 shows the Safety in the "ON SAFE" position, the Bolt unlocked and the Bolt handle raised. Here the shooter depresses the release with his thumb to unlock the Bolt.

Exhibit 4-4 shows the Safety in the "ON SAFE" position, the Bolt unlocked with the Bolt handle raised and starting back to a load and unload position.

Exhibit 4-5 shows the Safety in the "OFF SAFE" position, the Bolt locked and the gun ready to fire.

Exhibit 4-6 shows the Safety again in the "OFF SAFE" position. The gun has been fired and the Bolt handle can be raised to load or unload the next round without having to depress the release.

MODEL 700 FIRE CONTROL IMPROVEMENTS
(1982 Introduction)

Research reviewed the operation of the improved Model 700 Fire Control. This Fire Control has been designed in conjunction with the new Bolt Lock system.

Exhibit 4-7 shows the Fire Control in a ready to fire condition. Note that the Safety, Trigger and Interceptor have a common pivot. This is done to reduce accumulated manufacturing tolerances of these critical components. Also note the Sear is supported by two independently moving parts.

IREM 0028325 1

IREM 0028027 1



NTBOOK094

CENTER FIRE RIFLESMODEL 700 FIRE CONTROL IMPROVEMENTS - Contd.

Exhibit 4-8 shows the Fire Control with the Safety in the "ON SAFE" position. There is no change in the position of the related components.

Exhibit 4-9 shows the Safety in the "ON SAFE" condition with the Trigger displaced. This illustrates that even when the Trigger is pulled with the Safety in the "ON SAFE" position, there is still support under the Sear and the shooter still has control of firing.

Exhibit 4-10 is a blown up section, showing the Trigger displaced and the Interceptor bar supporting the Sear.

Exhibit 4-11 shows the Safety back to a ready-to-fire condition and the Trigger displaced. It will still fire with a near normal Trigger pull.

Exhibit 4-12 shows the Safety in the "ON SAFE" condition to depict the ability to put the gun in a safe condition after being fired by blocking the Sear. At present, this is the only Fire Control we know of which allows this to be done.

BOLT ACTION CARBINE
(1982 Introduction)

Research reported that five rifles each, in four calibers have been completed. Four handmade Stocks have been completed. Accuracy testing is satisfactory. Functional testing has not been completed.

Work is progressing on schedule for twenty-five 7MM-08 rifles for a Marketing test. Six Stocks have been received from Fajan and were inspected. The vendor has been notified and will furnish the other nineteen Stocks on schedule.

The prototype Floor Plate Latch designed for the original rifle worked well; however, because a new learning process would be required to operate it, a more convenient alternate design has been made. This new prototype works satisfactorily, but some revisions have been made to further simplify it and reduce costs. A model has been made and shown to Marketing.

Cost estimates for this model have been delayed until May. If re-design for cost purposes is required, the development date will be tight.



NTBOOK095

IREM 002800R 1

CENTER FIRE RIFLESMODEL 700 BOLT LOCK
(1981 Introduction)

Research reported that model drawings are complete for the latest Bolt Lock design, reviewed at the April meeting, and have been forwarded to Process Engineering for cost estimates. They requested Marketing approval to transmit the design, explaining that potential appearance changes should not affect the cost. Marketing responded that they are satisfied with the appearance of the latest design.

Production reported that work has already begun on the cost estimate.

CENTER FIRE RIFLESMODEL 700 FIRE CONTROL IMPROVEMENTS
(1982 Introduction)

Research reported that work is proceeding on three separate designs. New components for the original design are being fabricated. A Fire Control of the second design will be ready for assembly the week of May 26. A third design is in progress with parts being fabricated in the Model Shop. This third design will use existing Model 700 components, adding features of the Trigger Block and Sear operation from the first two designs. Tests will begin in mid-June.

In response to a question from the Chairman, Research indicated that none of the designs have been reviewed with Production or Marketing. The Chairman asked that this program be reviewed again in July.



DCR

11216

DESIGN CHANGE REQUEST (DCR)

Sheet

of

OR

() TRANSMITTAL OF DRAWINGS / PARTS LIST

Requested By	Changed By	Date
J.W. Brooks	S. FAVELLI	7-7-80
Originating Date	Transmittal Date	
	7-10-80	

Model	Part Name / DC	Drawing No.	Part No.
700	Seat Safety CAM	C-15666	15666

Dwg. No.	Rev. No.	Design Change
C-15666	19	REMOVED PART Usage to Model 600 and 660
"	20	REMOVED DIMENSION ¹⁴⁷ 197
"	21	Added DIMENSION ¹⁵³ 170

Classification of Change

- () Functional Change
 (✓) Safety Mechanism Revision
 () Appearance

CBW EXHIBIT 5

WITNESS

RPTR/N.P.: *with*

DATE

10-6-83

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.

() Other

S. A. FAVELLI

Designer Signature

Reason for Change: Reduction of tolerance on part to
 IMPROVE PRODUCT - MANUFACTURED

001752

Disposition of Parts on Hand: (check below)

() Scrap () Alter () Use Inventory () RD 6589 Attached



NTBOOK098

July 17, 1980

"Chart XXXVI shows Category I projects, intended to put us in a more secure position with respect to product liability:

1. The Model 700 bolt lock has been redesigned to operate independently of the safety and to allow the shooter to reload his gun with the safety in the "ON" position. Production costs are being developed by Industrial Engineering and the final version is now in test.
2. Three different designs of the M700 Fire Control are being considered. Two are ready for release to the Test Lab and one is still on the drawing board. Upon successful completion of the Model 700, work will continue to develop similar mechanisms for all of our bolt action rifles.
3. The Model 788 safety is being redesigned to prevent accidental release of the safety lever. To do this, a more uniform detent is needed and the size of the safety button has been reduced.

"Chart XXXVII shows a time line schedule for Category I projects.



NTBOOK099

1 REM 0028321 1

C

FIREARMS RESEARCH DIVISION ALLOCATION OF RESOURCES

CATEGORY	ENG. MANPOWER	BUDGET 1980	ENG. MANPOWER	BUDGET 1981
I NECESSITY	2.2	255M	2.5	335M
II COMMITMENTS	20.5	1,980M	21.2	2,095M
III NEW INITIATIVES				
IV OTHER WORK				
	21.9	2,850M	36.0	3,525M

CHART XXXV

A

FIREARMS RESEARCH DIVISION

CATEGORY I

NECESSITY

	ENG. MANPOWER	BUDGET 1980	ENG. MANPOWER	BUDGET 1981
M700 BOLT LOCK	.7	115M	.5	75M
M700 FIRE CONTROL	1.2	120M	1.5	200M
M788 SAFETY	.3	20M	.5	60M
	2.2	255M	2.5	335M

CHART XXXVI

IREM 0028347

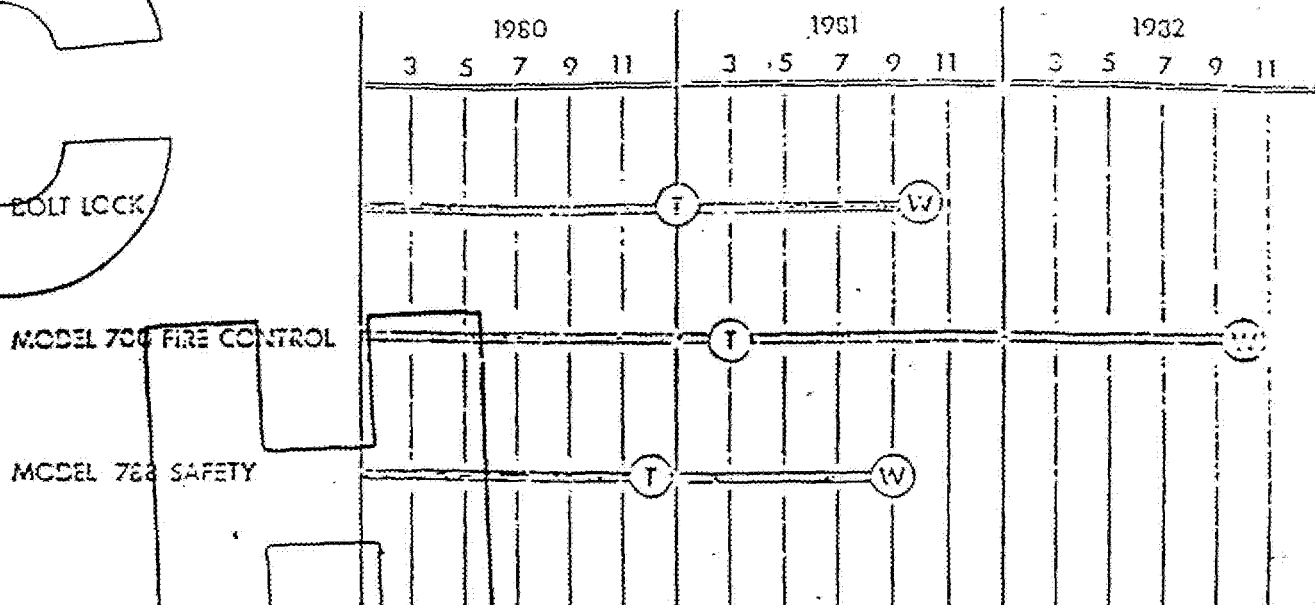
IREM 0028000



NTBOOK100

July 17, 1980

FIREARMS RESEARCH DIVISION
CATEGORY 1
NECESSITY



KEY:

① Design Transmittal
② Warehouse

~~FIREARMS RESEARCH DIVISION~~
~~CATEGORY I~~
~~NEW INITIATIVES~~

ENG.
MANPOWER

BUDGET
1980

ENG.
MANPOWER

BUDGET
1981

INCENTIVES

CHART XXXVIII

IREM 0028323

~~IREM - 000000~~



NTBOOK101

**Operations Committee
Illion Division
July 17, 1980**

**Minute #14
From Page 26**

"Chart XXXVI shows Category I projects, intended to put us in a more secure position with respect to product liability:

- 1. The Model 700 bolt lock has been redesigned to operate independently of the safety and to allow the shooter to reload his gun with the safety in the "ON" position. Production costs are being developed by Industrial Engineering and the final version is now in test.**
- 2. Three different designs of the M700 Fire Control are being considered. Two are ready for release to the Test Lab and one is still on the drawing board. Upon successful completion of the Model 700, work will continue to develop similar mechanisms for all of our bolt action rifles.**



NTBOOK102

Firearms Research Division
Category I
Necessity

	<u>Eng.</u> <u>Manpower</u>	<u>Budget</u> <u>1980</u>	<u>Eng.</u> <u>Manpower</u>	<u>Budget</u> <u>1981</u>
M700 Bolt Lock	.7	115M	.5	75M
M700 Fire Control	1.2	120M	1.5	200M
M788 Safety	.3	20M	.5	60M
	<u>2.2</u>	<u>255M</u>	<u>2.5</u>	<u>335M</u>

Chart XXXVI

Firearms Research Division
Category I
Necessity

Minute #14

July 17, 1980

	1980					1981					1982				
	3	5	7	9	11	3	5	7	9	11	3	5	7	9	11
Bolt lock					(T)					(W)					
Model 700 Fire Control					(T)										(W)
Model 788 Safety					(T)					(W)					

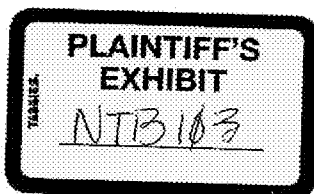


Chart XXXVII

Key: (T) Design Transmittal
(W) Warehouse



DESIGN CHANGE REQUEST (DCR)

Sheet 1 of 2~~OR~~~~TRANSMITTAL OF DRAWINGS / PARTS LIST~~

Requested By	Changed By	Date
PEYC	S A Fawell	7-10-80
Originating Date	Transmittal Date	
	8-21-80	

Model

Part Name / List

Drawing No.

Part No.

700	SAFETY DETENT SPRING	B-15368	15368
XP-100	SAFETY DETENT SPRING	B-15432	15432

Dwg. No.	Rev. No.	Design Change
P-15368	13	ADDED USAGE TO MODEL 600
P-15368	14	ADDED 83° DIMENSION AND SECOND DETENT PUNCH
P-15368	3	CHANGED DIMENSION FROM .015-.020 TO .016-.020
P-15432	4	REMOVED USAGE TO MODEL 600 & 660
P-15432	5	WAS: XP-700
P-15432	6	REMOVED Heat Treat AND Color Note

Classification of Change

- () Functional Change
 () Safety Mechanism Revision
 () Appearance

CBW EXHIBIT 9A
 WITNESS Wilkman
 RPTR/N.P.: Wilk
 DATE 10-6-83

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

S A Fawell

Designer Signature

Reason for Change: TO PREVENT ROTATION OF SAFETY MECHANISM
 ON THE PULL 700 FIRE CONTROL, GIVING A MORE CONSISTENT
 FEEL TO THE SAFETY DETENT BALL.
 Dimension change allows for better control by vendor & detent punch

(X) Heat treating done by vendor

001753

Disposition of Parts on Hand: (check below)

() Scrap () Alter () Use Inventory () RD 6589 Attached

APPROVED: 8/17/80

NTBOOK104

Copies to: R. L. Hall J. P. Linde
R. A. Morris L. B. Bosquet
H. K. Boyle Z. J. Kowalski
G. E. Fletcher Est. No. 4197
J. H. Sweeney

October 24, 1980

G. D. CAMPBELL

M/700 Bolt Latch Mechanism

Evaluation of the proposed Bolt Latch mechanism for M/700 rifles indicates it will result in a \$3.00 increase in unit factory cost (full allocation basis) in its first year (1982). For comparison purposes, a 1982 M/700 "Line Before" and three alternative "Line After" results were developed based on M/700 cost performance during the first six months of 1979. These alternatives were:

1. Adding of the Bolt Latch mechanism without adjusting prices.
2. Adding the Bolt Latch mechanism and adjusting prices to maintain the percent pretax margin.
3. Adding the Bolt Latch mechanism without adjusting prices, but deleting the sling and swivels from the BDL grade to compensate for the increased cost.

The results of these evaluations are summarized in the attached table which shows weighted average unit prices, costs, and pretax earnings and the project results. This data has been adjusted to anticipated 1982 price and cost levels.

As shown in this table, Alternative III is the most attractive in % margin, earnings, and net return on investment because it results in a net reduction in costs and working capital requirements. One disadvantage of this alternative is that ADL and Classic grade earnings are adversely affected, and the results shown depend on maintaining current product mix.

Alternative II also results in increased earnings, however, its net return on investment is substantially lower because of additional working capital requirements resulting from increased costs and sales.

All alternatives require project expenditures of \$249M construction and \$83M in operations charges. Detailed data for the line before and each alternative are attached.

J. C. Hutton
J. C. Hutton, Superintendent
INDUSTRIAL ENGINEERING SECTION

by T. R. Andrews
TRA/mc
Att.



NTBOOK105

CC: C. B. WORKMAN
J. S. MARTIN

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington



BRIDGEPORT, CONN.

NOV. 5, 1980

FRED MARTIN

SUBJECT: BOLT LOCK FOR BOLT-ACTION RIFLES

A patent search has been made on the bolt lock shown in your Assembly Drawing SK-D-3596, and the corresponding detail drawings. The following are the most closely related prior patents that were located. In my opinion, they should not prevent us from securing a patent on your design.

1,669,496 - Stahl
1,322,514 - Bader

Stahl has a locking bolt 14 rotatably mounted in a transverse bore and passing across a flat 15 milled in the firing pin. When the firing pin is cocked as in Fig. 4, the forward end of the firing pin flat engages a mating flat on the locking bolt to prevent it from rotating. A detent pin 19 on the locking bolt (see Figs. 1 and 2) then restrains the bolt handle from being raised. However, the detent pin can be manually released by pressing a spring-loaded finger piece 21 (Figs. 1, 2 and 7). On firing, the locking bolt 14 is released by the firing pin, and is rotated out of locking engagement with the bolt handle simply by applying an upward pressure of the bolt handle on the detent pin 19.

Bader slidably mounts a detent 9 on a bolt plug or sleeve 5 to engage (Fig. 4) or disengage (Fig. 5) the bolt handle. A J-shaped pivoting lever 13 is spring-biased in a direction to normally engage the detent with the bolt handle. The detent 9 may be withdrawn to unlock the bolt either by manual rotation of the lever 13 when the firing pin is cocked, or by engagement with a shoulder 24 on the firing pin when the rifle is fired.

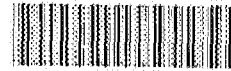
*Bill Ericson*WILLIAM L. ERICSON
SENIOR PATENT COUNSEL

WLE/dt

48.50



NTBOOK106

CENTER FIRE RIFLES

NTBOOK107

MODEL 700 BOLT LOCK

Research reported that five prototype Model 700 Rifles with the Bolt Lock and Fire Control Safety separated, are ready for testing. The prototype design includes blocks of both the Trigger and the Sear. Upon successful completion of tests, drawings can be transmitted to Production. Research noted that Production has estimated costs for the Bolt Lock, and indicated that drawings for estimating Fire Control costs will be released by December 20.

The Secretary reviewed the economics of adding the Bolt Lock to the Model 700 Fire Control (Exhibit 9). At Marketing's request, three cases were considered: 1) Adding the Bolt Lock with no price adjustment; 2) Adjusting the price to maintain margin and 3) Maintaining the price but deleting the sling currently included with BDL grades. Adding the Bolt Lock increases factory cost by \$3.00 per gun. Research noted that the Bolt Lock design will be reviewed for potential cost reductions before drawings are transmitted.

Jan. 21, 1981

Minute # 1 - 1981

- 7 -

CENTER FIRE RIFLESMODEL 700 BOLT LOCK

Research presented samples of the Model 700 with and without the Bolt Lock feature for Committee review. Research has discussed potential cost reductions with Production, and the Plunger and Operating Handle are being re-evaluated. They pointed out, however, that costs are not expected to be reduced more than 5% to 10%. Five prototypes of the latest design are being tested along with the new Fire Control System. Testing will be completed this month.

A review of competitors' designs (Exhibit 14) indicates that a few of them have Bolt Locks but only the Colt Sauer has a Bolt Lock which can be released independent of the Safety.

Feb. 11, 1981

Minute #3 - 1981

-5-

CENTER FIRE RIFLESMODEL 700 FIRE CONTROL IMPROVEMENTS1983 Introduction

Research reported that an alternative Model 700 Fire Control design has been completed, featuring a blocked Trigger and Sear. The design has the added advantage of making it very difficult to adjust the system to a "hair" Trigger. When adjusting to the extreme light trigger pull setting, the Safety binds and is difficult to move from "Safe On" to "Fire" position. Five prototypes of the new design are in test. The 100 round functional test portion has been completed and results indicate no major problems with the design. Dry cycle endurance tests are scheduled for the end of February. Drawings have been provided to Production for cost estimating.

Marketing noted that both the Fire Control Improvements and Bolt Lock will influence long range Bolt Action Rifle

	REM. M/788 M/600 CURRENT M/700 PROPOSED M/700		RECOMMENDED RETAIL PRICE	BOLT LOCK	BOLT LOCK PART OF SAFETY	BOLT LOCK INDEPENDENT	BLOCK TRIGGER	BLOCK SEAR	BLOCK STRIKER	2-POSITION SAFETY	3-POSITION SAFETY	UNLOAD SAFE-ON	LOAD SAFE-ON
COLT SAVER		X	4680	X		X	X	X		X		X	X
NIKKO CULD EAGLE			3399				X			X		X	X
BROWNING		X	3399	X	X		X			X			
WIN. M/70		X	3354	X	X				X		X	X	X
WEATHERBY VANGUARD			3349				X			X		X	X
RUGER 77		X	245	X	X		X			X			
S & W 1500			238				X			X		X	X
SAVAGE 340-D			149	X	X		X			X			



xc: C. B. Workman
J. P. Linde
F. E. Martin
S. A. Fanelli

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington
CUPERTINO

PETERS
CUPERTINO

"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



NTBOOK109

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



NTBOOK110

CHRONOLOGICAL RECORD OF TESTS

MODEL & DESCRIPTION M-700 Bolt Lock & Fire Control

CALIBER or GAUGE

DATE 1-23-81 TEST

TESTER

PAGE NO.

1-23-81 FIRE M-700 w/PROT-TYPE Bolt Locks AND FIRE CONTROLS DELIVERED TO TEST LAB FOR TEST - GUNS HEADSPACED AND PROOFED. GUNS RETURNED FOR EXAMINATION OF Bolt Locks ALSO GUN #3973 FOLLOWS DOWN.

DRY CYCLE
16 Feb 81

#7525 - CONTROL - OK.

#2973 - FOLLOW DOWN Don't LOCK 23/100

#5544 - OK.

#4915 - 17/100 Don't LOCK

#4867 - 4/100 " "

#8598 - 6/100 " "

NO DETENT
ON Bolt Lock

DETENT
Bolt Lock (1)

2-24-81 #1 - NO DETENT ON Bolt Lock

10043 DRY CYCLE - FIRING PIN TIP BROKE STD FIRE CONTROL NEW TRIG. SPRING AND ADJ. SCREW - TRIG. BEWT - CONNECTOR SHOWS WEAR INSIDE OF CLEARANCE HOLE TRIG. ALSO HAS DEFORMATION TO FRONT FACE - TRIG. STOP SCREW IS DEFORMED ON STOP SURFACE - NO DAMAGE NOTED TO TRIG. SPRING OR ^{NEW CI ADJ.} ~~STOP~~ SCREW

#2 - NO DETENT ON Bolt Lock 10055 DRY CYCLE NEW STYLE FIRE CONTROL - NEW TRIG. SPRING AND ADJ. SCREW NO DAMAGE NOTED



NTBOOK111

CHRONOLOGICAL RECORD OF TESTS 3

MODEL & DESCRIPTION

M-700 Bolt Lock & Fire Control

CALIBER or GAUGE

DATE 2-24-81 TEST

TESTER

PAGE NO.

#3 - CONTINUED - WITH BARRELED ACTION
~~OK~~ ^{STC} IF TRIGGER IS PULLED THEN SAFETY
 LEVER IS MOVED TO REAR (SAFE) POSITION
 THEN BOLT CLOSED - GUN WILL FIRE
 ON SAFE RELEASE - TRIGGER IS
 TRAPPED ~~REARWARD~~ BY TRIGGER BLOCK
 PLUNGER AND LOAD EXERTED BY SAFETY
 LEVER - BOLT LOCK FUNCTIONS AS INTENDED
 FIRE CONTROL NOT REMOVED OR TAMPED
 WITH

#3 - DETENTED BOLT LOCK

10000 CYCLES - NO BREAKAGE OF
 FIRING PIN TIP - GUN WILL NO DUPLICATE
 ACTIONS OF NO. 2 GUN - SAFETY HITS
 BOLT PLUG - GUN APPEARS TO NOT
 HAVE BEEN FULLY CLOSED - ON FIRING
 COCKING CAM DAMAGED - SAFETY
 FUNCTION O.K. - BOLT LOCK INTER-
 MITTANT AT TIMES.

#4 - DETENTED BOLT LOCK

10308 CYCLES - NO BREAKAGE NOTED
 TRIGGER IS BENT AND WILL BIND



CH NOLOGICAL RECORD OF TEST 3

MODEL & DESCRIPTION M-700 Bolt Lock & Fire Control

CALIBER or GAUGE

DATE 3-29-81 TEST

TESTER

PAGE NO.

#4 (CONTINUED) DUPLICATE ACTIONS OF GUN
No. #2 & #3. Bolt Lock Action
Intermittant At Times - Safety
Function O.K.

#5 DETENTED Bolt Lock
10488 Cycles - No Breakage Noted -
Bolt Lock Retaining Pin Loose -
Bolt Lock Functions Intermittantly -
Safety Function - Cannot Duplicate
Actions Of Nos 2 & 3

Control Gun - Standard Fire Control As Produced
10000 Cycles SAFETY-Bolt Lock Integral
No Breakage Noted - Trigger Bent
Fire Control Not Disassembled



G-88

DON'T SAY IT-WRITE IT

F. S. MARTIN

To A. D. Campbell

Date 3 FEB 81

From F. MARTIN

PLEASE PREPARE COST ESTIMATE FOR THE
M-700 FIRE CONTROL CONSISTING OF SUPPLIED
PARTS - PARTS THAT HAVE BEEN ALTERED
ARE SAFETY LEVER - TRIGGER - HOUSING -
TRIG. ADJ. SCREW AND TRIG. SPRING
NEW PARTS ARE TRIG. BLOCK PLUNGER
AND PLUNGER SPRING
ASSEMBLY DRAWING IS BEING COMPLETED
AND WILL BE AVAILABLE 10 FEB. 81

"SAFETY RULES ARE PERFECT TOOLS"



NTBOOK114

Minute #3 - 1981

-5-

Feb. 11, 1981

CENTER FIRE RIFLESMODEL FOUR LIMITED EDITION
(1981 Introduction)

H

MODEL 700 FIRE CONTROL IMPROVEMENTS
(1983 Introduction)

Research reported that an alternative Model 700 Fire Control design has been completed, featuring a blocked Trigger and Sear. The design has the added advantage of making it very difficult to adjust the system to a "hair" Trigger. When adjusting to the extreme light trigger pull setting, the Safety binds and is difficult to move from "Safe On" to "Fire" position. Five prototypes of the new design are in test. The 100 round functional test portion has been completed and results indicate no major problems with the design. Dry cycle endurance tests are scheduled for the end of February. Drawings have been provided to Production for cost estimating.

Marketing noted that both the Fire Control Improvements and the Bolt Lock will influence long range Bolt Action Rifle strategy.



NTBOOK115

IREN 002

IREN 002

2-11-81 DE EX.13

Exhibit 13

1981 PROJECT AUTHORIZATION FORECAST

Ilion Plant

(Dollars in Thousands)

TITLE

AMOUNT

Projects to be Submitted in 1981

M/700 Fire Control Improvements

\$ 250*

New Bolt Action Carbine Styling

390

Replacement Broach for M/700 Receivers
Replacement Lathe for M/788 Receivers

110
83

Total

\$2,456

* Increased from \$120M



NTBOOK116

IREM 0028312

IREM 0027987

Exhibit 13
1981 Project Authorization Forecast
Operations Committee Meeting of Feb. 11 1981
Ilion Plant

(Dollars in Thousands)

Title	Amount
<u>Projects to be Submitted in 1981</u>	
M/700 Fire Control Improvements	\$ 250*
New Bolt Action Carbine Styling	390
Replacement Broach for M/700 Receivers	110
Replacement Lathe for M/788 Receivers	83
	<hr/>
Total	\$2,456

* Increased from \$120M



NTBOOK117



NTBOOK118

MINUTE #5 - 1981

March 19, 1981

FROM PAGE NUMBER

EXHIBIT 2-1

SUBJECT

BOLT ACTION STRATEGY

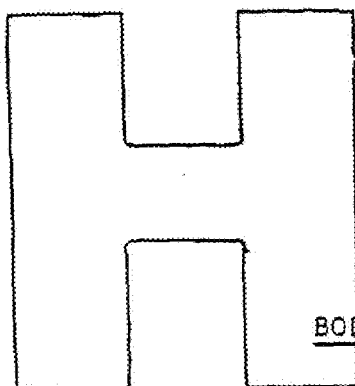


Exhibit 2-1

BOLT ACTION STRATEGY

Bolt Action Rifles comprise about 40% of the total Center Fire Rifle market. They represent the largest single action type. This predominance of Bolt Actions has been fairly constant and is expected to continue.

Over the last few months, Marketing has been developing a comprehensive Bolt Action Rifle strategy to assure our continued success in this extremely important market. This plan strengthens our present line and will enable us to enter new market segments in which we presently do not compete. Key points of the strategy will be presented today, with more specific details to be discussed with Research and Production at appropriate times.

Remington accounts for the largest market share in Bolt Action Rifles. Our Models 700 and 788 account for at least one third of all Bolt Action Rifles sold. Of concern, however, is the relative strength of the second place manufacturer, Ruger. The Ruger Model 77 is a very strong competitor. We have reason to believe they have increased their market share in the last few years, although Trendex, which is our monitor of retail sales, shows the Model 700 is still ahead.

While there are many factors involved in Ruger's growth, price and value certainly play a major role. Ruger has been able to maintain a favorable pricing point against all Bolt Actions including our Model 700. To examine the relative position between Remington and Ruger, the models retail prices are compared in Exhibit 2A.

As you can see, the Model 700 BDL is the highest priced rifle in this grouping. It offers Monte Carlo Stock with cheek-piece and Fore-end Tip, sling and swivels, and iron sights, all of which are not included in the Ruger.

The Model 700 Classic is priced \$35 below the BDL and includes cut checkering, floor plate, and swivel studs.

The Model 700 ADL is \$30 below the Classic and is equipped only with Monte Carlo Stock and iron sights.

REM 0021102

MINUTE #5 - 1981

March 19, 1981

FROM PAGE NUMBER

EXHIBIT 2-2

SUBJECT

BOLT ACTION STRATEGY - Contd.

Exhibit 2-2

Our strongest competitor, Ruger, markets the Model 77 with features comparable to the Classic, but provides integral scope mount rings that are included in the price of the rifle. At a retail price of \$325.00, the rifle is a formidable competitor.

From this it is evident that our Model 700 line could be improved to establish a better price-value relationship. We are recommending the following changes:

MODEL 700 ADL

The first step in our strategy is to upgrade the ADL by adding value in the form of additional product features. At the present ADL price level we believe customers expect cut checkering, sling swivel studs, and a detachable floor plate. We are recommending the addition of these features plus a new grip cap. The cut checkering should be a reduced pattern with less coverage than the Classic or BDL. The floor plate and studs are add-used from the other Model 700's.

We recognize that a majority of shooters buy scopes for their Bolt Action Rifles. The perceived value of the ADL would be greatly increased if mounts were supplied with each rifle.

The revised rifle just described could compete favorably with any bolt action on the market provided the price is held close to the present Model 700 ADL level. The addition of product features with a constraint on pricing will necessarily mean reduced margins on this rifle.

MODEL 700 CLASSIC

Model 700 Classic volumes have declined sharply each year since its introduction in 1978. Efforts were made in 1979 to restyle the Classic, but it appears this strategy has failed. Any further attempt to revitalize the Classic is not recommended. With the upgraded ADL competitively priced, the Classic should be dropped from the line.



NTBOOK119

IREM 0021103 1

MINUTE #5 - 1981

March 19, 1981

FROM PAGE NUMBER

EXHIBIT 2-3

SUBJECT

BOLT ACTION STRATEGY - Contd.

Exhibit 2-3

MODEL 700 BDL

With the exception of the custom and high grades, the Model 700 BDL is our "Top of the Line" Bolt Action Rifle. It offers many product features at a premium price. The styling of the BDL is well accepted and appeals to a large segment of the Bolt Action Rifle market. The continued popularity of this model can be assured by retaining the basic rifle, but adding value in the form of a new Model Four type grip cap and supplying mounts with the rifle. Thus, the BDL will have a higher perceived value and minimize the substitution effect of the restyled ADL. Again, margin reductions will probably be necessary.

So far the discussion has involved improvements to strengthen our present product line. At this point I will cover opportunities available to us in new market segments.

Remington, Ruger or Winchester offerings. This segment is presently held by Colt Sauer, Weatherby and numerous import rifles and accounts for about 80M units. A Remington higher Grade Bolt Action will enable us to compete in a new market and expand the potential of our bolt action product line. We will be working with Research to establish firm model requirements for the new Remington Rifle, tentatively being referred to as a Model Seven.



NTBOOK120

REM 0021104

MINUTE #5 - 1981

March 19, 1981

FROM PAGE NUMBER

EXHIBIT 2-4

SUBJECT

BOLT ACTION STRATEGY - Contd.

Exhibit 2-4

SUMMARY

The proposed bolt action line will have fewer specifications. We will include only high volume calibers in the restyled ADL version. The BDL will be our most complete model with a wide selection of calibers. Carbine specifications will be limited to the most popular short action calibers. The Model Seven will be offered in the 5 calibers most often found in high grade rifles. The net result of this strategy is a reduction of two specifications from our present Model 700 line.

An implementation schedule for the Bolt Action Rifle strategy has not been established. We will be meeting with Research and Production in the near future to determine specific dates. For our purposes today, however, it will be helpful to list the three basic parts of the plan in order of priority. They are:

ADL/BDL RESTYLE	-	FIRST
CARBINE	-	SECOND
MODEL SEVEN	-	THIRD

We are anxious to proceed with the bolt action strategy described today and will keep the Committee advised of our progress.



NTBOOK121

REM 0021105 1

MINUTE #5 - 1981

March 19, 1981

FROM PAGE NUMBER

EXHIBIT 2-A

SUBJECT

RETAIL PRICING COMPARISON - BOLT ACTION

H

Exhibit 2-A

RETAIL PRICING COMPARISON

RETAIL PRICE

MODEL 700 BDL	\$ 399.95
MODEL 700 CLASSIC	364.95
MODEL 700 ADL	334.95
RUGER MODEL 77	325.00

P

A



NTBOOK122

REM 0021106 1

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington
DUPONT

PETERS
DUPONT

xc: C. B. Workman
J. S. Martin
F. E. Martin
E. R. Owens

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

April 8, 1981

To: T. L. Capeletti

From: J. W. Bower *Job*

Re: M/700 Bolt Lock - Manufacturing Costs

In October, 1980, Industrial Engineering issued a report on the cost of the M/700 Bolt Lock based on a PE & C estimate. Because of the seemingly high cost to manufacture this feature, the Research Process Development Group was asked to review. Exhibit 1 shows a comparison of costs based on estimates prepared by PE & C, Research, and a hypothetical best case.

The major difference between the Research and PE & C estimate is the labor cost to make the extra cuts in the Bolt Plug. PE & C estimated two special machines, the Research estimate provides for 1 machine, and, therefore, less labor input. This \$.21 difference is multiplied when labor variance, industrial relations, and overhead are added to it.

The "best case" condition assumes that the pin hole in the Bolt Latch can be moved so that the powder metal blank can be made to include the hole. This \$.11 savings in the direct cost to drill the hole is again multiplied by the various overhead accounts.

Two other approaches are possible. If a high strength plastic could be substituted for powder metal in the Bolt Latch, it may be possible to reduce the total cost of the feature by an additional \$.20 below the "best case". Finally, the possibility of an investment cast Bolt Plug could be investigated. It would be necessary to eliminate all of the added cuts in the investment cast blank, however, to show any significant savings.

JWB:ws
Firearms Research Division
Attach.



NTBOOK123

M/700 BOLT LOCKMANUFACTURING COSTS

	<u>PE&C</u>	<u>R&D</u>	<u>BEST CASE</u>
Standard Material			
Bolt Latch	.17	.15	.15
Detent Plunger	.02	.02	.02
Detent Plunger Spr.	.01	.01	.01
Detent Retaining Pin	<u>.01</u>	<u>.01</u>	<u>.01</u>
Total	.21	.19	.19
Material Variance (12.2%)	.03	.02	.02
Standard Labor			
Bolt Latch	.12	.12	.01
Bolt Plug	.38	.17	.17
Bolt Assembly	.05	.03	.03
Firing Pin Assembly	.09	.07	.07
Final Assembly	<u>.01</u>	<u>.01</u>	<u>.01</u>
Total	.65	.40	.29
Labor Variance (38.6%)	.25	.15	.11
Industrial Relations (47.9%)	.43	.26	.19
Misc. Direct Exp (3.8%)	.06	.04	.03
Depreciation (7.5% Capital)	.13	.07	.07
Manufacturing Overhead (10%)	.18	.12	.09
Plant Overhead (17.5%)	<u>.34</u>	<u>.22</u>	<u>.17</u>
Price/Gun	\$ 2.28	\$ 1.47	\$ 1.16



NTBOOK124

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington



BRIDGEPORT, CONNECTICUT

APRIL 9, 1981

FRED MARTIN

SUBJECT: BOLT LATCH FOR BOLT-ACTION FIREARMS RA-0247

I am enclosing a draft patent application for your consideration. Your file copy has copies of the Stahl and Bader patents attached, which are discussed at pages 2 and 3 of the application.

There are several other patents mentioned at pages 1, 2, or 5, including two Walker patents owned by Remington, which relate to the Models 721, 700, etc., and four other patents to Fischer, Williams, Couture, and Brewer that relate to three-position safeties. These are not as pertinent to your invention as Stahl and Bader, and are mentioned only as general background; so I haven't attached copies, but will be glad to supply if you want to see them.

If you find that the application describes your bolt latch accurately and fully, please sign the Declaration attached to the "PTO Copy", sign the Assignment and have it notarized, and return these signed papers for filing in the Patent and Trademark Office.

However, if you want to make corrections or additions, please either give me a call, or correct your file copy in pencil and send all the papers back to me for revision.

Bill Ericson

WILLIAM L. ERICSON
SENIOR PATENT COUNSEL

WLE/dt
Encls.

RA-0247



NTBOOK125

M-100 New Design Bolt Lock and Fire Control Evaluation

4-6-81
A. J. Long / J. Hennings

Data Summary Sheet

CONTROL

Remington
Standards

A6747525

TEST RIFLES

Detented
A674554 A675273

Detented
A6744915

Min Detented
A6744809

Min Detented
A674248

Type of Bolt Lock
Ser. #

Headspace min. +
Firing pin indent
Trigger pull
Bolt Lock Force

Headspace min. +
Firing pin indent
Trigger Pull

Trigger pull meas.
during dry cycle

Cycles

0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"

002"
024"
5.00"
3.00"



NTBOOK126

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

April 8, 1981

Xc: J.S.Martin
J.R.Snedeker
F.E.Martin
S.A.Fanelli

TO: J. H. HENNINGS *JH*
FROM: A. J. LONG
SUBJECT: M700 - NEW DESIGN PARTS EVALUATION
1 Trigger Block on Fire Control
2 Weight of Pull Adjustments
3 Bolt Lock

Date Started: 1-23-81 ✓
Date Completed: 2-23-81 ✓
Work Order: C 3004 - C 2054

INTRODUCTION

Received from Design five (5) Model 700 rifles with the prototype bolt lock system and new design fire controls for evaluation. All test rifles have the new bolt lock and various changes to the present fire controls incorporating new design parts. A current production M700 rifle was withdrawn from the warehouse for control purposes.

TEST OBJECTIVE

To determine the degree of reliability of the New Design Bolt Lock, Trigger Block and Weight of Pull adjustment system supplied for test.

TEST OBSERVATIONS

Note: All rifles evaluated were subjected to a 100 rd. live fire test followed by a 10,000 cycle cock and fire dry cycle test.

A. Bolt Lock Detented and Non-detented

1. No functional or operational problems were experienced with the non-detented bolt locks during this test.
A total of two (2) samples were evaluated.
2. Intermittent function of the detented bolt lock was observed on all three (3) samples evaluated.

Note: Refer to attached sheets for detailed comments on all rifles.



To: J.H.Hennings
From: A.J.Long
M700 - New Design Parts Evaluation

4-8-81
-2-

TEST OBSERVATIONS Continued

B. Trigger Block and Weight of Pull Adjustment Screw and Spring

1. One (1) fire control experienced a safety related problem connected with the trigger block. The remaining four (4) fire controls functioned satisfactorily.
2. Two (2) fire controls tested experienced an increase in weight of pull measurements during this test. The remaining fire controls were acceptable.

C. Warehouse Withdrawn Control Rifle

1. No functional or operational problems were encountered with the control rifle during this test.

OBSERVATIONS PER RIFLE AT TEST COMPLETION

Test Gun #1 - Serial No. A6748248 - Non-detented Bolt Lock

- a. Trigger bent and deformed at front face.
- b. Connector exhibits wear inside of the clearance hole.
- c. Bolt lock functioning properly.
- d. Nominal wear observed on all parts.

x Test Gun #2 - Serial No. A6744869 - Non-detented Bolt Lock

- a. Trigger is trapped rearward by trigger block plunger and load exerted by the safety lever.
- b. A condition exists when the trigger is pulled and the safety lever is moved to the rear (safe) position, whereupon closing the bolt the rifle will fire when the safety is pushed to the off (fire) position.
- c. Bolt Lock is functioning properly.

Test Gun #3 - Serial No. A6744915 - Detented Bolt Lock

- a. Cocking cam damaged during testing.
- b. Safety operating properly.
- c. Bolt Lock functions intermittently.
- d. Nominal wear observed on all parts.



NTBOOK128



To: J.H.Hennings
From: A.J.Long
M700 - New Design Parts Evaluation

4-8-81
-3-

Test Gun #4 - Serial No. A6745544 - Detented Bolt Lock

- a. Trigger is bent and will bind in the trigger guard.
- b. Bolt Lock functions intermittently.
- c. Safety operates properly.

Test Gun #5 - Serial No. A6752773 - Detented Bolt Lock

- a. Bolt Lock retaining pin loosened while testing.
- b. Bolt lock functions intermittently.
- c. Safety operates properly.

Control Gun #1 - Serial No. A6747525 - Warehouse Sample

- a. Safety operates properly.
- b. Nominal wear observed on all parts.

TEST PROCEDURE

1. Headspace, trigger pull and firing pin indent measurements taken on all rifles as received.
2. Fired 100 rds. of mixed 30-06 ammunition thru each rifle in Test Lab shooting jacks.
3. Rifles reviewed by Design.
4. Headspace, trigger pull and firing pin indent measurements taken on all rifles after live fire test.
5. Each rifle dry cycle tested in cock and fire machines for a total of 10,000 cycles.
6. During cycle test, trigger pull and bolt lock function checked every 1,000 cycles.
7. Individual inspection of each rifle conducted at completion of dry cycle test.

DESCRIPTION OF PARTS TESTED

A. Bolt Lock - Two (2) types.

1. Detented (Allows unloading in "ON" safe condition)
"Bolt lock will remain in unlocked position when depressed."
2. Non-detented (Allows unloading in "ON" safe condition)
"Bolt lock will automatically relatch as bolt is cycled."

To: J.H.Hennings
From: A.J.Long
M700 - New Design Parts Evaluation

4-8-81
-4-

DESCRIPTION OF PARTS TESTED Continued

A. 3. Weight of Pull Adjustment Screw & Spring

"If screw is backed out by owner, sufficient spring tension will remain against the trigger to allow satisfactory connection."

4. Trigger Block

"When safety is placed in ON (safe) position, the trigger is blocked and support cannot be removed from under sear/connector surface."

FUTURE WORK

Additional samples of the non-detented bolt lock and weight of pull adjustment screw and trigger block will have to be evaluated.

AJL:T
Research Test Lab



NTBOOK130

OC 4-15-81

Exhibit 10

QUALITY REASSESSMENT - MARKETING COMMENTS

P.H. HOLMBERG

As has been alluded to, we did get a real education concerning numerous aspects of the study. Many of us probably had preconceived notions about nicks and dings, spacer fits, and other visual quality defects. Our focus group participants noted only the most obvious of visual defects.

Gediman concluded:

Given the overall clarity and consistency of the results, it could reasonably be concluded that Remington is under no market-based pressure to upgrade quality standards on the elements studied. That is, assuming that the standards have been fairly consistent for some time, and knowing that Remington's reputation for quality has been consistently favorable for some time, there seems no need to increase manufacturing costs on factors that don't matter.

I might add that Gediman is quick to point out that a decision not to change our current quality standards is much less risky than a decision to lower these same standards. The consideration of lowering quality standards was not within the scope of this study.

In ranking the sample guns, the group participants focused on three key issues:

- o Appearance of the wood (figure, color and grain).
- o Operation of action (smoothness, no binding).
- o General feel, fit and balance.

As far as the first issue is concerned, mother nature takes care of the figure and grain of wood. However, we can enhance the color and can provide the wood finishes that best present the wood characteristics to the customer. This is perhaps a lesson well learned with the current Stock finish on our Model 700 Classic. Our future products, such as the Bolt Action Carbine, will utilize a high luster finish to optimize the wood presentation to the customer.



NTBOOK131

REM 0027979

GUN-E-SACK

By Jon Sundra

■ No other gun is more uniquely American than the lever action, yet when you get right down to it only one stamped "Made in U.S.A." qualifies as a real high-intensity, high-velocity centerfire—Savage's Model 99. Now in its 86th year of production this brainchild of Arthur Savage is still going as strong as ever. Though two of the 99's contemporaries—the Winchester Model 94 and the Marlin 336—are also lever guns and enjoy a similar degree of popularity, nay, veneration, they are not capable of handling "high intensity" rounds like the .243, .308 and .358 Winchester and, new for '81, the 7 mm-08 Remington.

Adding this newest .28 caliber from Bridgeport was a natural for Savage, just as the .243, .308 and .358 were naturals since all are based on the same short 7.62 NATO case that is about as long as can be accommodated by the 99 action. For almost two decades the 99 was given strong competition by Winchester's Model 88, a thoroughly modern, rotary bolt, short-stroke lever gun that was introduced in 1955 and discontinued in '73. While the 88 sold fairly well, it didn't have the charisma that the old 99 had, despite the fact it was a more up-to-date design, more attractive, and was available in identical chamberings.

For quite some time now the only other gun competing with the 99 in the high-performance lever-action market has been Browning's BLR, a Japanese-made number loosely fashioned in the traditional Marlin/Winchester genre. The BLR's a fine gun with an exceptionally smooth, rack-and-pinion bolt system and a detachable box magazine, but its somewhat unorthodox appearance does not endear it to the traditionalists. Caliber-wise the Browning has always offered the same chamberings as the 99: .243, .308, and .358 Winchester. Surely the 7 mm-08 is in the cards for the near future.

With the minor exception of the Browning, then, the perennial Savage 99 has the high-performance lever-action market pretty much all to itself. With the addition of the 7 mm-08 I expect to see it become the best-selling chambering among the four calibers offered. Though the term "plains rifle" doesn't conjure up a lever gun, the 99 in 7 mm-08 would certainly qualify on ballistic performance, if not aesthetics.



For '81 the new 7 mm chambering will be available only in the 99-C, the detachable box magazine version which is the most gussied-up of the three 99s currently offered. The other two, the 99-A and 99-E, both have Savage's famous rotary magazine. The most traditional-looking is the A-model, which features the old, slender forearm with Schnabel tip and a straight-grip stock. In addition to the .243 and .308 chamberings that are available in all three models, the A-model can also be had in .250 Savage and .375 Winchester. The 99-E, the economy version of the C, is offered in .300 Savage. Why anyone would choose a .300 Savage over a .308 is beyond me. Perhaps nostalgia?

Some other noteworthy goodies from Savage for '81 are the Fox Model FB-1 deluxe-grade .22 sporter and, of course, the new Fox FA-1 and FP-1, a brother-sister act of gas-operated and pump-action shotguns, respectively.

Apparently, after offering deluxe grade .22s by Anschütz for many years, Savage has decided to offer one of their own in the FB-1. Reviving the Fox trademark to indicate Savage's top-of-the-line, the FB-1 is a handsome bolt-action sporter very similar in line to the Anschütz 54 except for lacking the Schnabel fore-end; on the Fox they went with the squarish, reversed-angle rosewood tip with white spacer a la Weatherby.

Other features which make the FB-1 a distinctive .22 are the select-grade walnut stock, cut checkering, a Wundhammer-swell grip and rollover checkpiece. I'm glad to see that pains were taken to make the five-shot detachable magazine flush with the belly of the stock; its release button is recessed in the right side. The FB-1 is a handsome rifle the deluxe status of which is indicated by its \$270 price tag.

It's taken a while but Savage now has a gas-operated semi-auto 12 gauge in the form of its FA-1, and a companion pump action in the FP-1. With this being the first year of availability for either gun, the choice of chamber, barrel lengths and

chambers is limited. Both guns will be available only in 28 and 30-inch vent-rib barrels choked Modified or Full. The pump will handle either 2½ or three-inch magnums while the semi-auto digests 2½-inch shells only.

BOLT SAFETIES

For a long time now I've been on record as being opposed to two-position safeties which lock the bolt handle. Try as I may, I just can't come up with a cogent reason for such a feature—one that would outweigh the safety considerations.

The only defense I've been able to come up with—and one which was brought to my attention by a reader in no uncertain terms recently—is that a bolt-lock safety precludes the accidental opening or partial opening of the action if the gun is slung and you're going through heavy brush.

I'll buy that. The aforementioned circumstance is the one defense for the bolt lock safety. Another, and one closely akin to the preceding scenario, is the one of the bolt being partially raised by some limb or vine. If unnoticed by the shooter when he unslings his rifle for a shot, that partially raised handle will cushion the blow of the firing pin to some degree—sometimes enough to cause a misfire, depending on how far the handle is up.

Under some circumstances, then, a partial or fully-opened bolt could be responsible for missed game. But that's *all* that can be lost; nothing more is at stake.

It seems to me that whenever there exists that slim possibility that your bolt handle could be raised accidentally, you're doing something you shouldn't be doing in the first place: negotiating heavy brush with your rifle slung instead of in your hand. Even when threading my way through moderately thick cover I find I must hand-carry in order to thread both myself and my rifle through the limbs and branches with a minimum of noise and physical effort.

So in spite of the fact that there is something to be said for the bolt-lock feature, it turns out to be more academic than real. What we gain in terms of safety far outweighs what are surely minor objections indeed to a mechanism which allows the action to be worked with the safety engaged. After all, at what times do we most want a gun on "Safe"? When closing the action on a live round or extracting same, right? And with a two-position bolt-lock safety like those found on the Remington 700 and 788, the Sako, and the Ruger 77 to name but four, you can't. You must disengage the safety to chamber or extract a round. I stress "two-position" because rifles like the Winchester Model 70 have three-position safeties whereby an intermediate setting engages the safety but not the handle.

Personally, I think it's just a matter of time before we see all two-position safeties changed to where they will allow the action to be opened.

cc: R.L. Hall
H.K. Boyle
G.E. Fletcher
J.C. Hutton
J.H. Sweeney
T.A. Capeletti
J.P. Linda) In
G.D. Campbell) Turn
J.S. Martin) In
P.E. Martin) Turn
L.B. Bosquet) In
G.J. Hill) Turn

Est. #4305

June 18, 1981

S.D. Bennett

M/700 Trigger Assembly
Present Trigger Assembly vs. Proposed New Trigger Assembly

A high spot economic evaluation has been completed using the 1981 M/700 forecast comparing the present M/700 Trigger Assembly to a proposed new designed Trigger Assembly. The safety is revised in the proposed new Trigger Assembly, cutting off the locking arm and adding a countersink to actuate the new safety plunger when the "safe" is on. New designed side plates, trigger and a new stop screw and spring completes the proposed new Trigger Assembly.

The attached economic sheet indicates an annual cost increase of \$35,270 in operating cost. A cost increase of \$16,800 after amortization of operation charges of \$16,500 will be realized with total capital required of \$20,060.

Industrial Engineering Section
R.W. Farrington, Jr., Supervisor

A.E. Desmond

By: A.E. Desmond

AED/kc
Attached



NTBOOK133

FD-6565
Rev.
BMT 3-26-79

ESTIMATE : 4305

ESTIMATED SAVINGS & RETURN ON INVESTMENT

MAJOR PROCESS ASSEMBLY - PRESENT VS. PROPOSED NEW ASSEMBLY DESIGNED UNDER THE SAFETY IS REVISED

ENGINEER: A. E. TISHMAN

CUTTING OFF THE LOCKING ARM AND ADDING A COUNTERWEIGHT TO ACTIVATE THE SAFETY PLUNGER WHEN THE SAFE IS ON.

DATE: 3-17-81

Forecast Year
Quantity Forecast

PRESENT
#2-1981
110,208

PROPOSED

OPERATING COSTS

Purchased Parts	\$ 181,700	\$ 105,000	\$	\$
Raw Material				
Standard Labor	122,060	131,280		
Labor Variance @ 5%	6,000	6,560		
Industrial Relations @ 4.4%	60,380	64,020		
Supplies	1,680	1,770		
Tool Replacement	1,520	2,300		
Cutter Grind	1,320	2,320		
Tool Maintenance	250	1,220		
Maintenance	1,160	1,100		
Energy				
Equipment Depreciation @				

Sub Totals	\$ 374,400	A \$ 400,670	\$	A \$
Gross Savings Before Admin. Exp.		(\$ 35,270)		\$
Admin. Exp. @ 4.3% Gross Savings		B \$		B \$
Sub Totals	\$ 374,400	A+B \$ 400,670	\$	A+B \$

SAVINGS IN OPERATING COST

Less: Income Tax @ 48.5 %	(\$ 17,110)	\$
Plus: Amortization of Investment Tax Credit	\$	\$
NET SAVINGS	(\$ 12,160)	\$

INVESTMENT

Project Expenditures	\$ -	\$
Manufacturing & Working Facilities	\$	\$
Net Change in Working Capital	\$ 11,930	\$
Total Capital Required for this Project	\$ 11,930	\$

RETURN ON INVESTMENT - THIS PROJECT

Net Savings - After Amortization of Operation Charges	(\$ 16,800)	\$
Project Operation Charges	\$ 16,500	\$
Less: Administration Expense @ 4.3 % & Income Taxes @ 48.5 % (Factor .5072)	(\$ 8,370)	(\$
Total Capital Required Including Research & Development & Other Charges	\$ 20,060	\$

RETURN ON TOTAL CAPITAL REQUIRED

(82.7 %)

Equipment to be Released
Increased Space Requirements (Decrease)
Production Capacity
Forecast Bumping



NTBOOK134

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

SUPPLY

DETERS

SUPPLY

Xc: C. S. Workman
T. L. Capeletti
S. A. Fanelli

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

June 23, 1981

TO: J. S. Martin
FROM: F. E. Martin
RE: M-700 Trigger Assembly Estimate

Estimate figures \$.32 additional cost per gun. For this amount we have the:

- Bolt lock removed.
- Ability to unload the gun in the safe position.
- Insurance that the trigger won't be moved with the safety "on safe".
- Trigger becoming inoperative when adjusted out of spec.

I feel we should not pass-up this opportunity to improve our fire control.

FEM:ws



June 23, 1981

TO: J. S. Martin
FROM: F. E. Martin
RE: M-700 Trigger Assembly Estimate

Estimate figures \$.32 additional cost per gun. For this amount we have the:

- Bolt lock removed.
- Ability to unload the gun in the safe position.
- Insurance that the trigger won't be moved with the safety "on safe".
- Trigger becoming inoperative when adjusted out of spec.

I feel we should not pass-up this opportunity to improve our fire control.

FEM:ws



NTBOOK136

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



NTBOOK138

LIMITED DISTRIBUTION

OPERATIONS COMMITTEE
(Ammunition and Firearms)

Minute #11 - 1981

J. R. AYERS
E. F. BARRETT
E. B. BEATTIE
J. C. CALLAHAN
G. D. CAMPBELL
W. T. COLE
W. H. COLEMAN, II
P. F. CUNNINGHAM
J. H. FENTON
W. H. FORSON, JR.
L. FOX
E. J. GINER
J. P. GLAS
K. D. GREEN
R. L. HALL
R. B. HARTMAN
P. S. HEBERT

A. J. HERMANDORFER
P. H. HOLMBERG
E. HOOTON, JR./R. E. SCHRADER
G. W. HOWELL
J. P. McANDREWS
W. D. NICKEL
R. A. PARTNOY
W. L. PENN
J. E. PREISER
G. E. PUCKETT
T. W. RAWSON
L. J. SCOTT
R. W. STEELE
R. S. SWARTZ
W. L. TOMER
J. G. WILLIAMS
C. B. WORKMAN

COPY NO. 0000

Bridgeport, Connecticut
July 17, 1981JOINT OPERATIONS COMMITTEE
AMMUNITION-FIREARMS DIVISIONS

June 29, 1981

Present:Committee

E.F. Barrett, Chairman
E.B. Beattie
G.D. Campbell, Ilion Secretary
W.T. Cole, Bpt. Secretary
L. Fox
J.P. Glas
E. Hooton, Jr.
T.W. Rawson
J.G. Williams

Others

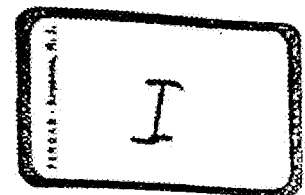
H.K. Boyle
J.C. Callahan
W.H. Coleman, II
T.C. Douglas
W.L. Ericson
J.H. Fenton
W.H. Forson, Jr.
R.B. Hartman
P.S. Hebert
A.J. Hermandorfer
P.H. Holmberg
G.W. Howell
J.P. Linde
W.D. Nickel
W.H. Padgett
W.L. Penn
R.E. Schrader
R.S. Swartz
W.L. Tomek
C.B. Workman

The meeting convened at 9:00 a.m. in Bridgeport.

NOT FOR REPRODUCTION
OR FURTHER DISTRIBUTION

NTBOOK139

1108 0002277



LIMITED DISTRIBUTION

OPERATIONS COMMITTEE
(Ammunition and Firearms)

Minute #11 - 1981

J. R. AYERS	A. J. HERMANDORFER
E. F. BARRETT	P. H. HOLMBERG
E. B. BEATTIE	E. HOOTON, JR./R. E. SCHRADER
J. C. CALLAHAN	G. W. HOWELL
G. D. CAMPBELL	J. P. McANDREWS
W. T. COLE	W. D. NICKEL
W. H. COLEMAN, II	R. A. PARTNOY
P. F. CUNNINGHAM	W. L. PENN
J. H. FENTON	J. E. PREISER
W. H. FORSON, JR.	G. E. PUCKETT
L. FOX	T. W. RAWSON
E. J. GINER	L. J. SCOTT
J. P. GLAS	R. W. STEELE
K. D. GREEN	R. S. SWARTZ
R. L. HALL	W. L. TOMER
R. B. HARTMAN	J. G. WILLIAMS
P. S. HEBERT	C. B. WORKMAN

COPY NO. 6046

Bridgeport, Connecticut
July 17, 1981

JOINT OPERATIONS COMMITTEE
AMMUNITION-FIREARMS DIVISIONS

June 29, 1981

Present:Committee

E.F. Barrett, Chairman
E.B. Beattie
G.D. Campbell, Ilion Secretary
W.T. Cole, Bpt. Secretary
L. Fox
J.P. Glas
E. Hooton, Jr.
T.W. Rawson
J.G. Williams

Others

H.K. Boyle P.H. Holmberg
J.C. Callahan G.W. Howell
W.H. Coleman, II J.P. Linde
T.C. Douglas W.D. Nickel
W.L. Ericson W.H. Padgett
J.H. Fenton W.L. Penn
W.H. Forson, Jr. R.E. Schrader
R.B. Hartman R.S. Swartz
P.S. Hebert W.L. Tomek
A.J. Hermendorfer C.B. Workman

The meeting convened at 9:00 a.m. in Bridgeport.

NOT FOR REPRODUCTION
OR FURTHER DISTRIBUTION



NTBOOK139

PLUR 0002271

U

FIREARMS

PROCESS DEVELOPMENT

N

AD 0001920

AD 0000102

1306 0002275



NTBOOK140

June 29, 1981

CENTER FIRE RIFLESMODEL 700 ADL RESTYLE
(1982 Introduction)

Marketing recalled that the Bolt Action Rifle strategy was reviewed in detail with the Committee last March. They noted that the most significant part of that plan is a restyling of the Model 700 ADL for 1982 introduction. Marketing has been working with Research and Production to establish exact model requirements and the feasibility of a late 1981 warehouse date. Marketing stated that they are close to a decision on the final package and expect to make a recommendation to the Committee in July.

Production reported that a list of possible specifications is currently being evaluated from the standpoint of cost reduction potential and earliest possible warehouse date. Production is also attempting to project the year-end inventory position in the current ADL.

RESEARCH PLANNING REVIEWINTRODUCTION

J. F. Glas introduced the Research Planning Review as follows:

"This year we have elected to take a second step of departure from the traditional long range Research review for the Operations Meeting. We have elected to title this segment a Research planning meeting. Beginning from a manpower base of the organization which we expect to have in place by year end, the managers will review the major programs we propose to support, and the major milestones to be achieved. They will also indicate what might be achieved with a reallocation of these resources, or with additional resources. This feature of their presentation is important because we have not had the manpower to accomplish everything we had planned for 1981, and we will not have the manpower in 1982 to accomplish some of the backlog programs we regard to be worthwhile (Charts 11 and 12). It is our objective today to provide a forum for your critique of our proposals. We plan to develop firm budget plans over the next two months, with guidance from the Operations Committee, and present these plans to the September Operations Meeting.

"Last year we reviewed 12 key objectives for 1981 (Chart 13). We stated that we expected to accomplish the following in 1981.

: 40 0000906 :

: 108 0002202 :



"Necessity

- (1) We will demonstrate improved fire control mechanisms for bolt action rifles. This program is on target as Clark will indicate.

"Commitments

AD 0001921

AD 0000907

1LUN 0002290 11



NTBOOK142

FIREARMS NEW PRODUCT DEVELOPMENT

C. B. Workman presented 1981-1982 strategy and new process Research plans for Firearms New Product Development.

"My objective today is to review the workload established within the charter of the Firearms Research Division, and how our assignable Exempt Salary manpower will be allocated to each category. The strategy used is to establish overall manpower needs and assign existing manpower to projects on a priority basis with the difference creating a backlog of work that must be deferred to a future date.

AD 0001922

AD 000717

1108 0002281 1



NTBOOK143

"There have been 91 individual items identified in our research work pool. Obviously all cannot be covered in detail at this meeting. They will be grouped as appropriate under one of five main headings.

1. Necessity
2. New Product Development
3. Process Development
4. Other Work
5. Backlog

"Under the heading of Necessity we have one commitment, Bolt Action Fire Controls (Chart 32). Our objectives here are to enable the shooter to load and unload his gun with the safety switch in the 'ON' position and prevent him for 'adjusting' himself into trouble. This work has been pursued in two ways:

1. Make the present fire control more tamper proof.
2. Design a new fire control.

"Working with Production, the Legal Department and Du Pont consultants, a number of possible improvements to the present fire control have been identified (Chart 33).

- (1) A warning 'Do not adjust Trigger Assembly' will be stamped into the side plate of the fire control.
- (2) Special screw heads will be developed to further discourage adjustment by anyone other than the factory or an authorized gunsmith.
- (3) A new sealant will be investigated that will enable us to prove conclusively that the seal on the adjusting screws has been broken.
- (4) A \$5,000 work order was authorized in March of this year for the Du Pont Engineering Department to assist us in developing a cleaning and lubrication procedure for the Model 700 Fire Control that can be included in the rifles instruction book.

"The evaluation program will consist of a preliminary review of all potential cleaning and lubrication candidates within proposed guidelines and selected products will be screened for performance. It is the program aim, if possible, to specify products on a generic name basis.

"Results of this work are expected in September.

: AD 0000910 :

AD 0001923

1LUN 0002282 1

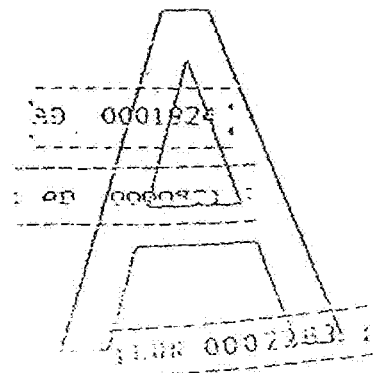
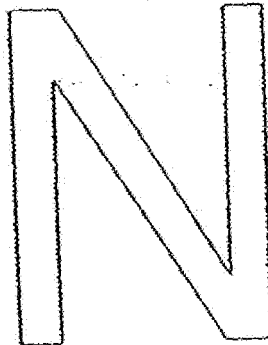
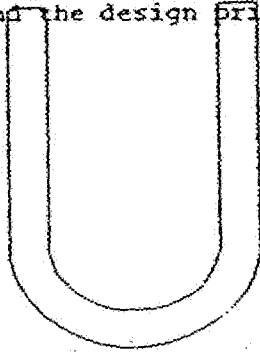


NTBOOK144

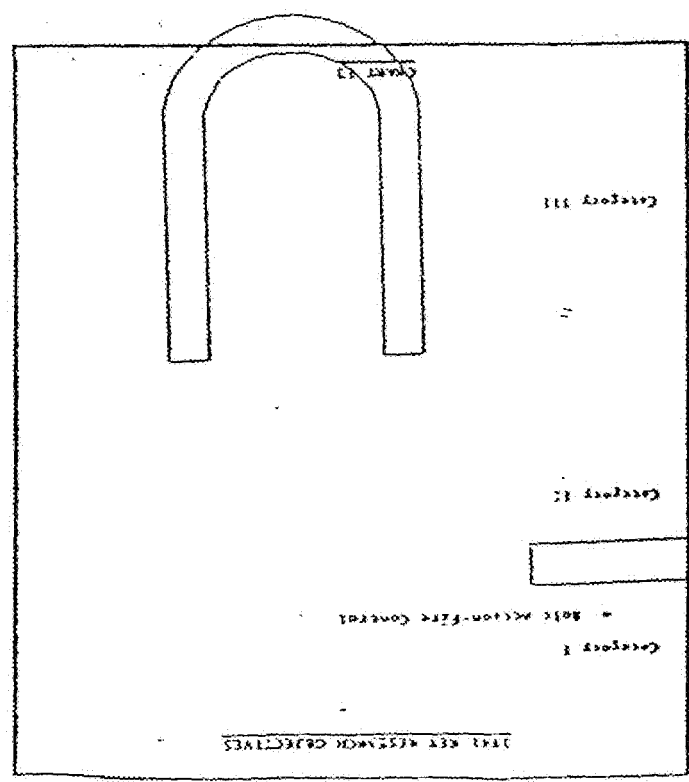
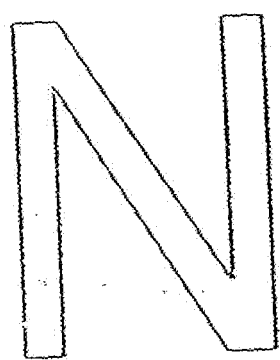
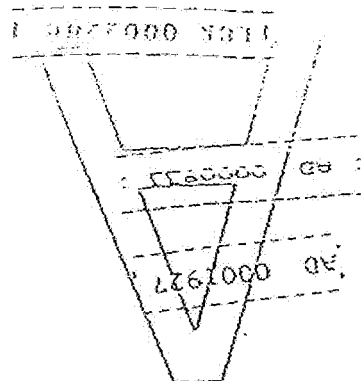
- (5) A longer trigger adjusting spring and screw will prevent 'O' spring load on the trigger if the screw is completely removed.

"Since last year an independent bolt lock and three new designs of a fire control for the M700 have been evaluated. One fire control was selected for continued development. A key feature of the new fire control is a safety that blocks the sear and the trigger. The bolt locks and five samples have been assembled and sent to the Test Lab for preliminary evaluation.

"Our goal remains to complete the redesign for the 700 and then extend the design principles to the 788 and 580 Triggers.



NTBOOK146



NECESSITY

Man / Years
Exempt Salary

Bolt Action Fire Control 2.0

CHART 32

BOLT ACTION FIRE CONTROL

- Warning
- Special Screws
- Signature Sealant
- Cleaning & Lubrication
- Longer Return Spring

CHART 32

NEW PRODUCT DEVELOPMENT

Assignable Exempt
Man / Year

Project

Direct Tech
Support

M-7

Bolt Action Carbine

M-700 ADL-BDL

.4

.4

.7

.1

.2

Total

CHART 32

AD 0001928



NTBOOK147

1111 00075111

U

FIREARMS

PROCESS DEVELOPMENT

N

AD 0001920

AD 0000000

AD 0002279



NTBOOK140

CENTER FIRE RIFLESMODEL 700 ADL RESTYLE
(1982 Introduction)

Marketing recalled that the Bolt Action Rifle strategy was reviewed in detail with the Committee last March. They noted that the most significant part of that plan is a restyling of the Model 700 ADL for 1982 introduction. Marketing has been working with Research and Production to establish exact model requirements and the feasibility of a late 1981 warehouse date. Marketing stated that they are close to a decision on the final package and expect to make a recommendation to the Committee in July.

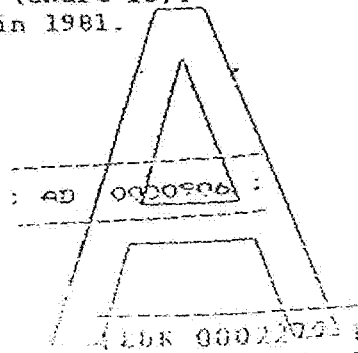
Production reported that a list of possible specifications is currently being evaluated from the standpoint of cost reduction potential and earliest possible warehouse date. Production is also attempting to project the year-end inventory position in the current ADL.

RESEARCH PLANNING REVIEWINTRODUCTION

J. F. Glas introduced the Research Planning Review as follows:

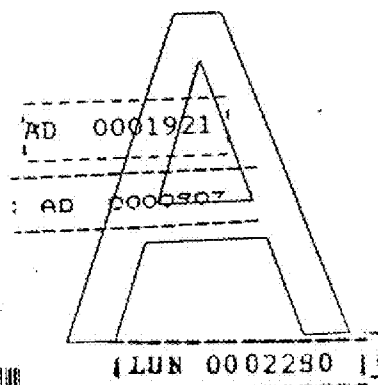
"This year we have elected to take a second step of departure from the traditional long range Research review for the Operations Meeting. We have elected to title this segment a Research planning meeting. Beginning from a manpower base of the organization which we expect to have in place by year end, the managers will review the major programs we propose to support, and the major milestones to be achieved. They will also indicate what might be achieved with a reallocation of these resources, or with additional resources. This feature of their presentation is important because we have not had the manpower to accomplish everything we had planned for 1981, and we will not have the manpower in 1982 to accomplish some of the backlog programs we regard to be worthwhile (Charts 11 and 12). It is our objective today to provide a forum for your critique of our proposals. We plan to develop firm budget plans over the next two months, with guidance from the Operations Committee, and present these plans to the September Operations Meeting.

"Last year we reviewed 12 key objectives for 1981 (Chart 13). We stated that we expected to accomplish the following in 1981.



"Necessity

- (1) We will demonstrate improved fire control mechanisms for bolt action rifles. This program is on target as Clark will indicate.

"Commitments

NTBOOK142

FIREARMS NEW PRODUCT DEVELOPMENT

C. B. Workman presented 1981-1982 strategy and new process Research plans for Firearms New Product Development.

"My objective today is to review the workload established within the charter of the Firearms Research Division, and how our assignable Exempt Salary manpower will be allocated to each category. The strategy used is to establish overall manpower needs and assign existing manpower to projects on a priority basis with the difference creating a backlog of work that must be deferred to a future date.

AD 0001922

AD 0000717

1LUN 0002281 1



NTBOOK143

"There have been 91 individual items identified in our research work pool. Obviously all cannot be covered in detail at this meeting. They will be grouped as appropriate under one of five main headings.

1. Necessity
2. New Product Development
3. Process Development
4. Other Work
5. Backlog

"Under the heading of Necessity we have one commitment, Bolt Action Fire Controls (Chart 32). Our objectives here are to enable the shooter to load and unload his gun with the safety switch in the 'ON' position and prevent him for 'adjusting' himself into trouble. This work has been pursued in two ways:

1. Make the present fire control more tamper proof.
2. Design a new fire control.

"Working with Production, the Legal Department and Du Pont consultants, a number of possible improvements to the present fire control have been identified (Chart 33).

- (1) A warning 'Do not adjust Trigger Assembly' will be stamped into the side plate of the fire control.
- (2) Special screw heads will be developed to further discourage adjustment by anyone other than the factory or an authorized gunsmith.
- (3) A new sealant will be investigated that will enable us to prove conclusively that the seal on the adjusting screws has been broken.
- (4) A \$5,000 work order was authorized in March of this year for the Du Pont Engineering Department to assist us in developing a cleaning and lubrication procedure for the Model 700 Fire Control that can be included in the rifles instruction book.

"The evaluation program will consist of a preliminary review of all potential cleaning and lubrication candidates within proposed guidelines and selected products will be screened for performance. It is the program aim, if possible, to specify products on a generic name basis.

"Results of this work are expected in September.

AD 0001923

AD 0000920



NTBOOK144

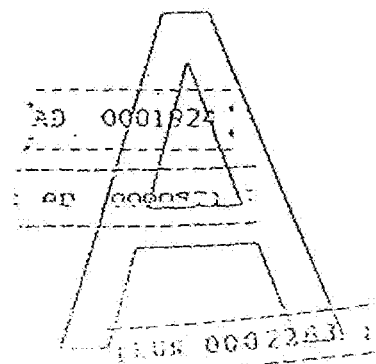
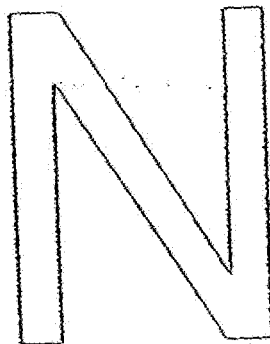
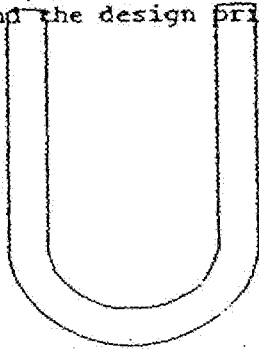
LUN 0002282

June 29, 1981

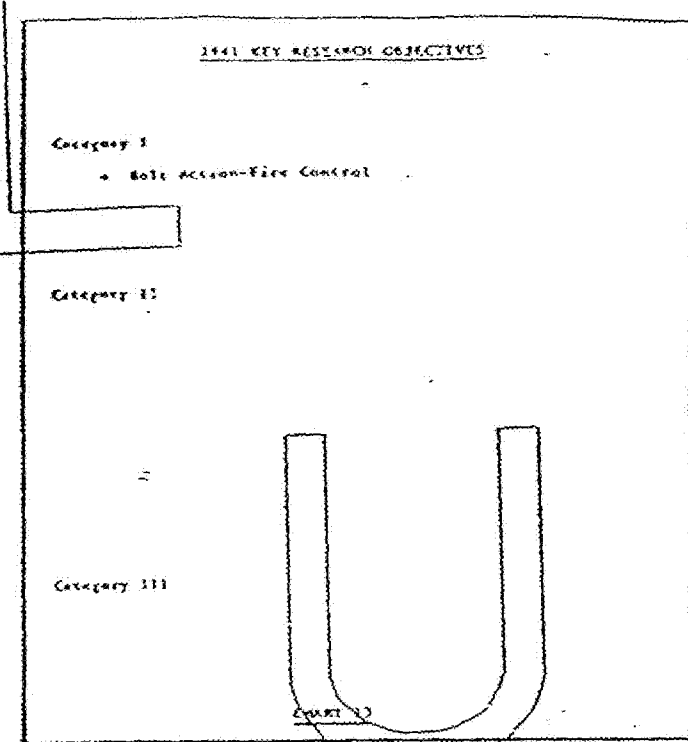
- (5) A longer trigger adjusting spring and screw will prevent 'O' spring load on the trigger if the screw is completely removed.

"Since last year an independent bolt lock and three new designs of a fire control for the M700 have been evaluated. One fire control was selected for continued development. A key feature of the new fire control is a safety that blocks the sear and the trigger. The bolt locks and five samples have been assembled and sent to the Test Lab for preliminary evaluation.

"Our goal remains to complete the redesign for the 700 and then extend the design principles to the 788 and 580 Triggers.



NTPROOK145



N

AD 0001927

AD 0000033

FLCK 0002260 1



NTBOOK146

NECESSITY

Man / Years
Exempt Salary

Bolt Action Fire Control 2.0

CHART 32

BOLT ACTION FIRE CONTROL

- Warning
- Special Screws
- Signature Sealant
- Cleaning & Lubrication
- Longer Return Spring

CHART 32

NEW PRODUCT DEVELOPMENT

Assignable Exempt
Man / Year

Project

Direct Tech Support

M-7

Bolt Action Carbine

M-700 ADL-BDL

.4

.4

.7

.1

.2

Total

CHART 32



NTBOOK147

AD 0001928

1116 0007707

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

BRIDGEPORT, CONNECTICUT

JULY 16, 1981

FRED MARTIN

SUBJECT: BOLT LATCH - RA-0247

Enclosed is a revised draft patent application on your invention, which covers the alternative of omitting a detent notch from the latch lever. The principal changes are on pages 3 (discussion of Stahl and Bader Patents modified); 4 (detent described as applicable to only one embodiment); 10 and 11 (please consider carefully whether the comparisons drawn between the alternative versions are valid); the Claims on pages 12-15; and the Abstract on page 16. The other pages are unchanged.

If you are satisfied that the description is adequate and accurate, please sign the Declaration attached to the "PTO copy", sign the Assignment and have it notarized, and return these papers for filing in the Patent and Trademark Office. But if changes are needed, please give me a call. I'll be in Ilion on July 22nd, and can discuss this more fully then if you wish.

*Bill Ericson*WILLIAM L. ERICSON
SENIOR PATENT COUNSELWLE/dt
Encls.

RA-0247



NTBOOK148

CONFIDENTIAL

MINUTE # 12 - JULY 27, 1981

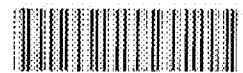
FROM PAGE NUMBER 5

SUBJECT: MODEL 700 BOLT LOCK

MODEL 700 BOLT LOCK

The Chairman asked that Production and Research develop an implementation schedule for eliminating the Bolt Lock from the Model 700 Safety Assembly. He indicated that the schedule should be based on a flying transition.

CONFIDENTIAL



NTBOOK149

MINUTE #12 - JULY 27, 1981

FROM PAGE NUMBER 5

SUBJECT: MODEL 700 BOLT LOCK

MODEL 700 BOLT LOCK

THE CHAIRMAN ASKED THAT PRODUCTION AND RESEARCH DEVELOP AN IMPLEMENTATION SCHEDULE FOR ELIMINATING THE BOLT LOCK FROM THE MODEL 700 SAFETY ASSEMBLY. HE INDICATED THAT THE SCHEDULE SHOULD BE BASED ON A FLYING TRANSITION.



NTBOOK150

CHRONOLOGICAL RECORD OF TEST 3

MODEL & DESCRIPTION

M-700 Trigger Block

CALIBER or GAUGE

DATE

9/8/81
9/1/81

TEST

New Design Evaluation

TESTER

HLL

PAGE NO.

New triggers installed parts are hardened
and colored

Trigger block plungers have been
replaced deformation noted



NTBOOK151

(Ilion Research Division presentation contd.)

MAJOR PRODUCT UPGRADING

Bolt Action Fire Control

Although Remington Bolt Action Rifles have Fire Controls that have been in the line for many years, and have proven themselves to be safe and reliable, it was felt that these designs should be looked at and analyzed in light of new processing technology and materials. With this in mind, the following items were investigated. (Slide A23)

1. Improved Trigger Pull
2. Cost Improvement
3. Standardization of Operation

Improved Trigger Pull

The present Triggers at times have a variation in poundspull that can be distracting to the shooter. It was felt that improvements could be made by improving surface finish of mating parts and by the use of better materials. Grinding of surfaces and plating of parts are being investigated. Some redesign for elimination of parts should also help this problem and will now be covered under cost improvements.

Cost Improvements

The first thing to be looked at under cost improvement was simplification of design so that as many parts as possible could be used by each of the various models.

IREM 0028199-1

IREM 0027577-1



NTBOOK051

(Ilion Research Division presentation contd.)

MAJOR PRODUCT UPGRADING

Cost Improvements - Contd. (Slide A24)

The design of the Model 700 and Model 600 Sear Safety Cam is being altered so that the same part will be used in both assemblies and models will be in test by the end of July.

(Slide A25)

Consolidation of design, if and where possible, is being looked at to help cut down on the number of parts. The Trigger of the Models 700 and 600 Fire Control can presently be adjusted for engagement with the Sear Safety Cam and for overtravel. It can also be adjusted for pounds pull when the Action is removed from the Stock. Designs have been altered and test models made to incorporate these features.

This slide shows the present Fire Control and a newly developed test model.

1. Fixed Sear and Trigger engagement

On the present Fire Control this is accomplished by adjustment of the Trigger Engagement Screw. On the proposed assembly, this is accomplished by a shoulder on the Sear that stops the Trigger and gives fixed engagement.

2. Fixed overtravel

On the present assembly, this is accomplished by adjustment of the Trigger Stop Screw. On the proposed model, a shoulder near the rear of the Sear Safety Cam will stop the Trigger overtravel.

IREM 0027578 1



NTBOOK052

(Ilion Research Division presentation contd.)

MAJOR PRODUCT UPGRADING

Cost Improvements - Contd.

3. Trigger externally adjustable

The adjustment of the present assembly is done with the Trigger Adjusting Screw and Spring after removing the Action from the Stock. The proposed Screw and Spring for adjusting pounds pull will be placed in the Trigger so that adjustment can be made without removing the Action from the Stock.

Another feature being tested in this new model is removal of the present Connector.

The first designs will be ready for testing by the end of July. These designs eliminate one screw, a Connector and two drilled and tapped holes. If materials being investigated for these parts do not prove adequate, more expensive material may be required. This could negate some cost improvements; however, improved function in creep and Trigger pull would help outweigh the cost disadvantage.

Standardization of Operation

Presently, all of our shotguns and some of our rifles can be unloaded with the Safe in the "ON" position. The rest of our rifles must be unloaded with the Safe in the "OFF" position. This is, and has been, a normal practice for years on rifles sold to the trade by all manufacturers. Research feels that Remington should offer the customer the option of being able to unload their Bolt Action firearms with the Safe in the "ON" position, while at the same time if possible, retaining the Bolt Lock condition. Designs have been developed and some models built for testing. They have been given to Marketing for their evaluation in order to decide which type of design the customer would prefer.

IREM 0027579 1



NTBOOK053

(Ilion Research Division presentation contd.)

MAJOR PRODUCT UPGRADING

Standardization of Operation - Contd. (Slide A26)

One model is a three-position Safety. The "OFF" Safety position is forward. The middle position is "ON" Safe and the Bolt is locked. The rear position is "ON" Safe but the Bolt can be unlocked.

(Slide A27)

The other model is a Bolt Lock mounted on the Bolt Plug. It is used in conjunction with the present two-position Safety. When the Bolt is closed and cocked, the Bolt Handle is locked in the down position. With the Safe in the "OFF" position, the Trigger can be actuated to fire the rifle and this will automatically unlock the Bolt so that it can be opened. To open the Action with the Safe "ON", the Bolt Lock Lever on the Bolt Plug must be depressed, while at the same time, lifting the Bolt Handle. This can be done easily with a natural motion of the hand and thumb.

Prototypes of these designs are now in test. It is anticipated that final designs will be ready for acceptance by December 1978.

Guns with each of these design features are on display boards and can be examined after the presentations.

XSG

Because the autoloading shotgun market is such an important segment of the total industry, there has been heavy competitive pressure over the past few years. This can readily be seen in the quality and durability of our competitors' latest offerings. While we have not yet lost market share, the effects of the Browning 2000, Winchester SX-1 and Smith and Wesson 1000 will be felt.



NTBOOK054

IREM 002758C-1

CHRONOLOGICAL RECORD OF TEST

M-700 TRIGGER BLOCK

4/8/81/9/1/81

NEW DESIGN EVALUATION

**NEW TRIGGERS INSTALLED
PASTE AND HARDENED AND
COLORED.**

**TRIGGER BLOCK PLUNGERS
HAVE BEEN REPLACED
DEFORMATION NOTED.**



NTBOOK152

CONFIDENTIAL

MINUTE # 18 - OCT. 15, 1981

FROM PAGE NUMBER 3

SUBJECT - MODEL 700 BOLT LOCK

CENTER FIRE RIFLES

MODEL 700 BOLT LOCK

Production reported that plans have been finalized to delete the Bolt Lock from the Model 700 fire Control. Research will transmit drawings by October 16. Vendor samples of the new Safety Lever will be available by the end of November. Production quantities will be available from the vendor by mid-December.

Marketing noted that the Bolt Lock is to be phased out of the Model 700 line in order to simplify unloading. Because it is a change in process only, it will not affect guns currently in the warehouse or guns received for repair.

The Chairman directed that the Product Safety Committee should review the owner's manual, and that the change be implemented in December.

CONFIDENTIAL



NTBOOK153

OPERATIONS COMMITTEE
ILION DIVISION

OCTOBER 15, 1981

CENTER FIRE RIFLES

MODEL 700 BOLT LOCK

PRODUCTION REPORTED THAT PLANS HAVE BEEN FINALIZED TO DELETE THE BOLT LOCK FROM THE MODEL 700 FIRE CONTROL. RESEARCH WILL TRANSMIT DRAWINGS BY OCTOBER 16. VENDOR SAMPLES OF THE NEW SAFETY LEVER WILL BE AVAILABLE BY THE END OF NOVEMBER. PRODUCTION QUANTITIES WILL BE AVAILABLE FROM THE VENDOR BY MID-DECEMBER.

MARKETING NOTED THAT THE BOLT LOCK IS TO BE PHASED OUT OF THE MODEL 700 LINE IN ORDER TO SIMPLIFY UNLOADING. BECAUSE IT IS A CHANGE IN PROCESS ONLY, IT WILL NOT AFFECT GUNS CURRENTLY IN THE WAREHOUSE OR GUNS RECEIVED FOR REPAIR.

THE CHAIRMAN DIRECTED THAT THE PRODUCT SAFETY COMMITTEE SHOULD REVIEW THE OWNER'S MANUAL, AND THAT THE CHANGE BE IMPLEMENTED IN DECEMBER.



OPERATIONS COMMITTEE
ILION DIVISION

OCTOBER 15, 1981

MINUTE #18 - 1981

From Page 3

CENTER FIRE RIFLES

MODEL 700 BOLT LOCK

Marketing noted that the Bolt Lock is to be phased out of the Model 700 line in order to simplify unloading. Because it is a change in process only, it will not affect guns currently in the warehouse or guns received for repair.

The Chairman directed that the Product Safety Committee should review the owner's manual, and that the change be implemented in December.



NTBOOK155

PSSC 12-7-81

MINTE p.2

-2-

Policy for Dealing with Bolt Locks on Model 700 and
Model 40X (B.C. & R) Firearms Returned for Repairs

There was discussion of procedures to be followed in repairing firearms with bolt locks. Since the absence or presence of a bolt lock is not a safety problem, determination of the policy to follow in these circumstances was not a matter for the Product Safety Subcommittee.

C. A. Nash
C. A. Nash, Secretary
Product Safety Subcommittee

CAN/kam

PLAINTIFF'S
EXHIBIT

NTB-156

REM 0000568 1



NTBOOK156

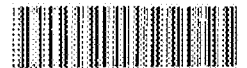
PRODUCT SAFETY SUB-COMMITTEE
ILION DIVISION

DECEMBER 7, 1981

MINUTE #8 - 1981

POLICY FOR DEALING WITH BOLT
LOCKS ON MODEL 700 AND MODEL
40X (B.C.&R) FIREARMS RETURNED
FOR REPAIRS

THERE WAS DISCUSSION OF PROCEDURES TO BE FOLLOWED IN REPAIRING FIREARMS WITH BOLT LOCKS. SINCE THE ABSENCE OR PRESENCE OF A BOLT LOCK IS NOT A SAFETY PROBLEM, DETERMINATION OF THE POLICY TO FOLLOW IN THESE CIRCUMSTANCES WAS NOT A MATTER FOR THE PRODUCT SAFETY SUBCOMMITTEE.



CONFIDENTIAL

M

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 BR case .25 caliber

F. E. Martin:ws

MUR 0006572

CAM 0001190

DF 0001191



NTBOOK158

CONFIDENTIAL

MINUTE 0 4 - 1982

FROM PAGE NUMBER 3

SUBJECT - MODEL 700 BOLT LOCK DELETION

CENTER FIRE RIFLES

MODEL 700 BOLT LOCK DELETION

Production reported that the initial sample of Safety Levers from the vendor's new tooling was rejected for hole size and cam position. New samples are expected by February 12. Production shipments will begin two to four weeks after sample approval.

About 10,000 old style Safety Levers have been modified by the vendor. The modification involves clipping the Safety Arm to a new (shorter) dimension. Another 10,000 will be modified by mid-February. As soon as sample parts from new production tooling have been approved, the change will be implemented using the modified Safeties on hand. Research will test a sample from the first production lot.

The Chairman noted that further discussion is required to determine how to handle the transition and subsequent customer repairs. The Chairman also pointed out that the Bolt Locks will be deleted from other bolt action rifles as well.

CONFIDENTIAL



NTBOOK159

CC: J. S. MARTIN (No Attach.)
C. B. WORKMAN (No Attach.)

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

BRIDGEPORT, CONNECTICUT

JANUARY 4, 1982

FRED MARTIN

RE: BOLT ACTION SAFETY WITH SEAR AND TRIGGER BLOCKS

A preliminary patent search has been made on the trigger assembly shown in your drawing of February 10, 1981 (unnumbered), which shows a Model 700 sear-blocking safety with the addition of a spring-biased trigger block plunger (SKB-3633). This plunger is slidable transversely in a hole through the trigger; it has an enlarged tip which is depressed by the safety lever into locking engagement with the trigger in the "safe" position, but releases the trigger by seating in a conical recess in the safety lever in the "fire" position.

My search did not disclose any competitively-owned patents that would pose any infringement risks in connection with your design. While other types of safeties were found that block both the sear and the trigger, I believe that patent protection may be obtainable in the event your design is used.

Hildebrandt Patent 3,608,224 shows a safety lever 30 which carries a bent rod 36, and in the "safe" position, slides this rod between opposed surfaces of the sear 16 and trigger 8 to block movement of either.

Horsrud Patent 2,310,238 has a safety slide 123 formed with a vertical arm whose extremities 122, 125 are engaged with the sear 66 and the trigger 87 to block movement of either, when the slide is moved to the "safe" position.

These references are representative of the state of the art; no patent has been found that discloses a system equivalent to yours.

WLE/dt
Attachs.

45.100

W L Ericson
WILLIAM L. ERICSON
SENIOR PATENT COUNSEL



NTBOOK160

M

File NBAR

CONFIDENTIAL

Green Valley, Arizona

Jan. 15, 1982

To Clark Workman

From Wayne E. Leek *Wayne E. Leek*

Subjects: December 1981 report on Silhouette activities
and an outline on ideas to support a new bolt
action line of rifles and shotguns.

Matches attended: 22 RF Silhouette

Dec. 20 Nogales Rifle Club

Match Winner Leek 28/40
24/40

Dec. 27 Tucson Rifle Club

Match Winner Leek 27/40
29/40

Jan. 1982 report on more details supporting new
bolt action designs.

Suggestions to support new bolt action rifle design:

I Analysis of M70C CP rifle

A. Positive features

1. Superior strength.
2. Adequate accuracy.
3. General appearance satisfactory.
4. Complete range of popular calibers.
5. Priced competitively.
6. Right and left hand models.

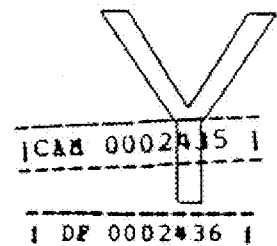
B. Negative features

1. Weak recoil bracket.
2. Ring extractor (bad reputation).
3. Round receiver (unreliable bedding).
4. Trigger adjustment insecure and weak.
5. Lock time (slow).
6. Manual safety (inadequate).
7. Scope base mounting (inadequate).
8. Match rifles (not competitive).

II Proposed foundation for improved rifle.

- A. New bedding and recoil bracket.
- B. Redesigned claw extractor.

MUR 0007698



JAN. 15, 1982

TO: CLARK WORKMAN

FROM: WAYNE E. LEEK

*** * ***

I. ANALYSIS OF M700 CF RIFLE

*** * ***

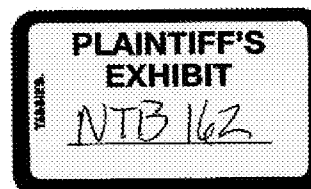
B. NEGATIVE FEATURES

*** * ***

**4. TRIGGER ADJUSTMENT
INSECURE AND WEAK**

*** * ***

6. MANUAL SAFETY (INADEQUATE).



NTBOOK162

Operations Committee Illion Division

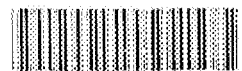
Firearms

New Product Development

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.

**Research Department
January 1982**



NTBOOK163

FIREARMS

NEW PRODUCT DEVELOPMENT

U

N

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.

Research Department

Monthly Report

-1-

January 1982

1 RR 0003084 1

1 RR 0000101 1

1 NOZ 0002703



NTBOOK164

M

CONFIDENTIAL

FIREARMS

NEW PRODUCT DEVELOPMENT

U

R

R

A

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.

Y

Research Department

-1-

January 1982

REF 0045171

BR 0000101



NTBOOK165

MUR 0009384

**RESEARCH DEPARTMENT
JANUARY 1982**

**REASONS FOR
REMOVAL OF "CONNECTOR"**

- 1. ELIMINATE A PART**
- 2. INSURE A MORE POSITIVE LIFT**
- 3. MAINTAIN PROPER CLEARANCE**



NTBOOK166

M

CONFIDENTIAL

FIREARMS

U

R

R

Bolt Action Rifles

Five M/700 fire controls with blocked sears and blocked triggers are in the test lab or evaluation. Sample fire controls are complete without a connector to eliminate a part, insure a more positive life, and maintain proper clearance.

Two Model 7 New Generation bolt action rifles are now complete.

Bob Emmons Styling - Bolt Action Rifle

Two sample stocks were hand delivered to Ilion by Bob Emmons and reviewed by Research, Marketing and Production personnel. Based on modifications to facilitate Production operations, Emmons will prepare a third sample which will feature alterations to the stock, action, and barrel contour. That sample is scheduled for completion by April 1, 1982.

Research Department

-1-

February 1982

REM 0045161

RB 0000081

MUR 0009371



NTBOOK167

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

February 24, 1982

Xc: C.B. Workman
J.S. Martin
C.E. Ritchie
J.W. Bower

TO: ALL RESEARCH PERSONNEL
FROM: J. W. BROOKS *JWB*

On Friday, February 26, 1982 the Plant will remove from the Production area and the Custom Shop all safety assemblies with the bolt lock arm. They will be delivered to Arms Service. All new trigger assemblies will have the bolt lock removed.

Beginning February 26 all Model 700 rifles (Right and Left Hand) 40XB, 40XC, 40BBR and 40XR rifles that are returned to Production should be tagged to identify them if they have a safety with the bolt lock arm.

JWB:T



NTBOOK168

REMINGTON ARMS COMPANY, INC.

INTERDEPARTMENTAL CORRESPONDENCE

Remington

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Kc: H. K. Boyle
D. P. Lunde
J. W. Brooks
J. S. Martin

LIMITED DISTRIBUTION

March 15, 1982

TO: C. B. WORKMAN
FROM: T. L. CAPELETTE
SUBJECT: BOLT ACTION RIFLE MARKETING STRATEGY

Clem Riley called last Friday to indicate that they are revising the Marketing Strategy based on further discussions with Sales and Marketing personnel. The new strategy is as follows:

A. 1983

1) Restyled "ADL"

- New Introduction
- New Model designation
- With scope mounts
- Direct competition with Ruger

2) BDL

- Unchanged
- No scope mounts (Not even on fulfillment)

3) Classic

- Unchanged
- Special Order only

REM 0034024



NTBOOK169

4) Current ADL

— Unchanged

— Reduce to three (3) most popular calibers only (eg. 30-06, .243, etc.)

— Strategy is to offer through Mass Merchants (K-Mart)

9. 1984

1) Restyled "ADL"

— Add calibers

2) BDL

— Unchanged

— Phase down production to zero inventory

3) Classic

— Unchanged

4) Current ADL

— Unchanged

C. 1985

1) Restyled "ADL"

— Unchanged

2) Restyled "BDL"

— Approximately six (6) calibers

— Except for Varmint and Left-Hand specials

REM 0034925



NTBOOK170

3) Classic

~~Convert to Restyled BDL~~

~~Special calibers by order only~~

4) Current ADL

~~Delete or unchanged and delete in 1986~~

TLC:ws

: REM 0034026 :



NTBOOK171

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington
SUPERIORPETERS
SUPERIORXc: J. W. Brooks
J. S. Martin
F. E. Martin

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

April 30, 1982

TO: C. B. WORKMAN

FROM: T. L. CAPELETTI *TC*

SUBJECT: BOLT ACTION RIFLE DEVELOPMENT — REPLACEMENT FOR MODEL 700

Based on our discussion Friday, April 23, the proposed specifications for bolt action rifle development are as follows:

A. Preferred Design B. Contingency Design #1 C. Contingency Design #2

1) Receiver

- | | | |
|-------------------------------------|-------------------------------------|-----------------------------------|
| a) Flat bottom octagonal | a) Round bottom octagonal | a) Full round |
| b) Integral recoil lug | b) M/700 - thicker | b) M/700 - thicker |
| c) Integral & standard scope mounts | c) Integral & standard scope mounts | c) Standard scope mounts |
| d) Anti-bind bolt | d) M/700 - no bind | d) M/700 - no bind |
| e) Front lock
— two lug system | e) Front lock
— two lug system | e) Front lock
— two lug system |
| f) Short and long actions | f) Short and long actions | f) Short and long actions |
| g) New bolt stop-release | g) New bolt stop-release | g) M/700 |



NTBOOK172

| REM 0027949 |

In 10 shotshells shot: 1 misfire (Hoppes Solvent)

In 20 centerfire rounds:

Spray: Hoppes Solvent	3 misfire - 1 delay
Hoppes Oil	3 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 came out equal to CRC and both well ahead of 711.

7. 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:

Outstanding lubricating and cleaning properties as well as good rust preventitive.

~~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.~~



NTBOOK173

IREM 0027960

REMINGTON ARMS COMPANY, INC.
INTER-DEPARTMENTAL CORRESPONDENCE

Remington
CUMM

PSTERS
CUMM

Xc: J. W. Brooks
J. S. Martin
F. E. Martin

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

April 30, 1982

TO: C. B. WORKMAN
FROM: T. L. CAPELETTI *TC*
SUBJECT: BOLT ACTION RIFLE DEVELOPMENT — REPLACEMENT FOR MODEL 700

Based on our discussion Friday, April 23, the proposed specifications for bolt action rifle development are as follows:

A. Preferred Design

B. Contingency Design #1

C. Contingency Design #2

2) Safety

a) Block trigger and firing pin

a) Block trigger and firing pin

a) Block trigger and sear

b) Reposition switch to bolt plug

b) Reposition switch to tang

b) M/700

c) Independent bolt lock

c) Independent bolt lock

c) No bolt lock

d) Cocking indicator

d) Cocking indicator

d) Cocking indicator

3) Fire Control

a) Fully adjustable in stock - With limits on engagement
— Safe lower limit

a) Weight of pull adjustable in stock
— Pre set engagement and overtravel

a) Tamper proof M/700

b) Standard trigger

b) Standard trigger

b) Double set trigger

c) Exposed components
— No housing

c) Skeletonized housing

c) Skeletonized housing



NTBOOK174

April 30, 1982

To: C.B. Workman

From: T.L. Capeletti

Subject: Bolt Action Rifle Development — Replacement for Model 700

Based on our discussion Friday, April 23, the proposed specifications for bolt action rifle development are as follows:

**A. Preferred
Design**

**B. Contingency
Design #1**

**C. Contingency
Design #2**

2) Safety

a) Block trigger
and firing pin

a) Block trigger
and firing pin

a) Block trigger
and sear

c) Independent
bolt lock

c) Independent
bolt lock

c) No bolt lock

3) Fire Control

a) Fully adjustable
in stock — With limits
on engagement
— Safe lower limit

a) Weight of pull
adjustable in
stock — Pre set
engagement
and overtravel

a) Tamper proof
M/700

b) Standard trigger

b) Standard trigger

b) Double set trigger

c) Exposed
components
— No housing

c) Skeletonized
housing

c) Skeletonized
housing



NTBOOK175

A. Preferred DesignB. Contingency Design #1C. Contingency Design #22) Safety

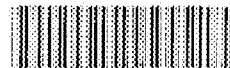
- | | | |
|-----------------------------------|---------------------------------|---------------------------|
| a) Block trigger and firing pin | a) Block trigger and firing pin | a) Block trigger and sear |
| b) Reposition switch to bolt plug | b) Reposition switch to tang | b) M/700 |
| c) Independent Bolt lock | c) Independent bolt lock | c) No bolt lock |
| d) Cocking indicator | d) Cocking indicator | d) Cocking indicator |

3) Fire Control

- | | | |
|--|--|-------------------------|
| a) Fully adjustable in stock - With limits on engagement
— Safe lower limit | a) Weight of pull adjustable in stock
— Pre set engagement and overtravel | a) Tamper proof M/700 |
| b) Standard trigger | b) Standard trigger | b) Double set trigger |
| c) Exposed components
— No housing | c) Skeletonized housing | c) Skeletonized housing |

4) Barrel

- | | | |
|---|--|------------------------------|
| a) High gloss without removing hammer marks | a) High gloss without removing hammer marks | a) M/700 |
| b) Light weight contour | b) Light weight contour | b) Light weight contour |
| c) Target crown | c) Target crown | c) Target crown |
| d) Recoil reducing muzzle device - Option | d) Recoil reducing muzzle device - Option | d) No recoil reducing device |
| e) Stainless steel - Option | e) Carbon steel | e) Carbon steel |
| f) Clean barrel | f) Drilled & tapped for iron sights
— no sights | f) Iron sights |



NTBOOK176

REM 0027950

Remington-Union

REMINGTON ARMS COMPANY, INC.

PATENT

SPEEDING BREAKS

12.25

POUNDS METAL PARTS

IRON, NEW YORK

IRON, NEW YORK

IRON, NEW YORK

MANUFACTURERS OF

TRAPS

TARGETS

ILLION, NEW YORK 13357

TELEPHONE 315-334-7931

MAY 11, 1982

OFFERS CARTRIDGE DIVISION

BRIDGEPORT, CONNECTICUT

TARGETS, ADA, OKLAHOMA

ATLANTA, GEORGIA

INDIAN, OHIO

CABLE—ARTERY, BRIDGEPORT

ILLION, New York
May 13, 1982

TO: RECOMMENDED GUNSMITH INFORMATION BULLETIN

MODEL 700 - CHANGE IN OPERATION

CC1143

Market research, over the past several years, shows that customer interest in the bolt lock feature on the Model 700 rifle has declined. As a result, we have removed it. Elimination of the bolt lock period the bolt handle to be raised when the safety switch is either in the "S" or "F" position, simplifying loading and unloading. Appropriate changes in the instruction books have been made.

Since this change does not involve any product obsolescence, the order number will remain the same and there will be no formal trade announcement. Any gun returned to Illion Arms Service for repair will be returned to the customer with the same style safety switch it had when received.

RJSTJ:tpj

R. J. St. John

PR

IREN 0013838 1



NTBOOK177

MINUTE # 10 - MAY 19, 1982

FROM PAGE NUMBER - 6 & 7

SUBJECT: MODEL 700 TRIGGER PULL SPECIFICATIONS

MODEL 700 TRIGGER PULL SPECIFICATIONS

Production reviewed the current standards and proposed changes to the Model 700 Trigger Assembly.

The Model 700 Trigger Assembly is adjusted with the aid of a 10 power optical comparator. The Trigger Assembly is held in a special fixture on the comparator while the operator makes the following adjustments to preset limits:

- o Sear engagement is adjusted to give .015 - .020 of an inch bearing on the Trigger Connector (Specifications .015" - .020".)
- o Trigger overtravel is adjusted to yield .005 inch clearance between the Connector and Sear.
- o Trigger pull is adjusted with a dead weight of four pounds. (Specifications 3 to 5 pounds.)

The safety mechanism cams the Sear Safety Cam away from the Connector, disengaging the Trigger. The clearance is presently checked with shim stock through the inspection hole. For improved operator convenience this technique will be replaced by a special gage which fits in the bolt slot and measures the sear lift with a dial indicator. The gages are on order and implementation is expected in three months.

It is proposed the Trigger Assemblies be lubricated with a recently developed improved lubricant. All the process equipment required has been received and it is expected Research will complete the lubrication testing by June 1, 1982.

To improve the yield of chrome plated Sear Safety Cams, Trial and Pilot parts are being run with an additional sintering operation. This added operation will decrease the porosity of the powdered metal part, improving its plating properties.



NTBOOK178

IREM 0020751 1

MINUTE # 10 - MAY 19, 1982

FROM PAGE NUMBER - 6 & 7

SUBJECT: MODEL 700 TRIGGER PULL SPECIFICATIONS

MODEL 700 TRIGGER PULL SPECIFICATIONS

Production reviewed the current standards and proposed changes to the Model 700 Trigger Assembly.

The Model 700 Trigger Assembly is adjusted with the aid of a 10 power optical comparator. The Trigger Assembly is held in a special fixture on the comparator while the operator makes the following adjustments to preset limits:

- o Sear engagement is adjusted to give .015 - .020 of an inch bearing on the Trigger Connector (Specifications .015" - .020".)
- o Trigger overtravel is adjusted to yield .005 inch clearance between the Connector and Sear.
- o Trigger pull is adjusted with a dead weight of four pounds. (Specifications 3 to 5 pounds.)

The safety mechanism cams the Sear Safety Cam away from the Connector, disengaging the Trigger. The clearance is presently checked with shim stock through the inspection hole. For improved operator convenience this technique will be replaced by a special gage which fits in the bolt slot and measures the sear lift with a dial indicator. The gages are on order and implementation is expected in three months.

It is proposed the Trigger Assemblies be lubricated with a recently developed improved lubricant. All the process equipment required has been received and it is expected Research will complete the lubrication testing by June 1, 1982.

To improve the yield of chrome plated Sear Safety Cams, Trial and Pilot parts are being run with an additional sintering operation. This added operation will decrease the porosity of the powdered metal part, improving its plating properties.

PLAINTIFF'S
EXHIBIT

NTB 178



NTBOOK178

IREM 6020751 1

CENTER FIRE RIFLESMODEL 700 TRIGGER PULL SPECIFICATIONS - Contd.

The safety mechanism cams the Sear-Safety Cam away from the Connector, disengaging the Trigger. The clearance is presently checked with shim stock through the inspection hole. For improved operator convenience this technique will be replaced by a special gage which fits in the bolt slot and measures the sear lift with a dial indicator. The gages are on order and implementation is expected in three months.

It is proposed the Trigger Assemblies be lubricated with a recently developed improved lubricant. All the process equipment required has been received and it is expected Research will complete the lubrication testing by June 1, 1982.

To improve the yield of chrome plated Sear Safety Cams, Trial and Pilot parts are being run with an additional sintering operation. This added operation will decrease the porosity of the powdered metal part, improving its plating properties.

MODEL 700 - BOLT LOCK DELETION

As directed during the October 1981 meeting, the Bolt Lock has been removed from the current production of Model 700's. Since this change is being made without product obsolescence, there will be no trade announcement and the order number remains the same. Letters of notification are being sent to sales personnel and our recommended gunsmiths. Procedures for repair of Model 700's are discussed in F. T. Millener's letter of May 14, 1982. The basic guideline in that letter is to return a gun to the customer with the same features it had when it was sent to Remington.

GENERALDEVELOPMENT SCHEDULE REVIEW

Research reviewed the Development Schedule and indicated that it was somewhat optimistic at this time. Revisions may be necessary to allow for delays created by the shortened work week and the priority given to Model Seven LWT Trial and Pilot tooling.

PLAINTIFF'S
EXHIBIT

NTB 179

REM 0027962 1



NTBOOK179

CENTER FIRE RIFLESMODEL 700 TRIGGER PULL SPECIFICATIONS - Contd.

The safety mechanism cams the Sear-Safety Cam away from the Connector, disengaging the Trigger. The clearance is presently checked with shim stock through the inspection hole. For improved operator convenience this technique will be replaced by a special gage which fits in the bolt slot and measures the sear lift with a dial indicator. The gages are on order and implementation is expected in three months.

It is proposed the Trigger Assemblies be lubricated with a recently developed improved lubricant. All the process equipment required has been received and it is expected Research will complete the lubrication testing by June 1, 1982.

To improve the yield of chrome plated Sear Safety Cams, Trial and Pilot parts are being run with an additional sintering operation. This added operation will decrease the porosity of the powdered metal part, improving its plating properties.

MODEL 700 - BOLT LOCK DELETION

As directed during the October 1981 meeting, the Bolt Lock has been removed from the current production of Model 700's. Since this change is being made without product obsolescence, there will be no trade announcement and the order number remains the same. Letters of notification are being sent to sales personnel and our recommended gunsmiths. Procedures for repair of Model 700's are discussed in F. J. Millener's letter of May 14, 1982. The basic guideline in that letter is to return a gun to the customer with the same features it had when it was sent to Remington.

GENERALDEVELOPMENT SCHEDULE REVIEW

Research reviewed the Development Schedule and indicated that it was somewhat optimistic at this time. Revisions may be necessary to allow for delays created by the shortened work week and the priority given to Model Seven LWT Trial and Pilot tooling.



NTBOOK179

REM 0027962 1

MODEL 700 FIRE CONTROL LUBRICATION EVALUATION

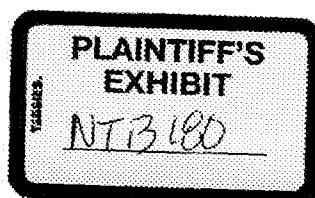
Good morning. My name is Evan Ritchie; I am the Sr. Supervisor of the Ilion Firearms Research Testing & Measurement Lab.

Today, I would like to review with you the results to date of the Model 700 fire control lubrication testing.

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. 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 from -20°F. to 120°F.



IREM 0027954

MODEL 700 FIRE CONTROL LUBRICATION EVALUATION ---

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.

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. 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 from -20°F. to 120°F.



NTBOOK180

1 REM 0027954

JUNE 30, 1982

**MODEL 700 FIRE CONTROL
LUBRICATION EVALUATION**

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.

IT IS CLEAR WE HAVE A PROBLEM IN FIRE ARMS 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.



NTBOOK181

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.



NTBOOK182

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

SUPREMACY

PETERS

WEBB

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, / R.E. Nightingale,
Foreman-Test Lab / Foreman-Measurement Lab

Signature

Date

C.E. Ritchie,
Sr. Supervisor - Testing,
Meas. & Mech. Analysis Lab

Signature

Date



NTBOOK183

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington



PETERS



Distribution: C. B. Workman
J. S. Martin
C. E. Ritchie
F. E. 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, / R.E. Nightingale,
Foreman-Test Lab / Foreman-Measurement Lab

Signature

Date

9-15-82

C.E. Ritchie,
Sr. Supervisor - Testing,
Meas. & Mech. Analysis Lab

Signature

Date

9-14-82



NTBOOK183

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 6



NTBOOK184

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 6



MINUTE #16 - September 22, 1982

FROM PAGE NO. 24

SUBJECT: NEW BOLT ACTION RIFLE
1983-1987 Firearms Research Strategy

New Bolt Action Rifle

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

A

P

A



REM 0020707 1

MINUTE #16 - September 22, 1982

FROM PAGE NO. 24

SUBJECT: NEW BOLT ACTION RIFLE
1983-1987 Firearms Research Strategy

New Bolt Action Rifle

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



NTBOOK185

IREM 0020707 1

MINUTE 016 - September 22, 1982
FROM PAGE NO. 25
SUBJECT: NEW BOLT ACTION RIFLE
1983-1987 Firearms Research Strategy

Chart XLIX and 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 desirable 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 receiver 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

ITEM 0020708 1



NTBOOK186

MINUTE #16 - September 22, 1982
FROM PAGE NO. 25
SUBJECT: NEW BOLT ACTION RIFLE
1983-1987 Firearms Research Strategy

Chart XLIX and 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 desirable 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 receiver 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

IREM-0020708-1

#108-4-

H

MODEL 700 ADL

PRODUCT/MARKETING REVITALIZATION RESEARCH

A

P

A

For: Remington Arms Company, Inc.
June, 1982



NTBOOK187

IREM 0026772

#108-4-

MODEL 700 ADL

PRODUCT/MARKETING REVITALIZATION RESEARCH

For: Remington Arms Company, Inc.
June, 1982



NTBOOK187

IREM 0026772

TABLE OF CONTENTS

BACKGROUND AND PURPOSE. 1

SUMMARY AND STRATEGIC IMPLICATIONS. 2

STEP ONE

INTRODUCTION. 6

THE FOCUS GROUPS. 7

THE PERSONAL INTERVIEWS. 17

STEP TWO

INTRODUCTION. 40

PREFERENCE. 41

DETAILED LIKES AND DISLIKES OF THE MODELS. 55

EVALUATION OF SCOPE MOUNTING SYSTEMS. 63

IRM 0026773 1



NTBOOK188

BACKGROUND AND PURPOSE

In connection with Remington's concern over increasing market share loss of its Model 700 ADL bolt action center fire rifle (presumably) to the Ruger Model 77, this research was designed to:

1. Provide additional qualitative understanding of comparatively recent Ruger purchase decisions in this category;
2. Screen four new ADL prototypes to identify the best combination of finish and stock style to place against the Ruger 77 in the marketplace;
3. Conduct a preference test between the winner in 2., above and the current Ruger 77; and also to evaluate a Remington scope mounting system being considered as a standard addition to the new ADL model.

The research was conducted in two steps, with the first addressing objectives 1. and 2., above, and the second step addressing objective 3. Detailed descriptions of method and sample are set forth in the separate "Introduction" sections for each step.

REM 0024774



NTBOOK189

TABLE OF CONTENTS

BACKGROUND AND PURPOSE. 1

SUMMARY AND STRATEGIC IMPLICATIONS. 2

STEP ONE

INTRODUCTION. 6

THE FOCUS GROUPS. 7

THE PERSONAL INTERVIEWS. 17

STEP TWO

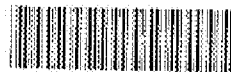
INTRODUCTION. 40

PREFERENCE. 41

DETAILED LIKES AND DISLIKES OF THE MODELS. 55

EVALUATION OF SCOPE MOUNTING SYSTEMS. 63

IRGM 0326773 1



NTBOOK188

BACKGROUND AND PURPOSE

In connection with Remington's concern over increasing market share loss of its Model 700 ADL bolt action center fire rifle (presumably) to the Ruger Model 77, this research was designed to:

1. Provide additional qualitative understanding of comparatively recent Ruger purchase decisions in this category;
2. Screen four new ADL prototypes to identify the best combination of finish and stock style to place against the Ruger 77 in the marketplace;
3. Conduct a preference test between the winner in 2., above and the current Ruger 77; and also to evaluate a Remington scope mounting system being considered as a standard addition to the new ADL model.

The research was conducted in two steps, with the first addressing objectives 1. and 2., above, and the second step addressing objective 3. Detailed descriptions of method and sample are set forth in the separate "Introduction" sections for each step.

REN 0024774 1



NTBOOK189

MINUTE 016 - September 22, 1982
FROM CHART NO. XLIX
SUBJECT: NEW BOLT ACTION RIFLE
1983-1987 Firearms Research Strategy

MODEL REQUIREMENTS

NEW BOLT ACTION RIFLE

KEY ELEMENTS

RECEIVER

- o FLAT BOTTOM - OCTAGONAL TOP
- o INTEGRAL RECOIL LUG
- o INTEGRAL AND STANDARD SCOPE MOUNTS

SAFETY

- o BLOCK TRIGGER AND FIRING PIN
- o INDEPENDENT BOLT LOCK

FIRE CONTROL

- o FULLY ADJUSTABLE - IN STOCK

BARREL

- o HIGH GLOSS W/HAMMER MARKS
- o LIGHT WEIGHT CONTOUR



NTBOOK190

IREM 0020710 1

Other safeties in use are the firing pin block used by U.S. Repeating Arms (Winchester) and Weatherby.

SUMMARY OF INVENTION

The trigger block plunger has an enlarged tip that is depressed by the safety into a recess in the trigger when in the on safe position. The plunger releases the trigger by seating in a conical recess in the safety lever in the fire position. The plunger is mounted thru the trigger and housing and is spring loaded to the unblocked position.

INVENTION DISCLOSURE

Completely assembled this unit consists of the present trigger housing assembly modified to accept the plunger, the trigger altered to have a thru clearance-hole and blocking recess, a compression spring to actuate the plunger, a newly designed safety lever, and the trigger block plunger.

PRIOR ART

To the writer's knowledge there are no fire controls that have a trigger block passing thru the trigger.

This system was designed for Bolt Action Rifles to eliminate unnecessary trigger movement, and may be adapted to Remington's present line.

Fred E. Martin Date
Illion Research Division

FEM:ws



CODE NO.CATEGORY & TYPEFIRING (100 to 199)

100	Fails to cock.
101	Fails to fire or misfires.
102	Firing Pin strikes light blow, poor point.
103	Firing Pin fell out.
104	Firing Pin or Spring binds, length incorrect, protrudes
105	Firing Pin strikes off center, marks shells.
106	Fails to connect.
107	Safe off or fires closing.
108	Fires on safe or safe doesn't hold.
109	Fires when safe is pushed off.
110	Follows down or Hammer falls.
111	Pieces or primer in action or Bolt.
112	Right Connector doesn't seat in sear notch.
113	Trigger binds.
114	Trigger pull heavy, light, creeps, long. Poor
115	Safe binds, loose, excessive play, double click.
116	Max. header.
117	Min. header.
118	Bolt catches on Receiver (M/721-722 only).
119	Fires automatic, doubles.
120	Improper Head Space
121	Safe goes on after firing.
122	Selector won't fire.
123	Selector works hard, binds.
124	
125	

* These are the complaint code numbers and meanings
used on the attached report.



NTBOOK192

RD-44-8
REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington
OUTPORT

PETERS
OUTPORT

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

Ilion, New York
December 7, 1982

Barry Estrin
Patent Department
Bridgeport

INVENTION REPORT NO. IT-300
A FIRE CONTROL FOR BOLT ACTION
RIFLES HAVING A TRIGGER AND
SEAR BLOCK

FRED E. MARTIN
BOX 599, RD #2, DUTCH HILL ROAD
FRANKFORT, NEW YORK 13340

REASON FOR DEVELOPMENT

A fire control featuring a sear block along with a trigger block was developed to eliminate unwanted trigger movement when the safety is in the on safe position.

THE PROBLEM

A major problem with present fire controls used in bolt action rifles has been unwanted and unnecessary trigger movement when the safety is in the on safe position.

The trend has been to allow this movement to exist unless specifically addressed by the use of a trigger block safety. A trigger block safety was used on the early Remington M/788.



NTBOOK193

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

UPON

PETERS

OPEN

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

Ilion, New York
December 7, 1982

Barry Estrin
Patent Department
Bridgeport

INVENTION REPORT NO. IT-300 A FIRE CONTROL FOR BOLT ACTION RIFLES HAVING A TRIGGER AND SEAR BLOCK

FRED E. MARTIN
BOX 599, RD #2, DUTCH HILL ROAD
FRANKFORT, NEW YORK 13340

REASON FOR DEVELOPMENT

A fire control featuring a sear block along with a trigger block was developed to eliminate unwanted trigger movement when the safety is in the on safe position.

THE PROBLEM

A major problem with present fire controls used in bolt action rifles has been unwanted and unnecessary trigger movement when the safety is in the on safe position.

The trend has been to allow this movement to exist unless specifically addressed by the use of a trigger block safety. A trigger block safety was used on the early Remington M/788.

PRIOR ART

To the writer's knowledge there are no fire controls that have a trigger block passing thru the trigger.

This system was designed for Bolt Action Rifles to eliminate unnecessary trigger movement, and may be adapted to Remington's present line.

Fred E. Martin
Ilion Research Division

Date



NTBOOK194

FEM:ws

MINUTE #20

December 15, 1982

FROM PAGE NO. 8

SUBJECT: Model 700 BDL Replacement

MODEL 700 BDL REPLACEMENT
(1985 Introduction)

Research reported that a new bolt action rifle is being developed to replace the Model 700 BDL. This new rifle, to be introduced in November, 1984, will feature new styling and improved function (Exhibit 13). Styling items include a Stock designed by Bob Emmons, an octagonal Receiver with integral scope mounts, and a lightweight Barrel contour polished without removing the CFM hammer marks. Functional improvements will include a rotary Magazine Box for more reliable feeding, fully enclosed claw type Extractor for added strength, no bind, easy lift Bolt for smoother action, Receiver with a heavier, integral recoil lug for added stability, a redundant Safety Switch, and a fully adjustable Fire Control that does not require removal from the Stock. Due to priorities being placed on 1983 programs, preliminary design completion has been delayed until March.

The fourth model gun from Bob Emmons, featuring revisions to the Receiver by Pete Grisel, has been delayed until February. That gun will include a Tang Safety and a Schnabel Fore-end. Initial designs have also been completed for the rotary Magazine Box, the fully enclosed claw type Extractor, and Receiver with integral recoil lug. Tests of the Extractor will begin in January. However, priorities being placed on 1983 programs are delaying fabrication of key components.

Marketing noted that recent data indicate that some features proposed for the Model 700 BDL replacement are not as important to the customer as previously thought. Final specifications will be proposed in January.



NTBOOK195

IREM 0021033 1

MINUTE #20

December 15, 1982

FROM PAGE NO. 8

SUBJECT:

Model 700 BDL Replacement
(Exhibit 13)

EXHIBIT 13

BOLT ACTION CENTERFIRE RIFLE DEVELOPMENT

H

• STYLING

- Bob Emmon's Stock
- Octagonal Receiver
- Hammer marked Barrel
- Integral scope mounts

• FUNCTION

- Rotary Magazine
- Fully enclosed claw Extractor
- No blind/easy lift Bolt
- Integral Recoil Lug
- Redundant (double block) Safety
- Fully adjustable Fire Control

A

P

A

12/15/82



NTBOOK196

REM 0021054 1

C

	TOTAL '82		1 SHARE OF MARKET	TYPE FOLLOWER
	ACT. PRICE			
RUGER 77	318.		26	Inv. Cast
700 EDL	334.		17	Inv. Cast
700 ADL	283.		11	Stamped
WIN. 70	385.		11	Inv. Cast
S&W 1500	289.		6	Stamped
BROWNING	445.		3	Dis Cast Plated
STEYR MANNLICHER	958.-962.		Not Measurable	Stamped or Plastic
WEATHERBY VAN GUARD	449-95		Not Measurable	Stamped

P

A



NTBOOK197

| REM 0028694 |

FILE COPY

QUALITY ATTRIBUTES AND CUES
IN BOLT ACTION CENTER FIRE RIFLES

For: Remington Arms Company, Inc.
January, 1983



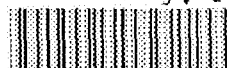
NTBOOK198

REM 0026850 1

FILE COPY

QUALITY ATTRIBUTES AND CUES
IN BOLT ACTION CENTER FIRE RIFLES

For: Remington Arms Company, Inc.
January, 1983



NTBOOK198

REM 0026850

...assessing how much wobble or slop there is in various positions (more tolerated in the fully open position), checking for close tolerances (also a cue to durability)...

"The bolt just rattles and rattles -- but when I close it, it's solid."

"I would feel the action. If there's a lot of slop and freedom, that would tell me it's probably going to wear out faster than one whose bolt fits nicely."

...or noting the action design. Frequent reference is made to the Mauser type action with its (perceived) stronger, larger extractor:

"It takes a bite on the cartridge -- a whole quarter-inch instead of a sixteenth. So if you get some dirt in the chamber or a burr on the rim instead of pulling through the rim on the cartridge, it'll yank the thing out of the chamber." (Ruger)

Other action pluses mentioned include a short, fast throw; an enclosed bolt head (a few); and an easily removed bolt.

"It had a very short-throw bolt action; it was just crisp all the way down. The working of the mechanical work was just beautiful -- a short throw, crisp!"

"I have never cared for Ruger's bolt stops; that's definitely a two-handed operation, getting that bolt out of there."

Safety. General agreement exists on a stated desire for a safety that is quiet...

"If it makes any noise at all it's too noisy. Mine's been modified so it's not noisy." (Ruger)

...is solid, not flimsy, and smooth yet positive in action, without being subject to accidental shifting...

"When you move it, it's hard to know whether it has reached safe or whether it's only half way there because there's no click, no positive click to it."

"If you grab it in the wrong place [Remington Model 788], this portion of your hand will shove the safety off."



NTBOOK199

IREN-0026848

...add gives clear indication of its position (for some, especially when shouldered), without paint spots that wear off:

"I try to get a safety that's in front of my eye so that I know when it's on and when it's off. I hate those little colored paint dots that wear off."

"On others, the movement is so imperceptible you can't tell which position it's in without looking. On the Remington when you're carrying it, you just touch it with the side of your thumb and tell whether it's on or off. I don't like to keep looking."

Additionally, on probing, there is some positive reaction to a three position safety, primarily for the ability to "clear" a weapon with the safety in the "on" position, rather than because three positions are intrinsically preferable to two. That is, a two-position safety which would permit working the action in the "on" position might be just as acceptable as a three:

"If you wanted to get the shells out, on this gun you'd have to put it in the "fire" position. That's why I like the three position safety."

Location of safety generally is a matter of idiosyncratic personal preference, although a few men cite the convenience of a tang safety, especially for left handers.

Floor Plate. For the most part, the hinged floor plate is liked for the ability to empty the magazine quickly out the bottom of the receiver...

"On the Classic you can dump all shells out the bottom."

...but, for some, a removable clip (attached to the floor plate ala Browning) is preferable, as it would avoid dumping cartridges into the snow or dirt; and for at least one respondent would eliminate the fragile "jack-in-the-box" look of the follower dangling on a spring.

Trigger. All agree that quality in a trigger pull means crisp, clean, and precise, without any slack, creep, or grabbiness. Only a few mentions (mainly dealers) are made about having an externally adjustable trigger; apparently it's not that important on a hunting rifle. In more than one instance, Remington is praised for having the best triggers.



NTBOOK200

IREM-Q026869

...assessing how much wobble or slop there is in various positions (more tolerated in the fully open position), checking for close tolerances (also a cue to durability)...

"The bolt just rattles and rattles -- but when I close it, it's solid."

"I would feel the action. If there's a lot of slop and freedom, that would tell me it's probably going to wear out faster than one whose bolt fits nicely."

...or noting the action design. Frequent reference is made to the Mauser type action with its (perceived) stronger, larger extractor:

"It takes a bite on the cartridge -- a whole quarter-inch instead of a sixteenth. So if you get some dirt in the chamber or a burr on the rim instead of pulling through the rim on the cartridge, it'll yank the thing out of the chamber." (Ruger)

Other action pluses mentioned include a short, fast throw; an enclosed bolt head (a few); and an easily removed bolt.

"It had a very short-throw bolt action; it was just crisp all the way down. The working of the mechanical work was just beautiful; -- a short throw, crisp!"

"I have never cared for Ruger's bolt stops; that's definitely a two-handed operation, getting that bolt out of there."

Safety. General agreement exists on a stated desire for a safety that is quiet...

"If it makes any noise at all it's too noisy. Mine's been modified so it's not noisy." (Ruger)

...is solid, not flimsy, and smooth yet positive in action, without being subject to accidental shifting...

"When you move it, it's hard to know whether it has reached safe or whether it's only half way there because there's no click, no positive click to it."

"If you grab it in the wrong place [Remington Model 788], this portion of your hand will shove the safety off."



NTBOOK199

REM-0026848

...add gives clear indication of its position (for some, especially when shouldered), without paint spots that wear off:

"I try to get a safety that's in front of my eye so that I know when it's on and when it's off. I hate those little colored paint dots that wear off."

"On others, the movement is so imperceptible you can't tell which position it's in without looking. On the Remington when you're carrying it, you just touch it with the side of your thumb and tell whether it's on or off. I don't like to keep looking."

Additionally, on probing, there is some positive reaction to a three position safety, primarily for the ability to "clear" a weapon with the safety in the "on" position, rather than because three positions are intrinsically preferable to two. That is, a two-position safety which would permit working the action in the "on" position might be just as acceptable as a three:

"If you wanted to get the shells out, on this gun you'd have to put it in the "fire" position. That's why I like the three position safety."

Location of safety generally is a matter of idiosyncratic personal preference, although a few men cite the convenience of a tang safety, especially for left handers.

Floor Plate. For the most part, the hinged floor plate is liked for the ability to empty the magazine quickly out the bottom of the receiver...

"On the Classic you can dump all shells out the bottom."

...but, for some, a removable clip (attached to the floor plate ala Browning) is preferable, as it would avoid dumping cartridges into the snow or dirt; and for at least one respondent would eliminate the fragile "jack-in-the-box" look of the follower dangling on a spring.

Trigger. All agree that quality in a trigger pull means crisp, clean, and precise, without any slack, creep, or grabbiness. Only a few mentions (mainly dealers) are made about having an externally adjustable trigger; apparently it's not that important on a hunting rifle. In more than one instance, Remington is praised for having the best triggers.



NTBOOK200

IREX 0026869

0330-0000

FORGE YOUR GUN FREEDOMS AT HOME!

GUNS & AMMO



HANDGUN ROUNDUP

\$1.75
in Canada
\$2.25

JANUARY 1983



A SEMI-AUTO VERSION OF THE
ULTIMATE ASSAULT RIFLE
THE AKM

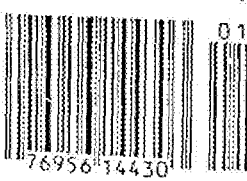
EXCLUSIVE:
BERETTA'S
D.A..25 ACP

CAST BULLETS
FOR THE 7 mm's

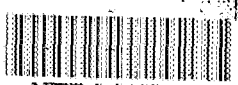
BRAND NEW!
OMNI .45 ACP

FIELD TESTS:

- CLASSIC
COLT 1909
- NEW HAVEN
.410 M600
- TAURUS
9 mm PT-99



76956 14430



NTBOOK201

G&A's

PLAINTIFF'S
EXHIBIT

033011Z

FORGE YOUR GUN FREEDOMS AT HOME!

GUNS & AMMO

3-6



HANDGUN ROUNDUP

A SEMI-AUTO VERSION OF THE
ULTIMATE ASSAULT RIFLE
THE AKM

EXCLUSIVE:
BERETTA'S
D.A. .25 ACP

CAST BULLETS
FOR THE 7mm's

BRAND NEW!
OMNI .45 ACP

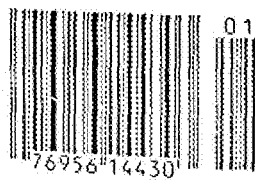
FIELD TESTS:

- **CLASSIC**
COLT 1909
- **NEW HAVEN**
.410 M600
- **TAURUS**
9 mm PT-99

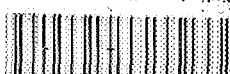
\$1.75

in Canada
\$2.25

JANUARY 1983



76956 14430



NTBOOK201

G&A's

PLAINTIFF'S
EXHIBIT

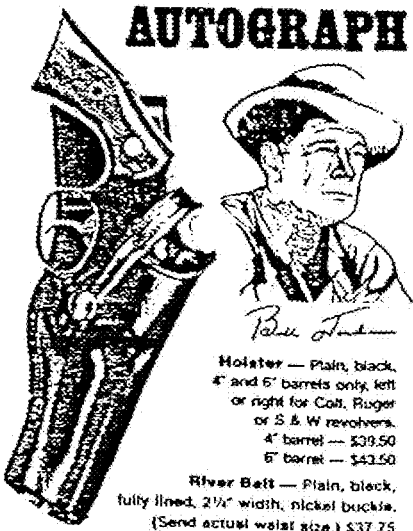
**PROTECT IT
COVER IT FOR
FALL & WINTER HEAVY DUTY
TRUCK/BOAT/ALL PURPOSE
TARPAULINS**

12x15	\$23	26x40	\$89
16x20	\$32	26x55	\$115
20x20	\$36	30x60	\$145
18x24	\$38	50x100	\$390
18x32	\$50	60x120	\$547
20x30	\$50	50x150	\$562

Before Midnight Jan. 30

Viking Ind. will send any of the above size tarpaulins to any reader of this publication who reads and responds to this test before midnight Jan. 30. Each tarpaulin Lot (#Z-18, PVC) is constructed of high density fabric (with virgin grade ingredients, supplied by Gulf Oil Co., Dow Chemical Co., and Union Carbide Co.) with nylon reinforced rope hems, double lock stitched hems, electronically welded seams, 100% water proof, #4(1/2" dia.) metal grommets set on 3 ft. centers with reinforced triangular corner patches and are recommended for all heavy duty use, all yachts and sailboats, and all bulk or pallet riding materials, and will be accompanied with a LIFE-TIME guarantee that it must perform 100% or it will be replaced free. Add \$7 handling & crating for each tarp ordered. Viking Ind. pays all shipping. Should you wish to return your tarpaulins you may do so for a full refund. Any letter postmarked later than Jan. 30, will be returned. LIMIT: Fifty (50) tarps per address, no exceptions. Send appropriate sum together with your name & address to: Tarp Test Dept. #928K, Viking Ind. 6314 Santa Monica Blvd., Los Angeles, CA 90038, or for fastest service from any part of the country call collect, before midnight 7 days a week (213) 462-1914 (Ask Exchange Operator for) TARP TEST #928K, have credit card ready.

**JORDAN HOLSTER
WITH PICTURE &
AUTOGRAPH**



Bill Jordan's picture and autograph
are featured on the back
of this new holster.



P.O. Box 351
Miami, OK 74354

Postage paid.
Oklahoma residents add 2%. Send \$2.00 for catalog.

GUN-E-SACK

By Jon Sundra



■ Surely everyone knows by now that the legendary Winchester Repeating Arms Company no longer exists as such. A couple of years ago the parent company, Olin Chemical, sold the domestic gunmaking facility in New Haven to a group of private investors, mostly ex-Winchester management people, who now run the show as the U.S. Repeating Arms Company.

The ammunition division, which was always the more profitable of the two, was retained by Olin, as well as the international division which imported the Japanese-made O/U and S/S shotguns bearing the Winchester name.

For the past 20 months then, all U.S.-made Winchesters have been the product of the U.S. Repeating Arms Company, the exclusive licensee of the Winchester name. For the most part, the Winchester line for 1983 is much the same as it was before the changeover, still being produced by the same people in the same factory. There are, however, some important changes that have been made which should interest everyone who has a fascination with this American legend and the desire to see it once again occupy that position where "It's a Winchester" means everything it used to mean.

Now it would be easy for me to sit here with the typical 20-20 hindsight we all possess and speculate on the things the old Winchester organization did wrong since those dark days of 1964, but that would serve no purpose. Suffice it to say that too many non-gun people were involved in the design, manufacture and marketing of Winchester guns during those years and the end results were not up to standards the company had established for its products over the previous century.

What most critics like to forget is that it didn't take long for Winchester to realize their mistakes and do their damndest to correct 'em. In that late '60s and early '70s period, many upgrading programs were undertaken with the Model 70, 94, 1200 and 1400 shotguns, to name a few. They also brought out the 9422, one of the finest production firearms ever made. The same can be said of the ill-fated Model One gas-operated shotgun.

Despite Winchester's earnest efforts,

American hunters and shooters are decidedly unforgiving, especially when they feel they've been betrayed. Vindictive is not too strong a word to describe how many of them greeted the post-1964 guns. To their eyes, their beloved Model 12 and Model 70 were no more, and pretenders aspired to the throne.

To make a long story short, Winchester had a tough selling job over the next 15 years, and, when coupled with severe labor problems at the plant, it became less of a plum for Olin.

Anyway, curious to see firsthand the New Haven factory since the USRAC takeover, I visited the plant for the first time since the mid-70s this past October and spent some time with the new management team—President Hugh Fletcher, along with Dick Pelton, Charlie Rhodes and Bob Morrison. I sensed a much different attitude there, not only among management people, but the union people as well. There was a spirit of cooperation and genuine enthusiasm evident, an enthusiasm for making the best Winchester possible.

Toward that end, a quiet upgrading program is underway which will ultimately affect every model in the line. I'm not talking about superficial cosmetic changes like a new stock finish, a different pistol grip cap or a new front sight hood; I mean the small yet substantive changes and attention to detail which make a rifle or shotgun appeal to those who know and understand firearms. Take the Model 70, for example, the first Winchester to be subjected to this quiet upgrading program.

Chief design engineer, Ed Vartanian, showed me the subtle mechanical changes and new production procedures being implemented that should make the Model 70 one of the smoothest operating and accurate out-of-the-box production rifles available anywhere at any price. Tolerances are being held extremely tight throughout production. The inletting is

actions are glass bedded (though it is not actually fiberglass they're using). Extreme pains are now taken to be sure that chambers are absolutely concentric with the bore, that the throating and leade are uniform from rifle to rifle, that the bolt face is dead square with the bore, and that both locking lugs are making full contact. The feed rails have been redesigned to provide a more controlled, positive feeding, plus a lot of other little improvements.

"We are absolutely committed to restoring the Model 70," says Bob Morrison, the production planning manager, "as well as every gun bearing the Winchester name, to the exalted positions they once held." In a very forthright manner Bob conceded that you can't fool the gun-buying public. "The only way we can achieve that goal is to make guns that deserve that esteem."

Like I said, there's a new attitude at Winchester. And there are gun people running it again. Surely that bodes well for all of us Winchester fans.

TWO-POSITION SAFETIES

"For years I've been advocating that rifles with two-position safeties should not lock the action when engaged. It's always been my contention that the time when you need a safety most is when you're cycling a live round into the chamber or taking a round out.

The only rationale I've ever heard used to defend the bolt-lock safety is that without it the handle could get caught on brush and thus partially or fully open the action. If a hunter were unaware of the condition and were suddenly confronted by game, a partially raised bolt handle may or may not allow the gun to fire. And, if the action has been fully opened, you'd have to reload.

Now I maintain that such incidents are extremely rare; after all, who goes through thick brush with their musket slung? That's like Stan Laurel trying to get a six-foot ladder through a three-foot-wide door, sideways. When I'm going through thick stuff, I'm holding my rifle in hand at my side and pointing it straight ahead. And so does everyone else I've hunted with.

In the highly unlikely event of a partially lifted bolt, all that's at stake is *perhaps* a missed opportunity at game. When compared to the alternative safety considerations, the missed-game argument barely merits mention.

Anyway, I was happy to learn recently that Remington has finally come over to my way of thinking. As of June of last year, the two-position, bolt-locking safety that has been traditional on the Remington 700 for the past 20 years has been modified to allow the action to be operated with the safety engaged. I must add, however, that I feel this unpublicized change of specs is an interim move on the part of the Remington, and that in the near future we'll see a complete redesigning of the fire-control assembly in the form of a three-position safety *a la* the Model 70 Winchester, or a two-position one with a separate bolt-locking feature like on the Colt Sauer. ☼

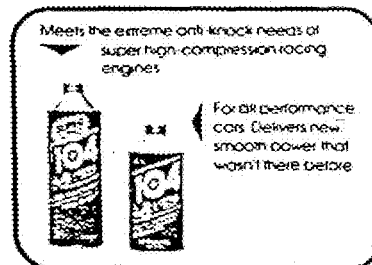
NOTHING STOPS KNOCKS LIKE 104+ OCTANE BOOST

Everybody wants to copy us, but
nobody knows how!

Compelling octane boosters come and go, and perhaps a dozen of them since we entered the market. One by one they challenge 104+, the national leader.

Some of our competitors tell how their octane boosters perform in laboratory tests. A few even mention our name, and we appreciate it.

It all started in 1976, when 104+ brought a new kind of anti-knock chemistry to the performance field. Today's 104+ still is the only product of its kind. Test it yourself—against anything.



Give yourself the POWER ADVANTAGE™...with 104+

Order Direct—REGULAR 104+—\$8.00 per 12 oz. can—SUPER 104+—\$10.50 per 16 oz. can
OCTANE BOOST CORP. • Box 271148 Dept. GA-83 • Dallas TX 75227

MOVING?

DON'T MISS A SINGLE ISSUE OF GUNS & AMMO

Let us know your new address right away. Attach an old mailing label in the space provided and print your new address where indicated.

QUESTION ABOUT YOUR SUBSCRIPTION?

When you write, be sure to include a label. It helps us serve you more promptly.

TO SUBSCRIBE OR EXTEND YOUR SUBSCRIPTION.

Check the appropriate boxes below:

- ☐ New subscription. Please allow 4-8 weeks for your first copy to be mailed.
☐ Renewal subscription. Please include a current address label to insure prompt and proper extension.
☐ 1-year \$11.94. This rate limited to the U.S.A. and its Possessions. ☐ Payment enclosed or ☐ Bill me.

MAIL TO: GUNS & AMMO

8725 Sunset Blvd., P.O. Box 3292, Los Angeles, CA 90028

Name _____

Address _____

City _____ State _____ Zip _____

ATTACH
LABEL
HERE

If label is not handy, print old address in this space.

**PROTECT IT
COVER IT FOR
FALL & WINTER HEAVY DUTY
TRUCK/BOAT/ALL PURPOSE
TARPAULINS**

12x16	\$23	26x40	\$89
16x20	\$32	26x55	\$115
20x20	\$36	30x60	\$145
18x24	\$38	50x100	\$390
18x32	\$50	60x120	\$547
20x30	\$50	50x150	\$562

Before Midnight Jan. 30

Viking Ind. will send any of the above size tarpaulins to any reader of this publication who reads and responds to this test before midnight Jan. 30. Each tarpaulin lot (#Z-18, PVC) is constructed of high density fabric (with virgin grade ingredients, supplied by Gulf Oil Co., Dow Chemical Co., and Union Oil Co.) with nylon reinforced rope hems, double lock stitched hems, electronically welded seams, 100% water proof, #4(1/2" dia.) metal grommets set on 3 ft. centers with reinforced triangular corner patches and are recommended for all heavy duty use, all yachts and sailboats, and all bulk or pallet riding materials, and will be accompanied with a LIFE-TIME guarantee that it must perform 100% or it will be replaced free. Add \$7 handling & crating for each tarp ordered. Viking Ind. pays all shipping. Should you wish to return your tarpaulins you may do so for a full refund. Any letter postmarked later than Jan. 30, will be returned. LIMIT: Fifty (50) tarps per address, no exceptions. Send appropriate sum together with your name & address to: Tarp Test Dept. #928K, Viking Ind. 6314 Santa Monica Blvd., Los Angeles, CA 90038, or for fastest service from any part of the country call collect, before midnight 7 days a week (213) 462-1914 (Ask Exchange Operator for) TARP TEST #928K, have credit card ready.

**JORDAN HOLSTER
WITH PICTURE &
AUTOGRAPH**



Bill Jordan's picture and autograph are featured on the back of this new holster.



P.O. Box 351
Miami, OK 74354

Postage paid.
Oklahoma residents add 2%. Send \$2.00 for catalog.

GUN-E-SACK

By Jon Sundra



■ Surely everyone knows by now that the legendary Winchester Repeating Arms Company no longer exists as such. A couple of years ago the parent company, Olin Chemical, sold the domestic gunmaking facility in New Haven to a group of private investors, mostly ex-Winchester management people, who now run the show as the U.S. Repeating Arms Company.

The ammunition division, which was always the more profitable of the two, was retained by Olin, as well as the international division which imported the Japanese-made O/U and S/S shotguns bearing the Winchester name.

For the past 20 months then, all U.S.-made Winchesters have been the product of the U.S. Repeating Arms Company, the exclusive licensee of the Winchester name. For the most part, the Winchester line for 1983 is much the same as it was before the changeover, still being produced by the same people in the same factory. There are, however, some important changes that have been made which should interest everyone who has a fascination with this American legend and the desire to see it once again occupy that position where "It's a Winchester" means everything it used to mean.

Now it would be easy for me to sit here with the typical 20-20 hindsight we all possess and speculate on the things the old Winchester organization did wrong since those dark days of 1964, but that would serve no purpose. Suffice it to say that too many non-gun people were involved in the design, manufacture and marketing of Winchester guns during those years and the end results were not up to standards the company had established for its products over the previous century.

What most critics like to forget is that it didn't take long for Winchester to realize their mistakes and do their damndest to correct 'em. In that late '60s and early '70s period, many upgrading programs were undertaken with the Model 70, 94, 1200 and 1400 shotguns, to name a few. They also brought out the 9422, one of the finest production firearms ever made. The same can be said of the ill-fated Model One gas-operated shotgun.

Despite Winchester's earnest efforts, they fell on an unresponsive consumer

American hunters and shooters are decidedly unforgiving, especially when they feel they've been betrayed. Vindictive is not too strong a word to describe how many of them greeted the post-1964 guns. To their eyes, their beloved Model 12 and Model 70 were no more, and pretenders aspired to the throne.

To make a long story short, Winchester had a tough selling job over the next 15 years, and, when coupled with severe labor problems at the plant, it became less of a plum for Olin.

Anyway, curious to see firsthand the New Haven factory since the USRAC takeover, I visited the plant for the first time since the mid-70s this past October and spent some time with the new management team—President Hugh Fletcher, along with Dick Felton, Charlie Rhodes and Bob Morrison. I sensed a much different attitude there, not only among management people, but the union people as well. There was a spirit of cooperation and genuine enthusiasm evident, an enthusiasm for making the best Winchester possible.

Toward that end, a quiet upgrading program is underway which will ultimately affect every model in the line. I'm not talking about superficial cosmetic changes like a new stock finish, a different pistol grip cap or a new front sight hood; I mean the small yet substantive changes and attention to detail which make a rifle or shotgun appeal to those who know and understand firearms. Take the Model 70, for example, the first Winchester to be subjected to this quiet upgrading program.

Chief design engineer, Ed Vartanian, showed me the subtle mechanical changes and new production procedures being implemented that should make the Model 70 one of the smoothest operating and accurate out-of-the-box production rifles available anywhere at any price. Tolerances are being held extremely tight throughout production. The inletting is now exceptionally close and all barrels

actions are glass bedded (though it is not actually fiberglass they're using). Extreme pains are now taken to be sure that chambers are absolutely concentric with the bore, that the throating and leade are uniform from rifle to rifle, that the bolt face is dead square with the bore, and that both locking lugs are making full contact. The feed rails have been redesigned to provide a more controlled, positive feeding, plus a lot of other little improvements.

"We are absolutely committed to restoring the Model 70," says Bob Morrison, the production planning manager, "as well as every gun bearing the Winchester name, to the exalted positions they once held." In a very forthright manner Bob conceded that you can't fool the gun-buying public. "The only way we can achieve that goal is to make guns that deserve that esteem."

Like I said, there's a new attitude at Winchester. And there are gun people running it again. Surely that bodes well for all of us Winchester fans.

TWO-POSITION SAFETIES

For years I've been advocating that rifles with two-position safeties should not lock the action when engaged. It's always been my contention that the time when you need a safety most is when you're cycling a live round into the chamber or taking a round out.

The only rationale I've ever heard used to defend the bolt-lock safety is that without it the handle could get caught on brush and thus partially or fully open the action. If a hunter were unaware of the condition and were suddenly confronted by game, a partially raised bolt handle may or may not allow the gun to fire. And, if the action has been fully opened, you'd have to reload.

Now I maintain that such incidents are extremely rare; after all, who goes through thick brush with their musket slung? That's like Stan Laurel trying to get a six-foot ladder through a three-foot-wide door, sideways. When I'm going through thick stuff, I'm holding my rifle in hand at my side and pointing it straight ahead. And so does everyone else I've hunted with.

In the highly unlikely event of a partially lifted bolt, all that's at stake is *perhaps* a missed opportunity at game. When compared to the alternative safety considerations, the missed-game argument barely merits mention.

Anyway, I was happy to learn recently that Remington has finally come over to my way of thinking. As of June of last year, the two-position, bolt-locking safety that has been traditional on the Remington 700 for the past 20 years has been modified to allow the action to be operated with the safety engaged. I must add, however, that I feel this unpublicized change of specs is an interim move on the part of the Remington, and that in the near future we'll see a complete redesigning of the fire-control assembly in the form of a three-position safety *a la* the Model 70 Winchester, or a two-position one with a separate bolt-locking feature like on the Colt Sauer.

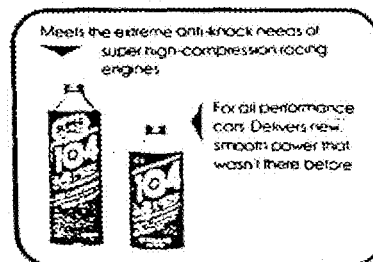
NOTHING STOPS KNOCKS LIKE 104+ OCTANE BOOST

Everybody wants to copy us, but
nobody knows how!

Compelling octane boosters come and go. In the past two dozen or so years since we entered the market, one by one they challenge 104+ the national leader.

Some of our competitors tell how their octane boosters perform in laboratory tests. A few even mention our name, and we appreciate it.

It all started in 1976, when 104+ brought a new kind of anti-knock chemistry to the performance field. Today's 104+ still is the only product of its kind. Test it yourself—against anything.



Give yourself the POWER ADVANTAGE™...with 104+

Order Direct—REGULAR 104+—\$8.00 per 12 oz. can—SUPER 104+—\$10.50 per 16 oz. can
OCTANE BOOST CORP. • Box 271148 Dept. GA-83 • Dallas TX 75227

MOVING?

DON'T MISS A SINGLE ISSUE OF GUNS & AMMO

Let us know your new address right away. Attach an old mailing label in the space provided and print your new address where indicated.

QUESTION ABOUT YOUR SUBSCRIPTION?

When you write, be sure to include a label. It helps us serve you more promptly.

TO SUBSCRIBE OR EXTEND YOUR SUBSCRIPTION

Check the appropriate boxes below:

- ☐ New subscription. Please allow 4-6 weeks for your first copy to be mailed.
☐ Renewal subscription. Please include a current address label to insure prompt and proper extension.
☐ 1-year \$11.94. This rate limited to the U.S.A. and its Possessions. ☐ Payment enclosed or ☐ Bill me.

MAIL TO: GUNS & AMMO

6725 Sunset Blvd., P.O. Box 3292, Los Angeles, CA 90028

Name _____

Address _____

City _____

State _____

Zip _____

ATTACH
LABEL
HERE

If label is not handy, print OLD address in this space.

CONFIDENTIAL

M

- 7 -

March 83

a jam condition can be created which is difficult to clear without removal of the fire control. While no complaints have been received from the field, modifications have been considered which will prevent jamming under the above conditions. Proposed modifications include changes to the slide and carrier assemblies.

Preliminary tests have been successful using slides modified to include an additional shell latch and carriers modified to provide additional shell clearance. Three (3) modified Model 870 Riot endurance test shotguns have been turned over to the Research Test Lab for a 20,000 round endurance test. The test will include a 25 round test of the jam condition after every 1,000 rounds.

Marketing has expressed concern about the disassembly of the action. With the new design slide latch, the fire control must be removed in order to depress the slide latch to remove the action bar assembly. Revisions are being considered to both the slide latch and carrier to simplify the disassembly feature. Our goal is to make the disassembly no more difficult than the standard (field) Model 870. However, in order to correct the jam condition and still maintain our standard for malfunction rate, this may not be achievable.

~~Both rifles are included in the bolt action program.~~

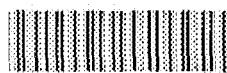
MARCH 83

(F. E. Martin, T. G. Bauman)

MUR 0006559

Two (2) new rifles are included in the bolt action program. replacements for the Model 700 Classic and BDL, respectively. The replacement for the Classic will be designated the Model 700 Lightweight and is planned for 1985 introduction. While a designation has not yet been determined, the replacement for the BDL is currently scheduled for 1986 introduction. Both rifles will feature a stock designed by Bob Emmons and a lightweight barrel contour. The BDL replacement will include other distinctive styling changes, such as an octagonal receiver with integral scope mounts. Functional improvements to the BDL will include a rotary magazine box for more reliable feeding, fully enclosed claw type extractor for added strength, no bind-easy lift bolt for smoother action, receiver with heavier - integral recoil lug for added stability, a redundant safety switch, and a fully adjustable fire control that does not require removal from the stock.

1 DF 0001179 1



NTBOOK204

1 CAN 0001177 1

CONFIDENTIAL

M

LIMITED DISTRIBUTION

U

REMINGTON ARMS COMPANY, INC.
RESEARCH AND DEVELOPMENT - FIREARMS
THIRD QUARTER PROGRESS REPORT - 1983
SEPTEMBER 29, 1983

R

R

Distribution List:

R. E. Fielitz	D. S. Findlay
W. H. Coleman, II	J. C. Hutton
R. L. Hall	J. S. Martin
C. B. Workman	C. E. Ritchie
J. W. Bower	R. J. Sanzo
J. W. Brooks	R. L. Sassone

A

MUR 0006738

Y
1 DF 0001357 1
Remington Arms Company, Inc.

1CAM 0001356 1



NTBOOK205

CONFIDENTIAL

M

- 6 -

Bolt Action Rifle Development

(F. E. Martin)

Model 700 Lightweight drawing and parts list transmittal will be completed by October 1, 1983. Work on this model is expected to be complete by October 10.

Work on the Model 700 BDL Replacement will resume to meet the scheduled 1986 introduction. The new BDL will include the following functional improvements: a rotary box magazine for feeding reliability, a new fully enclosed claw extractor for added strength, a no-bind easy lift bolt for a smoother action, a receiver with a heavier integral recoil bracket for stability, and a fully adjustable fire control with redundant safety switches.

Testing of the new extractor will be starting in September with the completion of prototype assemblies.

STATUS - CURRENT PRODUCT DEVELOPMENT

(J. W. Brooks)

R

A

MUR 0006743

Y

|BEM 0046679 |

|DP 0001362 |

|CAM 0001361 |



NTBOOK206

CONFIDENTIAL

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Xc: J. W. Bower

Remington
SUPER

PETERS
450

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
December 9, 1983

To: T. W. Rawson

From: R. S. Murphy RSM

I would like you to address the following questions concerning the Sportsman 12 Auto and the New Bolt Action Rifle. We need some direction in these areas to help streamline our design efforts.

Sportsman 12 Auto (Model 1100 El Cheapo)

Do we want a 3" chamber as in the Sports 12 Pump?

If so, what endurance life should we design for, i.e., do we also want the magnum inertia sleeve and orifice diameter?

What loads should operate this gun?

How long will this gun be in the line?

New Bolt Action Rifle

We are presently in the design stage of two new fire control options for this rifle.

- How strongly do you feel about the need for a connector? Can we drop this?
- In a new "exposed components" firecontrol, do we really want the customer to be able to adjust the engagement in addition to the weight of pull?

• 3 position safety.

RSM:ws
Ilion Research Division

MUR 0006838

1 DF 0001465 1

1 CAM 0001464 1



NTBOOK207

[54] BOLT LATCH FOR BOLT-ACTION
FIREARM

[75] Inventor: Fred E. Martin, Frankfort, N.Y.

[73] Assignee: Remington Arms Company, Inc.,
Bridgeport, Conn.

[21] Appl. No.: 511,449

[22] Filed: Jul. 7, 1983

Related U.S. Application Data

[63] Continuation of Ser. No. 290,693, Aug. 6, 1981.

[51] Int. Cl.³ F41C 11/06[52] U.S. Cl. 42/16; 42/69 A;
42/70 R

[58] Field of Search 42/16, 69 A, 70 R, 70 F

[56] References Cited

U.S. PATENT DOCUMENTS

1,318,423 10/1919 Williams 42/16

1,322,514 11/1919 Bader 42/16

3,138,888 6/1964 Brewer 42/70 E

4,305,218 12/1981 Godsey 42/70 R X

Primary Examiner—Charles T. Jordan

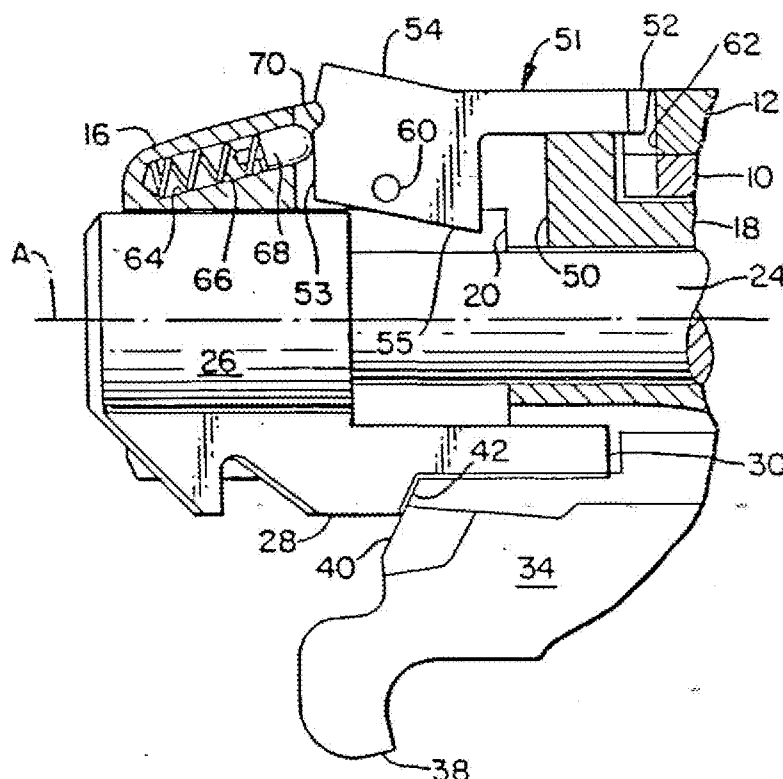
Assistant Examiner—Ted L. Parr

Attorney, Agent, or Firm—Nicholas Skovran; William L.
Ericson; Barry Estrin

[57] ABSTRACT

A bolt-action firearm, of the type having a bolt rotatably movable between closed and open positions, has an improved bolt latch mechanism which is operable independently of a safety mechanism. The latch locks the bolt in closed position automatically when the firing pin is cocked, and releases the bolt upon firing. The latch mechanism is recessed in the bolt plug in such fashion that it is readily visible and accessible, yet does not interfere with normal manual operation of the firearm, and does not protrude so that it might readily be displaced accidentally. In one embodiment, the latch may be manually displaced to or from a disabled position, in which it is releasably detented.

7 Claims, 6 Drawing Figures



NTBOOK208

FIG. 1.

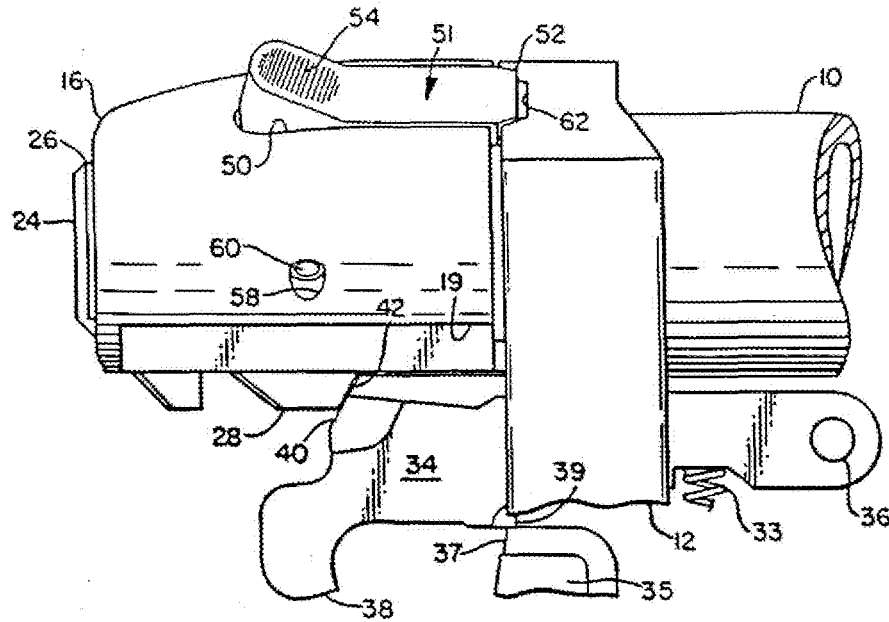


FIG. 2.

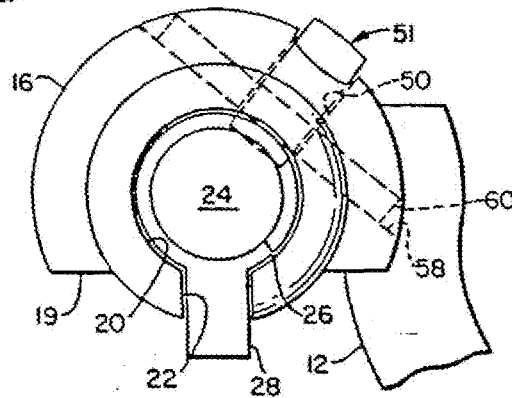


FIG. 3.

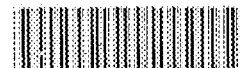
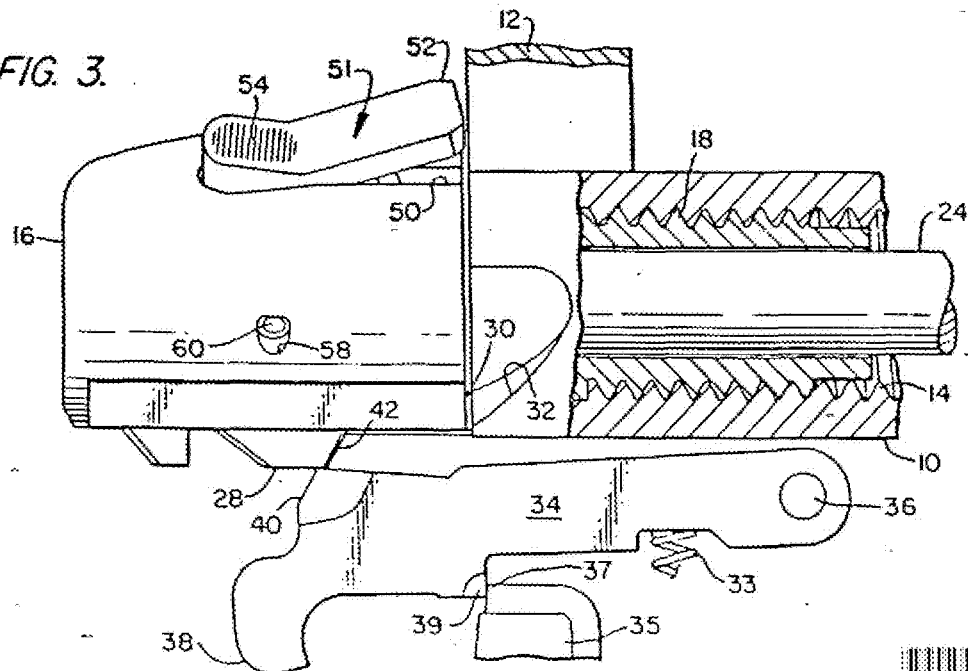


FIG. 4

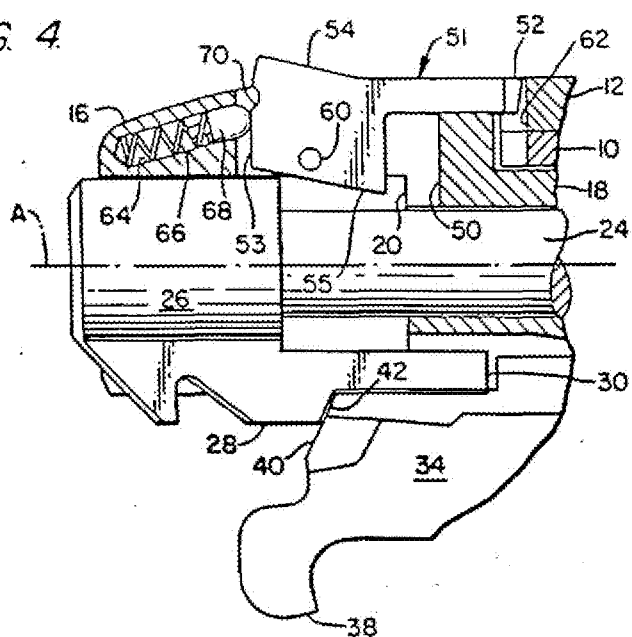


FIG. 5

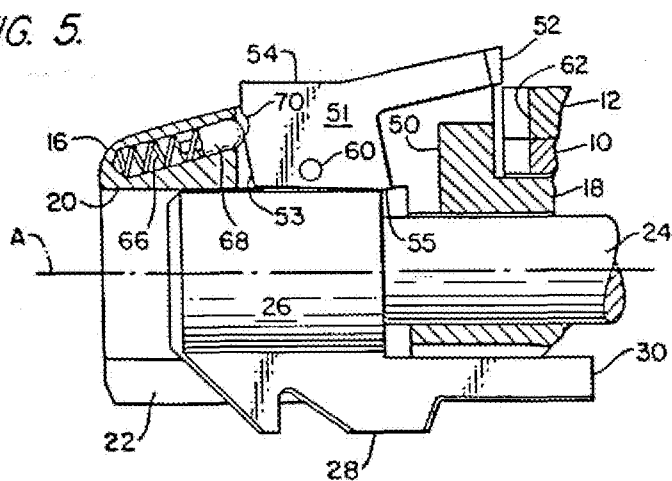
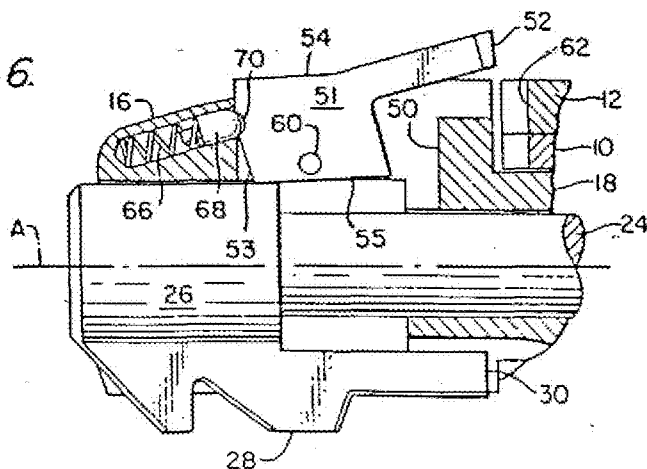


FIG. 6



BOLT LATCH FOR BOLT-ACTION FIREARM

This application is a continuation of application Ser. No. 290,693 filed Aug. 6, 1981.

This invention relates to firearms of the bolt-action type, which have a bolt reciprocable in a receiver between open and closed portions, and rotatable by means of a handle between locked and unlocked relationship to the firearm barrel. The invention is particularly concerned with an improved bolt latch mechanism which is normally operated automatically by the firing and re-cocking of the firearm, but which may be selectively disabled, according to the user's wishes.

In a bolt-action firearm intended for hunting use, it is desirable to provide both a safety, and a bolt latch for securing the bolt locked in a closed position. These two features allow the firearm to be carried in the field loaded and cocked, without risk either of accidental firing, or of the bolt being unlocked by some accidental jar or collision. At the same time, the user should be enabled to open the bolt readily and safely for unloading. Controls for the safety and bolt latch should be simple enough to avoid confusion in poor lighting conditions; should be readily manipulable even by a hunter wearing gloves; and yet should not protrude in a manner either to interfere with manual operation of the firearm, or to be susceptible to inadvertent displacement.

One approach to this question is shown in U.S. Pat. No. 2,514,981 to Walker et al, in which a two-position safety lever also serves as a bolt latch. The safety lever has two arms: a safety arm bearing an eccentric which blocks the sear of the trigger mechanism in a "safe" position of the lever; and another latch arm which engages a notch in the bolt to latch it against rotation. Movement of the safety lever to the "fire" position releases the sear, and also removes the latch arm from engagement with the bolt. This is a satisfactory system; but it does require the safety to be released when the bolt is opened, and therefore calls for proper caution to be exercised when the user wishes to unload the firearm.

Another prior art solution involves a safety lever movable to three positions: one in which the safety and the bolt latch are both engaged; a second, intermediate position which either disengages the bolt latch, or enables it to be manually disengaged, but leaves the safety on; and a third, firing position in which both the safety and the bolt latch are inoperative. Examples of this approach appear in U.S. Pat. Nos. 2,824,402 to Fischer; 1,318,423 to Williams; 2,869,269 to Couture; and 3,138,888 to Brewer. If a hunter is working in good lighting conditions, without gloves, and with leisure to see that the safety is correctly positioned, these systems are satisfactory. But in the press of urgency and excitement that often arises in the field, and under adverse conditions, error in selecting among three safety positions is not unlikely to occur.

Another solution that has been suggested is to provide a bolt latch that is completely divorced from the safety mechanism. This enables the hunter to unload without concern about changing the condition of a safety he has previously activated. Two examples of such a bolt latch are found in U.S. Pat. Nos. 1,322,514 to Bader, and 1,669,496 to Stahl. In Bader, a sliding latch, mounted on the side of the bolt plug just behind the bolt handle, is movable to or from latching engagement with

the bolt handle by means of a pivoted lever, which is spring-biased toward the latch-engaging position. The latch may be withdrawn either by lever engagement with a shoulder on the firing pin when the rifle is fired, or by manual rotation of the pivoted lever. After manual opening with the rifle cocked, the pivoted lever must be held manually retracted in order to re-close the bolt.

In the Stahl Patent, a rotatable shaft, formed with a flat and carrying a spring-biased latch plunger, extends transversely across a mating flat in the firing pin. The cocking of the firing pin mates the two flats so as to turn the shaft and latch plunger into locking engagement with the bolt handle. Upon firing, the flats disengage so that the bolt handle may be raised, with the shaft and latch plunger now being free of the firing pin and able to rotate to permit this opening movement. If it is desired to unload the rifle with the firing pin cocked, the latch plunger may be retracted manually to permit the bolt to be opened. The latch plunger must once again be held retracted to permit the bolt to be re-closed; this disadvantage is shared by Bader and Stahl.

The present invention has as its general object the improvement of bolt latch mechanisms for bolt-action rifles which have independently-operable safety devices. The improved mechanism features a simplified construction, involving a single pivoted, spring-loaded latch lever, which is automatically operated by the displacements of a firing pin during cocking and firing. In one embodiment, a detent is provided so that the latch is selectively operable manually to releasably secure it in a disabled position. The latch may readily be disabled or reactivated by the press of even a gloved finger, after which the hands are free to carry out loading, cocking, firing, or unloading operations without further attention to the latch.

According to the invention, the bolt plug of a bolt-action firearm is recessed to receive a latch lever, which is pivotally mounted in the recess for rocking motion to either of two positions: latched by cocking the weapon and closing the bolt handle; or unlatched by firing the weapon. A spring and plunger bias the lever toward the latched position, in which a tooth formed at one end of the lever engages in a mating notch in the closed bolt handle. The latch lever has a cam surface so arranged, in the latched position, as to project into the path of motion of the head of the firing pin, which therefore pivots the lever to the unlatched position when the weapon is fired. Subsequent re-cocking and withdrawal of the firing pin head enables the spring-loaded plunger to return the lever automatically to the latched position.

In one embodiment, the latch lever may be manually rocked beyond the latched position to a disabled position, in which a detent notch formed in the lever engages and interferes with movement of the spring-loaded plunger. The plunger cannot then move the lever toward the latched position until the lever is manually pressed in a direction to release the detent and thus restore automatic operation.

FIG. 1 is a fragmentary view in side elevation of one embodiment of the improved bolt latch mechanism, shown in latched relation to the bolt assembly of an illustrative bolt-action firearm, which is shown cocked and ready to fire;

FIG. 2 is a fragmentary view in rear elevation of the assembly of FIG. 1;

FIG. 3 is a fragmentary view showing the latch in unlatched position, with the bolt handle raised to un-



lock the bolt, and the parts of the firearm in fired and uncocked condition;

FIG. 4 is a fragmentary cross-sectional view in side elevation, with the parts in the same latched and cocked condition as in FIG. 1;

FIG. 5 is a view similar to FIG. 4, but showing the firing pin in a fired position, and the latch mechanism is an unlatched position; and

FIG. 6 is a view similar to FIGS. 4 and 5, but showing the firing pin in a cocked position, and the latch mechanism detented in a disabled position.

The improved bolt latch mechanism is broadly applicable to bolt-action firearms of various designs, but is shown for purposes of illustration in a bolt-action rifle of substantially the same type as is shown in more detail in U.S. Pat. Nos. 2,585,195 to Walker and 2,514,981 to Walker et al, which were assigned to the owner of the present application. The rifle includes a hollow cylindrical bolt 10 which is mounted for rotation and longitudinal reciprocation in a receiver (not shown), by means of a handle 12 brazed or otherwise secured to the bolt. The bolt, when closed against the breech of the rifle barrel, may be locked by means of conventional lugs formed on its forward end (not shown), which are engaged by rotating the handle down into the position shown in FIGS. 1 and 2, or unlocked by raising the handle to the position of FIG. 3. The bolt is shown in its closed longitudinal position with respect to elements of a fire control mechanism which includes a sear 34 and a trigger 35. With the bolt turned to its unlocked position of FIG. 3, it may be pulled longitudinally to the left to open the action for loading and unloading cartridges, and for cocking a firing pin 24.

A bolt plug 16 has a threaded extension 18 which extends forwardly into threaded engagement with internal threads 14 formed in the bolt, thus drivingly connecting the bolt and bolt plug for joint longitudinal reciprocation, but permitting the bolt to rotate independently. The bolt plug is formed with recessed flats 19 for sliding engagement with mating surfaces formed on the receiver (not shown), to restrain the bolt plug from rotating with the bolt. The bolt plug also has a cylindrical recess 20 slidably receiving an enlarged head 26 of the firing pin 24, and a slot 22 through which a sear-engaging lug 28 and a cocking arm 30 of the firing pin extend in freely-slidable but non-rotatable relation.

In the relative positions of these elements shown in FIGS. 1 and 4, the firing pin 24 is cocked, with an oblique face 42 of the lug 28 bearing against a mating face 40 of the sear 34. The firing pin is continuously urged toward a firing position, that is, toward the right in the drawings, by a conventional firing pin spring contained within the bolt. The sear, pivoted on a pin 36, is held in its illustrated angular position by the engagement between a step 39 in the sear and a connector 37 attached to the trigger 35, thereby restraining the firing pin in its cocked position. To fire the weapon, the trigger is pulled to move the connector 37 to the position shown in FIG. 3. The angle of the faces 40 and 42 with respect to the longitudinal axis of the bolt and firing pin is such that the firing pin spring exerts a downward component of force on the sear that overcomes the upward force exerted by a sear spring 33, and pivots the sear counterclockwise to the position shown in FIG. 3, permitting the firing pin to be driven forwardly to its fired position shown in FIG. 5.

In the fired condition, the cocking arm 30 of the firing pin extends forwardly into the deepest part of a cocking

cam 32 cut into the bolt 10, which is circumferentially aligned with the cocking arm when the bolt is closed (compare FIGS. 1 and 3). After firing, raising the bolt handle to the position of FIG. 3 causes the cocking arm to ride along the curved surface of the cam 32, and retracts the firing pin back toward the cocked position. Then as the bolt is opened and re-closed by a reciprocating movement along its major axis, the lug face 42 engages against the re-elevated sear face 40 and retains the firing pin in the cocked condition of FIGS. 1 and 4 once more.

The firearm action thus far described is conventional in design, and is further illustrated and described in the aforementioned U.S. Pat. Nos. 2,585,195 and 2,514,981. Therefore, no further detailed description of its operation and design is believed necessary. A safety mechanism of any type suitable to such an action may be utilized as desired, and the bolt latch of the present invention is intended to operate entirely independently of the safety mechanism. As illustrated, the sear 34 is provided with a cam lobe 38 for cooperation with a safety lever having an eccentric, of the kind disclosed in U.S. Pat. No. 2,514,981, which is selectively operable to block the sear against movement from the cocked position of FIG. 1. This is intended merely as an illustrative example of various safety mechanisms that might be used in conjunction with the improved bolt latch, which will now be described.

The bolt plug 16 is formed with a radially-extending recess 50, in which a latch lever 51 is pivotally supported on a pin 60 received in a transverse hole 58. The lever 51 has a tooth 52 at its forward end, which, in a latched position of FIGS. 1 and 4, engages in a locking notch 62 at the rear of the bolt 10 and handle 12 to prevent the bolt from being moved from its closed and locked position. A plunger 68 is slidably received in a blind hole 64 in the bolt plug, and is urged against a rear face 53 of the lever 51 by a spring 66 to bias the lever in a clockwise direction toward the latched position.

The latch lever 51 is formed with a planar cam surface 55 which projects into the recess 50 in the latched position of FIG. 4, into the path of movement of the outer cylindrical surface of the firing pin head 26 from its cocked position of FIG. 4 to its fired position of FIG. 5. In the latched position, the cam surface 55 extends in a direction inclined downwardly in a forward direction with respect to the longitudinal axis A of the firing pin motion. When the trigger 35 is pulled to release the firing pin, the forwardly-moving cylindrical head 26 engages the cam surface 55 and pivots the lever 51 to the unlatched position shown in FIG. 5, against the bias of the spring-loaded plunger 68. The bolt 10 is now free to turn, and may be unlocked and opened. The surface 55 continues to be inclined downwardly in a forward direction, for a reason which will appear, but at a greatly reduced angle to the bolt axis A.

Re-cocking of the firing pin 24 frees the cam surface 55 from the head 26. This allows the plunger 68 to automatically re-latch the lever 51 in the position of FIG. 4, as the bolt handle is closed and the locking notch 62 becomes aligned with the tooth 52.

In the illustrated embodiment, the rear face 53 of the latch lever is formed with a detent notch 70, which is not reached by the plunger 68 sliding along the face 53 during the pivotal movements of the lever between the latched position of FIG. 4 and the unlatched position of FIG. 5. However, the lever may be rocked, by applying finger pressure to a projecting V-shaped upper surface



54, counterclockwise into a further disabled position shown in FIG. 6, in which the plunger 68 seats in the notch 70. The engagement between the plunger and the notch restrains the lever against being rotated by the bias of the spring 66, and thus detents the lever in this disabled position.

To provide for an ample arcuate displacement between the unlatched and disabled positions of the lever 51, the surface 55 must have some clearance from the head 26. Thus this surface is inclined downwardly at a small angle to the axis A in both the unlatched and the disabled positions, but in opposite axial directions.

When placed in the disabled, detented position of FIG. 6, the latch lever 51 will remain inoperative and unaffected by movement of the firing pin, until such time as finger pressure is applied to it in a clockwise direction to release the plunger 68 from the notch 70, and thus restore the parts to the normal automatically-operating positions of FIGS. 4 and 5.

In a hunting situation in the field, where a series of 20 shots may be fired, the bolt is cyclically opened to reload the rifle, and reclosed to cock the firing pin for the next shot; and the latch lever automatically cycles between the latched and unlatched positions of FIGS. 4 and 5. Assuming, however, that the hunter wishes to unload the cocked and latched rifle without firing previously-loaded live rounds, he need not release the safety to do so. He merely presses the latch lever 51 into the disabled position of FIG. 6, and opens the bolt with the safety engaged. When he next wishes to reload the rifle, the latch lever should be pressed to release it from the detented disabled condition, so that its normal automatic operation is restored.

The latch lever 51 is preferably positioned near the top of the bolt plug as shown, so that it is readily visible and easily pressed even with a gloved hand, but does not protrude in such a location as to be readily subject to accidental operation by the user's hand carrying the rifle, or by jarring against other objects.

I claim:

1. In a bolt-action firearm of the type having a substantially cylindrical bolt rotatably mounted for movement between open and closed positions; a bolt plug non-rotatably mounted and having threaded connection with said bolt; a firing pin mounted reciprocally in said bolt plug for movement between fired and cocked positions with respect to said bolt; the improved bolt latch mechanism which comprises;

a latch lever having a tooth; said bolt plug being formed with a recess receiving said latch lever; said bolt being formed with a locking notch opening onto an outer peripheral surface thereof at a location radially aligned with said tooth upon rotation of said bolt to said closed position; means mounting said latch lever in said recess for pivotal movement about an axis substantially perpendicular to the longitudinal axis of said cylindrical bolt between a first, latched position in which said tooth is engaged in said locking notch to latch said bolt against rotation with respect to said bolt plug, and a second, unlatched position in which said tooth is disengaged from said locking notch to release said bolt for rotation; spring-biased plunger means mounted in said bolt plug for biasing said latch lever toward said first position;

said latch lever having cam means arranged to project, upon pivotal movement of said latch lever

into said first position, into the path of reciprocation of said firing pin, whereby movement of said firing pin to said fired position normally pivots said latch lever from said first to said second position to unlatch said bolt, and movement of said firing pin to said cocked position normally permits said spring-biased plunger means to pivot said latch lever from said second to said first position to latch said bolt;

said latch lever having a detent notch, and being manually pivotable in said recess to a third, disabled position in which said cam means is withdrawn from the path of reciprocation of said firing pin, said tooth is released from said locking notch and said detent notch engages said plunger means to interfere with rotation of said latch lever from said third position, and thereby render said plunger means inoperative to pivot said latch lever toward said first position thereof.

2. A bolt latch mechanism as recited in claim 1, said latch lever being manually pivotable from said disabled position toward said latched and unlatched positions thereof, by applying pressure sufficient to displace said plunger means from said detent notch.

3. A bolt latch mechanism as recited in claim 1, said latch lever having a face area normally bearing against said plunger means for relative sliding movement as said latch lever is pivoted between said latched and unlatched positions, said detent notch being formed in said face in a location spaced from said bearing area to engage said plunger means in said disabled position of said latch lever.

4. A bolt latch mechanism as recited in claim 1, said latch lever being pivotable: in a first angular direction into said unlatched position; in an opposite angular direction into said latched position; and beyond said unlatched position in said first angular direction into said disabled position.

5. A bolt latch mechanism as recited in claim 4, said firing pin being formed with a head having a peripheral surface cylindrical about the axis of movement of said firing pin; said cam means comprising a cam surface formed on said latch lever; said latch lever being constructed and pivotally mounted so that in said latched position thereof, said cam surface is inclined toward the axis of reciprocation of said firing pin in the direction of movement of said head from said cocked to said fired positions thereof, for sliding engagement by said head surface.

6. A bolt latch mechanism as recited in claim 5, said latch lever being constructed and pivotally mounted so that in said unlatched position thereof, said cam surface slidably engages said head surface and remains inclined to the axis of reciprocation of said firing pin in the direction of movement of said head from said cocked to said fired positions thereof, but at a smaller angle than in said latched position of said latch lever, thereby permitting further pivotal movement of said latch lever in said first angular direction into said disabled position without producing binding interference between said cam surface and said head surface.

7. A bolt latch mechanism as recited in claim 1, said latch lever projecting from said bolt plug recess outwardly of said bolt plug, and having a V-shaped upper surface for manual rocking between said disabled position and said latched and unlatched positions.



FIG. 4.

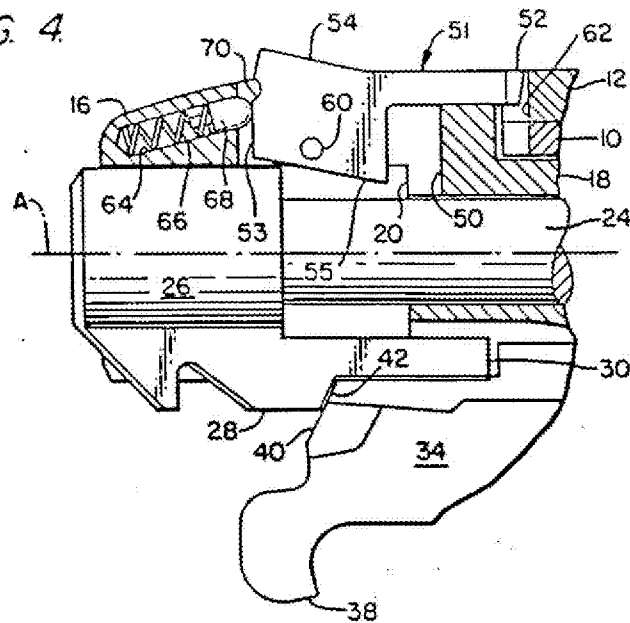


FIG. 5.

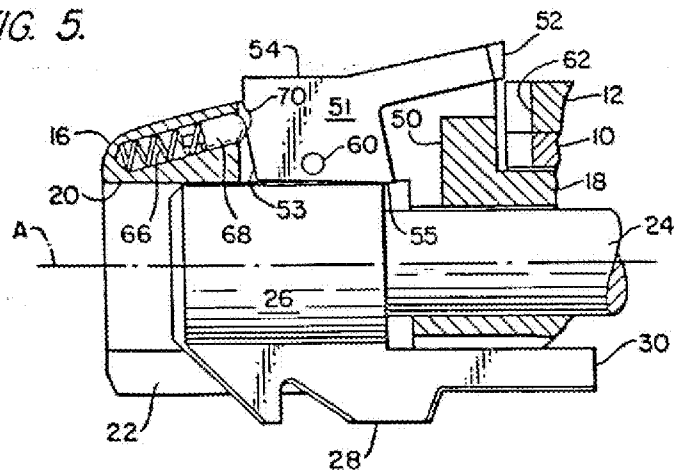
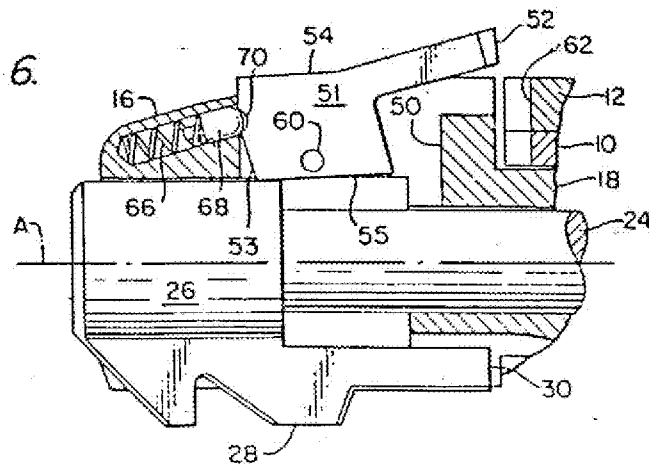


FIG. 6.



BOLT LATCH FOR BOLT-ACTION FIREARM

This application is a continuation of application Ser. No. 290,693 filed Aug. 6, 1981.

This invention relates to firearms of the bolt-action type, which have a bolt reciprocable in a receiver between open and closed portions, and rotatable by means of a handle between locked and unlocked relationship to the firearm barrel. The invention is particularly concerned with an improved bolt latch mechanism which is normally operated automatically by the firing and re-cocking of the firearm, but which may be selectively disabled, according to the user's wishes.

In a bolt-action firearm intended for hunting use, it is desirable to provide both a safety, and a bolt latch for securing the bolt locked in a closed position. These two features allow the firearm to be carried in the field loaded and cocked, without risk either of accidental firing, or of the bolt being unlocked by some accidental jar or collision. At the same time, the user should be enabled to open the bolt readily and safely for unloading. Controls for the safety and bolt latch should be simple enough to avoid confusion in poor lighting conditions; should be readily manipulable even by a hunter wearing gloves; and yet should not protrude in a manner either to interfere with manual operation of the firearm, or to be susceptible to inadvertent displacement.

One approach to this question is shown in U.S. Pat. No. 2,514,981 to Walker et al, in which a two-position safety lever also serves as a bolt latch. The safety lever has two arms: a safety arm bearing an eccentric which blocks the sear of the trigger mechanism in a "safe" position of the lever; and another latch arm which engages a notch in the bolt to latch it against rotation. Movement of the safety lever to the "fire" position releases the sear, and also removes the latch arm from engagement with the bolt. This is a satisfactory system; but it does require the safety to be released when the bolt is opened, and therefore calls for proper caution to be exercised when the user wishes to unload the firearm.

Another prior art solution involves a safety lever movable to three positions: one in which the safety and the bolt latch are both engaged; a second, intermediate position which either disengages the bolt latch, or enables it to be manually disengaged, but leaves the safety on; and a third, firing position in which both the safety and the bolt latch are inoperative. Examples of this approach appear in U.S. Pat. Nos. 2,824,402 to Fischer; 1,318,423 to Williams; 2,869,269 to Couture; and 3,138,888 to Brewer. If a hunter is working in good lighting conditions, without gloves, and with leisure to see that the safety is correctly positioned, these systems are satisfactory. But in the press of urgency and excitement that often arises in the field, and under adverse conditions, error in selecting among three safety positions is not unlikely to occur.

Another solution that has been suggested is to provide a bolt latch that is completely divorced from the safety mechanism. This enables the hunter to unload without concern about changing the condition of a safety he has previously activated. Two examples of such a bolt latch are found in U.S. Pat. Nos. 1,322,514 to Bader, and 1,669,496 to Stahl. In Bader, a sliding latch, mounted on the side of the bolt plug just behind the bolt handle, is movable to or from latching engagement with

the bolt handle by means of a pivoted lever, which is spring-biased toward the latch-engaging position. The latch may be withdrawn either by lever engagement with a shoulder on the firing pin when the rifle is fired, or by manual rotation of the pivoted lever. After manual opening with the rifle cocked, the pivoted lever must be held manually retracted in order to re-close the bolt.

In the Stahl Patent, a rotatable shaft, formed with a flat and carrying a spring-biased latch plunger, extends transversely across a mating flat in the firing pin. The cocking of the firing pin mates the two flats so as to turn the shaft and latch plunger into locking engagement with the bolt handle. Upon firing, the flats disengage so that the bolt handle may be raised, with the shaft and latch plunger now being free of the firing pin and able to rotate to permit this opening movement. If it is desired to unload the rifle with the firing pin cocked, the latch plunger may be retracted manually to permit the bolt to be opened. The latch plunger must once again be held retracted to permit the bolt to be re-closed; this disadvantage is shared by Bader and Stahl.

The present invention has as its general object the improvement of bolt latch mechanisms for bolt-action rifles which have independently-operable safety devices. The improved mechanism features a simplified construction, involving a single pivoted, spring-loaded latch lever, which is automatically operated by the displacements of a firing pin during cocking and firing. In one embodiment, a detent is provided so that the latch is selectively operable manually to releasably secure it in a disabled position. The latch may readily be disabled or reactivated by the press of even a gloved finger, after which the hands are free to carry out loading, cocking, firing, or unloading operations without further attention to the latch.

According to the invention, the bolt plug of a bolt-action firearm is recessed to receive a latch lever, which is pivotally mounted in the recess for rocking motion to either of two positions: latched by cocking the weapon and closing the bolt handle; or unlatched by firing the weapon. A spring and plunger bias the lever toward the latched position, in which a tooth formed at one end of the lever engages in a mating notch in the closed bolt handle. The latch lever has a cam surface so arranged, in the latched position, as to project into the path of motion of the head of the firing pin, which therefore pivots the lever to the unlatched position when the weapon is fired. Subsequent re-cocking and withdrawal of the firing pin head enables the spring-loaded plunger to return the lever automatically to the latched position.

In one embodiment, the latch lever may be manually rocked beyond the latched position to a disabled position, in which a detent notch formed in the lever engages and interferes with movement of the spring-loaded plunger. The plunger cannot then move the lever toward the latched position until the lever is manually pressed in a direction to release the detent and thus restore automatic operation.

FIG. 1 is a fragmentary view in side elevation of one embodiment of the improved bolt latch mechanism, shown in latched relation to the bolt assembly of an illustrative bolt-action firearm, which is shown cocked and ready to fire;

FIG. 2 is a fragmentary view in rear elevation of the assembly of FIG. 1;

FIG. 3 is a fragmentary view showing the latch in unlatched position, with the bolt handle raised to un-



lock the bolt, and the parts of the firearm in fired and uncocked condition;

FIG. 4 is a fragmentary cross-sectional view in side elevation, with the parts in the same latched and cocked condition as in FIG. 1;

FIG. 5 is a view similar to FIG. 4, but showing the firing pin in a fired position, and the latch mechanism is an unlatched position; and

FIG. 6 is a view similar to FIGS. 4 and 5, but showing the firing pin in a cocked position, and the latch mechanism detented in a disabled position.

The improved bolt latch mechanism is broadly applicable to bolt-action firearms of various designs, but is shown for purposes of illustration in a bolt-action rifle of substantially the same type as is shown in more detail in U.S. Pat. Nos. 2,585,195 to Walker and 2,514,981 to Walker et al, which were assigned to the owner of the present application. The rifle includes a hollow cylindrical bolt 10 which is mounted for rotation and longitudinal reciprocation in a receiver (not shown), by means of a handle 12 brazed or otherwise secured to the bolt. The bolt, when closed against the breech of the rifle barrel, may be locked by means of conventional lugs formed on its forward end (not shown), which are engaged by rotating the handle down into the position shown in FIGS. 1 and 2, or unlocked by raising the handle to the position of FIG. 3. The bolt is shown in its closed longitudinal position with respect to elements of a fire control mechanism which includes a sear 34 and a trigger 35. With the bolt turned to its unlocked position of FIG. 3, it may be pulled longitudinally to the left to open the action for loading and unloading cartridges, and for cocking a firing pin 24.

A bolt plug 16 has a threaded extension 18 which extends forwardly into threaded engagement with internal threads 14 formed in the bolt, thus drivingly connecting the bolt and bolt plug for joint longitudinal reciprocation, but permitting the bolt to rotate independently. The bolt plug is formed with recessed flats 19 for sliding engagement with mating surfaces formed on the receiver (not shown), to restrain the bolt plug from rotating with the bolt. The bolt plug also has a cylindrical recess 20 slidably receiving an enlarged head 26 of the firing pin 24, and a slot 22 through which a sear-engaging lug 28 and a cocking arm 30 of the firing pin extend in freely-slidable but non-rotatable relation.

In the relative positions of these elements shown in FIGS. 1 and 4, the firing pin 24 is cocked, with an oblique face 42 of the lug 28 bearing against a mating face 40 of the sear 34. The firing pin is continuously urged toward a firing position, that is, toward the right in the drawings, by a conventional firing pin spring contained within the bolt. The sear, pivoted on a pin 36, is held in its illustrated angular position by the engagement between a step 39 in the sear and a connector 37 attached to the trigger 35, thereby restraining the firing pin in its cocked position. To fire the weapon, the trigger is pulled to move the connector 37 to the position shown in FIG. 3. The angle of the faces 40 and 42 with respect to the longitudinal axis of the bolt and firing pin is such that the firing pin spring exerts a downward component of force on the sear that overcomes the upward force exerted by a sear spring 33, and pivots the sear counterclockwise to the position shown in FIG. 3, permitting the firing pin to be driven forwardly to its fired position shown in FIG. 5.

In the fired condition, the cocking arm 30 of the firing pin extends forwardly into the deepest part of a cocking

cam 32 cut into the bolt 10, which is circumferentially aligned with the cocking arm when the bolt is closed (compare FIGS. 1 and 3). After firing, raising the bolt handle to the position of FIG. 3 causes the cocking arm to ride along the curved surface of the cam 32, and retracts the firing pin back toward the cocked position. Then as the bolt is opened and re-closed by a reciprocating movement along its major axis, the lug face 42 engages against the re-elevated sear face 40 and retains the firing pin in the cocked condition of FIGS. 1 and 4 once more.

The firearm action thus far described is conventional in design, and is further illustrated and described in the aforementioned U.S. Pat. Nos. 2,585,195 and 2,514,981. Therefore, no further detailed description of its operation and design is believed necessary. A safety mechanism of any type suitable to such an action may be utilized as desired, and the bolt latch of the present invention is intended to operate entirely independently of the safety mechanism. As illustrated, the sear 34 is provided with a cam lobe 38 for cooperation with a safety lever having an eccentric, of the kind disclosed in U.S. Pat. No. 2,514,981, which is selectively operable to block the sear against movement from the cocked position of FIG. 1. This is intended merely as an illustrative example of various safety mechanisms that might be used in conjunction with the improved bolt latch, which will now be described.

The bolt plug 16 is formed with a radially-extending recess 50, in which a latch lever 51 is pivotally supported on a pin 60 received in a transverse hole 58. The lever 51 has a tooth 52 at its forward end, which, in a latched position of FIGS. 1 and 4, engages in a locking notch 62 at the rear of the bolt 10 and handle 12 to prevent the bolt from being moved from its closed and locked position. A plunger 68 is slidably received in a blind hole 64 in the bolt plug, and is urged against a rear face 53 of the lever 51 by a spring 66 to bias the lever in a clockwise direction toward the latched position.

The latch lever 51 is formed with a planar cam surface 55 which projects into the recess 20 in the latched position of FIG. 4, into the path of movement of the outer cylindrical surface of the firing pin head 26 from its cocked position of FIG. 4 to its fired position of FIG. 5. In the latched position, the cam surface 55 extends in a direction inclined downwardly in a forward direction with respect to the longitudinal axis A of the firing pin motion. When the trigger 35 is pulled to release the firing pin, the forwardly-moving cylindrical head 26 engages the cam surface 55 and pivots the lever 51 to the unlatched position shown in FIG. 5, against the bias of the spring-loaded plunger 68. The bolt 10 is now free to turn, and may be unlocked and opened. The surface 55 continues to be inclined downwardly in a forward direction, for a reason which will appear, but at a greatly reduced angle to the bolt axis A.

Re-cocking of the firing pin 24 frees the cam surface 55 from the head 26. This allows the plunger 68 to automatically re-latch the lever 51 in the position of FIG. 4, as the bolt handle is closed and the locking notch 62 becomes aligned with the tooth 52.

In the illustrated embodiment, the rear face 53 of the latch lever is formed with a detent notch 70, which is not reached by the plunger 68 sliding along the face 53 during the pivotal movements of the lever between the latched position of FIG. 4 and the unlatched position of FIG. 5. However, the lever may be rocked, by applying finger pressure to a projecting V-shaped upper surface

54, counterclockwise into a further disabled position shown in FIG. 6, in which the plunger 68 seats in the notch 70. The engagement between the plunger and the notch restrains the lever against being rotated by the bias of the spring 66, and thus detents the lever in this disabled position.

To provide for an ample arcuate displacement between the unlatched and disabled positions of the lever 51, the surface 55 must have some clearance from the head 26. Thus this surface is inclined downwardly at a small angle to the axis A in both the unlatched and the disabled positions, but in opposite axial directions.

When placed in the disabled, detented position of FIG. 6, the latch lever 51 will remain inoperative and unaffected by movement of the firing pin, until such time as finger pressure is applied to it in a clockwise direction to release the plunger 68 from the notch 70, and thus restore the parts to the normal automatically-operating positions of FIGS. 4 and 5.

In a hunting situation in the field, where a series of 20 shots may be fired, the bolt is cyclically opened to reload the rifle, and reclosed to cock the firing pin for the next shot; and the latch lever automatically cycles between the latched and unlatched positions of FIGS. 4 and 5. Assuming, however, that the hunter wishes to unload the cocked and latched rifle without firing previously-loaded live rounds, he need not release the safety to do so. He merely presses the latch lever 51 into the disabled position of FIG. 6, and opens the bolt with the safety engaged. When he next wishes to reload the rifle, the latch lever should be pressed to release it from the detented disabled condition, so that its normal automatic operation is restored.

The latch lever 51 is preferably positioned near the top of the bolt plug as shown, so that it is readily visible and easily pressed even with a gloved hand, but does not protrude in such a location as to be readily subject to accidental operation by the user's hand carrying the rifle, or by jarring against other objects.

I claim:

1. In a bolt-action firearm of the type having a substantially cylindrical bolt rotatably mounted for movement between open and closed positions; a bolt plug non-rotatably mounted and having threaded connection with said bolt; a firing pin mounted reciprocally in said bolt plug for movement between fired and cocked positions with respect to said bolt; the improved bolt latch mechanism which comprises;

a latch lever having a tooth; said bolt plug being formed with a recess receiving said latch lever; said bolt being formed with a locking notch opening onto an outer peripheral surface thereof at a location radially aligned with said tooth upon rotation of said bolt to said closed position; means mounting said latch lever in said recess for pivotal movement about an axis substantially perpendicular to the longitudinal axis of said cylindrical bolt between a first, latched position in which said tooth is engaged in said locking notch to latch said bolt against rotation with respect to said bolt plug, and a second, unlatched position in which said tooth is disengaged from said locking notch to release said bolt for rotation; spring-biased plunger means mounted in said bolt plug for biasing said latch lever toward said first position;

said latch lever having cam means arranged to project, upon pivotal movement of said latch lever

into said first position, into the path of reciprocation of said firing pin, whereby movement of said firing pin to said fired position normally pivots said latch lever from said first to said second position to unlatch said bolt, and movement of said firing pin to said cocked position normally permits said spring-biased plunger means to pivot said latch lever from said second to said first position to latch said bolt;

said latch lever having a detent notch, and being manually pivotable in said recess to a third, disabled position in which said cam means is withdrawn from the path of reciprocation of said firing pin, said tooth is released from said locking notch and said detent notch engages said plunger means to interfere with rotation of said latch lever from said third position, and thereby render said plunger means inoperative to pivot said latch lever toward said first position thereof.

2. A bolt latch mechanism as recited in claim 1, said latch lever being manually pivotable from said disabled position toward said latched and unlatched positions thereof, by applying pressure sufficient to displace said plunger means from said detent notch.

3. A bolt latch mechanism as recited in claim 1, said latch lever having a face area normally bearing against said plunger means for relative sliding movement as said latch lever is pivoted between said latched and unlatched positions, said detent notch being formed in said face in a location spaced from said bearing area to engage said plunger means in said disabled position of said latch lever.

4. A bolt latch mechanism as recited in claim 1, said latch lever being pivotable: in a first angular direction into said unlatched position; in an opposite angular direction into said latched position; and beyond said unlatched position in said first angular direction into said disabled position.

5. A bolt latch mechanism as recited in claim 4, said firing pin being formed with a head having a peripheral surface cylindrical about the axis of movement of said firing pin; said cam means comprising a cam surface formed on said latch lever; said latch lever being constructed and pivotally mounted so that in said latched position thereof, said cam surface is inclined toward the axis of reciprocation of said firing pin in the direction of movement of said head from said cocked to said fired positions thereof, for sliding engagement by said head surface.

6. A bolt latch mechanism as recited in claim 5, said latch lever being constructed and pivotally mounted so that in said unlatched position thereof, said cam surface slidably engages said head surface and remains inclined to the axis of reciprocation of said firing pin in the direction of movement of said head from said cocked to said fired positions thereof, but at a smaller angle than in said latched position of said latch lever, thereby permitting further pivotal movement of said latch lever in said first angular direction into said disabled position without producing binding interference between said cam surface and said head surface.

7. A bolt latch mechanism as recited in claim 1, said latch lever projecting from said bolt plug recess outwardly of said bolt plug, and having a V-shaped upper surface for manual rocking between said disabled position and said latched and unlatched positions.



CONFIDENTIAL

Quarterly Report - September, 1984

- 2 -

Sportsman 78 - cont'd.

parts list transmittal is complete and the remaining evaluation will be scheduled.

Model 700 Ducks Unlimited - R.S. Murphy

For the first time in 1985, Remington will produce a special, limited production Ducks Unlimited Dinner Rifle. Since the variation from a standard Model 700 entails only cosmetic changes, the total Research commitment will be limited to the transmittal and the trial and pilot evaluation. The transmittal is complete and the evaluation will be scheduled.

New Bolt Action Rifle - R.S. Murphy, F.E. Martin

A new bolt action rifle is being developed as a potential replacement for the Model 700, possibly in 1988. A "preferred" design has been selected by Marketing and Research, and work on the drawing package is continuing. A limited number of engineering test prototypes are also being built for evaluation in December. Computervision modeling of individual components is being done on a "safety critical" priority basis.

RSM:spa

MUR 0006686

DF 0001305

ICAM 0001304



NTBOOK214

NOVEMBER 9, 1984

TO: COLEMAN

FROM: BOWER

UPDATE - DEVELOPMENT SCHEDULE ITEMS

P.3 NEW BOLT ACTION RIFLE (1988)

THIS RIFLE HAS BEEN DESIGNED AS A REPLACEMENT FOR THE MODEL 700. TECHNICAL IMPROVEMENTS INCLUDE:

- A SIMPLIFIED FIRE CONTROL CONTAINING:
 - PRESET ENGAGEMENT & 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.

OC 000656



NTBOOK215

CONFIDENTIAL

the Gediman Research Group, Inc.

26 Sixth Street
Stamford, Connecticut 06905
203-348-0009

NEW BOLT ACTION CENTER FIRE RIFLE
PRODUCT/FEATURIZATION DEVELOPMENT RESEARCH



FOR: REMINGTON ARMS COMPANY, INC.

BY: THE GEDIMAN RESEARCH GROUP, INC.

APRIL, 1985

CONFIDENTIAL



NTBOOK216

LEWY

CONFIDENTIAL

TABLE OF CONTENTS

INTRODUCTION..... 1

SUMMARY OF RESULTS..... 5

THE FINDINGS IN DETAIL

STOCK CONFIGURATION..... 12

RECEIVER STYLE..... 15

BARREL STYLE..... 18

FLOOR PLATE/MAGAZINE STYLE..... 22

PRESENCE AND TYPE OF BOLT LOCK..... 25

LOCATION OF BOLT LOCK RELEASE..... 29

LOCATION OF BOLT RELEASE..... 31

BOLT PLUG DESIGN: ENCLOSED VS. EXPOSED..... 34

ENCLOSED BOLT PLUG STYLE..... 37

BOLT HANDLE STYLE..... 38

SAFETY LOCATION..... 40

APPENDIX



NTBOOK217

CONFIDENTIAL

LEWY

CONFIDENTIAL

-8-

SUMMARY OF RESULTS (CONT'D)

4. RESPONDENTS CLEARLY PREFER THE MAGAZINE BOX LOADING SYSTEM FOR CONVENIENCES (OF EASY LOADING AND UNLOADING) AND THE OPPORTUNITY TO CARRY AN EXTRA "CLIP."
5. MAINLY FOR FUNCTIONAL REASONS (I.E., PREVENTION OF ACCIDENTAL SNAGGING AND LIFTING OF THE BOLT), THE GREAT MAJORITY OF RESPONDENTS PREFER A RIFLE WITH A BOLT LOCK OVER ONE WITHOUT. OF THE TWO BOLT LOCK DESIGNS, MOST RESPONDENTS PREFER THE ONE WHICH LOCKS ON "SAFE" ONLY -- BOTH AS A DOUBLE-CHECK TO MAKE SURE THE GUN IS ON "SAFE" AND ALSO FOR ITS "SIMPLER" MECHANISM (I.E., ONE LESS THING TO GO WRONG).

- NOTE, HOWEVER, THAT THERE IS A RELATIVELY LOW DEGREE OF RESPONDENT AWARENESS AND COGNITION (ESPECIALLY CONCERNING THE "RELEASE" MECHANISM) REGARDING BOLT LOCKS; THUS, SOME EDUCATION MAY BE DESIRABLE TO ENSURE CONSUMER FAMILIARITY AND COMFORT WITH THE BOLT LOCK.

6. FOR CONVENIENCE AND EASE OF ACCESS, THE BOLT LOCK RELEASE LOCATED ON THE BOLT PLUG (MODEL R) IS marginally preferred.

- THE MAIN OBJECTION TO THE LOCATION OF MODEL M (SIDE OF RECEIVER) IS ITS PROXIMITY TO THE SAFETY -- MAKING IT DIFFICULT TO OPERATE, PARTICULARLY WITH GLOVES ON.

CONFIDENTIAL



NTBOOK218

LEWY

CONFIDENTIAL

-25-

PRESENCE AND TYPE OF BOLT LOCK

FOR BOTH FUNCTIONAL AND SAFETY REASONS, THE GREAT MAJORITY OF RESPONDENTS (EXCLUDING PHOENIX) PREFER A RIFLE WITH A BOLT LOCK TO ONE WITHOUT.*

	LIKED BEST BEFORE DISCUSSION (56)	LIKED BEST AFTER DISCUSSION (56)
<u>PRESENCE OF BOLT LOCK</u>		
PREFER A BOLT LOCK	72%	79%
PREFER NO BOLT LOCK AT ALL	28	21

RESPONDENTS CITE SEVERAL ADVANTAGES TO HAVING A BOLT LOCK:

- IT PREVENTS ACCIDENTAL SNAGGING ON A TWIG AND LIFTING OF THE BOLT, UNBEKNOWNST TO THE HUNTER, THUS POSSIBLY RESULTING IN A MISSED OPPORTUNITY.
- IT PREVENTS THE BOLT FROM OPENING AND DIRT FROM GETTING INTO THE MECHANISM IN THE EVENT OF A FALL.
- SOME ALSO SEE IT AS A SAFETY FEATURE (I.E., KIDS CANNOT OPEN THE BOLT AND LOAD THE GUN).

* IT SHOULD BE NOTED THAT THERE IS A RELATIVELY LOW LEVEL OF CONSUMER AWARENESS AND COGNITION REGARDING BOLT LOCKS. IN THE GROUPS A CERTAIN AMOUNT OF (COMPRESSED) "EDUCATION" WAS REQUIRED BEFORE THE TEST ISSUES COULD BE MEANINGFULLY DISCUSSED.

CONFIDENTIAL



NTBOOK219

LEWY

CONFIDENTIAL

-26-

PRESENCE AND TYPE OF BOLT LOCK (CONT'D)

"WITHOUT THE BOLT LOCK, IF YOU'RE CLIMBING ON ROCK OR THROUGH BRUSH AND YOUR BOLT GETS INADVERTENTLY KNOCKED PARTIALLY UP, YOU CAN'T FIRE THAT WEAPON."

"I GO DEER HUNTING BEFORE THE SUN COMES UP AND I ROUTINELY TAKE TUMBLES. I FALL DOWN A HILLSIDE AND WIND UP AT THE BOTTOM WITH MY BOLT HANGING OPEN, AND YOU GET A BUNCH OF CRAP IN THERE."

"IF A YOUNGSTER IS FOOLING WITH A GUN THAT HAS THE BOLT LOCKED IN BOTH POSITIONS, CHANCES ARE HE WON'T KNOW HOW TO LOAD IT, SO IT'S SAFE."

ON THE OTHER HAND, MANY RESPONDENTS (IN PHOENIX*) PREFER NO BOLT LOCK AT ALL.

- SEVERAL SIMPLY ARE NOT AWARE OF THE ISSUE AND SEE NO NEED FOR A BOLT LOCK (WHATEVER IT IS).
- SOME FEEL IT IS "JUST ANOTHER GIMMICK" OR "GADGET TO GO WRONG."
- A SMALL NUMBER OF RESPONDENTS FEEL THAT HAVING TO PRESS A RELEASE BUTTON TO OPEN THE BOLT SLOWS DOWN THE LOADING PROCESS AND "SAVES THE DEER."

* "I REALLY DON'T SEE THE PURPOSE OF A BOLT LOCK AT ALL."

"THIS [BOLT LOCK] IS JUST ANOTHER GADGET TO GO WRONG."

* TO SOME EXTENT THIS CAN BE ATTRIBUTED TO THE LACK OF EXPLANATION GIVEN IN THE PHOENIX GROUPS FOR THE RATIONALE AND OPERATION OF THE BOLT LOCK MECHANISM.

CONFIDENTIAL



NTBOOK220

OF THE TWO BOLT LOCK DESIGNS, MOST RESPONDENTS PREFER THE BOLT LOCK THAT LOCKS ON "SAFE" ONLY.

<u>TYPE OF BOLT LOCK</u>	<u>LIKED BEST BEFORE DISCUSSION (40)*</u>	<u>LIKED BEST AFTER DISCUSSION (44)*</u>
M LOCKS ON "SAFE" ONLY	63%	61%
R LOCKS ON BOTH "SAFE" AND "FIRE"	37	39

THEY FEEL THAT THE BOLT LOCK THAT LOCKS ON THE "SAFE" POSITION ONLY IS FUNCTIONALLY SUPERIOR, IN THAT:

- MANY WOULD USE IT AS A "DOUBLE CHECK" TO MAKE SURE THE GUN IS ON "SAFE."
- SEVERAL FEEL THAT LOCKING THE BOLT IN THE "FIRE" POSITION IS UNNECESSARY (THE GUN SHOULD BE STATIONARY WHEN IN THE "FIRE" POSITION).
- THE SYSTEM THAT LOCKS ON BOTH "SAFE" AND "FIRE" IS PERCEIVED BY SOME TO BE MORE LIKELY TO HAVE MECHANICAL TROUBLE THAN A BOLT LOCK THAT LOCKS IN ONE POSITION.

... "JUST ANOTHER THING TO GO WRONG."

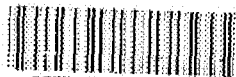
* * *

"AS LONG AS THAT BOLT IS DOWN AND LOCKED, THEN I KNOW MY SAFETY IS ON."

"I'M GENERALLY NOT CRAWLING THROUGH THE BRUSH WITH THE SAFETY ON FIRE. WHEN I'VE GOT IT IN THE FIRE POSITION, I'M READY TO FIRE."

"A BOLT LOCK IN THE FIRE POSITION IS JUST ANOTHER THING TO GO WRONG. I'D RATHER HAVE IT SIMPLE."

* BASED ON RESPONDENTS WHO PREFER A BOLT LOCK.



CONFIDENTIAL

-28-

PRESENCE AND TYPE OF BOLT LOCK (CONT'D)

STILL, SEVERAL RESPONDENTS (PARTICULARLY IN HOUSTON) PREFER THE BOLT LOCK THAT LOCKS IN BOTH POSITIONS, MAINLY FOR SAFETY REASONS:

"THE SAFER THEY ARE, THE BETTER... I HAVE A SON. AND IT DOESN'T SEEM LIKE IT'S GOING TO DETER FROM USING THE GUN."

IT IS IMPORTANT TO NOTE THAT CONSUMER COGNITION OF THE BOLT LOCK RELEASE MECHANISM IS PARTICULARLY WEAK. AS THE FOLLOWING VERBATIMS ILLUSTRATE, MANY RESPONDENTS DO NOT PICK UP ON THE FACT THAT THE BOLT CAN EASILY BE OPENED AT WILL:

"I DON'T WANT THE LOCK. BECAUSE THEN YOU CAN HAVE THE SAFETY ON AND STILL BE ABLE TO GET THE ROUND OUT."

"I DON'T WANT IT LOCKED IN BOTH POSITIONS. BECAUSE THEN YOU CAN'T GET THE ROUND OUT OF THE CHAMBER."

"IF THE BOLT IS LOCKED IN BOTH POSITIONS AND YOU ASSUME THE GUN IS UNLOADED, THE TENDENCY IS TO SQUEEZE THE TRIGGER TO OPEN THAT BOLT."

CONSUMER EDUCATION IS REQUIRED IN THIS AREA. CONSUMERS NEED TO BE MADE AWARE OF THE FACT THAT THE BOLT LOCK CAN BE RELEASED AT ANY TIME, WITHOUT ADJUSTING THE POSITION OF THE SAFETY OR SQUEEZING THE TRIGGER.

CONFIDENTIAL



NTBOOK222

11/17/77

CONFIDENTIAL

-29-

PRESENCE AND TYPE OF BOLT LOCK

LOCATION OF BOLT LOCK RELEASE

A BOLT LOCK RELEASE LOCATED RIGHT ON THE BOLT PLUG (MODEL R) IS PREFERRED OVER A RELEASE LOCATED ON THE SIDE OF THE RECEIVER (MODEL M). RESPONDENTS PREFER THE SHROUD LOCATION FOR CONVENIENCE AND EASE OF ACCESS.

	LIKED BEST BEFORE <u>DISCUSSION</u> (56)	LIKED BEST AFTER <u>DISCUSSION</u> (56)
<u>LOCATION OF BOLT LOCK RELEASE</u>		
R BOLT PLUG	55%	54%
M SIDE OF RECEIVER	43	44
NO PREFERENCE	2	2

- THE MAIN OBJECTION TO MODEL M IS ITS PROXIMITY TO THE SAFETY...

...MAKING IT ESPECIALLY DIFFICULT TO
OPERATE WITH GLOVES ON

- SOME SAY THAT THE LOCATION OF MODEL R IS EASIER
TO REACH WITH THE SIDE OF THE THUMB.

...BUTTON CAN BE PRESSED AND
BOLT LIFTED IN ONE MOTION

CONFIDENTIAL



NTBOOK223

CONFIDENTIAL

CONFIDENTIAL

-30-

PRESENCE AND TYPE OF BOLT LOCK

LOCATION OF BOLT LOCK RELEASE (CONT'D)

"I CHOSE R BECAUSE M IS TOO CLOSE TO THE SAFETY. THERE'S TOO MANY BUTTONS TOO CLOSE TOGETHER."

"YOU WON'T BE ABLE TO REACH THE BUTTON ON M WITH GLOVES ON. IT'S TOO CLOSE TO THE SAFETY."

"I PICKED R BECAUSE I COULD DO IT IN ONE MOTION -- PUSH THE BUTTON AND PULL THE BOLT UP AT THE SAME TIME. IT'S MORE CONVENIENT."

NEVERTHELESS, SOME RESPONDENTS PREFER THE LOCATION OF MODEL M FOR READY ACCESSIBILITY...

"I LIKED M BECAUSE ITS EASIER TO OPERATE. YOU HAVE YOUR HAND RIGHT THERE."

"I LIKED M BECAUSE I COULD REACH IT WITH MY THUMB."

CONFIDENTIAL



NTBOOK224

LEWY

CONFIDENTIAL

-40-

SAFETY LOCATION

FOR CONVENIENCE/ACCESSIBILITY REASONS AND PERSONAL SAFETY (WHICH TO A LARGE DEGREE IS SEEN TO BE RELATED TO THE TYPE OF SAFETY MECHANISM), RESPONDENTS PREFER THE STANDARD BDL SAFETY BY NEARLY A THREE TO ONE MARGIN OVER THE TANG MOUNTED SAFETY.

<u>SAFETY LOCATION</u>	<u>LIKED BEST BEFORE DISCUSSION (56)</u>	<u>LIKED BEST AFTER DISCUSSION (56)</u>
R STANDARD BDL (SIDE OF RECEIVER)	77%	71%
S TANG MOUNTED	23	29

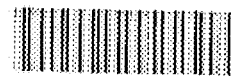
- THE SIDE OF THE RECEIVER IS SEEN AS THE "NATURAL POSITION" FOR THE SAFETY. MOST RESPONDENTS FEEL IT IS MORE ACCESSIBLE.

...SOME SAY IT IS MORE MANEUVERABLE AS WELL

- IN CONTRAST, THE TANG LOCATION IS VIEWED AS AN AWKWARD, "UNNATURAL" POSITION THAT IS MORE DIFFICULT TO REACH...

...ESPECIALLY WITH GLOVES ON

CONFIDENTIAL



NTBOOK225

CONFIDENTIAL

CONFIDENTIAL

-41-

SAFETY LOCATION (CONT'D)

"I LIKED R, MYSELF. IT'S READILY ACCESSIBLE. IT'S EASY TO GET TO."

"THE WAY I HOLD THE GUN, [THE LOCATION OF] R SEEMS MORE NATURAL TO ME. MY THUMB CAN MANEUVER BETTER."

"I DIDN'T LIKE THAT ONE ON THE TANG. IT SEEMED LIKE YOU HAVE TO COME WAY BACK TO GET TO IT. IT'S A LITTLE MORE UNNATURAL FOR ME."

"IF YOU'RE OUT IN THE COLD WEATHER AND WEARING A PAIR OF GLOVES, YOU'RE GOING TO HAVE A HECK OF A TIME GETTING TO THAT ONE ON THE TANG."

ALTHOUGH SOMEWHAT LESS IMPORTANT THAN THE CONVENIENCE ISSUE, MANY RESPONDENTS CITE PERSONAL SAFETY AS A FACTOR IN THEIR PREFERENCE. IT IS IMPORTANT TO NOTE, THOUGH, THAT THE PERSONAL SAFETY ISSUE IS MORE OF A FUNCTION OF THE TYPE OR DESIGN OF THE EXTERNAL MECHANISM (FLAT SLIDE SWITCH VERSUS PROTRUDING LEVER) THAN OF ITS LOCATION.

- SEVERAL MEN OBJECT TO THE SLIDE SWITCH MECHANISM OF MODEL S (WHICH SOME FEEL IS UNAVOIDABLE IN A TANG MOUNTED SAFETY). THEY ARE CONCERNED THAT IT MAY BE DIFFICULT TO DISTINGUISH BETWEEN POSITIONS...

...AND PARTICULARLY DIFFICULT TO DISTINGUISH BY "FEEL"

- SOME RESPONDENTS STATE THAT THE TANG SAFETY (BECAUSE OF IT'S LOCATION) IS MORE LIKELY TO BE ACCIDENTALLY DISENGAGED BY THE CARRIER'S HAND, ESPECIALLY WHEN THE GUN IS CARRIED BY THE PISTOL GRIP, AS IT OFTEN IS.



NTBOOK226

CONFIDENTIAL

-42-

SAFETY LOCATION (CONT'D)

"I PICKED R BECAUSE I BELIEVE THERE SHOULD NEVER BE A QUESTION AS TO WHETHER THE SAFETY IS ON OR NOT. I WANT A DEFINITE POSITION RATHER THAN JUST A SLIP UP AND A SLIP BACK."

"I COULDN'T SEPARATE THE DESIGN OF THE SWITCH [FROM] THE LOCATION. WITH IT IN THE BACK, IT HAD TO BE A LOW PROFILE TO BE PRACTICAL, AND TO ME THAT'S BAD."

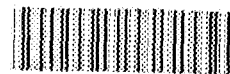
"WITH R, YOU DON'T HAVE TO ACTUALLY LOOK AT THE GUN TO SEE IF IT'S ON SAFETY. YOU CAN FEEL IT. I DON'T THINK YOU CAN DO THAT WITH S."

"WHEN YOU'RE WALKING THROUGH THE FIELD HOLDING THAT GUN [MODEL S], YOU COULD [ACCIDENTALLY] SLIDE THE SAFETY INTO THE FIRE POSITION USING YOUR THUMB...VERY UNSAFE."

NEVERTHELESS, SOME CONVINCING ARGUMENTS ARE MADE IN FAVOR OF A TANG MOUNTED SAFETY ON THE GROUNDS OF ACCESSIBILITY, SAFETY, AND FUNCTION:

- FOR CONVENIENCE/ACCESSIBILITY REASONS, THE TANG SAFETY IS MORE ATTRACTIVE TO SOME HUNTERS (PARTICULARLY LEFT HANDED SHOOTERS); THE THUMB "NEVER HAS TO LEAVE THE SHOOTING POSITION."
- WITH REGARD TO SAFETY, SOME MEN FEEL THAT THE LOCATION (AND SLIDE SWITCH MECHANISM) OF THE TANG SAFETY MAKES IT LESS LIKELY TO ACCIDENTALLY BECOME DISENGAGED BY TREES OR BRUSH.
- OTHER REASONS (SINGLE MENTIONS) GIVEN IN SUPPORT OF THE TANG SAFETY (BASED MORE ON THE MECHANISM THAN THE LOCATION) INCLUDE ITS SMALL SIZE, QUIETNESS, AND "ENCLOSURE OF THE ACTION."

CONFIDENTIAL



NTBOOK227

CONFIDENTIAL

SAFETY LOCATION (CONT'D)

"I LIKE THE TANG SAFETY BETTER. THERE'S LESS THUMB MOVEMENT."

"ON [MODEL] R YOU CAN BRUSH IT ON A BUSH OR A TREE AND KICK IT OFF SAFETY AND ON TO FIRE. THE SLIDE SWITCH MAY BE A LITTLE SAFER BECAUSE IT'S NOT AS ACCESSIBLE."

"THE PROBLEM WITH [MODEL] R IS THAT [WITH THE LEVER], THERE IS A FAIRLY LARGER OPENING DOWN TO THE MECHANISM WHERE DIRT OR MOISTURE CAN GET IN."

CONFIDENTIAL



NTBOOK228

LEWY

CONFIDENTIAL

APPENDIX



NTBOOK229

CONFIDENTIAL

FEATURE PREFERENCES

	Before Discussion		After Discussion
	Net Score*	Liked Best (56)	Liked Best (56)
(1) <u>Stock Configuration</u>			
Q Standard BDL	9.5	44%	44%
T Mountain rifle	6	25	25
S Prototype #1	(-5)	16	16
R Prototype #2	(-6.5)**	15**	15**
(2) <u>Receiver Styles</u>			
Q Round receiver with integral mounts	14.5	35%	42%
T Round receiver	(-4)	21	23
S Octagonal receiver with integral mounts	(-4.5)	20	17
R Octagonal receiver	(-6)	20	18
No preference		4	-
(3) <u>Barrel Styles</u>			
Q Standard contour	15	56%	57%
T Mountain rifle contour	11	30	32
S Mountain rifle/hammer-marked	(-25)	14	11
(4) <u>Floor Plate/Magazine Styles***</u>			
R Magazine box		71%	73%
T Floor plate		25	25
No preference		4	2
(5) <u>A. Presence/Type of Bolt Lock***</u>			
M, R Prefer a Bolt lock (net)		72%	79%
T Prefer no bolt lock at all		28**	21**
M Locks on "safe" only		45	49
R Locks on "safe" and "fire"		27	30
<u>B. Location of Bolt Lock Release***</u>			
R Bolt plug		55%	54%
M Side of receiver		43	44
No preference		2	2

* Net score = Liked best minus Liked least.

** Higher in Phoenix.

*** Net score cannot be computed.



NTBOOK230

CONFIDENTIAL

FEATURE PREFERENCES (cont'd)

	Before Discussion		After Discussion
	Net Score*	Liked Best	Liked Best
(6) <u>Bolt Release Location ***</u>		(56)	(56)
S Side of receiver		66%	59%**
Q Standard BDL		34	41
(7) <u>A. Bolt Plug Styles ***</u>			
S, R, M Fully enclosed		54%	59%
T Standard BDL exposed		46	41
<u>B. Enclosed Bolt Plug Style</u>			
M BDL style fully enclosed	22	64%	66%
R Fully enclosed, short scallops	(-9)	13**	13**
S Fully enclosed, scallops	(-12)	23	21
(8) <u>Bolt Handle Styles</u>			
M Standard BDL	27.5	52%	44%
T Teardrop	16.5	29	29
Q Standard ADL	(-2.5)	8	17
R Oval polished	(-2.5)	6	6
S Faceted	(-35)	5	4
(9) <u>Safety Location ***</u>			
R Standard BDL		77%	71%
S Tang mounted		23	29

* Net score = Liked best minus Liked least.

** Higher in Phoenix.

*** Net score cannot be computed

CONFIDENTIAL



NTBOOK231

LEW

CONFIDENTIAL

DEMOGRAPHICS OF SAMPLE

<u>Area</u>	<u>Total Sample</u> (56)	<u>Phoenix</u> (20)	<u>Denver</u> (18)	<u>Houston</u> (18)
Phoenix	36%	100%	-%	-%
Denver	32	-	100	-
Houston	32	-	-	100
<u>Days Hunted With Bolt-Action Center Fire Rifle in Past 12 Months</u>				
5 or less	25%	30%	22%	22%
6 - 10	31	20	33	39
11 - 15	25	15	33	28
16 or more	19	35	12	11
<u>Number of Guns Owned</u>				
1 - 3	25%	15%	22%	38%
4 - 6	25	20	28	28
7 - 10	18	20	28	6
11 or more	32	45	22	28
<u>Brand of Bolt Action Center Fire Rifle(s) owned*</u>				
Remington	66%	70%	65%	56%
Winchester	18	20	11	22
Ruger	16	20	22	6
Springfield	13	5	28	6
Mouser	13	20	11	6
Savage	13	20	6	11
Weatherby	5	5	6	6
Sako	5	-	11	6
Other	14	20	6	17

*Multiple responses

CONFIDENTIAL



LEWY

CONFIDENTIAL

TABLE OF CONTENTS

INTRODUCTION..... 1

SUMMARY OF RESULTS..... 5

THE FINDINGS IN DETAIL

STOCK CONFIGURATION..... 12

RECEIVER STYLE..... 15

BARREL STYLE..... 18

FLOOR PLATE/MAGAZINE STYLE..... 22

PRESENCE AND TYPE OF BOLT LOCK..... 25

LOCATION OF BOLT LOCK RELEASE..... 29

LOCATION OF BOLT RELEASE..... 31

BOLT PLUG DESIGN: ENCLOSED VS. EXPOSED..... 34

ENCLOSED BOLT PLUG STYLE..... 37

BOLT HANDLE STYLE..... 38

SAFETY LOCATION..... 40

APPENDIX



NTBOOK217

CONFIDENTIAL

LEWY

SUMMARY OF RESULTS (CONT'D)

4. RESPONDENTS CLEARLY PREFER THE MAGAZINE BOX LOADING SYSTEM FOR CONVENIENCES (OF EASY LOADING AND UNLOADING) AND THE OPPORTUNITY TO CARRY AN EXTRA "CLIP."
5. MAINLY FOR FUNCTIONAL REASONS (I.E., PREVENTION OF ACCIDENTAL SNAGGING AND LIFTING OF THE BOLT), THE GREAT MAJORITY OF RESPONDENTS PREFER A RIFLE WITH A BOLT LOCK OVER ONE WITHOUT. OF THE TWO BOLT LOCK DESIGNS, MOST RESPONDENTS PREFER THE ONE WHICH LOCKS ON "SAFE" ONLY -- BOTH AS A DOUBLE-CHECK TO MAKE SURE THE GUN IS ON "SAFE" AND ALSO FOR ITS "SIMPLER" MECHANISM (I.E., ONE LESS THING TO GO WRONG).

- NOTE, HOWEVER, THAT THERE IS A RELATIVELY LOW DEGREE OF RESPONDENT AWARENESS AND COGNITION (ESPECIALLY CONCERNING THE "RELEASE" MECHANISM) REGARDING BOLT LOCKS; THUS, SOME EDUCATION MAY BE DESIRABLE TO ENSURE CONSUMER FAMILIARITY AND COMFORT WITH THE BOLT LOCK.

6. FOR CONVENIENCE AND EASE OF ACCESS, THE BOLT LOCK RELEASE LOCATED ON THE BOLT PLUG (MODEL R) IS marginally preferred.

- THE MAIN OBJECTION TO THE LOCATION OF MODEL M (SIDE OF RECEIVER) IS ITS PROXIMITY TO THE SAFETY -- MAKING IT DIFFICULT TO OPERATE, PARTICULARLY WITH GLOVES ON.

CONFIDENTIAL

-25-

PRESENCE AND TYPE OF BOLT LOCK

FOR BOTH FUNCTIONAL AND SAFETY REASONS, THE GREAT MAJORITY OF RESPONDENTS (EXCLUDING PHOENIX) PREFER A RIFLE WITH A BOLT LOCK TO ONE WITHOUT.*

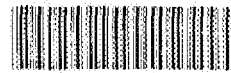
	LIKED BEST BEFORE DISCUSSION (56)	LIKED BEST AFTER DISCUSSION (56)
<u>PRESENCE OF BOLT LOCK</u>		
PREFER A BOLT LOCK	72%	79%
PREFER NO BOLT LOCK AT ALL	28	21

RESPONDENTS CITE SEVERAL ADVANTAGES TO HAVING A BOLT LOCK:

- IT PREVENTS ACCIDENTAL SNAGGING ON A TWIG AND LIFTING OF THE BOLT, UNBEKNOWNST TO THE HUNTER, THUS POSSIBLY RESULTING IN A MISSED OPPORTUNITY.
- IT PREVENTS THE BOLT FROM OPENING AND DIRT FROM GETTING INTO THE MECHANISM IN THE EVENT OF A FALL.
- SOME ALSO SEE IT AS A SAFETY FEATURE (I.E., KIDS CANNOT OPEN THE BOLT AND LOAD THE GUN).

* IT SHOULD BE NOTED THAT THERE IS A RELATIVELY LOW LEVEL OF CONSUMER AWARENESS AND COGNITION REGARDING BOLT LOCKS. IN THE GROUPS A CERTAIN AMOUNT OF (COMPRESSED) "EDUCATION" WAS REQUIRED BEFORE THE TEST ISSUES COULD BE MEANINGFULLY DISCUSSED.

CONFIDENTIAL



NTBOOK219

LEWY

CONFIDENTIAL

-26-

PRESENCE AND TYPE OF BOLT LOCK (CONT'D)

"WITHOUT THE BOLT LOCK, IF YOU'RE CLIMBING ON ROCK OR THROUGH BRUSH AND YOUR BOLT GETS INADVERTENTLY KNOCKED PARTIALLY UP, YOU CAN'T FIRE THAT WEAPON."

"I GO DEER HUNTING BEFORE THE SUN COMES UP AND I ROUTINELY TAKE TUMBLES. I FALL DOWN A HILLSIDE AND WIND UP AT THE BOTTOM WITH MY BOLT HANGING OPEN, AND YOU GET A BUNCH OF CRAP IN THERE."

"IF A YOUNGSTER IS FOOLING WITH A GUN THAT HAS THE BOLT LOCKED IN BOTH POSITIONS, CHANCES ARE HE WON'T KNOW HOW TO LOAD IT, SO IT'S SAFE."

ON THE OTHER HAND, MANY RESPONDENTS (IN PHOENIX*) PREFER NO BOLT LOCK AT ALL.

- SEVERAL SIMPLY ARE NOT AWARE OF THE ISSUE AND SEE NO NEED FOR A BOLT LOCK (WHATEVER IT IS).
- SOME FEEL IT IS "JUST ANOTHER GIMMICK" OR "GADGET TO GO WRONG."
- A SMALL NUMBER OF RESPONDENTS FEEL THAT HAVING TO PRESS A RELEASE BUTTON TO OPEN THE BOLT SLOWS DOWN THE LOADING PROCESS AND "SAVES THE DEER."

* "I REALLY DON'T SEE THE PURPOSE OF A BOLT LOCK AT ALL."

"THIS [BOLT LOCK] IS JUST ANOTHER GADGET TO GO WRONG."

* TO SOME EXTENT THIS CAN BE ATTRIBUTED TO THE LACK OF EXPLANATION GIVEN IN THE PHOENIX GROUPS FOR THE RATIONALE AND OPERATION OF THE BOLT LOCK MECHANISM.

CONFIDENTIAL



NTBOOK220

1 FEB 77

OF THE TWO BOLT LOCK DESIGNS, MOST RESPONDENTS PREFER THE BOLT LOCK THAT LOCKS ON "SAFE" ONLY.

LIKED BEST
AFTER
DISCUSSION
(44)*

M LOCKS ON "SAFE" ONLY

63%

61%

37

39

- MANY WOULD USE IT AS A "DOUBLE CHECK" TO MAKE SURE THE GUN IS ON "SAFE."

- SEVERAL FEEL THAT LOCKING THE BOLT IN THE "FIRE" POSITION IS UNNECESSARY (THE GUN SHOULD BE STATIONARY WHEN IN THE "FIRE" POSITION).

- THE SYSTEM THAT LOCKS ON BOTH "SAFE" AND "FIRE" IS PERCEIVED BY SOME TO BE MORE LIKELY TO HAVE MECHANICAL TROUBLE THAN A BOLT LOCK THAT LOCKS IN ONE POSITION.

... "JUST ANOTHER THING TO GO WRONG."

"AS LONG AS THAT BOLT IS DOWN AND LOCKED,
THEN I KNOW MY SAFETY IS ON."

"I'M GENERALLY NOT CRAWLING THROUGH THE BRUSH WITH THE SAFETY ON FIRE. WHEN I'VE GOT IT IN THE FIRE POSITION, I'M READY TO FIRE."

"A BOLT LOCK IN THE FIRE POSITION IS JUST ANOTHER THING TO GO WRONG. I'D RATHER HAVE IT SIMPLE."

* BASED ON RESPONDENTS WHO PREFER A BOLT LOCK.



NTBOOK221

CONFIDENTIAL

SECRET

CONFIDENTIAL

-28-

PRESENCE AND TYPE OF BOLT LOCK (CONT'D)

STILL, SEVERAL RESPONDENTS (PARTICULARLY IN HOUSTON) PREFER THE BOLT LOCK THAT LOCKS IN BOTH POSITIONS, MAINLY FOR SAFETY REASONS:

"THE SAFER THEY ARE, THE BETTER... I HAVE _____
A SON. AND IT DOESN'T SEEM LIKE IT'S
GOING TO DETER FROM USING THE GUN."

IT IS IMPORTANT TO NOTE THAT CONSUMER COGNITION OF THE BOLT LOCK RELEASE MECHANISM IS PARTICULARLY WEAK. AS THE FOLLOWING VERBATIMS ILLUSTRATE, MANY RESPONDENTS DO NOT PICK UP ON THE FACT THAT THE BOLT CAN EASILY BE OPENED AT WILL:

"I DON'T WANT THE LOCK. BECAUSE THEN YOU
CAN HAVE THE SAFETY ON AND STILL BE ABLE
TO GET THE ROUND OUT."

"I DON'T WANT IT LOCKED IN BOTH
POSITIONS. BECAUSE THEN YOU CAN'T GET
THE ROUND OUT OF THE CHAMBER."

"IF THE BOLT IS LOCKED IN BOTH POSITIONS
AND YOU ASSUME THE GUN IS UNLOADED, THE
TENDENCY IS TO SQUEEZE THE TRIGGER TO
OPEN THAT BOLT."

CONSUMER EDUCATION IS REQUIRED IN THIS AREA. CONSUMERS NEED TO BE MADE AWARE OF THE FACT THAT THE BOLT LOCK CAN BE RELEASED AT ANY TIME, WITHOUT ADJUSTING THE POSITION OF THE SAFETY OR SQUEEZING THE TRIGGER.

CONFIDENTIAL



NTBOOK222

15077

CONFIDENTIAL

-29-

PRESENCE AND TYPE OF BOLT LOCK

LOCATION OF BOLT LOCK RELEASE

A BOLT LOCK RELEASE LOCATED RIGHT ON THE BOLT PLUG (MODEL R) IS PREFERRED OVER A RELEASE LOCATED ON THE SIDE OF THE RECEIVER (MODEL M). RESPONDENTS PREFER THE SHROUD LOCATION FOR CONVENIENCE AND EASE OF ACCESS.

	LIKED BEST BEFORE DISCUSSION (56)	LIKED BEST AFTER DISCUSSION (56)
<u>LOCATION OF BOLT LOCK RELEASE</u>		
R BOLT PLUG	55%	54%
M SIDE OF RECEIVER	43	44
NO PREFERENCE	2	2

- THE MAIN OBJECTION TO MODEL M IS ITS PROXIMITY TO THE SAFETY...

...MAKING IT ESPECIALLY DIFFICULT TO
OPERATE WITH GLOVES ON

- SOME SAY THAT THE LOCATION OF MODEL R IS EASIER
TO REACH WITH THE SIDE OF THE THUMB.

...BUTTON CAN BE PRESSED AND
BOLT LIFTED IN ONE MOTION

CONFIDENTIAL



NTBOOK223

LEW

CONFIDENTIAL

-30-

PRESENCE AND TYPE OF BOLT LOCK

LOCATION OF BOLT LOCK RELEASE (CONT'D)

"I CHOSE R BECAUSE M IS TOO CLOSE TO THE SAFETY. THERE'S TOO MANY BUTTONS TOO CLOSE TOGETHER."

"YOU WON'T BE ABLE TO REACH THE BUTTON ON M WITH GLOVES ON. IT'S TOO CLOSE TO THE SAFETY."

"I PICKED R BECAUSE I COULD DO IT IN ONE MOTION -- PUSH THE BUTTON AND PULL THE BOLT UP AT THE SAME TIME. IT'S MORE CONVENIENT."

NEVERTHELESS, SOME RESPONDENTS PREFER THE LOCATION OF MODEL M FOR READY ACCESSIBILITY...

"I LIKED M BECAUSE ITS EASIER TO OPERATE. YOU HAVE YOUR HAND RIGHT THERE."

"I LIKED M BECAUSE I COULD REACH IT WITH MY THUMB."

CONFIDENTIAL



NTBOOK224

LEWY

CONFIDENTIAL

-40-

SAFETY LOCATION

FOR CONVENIENCE/ACCESSIBILITY REASONS AND PERSONAL SAFETY (WHICH TO A LARGE DEGREE IS SEEN TO BE RELATED TO THE TYPE OF SAFETY MECHANISM), RESPONDENTS PREFER THE STANDARD BDL SAFETY BY NEARLY A THREE TO ONE MARGIN OVER THE TANG MOUNTED SAFETY.

<u>SAFETY LOCATION</u>	<u>LIKED BEST BEFORE DISCUSSION (56)</u>	<u>LIKED BEST AFTER DISCUSSION (56)</u>
R STANDARD BDL (SIDE OF RECEIVER)	77%	71%
S TANG MOUNTED	23	29

- THE SIDE OF THE RECEIVER IS SEEN AS THE "NATURAL POSITION" FOR THE SAFETY. MOST RESPONDENTS FEEL IT IS MORE ACCESSIBLE.

...SOME SAY IT IS MORE MANEUVERABLE AS WELL

- IN CONTRAST, THE TANG LOCATION IS VIEWED AS AN AWKWARD, "UNNATURAL" POSITION THAT IS MORE DIFFICULT TO REACH...

...ESPECIALLY WITH GLOVES ON

*

*

*

CONFIDENTIAL



NTBOOK225

LEWY

SAFETY LOCATION (CONT'D)

"I LIKED R, MYSELF. IT'S READILY ACCESSIBLE. IT'S EASY TO GET TO."

"THE WAY I HOLD THE GUN, [THE LOCATION OF] R SEEMS MORE NATURAL TO ME. MY THUMB CAN MANEUVER BETTER."

"I DIDN'T LIKE THAT ONE ON THE TANG. IT SEEMED LIKE YOU HAVE TO COME WAY BACK TO GET TO IT. IT'S A LITTLE MORE UNNATURAL FOR ME."

"IF YOU'RE OUT IN THE COLD WEATHER AND WEARING A PAIR OF GLOVES, YOU'RE GOING TO HAVE A HECK OF A TIME GETTING TO THAT ONE ON THE TANG."

ALTHOUGH SOMEWHAT LESS IMPORTANT THAN THE CONVENIENCE ISSUE, MANY RESPONDENTS CITE PERSONAL SAFETY AS A FACTOR IN THEIR PREFERENCE. IT IS IMPORTANT TO NOTE, THOUGH, THAT THE PERSONAL SAFETY ISSUE IS MORE OF FUNCTION OF THE TYPE OR DESIGN OF THE EXTERNAL MECHANISM (FLAT SLIDE SWITCH VERSUS PROTRUDING LEVER) THAN OF ITS LOCATION.

- SEVERAL MEN OBJECT TO THE SLIDE SWITCH MECHANISM OF MODEL S (WHICH SOME FEEL IS UNAVOIDABLE IN A TANG MOUNTED SAFETY). THEY ARE CONCERNED THAT IT MAY BE DIFFICULT TO DISTINGUISH BETWEEN POSITIONS...

...AND PARTICULARLY DIFFICULT TO DISTINGUISH BY "FEEL"

- SOME RESPONDENTS STATE THAT THE TANG SAFETY (BECAUSE OF IT'S LOCATION) IS MORE LIKELY TO BE ACCIDENTALLY DISENGAGED BY THE CARRIER'S HAND, ESPECIALLY WHEN THE GUN IS CARRIED BY THE PISTOL GRIP, AS IT OFTEN IS.



CONFIDENTIAL

-42-

SAFETY LOCATION (CONT'D)

"I PICKED R BECAUSE I BELIEVE THERE SHOULD NEVER BE A QUESTION AS TO WHETHER THE SAFETY IS ON OR NOT. I WANT A DEFINITE POSITION RATHER THAN JUST A SLIP UP AND A SLIP BACK."

"I COULDN'T SEPARATE THE DESIGN OF THE SWITCH [FROM] THE LOCATION. WITH IT IN THE BACK, IT HAD TO BE A LOW PROFILE TO BE PRACTICAL, AND TO ME THAT'S BAD."

"WITH R, YOU DON'T HAVE TO ACTUALLY LOOK AT THE GUN TO SEE IF IT'S ON SAFETY. YOU CAN FEEL IT. I DON'T THINK YOU CAN DO THAT WITH S."

"WHEN YOU'RE WALKING THROUGH THE FIELD HOLDING THAT GUN [MODEL S], YOU COULD [ACCIDENTALLY] SLIDE THE SAFETY INTO THE FIRE POSITION USING YOUR THUMB...VERY UNSAFE."

NEVERTHELESS, SOME CONVINCING ARGUMENTS ARE MADE IN FAVOR OF A TANG MOUNTED SAFETY ON THE GROUNDS OF ACCESSIBILITY, SAFETY, AND FUNCTION:

- FOR CONVENIENCE/ACCESSIBILITY REASONS, THE TANG SAFETY IS MORE ATTRACTIVE TO SOME HUNTERS (PARTICULARLY LEFT HANDED SHOOTERS); THE THUMB "NEVER HAS TO LEAVE THE SHOOTING POSITION."
- WITH REGARD TO SAFETY, SOME MEN FEEL THAT THE LOCATION (AND SLIDE SWITCH MECHANISM) OF THE TANG SAFETY MAKES IT LESS LIKELY TO ACCIDENTALLY BECOME DISENGAGED BY TREES OR BRUSH.
- OTHER REASONS (SINGLE MENTIONS) GIVEN IN SUPPORT OF THE TANG SAFETY (BASED MORE ON THE MECHANISM THAN THE LOCATION) INCLUDE ITS SMALL SIZE, QUIETNESS, AND "ENCLOSURE OF THE ACTION."

CONFIDENTIAL



NTBOOK227

CONFIDENTIAL

SAFETY LOCATION (CONT'D)

"I LIKE THE TANG SAFETY BETTER. THERE'S LESS THUMB MOVEMENT."

"ON [MODEL] R YOU CAN BRUSH IT ON A BUSH OR A TREE AND KICK IT OFF SAFETY AND ON TO FIRE. THE SLIDE SWITCH MAY BE A LITTLE SAFER BECAUSE IT'S NOT AS ACCESSIBLE."

"THE PROBLEM WITH [MODEL] R IS THAT [WITH THE LEVER], THERE IS A FAIRLY LARGER OPENING DOWN TO THE MECHANISM WHERE DIRT OR MOISTURE CAN GET IN."

CONFIDENTIAL

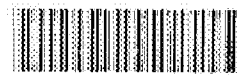


NTBOOK228

LEWY

CONFIDENTIAL

APPENDIX



NTBOOK229

CONFIDENTIAL

FEATURE PREFERENCES

	Before Discussion		After Discussion
	Net Score*	Liked Best (56)	Liked Best (56)
(1) <u>Stock Configuration</u>			
Q Standard BDL	9.5	44%	44%
T Mountain rifle	6	25	25
S Prototype #1	(-5)	16	16
R Prototype #2	(-6.5)**	15**	15**
(2) <u>Receiver Styles</u>			
Q Round receiver with integral mounts	14.5	35%	42%
T Round receiver	(-4)	21	23
S Octagonal receiver with integral mounts	(-4.5)	20	17
R Octagonal receiver	(-6)	20	18
No preference		4	-
(3) <u>Barrel Styles</u>			
Q Standard contour	15	56%	57%
T Mountain rifle contour	11	30	32
S Mountain rifle/hammer marked	(-25)	14	11
(4) <u>Floor Plate/Magazine Styles***</u>			
R Magazine box		71%	73%
T Floor plate		25	25
No preference		4	2
(5) <u>A. Presence/Type of Bolt Lock***</u>			
M, R Prefer a Bolt lock (net)		72%	79%
T Prefer no bolt lock at all		28**	21**
M Locks on "safe" only		45	49
R Locks on "safe" and "fire"		27	30
<u>B. Location of Bolt Lock Release***</u>			
R Bolt plug		55%	54%
M Side of receiver		43	44
No preference		2	2

* Net score = Liked best minus Liked least.

** Higher in Phoenix.

*** Net score cannot be computed.

CONFIDENTIAL



NTBOOK230

CONFIDENTIAL

FEATURE PREFERENCES (cont'd)

	Before Discussion		After Discussion
	Net Score*	Liked Best	Liked Best
(6) <u>Bolt Release Location ***</u>		(56)	(56)
S Side of receiver		66%	59%**
Q Standard BDL		34	41
(7) <u>A. Bolt Plug Styles ***</u>			
S, R, M Fully enclosed		54%	59%
T Standard BDL exposed		46	41
<u>B. Enclosed Bolt Plug Style</u>			
M BDL style fully enclosed	22	64%	66%
R Fully enclosed, short scallops	(-9)	13**	13**
S Fully enclosed, scallops	(-12)	23	21
(8) <u>Bolt Handle Styles</u>			
M Standard BDL	27.5	52%	44%
T Teardrop	16.5	29	29
Q Standard ADL	(-2.5)	8	17
R Oval polished	(-2.5)	6	6
S Faceted	(-35)	5	4
(9) <u>Safety Location ***</u>			
R Standard BDL		77%	71%
S Tang mounted		23	29

* Net score = Liked best minus Liked least.

** Higher in Phoenix.

*** Net score cannot be computed

CONFIDENTIAL



NTBOOK231

LEWY

CONFIDENTIAL

DEMOGRAPHICS OF SAMPLE

Area	Total Sample (56)	Phoenix (20)	Denver (18)	Houston (18)
Phoenix	36%	100%	-%	-%
Denver	32	-	100	-
Houston	32	-	-	100
<u>Days Hunted With Bolt-Action Center Fire Rifle in Past 12 Months</u>				
5 or less	25%	30%	22%	22%
6 - 10	31	20	33	39
11 - 15	25	15	33	28
16 or more	19	35	12	11
<u>Number of Guns Owned</u>				
1 - 3	25%	15%	22%	38%
4 - 6	25	20	28	28
7 - 10	18	20	28	6
11 or more	32	45	22	28
<u>Brand of Bolt Action Center Fire Rifle(s) owned*</u>				
Remington	66%	70%	65%	56%
Winchester	18	20	11	22
Ruger	16	20	22	6
Springfield	13	5	28	6
Mouser	13	20	11	6
Savage	13	20	6	11
Weatherby	5	5	6	6
Sako	5	-	11	6
Other	14	20	6	17

*Multiple responses

CONFIDENTIAL



NTBOOK232

LEWY

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

PETERS

CONFIDENTIAL

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" April 16, 1985

TO: J.W. Bowen

FROM: R.S. Murphy *RS*Monthly Report - April 1985New Bolt Action Rifle - R.S. Murphy - P.E. Martin - P.H. Smith

The completion of the first phase of developmental jar-off testing has left us short of our design goals. An analysis of the test data and design, however, has indicated what we need in the second generation design to fulfill the performance requirements. A layout and CV mass properties study of the trigger is being done to determine if a redesign to meet the design parameters is feasible.

Since our initial drop test results did not look favorable, the contingency design is being updated to incorporate the design features desired in the new fire control. Specifically, the bolt lock must be added, the safety must be relocated to the tang, and the fire control adjustment must be relocated.

A schedule to test NBAR sub-assemblies in M/700 test vehicles has been developed and is being implemented.

High Velocity Limited Range Centerfire - P.H. Smith - C.P. desJardins

The non-standard custom barrels purchased for the ammunition development are still in the Custom Shop to be hubbed, chambered, and instrumented. They have been given a very low priority, are being worked in to a busy schedule and have been there over six weeks. First generation prototype ammunition has been finalized and can be loaded in one day when the barreled actions are ready.

M/700 Classic .350 Rem. Mag. - F.H. Smith

A second trial and pilot sample of guns selected has been tested for accuracy and field function with acceptable results. The visual inspection is being held pending the receipt of rifles with the correct stock reinforcement screw configuration.

MUR 0006823

RSM:sps

1 DF 0001443 1

1CAM 0001442 1



NTBOOK233

Firearms Business Team Meeting
May 31, 1985

File: Bolt Action Rifle
(Replacement for the Model 700)
J. W. Bower's Letter to W. H. Coleman, II

9. New Bolt Action Rifle

This rifle has been designed as a replacement for the Model 700. Technical improvements include:

- o An improved fire control containing:
 - preset engagement and overtravel
 - customer adjustable trigger pull to a safe lower limit
 - steel trigger and sear

- o a safety that blocks both the trigger and sear

- o a bolt lock which allows the customer to unload the gun with the safety on

Marketing has completed initial focus panels to guide the design evolution.

Revisions to the fire control are in the final design stage. Additional prototypes will be ready for development testing this summer.



NTBOOK234

M

CONFIDENTIAL

U

R

R

RIFLE DEVELOPMENT

New Bolt Action Rifle (1988 Introduction)

Development of the exposed component fire control has been stopped in favor of a modified Model 700 design. This new design satisfies all program goals and capitalizes on the strong reputation of the Model 700. Design of the new fire control is complete and in the Model Shop for fabrication.

Research Department

-3-

May, 1985

[REN 0045308]

[RR 0000470]

MUR 0009561



NTBOOK235

Firearms Business Team Meeting

May 31, 1985

File: Bolt Action Rifle

(Replacement for the Model 700)

J.W. Bower's letter to W.H. Coleman, II

9. New Bolt Action Rifle

This rifle has been designed as a replacement for the Model 700. Technical improvements include:

- ◆ **An improved fire control containing:**
 - **preset engagement and overtravel**
 - **customer adjustable trigger pull to a safe lower limit**
 - **steel trigger and sear**
- ◆ **a safety that blocks both the trigger and sear**
- ◆ **a bolt lock which allows the customer to unload the gun with the safety on**

Marketing has completed initial focus panels to guide the design evolution.

Revisions to the fire control are in the final design stage. Additional prototypes will be ready for development testing this summer.



REMINGTON ARMS COMPANY, INC.

INTERDEPARTMENTAL CORRESPONDENCE

Remington

REMINGTON

PETERS

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

July 15, 1985

Responsibility: F.C. Martin

Program: Trigger Pull Adjustment

Objective: To provide a means of adjusting the trigger weight of pull from a safe lower limit to a reasonable upper limit without removing the barrelled action from the stock.

Goals:

- o adjustable to safe lower limit
- o must not adversely effect firearm safety
- o readily identified

Stake:

- o increased sales

Status:

- o The design is complete and is in the Model Shop for fabrication.

Program/

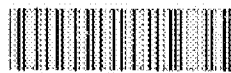
Timing:

- o Check CV drawings
- o Fabricate components
- o Assemble
- o Developmental test
- o Redesign
- o Fabricate
- o Design acceptance test

RSM:sps

RSM

MUR 0005790



NTBOOK237

DP 0000175

CAM 0000174

Missing Exhibits 238 - 239

CONFIDENTIAL



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

February 12, 1986

TO: R.S. Murphy
FROM: F.E. Martin *FM*

New Bolt Action Rifle

Five model guns are ready for testing by design and the R & D Test Lab. A test request has been submitted and awaits action. Parts are available to assemble the remaining five models as soon as testing is started on the initial five. With the exception of the bolt stop release, all parts will be prototype model shop parts. A new bolt lock spring and trigger spring have to be designed and fabricated.

Work remaining for new bolt action rifle samples:

- Design and fabricate trigger and bolt lock springs.
- Evaluate bolt stop release dimensions.
- Complete assembly of prototypes.
- Complete parts list and drawing corrections.

FEM:spg

MUR 0005755



1 OF 0000139 1

1CAB 0000139 1

108-13
FILE COPY

NEW BOLT ACTION CENTER FIRE RIFLE DESIGN
FEATURE DEVELOPMENT RESEARCH

FOR: REMINGTON ARMS COMPANY, INC.

MARCH, 1986



NTBOOK241

IREM 0026876 1

no mention of scope

TABLE OF CONTENTS

INTRODUCTION..... 1

SUMMARY OF RESULTS..... 5

STOCK CONFIGURATION..... 9

METAL FINISH.....14

BOLT BODY FINISH.....18

STOCK FINISH.....22

BARREL CONTOUR.....26

FOLLOWER FINISH.....30

RECEIVER CONFIGURATION.....34

FORE-END TIP.....39

GRIP CAP.....42

BUTT PAD COLOR.....45

SPACERS.....47

CHECKERING PATTERNS.....52

OPEN VERSUS CLOSED GRAIN.....53

APPENDIX

* SEE APPENDIX PAGES FOR GUN MODEL CODE DESIGNATIONS AND DESCRIPTIONS OF ALL TEST ELEMENTS, AS WELL AS TABULAR RESULTS (BY AREA) OF THE SELF-ADMINISTERED BOOKLETS AND COMPILATION OF REASONS FOR CHOICES FROM DISCUSSIONS.



NTBOOK242

IREK 0035877

M

CONFIDENTIAL

Xc: File

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

Ilion, New York
March 14, 1986

R

TO: J.W. BOWER
FROM: R.S. MURPHY

QUARTERLY REPORT - MARCH, 1986

R

NBAR

A new bolt action rifle is being developed as a replacement for the Model 700 BDL. Introduction is scheduled for 1988. Technical improvements include a safety to block both the sear and trigger, a detachable magazine box, a revised-extractor, a lightweight firing pin, an enclosed bolt plug, an independent bolt lock, and integral scope mounts.

The ten engineering development test rifles are all at the 500 round level and are currently being inspected. Accuracy will be shot Monday. The endurance and accuracy testing will continue to the 2500 round level after which the destructive drop testing and strength testing will be done. Magazine Box development components are in the Model Shop and are expected by March 24.

A Computervision stock model is complete except for a cheek-piece and will be given to the N/C Shop for prototyping. Marketing is selecting the cheekpiece configuration to be used.

Y

1 88 0000620 1

MUR 0009648



M

1987

CONFIDENTIAL

CONFIDENTIAL

NEW BOLT ACTION RIFLE - Bauman/Murphy/Martin

Fred Martin will be working on the implementation of the SPC program. Tom Bauman will now be the Team Leader working with Randy Murphy. Fred will act as a resource to the program if possible. A meeting was held on October 31 with the old NEAR team, the new NEAR team and the Litigation group to get the new players up to speed as well as redefine the NEAR program goals. The insight 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

Testing of a patented new technology rifle barrel in a joint program between Remington and D.C. Brennan Firearms, Inc. has been completed. The Brennan technology claims a 25% increase in accuracy with reduced recoil. However, test results show no significant improvement over our current design (at the 95% confidence level). The final report is complete, and D.C. Brennan was notified as well as sent a copy of the report. D.C. Brennan requested that Remington return their property, which has been done.

M

CONFIDENTIAL

REMINGTON ARMS COMPANY, INC.

INTERDEPARTMENTAL CORRESPONDENCE

Remington
1986

PETERS
1986

CC: C. E. Ritchie
J. R. Snedeker
T. C. Douglas
R. S. Murphy
K. C. Rowlands
File-Monthly Reports

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

U

ILION, NEW YORK
AUGUST 26, 1986

TO: W. B. COLEMAN, II

FROM: J. W. BOWER

R

MONTHLY REPORT - NEW PRODUCT DEVELOPMENT - AUGUST, 1986

WEAR

Based on 2,000 rounds of endurance and three field function tests on six rifles, the extractor, bolt assembly, firing pin assembly, and fire control all appear to be satisfactory. Problems remain with the feeding system and the bolt lock.

Several options are being investigated on the feeding system. The most promising appears to be a three-point contact box with a simplified front latch.

New bolt lock components should be out of the Model Shop by 8/27.

SYNTHETIC LONG STOCK (MODEL 700 SIERRA)

The molding vendor is waiting on a subcontractor to complete mold fabrication. Initial samples should be available in early September.

R

A

Y

18EM 0045332 1

1 86 0000536 1

MUR 0009596



NTBOOK245

M

CONFIDENTIAL

-2-

U

R

R

A

RIFLE DEVELOPMENT

NBAR

The NBAR performance to date has not been satisfactory. To determine if the problems lie with the design or with the prototype manufacture, six rifles were carefully measured and field tested. A total of two malfunctions occurred, both related to the unlatching of the magazine box. Since these results are significantly better than previous testing, six additional rifles are being assembled to the same design. If these rifles pass a field function test without a malfunction design acceptance testing will begin.

ITEM 0045335

BR 0000540

MUR 0009599



NTBOOK246

M

1988

CONFIDENTIAL

CONFIDENTIAL

NEW PRODUCTS AND PROCESSES - 1990 AND BEYOND

NEW BOLT ACTION RIFLE - Fred Martin and Dick Jackson

Fabrication of prototype parts necessary for the next phase of testing has begun in the Model Shop and the N/C area. Detachable magazine components to be produced by outside vendors have been sent to vendors to provide those prototype parts. Trigger guard blanks have been received. Development testing of the magazine latch system is underway. An accuracy and endurance test is planned for the first of March that will include the complete barreled action and the proposed bedding system versus conventional wood stock bedding. The detachable magazine box will not be included in this test. A revised Development Schedule is attached at the end of this report.

Testing of a patented new technology rifle barrel is currently underway in a joint program with Remington and D. C. Brennan Firearms, Inc. The Brennan technology promises a 25% increase in accuracy with reduced recoil. The D. C. Brennan modified guns and their personnel will be in Ilion on February 3rd. Testing will start immediately.

R

A

Y

IREM 0045407 1

1 BR 0000693 1

MUR 0009692



NTBOOK248

M

1989

CONFIDENTIAL

CONFIDENTIAL

NEW PRODUCTS AND PROCESSES - 1990 AND BEYOND

NEW BOLT ACTION RIFLE - Fred Martin and Dick Jackson

Fabrication of prototype parts necessary for the next phase of testing has begun in the Model Shop and the N/C area. Detachable magazine components to be produced by outside vendors have been sent to vendors to provide those prototype parts. Trigger guard blanks have been received. Development testing of the magazine latch system is underway. An accuracy and endurance test is planned for the first of March that will include the complete barreled action and the proposed bedding system versus conventional wood stock bedding. The detachable magazine box will not be included in this test. A revised Development Schedule is attached at the end of this report.

Testing of a patented new technology rifle barrel is currently underway in a joint program with Remington and D. C. Brennan Firearms, Inc. The Brennan technology promises a 25% increase in accuracy with reduced recoil. The D. C. Brennan modified guns and their personnel will be in Ilion on February 3rd. Testing will start immediately.

R

A

Y

IBEM 0045407

IB 0000693

MUR 0009692



NTBOOK248

M
REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington

REM

PATERS

PAT

CONFIDENTIAL

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

September 16, 1987

NBAR Specification List

Bolt Assembly

- * Enclosed Bolt Plug
- * Lightweight Firing Pin/Faster Locktime
- * Claw Type Extractor

Firecontrol

- * Pre-set Engagement and Overtravel
- * Weight of Pull Adjustable in Stock
- * Trigger and Sear Block Two Position Safety
- * Skeletonized Housing
- * No Connector

Receiver

- * Integral Recoil Lug
- * Integral Scope Mounts
- * Independent Bolt Lock
- * Detachable Magazine Box
- * Semi-rounded Receiver Styling (see sample)

Stock

- * Walnut with Synthetic Bedding Block
- * Kynite
- * Satin Finish

Y

TM 0001602

MUR 0008729



NTBOOK249

M

CONFIDENTIAL

CONFIDENTIAL

Illion, New York
December 29, 1988

TO: W. H. COLEMAN, II

FROM: L. B. BOSQUET/T. C. DOUGLAS *LD AS*

U

NEW PRODUCTS DEVELOPMENT MONTHLY REPORT - DECEMBER

CURRENT PRODUCTS

R

R

A

Y

2

IBEN 0045393

IBB 0000663

MUR 0009676



NTBOOK250

M
CONFIDENTIAL

CONFIDENTIAL

NEW BOLT ACTION RIFLE (cont.)

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 Mount
- 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

M

CONFIDENTIAL

Product Redesign Criteria

New Bolt Action Rifle (NBAR)

Revised 3/14/89

Metalwork

- 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 M/700 receiver, cosmetically altered

Woodwork

- o Improved Bedding System
- o New Wood Stock

RSM/TGB
3-14-89

A

Y

TM 0002060

MUR 0008876



NTBOOK252

NTBOOK250 12/29/88 MEMO TO:COLEMAN FROM:BOSQUET. RE:NEW PRODUCTS DEVELOPMENT MONTHLY REPORT.

NTBOOK251 SAME REPORT AS NTBOOK250, PG.16. RE:NBAR. LISTS FEATURES IN ORDER OF PRIORITY. 2ND ON LIST WAS IMPROVED FIRE CONTROL. 3RD ON LIST WAS BOLT LOCK W/OVERRIDE.

NTBOOK252 PRODUCT REDESIGN CRITERIA-NBAR. 3/14/89. METALWORK & WOODWORK.

NTBOOK253 RESULTS OF 7/18/89 NEW PRODUCTS PRESENTATION MEETING. RE:NBAR- SUGGESTED NAME-M792. FORCE TO PULL TRIGGER MUST NOT EXCEED 4 POUNDS. ITEMS UNDER CURRENT DEVELOPMENT INCLUDE: IMPROVED FIRE CONTROL-TO MEET SPECS SET FORTH BY R&D, MKTN'G, & LEGAL DEPTS.

NTBOOK254 9/29/89 MONTHLY REPORT-NBAR. KEN ROWLANDS IS STILL WORKING ON FIRE CONTROL. JIM HUPTON, OUT OF THE LEGAL DEPT. HAS OFFERED DIRECTION FOR FIRE CONTROL DEVELOPMENT.

NTBOOK255 FRED MARTIN'S MONTHLY REPORT 1/91. RE:NBAR-GOAL: TO PRESENT PLAN TO MARKETING TO "CATCH UP" W/COMPETITION. THIS CAN BE DONE "IF" THERE IS NO "CHANGING OF MINDS" (SPECS) ONCE THEY ARE ACCEPTED & THE PROGRAM STARTED.

NTBOOK256 SAME AS NTBOOK244.

NTBOOK257 SAME AS NTBOOK254.

NTBOOK258 1993/94 NEW PRODUCT INTRODUCTIONS. NBAR-STAINLESS STEEL MODEL PROPOSED TO BE OFFERED IN 1993. 1994-NBAR-(ITS 2ND YEAR OF PRODUCTION), NBAR WILL REPLACE ALL M/700 BDLs. BALANCE OF THE BDL LINE WILL BE REPLACED W/A NON-STAINLESS STEEL VERSION OF THE NBAR. M/700 ADL TO REMAIN IN THE PRODUCT LINE.

NTBOOK259 CONFID. MEMO. NBAR MAY BE CLOSER TO THE 1ST QTR OF 1995.

NTBOOK260 1994 AND BEYOND DEVELOPMENT SCHEDULE. RE:NBAR-SCHEDULED FOR 1995 INTRODUCTION, NOT 1994.

NTBOOK261 PRODUCT SAFETY SUBCMTE POSITION ON BOLT LOCK: 7/18/79--ILION'S GOAL IS TO REDESIGN BOLT LOCK OF M/700, AND SEPERATING ITS OPERATION FROM THE MECHANISM OF THE SAFETY. OBJECTIVE: ABILITY TO UNLOAD THE RIFLE W/SAFETY LEVER IN "ON" POSITION. 12/7/81--PROCEDURE TO BE FOLLOWED IN REPAIRING FIREARMS W/BOLT LOCKS. ABSENCE OF BOLT LOCK IS NOT A SAFETY PROBLEM, SO WAS NOT A MATTER FOR THE PRODUCT SAFETY SUBCMTE.

NTBOOK262 HISTORY OF TRIGGER ADJUSTMENT INSTRUCTIONS.

NTBOOK263 SAME AS NTBOOK262. FROM 1962 TO 1972, INSTRUCTIONS ALLOWED ADJUSTMENT OF TRIGGER. IN 4/1973, INSTRUCTIONS

CONFIDENTIAL

September 29, 1989

MONTHLY REPORT - SEPTEMBER 1989
NEW BOLT ACTION RIFLE (NBAR)
(BAUMAN/ROWLANDS/MARTIN/SEPPALA)

Work is currently continuing on the N'Bar Program. One specification, not previously listed, has been added to gun specs. and that is for the bolt design to include a cocking indicator. This is to enable shooter to visually determine if the firing pin is cocked or uncocked.

Earl Seppala has started the investigation stage for a detachable magazine box, looking at the competition and aftermarket 'Kwik-Klip'.

Ken Rowlands is progressing on the investigation and idea stage for an improved fire control. The Legal Department, Jim Hutton, has offered direction and assistance for fire control development.

Layouts are in progress currently by T. Bauman for an improved bedding/accuracy concept, originating from Wayne Cable of the Custom Shop. Prototypes will be built in 30-06 for evaluation.

Ed Klock is being assigned to aid N'Bar Project with any computer vision work required. We will start by modeling and detailing current M/700 model drawings on 'CV' System that will not change for N'Bar Program.

TGB:cap

MUR 0007276

DF 0001999

ICAM 0001998



NTBOOK254

M

CONFIDENTIAL

U

MONTHLY REPORT ITEMS-JANUARY 1991
FRED MARTIN

XP-100 WOOD STOCK

All samples have been assemble and are ready for testing at a later date. There has been no activity on this program and it will be dropped from future reports.

7mm WEATHERBY MAGNUM

This item has been completed a report has been issued by the test lab. This item will be dropped from future reports.

7x64 MOUNTAIN RIFLE

This item has been completed a report has been issued by the test lab. This item will be dropped from future reports.

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.

SNIPER RIFLE

The approval for the Remington produced barrel was received the first part of November 1990. This item was finished well ahead of expectations and at minimum cost to Remington. SWS shipments for December 1990 consisted of 165 M24's with Mike Rock barrels and 238 M24's with Remington barrels (see attached histograms for accuracy).

A

Y

IRBA 0045936 1

ICAN 0011660 1

MUR 0010356



NTBOOK255

M

CONFIDENTIAL

CONFIDENTIAL

NEW BOLT ACTION RIFLE - Bauman/Murphy/Martin

Fred Martin will be working on the implementation of the SPC program. Tom Bauman will now be the Team Leader working with Randy Murphy. Fred will act as a resource to the program if possible. A meeting was held on October 31 with the old NBAR team, the new NBAR team and the Litigation group to get the new players up to speed as well as redefine the NBAR program goals. The insight 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

Testing of a patented new technology rifle barrel in a joint program between Remington and D.C. Brennan Firearms, Inc. has been completed. The Brennan technology claims a 25% increase in accuracy with reduced recoil. However, test results show no significant improvement over our current design (at the 95% confidence level). The final report is complete, and D.C. Brennan was notified as well as sent a copy of the report. D.C. Brennan requested that Remington return their property, which has been done.



M

CONFIDENTIAL

CONFIDENTIAL

U

NEW BOLT ACTION RIFLE - Bauman/Rowlands/Martin

Work is currently continuing on the N'Bar Program. One specification, not previously listed, has been added to gun specs. and that is for the bolt design to include a cocking indicator. This is to enable shooter to visually determine if the firing pin is cocked or uncocked.

Earl Seppala has started the investigation stage for a detachable magazine box, looking at the competition and aftermarket 'Kwik-Klip'.

Ken Rowlands is progressing on the investigation and idea stage for an improved fire control. Jim Hutton, has offered direction and assistance for fire control development.

Layouts are in progress currently by T. Bauman for an improved bedding/accuracy concept, originating from Wayne Cable of the Custom Shop. Prototypes will be built in 30-06 for evaluation.

Ed Klock is being assigned to aid N'Bar Project with any computer vision work required.

A

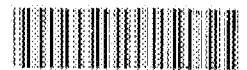
Y

9

1 REN 0045503 1

1 RB 0001001 1

MUR 0009820



NTBOOK257

M

CONFIDENTIAL

7

CONFIDENTIAL

U

R

1993 Product Introductions

- o New Bolt Action Rifle (NBAR) - stainless steel
A special meeting will be called by H.C. Munson to address and resolve the specifications.

It was proposed that the first year of introduction for this product also address the need for a stainless steel offering. Components to be stainless steel would be the barrel, receiver, bolt and bolt handle. The floor plate, trigger guard, sights, magazine box and magazine follower must be processed to look like stainless steel. It was also proposed that this gun have a synthetic stock. First year caliber offerings in the stainless version would be: 7MM Mag, .243 Win and 30-06.

During the first year the present Model 700 ADL and BDL would remain in the line.

1994 Product Introductions

- o New Bolt Action Rifle (NBAR)
During the second year of production, the NBAR will replace all Model 700 BDL's. The caliber offerings in the stainless steel version will be expanded to include the .243 Win and the .300 Rem Mag. The balance of the BDL line (including the varmint) will be replaced by a non-stainless steel version of the NBAR. An alternative to this would be to replace all long action BDL's in 1994 and defer the replacement of the short actions to 1995.

The Model 700 ADL will remain in the product line.

CONFIDENTIAL

EEB 0046233 1

MUR 0008982

TM 0006970 1



NTBOOK258

M

CONFIDENTIAL

U

- o NBAR may be closer than the first quarter of 1995. This may have an impact on other projects currently on the schedule in terms of meeting manpower requirements. Bill Coleman is currently directing efforts on this project.
- o J. M. Bunting stated that from Marketing's point of view, the last three or four items on the 1993 list (exclusive of niche items) could be sacrificed in favor of advancing a program like NBAR. Munson pointed out that this still would not be enough to relieve the work load when other items are looked at and possibly something else must be sacrificed.

R

A

Y

IRM 0046263

TM 0007901



NTBOOK259

MUR 0009093

M

CONFIDENTIAL

- 7 -

U

R

R

1994 AND BEYOND DEVELOPMENT SCHEDULE

High spot economics are required to present to Pittsburgh management to gain program approval to continue new product development on these items.

NBAR

Ken Soucy noted the NBAR program is scheduled for a 1995 introduction. Not 1994 as shown on the development schedule. This correction will be made.

A

Y

REN 0043742 1

1 TM 0008062 1



NTBOOK260

MUR 0009223

PRODUCT SAFETY SUBCOMMITTEE
POSITION ON BOLT LOCK

JULY 18, 1979

ON THE RECOMMENDATION OF THE PRODUCT SAFETY SUBCOMMITTEE, ILION RESEARCH IS CONCENTRATING DESIGN EFFORTS ON RELOCATING THE BOLT LOCK OF THE M/700, AND SEPARATING ITS OPERATION FROM THE MECHANISM OF THE SAFETY. THE OBJECTIVE IS TO PROVIDE THE ABILITY TO UNLOAD THE RIFLE WITH THE SAFETY LEVER IN THE "ON" POSITION.

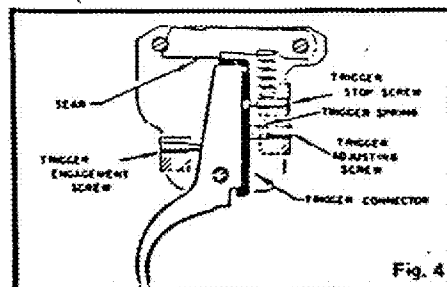
DECEMBER 7, 1981

PROCEDURE TO BE FOLLOWED IN REPAIRING FIRE-ARMS WITH BOLT LOCKS. SINCE THE ABSENCE OR PRESENCE OF A BOLT LOCK IS NOT A SAFETY PROBLEM, DETERMINATION OF THE POLICY TO FOLLOW IN THESE CIRCUMSTANCES WAS NOT A MATTER FOR THE PRODUCT SAFETY SUBCOMMITTEE.

HISTORY OF TRIGGER ADJUSTMENT INSTRUCTIONS

1962 TO 2/72

TO ADJUST TRIGGER. Remove trigger guard and stock. Cock bolt in receiver. Important: No adjustment or removal of trigger engagement screw is recommended unless replacement is necessary. The trigger engagement screw is set at factory to engage trigger and provide correct amount of supporting trigger connector surface beneath sear (Fig. 4). Pull of trigger is adjusted to desired weight by turning trigger adjusting screw clockwise for a heavier weight adjustment and counter-clockwise for a lighter weight adjustment. Travel of trigger may be reduced by turning trigger stop screw clockwise until firing pin will not fall when trigger is pulled. Then, while keeping pressure on trigger, back off trigger stop screw, counter-clockwise, until firing pin falls. Continue back off about 1/16 turn. This method of adjusting will allow least amount of trigger overtravel.



REV. 4/72

TO ADJUST TRIGGER (Fig. 4) — Remove trigger guard and stock. Cock bolt in receiver. Pull of Trigger is adjusted to desired weight by turning trigger adjusting screw clockwise for a heavier weight adjustment and counter-clockwise for a lighter weight adjustment. Adjustment of trigger adjusting screw to provide a weight pull of less than 3 pounds is not recommended. Overtravel of trigger may be reduced by turning trigger stop screw clockwise until firing pin will not fall when trigger is pulled. Then, while keeping pressure on trigger, back off trigger stop screw, counter-clockwise, until firing pin falls. Continue back off about 1/16 turn. This method of adjusting will allow least amount of trigger overtravel. **IMPORTANT:** The trigger engagement screw (Fig. 4) has been factory adjusted and sealed to provide the correct amount of trigger connector supporting surface beneath sear.

REV. 4/73

TRIGGER — No adjustment of trigger by the owner is recommended. Trigger pull has been factory adjusted. Should any adjustment be necessary return rifle to factory or see a Remington approved gunsmith.

REV. 9/80

SAFETY INFORMATION

NEVER MAKE ADJUSTMENTS:

- Do not make changes or alterations to any parts of a firearm. Use only REMINGTON parts.
- Never make an adjustment to the trigger, or change the shape or size of the sear, sear notch, or other parts.



HISTORY OF
TRIGGER ADJUSTMENT INSTRUCTIONS

1962 to 2/72

TO ADJUST TRIGGER - ... Pull of trigger is adjusted to desired weight by turning trigger adjusting screw clockwise for a heavier weight adjustment and counter-clockwise for a lighter weight adjustment.

Rev. 4/72

TO ADJUST TRIGGER ... Adjustment of trigger adjusting screw to provide a weight pull of less than 3 pounds is not recommended.

Rev. 4/73

TRIGGER - No adjustment of trigger by the owner is recommended.

Rev. 9/80

NEVER MAKE ADJUSTMENTS: ... Never make an adjustment to the trigger.



NTBOOK263

OPERATIONS COMMITTEE
ILION DIVISION

MARCH 21, 1975

REMINGTON PRODUCT DEFICIENCIES
KNOWN OR SUSPECTED

M/700 SAFETY

**EASE OF OPERATION AND SAFE GUN
HANDLING DEMAND A DESIGN
THAT ENABLES THE SHOOTER TO
OPERATE THE ACTION WITH THE
SAFETY "ON".**

OPERATIONS COMMITTEE
ILION DIVISION

MARCH 18, 1976

PRODUCT DEFICIENCIES
KNOWN OR SUSPECTED IN 1976

MODEL 700 SAFETY LEVER

**EASE OF OPERATION AND
INTERESTS OF SAFE GUN HANDLING
DEMAND A DESIGN THAT ENABLES
A SHOOTER TO OPERATE THE
ACTION WITH THE SAFETY "ON".**



NTBOOK264

MODEL 700 YEARLY SALES

<u>QUANTITY</u>	<u>YEAR</u>
42,799	1962
41,087	1963
37,661	1964
53,789	1965
58,031	1966
65,082	1967
69,813	1968
80,209	1969
89,651	1970
93,176	1971
84,178	1972
94,483	1973
107,146	1974
103,322	1975
109,807	1976
124,560	1977
132,600	1978
139,768	1979
110,608	1980
94,807	1981
76,998	1982
92,057	1983
94,111	1984
85,576	1985
76,262	1986
77,377	1987
103,501	1988
2,338,459	TOTAL



NTBOOK265

**COMPOSITE SAFETY RECOMMENDATIONS
OF REMINGTON RESEARCH DEPT.**

- 1. Redundant safety to protect against accidental discharge by simultaneously blocking trigger and sear.**
- 2. Provide ability to load and unload while in "on safe" position. Bolt lock independent of safety for maximum protection is preferred design.**
- 3. Eliminate trigger connector via use of one piece trigger.**
- 4. Eliminate enclosed housing for easier cleaning and lubrication.**
- 5. Provide externally adjustable trigger that will not function when adjusted out of spec.**



NTBOOK266

OPERATIONS COMMITTEE
ILION DIVISION

MODEL 700 FIRE CONTROL IMPROVEMENT

MINUTE #17, PAGE 17, OCTOBER 18, 1979

MODEL 700 FIRE CONTROL IMPROVEMENT
(1982 Introduction)

Research reported that progress is continuing on both Fire Control designs. Detailing on one design is about 70% complete, with final completion in two weeks. The remaining design and detailing will take an additional 3 - 4 weeks. A completed prototype of both designs will be ready in January.

MINUTE #20, PAGE 15, DECEMBER 12, 1979

MODEL 700 FIRE CONTROL IMPROVEMENTS
(1982 Introduction)

Research reported that detailing of both systems have been completed, and 98% of the parts have been returned from the Model Shop. Assembly is anticipated for the first of the year. Prototypes will be available for review with the Committee at the January meeting.

MINUTE #3, PAGE 9, FEBRUARY 20, 1980

MODEL 700 FIRE CONTROL IMPROVEMENTS
(1982 Introduction)

Research reported that the two Fire Control designs have been assembled. The design with a Sear Block Safety is complete and ready for testing. The design with a Sear and Trigger Block Safety is still in the revision stage. All components necessary for the second model have been made except for the Safety arm. Scheduled assembly is mid-March.



NTBOOK267

REMINGTON MODEL 700 OWNERS MANUAL
SUMMARY OF WARNINGS AND INSTRUCTIONS

<u>ADJUSTMENT</u>	<u>LUBRICATION</u>	<u>DIAGRAM/PARTS</u>	<u>BOLT LOCK LOAD/UNLOAD</u>	<u>CAUTION</u>
11/75 TP - turn screw no minimum OT - back off 1/8 turn after firing. Engagement - no adjustment recommended (p. 1)	Remove from stock & clean in solvent, wipe clean. No recommendation on lubricant. <u>p. 1</u> Clean with good grade petroleum solvent and re-oil very lightly. When shooting in freezing weather, remove excess oil. For best results, use dry graphite if necessary. (p. 6)	Exploded diagram <u>(p. 2)</u> Fire control system parts including trigger connector for sale <u>(p. 3)</u> Parts made to close dimensions, may require slight adjustment or fitting to assure proper functioning. (p. 5)	Bolt lock on safe, unload by cycling bolt. (p. 1)	
1/71 "	"	"	"	
4/71 "	"	"	"	
2/72 ?	?	"	"	
4/72 ?	?	"	"	
12/72 TP- adjustment less than 3 lbs. not recommended. OT-adjustment back out 1/16 turn. (p. 2) <u>Remington disclaims responsibility for alterations not made at factory.</u> (p. 8)	Checked periodically by competent gunsmith to ensure proper inspection. (p. 7)	"	"	

<u>ADJUSTMENT</u>	<u>LUBRICATION</u>	<u>DIAGRAM/PARTS</u>	<u>BOLT LOCK LOAD/UNLOAD</u>	<u>CAUTION</u>
4/73 ?	"	"	?	"
1/74 ?	"	"	?	"
4/74 ?	"	"	?	?
9/74 ?	"	"	?	?
11/74 ?	"	"	?	?
1/75 ?	"	"	?	?
2/75 ?	"	"	?	?
11/75 No adjustment by owner is recommended. Return to factory or approved Remington gunsmith. (p. 2)	" (pp. 1,2)	" (pp. 3,4)	Add step of reengaging safety. Also instructs to point in safe direction. Different instructions for unloading bolt, use floorplate. (p. 1) Put rifle on safe before closing bolt on live round. (p. 2)	" Point in safe direction. (p. 1)
1/77 "	"	"	"	"
1/78 "	"	"	"	"
1/79 No parts prices. (pp. 3,4)	"	"	"	"
2/79 No parts prices and some restricted parts. (pp. 4,5)	"	"	"	"

ADJUSTMENT

1/80 Do not make adjustments including trigger, sear, notch.
(p. 3)
Must be made at factory or Remington recommended gunsmith. Never remove trigger mechanism or adjust it.
(p. 5)

LUBRICATION

Inspected periodically by Remington or recommended gunsmith.
(p. 11)
Clean with a gun cleaning solvent.
(p. 13)
Apply thin coat oil to prevent rust.
(p. 13)

DIAGRAM/PARTS

Centerfire rifle receivers not sold separately.
(p. 14)
Exploded view does not include fire control system.
(p. 15)
Trigger assembly sold as unit.
(p. 16)

BOLT LOCK LOAD/UNLOAD

Never pull trigger while on safe. Even when safety is on, careless handling can cause rifle to fire.
(p. 4)
Includes intermediate step of reengaging safety. Special instruction if cartridge slides on chamber.
(p. 8)

CAUTION

Check firearm periodically to make sure mech. correct.
(p. 2)
Do not play with safety switch.
(p. 2)
Never put finger on trigger unless to fire.
(p. 5)

6/80 "

"

"

"

"

7/82 "

Recommends du Pont Teflon wet lubricant.
(p. 11)
Identifies 4 points to spray lubricant and instructs to do twice, once to lube and second to clean then shake off.
(p. 12)
Clean frequently, before and after long storage, adverse conditions, moisture, exposed to dirty conditions.
(p. 13)
Excessive use of a non-recommended lubricant could cause serious function problems possibly leading to accidental firing.
(p. 12)

Trigger assembly sale is restricted.
(p. 18)

Do not touch trigger while moving safety switch.
(p. 4)

After lubrication and cleaning check FBC 10 times. If it fails to cock return to factory or Remington recommended gunsmith.
(p. 13.)

ADJUSTMENTLUBRICATIONDIAGRAM/PARTSBOLT LOCK
LOAD/UNLOADCAUTION

Over lubrication avoided
at all times, thin coat of
Remington oil all needed.
If stored, carefully
cleaned and thoroughly
oiled when reused, all
excess lubricant must be
removed. Recommends
Remington oil.
(p. 11)

1/83 "

"

"

"

1/83 "

"

"

"

1/84 "

"

"

"

1/88 "

"

Don't rely on the
safety switch.
(p. 3)

Learn how
to handle
firearms
safely,
failure to
obey these
rules can
result
serious
personal
injury.
(p. 2)



SAFETY PERFORMANCE CHECK

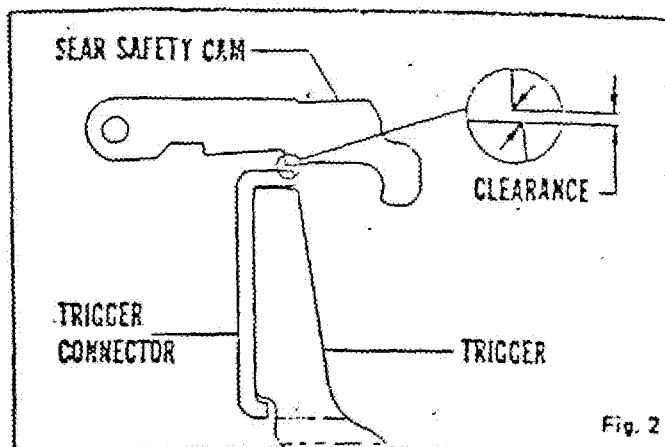
After reassembly, the following checks for proper function of the safety should be made:

Close bolt. Put safety ON SAFE. Lift bolt handle. (Bolt handle should not raise). Pull trigger (firing pin should not fall). Action of trigger pull should be smooth (no bind, drag, click or catch). Release trigger (trigger should return to former position). Put safety ON FIRE position (firing pin should not fall). Pull trigger (firing pin should fall). Repeat test at least three (3) times.

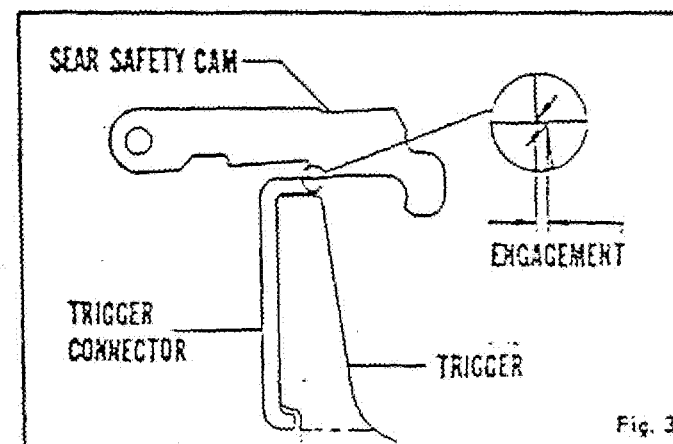
Safety should function on two (2) positive stop positions (ON SAFE - FIRE). If positions are not positive, check parts. Inspect detent holes, retainer, retainer pin, detent, detent spring and related parts for possible cause. Replace any worn or damaged parts and lubricate with a dry lubricant. Reassemble and check. If stop positions are not positive replace complete trigger housing assembly.

NOTE: Lubrication should not be used as a remedy for trigger housing assembly problems. The cause should be positively located and corrected.

When repairing trigger housing assembly wash parts thoroughly with a petroleum solvent. An accumulation of gun oil or dried oil can build a film that may cause malfunctions. Relubricate with a dry lubricant and reassemble. Check clearance between trigger and trigger connector .010 MAX. slip fit (MIN.) with feeler gage (see Fig. 1). Check trigger connector for straightness and cracks at trigger stop screw hole. Make sure there is no bind or catch in trigger, sear safety cam or safety lever about pivots.



Sear safety cam and trigger connector engagement of .015" - .020" on field rifles and .010" - .015" on target rifles is critical (see Fig. 3). Replace any worn or damaged parts. To adjust, close bolt and place safety OFF SAFE. Turn trigger engagement screw clockwise until rifle fires. Turn screw counterclockwise 1/4 turn (90°) and check engagement. (see note A). Corners must be sharp. (Arrows).



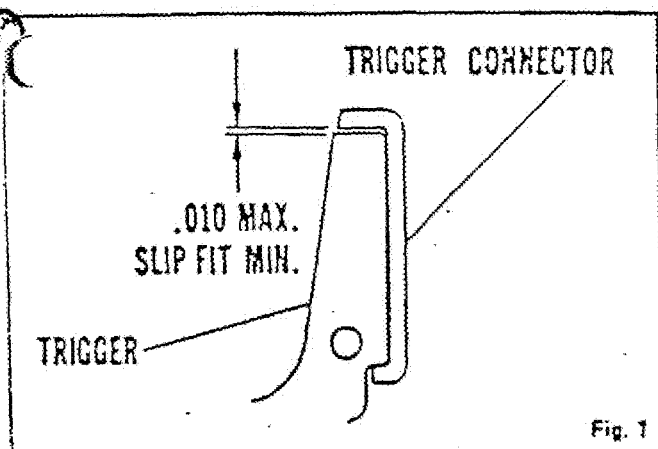
To adjust trigger stop screw, close bolt and put safety OFF SAFE. Turn trigger stop screw clockwise until it touches trigger. Pull and hold trigger rearward. Turn trigger stop screw counter clockwise until rifle fires. Turn an additional 1/8 turn for clearance. (see note A).

Trigger pull adjustment on any field rifle should never be adjusted below three (3) pounds. (see note A).

Trigger pull adjustment on any target rifle should never be adjusted below two (2) pounds. (see note A).

NOTE A: After any adjustments to trigger housing assembly screws, repeat all safety checks. Check for "follow down." See malfunctions. Restake or reseal screws with DuPont Duco cement.

When replacing stock assembly, check for clearance between following parts: Safety Lever - Stock; Trigger - Trigger Guard; Trigger - Stock.



When replacing trigger housing assembly, take care not to bend or spring the housing. Sear safety cam should pivot freely. To check, remove bolt, move safety to OFF SAFE, pull trigger and press down on rear of sear safety cam and release.

For proper safety function there must be clearance between trigger connector and sear safety cam. To check close bolt and put safety ON SAFE. Visually inspect through hole in side of trigger housing (see Fig. 2). If there is no clearance, replace safety assembly, or trigger housing assembly. Corners must be sharp. (Arrows).

Leek
EXHIBIT NO. 65

EXHIBIT "C"
DEPOSITION
EXHIBIT

NTBOOK272

EXHIBIT
EFS
2
10/26/83 AB

SAFETY PERFORMANCE CHECK

After reassembly, the following checks for proper function of the safety should be made:

Close bolt. Put safety ON SAFE. Lift bolt handle. (Bolt should not raise). Pull trigger (firing pin should not move). Action of trigger pull should be smooth (no bind, drag, click or catch). Release trigger (trigger should return to former position). Put safety ON FIRE position (firing pin should not fall). Pull trigger (firing pin should fall). Repeat test at least three (3) times.

Safety should function on two (2) positive stop positions (ON SAFE - FIRE). If positions are not positive, check parts. Inspect detent holes, retainer, retainer pin, detent, detent spring and related parts for possible cause. Replace any worn or damaged parts and lubricate with a dry lubricant. Reassemble and check. If stop positions are not positive replace complete trigger housing assembly.

NOTE: Lubrication should not be used as a remedy for trigger housing assembly problems. The cause should be positively located and corrected.

When repairing trigger housing assembly wash parts thoroughly with a petroleum solvent. An accumulation of gun oil or dried oil can build a film that may cause malfunctions. Relubricate with a dry lubricant and reassemble. Check clearance between trigger and trigger connector .010 MAX. slip fit (MIN.) with feeler page (see Fig. 1). Check trigger connector for straightness and cracks at trigger stop screw hole. Make sure there is no bind or catch in trigger, sear safety cam or safety lever about pivots.

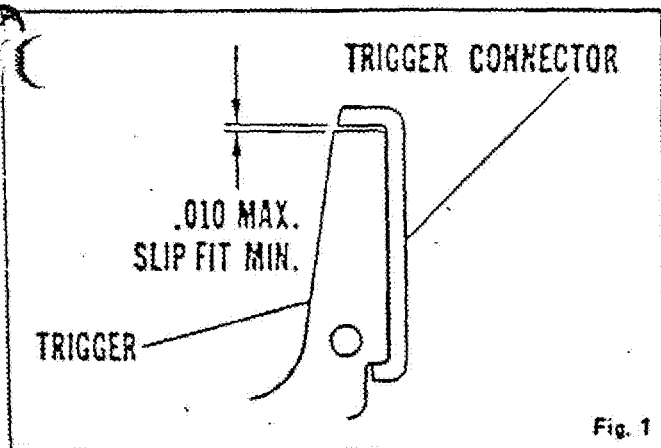


Fig. 1

When replacing trigger housing assembly, take care not to bend or spring the housing. Sear safety cam should pivot freely. To check, remove bolt, move safety to OFF SAFE, pull trigger and press down on rear of sear safety cam and release.

For proper safety function there must be clearance between trigger connector and sear safety cam. To check close bolt and put safety ON SAFE. Visually inspect through hole in side of trigger housing (see Fig. 2). If there is no clearance, replace safety assembly, or trigger housing assembly. Corners must be sharp. (Arrows).

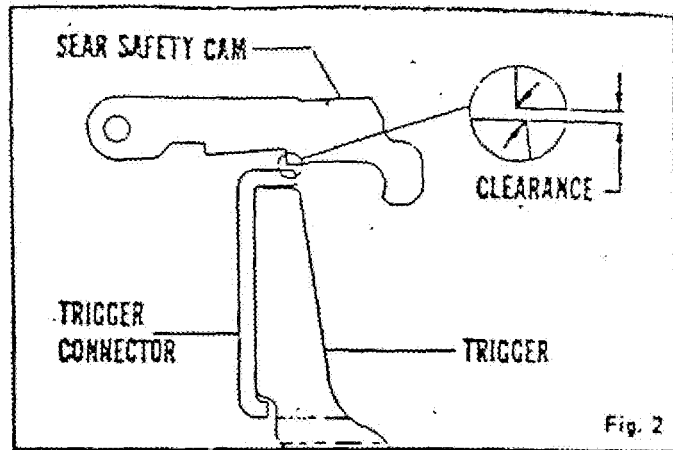


Fig. 2

Sear safety cam and trigger connector engagement of .015" - .020" on field rifles and .010" - .015" on target rifles is critical (see Fig. 3). Replace any worn or damaged parts. To adjust, close bolt and place safety OFF SAFE. Turn trigger engagement screw clockwise until rifle fires. Turn screw counterclockwise 1/2 turn (90°) and check engagement. (see note A). Corners must be sharp. (Arrows).

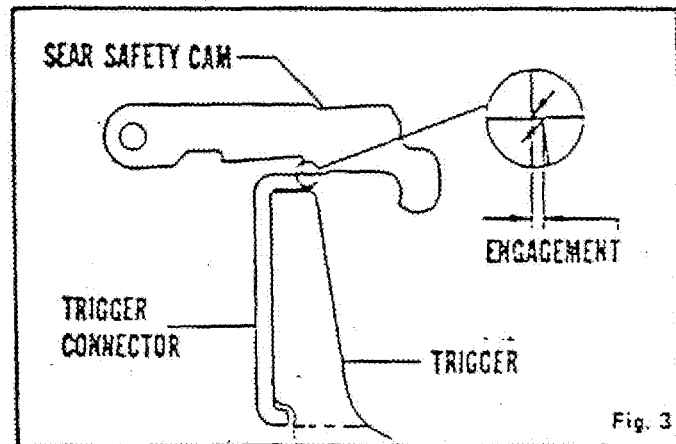


Fig. 3

To adjust trigger stop screw, close bolt and put safety OFF SAFE. Turn trigger stop screw clockwise until it touches trigger. Pull and hold trigger rearward. Turn trigger stop screw counter clockwise until rifle fires. Turn an additional 1/8 turn for clearance. (see note A).

Trigger pull adjustment on any field rifle should never be adjusted below three (3) pounds. (see note A).

Trigger pull adjustment on any target rifle should never be adjusted below two (2) pounds. (see note A).

NOTE A: After any adjustments to trigger housing assembly screws, repeat all safety checks. Check for "follow down." See malfunctions. Restake or reseal screws with DuPont Duco cement.

When replacing stock assembly, check for clearance between following parts: Safety Lever - Stock; Trigger - Trigger Guard; Trigger - Stock.

EXHIBIT "C"

DEPOSITION
EXHIBIT

11



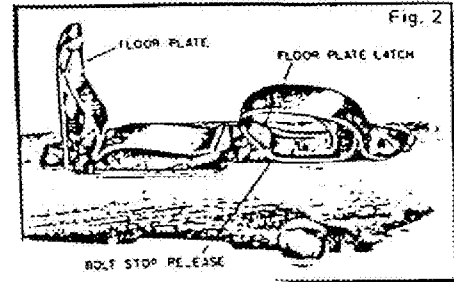
NTBOOK273



m m l e
.010 m p s
+ target

Leek
EXHIBIT NO. 65

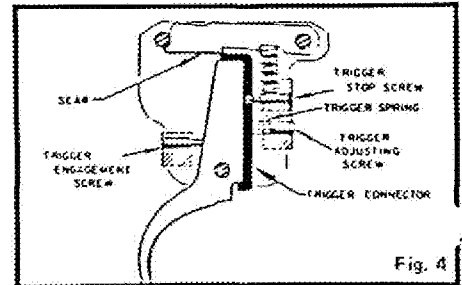
ACTION CARE AND DISASSEMBLY—Remove bolt and stock if necessary to clean action or replace parts. Unscrew guard screws and lift stock away from action and barrel. Clean bolt and action in solvent and wipe clean. Before re-assembling stock to receiver, particularly on ADL Grade, take care magazine fully into magazine recess in bottom of receiver. This special care will prevent any damage to stock when stock is tightened against receiver. Note: Re-assemble BDL grade trigger guard assembly (includes floor plate, guard, magazine follower and spring) to stock before placing stock over assembled magazine.



TO ADJUST TRIGGER—Remove trigger guard and stock. Cock bolt in receiver. Important: No adjustment or removal of trigger engagement screw is recommended unless replacement is necessary. The trigger engagement screw is set at factory to engage trigger and provide correct amount of supporting trigger connector surface beneath sear (Fig. 4). Pull of trigger is adjusted to desired weight by turning trigger adjusting screw clockwise for a heavier weight adjustment and counter-clockwise for a lighter weight adjustment. Travel of trigger may be reduced by turning trigger stop screw clockwise until firing pin will not fall when trigger is pulled. Then, while keeping pressure on trigger, back off trigger stop screw, counter-clockwise, until firing pin falls. Continue back off about 1/16 turn. This method of adjusting will allow least amount of trigger overtravel.

No minimum pull wanted against
Also, no minimum overtravel setting

LUBRICATION—Your Remington Model 700 will remain clean longer if little or no oil is used on parts of action. Lubricate cam surfaces on bolt to prevent wear. Wash action and bolt parts with a good grade of petroleum solvent, dry and re-oil very lightly. After handling, wipe barrel, receiver and all steel parts to prevent rusting. Invisible "prints" of moisture can cause rust unless removed. After using in wet weather dry and wipe steel parts with oil to prevent rusting. Abrupt changes in temperature can cause condensation and wetness. Therefore, special care is needed to interior steel parts to prevent rust. When shooting in freezing weather, remove excess oil for best results. Use dry graphite if necessary to lubricate metal parts.



Form RD 5461
Rev. 472

✓ **TO ADJUST TRIGGER** (Fig. 4) — Remove trigger guard and stock. Cock bolt in receiver. Pull of Trigger is adjusted to desired weight by turning trigger adjusting screw clockwise for a heavier weight adjustment and counter-clockwise for a lighter weight adjustment. Adjustment of trigger adjusting screw to provide a weight pull of less than 3 pounds is not recommended. Overtravel of trigger may be reduced by turning trigger stop screw clockwise until firing pin will not fall when trigger is pulled. Then, while keeping pressure on trigger, back off trigger stop screw, counter-clockwise, until firing pin falls. Continue back off about 1/16 turn. This method of adjusting will allow least amount of trigger overtravel. **IMPORTANT:** The trigger engagement screw (Fig. 4) has been factory adjusted and sealed to provide the correct amount of trigger connector supporting surface beneath sear.

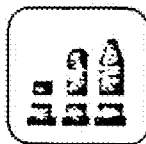
3 lbs added - "not recommended"

Form RD 5461
Rev. 473

TRIGGER — No adjustment of trigger by the owner is recommended. Trigger pull has been factory adjusted. Should any adjustment be necessary return rifle to factory or see a Remington approved gunsmith.



SAFETY INFORMATION



NEVER USE THE WRONG AMMUNITION:

- Only use ammunition of the correct caliber, that is in good condition.
- Before loading, check the caliber shown on the ammunition, and caliber shown on the firearm. They must be the same caliber.
- Handloads can be dangerous. Remington Arms Company, Inc., is not responsible for accidents or damage caused by badly loaded handloads.



NEVER MAKE ADJUSTMENTS:

- Do not make changes or alterations to any parts of a firearm. Use only REMINGTON parts.
- Never make an adjustment to the trigger, or change the shape or size of the sear, sear notch, or other parts.



EYE PROTECTION:

- Wear safety glasses when using a firearm.



EAR PROTECTION:

- Wear hearing protectors when firing to adjust the sights.

3



IMPORTANT PARTS OF THE FIREARM

THE SAFETY SWITCH

The safety switch provides protection against accidental or unintentional discharge under normal usage when properly engaged.

To engage the safety switch, put the switch in the "S" position. See picture 3.

Always put the safety switch in the "S" position when the firearm is loaded and not ready for firing.

The bolt handle cannot be lifted when the safety switch is in the "S" position. See picture 3.

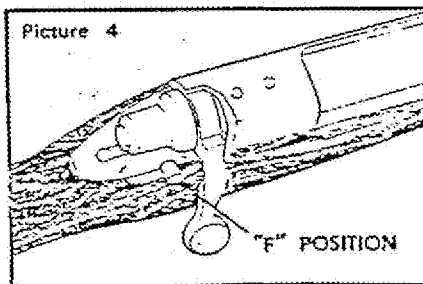
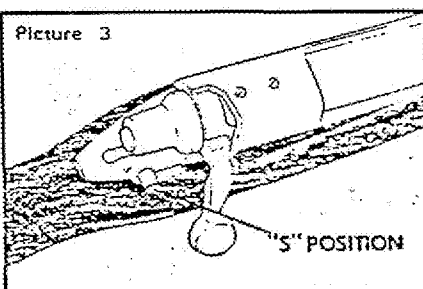
When you are ready to fire the firearm, put the safety switch in the "F" position. See picture 4.

Never pull the trigger when the safety switch is in the "S" position.

WARNING: The firearm will fire when the trigger is pulled and the safety switch is in the "F" position.



Even when the safety switch is in the "S" position, careless handling can cause the firearm to fire.



4



NTBOOK275

9/80
cont**TO CLEAN THE BARREL**

WARNING: Check the chamber and magazine to make sure there are no cartridges in the firearm.

1. Use the instructions and the equipment provided in a good cleaning kit.
2. Remove the bolt assembly. See page 5.
3. Select the correct caliber cleaning brush and attach the brush to the cleaning rod.
4. Put the cleaning brush into the gun cleaning solvent.
5. Push the cleaning rod through the barrel several times. **NOTE:** Always clean the barrel from the chamber end to the muzzle.
6. Push the correct cleaning patch through the bore.
7. Repeat several times using a new cleaning patch each time, until the patch is not dirty.
8. Apply a thin coat of oil to the outside of the barrel with a soft cloth.
9. Clean the varmint models with a wire brush and cleaning patches after firing 25 cartridges.

WARNING: Before you replace the bolt assembly, make sure the barrel is free of obstructions.

WARNING: This firearm should be checked periodically by The Remington Arms Company Inc. or a REMINGTON RECOMMENDED GUNSMITH. This will insure proper inspection and any necessary replacement of worn or damaged parts.

TO CLEAN THE ACTION

1. Remove the bolt assembly. See page 5.
2. Turn the rifle upside down.
3. Remove the screws from the trigger guard. See picture 12, or picture 13.
4. Lift the stock away from the action.

NOTE: MODELS WITHOUT A FLOOR PLATE:
Remove the magazine spring and follower from the magazine.

NOTE: MODELS WITH A FLOOR PLATE:
Remove the magazine spring and follower from the receiver.

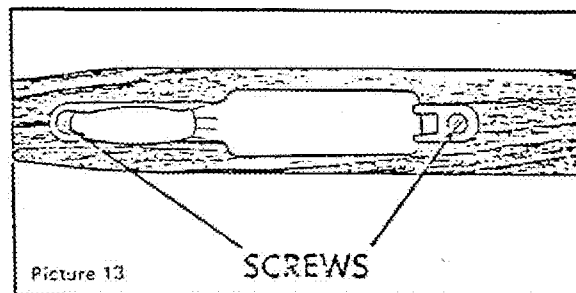
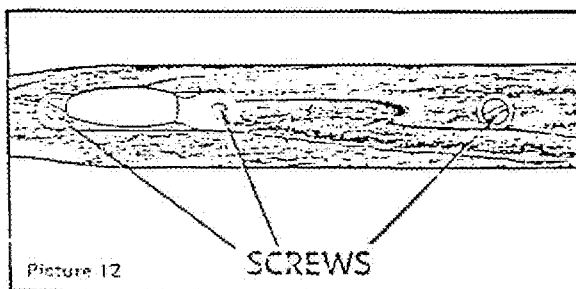
5. Clean the action with a gun cleaning solvent and dry with a cloth.
6. Apply a thin coat of oil to prevent rust.

TO ASSEMBLE THE MODELS WITHOUT A FLOOR PLATE

1. Put the magazine follower and the spring into the magazine.
2. Put the stock over the action.
3. Replace and tighten the screws on the trigger guard.
4. Replace the bolt assembly.

TO ASSEMBLE THE MODELS WITH A FLOOR PLATE

1. Put the magazine all the way into the bottom of the receiver.
2. Assemble the trigger guard assembly on the stock.
3. Put the stock over the action.
4. Replace and tighten the trigger guard screws.
5. Replace the bolt assembly.



12/82

IMPORTANT PARTS OF THE FIREARM

THE SAFETY SWITCH

The safety switch provides protection against accidental or unintentional discharge under normal usage when properly engaged.

To engage the safety switch, put the switch in the "S" position. See picture 3.

Always put the safety switch in the "S" position before handling, loading or unloading the firearm.

When you are ready to fire the firearm, put the safety switch in the "F" position. See picture 4.

Do not touch the trigger while moving the safety switch.

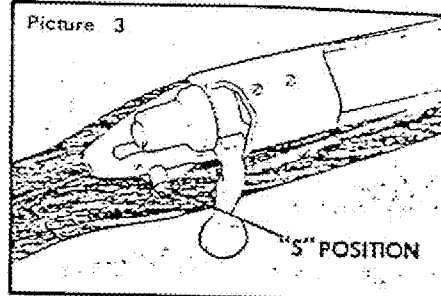
Never pull the trigger when the safety switch is in the "S" position.

WARNING: The firearm will fire when the trigger is pulled and the safety switch is in the "F" position.

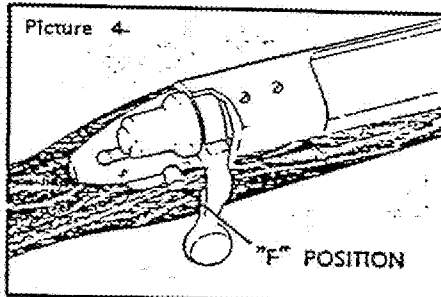


Even when the safety switch is in the "S" position, careless handling can cause the firearm to fire.

Picture 3



Picture 4



LUBRICATION AND MAINTENANCE



TO CLEAN THE BARREL

WARNING: Check the chamber and magazine to make sure there are no cartridges in the firearm.

1. Use the equipment provided in a good cleaning kit.
2. Remove the bolt assembly. See Instructions on Page 5.
3. Select the correct caliber cleaning brush and attach the brush to the cleaning rod.
4. Put the cleaning brush into the gun cleaning solvent.

NOTE: Barrel should lay horizontally with the ejection port facing down during cleaning. Always clean the barrel from the chamber end to the muzzle.

5. Push the cleaning brush through the barrel several times.
6. Remove brush from rod, attach tip with patch, and push through the bore.
7. Repeat several times, using a new cleaning patch each time, until the patch is not dirty.
8. Push a clean patch saturated with DuPont Teflon Wet Lubricant through the barrel.
9. Push a clean dry patch through the barrel to remove excess lubricant.
10. Apply a thin coat of DuPont Teflon Wet Lubricant to the outside of the barrel with a soft clean cloth.
11. After cleaning the barrel, clean the receiver and the trigger assembly.

WARNING: This firearm should be checked periodically by the Remington Arms Company, Inc. or a REMINGTON RECOMMENDED GUNSMITH. This will insure proper inspection and any necessary replacement of worn or damaged parts.



NTBOOK277

SAFETY RULES

REMEMBER

READ THESE BASIC SAFETY RULES. Learn how to handle your firearm safely. Failure to obey these rules can result in serious personal injuries. Only you can prevent accidents.



KNOW YOUR FIREARM. To use it correctly and safely, read and follow the instructions in the enclosed firearms safety booklet and this instruction book.

TREAT EVERY FIREARM AS IF IT WERE LOADED. Don't rely on the safety switch. Use it as shown in this book.



NEVER MAKE ADJUSTMENTS. Do not make changes or alterations to any parts of a firearm. Use only REMINGTON parts. Never make an adjustment to the trigger, or change the shape or size of the sear, sear notch, or other parts.

WEAR EYE PROTECTION. Wear eye protection, such as glasses or sunglasses, when shooting. Wear ear protection, such as ear plugs or muffs, when target shooting or plinking. Repeated exposure to shooting noise can cause permanent hearing loss. Never drink alcoholic beverages before or during shooting.



KEEP YOUR FIREARM CLEAN. Keep the barrel clean and free of obstructions. Clean and have the firearm checked periodically to make sure it is mechanically correct. Worn, damaged or missing parts may be dangerous.

ALWAYS POINT THE MUZZLE. Always keep the firearm pointed in a safe direction.

LUBRICATION AND MAINTENANCE



LUBRICATION:

Over-lubrication should be avoided at all times. A thin coat of Remtm Oil is all that is needed to prevent the possibility of rusting. See note below.

When the firearm is to be stored, it should be carefully cleaned and thoroughly oiled. Outside surfaces should be wiped with a light coat of Remtm Oil occasionally.

When firearm is to be reused, all excess lubrication must be removed. The chamber and bore must be thoroughly wiped dry.

NOTE: Remington Remtm Oil with DuPont Teflon Wet Lubricant is available from your local dealer. If your dealer is out of stock, ask him to order Remtm Oil from his Remington distributor.

TO CLEAN THE BARREL

WARNING: Check the chamber and magazine to make sure there are no cartridges in the firearm.

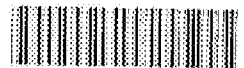
1. Use the equipment provided in a good cleaning kit.
2. Remove the bolt assembly. See instructions on Page 5.

3. Select the correct caliber cleaning brush and attach the brush to the cleaning rod.
4. Put the cleaning brush into the gun cleaning solvent.

NOTE: Barrel should lay horizontally with the ejection port facing down during cleaning. Always clean the barrel from the chamber end to the muzzle.

5. Push the cleaning brush through the barrel several times.
6. Remove brush from rod, attach tip with patch, and push through the bore.
7. Repeat several times, using a new cleaning patch each time, until the patch is not dirty.
8. Push a clean patch saturated with Remtm Oil through the barrel.
9. Push a clean dry patch through the barrel to remove excess lubricant.
10. Apply a thin coat of Remtm Oil to the outside of the barrel with a soft clean cloth.
11. After cleaning the barrel, clean the receiver and the trigger assembly.

WARNING: This firearm should be checked periodically by the Remington Arms Company, Inc. or a REMINGTON RECOMMENDED GUNSMITH. This will insure proper inspection and any necessary replacement of worn or damaged parts.



NTBOOK278

HISTORY OF LUBRICATION INSTRUCTION

Rev. 2/72

ACTION CARE AND DISASSEMBLY - Clean bolt and action in solvent and wipe clean.

Rev. 2/72

Your Remington Model 700 will remain clean longer if little or no oil is used on parts of action. Wash action and bolt parts with a good grade of petroleum solvent, dry and re-oil very lightly.

1979 - Letter to Mr. Benjamin - Use no lubrication on fire control.

Rev. 9/80

TO CLEAN THE ACTION

5. Clean the action with a gun cleaning solvent and dry with a cloth.
6. Apply a thin coat of oil to prevent rust.

Rev. 12/82

TO CLEAN THE RECEIVER AND TRIGGER ASSEMBLY

5. NOTE: Clean the receiver and trigger assembly as a unit with DuPont Teflon Wet Lubricant only.
6. Spray the receiver and the four points of the trigger assembly with DuPont Teflon Wet Lubricant (See Picture 11). let stand for 15 minutes. Spray again to wash off components. Shake off excess lubricant.

WARNING: Excessive use of a non recommended lubricant could cause serious function problems possibly leading to accidental firing.

12/82

TO ASSEMBLE THE MODELS WITHOUT A FLOOR PLATE

6. WARNING: After cleaning the trigger assembly, check the chamber and magazine to make sure there are no cartridges in the firearm. Put the safety switch in the "F" position. Close the bolt smartly. The firing pin must remain cocked. To check, pull the trigger. The firing pin must fall. Repeat the test at least ten times. If the firing pin will not remain cocked when the bolt is closed smartly, return the firearm to the factory, or a REMINGTON RECOMMENDED GUNSMITH.



NTBOOK280

Rev. 6/86

LUBRICATION AND MAINTENANCE

LUBRICATION:

Over-lubrication should be avoided at all times. A thin coat of Rem™ Oil is all that is needed to prevent the possibility of rusting. See note below.

When the firearm is to be stored, it should be carefully cleaned and thoroughly oiled. Outside surfaces should be wiped with a light coat of Rem™ Oil occasionally.

NOTE: Remington Rem™ Oil with DuPont Teflon Wet Lubricant is available from your local dealer. If your dealer is out of stock, ask him to order Rem™ Oil from his Remington distributor.

Rev. 6/86

TO CLEAN THE RECEIVER AND TRIGGER ASSEMBLY

5. NOTE: Clean the receiver and trigger assembly as a unit with Rem™ Oil.
6. Spray the receiver and the four points of the trigger assembly with Rem™ Oil (see Picture 11). Let stand for 15 minutes. Spray again to wash off components. Shake off excess lubricant.

WARNING: Excessive use of a non-recommended lubricant could cause serious function problems possibly leading to accidental firing.

GUNSMITH MANUAL - When repairing trigger housing assembly wash parts thoroughly with a petroleum solvent. An accumulation of gun oil or dried oil can build a film that may cause malfunctions. Relubricate with a dry lubricant and reassemble.



NTBOOK281

Break in Sequence NBT 282- 285_ Nothing Listed in Exhibit List

Break in Sequence NBT 282- 285_ Nothing Listed in Exhibit List

**M700 MALFUNCTIONS INVOLVING
THE TRIGGER CONNECTOR AND SEAR**

- 1. INADEQUATE LIFT OF SEAR CAUSES INTERFERENCE AND TRIGGER CONNECTOR TOTALLY FAILS TO SEAT BENEATH SEAR.**
- 2. TRIGGER CONNECTOR RIDES UP ON TRIGGER CAUSING INTERFERENCE AND TRIGGER CONNECTOR TOTALLY FAILS TO SEAT BENEATH SEAR.**
- 3. TRIGGER CONNECTOR FAILS TO FULLY RETRACT AND THUS PARTIALLY FAILS TO SEAT BENEATH SEAR CAUSING INADEQUATE SUPPORT OF SEAR.**



**REMINGTON RECOGNIZED CAUSES OF
M700 MALFUNCTIONS AND MISFIRES**

- 1. OIL OR DIRT IN FIRE CONTROL**
- 2. ADJUSTMENT OF ENGAGEMENT,
OVERTRAVEL OR POUNDAGE
SCREWS BY CUSTOMER**
- 3. COLD WEATHER WHEN COMBINED
WITH OIL IN FIRE CONTROL**
- 4. TRIGGER PULLED WHILE SAFETY IN
INTERMEDIATE POSITION AND
THEN SAFETY RELEASED -
"TRICKING"**



**OPERATIONS COMMITTEE
JULY 17, 1980**

**PROGRAMS ARE CONSIDERED UNDER
THE "NECESSITY" CATEGORY WHEN
REQUIRED TO MEET SUCH
IMPERATIVES AS:**

- 1. GOVERNMENTAL REGULATIONS**
- 2. PRODUCT OR PROCESS SAFETY**
- 3. CRITICAL BUSINESS CONDITIONS**



NTBOOK288

PRIORITY PLANNING AND MANAGEMENTPriority Category

I. Necessity

Those programs which are required to meet mandated regulations (OSHA), company policy, safety, product liability needs, contractual commitments, and similar non-discretionary commitments. By definition, these programs are fully funded and supported.

II. Commitments

Those programs which have been initiated in response to marketing and manufacturing needs to improve Established Businesses, and have negotiated support of Management.

III. New Initiatives

Those program proposals which are under study (or which we plan to study), to explore feasibility, justification, and to develop proposals requesting Management support. (Marketing requests for new product are automatically placed in this category.)

CHART I

ER&D - EQUIPMENT DEVELOPMENT
ADMINISTRATIVE PROGRAMS
1982 - 1985

CHART II

LIN 000855

REM 0056888



NTBOOK289

**OPERATIONS COMMITTEE
JULY 17, 1980**

PRIORITY PLANNING AND MANAGEMENT

PRIORITY CATEGORY

I. NECESSITY

**THOSE PROGRAMS WHICH ARE
REQUIRED TO MEET MANDATED
REGULATIONS (OSHA), COMPANY
POLICY, SAFETY, PRODUCT LIABILITY
NEEDS, CONTRACTUAL COMMITMENTS,
AND SIMILAR NON-DISCRETIONARY
COMMITMENTS. BY DEFINITION;
THESE PROGRAMS ARE FULLY FUNDED
AND SUPPORTED.**



EXHIBIT LIST OF INVISION DOCUMENTS

NTBK001 EXHIBIT A - THE SAFETY DESIGN IN THE 721 AND 722 IS CONSIDERED INADEQUATE; SALES ATTACHES GREAT IMPORTANCE TO THE IMPROVEMENT IN THE SAFETY

NTBK002 at least 20 complaints in 72 and 4 so far in 73 HAVE BEEN ATTRIBUTED TO THE CONNECTOR SEAR INTERFERENCE

NTBK003 TYPED VERSION OF ABOVE

NTBK004 ***

NTBK005 MEMO FROM SPRELING TO HART ORDERING CHANGE IN OWNERS MA-JAI INSTRUCTION ON UNLOADING GUN

NTBK006 THE COST OF CHANGING TO A THREE POSITION SAFETY FOR THE 700 WOULD BE \$4400 A YEAR AND \$25,600 FOR NEW TOOLING. THE FULL BOOK UNIT COST WOULD BE AN INCREASE OF \$.056 FOR EACH RIFLE

NTBK007 KNOWN PRODUCT DEFICIENCIES-SAFE GUNHANDLING DEMANDS A DESIGN THAT ALLOWS SHOOTER TO OPERATE ACTION WITH SAFETY ON

NTBK008 NTBOOK007 TYPED BY PAT

NTBK009 THREE POSITION SAFETY WOULD BE DESIRABLE-IT IS BEING REVIEWED, REC'S WILL BE MADE IN SECOND HALF OF 175

NTBK010 FOUR MODEL 600 GUNS FOUND TO FIRE UNDER SIMILAR CIRCUMSTANCES AS 700

NTBK011 DEVELOP PLANS TO CONDUCT A SAFETY ANALYSIS OF BOLT ACTION FIRE CONTROLS-- THE PRESENT DESIGN FOR A 3 POS. SAFETY IS INADEQUATE-- SECOND HALF OF 175 DEVELOP A NEW SAFETY M-HANISM

NTBK012 MARKETING WILL REVIEW GUNSMITH REPORTS, ARMS REPAIR DATA, PARTS USAGE ECT...A LIST OF RECOMMENDATIONS FOR IMPROVING QUALITY PERFORMANCE WILL BE DEVELOPED AND REVIEWED BY THE PRODUCT SAFETY DIVISION

NTBK013 PRODUCT SAFETY MEETING: ANALYZE PRODUCT SAFETY OF BOLT ACTION FIRE CONTROLS

NTBK014	4 OF 147 FSR
NTBK015	4 OF 147 FSR
NTBK016	****
NTBK016	****
NTBK017	****
NTBK018	SOME 600s CAN BE ~"TRICKED" in to firing
NTBK019	023 MEMO FROM LEEK TO LINDE EVALUATING THE BOLT ACTION SAFETY MECHANISMS--*****
NTBK024	THE MODEL 600 CAN BE ~"TRICKED~" INTO FSR BUT GIVEN THAT THERE HAVE BEEN ONLY A FEW INCIDENTS REPORTED FROM THE FIELD REMINGTON CONCLUDES THAT A SHOOTER IS UNLIKELY TO PLACE HIS GUN IN THE TRICK POSITION
NTBK025	DESIGNS ARE BEING ANALYZED TO ALLOW THE CUSTOMER TO UNLOAD THE 700 WITH THE SAFE IN THE ON POSITION
NTBK026	SEPT 19,1975 DESIGNS ARE BEING ANALYZED TO ALLOW THE CUSTOMER TO UNLOAD THE MODEL 700 WITH THE SAFE IN THE ON POSITION AS AN ADDITIONAL SAFETY FEATURE
NTBK027	029 DEC. 10, 1975 M/700 SAFETY EVALUATION--DESIGN INITIATED A REVIEW OF THE BOLT ACTION RIFLE SAFETY FUNCTION THE FINAL PHASE OF THIS PROGRAM INVOLVED THE M 700
NTBK030	JAN 23 '76 THE MOST IMPORTANT ALTERATION WOULD BE A DESIGN CHANGE TO ALLOW THE SHOOTER TO UNLOAD THE RIFLE WITH THE SAFETY IN THE ON POSITION.
NTBK031	PRDCT DEFICIENCIES INTERESTS OF SAFE GUN HANDLING DEMAND A DESIGN THAT ENABLES A SHOOTER TO OPERATE THE ACTION WITH THE SAFETY ~ON~
NTBK032	PAT-S TYPED VERSION OF 031
NTBK033	A COMPETITIVE TEST HAS BEEN STARTED TO ANALYZE THE BEST SAFETY MECHANISMS
NTBK034	NOV 18, 1976 M/700 R&D REPORT AT BUSINESS MEETING- THE DESIGN OF THE TRIGGER MECHANISM IS BEING ANALYZED. THIS

ANALYSIS SHOULD LEAD TO POSSIBLE DESIGN OPTIONS WHICH
WILL BE PURSUED

NTBK35 JAN 26 1977 M700-600 FIRE CONTROL IMPROVEMENT DESIGN
C H A N G E S A R E B E I N G D E V E L O P E D
PRELIMINARY DESIGN SHOULD BE COMPLETED BY SEPT. 1977

NTBK036 APRIL 21, 1977 SPECIAL REPORTS ON THOUSAND M 600 RIFLES WERE
STOPPED BY AUSTRALIAN CUSTOMS AS UNACCEPTABLE FOR
IMPORTATION BECAUSE TRIGGER ADJUSTING SCREWS SHOULD
HAVE MECHANICAL LOCKING MEANS...M/700 ALSO LACKS
MECHANICAL LOCKING MEANS FUTURE PROGRAM R&D WILL
COMPLETE DESIGN ANALYSES TO ALLOW M/700 TO BE UNLOADED
WITH SAFETY IN THE "ON SAFE" POSITION

NTBK38 JULY 19, 1977 FIRE CONTROL IMPROVEMENTS***

NTBK041 SEPT 20, 1977 OPERATIONS COMMITTEE: DESIGN PROGRAM BEING
PURSUED TO IMPROVE THE FUNCTION AND RELIABILITY OF BOLT
ACTION FIRE CONTROLS

NTBK043 NOV. 16, 1977 BUSINESS MEETING TWO OBJECTIVES TO
DEVELOPMENT EFFORT -SHOOTER UNLOAD RIFLE IN "ON SAFE"
AND IMPROVE FIRING MECHANISM

NTBK045 change _ to improve function of trigger by eliminating interference between
trigger and housing

NTBK046 CHANGE TO IMPROVE FUNCTION OF THE TRIGGER

NTBK047 FEB 15, 1978 SEAR ENGAGEMENT AND TRIGGER OVERTRAVEL TO BE
DETERMINED BY DESIGN AND NOT ADJUSTABLE BY CONSUMER

NTBK048 FEB 15, 1978 OPERATIONS COMMITTEE: DESIGN OBJECTIVES FOR
NEW FIRE CONTROL FOR M/700, M/600

NTBK049 DESIGN CHANGE ORDER FOR TRIGGER IN M 700

NTBK050 JULY 18, 1978 MAJOR PRODUCT UPGRADING M/700: BOLT ACTION
FIRE CONTROL REFINEMENTS

NTBK055 MEMO FROM ERICSON TO BROOKS SEPT. 14, 1978 RE: PATENTS ON
THREE POSITION SAFETY AND RELEASABLE BOLT LOCK

NTBK057 SEPT 20, 1978 OPERATIONS COMMITTEE MEETING: FIRE CONTROL
ASSEMBLIES HAVE BEEN DESIGNED AND FABRICATED THAT CAN

BE ADJUSTED FOR POUNDS PULL WITHIN SAFE LIMITS, HAVE FIXED TRIGGER AND SEAR ENGAGEMENT AND FIXED OVERTRAVEL, WILL ALLOW RIFLE TO BE UNLOADED IN ON SAFE

- NTBK059 OCT 23, 1978 PRODUCT SAFETY MEETING: GIVEN 6,800,000 VERDICT IN COATES CASE COMMITTEE RECOMMENDS RECALL OF MODEL 600 GUNS AND CHANGE IN TRIGGER ASSEMBLY...PRESIDENT APPROVED THESE RECOMMENDATIONS ON OCT. 23, 1978
- NTBK061 10 TO 15 REPRESENTATIVES WILL BE SENT ON PROPAGANDA VISITS TO GUN SMITHS WHO WILL BE PARTICIPATING IN RECALL
- NTBK062 LETTER NOV,6 1978 FROM R. B. SPERLING ASSOCIATE COUNCIL FOR REMINGTON TO R. R. INGHAM OF FINANCE FOR DU PONT DE NEMOURS AND CO.THE LETTER IS ABOUT THE COATES V. REMINGTON CASE AND THE RECALL ANNOUNCED THE DAY AFTER SETTLEMENT
- NTBK065 NOV. 13, 1978 SAMPLE FIRE CONTROLS OF MODEL 700 AND 600 ~RF~ TN TF~.~TTN(~:
- NTBK066 DEC. 13, 1878 TWO PROTOTYPE FIRE CONTROLS HAVE BEEN GIVEN TO MARKETING FOR USE WITH FOCUS PANELS...CURRENTLY WORKING TO DESIGN FIRE CONTROL THAT WILL BLOCK HAMMER AND SEAR....RESEARCH IS DEVELOPING A POSITION ON EXACTLY WHAT BOLT ACTION SAFTEYS SHOULD DO
- NTBK067 PAT~S TYPED VERSION OF 066 SEAR AND HAMMER SECTION
- NTBK068 PRODUCT SAFETY SUBCOMMITTEE MEETING JAN. 2, 1979:Remington believes 1% of all 700s CAN BE TRICKED (AROUND 20,000 DEFECTIVE GUNS) BUT DO NOT FEEL A RECALL IS APPROPRIATE FOR THE 700
- NTBOOK073 JAN. 24, 1979 PROGRAM HAS BEEN INSTITUTED TO DESIGN NEW FIRE CONTROLS FOR THE ENTIRE BOLT ACTION LINE THESE ARE ~IJRRENTLY ON PROTOTYPE RIFLES
- NTBOOK074 RESULTS OF FOCUS GROUP INDICATE THAT CONSUMER PREFERS BOLT ACTION SEPARATED FROM THE SAFETY
- NTBOOK075-079 MARKET EVALUATION OF A NEW BOLT ACTION CARBINE STYLE CENTER FIRE RIFLE: TOP PRIORITY IS ON THE BOLT LOCK DESIGN SEPARATE FROM THE SAFETY FURTHER INFORMATION SHOULD BE AVAILABLE BY JUNE MEETING ON DIRECTION RESEARCH WILL TAKE. EMPHASIS WILL BE ON THIS DESIGN AND IT WILL SLOW BUT NOT STOP.

NTBOOK081 PAT-S TYPED VERSION OF ABOVE

NTBOOK082 JUNE 20, 1979 LETTER TO REM.'S RECOMMENDED GUNSMITHS: IF YOU HAVE ANY GUNS RETURNED FOR SAFETY REASONS OR BEARING ON SHOOTER OR BYSTANDER'S SAFETY PLEASE SEND THE GUN TO US. DO NOT FIX YOUR SELF

NTBOOK083 REMINGTON WILL NOT ALLOW ANY ONE TO SELL THE 700 TRIGGER ASSEMBLY

NTBOOK084 PRODUCT SAFETY COMMITTED RECOMMENDS CONCENTRATING RESEARCH EFFORTS ON SEPARATING THE BOLT LOCK FROM SAFETY MECHANISM

NTBOOK085 TWO DESIGNS ARE IN PROCESS TO ALLOW THE OPERATION OF T-F ~AFTT~Y T~ FIJUNCTION IN ANY CONDITION

NTBOOK086 ***

NTBOOK087 MODEL 700 FIRE CONTROL IMPROVEMENTS-1982 INTRODUCTION

NTBOOK088 PSSC JAN. 22, 1980 REMINGTON BELIEVES ONLY .6% OF GUNS IN FT~TT,n WTT,T, F.C;R oR TRTCK

NTBOOK089 35 GUNS FAILED THE TRICK TEST, 38 RETURNED MODEL 700'S WERE FOUND TO FIRE OFF SAFE

NTBOOK090 ***

NTBOOK091 THE TWO FIRE CONTROL MECH. HAVE BEEN ASSEMBLED

NTBOOK092 TYPED VERSION OF 091

NTBOOK093 THE CHAIRMAN COMMENTED THAT BECAUSE OF THE PURPOSE OF THIS CHANGE IT IS IMPORTANT TO EMPHASIZE THIS ITEM. RESEARCH FELT THEY COULD HAVE A PROTO TYPE AVAILABLE IN MAY

NTBOOK094-095 IMPROVED MODEL 700 CONTROL...THE SAFETY TRIGGER AND INCEPTOR HAVE A COMMON PIVOT

NTBOOK096 PRODUCTION HAS BEGUN COST ESTIMATE WORK IS PROCEEDING ON THE SEPARATE DESIGNS

NTBOOK097 WORK PROCEEDING ON THREE DESIGNS--NONE OF THEM HAVE BEEN R~IT~W~n WTT~ PR~DIJCTION OR MARKETING

NTBOOK098 *****

NTBOOK099 CATEGORY I PROJECTS ARE INTENDED TO PUT REMINGTON IN A MORE SECURE POSITION WITH RESPECT TO PRODUCT LIABILITY THE 700 SAFETY HAS BECOME A CATEGORY I PROJECT

NTBOOK100 CATEGORY I CHART

NTBOOK101 MORE CAT. I CHARTS

NTBOOK102-103 : 099-101 TYPED

NTBOOK104 ***

NTBOOK105 PROPOSED BOLT LATCH MECHANISM WILL RESULT IN 3.00 DOLLAR INCREASE IN UNIT FACTORY COST

NTBOOK106 PATENT SEARCH WAS MADE ON BOLT LOCK AND REM. DOESN'T BELIEVE IT SHOULD BE A PROBLEM TO OBTAIN NEW PATENT

NTBOOK107 REVIEW OF COMPETITORS' DESIGNS-ONLY THE COLT SAUER HAS A BOLT LOCK WHICH CAN BE RELEASED INDEPENDENTLY OF SAFETY. RESEARCH ALSO REPORTED THAT ADDING THE BOLT LOCK INCREASES WOULD INCREASE FACTORY COST BY \$3.00. 1983 INTRODUCTION-MODEL 700 FIRE CONTROL DESIGN HAS BEEN COMPLETED. SUCH DESIGN HAS THE ADDED ADVANTAGE OF MAKING IT VERY DIFFICULT ADJUST THE SYSTEM TO A HAIR TRIGGER.

NTBOOK108 COMPARISON OF ALL AVAIL. RIFLES ON MARKET, CONTRASTING T-ETR nTFFERENT CHARACTERISTICS.

NTBOOK109 PG.1 OF REM.LETTER 1/9/81. MARTIN TO CAPELETTI. SAID IT WAS AGREED THAT REM. WOULD STAY WITH PRESENT DESIGN ON MODEL 700 BOLT LOCK.

NTBOOK110 PG.2 OF SAME LETTER. MODEL 788 SAFETY-PROPOSE TO PROCESS ENGR. TO ALTER PRESENT SAFETY LEVER TO 100DEGREE ANGLE.

NTBOOK111 CHRONOLOGICAL RECORD OF 700 BOLT LOCK TEST, DATED 1/23/81.

NTBOOK112 CHRONOLOGICAL RECORD OF 700 BOLT LOCK TEST, DATED 2/24/81.
NTBOOK113 CHRONOLOGICAL RECORD OF 700 BOLT LOCK TEST, DATED 2/25/81.

NTBOOK114 LTR-MARTIN TO CAMPBELL-2/3/81. PREPARE COST EST. FOR 700

WITH ALTERED PARTS, INCL. SAFETY LEVER, TRIGGER, HOUSING.

- NTBOOK115 2/11/81 MINUTE-RESEARCH SAID AN ALTERNATIVE 700 FIRE CONTROL DESIGN HAS BEEN COMPLETED FEATURING A BLOCKED TRIGGER AND SEAR.
- NTBOOK116 1981 PROJECT AUTHORIZATION FORECAST-ILION PLANT. M/700 FIRE CONTROL IMPROVEMENTS PROJECTED TO COST \$250K.
- NTBOOK117 SAME AS NTBOOK116.
- NTBOOK118 3/19/81 MEMO. PG.1 BOLT ACTION RIFLES COMPRISE 40% OF CENTER FILE RIFLE MARKET. M700 & 788 ACCOUNT FOR AT LEAST 1/3 OF ALL BOLT ACTION RIFLES SOLD. CONCERN IS WITH COMPETITOR, RUGER MODEL 77. PRICE IS MAIN FACTOR. M700 BDL IS MOST EXPENSIVE RIFLE IN ITS GROUP.
- NTBOOK119 3/19/81 MEMO. PG 2. GOAL IS TO PUT PRICE OF M700ADL IN LINE WITH RUGER, WHICH IS CHEAPER. 1ST STEP IS TO UPGRADE ADL THROUGH ADDT'L PRODUCT FEATURES, MOSTLY COSMETIC. RECOMMEND THEY DROP M700 CLASSIC.
- NTBOOK120 3/19/81 MEMO. PG.3. M700 BDL IS ~TOP OF THE LINE~. INCREASE ITS PERCEIVED VALUE BY ADDING GRIP CAP AND MOUNTS. MENTIONS DEVELOPMENT OF NEW MODEL SEVEN.
- NTBOOK121 3 / 1 9 / 8 1
MEMO. PG.4. SUMMARY OF PROPOSED CHANGES TO BE M~nE TN RnT,T ACTION LINE.
- NTBOOK122 3/19/81 MEMO. EXH.2A. RETAIL PRICE COMPARISON OF M700BDL, CLASSIC, ADL, AND RUGER M77. MODEL 700 BDL MOST EXPENSIVE.
- NTBOOK123 4/8/81 MEMO. RE: M700 BOLT LOCK MFG.COSTS. PE~C ESTIMATED HIGH COST. WAS SENT TO RESEARCH TO REVIEW. RESEARCH HAD THE LOWEST ESTIMATE.
- NTBOOK124 4/8/81 MEMO. EXH.1. MFG.COSTS AS ESTIMATED BY PE&C, R&D, ANT~ RE.ST CASE.
- NTBOOK125 4/9/81 MEMO. TO MARTIN FROM PATENT COUNSEL, STATING DRAFT PATENT APPLICATION FOR BOLT LATCH READY FOR MARTIN'S SIGNATURE.
- NTBOOK126 4/6/81-M700 NEW DESIGN BOLT LOCK EVALUATION SHEET.

NTBOOK127 4/8/81 MEMO.PG.1. M700 NEW DESIGN PARTS EVALUATION. ANALYSIS OF 5 PROTOTYPE M700 RIFLES WITH NEW BOLT LOCK SYSTEM. TEST WAS TO DETERMINE DEGREE OF RELIABILITY OF NEW DESIGN.

NTBOOK128 4/8/81 MEMO.PG.2. TEST OBSERVATIONS: ONE FIRE CONTROL HAD A SAFETY RELATED PROBLEM CONNECTED WITH THE TRIGGER BLOCK. THEN EACH RIFLE WAS EXAMINED SEPARATELY AFTER TEST COMPLETION.

NTBOOK129 4/8/81 MEMO.PG.3. DESCRIPTION OF TEST PROCEDURES.

NTBOOK130 4/8/81 MEMO.PG.4. DESCRIPTION OF PARTS TESTED: BOLT LOCK, WEIGHT & PULL ADJUSTMENT SCREW & SPRING, AND TRIGGER BLOCK. FUTURE WORK: ADD'L SAMPLES OF THE NON-DETENTED BOLT LOCK AND WEIGHT OF PULL ADJUSTMENT SCREW AND TRIGGER. BLOCK WILL HAVE TO BE EVALUATED.

NTBOOK131 4/15/81: QUALITY REASSESSMENT-MKT COMMENTS BY HOLMBERG. FINDINGS: REM. IS UNDER NO MKT-BASED PRESSURE TO UPGRADE. NO NEED TO INCREASE MFG COSTS ON THINGS THAT DON'T MATTER. ALSO SAID DECISION TO DO NOTHING IS BETTER THAN DECISION TO CHANGE CURRENT QUALITY STANDARDS. RECOMMENDATIONS: MAKE WOOD FINISH LOOK BETTER.

NTBOOK132 "GUN-E-SACK~ ARTICLE BY JON SUNDRA. RE: BOLT SAFETIES- HE IS OPPOSED TO TWO-POSITION SAFETIES WHICH LOCK THE BOLT HANDLE. SAYS THEY ARE NOT SAFE.

NTBOOK133 6/18/81 MEMO. M700 TRIGGER ASSEMBLY: PRESENT ASSEMBLY V. PROPOSED ASSEMBLY. PROPOSED ASSEMBLY CUTS OFF THE LOCKING ARM AND ADDS A COUNTERSINK TO ACTUATE THE NEW SAFETY PLUNGER WHEN THE ~SAFE~ IS ON. ANNUAL COST INCREASE: \$35,270 IN OPERATING COST. \$16,800 AFTER AMORTIZATION OF OPER. CHARGES OF \$16,500 WILL BE REALIZED WITH TOTAL CAP. REQ~D-\$20,600.

NTBOOK134 ESTIMATE #4305: EST. SAVINGS AND RETURN ON INVESTMENT. RETURN ON CAPITAL REQ'D: 83.7%

NTBOOK135 6/23/81 MEMO. ESTIMATE FIGURES \$.32 ADD'L COST PER GUN. RECOMMENDATION: REM SHOULD IMPROVE ITS FIRE CONTROL, SAID F.E.MARTIN.

NTBOOK136 SAME AS NTBOOK135.

NTBOOK137 6/24/81 MEMO. TEST RESULTS OF 4/8/81 INDICATE FIRE CONTROL

PERFORMANCE IS ACCEPTABLE. ORDERED MORE TESTING.

- NTBOOK138 SAME AS NTBOOK137.
- NTBOOK139 OPERATIONS CMTE. ROSTER. MEETING HELD 7/17/81.
- NTBOOK140 MINUTE#11 6/29/81. FIREARMS PROCESS DEVELOPMENT.
- NTBOOK141 MINUTE#11. PG.12. CENTER FIRE RIFLES-M700 ADL RESTYLE. FINAL DECISION TO COME OUT OF MARKETING BY JULY 1981.
- NTBOOK142 MINUTE#11 PG.13. NEED TO DEMONSTRATE IMPROVED FIRE CONTROL MECHANISMS FOR BOLT ACTION RIFLES.
- NTBOOK143 MINUTE#11 PG.25. FIREARMS NEW PRODUCT DEVELOPMENT STRATEGY FOR 81-82 YEAR.
- NTBOOK144 MINUTE#11 PG.26. UNDER NECESSITY HEADING REM. HAS ONE COMMITMENT: BOLT ACTION FIRE CONTROLS. OBJECTIVE: TO ENABLE THE SHOOTER TO LOAD/UNLOAD GUN WITH SAFETY SWITCH IN THE ~ON~ POSITION & PREVENT HIM FOR ~ADJUSTING~ HIMSELF INTO TROUBLE. 2 WAYS TO DO THIS: 1) MAKE PRESENT FIRE CONTROL MORE TAMPER PROOF, 2) DESIGN NEW FIRE CONTROL. WORKED WITH PRODUCTION, LEGAL DEPT, & DUPONT ON THIS.
- NTBOOK145 MINUTE#11 PG.27. NEW FIRE CONTROL SELECTED. KEY FEATURE: SAFETY THAT BLOCKS THE SEAR & TRIGGER. GOAL: COMPLETE REDESIGN OF M700 AND TO EXTEND THAT DESIGN TO M788 AND S80 TRIGGERS.
- NTBOOK146 ***
- NTBOOK147 MINUTE#11 RECAP.
- NTBOOK148 7/16/81 MEMO. MARTIN TO SR. PATENT COUNSEL RE: BOLT LATCH RA-0247. REVISED DRAFT PATENT APPLICATION FOR MARTIN-S SIGNATURE.
- NTBOOK149 CONFIDENTIAL MINUTE#12 DATED 7/27/81 RE:M700 BOLT LOCK. CHRMAN ASKED P&R DEVELOP AN IMPLEMENTATION SCHEDULE FOR ELIMINATING THE BOLT LOCK FROM M700 SAFETY ASSEMBLY. SCHEDULE TO BE BASED ON A FLYING TRANSITION.
- NTBOOK150 SAME AS NTBOOK149.

NTBOOK151 CHRONOLOGICAL RECORD OF TESTING M700 TRIGGER BLOCK. 4/8/91-9/1/81.

NTBOOK152 SAME AS NTBOOK151.

NTBOOK153 CONFID. MINUTE#18 DATED 10/15/81 RE: M700 BOLT LOCK. PLANS FINALIZED TO DELETE BOLT LOCK FROM M700 FIRE CONTROL. MARKETING NOTED REASON TO PHASE OUT IS TO SIMPLIFY UNLOADING. THIS IS A CHANGE IN PROCESS **ONLY**, SO IT WON'T AFFECT GUNS CURRENTLY IN WAREHOUSE OR GUNS RECEIVED FOR REPAIR.

NTBOOK154 SAME AS NTBOOK153.

NTBOOK155 SAME AS NTBOOK153.

NTBOOK156 12/7/81 MINUTE#8 PG.2. POLICY FOR DEALING WITH BOLT LOCKS ON M700 FIREARMS RETURNED FOR REPAIRS. THE BOLT LOCK IS NOT A SAFETY PROBLEM, SAID PRODUCT SAFETY CMTE.

NTBOOK157 SAME AS NTBOOK156.

NTBOOK158 CONFID. MEMO DATED 12/21/81 RE:BOLT ACTION PROGRAM, 1984 INTRODUCTION-FIRE CONTROL REVISION & REDESIGN.

NTBOOK159 CONFID. MINUTE#4-1982, RE:M700 BOLT LOCK DELETION. 10,000 OLD STYLE SAFETY LEVERS HAVE BEEN MODIFIED TO A SHORTER DIMENSION. ANOTHER 10,000 DONE BY FEB. CHRMAN SAYS - FURTHER DISCUSSION REQ'D TO DEAL WITH TRANSITION AND SUBSEQUENT CUSTOMER REPAIRS.

NTBOOK160 MEMO DATED 1/4/82 RE:BOLT ACTION SAFETY W/SEAR & TRIGGER BLOCKS. SR. PATENT COUNSEL SAID OK TO GO AHEAD WITH PATENT FOR MARTIN.

NTBOOK161 CONFIDEMO DATED 1/15/82 RE: IDEAS TO SUPPORT NEW BOLT ACTION LINE. NEGATIVE FEATURE: TRIGGER ADJUSTMENT INSECURE & WEAK.

NTBOOK162 SAME AS NTBOOK161.

NTBOOK163 NEW PRODUCT DEV. MEMO DATED 1/82. RESEARCH TESTING NEW TR T (~.~. ER r) E .S T ('N

NTBOOK164 FIREARMS: NEW PRDCT DEVELOPMENT: FIVE MODEL 700 FIRE C-NTR-T,S ARE TN TE.ST LABB F~R TING OF NEW TRIGGER DESIGN

NTBOOK165 JAN 1982 NEW PRODUCT DEVELOPMENT: FIVE M 700 FIRE CONTROLS ARE IN THE TEST LAB FOR EVALUATION -- NEW TRIGGER DESIGN WHICH DOES NOT REQUIRE CONNECTOR

NTBOOK166 RESEARCH DEPT: REASONS FOR REMOVAL OF CONNECTER: ELININATE A PART, INSURE MORE POSITIVE LIFT, MAINTAIN PROPER CLEARANCE

NTBOOK167 FEB 1982 RESEARCH DEPT: 5 FIRE CONTROLS ARE IN TESTING, SAMPLE CONTROLS ARE COMPLETE WITHOUT A CONNECTOR, TWO MODEL 7 NEW GENERATION BOLT ACTION RIFLES ARE NOW COMPLETE

NTBOOK168 FEB 24, 1982 RESEARCH: AS OF FEB 26 ALL NEW TRIGGER ASSEMBLIES WILL HAVE BOLT REMOVED....ALL MODEL 700s ARE RETURNED SHOULD BE TAGGED IF THEY HAVE A SAFETY WITH A BOLT LOCK

NTBOOK169-171 LETTER FR: CAPLETI TO: WORKMAN RE: BOLT ACTION RIFLE MARKETING STRATEGY

NTBOOK172 LETTER APR. 30, '82 FR: CAPELTTI TO: WORKMAN RE: REPLACEMENT FOR M 700 LIST PROPOSED SPECS FOR BOLT ACTION RIFLE DEVELOPMENT

NTBOOK173 LIST OF MISFIRE OCCURRENCES WITH DIFFERENT LUBRICANTS ~WE FELT THIS INFORMATION WAS WORTH WHILE TO NOTE~ THE WRITING OF THE OWNERS MANUAL ON CLEANING AND LUBRICATING IS PRESENTLY IN PROGRESS BOTH LEGAL AND MARKETING WILL BE CONTACTED FOR INPUT AND APPROVAL

NTBOOK174 LETTER APR 30 '82 FR: CAPELETTI TO: WORKMAN RE: BOLT ACTION RIFLE DEVLP-REPLACEMENT FOR 700: PROPOSED SPECS FOR SAFETY AND FIRE CONTROL

NTBOOK175 PAT~S TYED VERSION OF 174

NTBOOK176 MORE SPECS FOR NEW/REPLACEMENT 700

NTBOOK177 MAY 13, 1982 RECOMMENDED GUNSMITH BULLETIN: CHANGE IN OPERATION: DUE TO DECREASE IN CUSTOMER INTEREST NEW 700s WILL LACK BOLT LOCK FEATURE, THIS ALLOWS LOADING OR UNLOADING IN "SII OF "F" FEATURE

NTBOOK178 MAY 19, '82 700 TRIGGER PULL SPECS: CURRENT STANDARDS AND PROPOSED CHANGES TO 700 TRIGGER ASSEMBLY, ASSEMBLY IS

ADJUSTED WITH 10 POWER OPTICAL COMPARATOR, CHROME PLATED SEAR SAFETY CAMS...IMPROVING ITS PLATING PROPERTIES

- NTBOOK179 MINUTE 10 MAY 19, '82 M 700 TRIGGER PULL SPECS NEW GAGE FOR MEASUREMENT OF SEAR SAFETY CLEARANCE, NEW LUBRICANT, IMPROVED CHROME BOLT LOCK DELETION: BOLT LOCK HAS BEEN REMOVED FROM CURRENT PRODUCTION MODEL 700s
- NTBOOK180 MINUTE 12 JUNE 30, 1982 FIRE CONTROL LUBRICATION EVALUATION: EVAN RITCHIE SR. SUPERVISOR OF ILLION RESEARCH, TESTING AND MEASUREMENT LAB DISCUSSES PROBLEM WITH LUBRICATION AND CLEANING OF M 700 DISCUSSES NEW RECOMMENDED LUBRICANTS
- NTBOOK181 JUN. 30, 1982: ~IT IS CLEAR WE HAVE A PROBLEM IN FIREARMS DUE TO IMPROPER CLEANING AND LUBRICATING." FURTHER EXPLANATION TYPED BY PAT
- NTBOOK182 9/10/82 FR: WILLIAMS TO: HENNINGS RE: M/700 TRIGGER/SEAR BLOCK EVAL. SAFETY ASSEMBLY BLOCKS TRIGGER & SEAR SO FIRING PIN WON'T FALL WHEN TRIGGER IS HELD BACK WHILE SAFETY SWITCH IS PUSHED FROM SAFE TO FIRE POSITION. BOTH NEW DESIGN SAFETY AND CONTROL WORKED NORMALLY.
- NTBOOK183 9/10/82 REPORT NO.812441 NEW DESIGN M/700 TRIGGER/SEAR BLOCK EVAL. PREP. BY: WILLIAMS. REC'VD BY: HENNINGS, RITCHIE.
- NTBOOK184 REPORT NO.812441-TEST ~ MEASUREMENT LAB REPORT. PART TESTED: TRIGGER ASSEMBLY (5 GUNS TESTED, 2500 ROUNDS PER GUN).
- NTBOOK185 MINUTE #16 9/22/82, PG.24. RE: NEW BOLT ACTION RIFLE. 3 CONTINGENCY DESIGNS DESIGNS ARE BEING CONSIDERED AS A REPLACEMENT FOR THE 700.
- NTBOOK186 MINUTE #16, PG.25. ~IT IS DESIRABLE THAT THE SAFETY BLOCK THE TRIGGER AS WELL AS THE FIRING PIN, FOR THE Ann~n MAR~IN OF SAFETY AGAINST ACCIDENTAL DISCHARGE."
- NTBOOK187 M/700 ADL PRODUCT/MARKETING REVITALIZATION RESEARCH REPORT, DATED 6/82.
- NTBOOK188 SAME REPORT AS NTBOOK187, TABLE OF CONTENTS PAGE.
- NTBOOK189 PURPOSE OF RESEARCH WAS CONCERN OVER REM~S MKT SHARE LOSS OF ITS M/700 ADL BOLT ACTION CENTER RIFLE TO THE RUGER

M/77.

- NTBOOK190 MINUTE #16 9/22/82-MODEL REQ~TS-NEW BOLT ACTION RIFLE-KEY ELEMENTS RE:SAFETY ARE BLOCK TRIGGER AND FIRING PIN & INDEPENDENT BOLT LOCK.
- NTBOOK191 FRED MARTIN~S INVENTION REPORT NO.IT-300. SUMMARY OF INVENTION-TRIGGER BLOCK PLUNGER. THIS SYSTEM WAS DESIGNED TO ELIMINATE UNNECESSARY TRIGGER MOVEMENT, AND MAY BE ADAPTED TO REM'S PRESENT LINE.
- NTBOOK192 COMPLAINT CODE NUMBERS: 107-JARS OFF OR FIRES CLOSING. 108-FIRES ON SAFE OR SAFE DOESN~T HOLD. 109-FIRES WHEN SAFE IS PUSHED OFF. 110-FOLLOWS DOWN OR HAMMER FALLS.
- NTBOOK193 MARTIN~S REPORT TO PATENT DEPT. DATED 12/7/82 RE: FIRE CONTROL FOR BOLT ACTION RIFLES HAVING A TRIGGER AND SEAR BLOCK. REASON FOR DEVELOPMENT: "TO ELIMINATE UNWANTED TRIGGER MOVEMENT~. PROBLEM W/PRESENT FIRE CONTROLS:~UNWANTED ~ UNNECESSARY TRIGGER MOVEMENT WHEN THE .SAFETY IS IN THE ON SAFE POSITION".
- NTBOOK194 SAME AS NTBOOK193.
- NTBOOK195 MINUTE #20 12/15/82 PG.8. RE:M/700 BDL REPLACEMENT. NEW BOLT ACTION RIFLE BEING INTRODUCED TO REPLACE THE BDL.
- NTBOOK196 MINUTE #20 12/15/82 PG.8. REM/700 BDL REPLACEMENT. NEW INTRODUCTION OF BOLT ACTION CENTER FIRE RIFLE DEVELOPMENT INCLUDES REDUNDANT (DOUBLE LOCK) SAFETY, FULLY ADJUSTABLE FTRE (~)NTRnT.
- NTBOOK197 LIST OF AVAIL. TYPE RIFLES IN 1982,INCLUDING PRICE, MKT. SHARE.
- NTBOOK198 1/83 REM. REPORT ON QUALITY ATTRIBUTES IN BOLT ACTION CENTER FIRE RIFLES.
- NTBOOK199 1/83 REM. REPORT PG.17. RE:SAFETY. DESIRE IS FOR A SAFETY THAT IS QUIET. ALSO A SAFETY THAT IS SOLID, YET SMOOTH IN ACTION, W/O BEING SUBJECT TO ACCIDENTAL SHIFTING.
- NTBOOK200 1/83 REM. REPORT, PG.18. REM. PRAISED AS HAVING THE BEST TRIGGERS. CONSUMERS LIKE THE THREE-POSITION SAFETY, B/C THEY CAN CLEAR A WEAPON IN THE "ON" POSITION.
- NTBOOK201 "GUNS & AMMO" MAGAZINE COVER, 1/83.

NTBOOK202 "GUN-E-SACK" ARTICLE BY JON SUNDRA. ARTICLE ABOUT M/70 WINCHESTERS WITH 3-POSITION SAFETIES.

NTBOOK203 SAME ARTICLE AS NTBOOK202, SECOND PAGE. AUTHOR DISFAVORED TWO-POSITION SAFETIES. ARTICLE SAID REM.M/700 WAS WISELY MODIFIED TO A THREE-POSITION SAFETY TO ALLOW THE ACTION TO BE OPERATED W/SAFETY ENGAGED. AUTHOR SAID HE HOPED ALL RIFLES WOULD FOLLOW REM'S LEAD.

NTBOOK204 3/83 CONFID. MEMO. NEW M/700 INTRO IN 1986. WILL INCLUDE A REDUNDANT SAFETY SWITCH, AND A FULLY ADJUSTABLE FIRE CONTROL THAT DOES NOT REQUIRE REMOVAL FROM THE STOCK.

NTBOOK205 9/28/83 THIRD QTR.PROGRESS REPORT. REM. R&D-FIREARMS.

NTBOOK206 9/28/83 REPORT, PG.6. RE: BOLT ACTION RIFLE DEVELOPMENT. M/700 LIGHTWT. DRAWING TO BE COMPLETED BY 10/1/83. M/700 BDL REPLACEMENT WILL INCLUDE A FULLY ADJUSTABLE FIRE CONTROL W/REDUNDANT SAFETY SWITCHES.

NTBOOK207 MEMO: MURPHY TO RAWSON, DATED 12/9/83. RE: NEW BOLT A(-TT~N RTFT,r~ N(~FRNF) W/~Po.STTioN .SAFETY.

NTBOOK208 USPATENT #4,445,292. 5/1/84, FRED MARTIN, INVENTOR. BOLT ACTION FIREARM HAS AN IMPROVED BOLT LATCH MECHANISM WHICH IS OPERABLE INDEPENDENT OF A SAFETY MECHANISM. LATCH LOCKS THE BOLT IN A CLOSED POSITION AUTOMATICALLY WHEN THE FIRING PIN IS COCKED, AND RELEASES THE BOLT UPON FIRING.

NTBOOK209 PG.2 OF PATENT #4,445,292. DRAWING.

NTBOOK210 SAME AS NTBOOK209.

NTBOOK211 DETAIL OF BOLT-ACTION FIREARM IN PATENT #4,445,292. SAID IN A BOLT-ACTION FIREARM INTENDED FOR HUNTING USE, "IT IS DESIRABLE TO PROVIDE BOTH A SAFETY, AND A BOLT LATCH FOR SECURING THE BOLT LOCKED IN A CLOSED POSITION." THE USER SHOULD BE "ENABLED TO OPEN THE BOLT READILY AND SAFELY F~R T~rl~AnTN~

NTBOOK212 CONTINUATION OF NTBOOK211.

NTBOOK213 CONTINUATION OF NTBOOK211.

NTBOOK214 QTRLY REPORT 9/84. RE:NEW BOLT ACTION RIFLE. M/700 REPLACEMENT DUE FOR 1988. "PREFERRED" DESIGN HAS BEEN

SELECTED BY MARKETING & RESEARCH.

- NTBOOK215 11/9/84 MEMO. TO:COLEMAN FROM:BOWER. RE: **NEW BOLT ACTION RIFLE(1988)**. TECHNICAL IMPROVEMENTS INCLUDE: SIMPLIFIED FIRE CONTROL CONTAINING PRESET ENGAGEMENT & OVERTRAVEL, CUSTOMER-ADJUSTABLE TRIGGER PULL TO A SAFE LOWER LIMIT, STEEL TRIGGER AND SEAR. ALSO A TANG MOUNTED SAFETY THAT BLOCKS BOTH THE TRIGGER AND SEAR, AND A BOLT LOCK WHICH ATT~W.S T~E ~T~.S~MER TO UNLOAD THE GUN W/THE SAFETY ON.
- NTBOOK216 GEDIMAN RESEARCH GROUP REPORT ON NEW BOLT ACTION CENTER FTRE RTFLE DEVELOPMENT RESEARCH, DATED 4/85.
- NTBOOK217 SAME REPORT AS NTBOOK216, TABLE OF CONTENTS.
- NTBOOK218 SAME REPORT AS NTBOOK216,PG.8. SUMMARY OF RESULTS. THOSE TESTED PREFER A RIFLE W/ A BOLT LOCK OVER ONE W/O. MOST PREFER THE ONE WHICH LOCKS ON "SAFE" ONLY. REPORT SAID EDUCATION IS NEEDED TO ENSURE CUSTOMER FAMILIARITY AND ~OMFORT W/ROT.T LOCK.
- NTBOOK219 SAME REPORT AS NTBOOK216, PG.25. ADVANTAGES TO HAVING A BOLT LOCK: PREVENTS ACCIDENTAL SNAGGING ON A TWIG & LIFTING THE BOLT. IT PREVENTS THE BOLT FROM OPENING AND DIRT FROM GETTING INTO IT. KIDS CANT OPEN THE BOLT AND LOAD THE GUN.
- NTBOOK220 SAME REPORT AS NTBOOK216, PG.26. THOSE WHO PREFERRED NO LOCK AT ALL PROBABLY WERE NOT EXPLAINED THE PURPOSE OF THE BOLT LOCK MECHANISMS.
- NTBOOK221 SAME REPORT AS NTBOOK216, PG.27. MOST PREFER A BOLT LOCK THAT LOCKS ON "SAFE" ONLY.
- NTBOOK222 SAME REPORT AS NTBOOK216, PG.28. MANY PREFER A BOLT LOCK THAT LOCKS IN BOTH POSITIONS, MAINLY FOR SAFETY REASONS. CONSUMER COGNITION OF BOLT LOCK RELEASE MECHANISM IS WEAK. CUSTOMER EDUCATION IS REQUIRED IN THIS AREA. CONSUMERS NEED TO BE MADE AWARE OF **THE FACT THAT THE BOLT LOCK CAN BE RELEASED AT ANY TIME, W/O ADJUSTING THE POSITION OF THE SAFETY OR SQUEEZING THE TRIGGER.**
- NTBOOK223 SAME REPORT AS NTBOOK216, PG.29. BOLT LOCK RELEASE LOCATED RIGHT ON THE BOLT PLUG IS PREFERRED OVER A RELEASE LOCATED ON THE SIDE OF THE RECEIVER. CONSUMERS PREFER THE SHROUD LOCATION FOR CONVENIENCE AND EASE OF

ACCESS.

- NTBOOK224 SAME REPORT AS NTBOOK216, PG.30. CONTINUATION OF NTBOOK223.
- NTBOOK225 SAME REPORT AS NTBOOK216, PG.40. CONSUMERS PREFER THE .STANDARD BDL SAFETY 3:1 OVER THE TANG MOUNTED SAFETY.
- NTBOOK226 SAME REPORT AS NTBOOK216, PG.41. SECOND ONLY TO CONVENIENCE WAS THE SAFETY ISSUE. PERSONAL SAFETY IS MORE A FUNCTION OF THE DESIGN OF MECHANISM THAN OF ITS LOCATION. SOME CONSUMERS SAID A TANG SAFETY IS MORE LIKELY TO BE ACCIDENTALLY DISENGAGED BY THE CARRIER'S HAND, B/C IT IS OFTEN CARRIED BY THE PISTOL GRIP.
- NTBOOK227 SAME REPORT AS NTBOOK216, PG.42. ARGUMENTS FOR THE TANG MOUNTED SAFETY: CONVENIENCE, SAFETY, SMALL SIZE, QUIET.
- NTBOOK228 SAME REPORT AS NTBOOK216. CONTINUATION OF NTBOOK227.
- NTBOOK229 SAME REPORT AS NTBOOK216-APPENDIX.
- NTBOOK230 SAME REPORT AS NTBOOK216, FEATURE PREFERENCES: PREFER A BOLT LOCK; BOLT PLUG AS BEST LOCATION FOR BOLT LOCK RELEASE.
- NTBOOK231 SAME REPORT AS NTBOOK216. CONTINUATION OF PREFERENCES STARTED IN NTBOOK230. PREFERRED BOLT RELEASE TO BE LOCATED ON SIDE OF RECEIVER; BOLT PLUG STYLE-FULLY ENCLOSED; SAFETY LOCATION-STANDARD BDL PREFERRED OVER TANG-MOUNTED.
- NTBOOK232 SAME REPORT AS NTBOOK216. CONTINUATION OF APPENDIX AS IN NTBOOK229. DEMOGRAPHICS OF SAMPLE.
- NTBOOK233 4/16/85 MEMO. TO:BOWEN FROM:MURPHY. RE: MONTHLY REPORT 4/85. NEW BOLT ACTION RIFLE. TEST RESULTS OF FIRST PHASE DID NOT GO WELL. CONTINGENCY DESIGN BEING IMPLEMENTED BOLT LOCK ADDED, SAFETY RELOCATED TO THE TANG, FIRE CONTROL ADJUSTMENT RELOCATED.
- NTBOOK234 FIREARMS BUSINESS TEAM MEETING, 5/31/85. RE:NEW BOLT ACTION RIFLE. TECHNICAL IMPROVEMENTS INCLUDE: **IMPROVED** FIRE CONTROL, A SAFETY THAT BLOCKS BOTH TRIGGER AND SEAR, A BOLT LOCK WHICH ALLOWS THE CUSTOMER TO UNLOAD THE GUN W/SAFETY ON.

NTBOOK235 5/85 RESEARCH DEPT. MEMO RE: NEW BOLT ACTION RIFLE. DEVELOPMENT OF THE EXPOSED COMPONENT FIRE CONTROL HAS BEEN STOPPED IN FAVOR OF A MODIFIED M/700 DESIGN.

NTBOOK236 SAME AS NTBOOK234.

NTBOOK237 7/15/85 MEMO RE:TRIGGER PULL ADJUSTMENT. OBJECTIVE IS TO ADJUST THE TRIGGER WEIGHT OF PULL FROM A SAFE LOWER LIMIT TO A REAS. UPPER LIMIT W/O REMOVING THE BARRELLED ACTION FROM THE STOCK. GOALS: MUST NOT ADVERSELY AFFECT FIREARM SAFETY.

NTBOOK238 7/15/85 MEMO RE: NBAR FIRE CONTROL HOUSING & SAFETY. OBJECTIVE: TO PROVIDE A POSITIVELY DETENTED TRIGGER BLOCK, SEAR BLOCK SAFETY IN A CUTAWAY HOUSING TO BE USED IN THE NEW BOLT ACTION RIFLE. STAKE:ENHANCED FIREARM SAFETY.

NTBOOK239 7/15/85 MEMO.RE:NBAR BOLT LOCK. OBJECTIVE:TO PROVIDE AN INDEPENDENT BOLT LOCK TO POSITIVELY LOCK THE BOLT IN BOTH THE SAFE AND FIRE.POSITIONS. BOLT LOCK SHOULD BE UNLOCKED AUTOMATICALLY ON FIRING. ALSO, A MEANS SHOULD BE PROVIDED TO OVERRIDE THE BOLT LOCK ONLY WHEN THE RIFLE IS ON "SAFE". GOALS: READILY IDENTIFIED, EASILY OPERATED IN ALL SHOOTING CONDITIONS, MUST NOT ADVERSELY AFFECT FIREARM SAFETY. STAKE: ENHANCED FIREARM SAFETY & REDUCED LIABILITY.

NTBOOK240 2/12/86 MEMO. TO:MURPHY FROM:MARTIN. RE: NEW BOLT ACTION RIFLE. FIVE MODEL GUNS READY FOR TESTING.

NTBOOK241 3/86 REM. REPORT. NEW BOLT ACTION CENTER FIRE RIFLE DESIGN FEATURE DEVELOPMENT RESEARCH.(NO MENTION OF SAFETY IN REPORT).

NTBOOK242 3/86 REM. REPORT-TABLE OF CONTENTS.

NTBOOK243 3/14/86 MEMO TO:BOWER FROM:MURPHY. QTRLY REPORT 3/86. NBAR REPLACEMENT FOR M/700 BDL SET FOR INTRODUCTION IN 1988. TECHNICAL IMPROVEMENTS INCLUDE A SAFETY TO BLOCK BOTH THE SEAR & THE TRIGGER.

NTBOOK244 CONFID. MEMO BY BAUMAN/MURPHY/MARTIN. RE:NBAR. BAUMAN IS TEAM LEADER ON PROJECT. MEETING OF 10/31 W/LITIGATION DEPT. WAS USEFUL.

NTBOOK245 8/26/86 MEMO. TO:COLEMAN FROM:BOWER. RE:NEW PRODUCT

DEVELOPMENT. MONTHLY REPORT 8/86. NBAR: BASED ON 2000 ROUNDS OF ENDURANCE AND 3 FIELD FUNCTION TESTS, PROBLEMS REMAIN W/BOLT LOCK. NEW BOLT LOCK COMPONENTS SHOULD BE OUT OF THE MODEL SHOP BY 8/27.

NTBOOK246 CONFID. MEMO. RE:NBAR. NBAR PERFORMANCE TO DATE HAS NOT BEEN SATISFACTORY. 6 ADDT'L RIFLES ARE BEING ASSEMBLED FOR TESTING. IF THEY PASS A FIELD FUNCTION TEST W/O A MALFUNCTION, DESIGN ACCEPTANCE TESTING WILL BEGIN.

NTBOOK247 SAME AS NTBOOK244.

NTBOOK248 CONFID. MEMO. RE: NEW PRODUCTS-1990 AND BEYOND. NBAR-FABRICATION OF PROTOTYPE PARTS NECESSARY FOR THE NEXT PHASE OF TESTING HAS BEGUN.

NTBOOK249 9/16/87 MEMO. NBAR SPECIFICATION LIST.

NTBOOK250 12/29/88 MEMO TO:COLEMAN FROM:BOSQUET. RE:NEW PRODUCTS DEVELOPMENT MONTHLY REPORT.

NTBOOK251 SAME REPORT AS NTBOOK250, PG.16. RE:NBAR. LISTS FEATURES IN ORDER OF PRIORITY. 2ND ON LIST WAS IMPROVED FIRE CONTROL. 3RD ON LIST WAS BOLT LOCK W/OVERRIDE.

NTBOOK252 PRODUCT REDESIGN CRITERIA-NBAR. 3/14/89. METALWORK & WOODWORK.

NTBOOK253 RESULTS OF 7/18/89 NEW PRODUCTS PRESENTATION MEETING. RE:NBAR- SUGGESTED NAME-M792. FORCE TO PULL TRIGGER MUST NOT EXCEED 4 POUNDS. ITEMS UNDER CURRENT DEVELOPMENT INCLUDE: IMPROVED FIRE CONTROL-TO MEET SPECS SET FORTH BY R&D, MKTN ' G, & LEGAL DEPTS .

NTBOOK254 9 / 2 9 / 8 9
MONTHLY REPORT-NBAR. KEN ROWLANDS IS STILL WORKING ON FIRE CONTROL. JIM HUTTON, OUT OF THE LEGAL DEPT. HAS OFFERED DIRECTION FOR FIRE CONTROL DEVELOPMENT.

NTBOOK255 FRED MARTIN'S MONTHLY REPORT 1/91. RE:NBAR-GOAL: TO PRESENT PLAN TO MARKETING TO ~'CATCH UPII W/COMPETITION. THIS CAN BE DONE "IF" THERE IS NO "CHANGING OF MINDS" (SPECS) ONCE THEY ARE ACCEPTED & THE PROGRAM STARTED.

NTBOOK2 5 6 SAME AS NTBOOK2 4 4 .

NTBOOK2 5 7 SAME AS NTBOOK2 5 4 .

NTBOOK258 1993/94 NEW PRODUCT INTRODUCTIONS. NBAR-STAINLESS STEEL MODEL PROPOSED TO BE OFFERED IN 1993. 1994-NBAR-(ITS 2ND YEAR OF PRODUCTION), NBAR WILL REPLACE ALL M/700 BDLS. BALANCE OF THE BDL LINE LINE WILL BE REPLACED W/A NON-STAINLESS STEEL VERSION OF THE NBAR. M/700 ADL TO REMAIN IN THE PRODUCT LINE.

NTBOOK259 CONFID. MEMO. NBAR MAY BE CLOSER TO THE 1ST QTR OF 1995.

NTBOOK260 1994 AND BEYOND DEVELOPMENT SCHEDULE. RE:NBAR-SCHEDULED FOR 1995 INTRODUCTION, NOT 1994.

NTBOOK261 PRODUCT SAFETY SUBCMTE POSITION ON BOLT LOCK: 7/18/79--ILION-S GOAL IS TO REDESIGN BOLT LOCK OF M/700, AND SEPARATING ITS OPERATION FROM THE MECHANISM OF THE SAFETY. OBJECTIVE: ABILITY TO UNLOAD THE RIFLE W/SAFETY LEVER IN ~ON~ POSITION. 12/7/81--PROCEDURE TO BE FOLLOWED IN REPAIRING FIREARMS W/BOLT LOCKS. ABSENCE OF BOLT LOCK IS NOT A SAFETY PROBLEM, SO WAS NOT A MATTER FOR THE PRODUCT SAFETY SUBCMTE.

NTBOOK262 HISTORY OF TRIGGER ADJUSTMENT INSTRUCTIONS.

NTBOOK263 SAME AS NTBOOK262. FROM 1962 TO 1972, INSTRUCTIONS ALLOWED ADJUSTMENT OF TRIGGER. IN 4/1973, INSTRUCTIONS SAID OWNER ADJUSTMENT OF TRIGGER IS NOT RECOMMENDED. IN 9/1980, INSTRUCTIONS SAY NEVER MAKE ADJUSTMENTS TO rT'R T - R

NTBOOK264 OPERATIONS CMTE-ILION DIVISION 3/21/75. M/700 SAFETY KNOWN/SUSPECTED AS A PRODUCT DEFICIENCY. 3/18/76: M/700 SAFETY LEVER WAS A KNOWN/SUSPECTED PRODUCT DEFICIENCY.

NTBOOK265 M/700 YEARLY SALES 1962-1988. TOTAL SOLD:2,338,459.

NTBOOK266 SAFETY RECOMMENDATIONS OF REM. RESEARCH DEPT.

NTBOOK267 OPERATIONS CMTE-ILION DIVISION. M/700 FIRE CONTROL IMPROVEMENT: MINUTE#17, PG.17, 10/18/79. MINUTE#20, PG.15, 12/12/79. MINUTE#3, PG.9, 2/20/80.

NTBOOK268 REM. OWNERS' MANUAL SUMMARY OF WARNINGS & INSTRUCTIONS. (CHART)

NTBOOK269 CONTINUATION OF NTBOOK268.

NTBOOK270 CONTINUATION OF NTBOOK268.

NTBOOK271 CONTINUATION OF NTBOOK268.

NTBOOK272 M/700 SAFETY PERFORMANCE CHECK MATERIALS. ~TRIGGER PULL ADJUSTMENT ON ANY FIELD RIFLE SHOULD NEVER BE ADJUSTED BELOW THREE POUNDS.~ "...TARGET RIFLE SHOULD NEVER BE ADJUSTED BELOW TWO POUNDS."

NTBOOK273 SAME AS NTBOOK272.

NTBOOK274 2/72-OWNERS~ MANUAL INSTRUCTED OWNERS HOW TO ADJUST PULL OF TRIGGER. 4/72 OWNER'S MANUAL SAID ADJUSTMENT OF WEIGHT PITT,T, T~ TIT~'~S.S THAN THREE POUNDS IS NOT RECOMMENDED.

NTBOOK275 9/80 OWNER'S MANUAL. INSTRUCTS OWNER TO NEVER MAKE An~TTT~sTMT~NT~s T~ THE TRIGGER.

NTBOOK276 9/80 OWNER'S MANUAL INSTUCTS OWNER TO CLEAN ACTION W/GUN CLEANING SOLVENT AND DRY W/ CLOTH. APPLY A THIN COAT OF OIL TO PREVENT RUST.

NTBOOK277 12/82 OWNER'S MANUAL INSTRUCTS OWNER TO NEVER PULL THE TRIGGER WHEN THE SAFETY SWITCH IS IN THE "S" POSITION.

NTBOOK278 6/86 OWNER~S MANUAL INSTRUCTS OWNERS TO NEVER MAKE ADJUSTMENTS TO ANY PARTS OF A FIREARM.

NTBOOK279 6/86 OWNER~S MANUAL SAYS TO CLEAN RECEIVER & TRIGGER ASSEMBLY ONLY W/REM. OIL.

NTBBOK280 CHRONOLOGY OF LUBRICATION INSTRUCTION. 2/72-CLEAN BOLT & ACTION IN SOLVENT & WIPE CLEAN. DON~T USE OIL TO CLEAN M/700. 9/80-CLEAN W/ GUN CLEANING SOLVENT. APPLY A THIN COAT OF OIL TO PREVENT RUST. 12/82-CLEAN ONLY W/ DUPONT TEFLON WET LUBRICANT.

NTBOOK281 CONTINUATION OF NTBOOK280. 6/86-THIN COAT OF REM. OIL SHOULD BE APPLIED TO PREVENT RUSTING. CLEAN RECEIVER & TRIGGER ASSEMBLY W/REM. OIL. NON-RECOMMENDED LUBRICANT COULD CAUSE PROBLEMS POSSIBLY LEADING TO ACCIDENTAL FIRING.

NTBOOK287 REM. RECOGNIZED CAUSES OF M/700 MISFIRES: (1) OIL/DIRT IN FIRE CONTROL, (2) ADJUSTMENT OF ENGAGEMENT, OVERTRAVEL OR