

BOOK # 236

Issued to M. H. Wier
on 2/21 (9/10/43)
To be returned on request.

236

**THIS BOOK MICROFILMED
AS COMPLETE
MAKE NO ADDITIONAL ENTRIES**

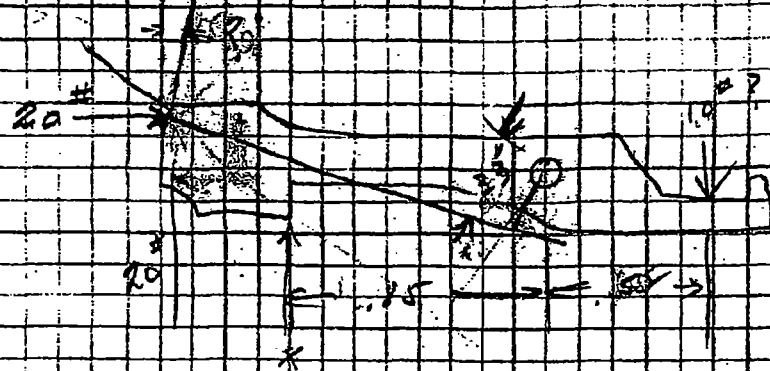
**RULES FOR RECORDING
EXPERIMENTS**

1. Original records are to be in ink.
2. Each notebook page whereon there is recorded a completed experiment should be signed and dated by the experimenter in the space provided.
3. Each notebook page containing a completed experiment should be read and signed by a witness who will place his signature and the date in the space provided. The witness is to be one who understands the purpose of the experiment and the result obtained but who is not likely to be the inventor or a co-inventor. Preferably the witness signs on the same day as the experimenter and in any event as soon thereafter as possible.
4. Where entries on a single experiment do not completely fill a page, the remainder of the blank page should be ruled out. Where the record of the experiment extends over several pages which are not consecutive, proper cross-references should be inserted.
5. The bound notebook is to be preserved intact. In no case should any page or part of a page be removed.
6. No erasures are to occur in the record. Any corrections or changes should be made by cancellation, leaving the original entry legible.
7. The same rules as to signing, dating and witnessing are to be followed when the original data are recorded on loose sheets or forms other than the standard bound notebook.

**SUBJECT FOR INDEXING THIS BOOK
MUST BE GIVEN BELOW**

[illegible]

Blocked search trigger



$$(10) 5.2 < 8 \quad (33)$$

$$24(33) = 10(52) + x(85)$$

$$8 = 5.2 + x(1.85)$$

2.8 E X

$$K = 3.34$$

DATE 9-13-43

SUBJECT OF EXPT Dimensions - Remington

134
Thurs

DAL - 8.85

M 7.20

1.127

1.40

1.164

1.67

1.93

Springfield

1.178

DAL - 8.579

1.37

1.30

1.556

1.684

M 7.0

1.215

DAL - 8.75

1.375

1.35

1.59

1.725

12-8.59

EXPERIMENTER

WITNESS

DATE

DATE

DATE 9-15-43

SUBJECT OF EXPT.

30-06 Magazine

M720

3.39"

11.97"

Boer

1.3"

9.1"

8.00"

RS03

3.41"

1.12"

Boer

1.300"

1.320"

9.30"

8.00"

M720

4.275"

1.08"

9.00"

7.80"

width of loading part

720 - 5.30"

RS. - 5.30"

701 - 5.41"

EXPERIMENTER

WITNESS

DATE

TIME

DATE

9-15-43

SUBJECT OF EXPT.

Kinematic Dragage

Recurve Rail to bottom of May

M 720

17.4

1.56

RS03

17.5

1.57

M 70

17.2

1.54

M 760

1.60

1.48

Top with

7.5

Bottom with

9.5

Bottom Point

8.5

PRINTER

DATE

NESS

DATE

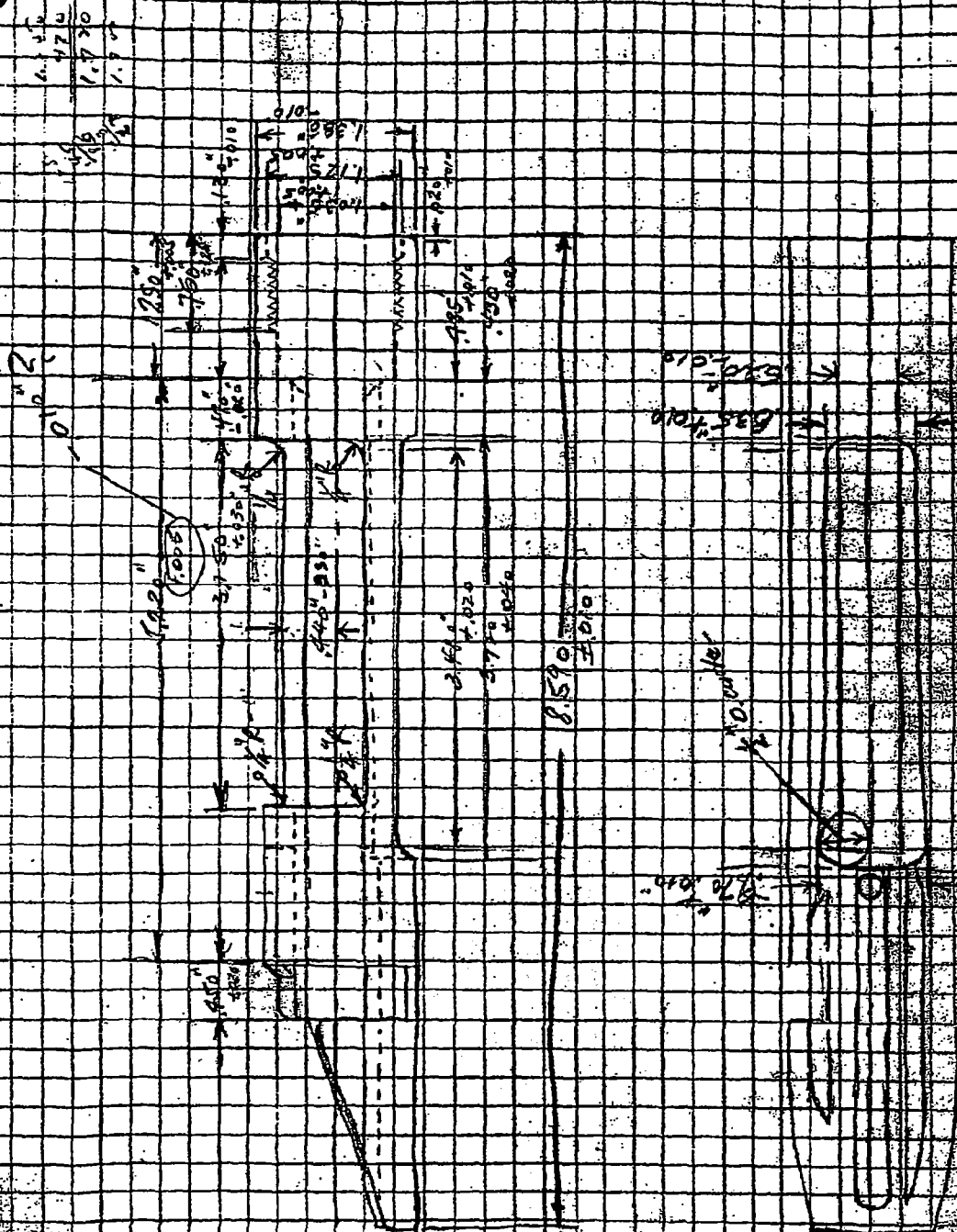
DATE

SUBJECT OF EXP'T.

9-16-43

721 Receiver Dimensions

5



EXPERIMENTER

WITNESS

DATE

DATE

6.

DATE

9-17-43

SUBJECT OF EXPT

Receiver Calculations

Strength of receiver Ring

$$\text{Min OD} = 1.370"$$

$$\text{Max ID} = 1.130"$$

$$\text{Area OD} = \left(\frac{1.370}{2}\right)^2 \pi = 1.475 \text{ sq in.}$$

$$\text{Area ID} = \left(\frac{1.130}{2}\right)^2 \pi = 1.004 \text{ sq in.}$$

$$\text{Cross Section Area} = .471 \text{ sq in.}$$

Yield strength of X1315 heat treated =

EXPERIMENTER

ESS

DATE

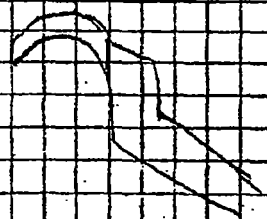
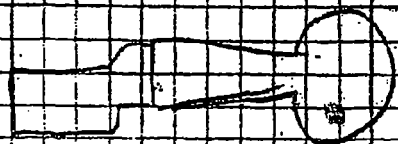
DATE

DATE

9-28-43

SUBJECT OF EXPT.

Stock dimensions 7-1

Wings at crown $1\frac{11}{16}$ "Wings at heel $2\frac{5}{8}$ "Length $13\frac{1}{2}$ "Pitch with 24" $25\frac{1}{2}$ "

EXPERIMENTER

DATE

WITNESS

DATE

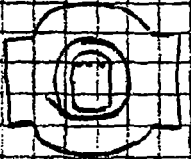
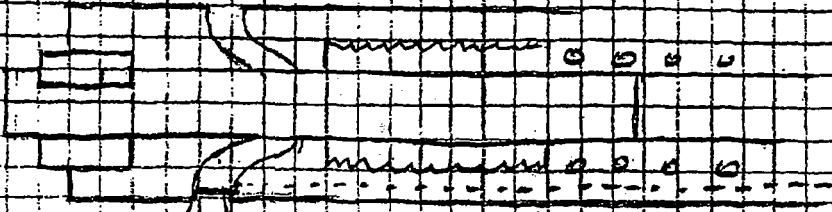
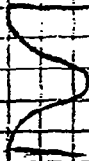
8

DATE

9-30-43

SUBJECT OF EXPT

Bolt



PERIMENTER

WITNESS

DATE

DATE

DATE

7-73-44

SUBJECT OF EXPT.

7x1 main Spring

FIRED LENGTH 3.325"

COCKED LENGTH 3.030"

 $d = 0.55"$ $D = 3.95 - 0.55 = 3.40"$ $n = 38$ ACTIVE $19 \# \text{ at } 3.325" = 6.1 \# \text{ ENERGY}$

C. changed

$$P = \frac{F d^4 G}{8 \pi D^3} = F \left(\frac{9.15 \times 10^{-6} \cdot 11.5 \times 10^6}{8 \times 38 \times 0.0395} \right)$$

Set from
19# to
6.1

$$= F 8.8$$

$$8.8 (L - 3.325) = 19 \#$$

$$L = \frac{19}{8.8} + 3.325$$

$$L = 5.485 - 5.50"$$

$$\text{FIRED } P = 19 \#$$

$$\text{COCKED } P = 8.8 (5.50 - 3.03) = 21.7 \#$$

$$\text{STACKED } P = 8.8 (5.50 - 2.14) = 29.6 \#$$

$$S = \frac{8 P D}{\pi d^3} = P \left(\frac{8 \times 3.4}{\pi (1.64 \times 10^{-4})} \right)$$

$$S = P (5200)$$

$$\text{FIRED } S = 19 (5200) = 98,800 \text{ PSI}$$

$$\text{COCKED } S = 21.7 (5200) = 113,000 \text{ PSI}$$

$$\text{STACKED } S = 29.6 (5200) = 154,000 \text{ PSI}$$

EXPERIMENTER

DATE

WITNESS

DATE

12

DATE

I - 23 - 44

SUBJECT OF EXPT.

Short on 724 Main Spring

Fired Length = 2.375

Cocked Length = 2.030

 $d = .055$ $D = .395 - .055 = .340$ 19th at 2.375 = 6th ENERGY

Stacked L = 2.030 - .600 = 1.430 = 25 Active Coils

 $P = 13.4 \text{ F}$ $13.4 (L - 2.375) = 2.0$ $L = 3.65$

Fired P = 18

Cocked P = $(3.66 - 2.030) 13.4 = 21.8$ Stacked P = $(3.66 - 1.43) 13.4 = 30.1$ $S = P (J 205)$ Fired S = $5200 \times 18 = 93,600$ Cocked S = $21.8 \times 5200 = 113,000$ Stacked S = $5200 \times 30 = 156,000$ $5200 \times 32 =$

set from to

set from to

EXPERIMENTER

WITNESS

DATE

DATE

DATE

3-29-44

SUBJECT OF EXPT.

FIRING PIN PROTRUSION

MAX BOLT LENGTH

MIN PIN LENGTH

.451
 .315
 .433
 .064
 1.263

1.810
 - .500
 1.310

$$\text{MIN PROTRUSION} = 1.310 - 1.263 = .047$$

MIN BOLT LENGTH

MAX PIN LENGTH

.449
 .309
 .427
 .066
 1.245

1.813
 - .498
 1.315

$$\text{MAX PROTRUSION} = 1.315 - 1.245 = .070$$

EXPERIMENTER

DATE

WITNESS

GEO. DATE

14

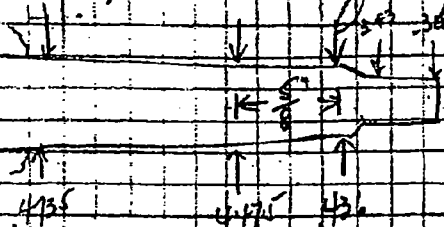
DATE:

4-7-44

SUBJECT OF EXPT.

First cartridge fired on 3/7/41

Chamber before firing

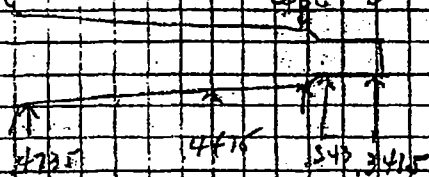


Head space 1.937"

A standard 30.06 Rem. U.S. S&P. was fired after some trouble getting the indenter up to work. The case stretched in front of the solid head and ruptured enough to let out some gas. The primer was swelled to more than 1 1/2 diameters.

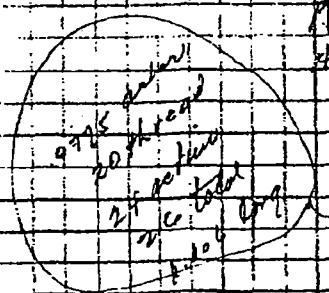
It is fairly evident that the heading plug took up on the body instead of the shoulder of the chamber causing space head space.

Chamber after firing



Head space 1.937"

No swell is evident.



Ejection spring

0.16
1.17
0.04

PERFORMER

DATE

WITNESS

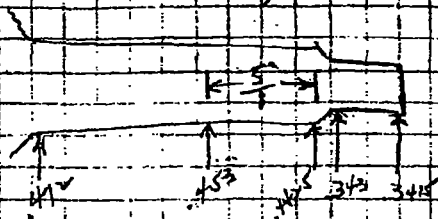
DATE

DATE

4-10-44

SUBJECT OF EXPT.

First Cartridge in 721 after re heading
Before Firing



Head Space
1.957

No change was evident after 10 proofloads

EXPERIMENTER

WITNESS

DATE

DATE

DATE

May 8 1944

SUBJECT OF EXPT.

New barrel breech dimensions

$$S = \frac{P(R^2 - r^2)}{(R^2 - r^2)}$$

Pitch Dia. of 1.067

PRESSURE = 84,000 PSI

$$\begin{aligned} 1\frac{1}{8} \text{ } 1.067 & \quad r^2 = (.474 - .2)^2 = .237^2 = .056 \\ 1\frac{1}{8} \text{ } 1.067 & \quad R^2 = (.4067 - .2)^2 = .534^2 = .285 \\ 1\frac{1}{8} \text{ } 1.067 & \quad r^2 = (.4067 - .2)^2 = .509^2 = .259 \end{aligned}$$

$$1\frac{1}{8} \text{ } S = \frac{84,000 (.341)}{2788} = 125,000 \text{ PSI } (270 \text{ Win})$$

$$1\frac{1}{8} \text{ } S = \frac{84,000 (.3157)}{2048} = 130,000 \text{ PSI } (270 \text{ Win})$$

PRESSURE = 84,000 PSI

$$\begin{aligned} 1\frac{1}{8} \text{ } 1.067 & \quad r^2 = (.514 - .2)^2 = .257^2 = .066 \\ 1\frac{1}{8} \text{ } 1.067 & \quad R^2 = (.1067 - .2)^2 = .534^2 = .285 \\ 1\frac{1}{8} \text{ } 1.067 & \quad r^2 = (.1067 - .2)^2 = .509^2 = .259 \end{aligned}$$

$$1\frac{1}{8} \text{ } S = \frac{84,000 (.351)}{219} = 135,000 \text{ PSI } (284 \text{ Mag})$$

$$1\frac{1}{8} \text{ } S = \frac{84,000 (.375)}{193} = 144,000 \text{ PSI } (284 \text{ Mag})$$

EXPERIMENTER

DATE

NESS

DATE

DATE

SUBJECT OF EXPT.

June 5 1944
721 Lock Time

17

721 Spring Pin = 61.5 gms.

721 Spring = 12.8 gms.

722 Spring Pin = 52.4 gms.

722 Spring = 9.1 gms.

$$721 \text{ Lock Time} = \sqrt{\frac{2 \times 61.9 \times 300 \times .0022}{21 \times 32 \times 12}} = 3.33 \text{ sec.}$$

$$722 \text{ Lock Time} = \sqrt{\frac{2 \times 50.9 \times 300 \times .0022}{21 \times 32 \times 12}} = 3.02 \text{ sec.}$$

$$= \sqrt{\frac{2 \times 14.5}{1 \times 12}}$$

721
61.5
12.8
52.4
9.1
3.33
3.02
14.5

EXPERIMENTER

WITNESS

DATE

DATE

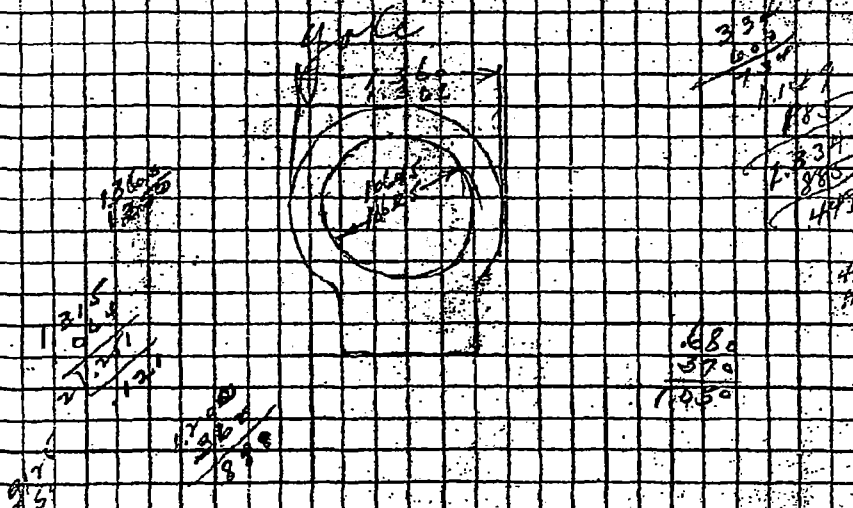
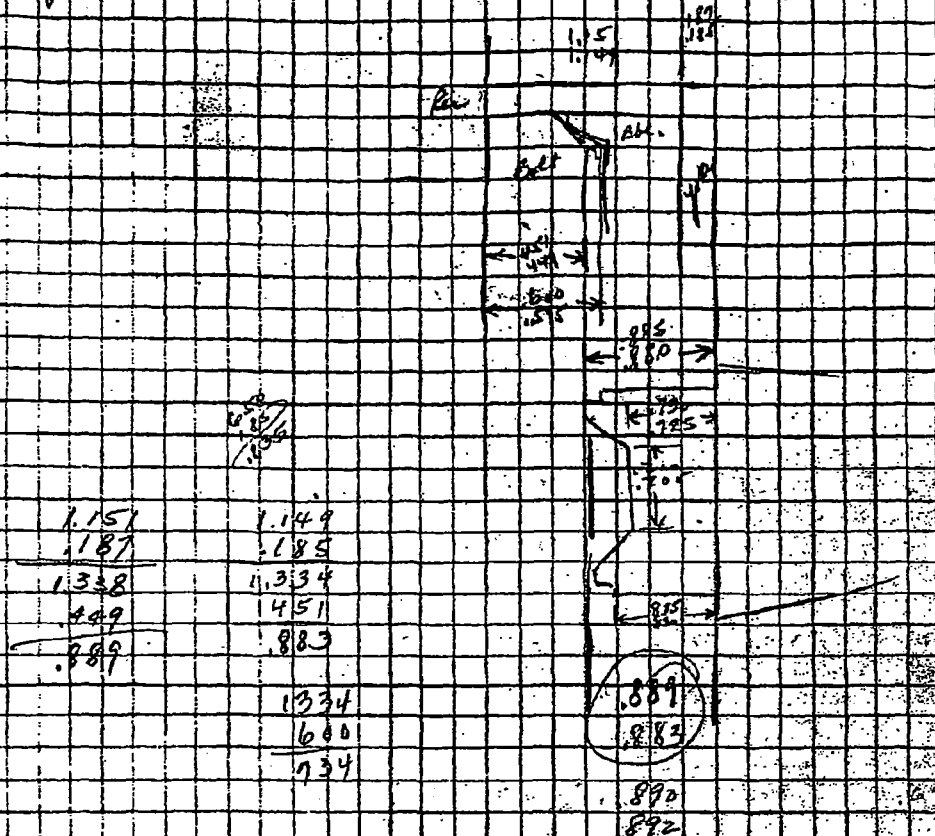
DATE _____

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June 7/94

Baird; Bolt & Reschner

Toluidine



EXPERIMENTER

NESS

DATE _____

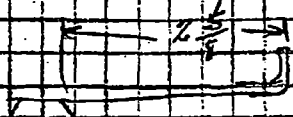
DATUM

DATE

SUBJECT OF EXPT

June 12, 1944
Recoil Sight

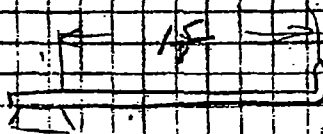
17 120



$$\frac{7}{6.4} = \frac{18}{6.4}$$

Deflection = .172

H 72



$$H = .08$$

Assume S of 150,000

$$F = \frac{2SL^2}{3EH} \quad H = \frac{2SE^2}{3EE}$$

$$H = \frac{2(150,000)(1.625)^2}{3(3 \times 10^7)(.172)} = 0.08$$

$$P = \frac{1.625^2}{300} = 0.00875$$

$$P = \frac{3.64 \times 10^6}{6(1.625)} = 370,000$$

EXPERIMENTER

WITNESS

DATE

DATE

20

DATE

Jan. 13 1944

SUBJECT OF EXPT.

721 & 722 Calibers

M 721

.284 Rem Mag.

.30-06

.280 Rem

M 722

.224 Rem (.25-3000)

.220 Rem (.25-7055)

M 710 (Single Shot)

.220 Rem (.25-7055)

M 514 (Single Shot)

.22 L.R. Target Model

EXPERIMENTER

DATE

WITNESS

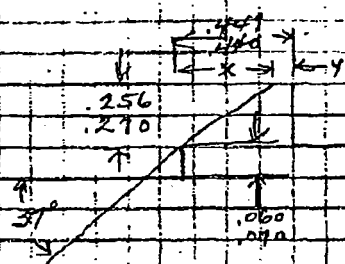
DATE

DATE

6-19-41

SUBJECT OF EXPT.

CARTRIDGE RAMP



$$\begin{array}{r} 1.1355 \\ - .6775 \\ \hline .4580 \\ + .0170 \\ \hline .4750 \end{array}$$

$\tan 37^\circ = .7536$

$$\begin{array}{r} 1.1360 \\ - .6800 \\ \hline .4560 \\ + .0200 \\ \hline .4760 \end{array}$$

$$x = \frac{.256}{.7536} = .340$$

$$x = \frac{.270}{.7536} = .358$$

MAX Y = 449 - 340 = 109

MIN Y = 440 - 358 = 82

MIN Y = .70

$$\begin{array}{r} 4235 \\ 3176 \\ \hline 1449 \end{array}$$

$$\begin{array}{r} 4220 \\ 3200 \\ \hline 1440 \end{array}$$

$$\begin{array}{r} 3740 \\ 480 \\ \hline 4220 \end{array}$$

EXPERIMENTER

WITNESS

DATE

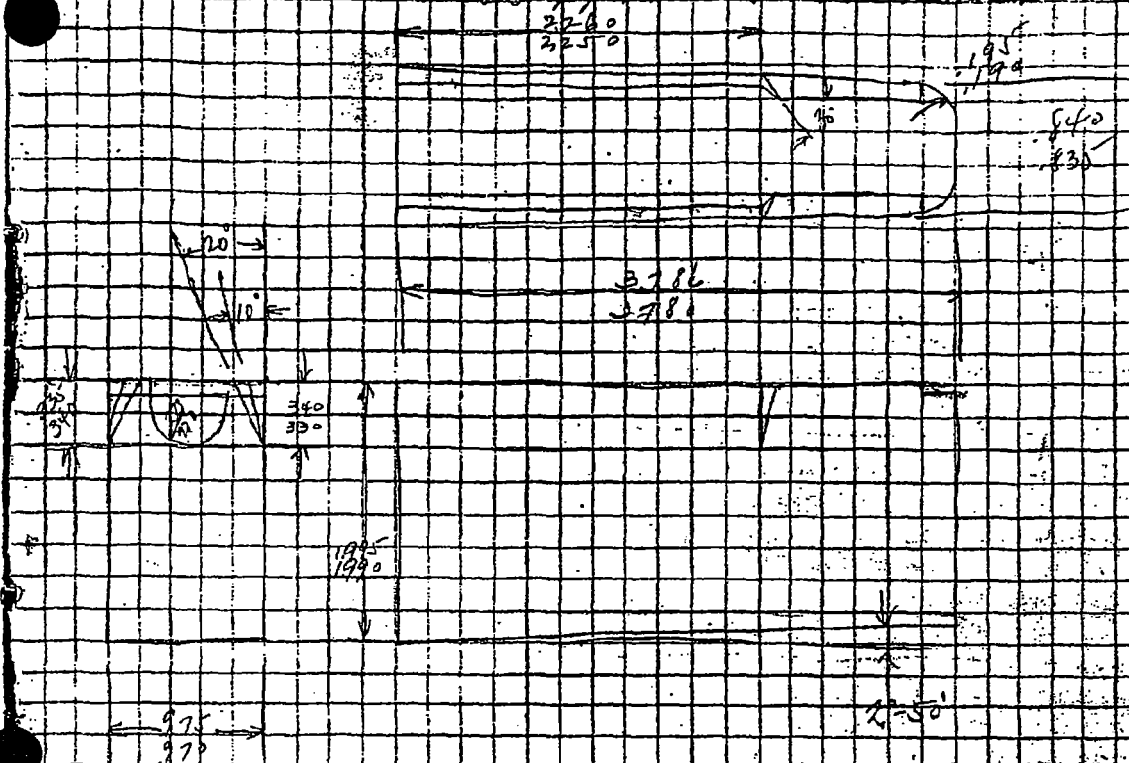
DATE

DATE _____

SUBJECT OF EXPT.

6-27-1944

300 КСН КРАСНЫМ КРАСЯЩЕМ



96 94
2206
18

Handwritten notes on a grid background, possibly a calendar or ledger, with some numbers and symbols.

~~9.6~~
~~48.0~~

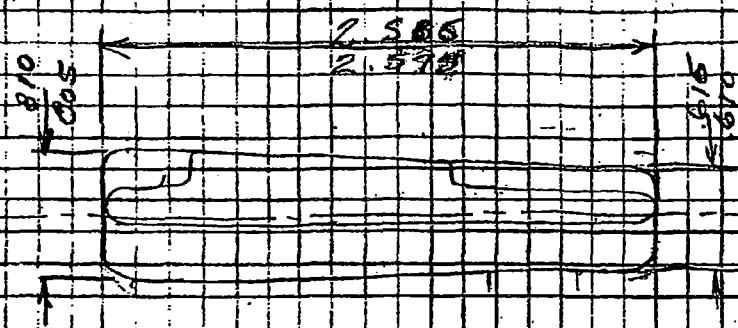
EXPERIMENTER	
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DATE _____

WINE

DATE _____

24
 ID. DATE 6-22-44
 SUBJECT OF EXPT. 300 SAVAGE FOLLOWER



970
 1088
 882

835
 1088
 747

2930
 1088
 2842

32
 26

517
 1072
 599

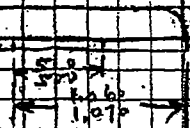
625
 1072
 553

2936
 1088
 2848

2842
 2000
 842

1500

Stock
 .032-.036



EXPERIMENTER
 WITNESS

DATE
 DATE

DATE

6-27-44

SUBJECT OF EXPT.

M-722 MAIN SPRING

FIREED LENGTH = 2.475
 COCKED LENGTH = 2.180

 $d = .055$
 $D = .395 - 40.7 \text{ } .255 = .352 \text{ MAX.}$

STACKED LENGTH = 1.540

28 TOTAL COILS 86 ACTIVE

 $P = 11.6 \text{ } \frac{\text{in}}{\text{in}}$

41 FREE LENGTH

 $\frac{2.475}{1.540}$
 $\text{FIREED } P = (4.00 - 2.475) 11.6 = 17.7 \text{ } \frac{\text{in}}{\text{in}}$
 $\text{COCKED } P = (4.00 - 2.180) 11.6 = 21.1 \text{ } \frac{\text{in}}{\text{in}}$
 $\frac{4.00}{2.180}$
 $21 \text{ } \frac{\text{in}}{\text{in}} \text{ at } 2.50 - 2.30$
 $\frac{39.1}{17.9}$

EXPERIMENTER

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WITNESS

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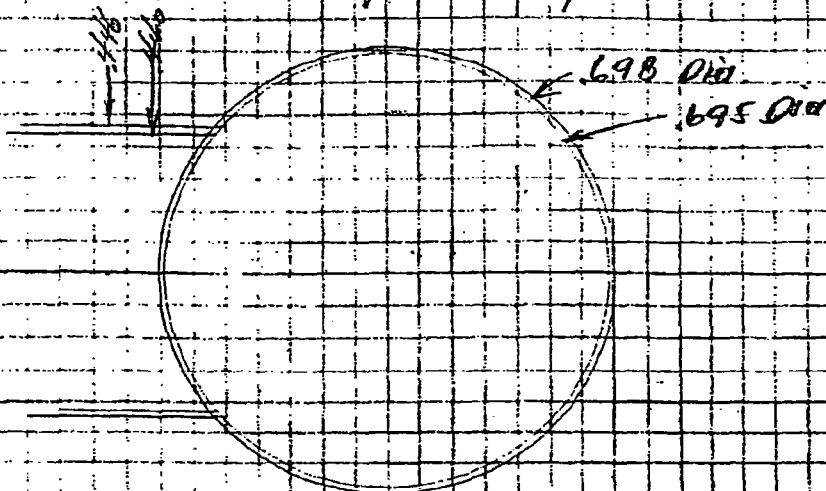
26

DATE

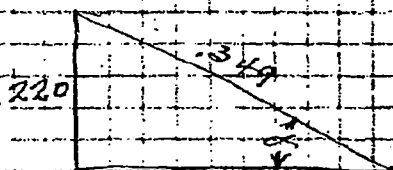
7-12-44

SUBJECT OF EXPT

Bolt Body and Lug Intersection



MIN LUG & MAX BOLT

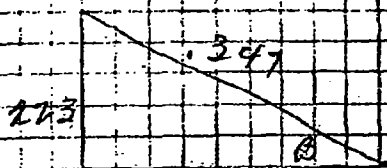


$$\sin \alpha = \frac{.220}{.349} = .6304$$

11
23" 10

$$\alpha = 39^{\circ} - 4' - 47''$$

MAX LUG & MIN BOLT



$$\sin \beta = \frac{.273}{.347} = .6426$$

$$\beta = 39^{\circ} - 59' - 5''$$

$$\beta - \alpha = 54' - 18'' = 54.3'$$

$$\frac{54.3}{360 \times 60} \times 0.698 \times \pi = \text{Linear Movement - Approx}$$

$$= .00552''$$

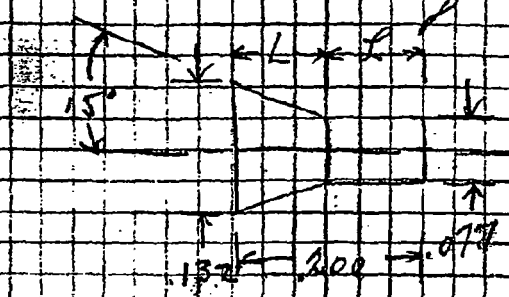
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DATE 7-14-44
 SUBJECT OF EXPT. Ball Head - Firing Run



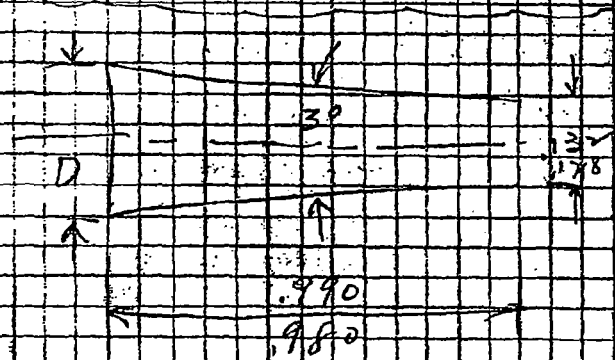
Find Min L

$$\frac{132 - 0.77}{2} = \tan 15^\circ$$

$$= 1.2679$$

$$L = \frac{0.77}{2.679} = 1.027$$

Min L = 200 - 103 = 0.97



Find Max & Min D

$$\frac{132 - 990}{2} = \tan 15^\circ = 0.262$$

$$D_{min} = 132 - 990 \times 0.262 \times 2 = 1.519$$

$$D_{max} = 1.838$$

$$D_{min} = 1.28 = 980 \times 0.262 \times 2 = 1.0513$$

$$D_{min} = 1.793$$

EXPERIMENTER
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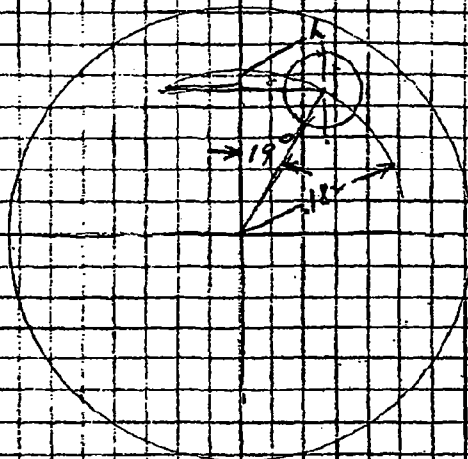
28

DATE

7-12-44

SUBJECT OF EXPT.

Placement of ejector pin hole



$$\begin{aligned}
 h &= .18x - (.18x \cos 19.4^\circ) \\
 &= .18x - (.18x \times .945) \\
 &= .18x - .172x \\
 &= .010x
 \end{aligned}$$

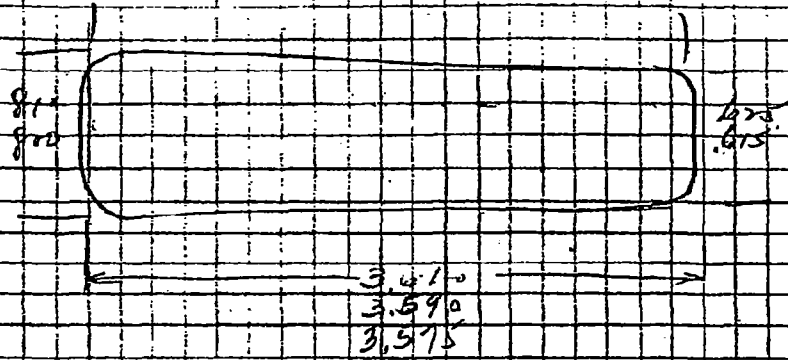
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DATE 7-18-47
SUBJECT OF EXPT. 300 H+ A1 Follow-up



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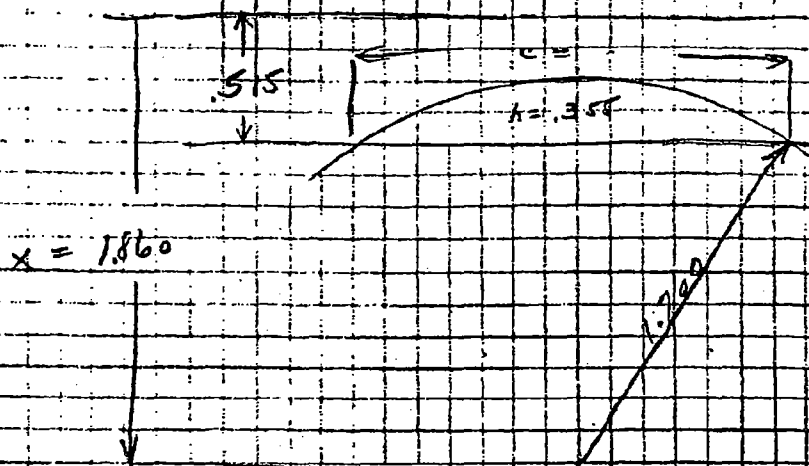
30

DATE

7-19-44

SUBJECT OF EXPT.

Calculations of Center centers for Fire control



$$\begin{array}{r} 1.860 \\ - 0.515 \\ \hline 1.345 \\ - 1.700 \\ \hline -0.355 \end{array}$$

$$\frac{h}{h} = \frac{0.355}{1.700} = 0.2087$$

$$\frac{1.092}{0.515} \times 0.013 = 0.005$$

$$\frac{C}{h} = 1.713$$

$$C = 2.080$$

For 1.645 correction

$$\frac{C}{h} = \frac{2.080}{1.645} = 1.265$$

$$\frac{1.092}{0.515} \times 0.005 = \frac{2.24}{0.005} = 0.0044$$

$$\frac{h}{h} = 0.254$$

$$h = 371$$

$$x = 1.645 - 371 + 0.515 = 1.789$$

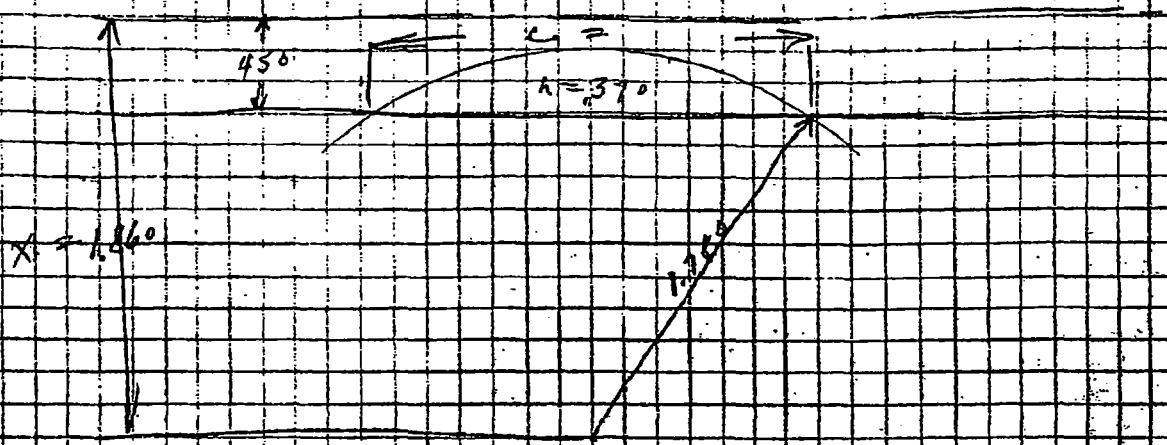
EXPERIMENTER

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DATE 7-19-44
 SUBJECT OF EXPT. Cutting venting



$$\begin{array}{r} 1680 \\ 220 \\ \hline 900 \\ 450 \end{array}$$

$$\begin{array}{r} 1840 \\ 450 \\ \hline 1390 \end{array}$$

$$\frac{h}{r} = \frac{.370}{1.750} = .208$$

$$\frac{.0044}{.0056} \times .0135 = .0034$$

$$\frac{C}{r} = 1.271$$

$$C = 2.173$$

$$\begin{array}{r} 780 \\ 410 \\ \hline 1370 \end{array}$$

$$\begin{array}{r} 2000 \\ 2066 \\ \hline 934 \end{array}$$

From 1.750 R center

$$\frac{C}{r} = \frac{2.173}{1.750} = 1.242$$

$$\frac{.011}{.017} \times .0056 = .0032$$

$$\frac{h}{r} = .2162$$

$$h = .3785$$

$$\begin{array}{r} 1750 \\ 3785 \\ \hline 13715 \\ 13715 \\ \hline 1.822 \end{array}$$

$$X = 1.750 - .378 + .450 = 1.822$$

EXPERIMENTER
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DATE
 DATE

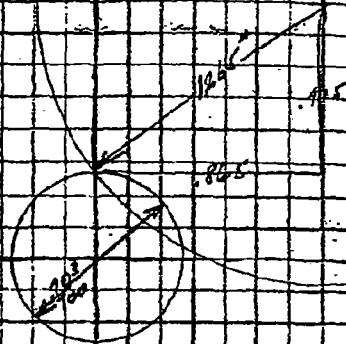
32

DATE

7-28-74

SUBJECT OF EXPT.

Extraction from Outer Center



$$\begin{array}{r} 12.5 \\ 9.15 \\ \hline 1.25 \end{array}$$

$$\sqrt{.865^2 + .915^2} =$$

$$\sqrt{.748 + .837} =$$

$$\sqrt{1.585} = 1.260$$

$$\begin{array}{r} 25 \\ 12.5 \\ \hline 12.5 \end{array} \quad \begin{array}{r} 25 \\ 12.5 \\ \hline 12.5 \end{array} \quad \begin{array}{r} 14.0 \\ 2.0 \\ \hline 12.0 \end{array}$$

EXPERIMENTER

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9-5-44

SUBJECT OF EXPT.

Assembly of m-721 & m-722

Two of the four models were assembled complete 9-5-44. The bolt heads were tensioned on and passed to determine their actual strength requirements.

m-721	300 H&H	m-722	300 H&H
Headspace before	0.0015"	Headspace	0.0015"
After spring loads	0.0015"	10 proof loads	0.0015"

The m-721 showed very high pressures on proofing.

The m-722 showed only ordinary pressures on proofing.

The m-722 bolt head had broken loose after firing. Only the gun was working it. However it held quite satisfactorily for proofing.

A 1/2" chamber was cut in the bolt body of the 722 and the bolt head brought on.

Considerable trouble was experienced with the safety. Carter checked one and found it would not meet the drawing. The safety surface was not under time and so 30" misplaced.

EXPERIMENTER

WITNESS

DATE

DATE

34

DATE

9 - 11 - 44

SUBJECT OF EXPT.

M-722 bolt head & Safety

After approximately its regular 200 lbs. loads the M-722 bolt head broke loose a second time. Inspection of the joint showed that the brags was not sufficient. The head was joined a third time using a ring of 1000° silver solder in a relief spot on the head. At the same time several test specimens were made up and checked on the tensile machine using different braying compounds. The minimum joint strength obtained with a poor bray gun was 7000 lbs. force to separate head and body, the best gun gave 25000 lbs. It was decided that the ring of braying compound in a relief spot constituted the best joint.

The M-722 bolt handle bent during the proofing due to head attraction (rough chamber). Opening the bolt by hitting with a stick of wood caused the bending. The handle was replaced and the chamber smoothed.

EXPERIMENTER

WITNESS

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DATE 9-13-44
SUBJECT OF EXPT. Fire control characteristics

1.048
.315
1.361 min clear and trip

1.241
.521
1.762 max clear trip hole to Rec E

1.762
1.361
.401
.430
.401
.029 min clear engagement

1.048
.335
1.383

1.239
.519
1.758 min clear trip hole to Rec E

1.758
1.383
.375
.435
.375
.050 max clear engagement

.321
.060
.581

.435
.050
.385

.585
.335
.920

.720
.078
.798

.798
.195
.603

.581 max dim. Rec E to bottom of bolt stop pin
.603 min dim. Rec E to rear contact on bolt stop pin
.022 min clearance

.391
.195
.586

.586
.160
.646

.649
.646
.003

.003 min clearance between
sext. Bolt stop pin with
object on

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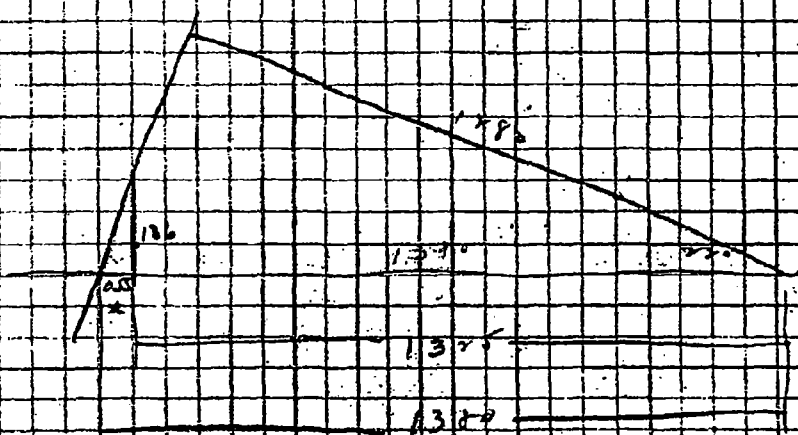
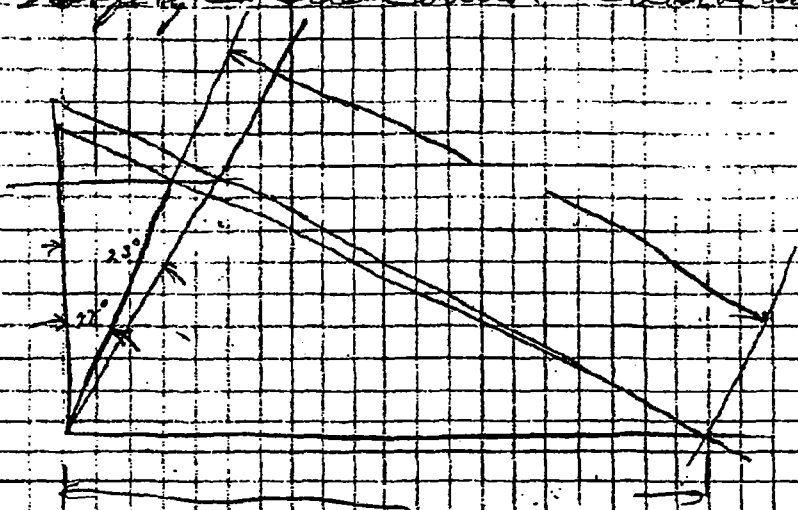
36

DATE

SUBJECT OF EXPT

9-13-44

Safety & Fire Control Characteristics (2)

For $\gamma = 0^\circ$

$$H_{eff} = \frac{x}{1.36} \quad x = 0.577$$

$$\frac{1.24}{0.577} = 2.15$$

$$970 (1.38) = 1,337$$

$$\frac{1.24}{1.38} = 0.899$$

Keep from the $\gamma = 0^\circ$

EXPERIMENTER

WITNESS

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9-13-44

SUBJECT OF EXPT.

Safety conditions

$$\begin{array}{r} 1.048 \\ 278 \\ \hline .970 \end{array}$$

$$\begin{array}{r} 1.244 \\ .651 \\ \hline .590 \\ .387 \\ \hline .977 \end{array}$$

$$\begin{array}{r} .977 \\ .970 \\ \hline \end{array}$$

Min. Safety interference = .007

$$\begin{array}{r} 1.046 \\ 82 \\ \hline .964 \end{array}$$

$$\begin{array}{r} 1.238 \\ .649 \\ \hline .589 \\ .391 \\ \hline .980 \\ .964 \end{array}$$

Max. Safety Int. = .019

Changed scan to make min. old and Max. 026

EXPERIMENTER

WITNESS

DATE

DATE

38

DATE

9-14-44

SUBJECT OF EXPT.

Newport Spring Design

65

Max. O.D. - .170

432

Min. O.D. - .164

ASSUME MEAN O.D. .141

026

LENGTH .380 EXTENDED LOAD 4"

13

LENGTH .378 COMPRESS LOAD

142

78

139

$$d^3 = \frac{2.55 P D}{S} = \frac{2.55 (4) .141}{90,000} = .00025$$

$$d = .029" \text{ USE } .028$$

Solid HT SAE 270 = 9 COILS ACTIVE

$$\frac{P}{F} = 36.2$$

$$F = \frac{P}{36.2} = .11$$

$$.380 + .110 = .490 \text{ FREE LENGTH}$$

$$4" \text{ LOAD } S = \frac{2.55 P D}{d^3} = \frac{2.55 (4) .139}{.000217} = 64,700 \text{ PSI}$$

$$5" \text{ LOAD} = 81,000 \text{ PSI}$$

$$6" \text{ LOAD} = 97,000 \text{ PSI}$$

EXPERIMENTER

DATE

WITNESS

DATE

DATE

9-14-44

SUBJECT OF EXPT.

Semi Spring (Cont)

$$\frac{P}{F} = \frac{G d^4}{8 D^3 N}$$

$$= \frac{11,500,000 (.00000615)}{8 (.00268)^3 \cdot 21.7} = 36.6 \text{ #/in}$$

$$\text{FREE LENGTH} = 490$$

$$90\% = (490 - 380) 36.6 = 4.1 \text{ # } 7.8 \text{ #}$$

$$\text{WT COCKED} = (490 - 380) 36.6 = 4.1 \text{ # } 7.8 \text{ #}$$

$$\text{WT FIRED} = (490 - 340) 36.6 = 5.5 \text{ # } 6.2 \text{ #}$$

$$\text{WT STACKED} = (490 - 280) 36.6 = 7.1 \text{ # } 7.8 \text{ #}$$

$$\frac{D}{d} = 5 \quad \text{WALL } K = 1.31$$

$$S = P \cdot 255 (1.31) K = P 16,700 K$$

$$\text{COCKED } S = 4 (16,700) 1.31 = 85,000 \text{ PSI}$$

$$\text{FIRED } S = 5.5 = 117,000 \text{ PSI}$$

$$80\% S = 6.1 = 130,000 \text{ PSI}$$

$$\text{SOLIDS } S = 7.1 = 163,000 \text{ PSI}$$

EXPERIMENTER

DATE

WITNESS

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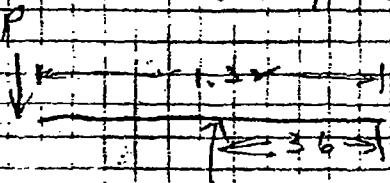
40

DATE

9-14-44

SUBJECT OF EXPT.

Seon Spring (Second)



$$44$$

$$S.W.$$

$$36(4) = 1.32 P$$

$$P = 11 \#$$

$$36(5.5) = 1.32 P$$

$$P = 15 \#$$

Second Spring

O.D. - 1.67

WIRE - 0.26

MEAN D - 1.41

$$29.5(X - 380) = 4 \#$$

$$X = \frac{38}{29.5} + 380 = 500 \text{ FREE LENGTH}$$

$$P = \frac{11,500,000 (.00000457)}{64 (.0008)} = 29.3 \frac{\text{lb}}{\text{in}}$$

$$\text{Index} = 5.4 = 1.78 \text{ WIRE K}$$

COCKED	(500 - 380)	29.3	=	3.5 ± 1	$S = P \frac{2.55(1.41)}{.000076 K}$ $= P 10,400 K$
FIRE	(500 - 340)	"	=	4.1 ± 1	
STACKED	(500 - 280)	"	=	7.8 ± 1.8	
80%	(215)	"	=	6.4 ± 1	

COCKED	38 (20,400)	1.78	=	19,200 PSI
FIRE	40	"	=	22,000
STACKED	7.8	"	=	30,000
80%	6.4	"	=	16,200

EXPERIMENTER

DATE

WITNESS

DATE

DATE

SUBJECT OF EXPT.

9-18-44

Gun Spring (Plund)

$$\frac{P}{F} = \frac{G d^4}{8 D^3 N}$$

$$\frac{0.28 = 8}{1.47 = 8} = N$$

$$= \frac{11,500,000 (0.000000615)}{64 (0.00268)} = 41.2 \text{ #/in}$$

$$41.2 (x - 380) = 3.5$$

$$x = \frac{3.5}{41.2} + 380 = 465 = \text{Free Length}$$

$$\text{COCKED} = 465 - 380 (41.2) = 3.5$$

$$\text{FIRED} = \quad \quad \quad - 340 \quad \quad = 5.1$$

$$\text{STUCK} = \quad \quad \quad - 252 \quad \quad = 8.8$$

$$\text{80\%} = \quad \quad \quad - 171 \quad \quad = 7.0$$

$$S = P F S^2 (.139) K = P 16,200 K$$

$$D = 5 \quad K = 1.31$$

$$\text{COCKED } S = 3.5 (16,200) 1.31 = 74,000$$

$$\text{FIRED } S = 5.1 \quad \quad \quad = 108,000$$

$$\text{STUCK } S = 8.8 \quad \quad \quad = 182,000$$

$$\text{80\% } S = 7.0 \quad \quad \quad = 148,000$$

EXPERIMENTER

WITNESS

DATE

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9-20-44

SUBJECT OF EXPT.

M-722 Preliminary Tests

360 preliminary rounds through the M-722 gave one failure to feed due to the cartridge base ducking under the bolt. The bolt on the M-722 is noticeably hard on closing due to the extractor. A few of these 360 were fired at the target with very good results.

EXPERIMENTER:

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9-21-44

SUBJECT OF EXPT.

Mr. 721 Preliminary Tests

After proofing the Mr. 721 had .004" excess head space (.227"). Max heading on assembly and poor contact on the legs contributed to this condition.

EXPERIMENTER

WITNESS

DATE

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44

DATE

9-26-44

SUBJECT OF EXPT.

Gunny Run Tolerances Check (Report)

min 1.311

Post

451

315

433

064

1263

1327

.048 min Protection

.048

FP

max 1317

444

369

427

1060

1245

1317

.072 max Protection

.072

min overall length

Rec & Seal

can 230 = 9205 = 1305

K = 1305

140

35

110

Post

can 230 = 4245 = X

X = 0467

4245 = X

X = 064

6.84

64

6.120

6.190

64

6.126

Cooking Power

560

550

1.010 max

4.595

5.188

Dung Run from
to Shoulder

EXPERIMENTER

WITNESS

DATE

DATE

DATE

9-26-44

SUBJECT OF EXPT.

Cocking Toleranza check (Repeat)

Cam dimension on bolt handle

$$\sin 16^\circ = \frac{x}{.350} = .2756$$

$$x = .0964"$$

Rec	Bolt min	Bolt max	
5.215 min	309	315	
5.220 max	315	316	
	5.385	5.675	
	5.604	434	
	437	5.241 closed	
Cam of bolt from shoulder	5.249 closed	405	
"	1.00		
"	5.327 closed	5.346	
	35	36	
Cocking piece notch	5.292	5.316	
500	400	415	
150			6.037
400	5.692	5.731	813
	437	434	5.325 notch to stop shoulder
560	6.129	6.165	5.25
1.95			3.00 mini stroke
415		447	
		315	
		.813	
6.45	309	150	
796	487	450	
5.349 notch to stop shoulder	796	600	
500			5.614
0.341 mini stroke		5.010	5.025 notch to firing pin shoulder
		5.010	

EXPERIMENTER

DATE

WITNESS

DATE

46

DATE

8-27-44

SUBJECT OF EXPT.

Map Solid Height of Man Spring

1.000

.830

1.830 Bolt Plug

1.010

2.840

450

560

1.010 acting piece

5.608

.255

5.353

2.840

2.513

Map Solid Height 721

722

4.758

.255

4.503

2.840

1.663

Map Solid Height 722

EXPERIMENTER

WITNESS

DATE

DATE

DATE
SUBJECT OF EXPT.

9-27-44
Main Springs
In - 721
A-753-t

Good 24.4 - 26.8 at 2.97 - 2.83 deflex.

Length fired =

$$\begin{array}{r} 485 \\ 365 \\ \hline 620 \\ 330 \\ \hline 950 \\ 742 \\ \hline 1692 \end{array}$$

$$\begin{array}{r} 430 \\ 62 \\ \hline 492 \\ 250 \\ \hline 742 \\ 5307 \\ \hline 1692 \end{array}$$

Stroke 313
Prot .054

$$\begin{array}{r} 297 \\ 330 \\ \hline 627 \\ 3178 \end{array}$$

$$\begin{array}{r} 3.348 \\ 532 \\ \hline 2.498 \end{array}$$

Length fired 19 #

Length cracked 21 #

$$\begin{array}{r} 5800 \\ 3665 \\ \hline 2135 \end{array}$$

$$\begin{array}{r} 5800 \\ 3348 \\ \hline 2452 \end{array}$$

$$\begin{array}{r} 24.4 \\ 26.8 \\ \hline 51.2 \\ 25.143 \\ \hline 26.23 \end{array}$$

$$\begin{array}{r} 18.5 \\ 21.1 \\ \hline 39.6 \end{array}$$

$$\begin{array}{r} 297 \\ 220 \\ \hline 517 \end{array}$$

$$\begin{array}{r} 3348 \\ 9678 \\ \hline 290 \\ 145 \\ \hline 149 \end{array}$$

$$S = \frac{8 P D}{\pi d^3} = \frac{8 (52.2) \cdot 3.145 (in)}{\pi (3.1416 (cm))^3} = 184,000$$

Max Working Stress = 121,000
In psi

EXPERIMENTER
WITNESS

DATE
DATE

48

DATE

9-27-44

SUBJECT OF EXPT.

Main Spring m 722

To work freely in 420. Rim Wall

" " " on 283" " Pin

Draft solid height 1.600" Free length

0.55 wire

29 total coils

400 outside

27 active

$$\text{Spring Rate } \frac{F}{F} = \frac{G d^4}{8 D^3 M} = \frac{11,500,000 (0.0000915)}{8 (29) (12)} = 1.7 \text{ lb/in}$$

Coiled length 2.498

29 #

Tined length 2.815

47 #

Stroke

3.13

Plot 0.54

7.1

$$\begin{array}{r} 2.5315 \\ 2.656 \\ 1.420 \\ \hline 4.206 \end{array}$$

3.42

1.84

2.06

4.54

5.2

23.6

24

71.4

24.6

$$S(\text{stacked}) = \frac{8 F D K}{\pi d^3} = \frac{8 (3.42) (3.45) (104)}{3.14 (0.0000915)^3}$$

$$\text{Let Coiled} = \frac{4.2 - 2.498}{1.1 - 0.8} = 2.0 \text{ #}$$

$$\text{Let Free} = \frac{4.2 - 2.815}{1.1 - 0.8} = 4.6 \text{ #}$$

$$18.6 \times 1.4972 = 5.49 \text{ "in. - Freeing}$$

$$\text{Max Working Stress} = 117,000 \text{ #}$$

EXPERIMENTER

WITNESS

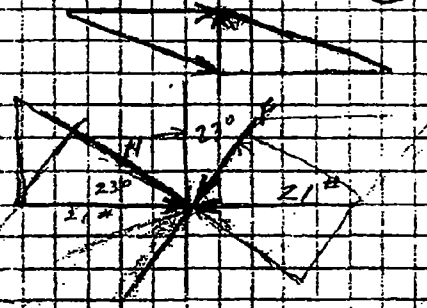
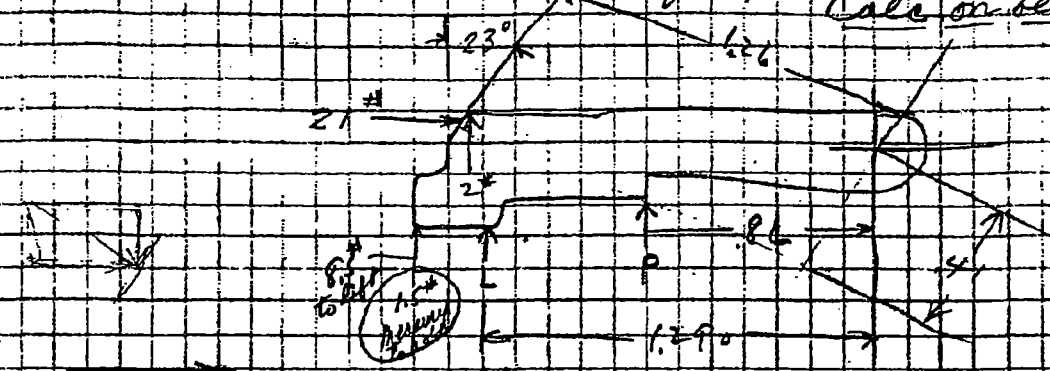
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DATE 12-20-44

SUBJECT OF EXPT. New Seal & Safety

Calc on old Seal



$\mu = 0.05$ in dust chamber
 $\mu = 0.15$ oiled

NORMAL FORCE = $N = 21 (\cos 23^\circ) = 21(0.92) = 19.3$

MOMENTS ABOUT O neglecting F
 $2(1.29) + P(0.26) = 22.8(0.41)$

$\cos 23^\circ = 0.920 = \frac{N}{21}$
 $N = 22.8$
 $F = NF$
 $= 19.3(0.41)$
 $= 7.91$

$P(0.26) = 9.35 - 2.58$
 $P = \frac{6.77}{0.26} = 25.9$
 $L = \frac{6.77}{1.29} = 5.25$

USING MEASURED FORCES
 $1.5(1.5) = P(0.80)$
 $P = 2.6$
 $L = 1.75$

MOMENTS TO FIND F

$1.5(1.5) + 2(1.29) + F(1.26) = 22.8(0.41)$

$F(1.26) = 9.35 - 2.75 - 2.58$
 $F = \frac{4.02}{1.26} = 3.19$

$\frac{F}{N} = \frac{3.19}{19.3} = 0.165$

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WITNESS

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50

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12-20-44

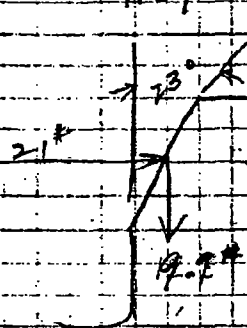
SUBJECT OF EXPT

New: Secret Safety

(cont)

calc on old secret Safety

$$\text{Actual } L = \frac{8.5(1.5)}{1.29} = 9.9^{\circ}$$



4.31 = Advantage

$$3.6(1.26) + 22.8(4.11) - 2(17.7)(2) = 11.29$$

$$4.52 + 9.35 - 7.58 = 11.29$$

$$\text{Then } L = \frac{11.29}{1.29} = 8.8^{\circ}$$

$$\frac{11.29}{1.29} = 8.8$$

Actual Load to put safety on = 6° off = 3°

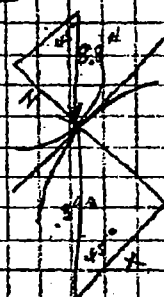
Theoretical on = 1.5° neglecting safety factor

6° includes the detent

Detent = 3°

$$\frac{N}{8.8} = \cos 45 = .707$$

$$N = 6.2^{\circ}$$



$$\frac{X}{290} = \cos 45 = .707$$

$$X = 206$$

$$F_{\text{safety}} = \frac{276 \times 15.2}{97} = 43.7$$

By calc. 9.9 = 2.3° to put safe on

$$\text{Return} = 6^{\circ} - 3.5^{\circ} = 2.5^{\circ}$$

EXPERIMENTER

WITNESS

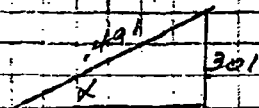
DATE

DATE

DATE

1-3-48

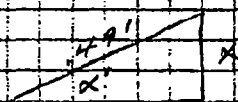
SUBJECT OF EXPT.

New Location of Safety Detent ~~Hy~~ in Housing

$$\sin \alpha = \frac{301}{491} = .613 \quad \alpha = 37^{\circ}-48'$$

Adding 5° to α

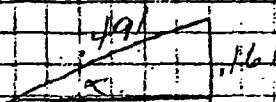
$$\alpha' = 42^{\circ}-48'$$



$$\sin \alpha' = .6794 = \frac{x}{491}$$

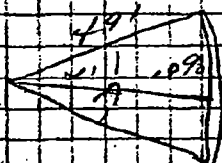
$$x = .334$$

not satisfactory



$$\sin \alpha = \frac{161}{491} = .3279$$

$$\alpha = 19^{\circ}-33'$$



$$\sin \alpha' = \frac{109}{491} = .1831$$

$$\alpha' = 10^{\circ}-33'$$

$$A = 21^{\circ}-6'$$

$$10^{\circ}-48'$$

$$21^{\circ}-36'$$

$$19^{\circ}-33'$$

$$40^{\circ}-48'$$

$$\alpha + A = 40^{\circ}-48'$$

$$37^{\circ}-48'$$

$$\text{USE } 40^{\circ}-48'$$

$$\sin 40^{\circ}-48' = .6534 = \frac{x}{491} \quad x =$$

EXPERIMENTER

WITNESS

DATE

DATE

52

DATE

10-18-45

SUBJECT OF EXPT

COCKING & TOL. CHECK.

SEAR PIN HOLE FROM LUG = 3.971 MAX ①

" " " " TO SEAR POINT = 1.8836 MAX ②

LUG SEAR TO POINT OF SEAR 5.2946 MAX

MIN LUG TO BOLT HANDLE = 4.380

MIN LUG TO COCKING REAR POINT: .309 ③ BOLT HEAD

4.505 ④ BOLT BODY

4.814

- .035 ⑤ CAM SEAT

4.749

.550 ⑥ CAM POINT TO SHOULDER

5.399

- .145 ⑦ SHOULDER TO MATCH

5.154

- .438 ⑧

4.716

.804 MIN BOLT HANDLE TO COCKING

4.326 MIN LUG TO BOLT HANDLE SEAR

1.500 MIN PRIM. EXT.

5.759 MIN LUG TO MATCH BOLT

+ .030 for coming into match in

giving .029 MIN. OVER TRAVEL

IF PRIMARY EXTRACTION CAM

IS O.K.

EXPERIMENTER

WITNESS

DATE

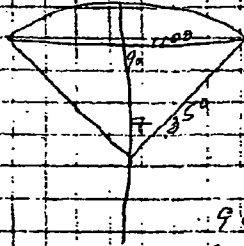
DATE

DATE

10-18-45

SUBJECT OF EXPT.

PRIMARY EXTRACTION CHECK



$$S_{\alpha} \alpha = \frac{.100}{.350} = .2855$$

$$\alpha = 16^{\circ} 35'$$

90°	73.5°
24°	16° 35'
66	66

$$3\alpha = 5/14000$$

Seal Pin hole from Rec Lug	=	3.970	± 1	1
Seal Pin hole to seal notch	=	1.298	± 5.6	5.6
		5.268	± 6.6	

Bolt Head	=	3.12	± 3	3
Bolt Body	=	4.5075	± 2.5	2.5
		4.8195	± 5.5	
Cam Seat	=	1.0325	± 2.5	2.5
		4.7870	± 8.0	
Cam point to shoulder	=	1.555	± 5.0	5.0
		5.3420	± 13.0	
Shoulder to notch	=	1.1125	± 2.5	2.5
		5.1995	± 15.5	

Lug to Bolt Head	=	4.3775	± 2.5	2.5
------------------	---	--------	-------	-----

Rec shoulder to Ext cam	=	4.3675	± 2.5	2.5
Cam	=	1.025	± 2.5	2.5
		4.4700	± 5	

$$\sqrt{2.5^2 + 2.5^2} = \pm 10.2$$

5.268 ± 6.6	822 ± 18	5.1995 ± 15.5
4.470 ± 5.0	798 ± 11.4	4.8195 ± 8.5
798 ± 11.6	1024 ± 29.0	5.0325 ± 18.5

EXPERIMENTER
WITNESS

STAD DATE
STAD DATE

54

DATE

10-22-45

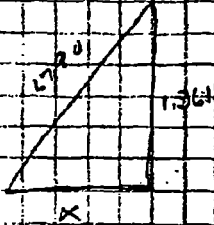
SUBJECT OR EXPT.

Need extraction part & extraction can cut the water
as per request of engineering.

1.390

2.072
- .680
1.392
1.317
- .085

1.712



1.712
351
1.361

351
46
4
1.361

70
9507

$$.76 = \frac{1.361}{1.712} = \cos \alpha$$

$$\alpha = 40.32^\circ$$

$$\tan \alpha = .855 = \frac{x}{1.361}$$

$$x = 1.165$$

$$\sin A = \frac{5}{(1.93) \times .97} \sqrt{2.105 (1.024) (1.05) (2.45)}$$

$$\frac{1.712}{x} = \cos 34.1^\circ$$

$$= .8005$$

$$A = 40.13^\circ$$

3.1
560
1.7

2.072
1.392
- .680
1.392
1.317
- .085
1.232

2.072
1.392
- .680
1.392
1.317
- .085
1.232

2.072
1.392
- .680
1.392
1.317
- .085
1.232

34.1
913
43.29

$$\sin 43.25^\circ = \frac{x}{1.93}$$

1.328

$$\sin \alpha = \frac{1.43}{1.351}$$

$$\alpha = 27.39^\circ$$

EXPERIMENTER
WITNESS

DATE
DATE

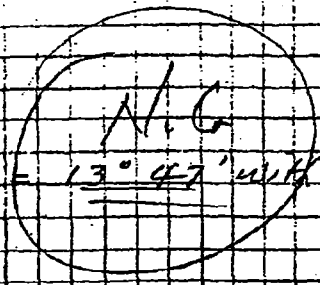
DATE
SUBJECT OF EXPT.

$$h = 350(1 - 8054)$$

$$= 351(1142)$$

$$= .0402$$

Angle of chord on ext cam on Rec = 13° 47' with h



$$\frac{.117}{.112}$$

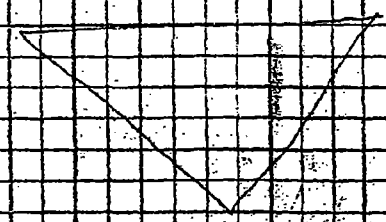
$$\frac{1.93}{1.79}$$

$$= 1.14$$

$\tan \alpha = \frac{1.14}{.74}$

$\alpha = 39^{\circ} 16'$

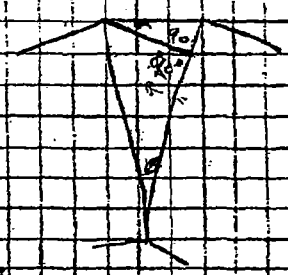
N.G.



$$9.1355 = \frac{x}{.351}$$

$$\frac{1.714}{320}$$

$$= 1.39$$



$$\sin 24^{\circ} = \frac{.4647}{.551} = \frac{x}{.551}$$

$$\frac{2.1256}{.351}$$

$$= 2.1256$$

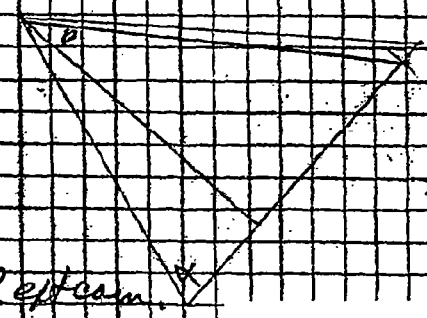
$$10.6180$$

$$63768$$

$$7460852$$

$$144416$$

$$\frac{24}{.33} = \frac{x}{.11} = 2^{\circ}$$



$$\frac{1.165}{.143}$$

$$= 1.308$$

$$1.392$$

$$\sin 63.13^{\circ} = \frac{1.308}{x}$$

$$.894$$

$$x = \frac{1.910}{.894} \text{ outer R ext cam.}$$

EXPERIMENTER
WITNESS

DATE
DATE

56

DATE

SUBJECT OF EXPT.

$$\sin A = \frac{x}{bc} \sqrt{s(s-a)(s-b)(s-c)}$$

$$a = 489$$

$$b = 2070$$

$$c = 1400$$

$$= .508$$

$$2.2345(17355)(11645)(3345)$$

$$3.880$$

$$638$$

$$2136$$

$$.4635$$

$$4.469$$

$$2.2345$$

$$499$$

$$117355$$

$$2.2345$$

$$2070$$

$$11645$$

$$2.2345$$

$$1.1$$

$$3345$$

$$\sin A = .2345$$

$$A = 13^\circ - 35'$$

$$34^\circ - 12'$$

$$47^\circ - 49'$$

$$\sin 47^\circ = \frac{x}{1400} = .7406$$

$$x = 1140.7$$

$$11645$$

$$.2042$$

$$\cos A = .643$$

$$.1141$$

$$2.5791$$

$$351$$

$$2.0791$$

$$10.3955$$

$$6.2373$$

$$.07297641$$

$$2$$

$$.14594$$

$$A = 11^\circ - 45' \text{ ept com chord angle with Hoke}$$

$$1.910$$

$$1.77$$

$$.11210$$

$$1141$$

$$.1185$$

$$1.1$$

$$88.60$$

$$A = 43^\circ 39' \text{ ept com angle with Roe}$$

$$4621$$

$$DATE$$

$$DATE$$

EXPERIMENTER

WITNESS

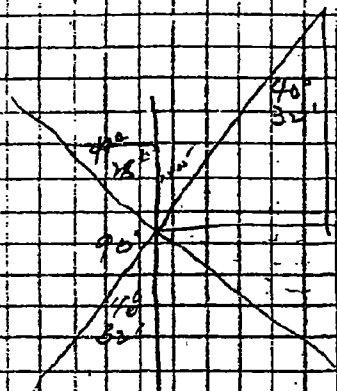
DATE _____

SUBJECT OF EXPT.				
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$$\frac{1165}{1367} \cdot \frac{7}{10} \approx 0.54$$

$\alpha = 2$

$$\begin{array}{r} 1712 \\ 351 \\ \hline 1361 \end{array}$$

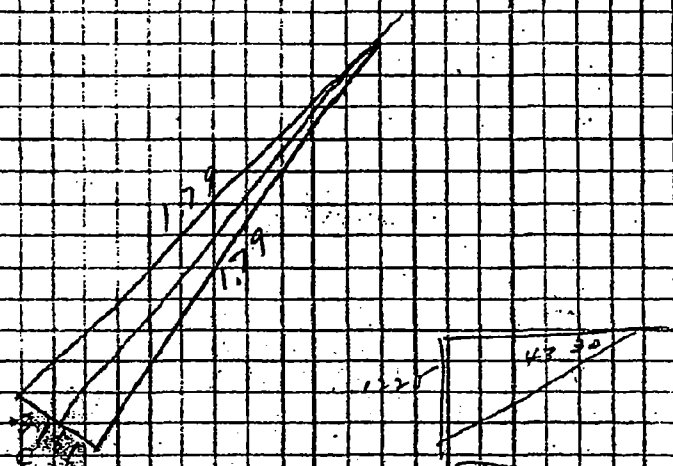


189	
130	32
49	28

	995
	+99
	695
	349
	143
	<u>492</u>

$$\begin{array}{r} \text{C- } 49^{\circ} 28' - 1705 \\ \underline{ X} \\ = 6499 \\ X = 1216 \end{array}$$

$$\begin{aligned} \sec 49^\circ 20' &= 1.5387 \\ c &= 1.5387 (140.5) \\ &= 216.1 \end{aligned}$$



$$I_{\text{avg}} = 43.30 = \frac{(12.2)^2}{x} = 54.96$$

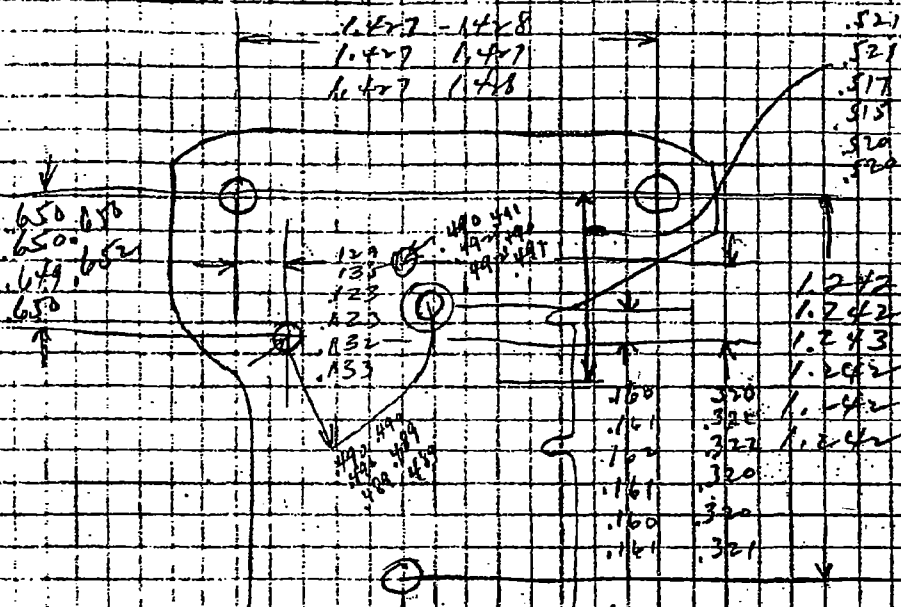
$$x = 12.8$$

EXPERIMENTER	
WITNESS	

DATE	
DATE	

SUBJECT OF EXP'T

10 15
Check on Housing


$$\begin{array}{r} 1437 \\ \times 155 \\ \hline 7185 \\ 14370 \\ 143700 \\ \hline 222735 \end{array}$$

WITNESS

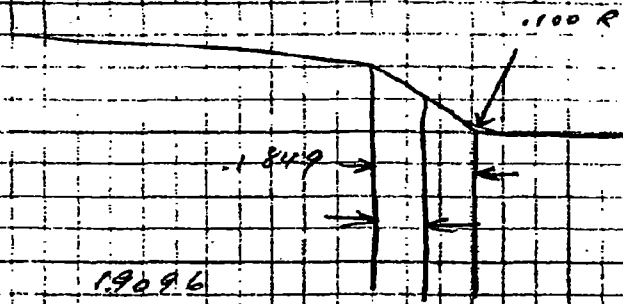
DATE _____

DATE

4-8-46

SUBJECT OF EXPT.

.274 Rem.



19096
17247
1849

214314
2157

4314
292
214394
0697

292
146

17995
17247
0748

375
1875

17277
17247
0030

4294
2147

19117
19086
0021

3073
025
3278
1689

20542
1981
506

20542
1981
506

20542
1981
506

20474
1940
1079

EXPERIMENTER

WITNESS

DATE

DATE

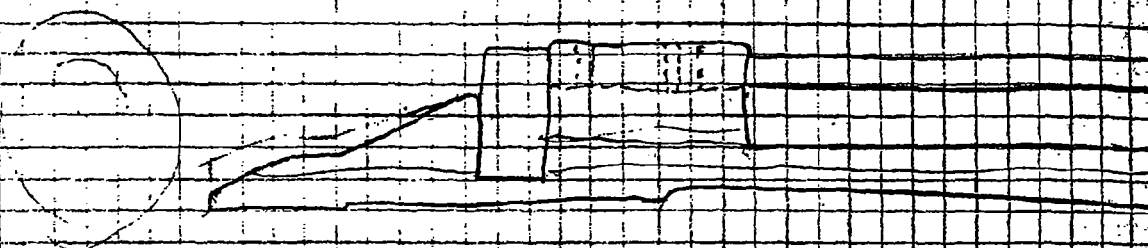
62

DATE

5-27-46

SUBJECT OF EXPT.

SKETCH FOR SIGNS



EXPERIMENTER

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DATE

DATE

DATE

SUBJECT OF EXPT.

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WITNESS

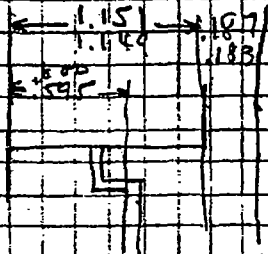
DATE

DATE

64

DATE

SUBJECT OF EXPT.

8-25-47
Bill & Bert Colon.

4.34
2.11
9.55

7.71
7.25

1.151
1.187
1.338
7.23
1.615
1.595

1.020 Mark

1.149
1.183
1.332
7.28
1.604
6.00

10.04
10.04
10.04

4.485

1.151
1.187

1.338
4.485
8.895

1.149
1.183
1.332
1.151
1.187
8.805

1.151
1.187
1.338
7.23
1.615
1.595

3.44
7.23
1.615
1.595

EXPERIMENTER

WITNESS

DATE

DATE

DATE

SUBJECT OF EXPT.

10-1-48

Give Calculations for Report in
Products Engineering Article

BARREL STRENGTH

FORMULAE

Lame's

$$S = \frac{P(r_2^2 + r_1^2)}{r_2^2 - r_1^2}$$

S = stress tang.

P = Int press.

r₁ = inside rr₂ = outside r

$$r_1 = .750" = .0625$$

$$r_2 = .595" = .331$$

$$P = 84000 \text{ PSI}$$

$$S' = \frac{1}{2} r P$$

$$= \frac{1}{2} (.250) 84000$$

$$S' = 104750 \text{ tangit.}$$

$$S = \frac{84000 (.343)}{.269}$$

$$= 123,400 \text{ PSI}$$

$$\frac{123400}{118250} = 104750$$

ORDINANCE

$$\sigma = \frac{P}{\frac{3}{2} \left(\frac{r_2^2 - r_1^2}{r_2^2 + 2r_1^2} \right)}$$

σ = Elastic Limit
of material
used.

$$= \frac{84000}{\frac{3}{2} \left(\frac{.269}{.343} \right)}$$

$$= \frac{84000}{1.1825} = 150000$$

EXPERIMENTER

DATE

WITNESS

DATE

DATE

10-4-68

SUBJECT OF EXPT.

COX'S

$$Y = \frac{2}{3} \frac{P}{W^2 - 1} (2W^2 + 1)$$

 $W = \frac{\text{outside dia}}{\text{inside dia}}$
 $P = \text{PRESSURE UNIT}$
 $Y = \text{STRESS}$

$$= \frac{1.15}{1.75} = .65 \quad W^2 = 5.19$$

$$Y = \frac{2}{3} \frac{84000}{4.19} = 11.38$$

$$= 152000$$

AVERAGE S using LAMÉ'S $P = 0$

$$S = P \left(\frac{r_1^2 + \frac{r_2^2 r_1^2}{r_2^2}}{r_1^2 - r_2^2} \right)$$

Substituting

$$r = .75 \quad S_1 = 123,000$$

$$r = .331 \quad S_2 = 80,600$$

$$203,600$$

$$r = .412 \quad S_2 = 57,200$$

$$137,800$$

$$r = .494 \quad S_2 = 45,600$$

$$68,000$$

$$r = .576 \quad S_2 = 38,800$$

$$102,800$$

$$r = .658 \quad S_2 = 38,800$$

$$84,400$$

EXPERIMENTER

DATE

WITNESS

DATE

DATE 10-4-48
 SUBJECT OF EXPT. CON'T.

$$AREA = \frac{123,000 + 80,600}{2} (0.81) = 82,500$$

$$\frac{80,600 + 57,200}{2} (0.81) = 55,500$$

$$\frac{57,200 + 45,600}{2} (0.84) = 41,600$$

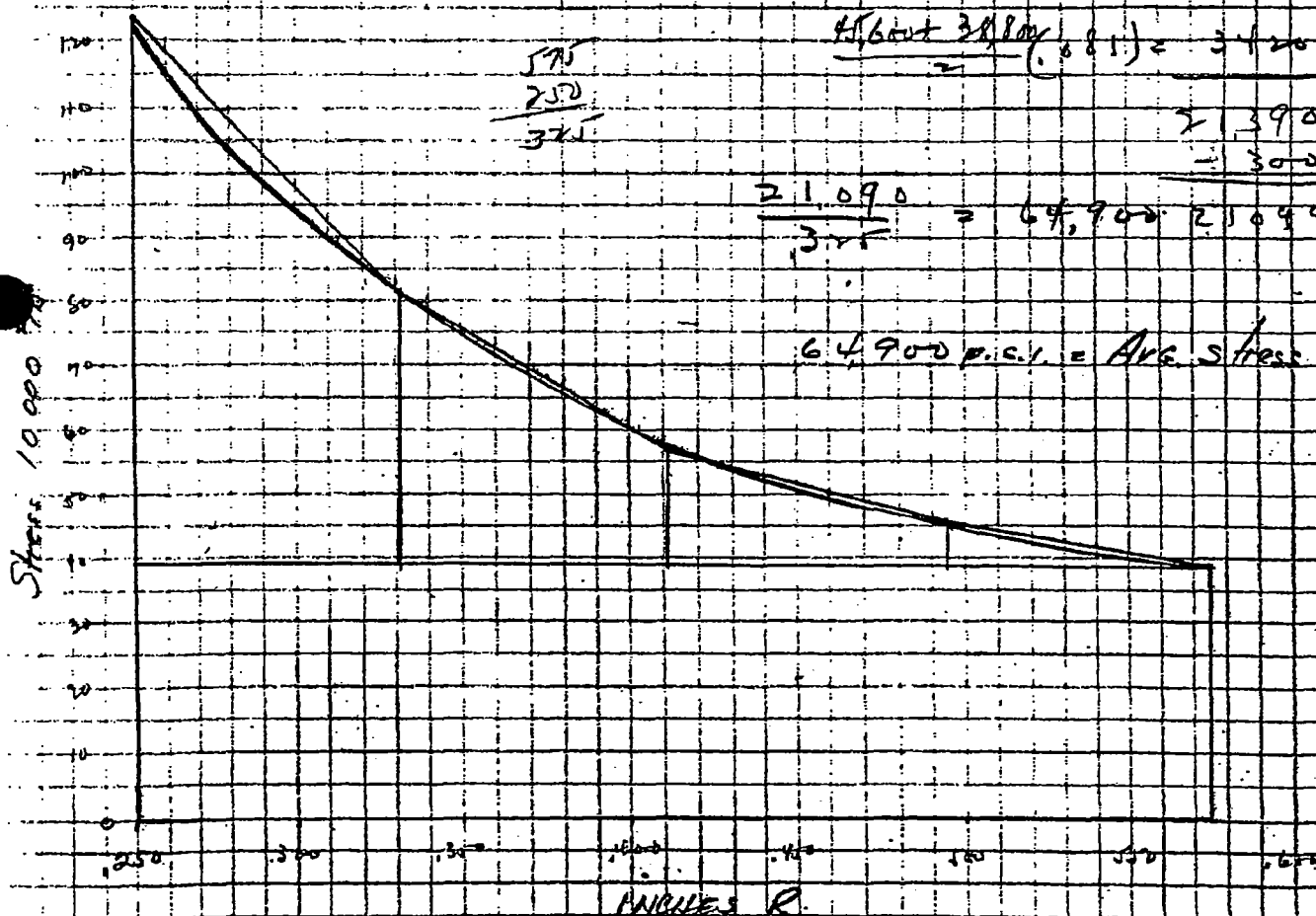
$$\frac{45,600 + 34,800}{2} (0.81) = 34,200$$

$$\frac{575}{250} = 371$$

$$\frac{21,390}{300} = 71.3$$

$$\frac{21,090}{3.15} = 67,900 \text{ p.s.i.}$$

67,900 p.s.i. = Avg. stress



EXPERIMENTER

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DATE

38

DATE

10-11-48

SUBJECT OF EXPT.

Coat LOCK TIME

$$E = \frac{1}{2} MV^2$$

$$E = 19$$

$$V = \frac{29}{T}$$

$$V = \frac{\sqrt{2E}}{M}$$

$$T = \frac{29}{\frac{\sqrt{2E}}{M}}$$

$$V = \frac{V_1 - V_2}{2}$$

$$V_1 = 0$$

$$V = \frac{V_2}{2}$$

$$2 \left(\frac{300}{12} \right)$$

$$2(0.022)$$

$$\frac{\sqrt{2(19)} \cdot 300}{67.9 \times 0.022}$$

$$\frac{\sqrt{10.5}}{0.0047}$$

$$= \frac{0.210}{\sqrt{2.46}}$$

$$= \frac{0.35}{1.49}$$

$$= 0.00337$$

$$2 \left(\frac{300}{12} \right) = \frac{1}{2} \frac{67.9(0.022)}{32} V^2$$

$$T^2 = \frac{4S^2}{2RS}$$

$$T^2 = \frac{2SM}{P}$$

EXPERIMENTER

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SUBJECT OF EXPT.

$$T = \frac{\sqrt{2MS}}{P}$$

$$E = \frac{1}{2}mv^2$$

$$E = PS$$

EXPERIMENTER

WITNESS

DATE

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70

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THIS BOOK MICROFILMED
AS COMPLETE
MAKE NO ADDITIONAL ENTRIES

EXPERIMENTER

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KINZER V. REMINGTON

R2500222

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MAKE NO ADDITIONAL ENTRIES

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