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REPORT
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MEMORANDUM REPORT

M62-19-1

DESCRIPTION AND OPERATION
OF A HAND HELD WIRE GUN

by

A. J. Grandy

and

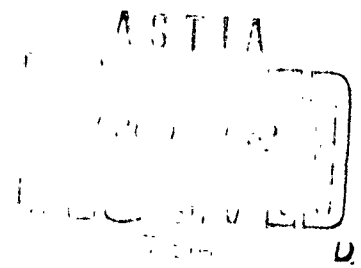
J. W. Zettel

OMS Code 5520.12.468 IO

DA Project 596-10-001

February 1962

338 000



REPORT M62-19-1



FRANKFORD ARSENAL

PHILADELPHIA 37, PA

Frankford Arsenal
Philadelphia 37, Pa.

Memorandum Report M62-19-1
February 1962
OMS Code 5520.12.468 IO
DA Project 596-10-001

DESCRIPTION AND OPERATION
OF A HAND HELD WIRE GUN

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OBJECT

To develop a self-energized hand held wire gun for unconventional warfare forces that will provide an effective means of capturing personnel alive, stopping riots, and erecting fast barriers in rough terrain.

SUMMARY

↙ A hand-held version of a wire gun was designed and developed, and a sample lot ^{was} fabricated for use in controlled tests.

During limited development time the device displayed excellent operational characteristics. Further testing will be required to accurately determine adequacy against intended targets.

Complete descriptions of ^{the} design and operation of ^{the} ~~this~~ device are ~~contained in this report~~ ^{presented}.

DESCRIPTION OF WIRE GUN

The wire gun developed for this application is intended primarily for use by individuals for short range operation against personnel encountered during riots or quelling an unruly mob. This device can also be used to sow or entangle a mass of barbed wire across narrow roads, paths, and the like. The completely assembled unit, ready for use is shown in figure 1.

The wire in this coil is a high strength rectangular steel wire which has been barbed and then wound in such a manner that it is not overstressed during the winding process. Upon release of the coil end, stored energy propels the wire out of the tube in a straight line so that the wire extends to a range of approximately 80 feet.

The complete system consists of a double action spring initiating assembly, a barbed wire coil, an outer container assembly, and an end cap with wing nut. See figure 2.

Initiating Mechanism

The double action spring initiating assembly is composed of four main parts; the pull ring, which is a brazed steel ring, a sear rod which has an angular cut on one end, a piston which has a mating end to fit in the sear rod, and the initiating spring. Attached to the pull ring is a red aluminum tag labeled "Pull ring to Fire." In operation, the sear rod and piston are locked together by means of mating cuts in the rod ends and act as a single unit as the pull ring is retracted to fire the device. At a point when the angled cut in the sear rod is retracted clear of the container (approx. 2.0 inches), it will release and allow the spring to reverse piston direction and propel it out of the container with the connected coil end.

Safety Assembly

The safety assembly is composed of a standard firing safety pin, a steel pull ring, and a black aluminum tag labeled "SAFETY." This safety pin, when inserted properly, gives a positive visual indication that the device is safe to handle.

Wire Coil

The wire coil is composed of approximately 450 feet of flat, high strength, barbed steel wire. It is wound in such a manner that the wire contains energy and upon release of the coil end, releases this energy to propel the wire to a range of approximately 80 feet. The wire coil weighs 8.2 lb.

Outer Container Assembly

The outer container is constructed of a steel cylinder and steel end cap brazed together. The cylinder is ten inches long and three and three-quarter inches in diameter. A steel holder is brazed into the end cap which houses the initiating mechanism.

End Cap and Wing Nut

The steel end cap contains a fiber washer which seals this end from moisture. The wing nut is assembled with an "O" ring, and is threaded into the end of the piston for shipping purposes. This wing nut also acts as a double safety. It is impossible to retract the sear rod when the wing nut is in place, even if the safety pin should be removed. The total weight of metal parts is approximately 2.5 lb.

Complete details of construction are contained in appendix B.

OPERATING INSTRUCTIONS

Wire guns supplied in the field will be available in standard T46 ammunition cans. See figure 3. Each of the four wire guns contained in a can will be packaged in a fiberboard cylinder and equipped with a canvas carry bag. See figure 4.

Upon receipt, the units should be removed from the ammunition can as illustrated in figure 5. The pull tape is removed from the shipping cylinder and the end cap lifted as shown in figure 6. The wire gun will be exposed upon removal of the packing excelsior and cardboard spacers. Complete packing arrangement within the tube is illustrated in figure 7. The wire gun can now be removed from the fiberboard cylinder as shown in figure 8.

In field use individual wire guns are carried in a canvas bag which is slung over the shoulder. The nylon belt which is supplied should be used when firing from the waist. The "PULL RING" of the firing assembly snaps onto the belt as shown in figure 9.

In order to prepare the device for firing, the end cap is removed by unscrewing the wing nut, (figures 10 and 11).

When ready to use, the safety pin is removed by pulling the ring with black tag labeled "SAFETY." (Figure 12) Three methods are suggested for initiation and operation of this device.

Figure 13 depicts the first and recommended method of firing. A nylon belt is supplied in each shipping container. The belt is worn around the user's waist and the "pull ring" of the device snaps onto it. With the device attached to the belt the gun is held securely with both hands and pulled away from the body. A force of 20 lbs. is required to retract the firing assembly two inches after which it will unlatch. Spring force will then propel the piston out of the container and expel the leading edge of the wire. The barbed wire will begin paying out, up to an approximate range of 80 feet. The gun may be guided by maneuvering the container similar to a water hose to lay wire on target. It will take approximately 6 or 7 seconds to expend the complete contents of the coil.

The second method of initiating the device is shown in figure 14. The gun is held in the crook of the left arm and actuated with the right hand.

The third method is depicted in figure 15. The device is aimed with the left hand and actuated with the right hand.

Figure 16 shows a section of wire as it would appear coming from the gun.

Notes:

1. There are no propellants or explosives used in this device. Velocity imparted to the wire is "built in" during the winding of the coil.
2. These devices are in the development stage and are not intended as fully qualified and tested equipment.
3. Each device has a serial number engraved on the end of the sear rod and is intended to be used for identification of the device in case of abnormal operation. In case of any such abnormal operation this serial number should be noted and transmitted back to the manufacturing agency.
4. Wherever possible, all used metal parts should be returned to sender for reloading.

REFERENCES

1. A. J. Grandy, "A Proposal for the Development of a Wire Gun," Frankford Arsenal Proposal P60-5-1, June 1960.
2. Frankford Arsenal Brochure, "Barnyard Ordnance," April 1961; classified SECRET.

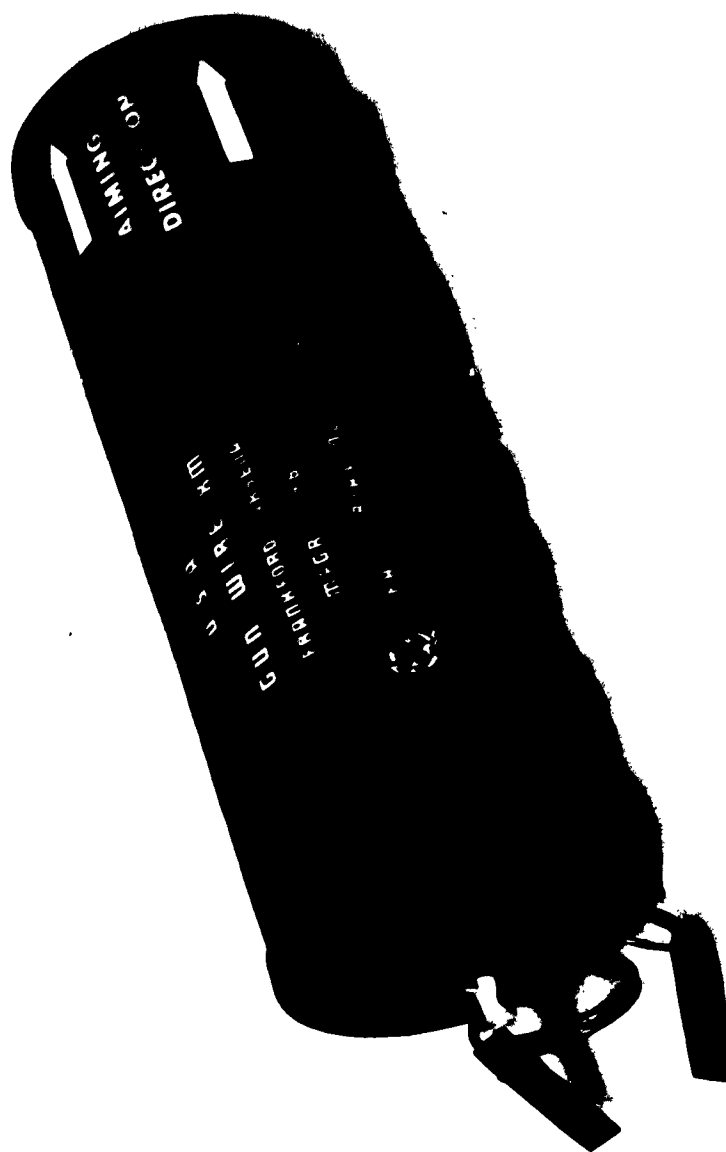
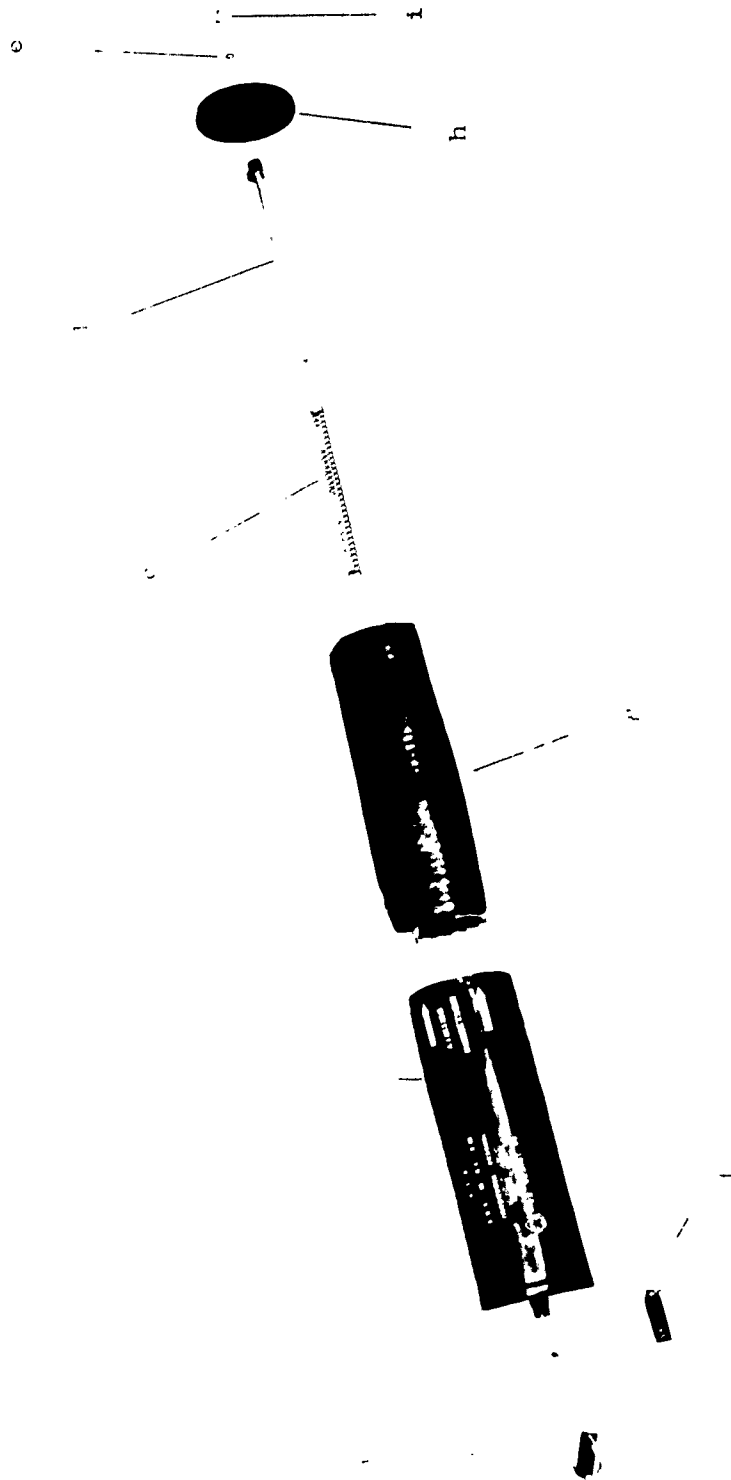


Figure 1. Gun, Wire, XM - Exterior View



a - Firing assy
 b - Outer container
 assy
 c - Spring

d - Piston
 e - "O" ring
 f - Safety assy

g - Wire coil
 h - End cap
 i - Wing nut

Figure 2. Partial Disassembly of Wire Gun

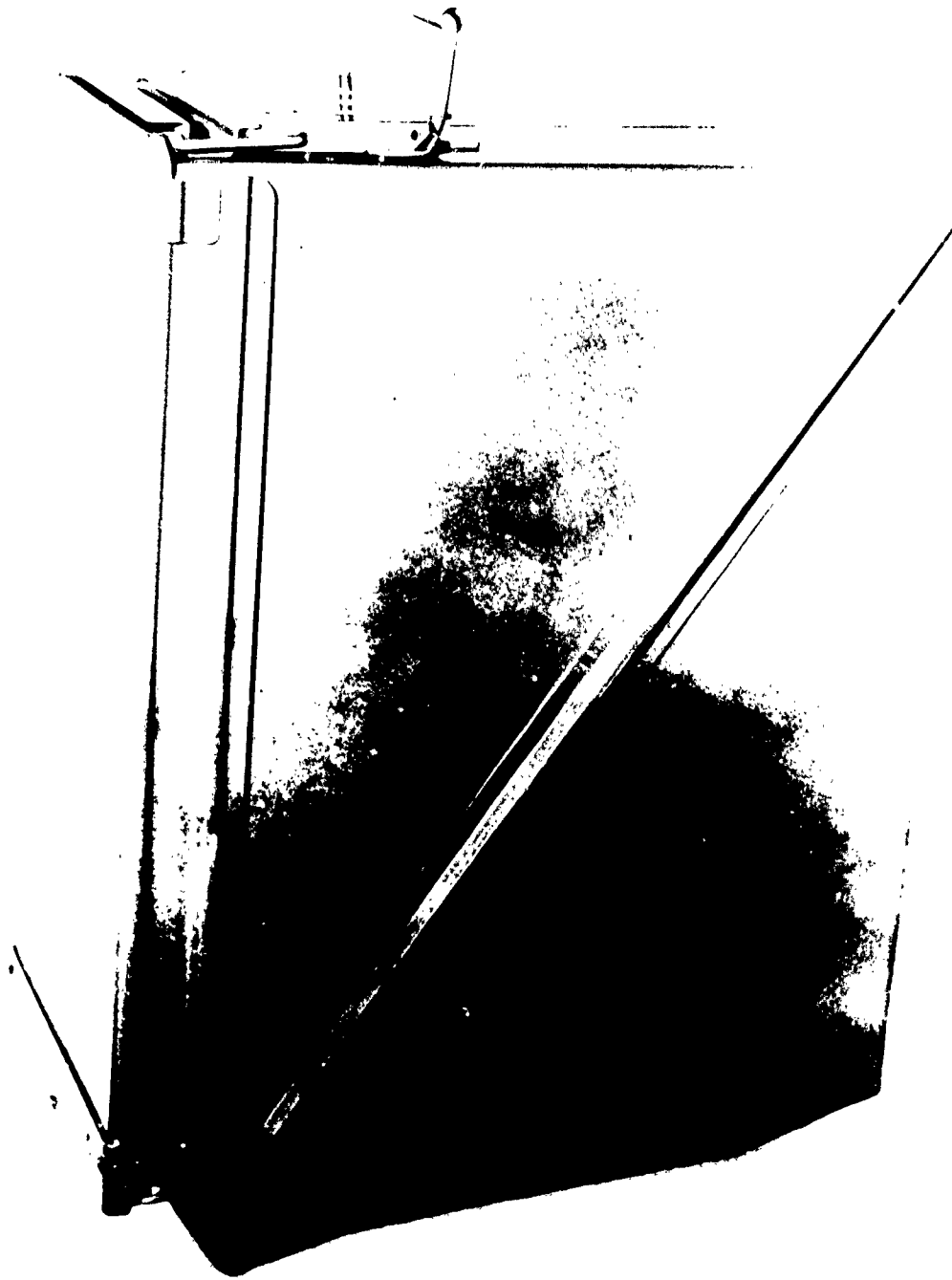


Figure 3. Side View of Wire Gun Shipping Can



Figure 4. Four Wire Guns are Loaded in Each Shipping Can



Figure 5. Wire Gun and Carry Bag Being Removed from Shipping Can



Figure 6. Removing Cap from Cardboard Container

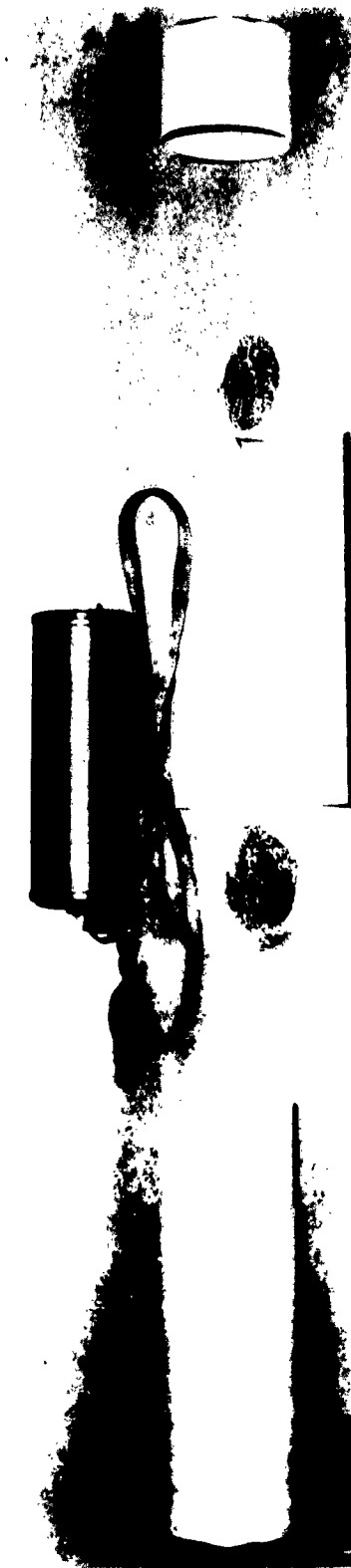


Figure 7. View of Wire Gun Packing Materials



Figure 8. Removing Wire Gun from Cardboard Container



Figure 9. Belt Attachment to Wire Gun



Figure 10. Step 1 - Unscrew Wing Nut



Figure 11. Step 2 - Remove End Cap



Figure 12. Step 3 - Remove Safety Pin



Figure 13. Belt Method of Firing Wire Gun



Figure 14. Elbow Rest Firing Position



Figure 15. Hand Held Filing Position

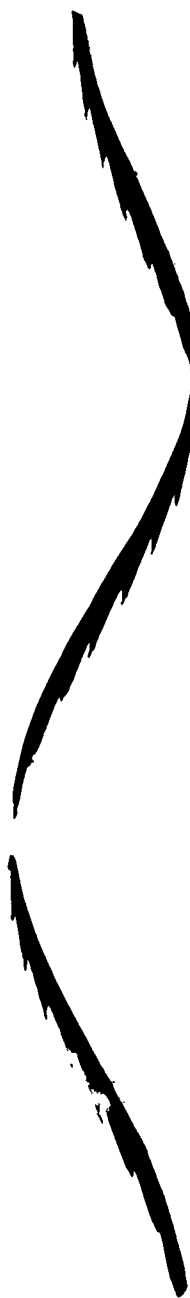


Figure 16. Wire Sample After Fired From Gun

APPENDIX A

DEVELOPMENT OBJECTIVE

DEVELOPMENT OBJECTIVE

Statement of Requirement

a. The requirement is for a coil of high strength steel wire wound in such manner that when its inner end is released it axially extends in essentially a straight line to a range of up to 100 feet using stored energy resulting from the winding process. With barbs on the wire, an antipersonnel or riot control weapon is created for field use. This wire gun will significantly increase the capabilities of unconventional warfare forces to harass the enemy and to support theatre operations.

Materiel

A. Performance Required

The wire gun must be positive in action, once released it must continue to exude wire until the entire coil is expended. Configuration of the wire mass at the target must be in accordance with its designed use. For antipersonnel use the barbs must be positioned so as to hamper escape of personnel enmeshed. For riot control the wire must "ball" with open barbs so as to halt a crowd. The wire gun device must be positive, simple, and reliable for use by indigenous personnel in unconventional warfare operations. Temperature within the target area must not be a limiting factor to its effectiveness.

B. Description of the Desired Equipment

A wire gun similar to that developed by F. A.* should be considered. With design modifications, it should be effective in a wide

*A. J. Grandy, A Proposal for the Development of a Wire Gun, Frankford Arsenal Proposal P60-5-1, June 1960.

variety of applications. The basic design consists of a seemingly harmless coil of wire. The internal energy is achieved by a special winding process. The intended use will determine the size and geometry of the wire. If sophistication is required, it will be concealed in the coil core.

Qualitative Characteristics

1. The device must resemble a harmless coil of wire to facilitate shipment or carry into an area of covert operations.

2. A positive and simple means of employment in the intended application must be provided. A minimum number of types are desired for multiple uses, but a family of devices is acceptable. Non-explosive devices are desired but incorporation of propellant will be acceptable if warranted by extension of range.

3. The device must be such that the source of wire cannot be determined from the expended wire.

4. Storage conditions and effective life must not be critical.

Operational and Organizational Concepts

1. Operational Concept - The device will provide unconventional warfare forces with an efficient means of capturing personnel alive, stopping riots, and generally reaching inaccessible positions.

2. Organizational Concept - The devices will be issued to unconventional warfare forces under the appropriate table of allowances.

3. Operational Urgency - These devices are required as early as possible, preferably within one year.

Maintenance Concept

There shall be no maintenance required for the device in storage or in the field, during its service life.

APPENDIX B

DETAIL DRAWINGS

Note:

Detail drawings and packaging instructions located in appendixes B and C are presented **FOR INFORMATION ONLY** and should not be used for manufacturing purposes.

MAX OD	.500	-.020
MIN ID	.380	
TO SUPPORT	23185 ± 10%	@
WIND	RIGHT HAND	
TYPE OF ENDS	CLOSED	AND
MAX SOLID HEIGHT	2.012	
WIRE DIA	.0625	
PITCH DIA	443	
ACTIVE COILS	30	
FREE HEIGHT	6.00 ± .03	
TOTAL NO. OF COILS	32	

TYPE OF ENDS

MAX SOLID HEIGHT 2.012

WIRE DIA	.0625
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PITCH DIA 443

ACTIVE COILS 30

FREE HEIGHT 6.00 ± .03

NO.	DESCRIPTION	QTY.	UNIT	TOTAL NO. OF COILS	32
1	COIL NO. 1	1	COIL	1	
2	COIL NO. 2	1	COIL	2	
3	COIL NO. 3	1	COIL	3	
4	COIL NO. 4	1	COIL	4	
5	COIL NO. 5	1	COIL	5	
6	COIL NO. 6	1	COIL	6	
7	COIL NO. 7	1	COIL	7	
8	COIL NO. 8	1	COIL	8	
9	COIL NO. 9	1	COIL	9	
10	COIL NO. 10	1	COIL	10	
11	COIL NO. 11	1	COIL	11	
12	COIL NO. 12	1	COIL	12	
13	COIL NO. 13	1	COIL	13	
14	COIL NO. 14	1	COIL	14	
15	COIL NO. 15	1	COIL	15	
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25	COIL NO. 25	1	COIL	25	
26	COIL NO. 26	1	COIL	26	
27	COIL NO. 27	1	COIL	27	
28	COIL NO. 28	1	COIL	28	
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32	COIL NO. 32	1	COIL	32	
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34	COIL NO. 34	1	COIL	34	
35	COIL NO. 35	1	COIL	35	
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45	COIL NO. 45	1	COIL	45	
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67	COIL NO. 67	1	COIL	67	
68	COIL NO. 68	1	COIL	68	
69	COIL NO. 69	1	COIL	69	
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72	COIL NO. 72	1	COIL	72	
73	COIL NO.				

[illegible]

PHYSICAL PROPERTIES		APPLICATION		FA 32228			
YP		NEXT ASSY	USED ON	REVIEWS			
TS			FA 32224				
CL 2				SYN	DESCRIPTION	DATE	APPROVAL
RA							
BN							
RH							
	DO NOT	APPLY PART NO.					
	DO	AS SPECIFIED					

NOTE:

1- MUSIC WIRE, COMP A, COLD DRAWN
SPEC QQ-W-470

2-CADMIUM PLATE, SPEC QQ-P-416
CLASS A (.0005 THK), TYPE I.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON-	ORIGINAL DATE OF DRAWING 2-9-62	PIN SAFETY	R & D GT20 11
DECIMALS ± .005	DRAWNMAN JVA		
FRACTIONS ± 1/64	CHECKER JME		
ANGLES ± 1'	TRACER		
MATERIAL SEE NOTE 1	ENGINEER	ENGINEER	ORDNANCE CORPS
HEAT TREATMENT	SUBMITTED	ORD CORPS	DEPT OF THE ARMY
FINAL PROTECTIVE FINISH SEE NOTE 2	APPROVED BY ORDER OF THE CHIEF OF ORDNANCE	ORD CORPS	U.S. ARMY ORD ARSENAL FRANKFORD
		SCALE	DRG SIZE A
			FA 32228

Figure B-2. Pin, Safety

PARTIAL SPECIFICATION		APPLICATION		FA 32199			
ITEM	PART NAME	USED ON	REV	DESCRIPTION	DATE	APPROVAL	
1	SAFETY	FA 32224					
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MATERIAL : 16 GA ALUM (2024-T3)
 LETTERS : LUSTERLESS WHITE NO. 37886,
 FED. STD NO. 595. SPEC TT-I-558
 OVER BLACK BACKGROUND (BOTH SIDES)

DIMENSIONS SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS _____ FRACTIONS _____ ANGLES _____ MATERIAL SEE NOTE HEAT TREATMENT FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING 2-7-62 DESIGNED J.V.F. CHECKED J.M.F. TRACER _____ ENGINEER _____ SUBMITTED ORG CORPS APPROVED BY ORDER OF THE CHIEF OF ORDNANCE ORG CORPS	TAB, SAFETY SCALE 1:1 UNIT WT	R & D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. ARSENAL FRANKFORD DWS SIZE A FA32199
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Figure B-3. Tab, Safety

PROPERTIES		APPLICATION		FA 32226			
YP		NEXT ASSY	USED ON	REVISIONS			
TS			FC11303				
EL 2				SYM	DESCRIPTION	DATE	APPROVAL
RA							
BN							
RH		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

OLIVE DRAB

YELLOW LETTERS

U.S.A.
GUN, WIRE, XM
FRANKFORD ARSENAL
MEGR. 1961
FA SERIAL NO.

3

1 1/32

3/16 (TYP)

1/16 (TYP)

9/32

2 13/16

YELLOW

OLIVE DRAB LETTERS

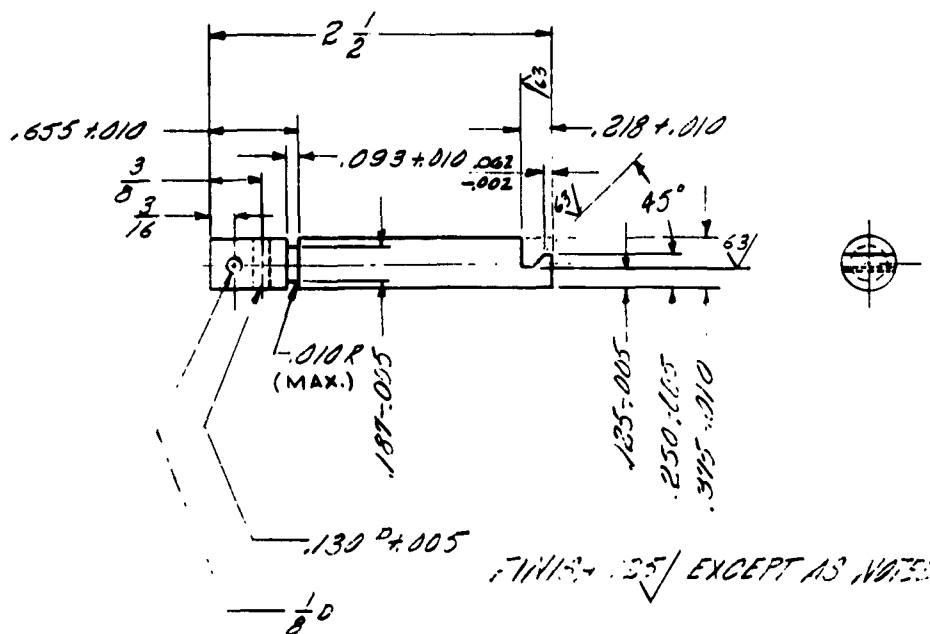
SOURCE: NATIONAL DECALCOMANIA CO.
236-40 N. 60TH ST
PHILA. PA. OR EQUIVALENT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON-	ORIGINAL DATE OF DRAWING 2-12-62	DECAL, IDENTIFICATION	R&D GROUP		
DECIMALS	DRAFTSMAN JPV		CHECKER JMF	ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORDNANCE FRANKFORD	
FRACTIONS	TRACER		CHECKER		
ANGLES	ENGINEER		ENGINEER		
MATERIAL	SUBMITTED		APPROVED BY ORDER OF THE CHIEF OF ORDNANCE		
HEAT TREATMENT		SCALE 1/1	UNIT WT	DWG SIZE A	FA32226
FINAL PROTECTIVE FINISH					

Figure B-4. Decal, Identification

PHYSICAL PROPERTIES		APPLICATION		FA 32122			
YP		NEXT ASSY	USED ON	REVISIONS			
TS			FA 32218	SYM	DESCRIPTION	DATE	APPROVAL
EL 2							
RA							
BH							
RH							
		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

NOTE:- BREAK ALL SHARP CORNERS



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS FRACTIONS $\pm 1/64$ ANGLES $\pm 30'$ MATERIAL: ALUMINUM (2024 T4) SPEC 3-A-1 HEAT TREATMENT FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING 2-9-62 DESIGNED JEF TRACER JEF ENGINEER JEF SUBMITTED APPROVED BY ORDER OF THE CHIEF OF ORDNANCE ORG CORPS	3' E 4' 5"	RD GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORDN. ARSENAL FRANKFORD DWS SIZE A FA 32122

ARMY-NAVY ORDNANCE TRUST, NEWTON, NJ 07110

Figure B-5. Sear

GENERAL INFORMATION		APPLICATION		AFA 32310			
YP		TEXT ASBY	USED ON	REVISIONS			
TS			FA 32218	SYN	DESCRIPTION	DATE	APPROVAL
EL 2							
BA							
BN							
RN		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

1.40 +.04

$\frac{1}{16}$ WHEN SPRING IS COMPRESSED TO 1.34 O.D.

ZINC PLATE, CHROMATE DIP, TYPE 1, CLASS RSC, SPEC 57-0-2. TO BE GIVEN A DEHYDROGENATION BAKE AT 350° TO 400°F FOR 1 HOUR AFTER PLATING AND BEFORE CHROMATING.

DIMENSION SPECIFICATIONS DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS _____ FRACTIONS $\pm \frac{1}{64}$ ANGLES _____ MATERIAL MUSIC WIRE, TYPE A, QQ-W-479 USE DIA. HEAT TREATMENT _____ FINAL PROTECTIVE FINISH SEE NOTE	ORIGINAL DATE OF DRAWING 14 Feb 62 DESIGNED BY _____ TRACER _____ ENGINEER _____ SUBMITTED _____ APPROVED BY ORDER OF THE CHIEF OF ORDNANCE _____ ORDN CORPS	RING	R & D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORDN. ARSENAL FRANKFORD DWG SIZE A F.A. 32310 SHEET 1 of 1
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SCALE 2:1

Figure B-6. Ring

GENERAL PROPERTIES		APPLICATION		FA 53759			
TP		WET ASSY	USED ON	REVISIONS			
TS			FA 32217				
EL 2				SYN	DESCRIPTION	DATE	APPROVAL
RA							
DN							
DN							
DN		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

0.005
0.010
4
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D 0.093 ± 0.005 AT ASSY

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MACHINE FINISH EXCEPT AS NOTED
BREAK ALL SHARP EDGES.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS — FRACTIONS ± 1/100 ANGLES —	ORIGINAL DATE OF DRAWING 2-6-62 DESIGNED J.F.K. CHECKED J.M.F. TRACER — CHECKED — ENGINEER — ENGINEER —	R&D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD AREA FRANKFORD
MATERIAL STEEL, FC 1020 HEAT TREATMENT — FINAL PROTECTIVE FINISH	SUBMITTED <i>O.J. Grand</i> ORD CORPS APPROVED BY ORDER OF THE CHIEF OF ORDNANCE ORD CORPS	

HOLDER

SCALE 1:1 UNIT —

SIZE A FA 53759

Figure B-7. Holder

PHYSICAL PROPERTIES		APPLICATION		FA 32219			
YP		NEXT ASST	USED ON				
TS			FB 53790				
EL 2				REVISIONS			
RA				SYM	DESCRIPTION	DATE	APPROVAL
ON							
RH							
		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

— BEND

— $\frac{7}{16} R$ MIN

— $.380^D + .010$

REMOVE BURRS AND CHAMFER EDGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS _____ FRACTIONS _____ ANGLES _____	ORIGINAL DATE OF DRAWING 2-9-62	WASHER MODIFIED	240 9 2001 ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY JRD. ARSENAL FRANKFORD	
	DRAFTER _____ TRACER _____ ENGINEER _____ SUBMITTED _____ APPROVED BY ORDER OF THE CHIEF OF ORDNANCE _____ ORN CORPS			
	MATERIAL STEEL (F31020)			
	HEAT TREATMENT _____ FINAL PROTECTIVE FINISH _____			

SCALE 2:1
 DWG SIZE A

UNIT WT

ARMT-AMSTAN ARSENAL (ORNS), DETROIT, MI 48211-0001

Figure B-8. Washer, Modified

APPROVAL		APPLICATION		FA 32218			
YP		NEXT ASSY	USED ON	REVISIONS			
TS		FA 53790		SYN	DESCRIPTION	DATE	APPROVAL
EL 2							
RA							
BH							
RH							
		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

DIMENSIONS SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON- DECIMALS _____ FRACTIONS _____ ANGLES _____ MATERIAL _____ HEAT TREATMENT _____ FINAL PROTECTIVE FINISH _____	ORIGINAL DATE OF DRAWING 2-9-62 DESIGNED BY JLF CHECKED BY JLF SUBMITTED BY JLF APPROVED BY ORDER OF THE CHIEF OF ORDNANCE ORG CORPS	SEAR ASS'Y	R&D GROUP ORDNANCE CORPS DEPT OF THE ARMY
	SCALE 1:1 ORG CORPS	ORG CORPS	FA32218

Figure B-9. Sear, Ass'y

GENERAL PROPERTIES		APPLICATION		FA 32220			
YP		NEXT ASSY	USED ON	REVISIONS			
TS			FB 33790				
EL 2				SYM	DESCRIPTION	DATE	APPROVAL
RA							
BN							
BN							
RN		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS — FRACTIONS — ANGLES ± 30°	ORIGINAL DATE OF DRAWING FEB. 9, 1962	BUSHING	R & D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. ARSENAL FRANKFORD
	SUBMITTED LEV CHECKED JMF		
	TRACER CHECKER ENGINEER ENGINEER		
	MATERIAL RUBBER MIL-R-3065 HEAT TREATMENT FINAL PROTECTIVE FINISH NATURAL BLACK		
SUBMITTED C. J. Grand ORD CORPS APPROVED BY ORDER OF THE CHIEF OF ORDNANCE		SCALE 2:1	DWG SIZE A FA 32220

Figure F-10. Bushing

GENERAL PROPERTIES		APPLICATION		FA 32227			
YP		NEXT ASSY	USED ON	REVISIONS			
TS			FC 11303				
EL 2				SYN	DESCRIPTION	DATE	APPROVAL
RA							
ON							
IN		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

SOURCE: NATIONAL DECALCOMANIA CO.
236-40 N. 60TH ST
PHILA., PA. OR EQUIVALENT

7-EQUALLY SPACED AROUND 3 ⁵/₈ DIA.

3/16 LETTERS YELLOW LETTERS AND ARROWS ON A OLIVE DRAB. BACKGROUND

YELLOW LETTERS

AIMING DIRECTION

WARNING DANGEROUS

3/32

5/32

1 1/2

4

11/32

3/8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON—	ORIGINAL DATE OF DRAWING 2-12-64	DECAL, FIRING	RD GROUP	
DECIMALS _____	DESIGNED JVF			ENGINEER JMF
FRACTIONS _____	TRACER _____			ENGINEER _____
ANGLES _____	ENGINEER _____			ENGINEER _____
MATERIAL _____	SUBMITTED <i>O. J. Grand</i>	ORD CORPS	ORDNANCE CORPS	
HEAT TREATMENT _____	APPROVED _____	CHIEF OF ORDNANCE	DEPT OF THE ARMY	
FINAL PROTECTIVE FINISH _____	ORD CORPS	SCALE 1" = 1"	U.S. ARMY ORD. ARSENAL	
			FRANKFORD	
			FA 32227	

ARMY-NAVY JOINT INSPECTION, RETURNED, 02-07-1195

Figure B-11. Decal, Firing

PHYSICAL PROPERTIES		APPLICATION		FA 32224			
YP		NEXT ASSY	USED ON	REVISIONS			
TS		FD2319/		SYM	DESCRIPTION	DATE	APPROVAL
EL 2							
RA							
BH							
RH		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

TAB, SAFETY FA 32199 ✓

RING, SAFETY FA 32225 ✓

PIN, SAFETY FA 32228 ✓

SAFETY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS _____ FRACTIONS _____ ANGLES _____ MATERIAL _____ HEAT TREATMENT _____ FINAL PROTECTIVE FINISH _____	ORIGINAL DATE OF DRAWING 2-12-62 DESIGNED J.A.V. CHECKED J.H.F. TRACER _____ CHECKER _____ ENGINEER _____ ENGINEER _____ SUBMITTED <i>O. J. [Signature]</i> APPROVED BY ORDER OF THE CHIEF OF ORDNANCE _____ ORD CORPS	SAFETY PIN ASS'Y SCALE 1:1 UNIT WT _____	R&D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. ARSENAL FRANKFORD DWS SIZE A FA32224

Figure B-12. Safety Pin, Ass'y

PHYSICAL PROPERTIES		APPLICATION		FA 32225			
YP		NEXT ASSY	USED ON	REVISIONS			
TS			FA 32224				
EL 2				SYM	DESCRIPTION	DATE	APPROVAL
RA							
BH							
RH							
		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

1.000 ± .015

.050

1/2

WIND RIGHT HAND

WIRE DIA. .045

TOTAL NO. OF COILS 1/2

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS .005 FRACTIONS — ANGLES —	ORIGINAL DATE OF DRAWING 2-14-62	RING, SAFETY	R&D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. ARSENAL FRANKFURT	
	DRAFTER TRACER ENGINEER			CHECKER CHECKER ENGINEER
	SUBMITTED <i>C. J. Gandy</i> ORD CORPS			APPROVED BY ORDER OF THE CHIEF OF ORDNANCE
	MATERIAL ALUMINUM 6061-T6 HEAT TREATMENT FINAL PROTECTIVE FINISH			SCALE 2:1 DWG A

Figure B-13. Ring, Safety

GENERAL PROPERTIES		APPLICATION		FA 32223			
YP		NEXT ASSY	USED ON	REVISIONS			
TS			FA 32221				
EL 2				SYN	DESCRIPTION	DATE	APPROVAL
RA							
BN							
RH		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

GASKET MAT'L, NON-METALLIC, MIL-G-12803

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS — FRACTIONS — ANGLES — MATERIAL SEE NOTE HEAT TREATMENT FINAL PROTECTIVE FINISH	ORIGINAL DATE OF DRAWING 2-6-62 DRAFTSMAN JFF CHECKER JAF TRACER — CHECKER — ENGINEER — ENGINEER — SUBMITTED <i>[Signature]</i> APPROVED BY ORDER OF THE CHIEF OF ORDNANCE ORD CORPS	GASKET SCALE 1:1 UNIT WT — SHEET OF	RID GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. ARSENAL WZANKFORD DWS SIZE A FA 32223
--	---	--	--

Figure B-14. Gasket

GENERAL INFORMATION		APPLICATION		FA 3222/			
TP	NEXT ASSY	USED ON	REVISIONS				
TS	FD 25/9/						
EL 2			SYN	DESCRIPTION	DATE	APPROVAL	
RA							
BN							
RN							
	DO NOT	APPLY PART NO.					
	DO	AS SPECIFIED					

GASKET, FA 32223

CAP, FA 32222

CEMENT IN PLACE
WITH MIL-C-13792(ORD)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS _____ FRACTIONS _____ ANGLES _____ MATERIAL _____ HEAT TREATMENT _____ FINAL PROTECTIVE FINISH _____	ORIGINAL DATE OF DRAWING 2-9-62 DESIGNED BY J.F. ENGINEER JMF TRACED BY _____ ENGINEER _____ ENGINEER _____ ENGINEER _____ SUBMITTED BY <i>O. J. Gandy</i> ORD CORPS APPROVED BY ORDER OF THE CHIEF OF ORDNANCE ORD CORPS	CAP, ASS'Y	R&D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. ARSENAL FRANKFORD DWG SIZE A FA32221
--	--	---	--

ARMY-ORDNANCE GENERAL CORPUS, DETROIT, MI 481-1100

Figure B-15. Cap, Ass'y

MATERIAL PROPERTIES		APPLICATION		FA 32222			
YP		TEST BODY	USED ON	REVISIONS			
TS			FA 32217				
EL 2				QTN	DESCRIPTION	DATE	APPROVAL
RA							
BN							
BN		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

NOTE:- BREAK ALL SHARP CORNERS

FINISH 125/ ALL OVER

BEND RADIUS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS $\pm .005$ FRACTIONS $\pm 1/64$ ANGLES		ORIGINAL DATE OF DRAWING 2-9-62 DESIGNED JTF TRACER CHECKED JMF ENGINEER SUBMITTED APPROVED BY ORDER OF THE CHIEF OF ORDNANCE ORN CORPS	CAP, END	R & D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. ARSENAL FRANKFORD
MATERIAL STEEL 1020 (OR EQUIV) HEAT TREATMENT FINAL PROTECTIVE FINISH	SCALE 1:1 UNIT	ORN CORPS	ORN CORPS	ORN CORPS FA32222

Figure B-16. Cap, End

GENERAL PROPERTIES		APPLICATION		AFA32198																									
VP		NEXT ASSY	USED ON	$\frac{1}{8}$ D.																									
TS		AFA3218																											
EL 2																													
RA																													
BN																													
BN				<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">REVISIONS</th> </tr> <tr> <th style="width: 30%;">SYN</th> <th style="width: 70%;">DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>				REVISIONS		SYN	DESCRIPTION																		
REVISIONS																													
SYN	DESCRIPTION																												
		DO NOT APPLY PART NO.																											
		DO AS SPECIFIED																											

MATERIAL: 16 GA ALUM (2024-T3)

LETTERS, LUSTERLESS WHITE # 37886, FED STD # 595,

SPEC TT-I-558 OVER RED BACKGROUND

(BOTH SIDES)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON- DECIMALS .0005 FRACTIONS 1/32 ANGLES .0005	ORIGINAL DATE OF DRAWING 2-9-62 DRAWN BY JFV CHECKED JMF	TAB, FIRING	R & D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. ARSENAL FRANKFORD	
	TRACER ENGINEER			CHECKED ENGINEER
	SUBMITTED A. J. Grandy ORD CORPS			
	APPROVED BY ORDER OF THE CHIEF OF ORDNANCE ORD CORPS			
MATERIAL 16 GA ALUM. HEAT TREATMENT FINAL PROTECTIVE FINISH	SCALE 1:1 UNIT WT		DDG SIZE A FA32198	

Figure B-17. Tab, Firing

PHYSICAL PROPERTIES		APPLICATION		FA 32217			
YP		NEXT ASSY	USED ON	REVISIONS			
TS		FA 53786		BYN	DESCRIPTION	DATE	APPROVAL
EL 2							
RA							
BN							
RH		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

4

$\frac{1}{2}$ MAINTAIN AT ASS'Y

CAP, FB53757

SILVER BRAZE
IN ACCORDANCE WITH MIL-5-7883

HOLDER, FB53759

SOURCE : AMERICAN CHAIN & CABLE CO.
AUTOMOTIVE & AIRCRAFT DIVISION
ADRAIN, MICH OR EQUIVALENT

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON—		ORIGINAL DATE OF DRAWING 2-9-62		CAP & HOLDER ASS'Y		R&D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. ARSENA FRANKFORD	
DECIMALS		DRAWN J.V.F.	CHECKED J.W.F.				
FRACTIONS		TRACER	CHECKER				
ANGLES		ENGINEER	ENGINEER				
MATERIAL		SUBMITTED					
HEAT TREATMENT		APPROVED BY ORDER OF THE CHIEF OF ORDNANCE					
FINAL PROTECTIVE FINISH							

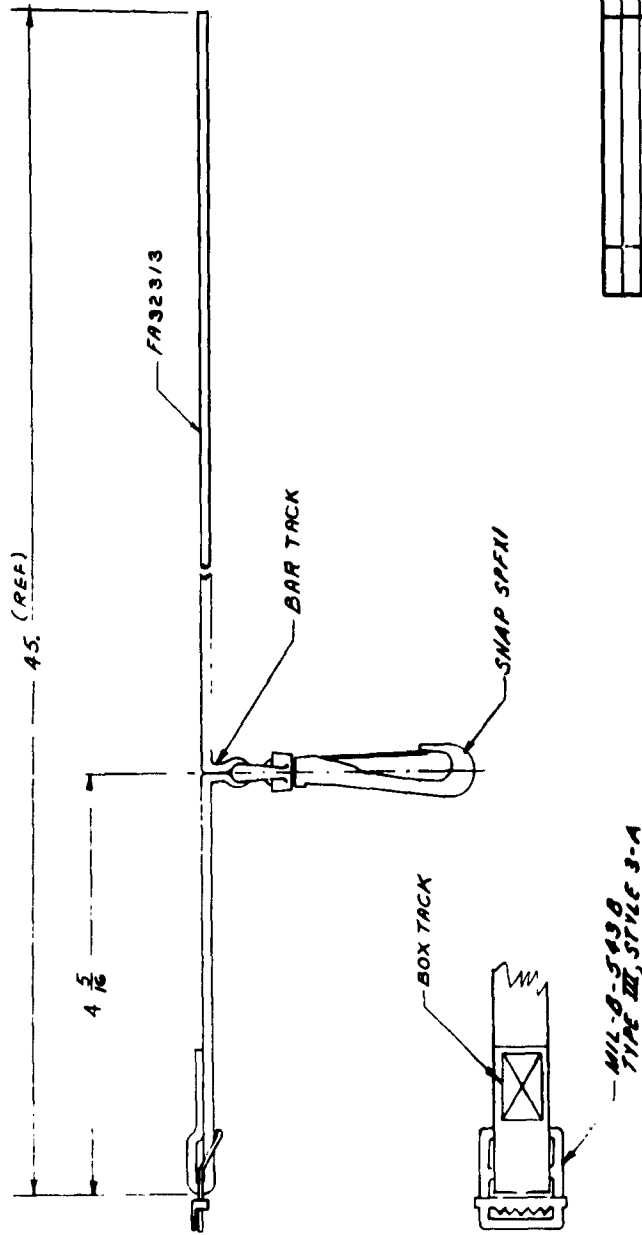
SCALE 1:1

WT

FA32217

Figure B-18. Cap & Holder Ass'y

11750-2



PARTIAL 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100		R10 GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORDNANCE EXAMINED B FB53742 1 1 1	
WIRE GUN BELT ASS'Y SCALE 1:1 UNIT WT		FEB 20/30 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	
TOLERANCES ON DIMS FRACTIONS DECIMALS 1/16 0.0625 1/8 0.125 1/4 0.25 3/8 0.375 1/2 0.5 3/4 0.75 1 1.0 1 1/2 1.5 2 2.0 3 3.0 4 4.0 5 5.0 6 6.0 8 8.0 10 10.0 12 12.0 14 14.0 16 16.0 18 18.0 20 20.0 24 24.0 28 28.0 32 32.0 36 36.0 40 40.0 48 48.0 56 56.0 64 64.0 72 72.0 80 80.0 96 96.0 100 100.0		HEAT TREATMENT FINAL PROTECTIVE FINISH 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	
APPLICATION APPLY PARTIAL 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100		11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	

Figure B-20. Wire Gun Belt Ass'y



NOTE: BREAK ALL SHARP CORNERS

Figure B-22. Tube

Figure B-23. Tube & Sear Assy

SOURCE AMERICAN CHAIN AND CABLE CO.
AUTOMOTIVE AND AIRCRAFT DIVISION
ADRAIN, MICH OR EQUIVALENT.

[illegible]

Figure B-24. Coil Ass'y

Figure B-25. Piston

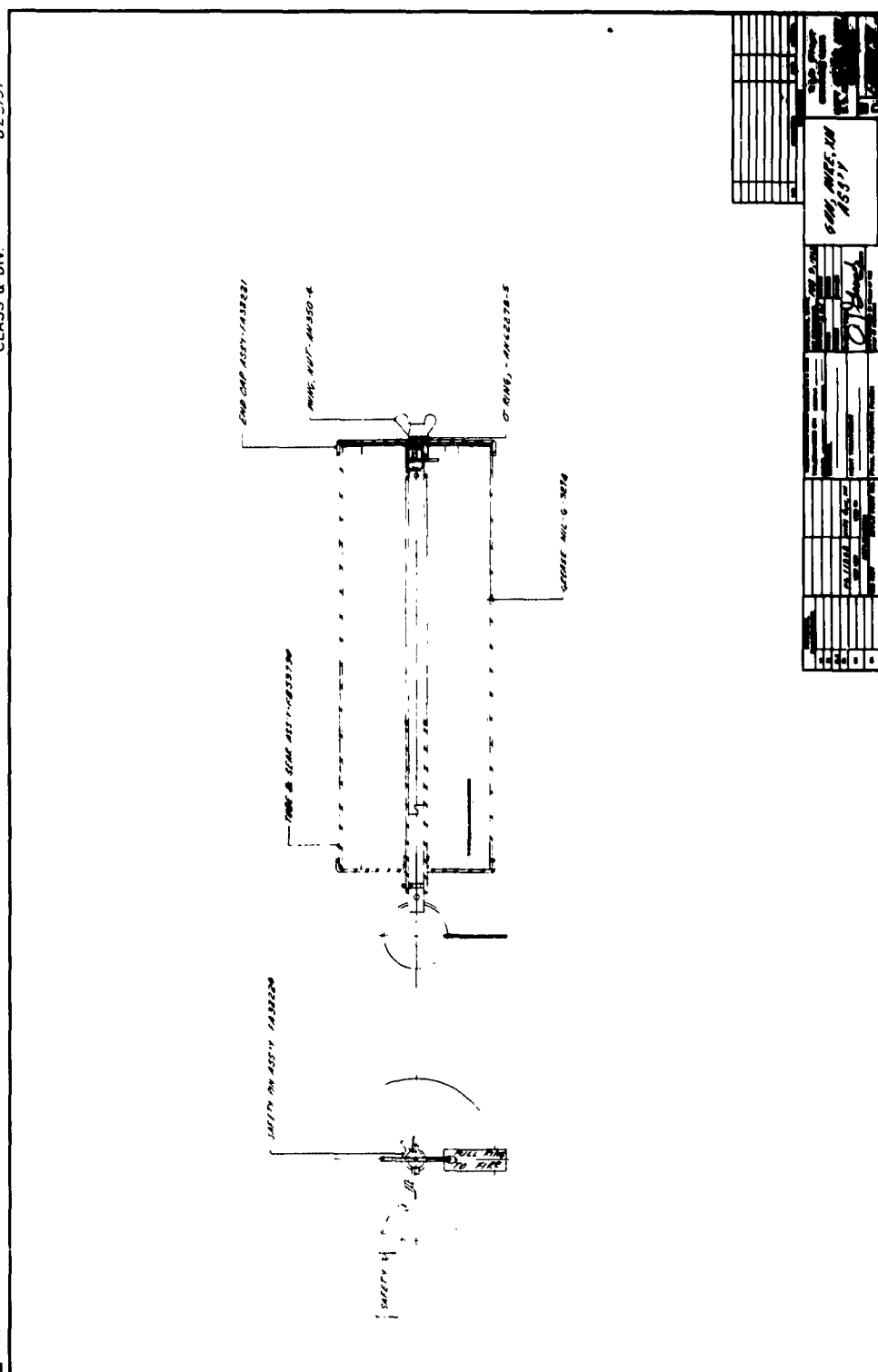
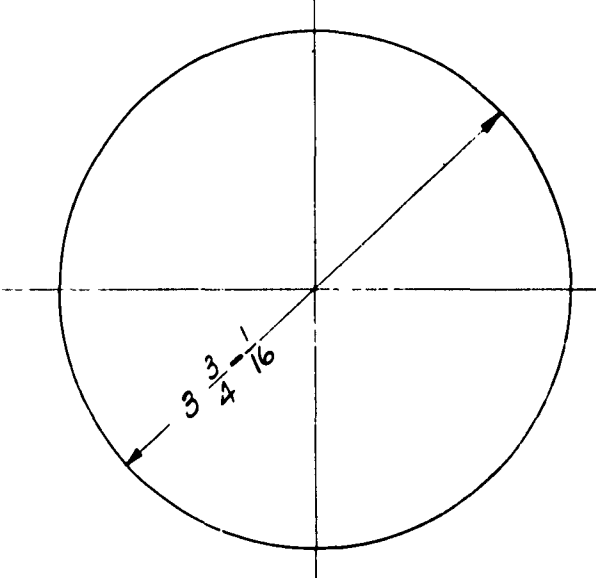


Figure B-28. Gun, Wire, XM Ass'y

APPENDIX C

PACKAGING DETAILS

PHYSICAL PROPERTIES		APPLICATION		FA 32311			
YP	TS	NEXT ASSY	USED ON	REVISIONS			
			FC 11329				
EL 2				SYM	DESCRIPTION	DATE	APPROVAL
RA							
BH							
RH							
		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				



MATERIAL: 1/8 THICK SOLID FIBERBOARD
 OR COMMERCIAL CHIPBOARD
SOURCE: WHITEMARSH CONVERTERS INC.
 COTTMAN ST. AND HASBROOK AV.
 PHILADELPHIA 11, PA. OR EQUIVALENT.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON— DECIMALS — FRACTIONS — ANGLES —	ORIGINAL DATE OF DRAWING 16 FEB 62 DESIGNED JTF CHECKED JTF TRACED CHECKED ENGINEER ENGINEER SUBMITTED <i>[Signature]</i> APPROVED BY ORDER OF THE CHIEF OF ORDNANCE ORN CORPS	FILLER	R&D GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. ARS. FRANKFORD DWG NO FA 32311 A
MATERIAL SEE NOTE HEAT TREATMENT FINAL PROTECTIVE FINISH			

Figure C-1. Filler

PHYSICAL PROPERTIES		APPLICATION		FA 32312			
YP		NEXT ASSY	USED ON	REVISIONS			
TS			FC11329				
EL 2				SYN	DESCRIPTION	DATE	APPROVAL
RA							
BN							
BN							
		DO NOT	APPLY PART NO.				
		DO	AS SPECIFIED				

2 3/4

2 3/4

1

NOTE -
MATERIAL - CUSHIONING MATERIAL, BOND
FIBER MIL - C - 7769

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON- DECIMALS — FRACTIONS — ANGLES — MATERIAL SEE NOTE HEAT TREATMENT — FINAL PROTECTIVE FINISH —	ORIGINAL DATE OF DRAWING 19 Feb 62 DRAWN BY JAP CHECKED JAL TRACER — CHECKER — ENGINEER — ENGINEER — SUBMITTED O. J. Garcia ORD CORPS APPROVED BY ORDER OF THE CHIEF OF ORDNANCE ORD CORPS	CUSHION BOND SCALE 1:1 UNIT WT	R & D GROUP ORDNANCE CORPS DEPT OF THE ARMY US ARMY HEADQUARTERS WASHINGTON, D.C. DWG SIZE A FA 32312 SHEET 1 OF 1
--	--	--	--

Figure C-2. Cushion Bond

NOTICE. - When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have furnished, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

PHYSICAL PROPERTIES		DO NOT DO	APPLY PART NO. AS SPECIFIED	REVISIONS			
YP		APPLICATION		SIZE	DESCRIPTION	DATE	APPROVAL
TS		NEXT ASSY	USED ON				
ELS			FB53742				
RA							
BM							
RM							

48.

9 1/16

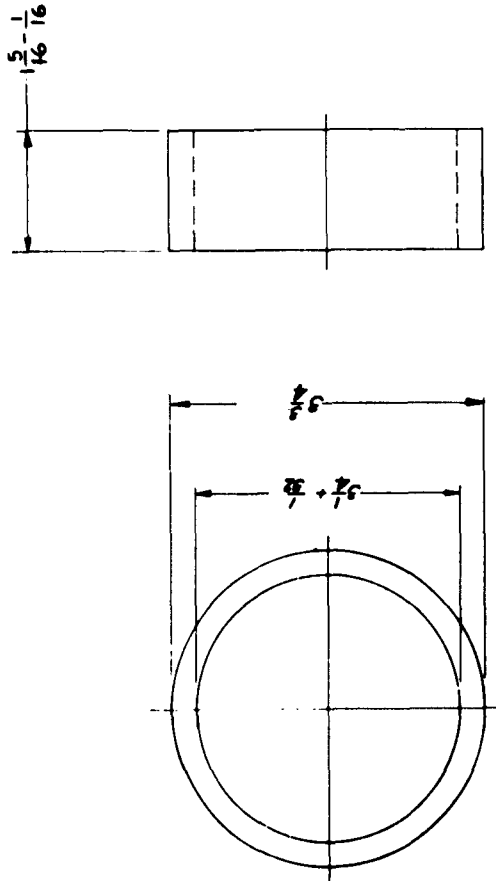
MELT BOTH ENDS WITH HEATING ELEMENT FOR DESIRED LENGTH.

UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING FEB 20 1963	WEB, GUN, WIRE	RID GROUP ORDNANCE CORPS DEPT OF THE ARMY U.S. ARMY ORD. FRANKFORD	
DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES 5/16	DESIGNED MT CHECKED JKR TRACER _____ ENGR _____ SUBMITTED <i>[Signature]</i>			SCALE 1:1 UNIT WT _____
MATERIAL MIL-W-5625D COLOR O.D. NYLON HEAT TREATMENT _____	APPROVED BY ORDER OF THE CHIEF OF ORDNANCE _____ OGD CORPS			FA32313 SHEET 1 OF 1
FINAL PROTECTIVE FINISH _____				

DD FORM 1 APR 64

REPLACES ARMY-Navy DRAWING BOARD, 12-10-14

Figure C-3. Web, Gun, Wire



SOURCE : PHILADELPHIA CONTAINER CO.
SWANSON ST. AND OREGON AV.
PHILADELPHIA, PA. OR EQUIVALENT

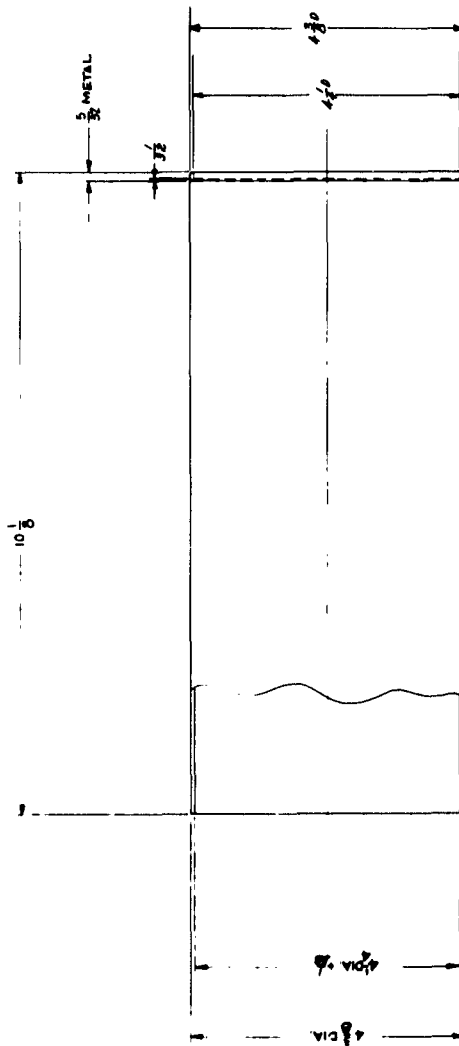
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																				
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Figure C-4. Tube, Chipboard, Rear

SOURCE : PHILADELPHIA CONTAINER CO.
SWANSON ST. AND OREGON AV.
PHILADELPHIA, PA OR EQUIVALENT

SOURCE : PHILADELPHIA CONTAINER CO. SWANSON ST. AND OREGON AV. PHILADELPHIA, PA OR EQUIVALENT		1. NAME OF PERSON OR ORGANIZATION 2. ADDRESS 3. CITY 4. STATE 5. ZIP CODE 6. COUNTRY		7. DATE OF BIRTH 8. SEX 9. RACE 10. HEIGHT 11. WEIGHT 12. HAIR 13. EYES 14. SKIN 15. BLOOD TYPE 16. OTHER		17. IDENTIFICATION NUMBER 18. DATE OF BIRTH 19. SEX 20. RACE 21. HEIGHT 22. WEIGHT 23. HAIR 24. EYES 25. SKIN 26. BLOOD TYPE 27. OTHER		28. DATE OF BIRTH 29. SEX 30. RACE 31. HEIGHT 32. WEIGHT 33. HAIR 34. EYES 35. SKIN 36. BLOOD TYPE 37. OTHER		38. DATE OF BIRTH 39. SEX 40. RACE 41. HEIGHT 42. WEIGHT 43. HAIR 44. EYES 45. SKIN 46. BLOOD TYPE 47. OTHER		48. DATE OF BIRTH 49. SEX 50. RACE 51. HEIGHT 52. WEIGHT 53. HAIR 54. EYES 55. SKIN 56. BLOOD TYPE 57. OTHER		58. DATE OF BIRTH 59. SEX 60. RACE 61. HEIGHT 62. WEIGHT 63. HAIR 64. EYES 65. SKIN 66. BLOOD TYPE 67. OTHER		68. DATE OF BIRTH 69. SEX 70. RACE 71. HEIGHT 72. WEIGHT 73. HAIR 74. EYES 75. SKIN 76. BLOOD TYPE 77. OTHER		78. DATE OF BIRTH 79. SEX 80. RACE 81. HEIGHT 82. WEIGHT 83. HAIR 84. EYES 85. SKIN 86. BLOOD TYPE 87. OTHER		88. DATE OF BIRTH 89. SEX 90. RACE 91. HEIGHT 92. WEIGHT 93. HAIR 94. EYES 95. SKIN 96. BLOOD TYPE 97. OTHER		98. DATE OF BIRTH 99. SEX 100. RACE 101. HEIGHT 102. WEIGHT 103. HAIR 104. EYES 105. SKIN 106. BLOOD TYPE 107. OTHER		108. DATE OF BIRTH 109. SEX 110. RACE 111. HEIGHT 112. WEIGHT 113. HAIR 114. EYES 115. SKIN 116. BLOOD TYPE 117. OTHER		118. DATE OF BIRTH 119. SEX 120. RACE 121. HEIGHT 122. WEIGHT 123. HAIR 124. EYES 125. SKIN 126. BLOOD TYPE 127. OTHER		128. DATE OF BIRTH 129. SEX 130. RACE 131. HEIGHT 132. WEIGHT 133. HAIR 134. EYES 135. SKIN 136. BLOOD TYPE 137. OTHER		138. DATE OF BIRTH 139. SEX 140. RACE 141. HEIGHT 142. WEIGHT 143. HAIR 144. EYES 145. SKIN 146. BLOOD TYPE 147. OTHER		148. DATE OF BIRTH 149. SEX 150. RACE 151. HEIGHT 152. WEIGHT 153. HAIR 154. EYES 155. SKIN 156. BLOOD TYPE 157. OTHER		158. DATE OF BIRTH 159. SEX 160. RACE 161. HEIGHT 162. WEIGHT 163. HAIR 164. EYES 165. SKIN 166. BLOOD TYPE 167. OTHER		168. DATE OF BIRTH 169. SEX 170. RACE 171. HEIGHT 172. WEIGHT 173. HAIR 174. EYES 175. SKIN 176. BLOOD TYPE 177. OTHER		178. DATE OF BIRTH 179. SEX 180. RACE 181. HEIGHT 182. WEIGHT 183. HAIR 184. EYES 185. SKIN 186. BLOOD TYPE 187. OTHER		188. DATE OF BIRTH 189. SEX 190. RACE 191. HEIGHT 192. WEIGHT 193. HAIR 194. EYES 195. SKIN 196. BLOOD TYPE 197. OTHER		198. DATE OF BIRTH 199. SEX 200. RACE 201. HEIGHT 202. WEIGHT 203. HAIR 204. EYES 205. SKIN 206. BLOOD TYPE 207. OTHER		208. DATE OF BIRTH 209. SEX 210. RACE 211. HEIGHT 212. WEIGHT 213. HAIR 214. EYES 215. SKIN 216. BLOOD TYPE 217. OTHER		218. DATE OF BIRTH 219. SEX 220. RACE 221. HEIGHT 222. WEIGHT 223. HAIR 224. EYES 225. SKIN 226. BLOOD TYPE 227. OTHER		228. DATE OF BIRTH 229. SEX 230. RACE 231. HEIGHT 232. WEIGHT 233. HAIR 234. EYES 235. SKIN 236. BLOOD TYPE 237. OTHER		238. DATE OF BIRTH 239. SEX 240. RACE 241. HEIGHT 242. WEIGHT 243. HAIR 244. EYES 245. SKIN 246. BLOOD TYPE 247. OTHER		248. DATE OF BIRTH 249. SEX 250. RACE 251. HEIGHT 252. WEIGHT 253. HAIR 254. EYES 255. SKIN 256. BLOOD TYPE 257. OTHER		258. DATE OF BIRTH 259. SEX 260. RACE 261. HEIGHT 262. WEIGHT 263. HAIR 264. EYES 265. SKIN 266. BLOOD TYPE 267. OTHER		268. DATE OF BIRTH 269. SEX 270. RACE 271. HEIGHT 272. WEIGHT 273. HAIR 274. EYES 275. SKIN 276. BLOOD TYPE 277. OTHER		278. DATE OF BIRTH 279. SEX 280. RACE 281. HEIGHT 282. WEIGHT 283. HAIR 284. EYES 285. SKIN 286. BLOOD TYPE 287. OTHER		288. DATE OF BIRTH 289. SEX 290. RACE 291. HEIGHT 292. WEIGHT 293. HAIR 294. EYES 295. SKIN 296. BLOOD TYPE 297. OTHER		298. DATE OF BIRTH 299. SEX 300. RACE 301. HEIGHT 302. WEIGHT 303. HAIR 304. EYES 305. SKIN 306. BLOOD TYPE 307. OTHER		308. DATE OF BIRTH 309. SEX 310. RACE 311. HEIGHT 312. WEIGHT 313. HAIR 314. EYES 315. SKIN 316. BLOOD TYPE 317. OTHER		318. DATE OF BIRTH 319. SEX 320. RACE 321. HEIGHT 322. WEIGHT 323. HAIR 324. EYES 325. SKIN 326. BLOOD TYPE 327. OTHER		328. DATE OF BIRTH 329. SEX 330. RACE 331. HEIGHT 332. WEIGHT 333. HAIR 334. EYES 335. SKIN 336. BLOOD TYPE 337. OTHER		338. DATE OF BIRTH 339. SEX 340. RACE 341. HEIGHT 342. WEIGHT 343. HAIR 344. EYES 345. SKIN 346. BLOOD TYPE 347. OTHER		348. DATE OF BIRTH 349. SEX 350. RACE	
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Figure C-5. Tube, Chipboard, Forward



Source: PHILADELPHIA CONTAINER CO
SWANSON ST AND OREGON AV
PHILA, PA OR EQUIVALENT

[illegible]

Figure C-6. Tube

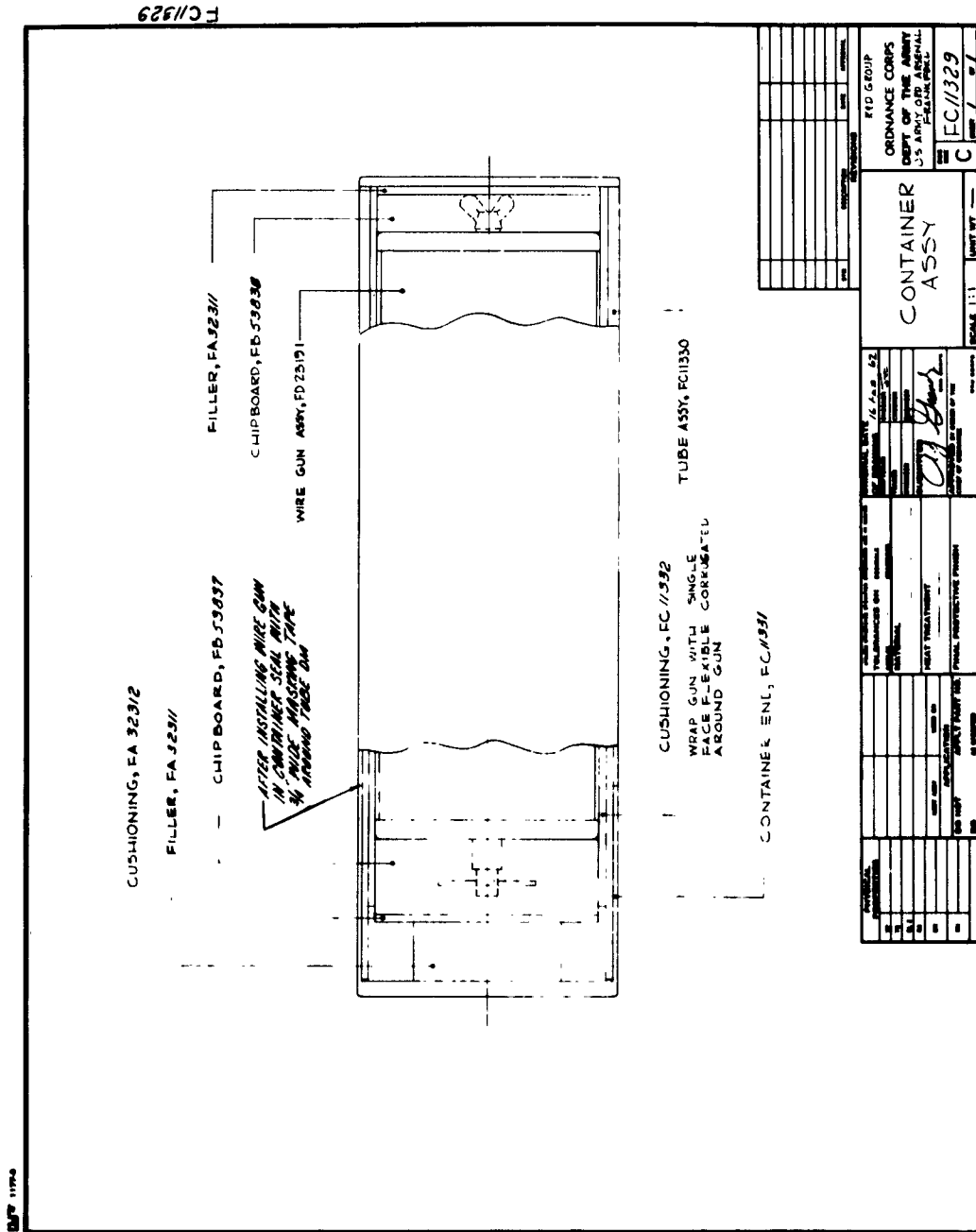


Figure C-7. Container Ass'y

BT 11704

LINE, FC 11334

TUBE, FC 11333

CEMENT LINER INTO TUBE IN
ACCORDANCE WITH PHILA CONTAINER CO.
MANUFACTURING METHODS OR EQUIVALENT

SOURCE PHILADELPHIA CONTAINER CO SWANSON ST AND OREGON AVE PHILADELPHIA, PA OR EQUIVALENT		TUBE ASSY		R1D GROUP ORDNANCE CORPS DEPT OF THE ARMY JCS, ARMY ORD ACTG FARMINGDALE FC 11330	
APPROVAL DATE BY FOR USE FOR TEST FOR DISPOSITION FOR DISPOSITION		APPROVAL DATE BY FOR USE FOR TEST FOR DISPOSITION FOR DISPOSITION		APPROVAL DATE BY FOR USE FOR TEST FOR DISPOSITION FOR DISPOSITION	

Figure C-8. Tube Ass'y

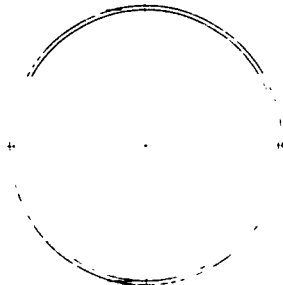
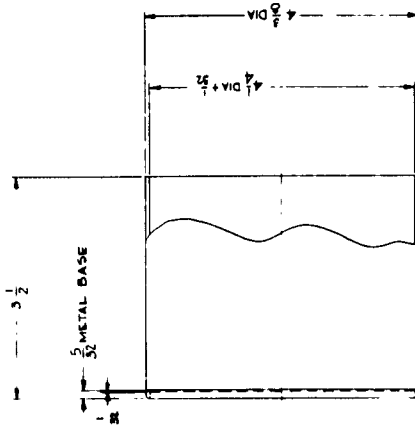
64

Figure C-9. Cushion, Wrapping

10/17/1943

FC11331

4 3/8 METAL BASE
4 1/4



SOURCE PHILADELPHIA CONTAINER CO
SWANSON ST AND OREGON AV
PHILADELPHIA, PA OR EQU VALENT

1. IDENTIFICATION 2. SPECIFICATION 3. DRAWING 4. MATERIAL 5. DIMENSIONS 6. WEIGHT 7. VOLUME 8. SURFACE AREA 9. TOLERANCES 10. FINISH 11. MARKING 12. INSPECTION 13. TESTING 14. PACKAGING 15. STORAGE 16. HANDLING 17. SAFETY 18. ENVIRONMENTAL 19. OTHER		20. MANUFACTURER 21. DATE 22. DRAWN BY 23. CHECKED BY 24. APPROVED BY 25. TITLE		26. ORDNANCE CORPS DEPT OF THE ARMY US ARMY CORPS OF ENGINEERS FC11331	
27. CONTAINER END		28. 410 GROUP		29. 10/17/1943	

Figure C-10. Container, End

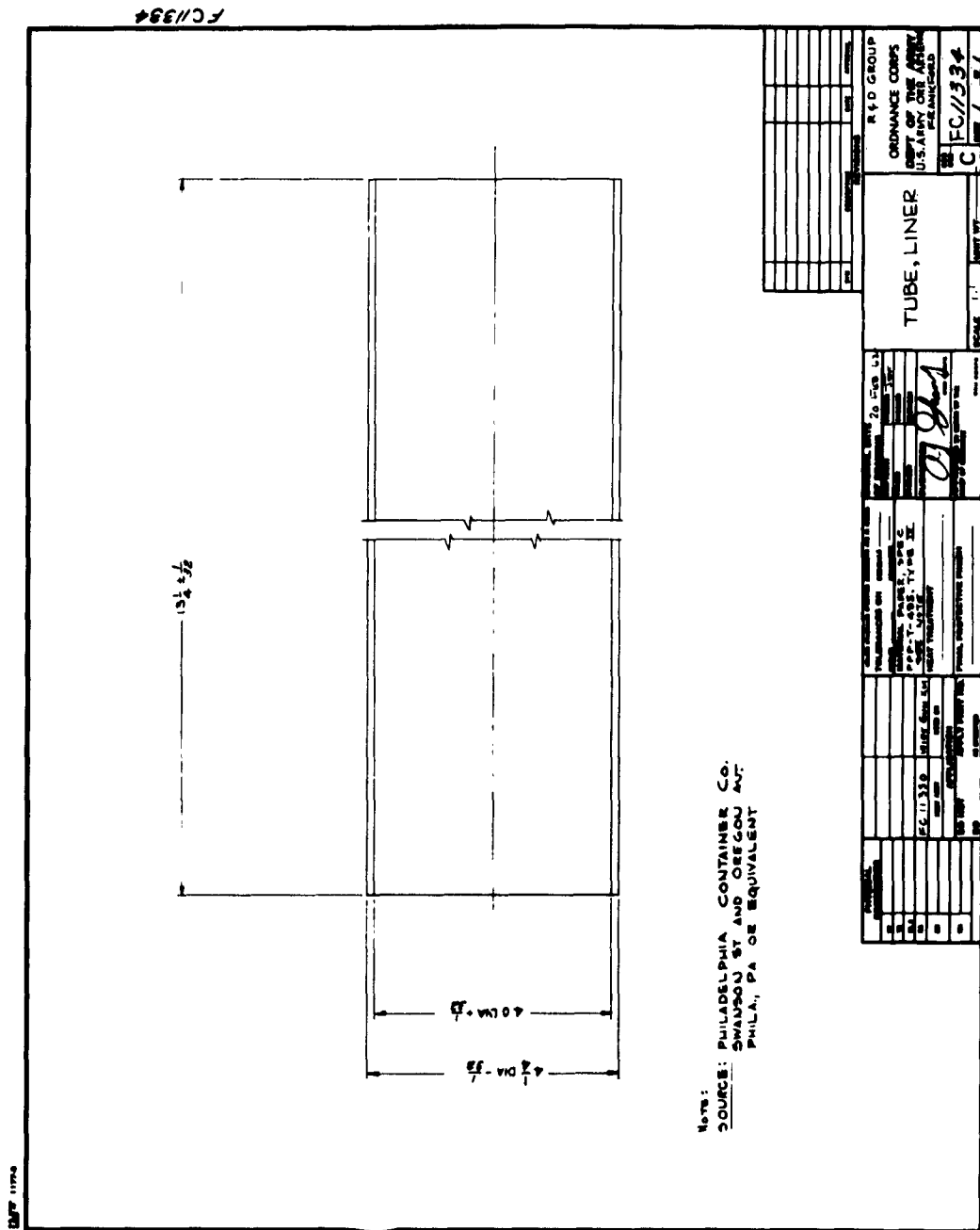


Figure C-11. Tube, Liner



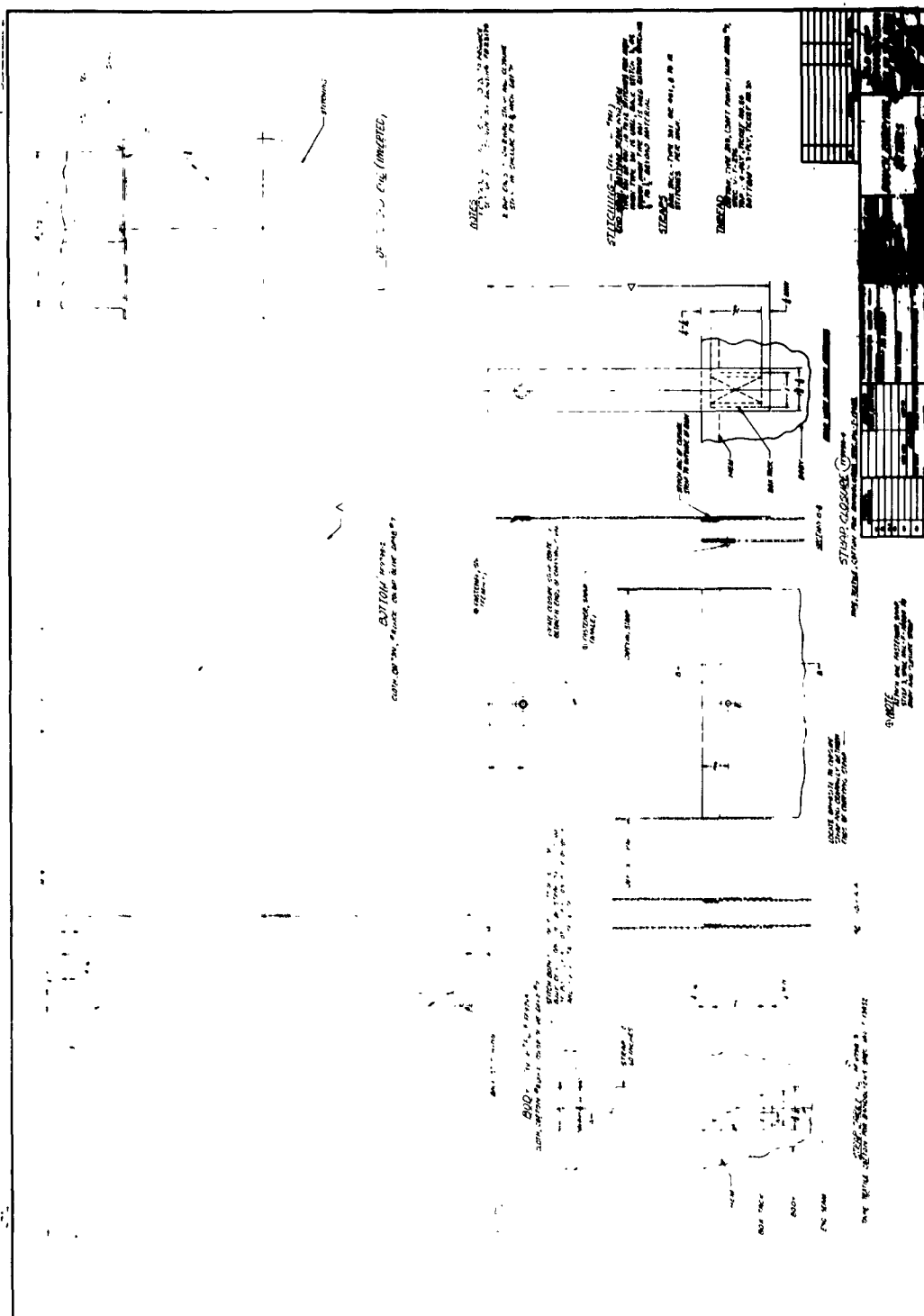


Figure C-13. Pouch, Carrying, Details

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Station
Inyokern, China Lake
California |
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Attn: Col Bell | 1 - Commandant
Hq, U. S. Marine Corps
Washington 25, D. C. |
| 5 - Commander
USA Special Warfare Center
Fort Bragg, North Carolina
Attn: Command Develop Dept | |

AD-M62-19-1 Research and Development Group, Pitman-Dunn Laboratories, Frankford Arsenal, Philadelphia 37, Pa. DESCRIPTION AND OPERATION OF A HAND HELD WIRE GUN by A. J. Grandy and J. W. Hettel. Memorandum Report M62-19-1, February 1962, 71pp incl illustrations. (OMS Code 5520.12.468 IO, DA Project 596-10-001). UNCLASSIFIED REPORT A hand held version of a wire gun was designed and developed, and a sample lot fabricated for use in controlled tests. During limited development time the device displayed excellent operational characteristics. Further testing will be required to accurately determine adequacy against intended targets. Complete descriptions of design and operation of this device are contained in this report. UNCLASSIFIED 1. Wire Gun I. Grandy, A. J. II. Hettel, J. W. III. OMS Code 5520.12.468 IO IV. DA Project 596-10-001 DISTRIBUTION LIMITATION: Qualified requesters may obtain copies from ASTIA. UNCLASSIFIED	AD-M62-19-1 Research and Development Group, Pitman-Dunn Laboratories, Frankford Arsenal, Philadelphia 37, Pa. DESCRIPTION AND OPERATION OF A HAND HELD WIRE GUN by A. J. Grandy and J. W. Hettel. Memorandum Report M62-19-1, February 1962, 71pp incl illustrations. (OMS Code 5520.12.468 IO, DA Project 596-10-001). UNCLASSIFIED REPORT A hand held version of a wire gun was designed and developed, and a sample lot fabricated for use in controlled tests. During limited development time the device displayed excellent operational characteristics. Further testing will be required to accurately determine adequacy against intended targets. Complete descriptions of design and operation of this device are contained in this report. UNCLASSIFIED 1. Wire Gun I. Grandy, A. J. II. Hettel, J. W. III. OMS Code 5520.12.468 IO IV. DA Project 596-10-001 DISTRIBUTION LIMITATION: Qualified requesters may obtain copies from ASTIA. UNCLASSIFIED
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