

AMMUNITION BULLETIN Nº 43

ITEMS 1126-1177

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THE CHIEF INSPECTOR OF ARMAMENTS.

1126. PROPELLANTS. SERVICE LIFE OF N.H.050. LOT M.A. 361 EXTENDED.

The abovementioned Lot of propellant has been released for filling Cartridges, Q.F. 17 pr. and the official "life" extended to April 1947.

To indicate this restricted life a special marking, as under, will be applied to cartridges and packages :-

- (a) All cartridges will be marked with a 1 inch circular disc followed by "4/47". This marking will be in silver nitrate on the wall of the case.
- (b) Packages will be marked with a 2 inch circular disc followed by "4/47". This marking will be in RED on one side of the package.

1127. CARTRIDGES, M.L. 3 inch MORTAR

Reference Bulletin No.36, Item 848, para. 3. It has now been decided that the wood plug will not be removed from the bomb tail when using the primary charges referred to in paras. 1 and 2.

1128. SHELL, Q.F. SMOKE EMISSION, 25 mm. Tk.HOW. MK.I. AMENDMENT TO M. OF F. DELAY NO.1.

Fig. 453.

Reference Bulletin No. 40, Item 998 and Fig.397. An amendment to M. of F. design for Delay No.1 described therein has been approved.

Details of the amended design are shown in Fig.453 this Bulletin and should be substituted for the particulars given in Fig.397, Bulletin No.40.

1129. TRACERS, SHELL, No's 21 and 22. METHOD OF SEALING

Fig.454.

Reference Bulletin No. 41, Items 1049, 1067 and Fig.421. Certain modifications have been made to the method of securing the above tracers as originally shown in Fig.421. These modified methods, in order of introduction, are as follows:-

- (i) Dimensions of steel closing ring amended. Fillets of approved cement applied after assembly of tracer as shown in Fig.454 in lieu of the use of approved cement to secure the bakelised paper and celluloid discs to each other and the filled tracer capsule before insertion of tracer into tracer boss.
- (ii) Dimensions of steel closing ring amended. The outer rim of bakelised paper disc and walls of tracer boss are coated with approved cement, the steel closing ring inserted and the edges of boss turned over. The final position of cement gives an effective seal (see Fig.454).

1130. BOMBS, S.B. 3 in. and 4.2 in. MORTAR. PACKAGE MARKING.

The code letters "S.A.S.", indicating the type of stowage required on freightships, will be stencilled next to the Government Explosive label on the undermentioned mortar ammunition packages when bombs charged F.M. or C.S.A.M. are packed:-

Box, B.173 containing Bombs, S.B. 3 in. or 4.2 in. Mortar, Smoke
" C.235 " " " 4.2 in. Mortar, Smoke

1131. GRENADE, HAND, DRILL NO.82 Mark I.

This grenade, for drill purposes, has been approved. It comprises a canvas bag, wood block, metal cup and dummy fuze.

The bag contains about 1 lb. 6 oz. H.E. substitute and the top of the bag is secured between the wood block and metal cup by 4 equi-spaced screws. A bolt secures the dummy fuze to the block.

The fuze and metal cup are painted White with "DRILL 82 I" stencilled on the cup in $\frac{1}{4}$ " block type.

1132. SHELL, Q.F., H.E. 2 pr. Mk.III. METHOD OF FILLING

Fig. 455.

This H.E. shell, to M. of F. design DD(L)11655, has been approved. It is prepared for Fuze No. 243 or 246 and Tracer, Igniter No. 7 or 10.

The "straight through" cavity is lined with a paper tube and contains, between the fuze and tracer, two tracing cloth or manilla paper discs, a 3 dr. T.N.T. exploder pellet, two felt discs, a 38 grain powder pellet and a washer of tracing cloth or manilla paper. The tracer is inserted over a copper washer.

The bursting charge is RDX/BWX 91/9 sealed by a waxed felt washer under a glazedboard washer. A waxed felt washer is positioned at the bottom of the shell cavity.

Details of painting and marking are included in Fig.455.

1133. CARTRIDGE, Q.F. 17 pr., CORDITE W.M. 017 REDUCED CHARGE, H.E.SHELL

Approval has been given for a reduced charge of 1 lb. 10 oz. Cordite W.M.017 for use with H.E. shell in the Q.F. 17 pr. gun.

1134. CARTRIDGES, Q.F. 3.7 in. Mks.I to III GUNS, CORDITE N.045 REDUCED CHARGE.

A nominal charge of 3 lb. 13 oz. Cordite N.045, for use with No.9 Primer for the abovementioned reduced charge cartridges, has been approved.

1135. FUZE SETTING ERRORS - A.A. AMMUNITION.

Errors are introduced in fuze setting with anti-aircraft ammunition when using the No.9 or 11 mechanical fuze setters due to the fuze not being screwed fully home into the shell.

In such cases the action of the fuze setter knives is sufficiently vigorous to overcome the securing screw and screw the fuze further home into the shell. Thus the movement of the knives is not fully taken up in setting the fuze, resulting in settings being long by varying amounts mostly of the order of a quarter of a fuze setting but sometimes even longer.

It is, therefore, most important that the fuze is screwed fully home into the shell.

1136. CONTAINER, CARTRIDGE, No. 233 Mk.I) (for 6 pr. 7 cwt.)
No. 236 Mk.I)

The above containers, in waterproof board, have been approved for Far East use.

No.233 Mk.I.

This container holds one round Q.F. 6 pr. 7 cwt. A.P.B.C.

One end of the container tube is prepared internally to locate the projectile and the end closed by a sheet metal cap secured to the container tube.

The opposite end is shouldered to receive a sheet metal cap, the cap being a push fit over the container tube. A strip of adhesive tape seals the joint between cap and container.

Stowage dimensions are:- Length 30.55 inches; Dia. 3.78 inches.

No.236 Mk.I.

This container holds one round Q.F. 6 pr. 7 cwt. A.P. or A.P.C. shot. It is generally similar in construction to the No.233, described above, except that the cap which fits over the shouldered end of the tube is of waterproof board with sheet metal end.

Stowage dimensions are:- Length 24.9 inches for A.P. round, or 25 inches for A.P.C. round; Dia. 3.9 inches.

1137. FUZES, VARIOUS. "OBSOLESCEMENT"

Reference Bulletin No.38, Item 926. Approval has now been given for the following fuzes to be declared "OBSOLESCEMENT" in lieu of "OBSOLETE":-

No.12. Mks.IX and X.
" 18. Mk.II
" 44. Mks.IV to IX.

1138. FUZE, PERCUSSION, D.A. No.152 MODIFICATION

Fig. 456

Approval has been given for the above fuze to be modified to prevent premature arming when dropped from aircraft. Modified fuzes will be fitted with a safety pin, the function of which is to secure the ball in the striker mechanism and thus prevent the fuze from arming should the detent momentarily set back on impact.

The pin is provided with a becket of waxed linen thread to facilitate removal. A small adhesive label, on which is printed the legend "PIN TO BE WITHDRAWN BEFORE FIRING", is secured to the becket. After the pin is inserted in the fuze the becket is passed up over the fuze cap and affixed to the top of the cap by the adhesive label, the safety cap is then screwed home.

To ensure that the safety pin is not withdrawn until preparation is made for firing a securing band of adhesive tape (5 $\frac{1}{4}$ " long x $\frac{1}{2}$ " wide) is wrapped round the exterior of the safety cap to cover the joint between it and the fuze body and affixed so that the Tommy hole in the cap is clear.

Fuze No: 152 when modified as above, will be known as "Fuze, percussion, D.A: No:162:"

1139. GRENADE, HAND, NO.75, BURROWITE FILLING.

Reference Bulletin No.25, Item 429. The Burrowite as used in the above grenade is "Military Burrowite" which consists of :-

Ammonium Nitrate Grade I
 Aluminium Powder, Heavy, Grade I, Size 60.
 Aluminium Powder, Light, Grade II, Size 248.
 T.N.T. Grade I or II.

An amendment to Item 429 appears on Page 2, this Bulletin.

1140. ROCKET AMMUNITION AND PACKAGES. MARKING

The marking of propellant code letters on rocket ammunition and packages will be discontinued. All such ammunition and packages will instead be marked with the letters indicative of the type of propellant with which they are filled.

1141. PACKAGES, AMMUNITION. SPECIAL MARKING TO FACILITATE IDENTIFICATION

Fig. 457

(See also Item 1158).

In order to assist in the ready identification of ammunition at all stages of handling, such as ports, landing beaches and forward delivery points, it has been agreed that all packages for ammunition in current production for the Army shall bear certain additional markings.

The markings are in the form of special stencilled abbreviations for this particular purpose and will be placed on the lid and on one long side of the package, being stencilled over the normal marking if separate space is not available. Colour of stencilling is white. Size of letters and figures will be 2 inches, with strokes $\frac{3}{8}$ " wide, plain block type (without serifs). Such contractions as "PR", "TN", "EN" and similar ones will be in $1\frac{1}{2}$ inch type, $\frac{1}{4}$ inch wide strokes.

Cylindrical containers will be marked on the side only.

The abbreviations will be as set out in the following list. Fig. 457 shows typical markings on the lines described above.

ABBREVIATIONS FOR CURRENT PRODUCTION

<u>NOMENCLATURE</u>	<u>ABBREVIATION</u>
25 Pr. Shell H.E. T.N.T.	25 pr HE
25 Pr. Ctges. F.N.H.	25 pr Cart FNH
25 Pr. Ctges. N.Q.	25 pr Cart NQ
25 Pr. Coloured Smoke Red	25 pr COL SMOK RED
25 pr. Coloured Smoke Green	25 pr COL SMOK GRN
25 Pr. Coloured Smoke Blue	25 pr COL SMOK BLU
25 Pr. Coloured Smoke Yellow	25 pr COL SMOK YEL
4.5 B.L. Ctges. 3rd Charge	4.5 GN Cart 3rd
5.5 B.L. Ctges. 4th Charge	5.5 Cart 4th
3.7-in. How. Shell H.E. A.T./Hollow Charge	3.7 How HEAT
3.7-in. How. Cartridge	3.7 How Cart

NOMENCLATURE

3.7-in. How. Cartridge Super S.L.
 3.7-in. How. Smoke
 3.7-in. How. Shell Coloured Smoke
 2 Pr. Ctge. Shot A.P.C. B.C. F.A.
 2 Pr. Shot A.P/S.V.
 37 mm. Ctge. Shot A.P./S.V. F.A.
 6 Pr. 7 Cwt. H.E. F.A.
 6 Pr. 7 Cwt. Ctge. A.P.C. B.C.
 6 Pr. 7 Cwt. Ctge. Shot
 6 Pr. 7 Cwt. Ctge. A.P/S.V.(D.S.)
 6 Pr. 7 Cwt. Ctge. A.P./S.V.(C.R.)
 Mines A/T. Mk.V. H.C.
 95 mm. S.P. & Inf. How. Shell H.E. T.N.T.
 95 mm. S.P. & Inf. How. Shell S/L Coloured Smoke
 95 mm. S.P. & Inf. How. Cartridge S/L
 95 mm. Tank How. Ctge. H.E. F.A.
 95 mm. Tank How. Ctge. A.T. H.E.
 95 mm. Tank How. Ctge. Smoke Emission F.M.
 95 mm. S.P. & Inf. How Shell A.T.
 40 mm. Ctge. H.E. F.A. with No.14 Tracer
 17 Pr. Ctge. Shot A.P.C. F.A.
 17 Pr. Ctge. Shot A.P.C., B.C. F.A.
 17 Pr. Shell H.E. (short)
 17 Pr. H.E. reduced charge
 77 mm. Ctge. H.E. Reduced Charge
 77 mm./17 pr. Ctge. Shot A.P.C., B.C., F.A.
 3.7-in. A.A. Ctge., Reduced Charge Fuzed 223.
 3.7-in. A.A. Ctge. Shot A.P. F.A.
 3.7-in. A.A. Ctge. H.E. Mk.VI.F.A.
 5.25-in. A.A. Shell H.E. S.L.
 5.25-in. A.A. Ctge. S.L.
 6 pr. 6 cwt. A.A. Ctge. H.E. Mk.III Gun F.A.
 6 pr. 6 cwt. A.A. Ctge. Shot A.T. Practice F.A.

ABBREVIATION

3.7 How SUPER
 3.7 How SMOK
 3.7 How COL SMOK (Colour)
 2 pr. APCBC
 2 pr. SHOT SV
 37 mm SHOT SV
 6 pr 7 HE
 6 pr 7 APCBC
 6 pr 7 SHOT
 6 pr 7 SVDS
 6 pr 7 SVCR.
 MINE V IC
 95 mm SP HE
 95 mm SP COL SMOK (Colour)
 95 mm SP Cart
 95 mm Tk HE
 95 mm Tk HEAT
 95 mm Tk SMOK
 95 mm SP HEAT
 40 mm PERM 12 sec
 17 pr APC
 17 pr APCBC
 17 pr HE
 17 pr HE RED
 77 mm HE RED
 77 mm APCBC
 3.7 AA FUZ 223
 3.7 AA SHOT
 3.7 AA VI
 5 25 AA HE
 5 25 AA Cart
 6 pr 6 AA HE
 6 pr 6 AA SHOT

NOMENCLATURE

6 pr. 10 cwt. Shell H.E, F, A,
2-in. M.L. Bomb H.E. with Cartridge
2-in. M.L. Bomb Smoke Emission with cartridge
3-in. M.L. Bomb Smoke W.P.
3-in. M.L. Bomb B.E. Smoke (10-lb. White)
with cartridge,
Mine Shrapnel Mk.II. with cartridge
Bomb Smoke Bursting 2-in-Mortar or
Bomb Thrower.
4.2-in. Bomb S.B. Smoke W.P.
4.2-in. Bomb S.B. H.E. (Streamline)
with cartridge.
Generator Smoke No.24
Generator Smoke No.28
1-in. Cartridge Case Illuminating J.
Mk.III T.
1-in. Signal Case Red Mk.XII/T
Grenade No.36
Grenade Hand No.75 A.T. Mk.I.
Grenade Hand No.75 A.T. Mk.II.
Grenade No.74 Mk.I
Grenade No.74 Mk.II
Grenade Hand No.69
Grenade No.77 W.P.
Grenade No. 79
Grenade No. 80
Container C.E, T.N.T. Demolition Slab.
Limpet Mk.IV.
Bangalore Torpedo 2-in. Mk.II.
Igniter Bangalore Torpedo.
Bangalore Torpedo Lightweight 6'.
Bangalore Torpedo Lightweight 10'.
Clam

ABBREVIATION

6 pr 10 HE
2 Mor HE
2 Mor SMOK
3 Mor SMOK (WP)
3 Mor SMOK
MINE SHRP II
2 Mor SMOK WP
2 Mor BT SMOK WP
4.2 Mor SMOK WP
4 2 Mor HE
24 GEN SMOK
28 GEN SMOK
1 in ILL J
1 in Sig RED
36 GREN
75 GREN I
75 GREN II
74 GREN I
74 GREN II
69 GREN
77 GREN (WP)
79 GREN
80 GREN
TNT/CE
LIMPETS
2 in BANG TORP
IGN 2 in BANG TORP
1½ in BANG TORP 6 ft.
1½ in BANG TORP 10 ft
CLAM

NOMENCLATUREABBREVIATION

Bomb H.E./A.T.Inf. Proj.	PIAT
Grenade No. 82	82 GREM
Charge Demolition No.3 15 lb. Mk.I (Hayrick)	HAYRICK
Bomb Demolition 40 lb. No.1 (Flying Dustbin)	BOM DEM NO 1
Charge Demolition 25 lb. No.2.	GEN WADE
Charge Demolition No.1 6 lb. Mk.III	BHIVE 6 lb.
Charge Demolition No.7 Mk.I (Beehive 35/50 lb)	BHIVE 35 lb
Charge Demolition No. 8 60 lb. Mk.I.	BHIVE 60 lb
Charge Demolition No.6 Mk.I (Beehive 16/25 lb.)	BHIVE 16 lb
Mine A.P. (Macrae) No.5 Mk.I	5 AP MINE
Fuze Mine Contact A.T. No.3	FUZ MINE AT 3
Fuze No.117 (with Exploder)	FUZ 117 W/EXPR
Fuze No. 221	FUZ 221
Fuze No.222 (Packed with exploders)	FUZ 222 W/EXPR
Fuze No.223	FUZ 223
Fuze No.231	FUZ 231
Fuze No.289	FUZ 289
Tube V.E. 0.4-in.	TUB ELEC 4 in
Tube V.P. 0.4-in.	TUB PERC 4 in

SMALL ARM AMMUNITION

Cartridges S.A. .303 in. Ball Bandoliers	303 Bdr
Cartridges S.A. .303 in. Ball Cartons	303 Ctn
Cartridges S.A. .303 in. Tracer (G)	303 TRACE
Cartridge S.A. .303 in. Incendiary (B)	303 INC
Cartridges S.A. .303 in. A.P. (W)	303 AP
Cartridges S.A. 20 mm. Oerlikon H.E./I.T.	20 mm OER HEIT
Cartridges S.A. 20 mm. Oerlikon H.E./T.	20 mm OER HE T
Cartridges S.A. .50 in. Browning Ball	50 in BROWN
Cartridges S.A. .50 in. Browning A.P./I	50 in BROWN AP I
Cartridges S.A. 7.92 mm Besa Belted	7 92 mm BLT
Cartridges S.A. .380 in. revolver ball	380 REV

NOMENCLATUREABBREVIATION

Cartridges S.A. 9 mm. Parabellum

9 mm

Cartridges S.A. .30 in. belted

30 in BLT

NOTE: "W.P." is required to be stencilled after all types of ammunition containing white phosphorus.

1142. FUZE, PERCUSSION, NO.232-MODIFICATION

It has been found that improved performance is obtained with the above fuze by the omission of the metal centrifugal bolt hole cover plate, powder pellet and paper disc and by the use of adhesive tape to close the centrifugal bolt hole. The introduction of these modifications to this fuze has been approved.

1143. FUZE, D.A. and PERCUSSION, NO.119 and 119B. MODIFICATION

Approval has been given for all existing stocks of Fuzes 119 Mk.III, IIIA, IV and 119B Mk.I to be modified before they are filled by the removal of the 10 oz. creep spring and replacement by a new 20 oz. spring.

1144. CONTAINER, CARTRIDGE, No. 229 Mk.I } (for Q.F. 2 pr. Mk.IX to XA)
No. 230 Mk.I

The above containers, in waterproof board, have been approved for Far East use. Each holds one round Q.F. 2 pr. (Mks. IX to XA guns) A.P.B.C.

No.229 Mk.I

One end of the container tube is prepared internally to locate the projectile and the end closed by a sheet metal cap secured to the container tube.

The opposite end is shouldered to receive a waterproof board cap fitted with a sheet metal end, the cap being a push fit over the container tube. A strip of adhesive tape seals the joint between cap and container.

Stowage dimensions are:- Length 19.3 inches; Dia. 2.6 inches.

No.230 Mk.I

This container is generally similar in construction to the No.229, described above, except that the cap which fits over the shouldered end of the tube is of sheet metal.

Stowage dimensions are:- Length 19.1 inches; Dia 2.5 inches.

1145. CARTRIDGES, Q.F. 6 pr. 7 cwt. A.P.C.B.C. SHOT. PACKAGE MARKING

Boxes containing Cartridges, Q.F. 6 pr. 7 cwt. A.P.C.B.C. Shot packed in Containers No.71 Mk.II with packing collar, or Containers No. 71 Mk.III and later Marks, will in future be distinguished by a frame of $\frac{1}{2}$ inch wide yellow stripes round the Government Explosive Label on the box.

1146. IGNITER, ELECTRIC, NO.88 MARK I

Fig. 458

This electric igniter, for use with the No. 3 Mk.I Simulator, Gun-flash, has been approved. It consists of a copper tube (similar to the No.8 commercial detonator tube) containing about 6 grains

gunpowder G.20 over which is a celluloid capsule filled with about $1\frac{1}{2}$ grains G.20 and a short length of fuze instantaneous, the capsule being inserted in the tube closed end uppermost. Fuze, electric, No. F.53 Mk.I is inserted over the capsule and the end of the tube sealed with approved cement.

After filling the tube is cannellured or crimped in 3 places to secure the capsule and electric fuze.

Details of the filled igniter are shown in Fig.458.

1147. IGNITER, NO.90 MARK I.

Fig. 459.

This igniter has been approved and is also for use with the No. 3 Mk.I Simulator, Gun-flash. Except that it has no electric fuze it is generally similar to the No.88 Electric Igniter described in Item 1146 above. The celluloid capsule is sealed in the copper tube with a fillet of H.C. varnish and the tube cannellured or crimped in 2 places to retain the capsule.

Details are shown in Fig. 459.

1148. FUZE, PERCUSSION, BASE, NO.291 Mk.I.

The abovementioned fuze has been approved. This fuze is identical with Fuze Percussion, Base, No.289 Mk.I in all respects except that it is fitted with an 8 oz. striker spring in lieu of the 34 oz. spring in the No.289 fuze.

The fuzes will be distinguished by a coloured band $\frac{1}{2}$ inch wide painted round the fuze body at 1 inch clear from the base. Colour of band will be BLUE for Fuze 289 and RED for Fuze 291.

Cylinder No. 289F, which is used for packing both fuzes, will bear a $\frac{1}{2}$ inch wide BLUE or RED band, as applicable, at $\frac{1}{2}$ inch clear from the base. The appropriate label will also be affixed to the cylinder.

1149. PACKAGES, AMMUNITION. DISTINCTIVE MARKING FOR JUNGLE WARFARE

The adoption of a distinctive marking for all outer ammunition packages containing stores packed to withstand jungle warfare conditions, has been approved. Such packages will be marked on the top surface with a patch of diagonal stripes 1 inch wide and 1 inch apart, the patch being about 9 inches wide. The colour of stripes will be middle buff or middle stone.

1150. CARTRIDGE, Q.F. 25 pr. CORDITE W.M.061, SUPERCHARGE INCREMENT, CHARGE, 45 oz. Mk.I.

The abovementioned supercharge increment, for use in the Q.F. 25 pr. with 20 lb. A.P. Shot, has been approved. The cordite is chopped to $\frac{1}{4}$ " lengths and filled into a cylindrical celluloid container. A label, L.369 (black print on white paper), is affixed inside the container by 4 dabs of approved adhesive and bears the following particulars:-

Q.F. 25 Pr.

 $4\frac{1}{2}$ oz. W.M.061

Lot Filled ... /.../..

FOR 20 lb.

A.P. SHOT ONLY

NOT TO BE USED WITH

ANY OTHER

PROJECTILE

PACKING

8 increments are packed in tinned plate cylinder No.426 fitted with a rolled paper liner and leatherboard cup. The lid of the cylinder is tape banded and bears a label L.370 (black print on white paper). Stowage dimensions of cylinder are 12.5 x 4.66 inches.

Details on label L.370:-

8

SUPERCHARGE
INCREMENTSQ.F. 25 Pr. CARTRIDGES20 Lb. A.P. SHOT ONLY $4\frac{1}{2}$ oz. W.M. 061

Lot

Filled/.....

Pkd. /.....

6 cylinders No.426, i.e. 48 increments, are packed in the steel box B.166 stowage dimensions of which are 19.7 x 13.2 x 9 inches.

1151. FUZES, TIME; T. & P. and TIME and D.A. - USE OF SR 227A FUZE POWDER

Approval has been given for the use of Fuze powder SR 227A, in lieu of G 20; for all fuze "connecting pellets."

The term "connecting pellets" covers all preformed perforated powder pellets employed in the filling of combustion time fuzes and any pellets formed by pressing loose powder into the escape hole pellet cavities of bottom rings, where this is an alternative to the loose pellet.

1152. SHELL, Q.F., H.E. - AMENDMENTS TO M. OF F. DESIGNS.

Reference Bulletin No.42, Item 1094. The undermentioned Method of Filling designs have been amended to include Fuze No.257 as an alternative to Fuze No.244 :-

DD(L)14697. Shell, Q.F., H.E. 6 pr. 7 cwt. Mk.I T.

DD(L)16673. Typical for Shell, Q.F., H.E. 17 pr. and
77 mm. Mk.I T. and II T.1153. FUZE, TIME AND PERCUSSION, NO.223. USE WITH Q.F. 3.7 in. MKS. I to III GUNS.

Approval has been given for the use of Fuze No.223 with Q.F. 3.7 in. A.A. guns, Mks. I to III, both full and reduced charges.

MINISTRY OF SUPPLY

AMMUNITION BULLETIN NO. 43RESTRICTEDISSUED BY
CHIEF INSPECTOR OF ARMAMENTS.ITEM NO.

- 1158 Item 1141.
- 1130 . and 4.2 in. Mortar. Package marking.
- 1' Mortar.
- wt. A.P.C.B.C. Shot. Package marking.
- W.M.017. Reduced charge.
- M.061. Supercharge increment,
- Guns. Cordite N.045.
- 2 pr. Mks. IX to XA.
- 7 cwt.
- Cordite S.
- Fuze setting
- Fuzes, various.
- Fuzes, Time; T. & .
- Fuze, D.A. and Percn. .
- Fuze, perc. D.A. No.152.
(FIG.456).
- Fuze, T. & P. No.223. Use with
- Fuze, perc. No.232. Modification.
- Fuze, perc. Base, No.291 Mk.I.
- Grenade, hand, No.75. Burrowite filling.
- Grenade, hand, Drill, No.82 Mk.I.
- Igniter, electric, No.88 Mk.I. (FIG.458).
- Igniter, No.90 Mk.I. (FIG.459).
- Mine, Anti-personnel, No.5 Mk.I. (FIGS.460, 461 & 4
- Packages, ammunition. Distinctive marking for jungle warfare.
- Packages, ammunition. Special marking to facilitate identification
(FIG.457).
- Propellants. Service life of N.H.050. Lot M.A.361 extended.
- Rocket ammunition and Packages. Marking.
- Shell, Q.F. Smoke Emission, 95 mm. Tk. How. Mk.I.
Amendment to M. of F. Delay No.1. (FIG.453).
- Shell, Q.F., H.E. Amendments to M. of F. Designs.
- Shell, Q.F., H.E. 2 pr. Mk.II T. Method of Filling. (FIG.455).
- Shot, Q.F. "Obsolescent".
- Tracers, Shell, Nos. 21 & 22. Methods of sealing. (FIG.454).

ENEMY AMMUNITIONGERMANITEM NO.

- 1159 Push igniter DZ 35 (Fig.463).
- 1160 Gaine model 40 B. (Fig.464).
- 1161 Gaine model 41 (Fig.465).
- 1162 Fuze Kz 38 with gaine (Fig.466).
- 1163 Base fuze Bd Z 5127 with tracer (Fig.467).
- 1164 Hollow charge bomb with projector (Faustpatrone) (Fig.468).
- 1165 4 cm. Cartridge Q.F. H.E. (Bofors type) (Figs. 469 and 470).
- 1166 8 cm. Mortar H.E. bombs 38 umg and 39 umg
- 1167 8.8 cm. Flak 18 and 36 Ctge. Q.F. A.P.C.B.C.
- 1168 8.8 cm. Flak 18 and 36 Ctge. Q.F. H.E. (Fig.471).
- 1169 8.8 cm. Flak 41 Ctge. Q.F. A.P.C.B.C./T. (Fig.472).
- 1170 8.8 cm. Flak 41 Ctge. Q.F. H.E.
- 1171 12.8 cm. Flak 40 Ctge. Q.F. H.E. Fuzed Zt Z S/30. (Fig.473).
- 1172 15 cm. (Naval) A.P.B.C. shell (Fig.474).
- 1173 15 cm. (Naval) H.E. B.C. shell (Fig.475).
- 1174 15 cm. (Naval) separate Q.F. Cartridge (Fig.476).
- 1175 8.8 cm. Anti-tank hollow charge rocket projectile (Figs. 477 & 478).
- 1176 Fuze AZ 5095.
- 1177 Fuze 1.Igr. Z 23 nA in 21 cm. H.E. B.C. Rocket.

AMENDMENTS

Bulletin No.25. Item 429. Line 3. For "Burrowite" substitute "Military Burrowite".

Line 9. Delete and Substitute "Military Burrowite consists of Ammonium Nitrate, Grade I; Aluminium powder, Heavy, Grade I, Size 60; Aluminium powder, Light, Grade II, Size 248; T.N.T. Grade I or II".

Bulletin 40. Item 1025. Line 13. For "Pamphlet No.4" substitute "Bulletin No.26, Item 464".

1154. SHOT, Q.F. "OBSCULESCENT"

The following shot have been declared "OBSCULESCENT" :-

Shot, A.P., Q.F. 75 mm. Mk.I T.
 Shot, S.A.P. " " Mk.VI T.
 Shot, A.P., Q.F. 3 in. 20 cwt. Mk.III T.
 Shot, S.A.P., " " " Mk.II T.
 Shot, A.P.C., Q.F. 25 pr. Mk.VII T.
 Shot, practice, Q.F. 6 pr. 7 cwt. Mk.V T.

1155. MINE, ANTI-PERSONNEL, NO.5, MK.I.
 Figs. 460, 461 & 462.

The abovementioned anti-personnel mine, filled H.E. and initiated by means of a detonator with striker unit and pressure plate, has been approved.

The cylindrical body is made up of two layers of strawboard coated internally, externally and between layers with approved varnish and has an outer wrapping of varnished brown paper. The inner layer forms a step inside each end of the body. Two varnished cardboard washers are fitted in one end of the body. A paper detonator tube, with the open end turned over and affixed to a strawboard washer, is secured to the inner of the two washers with an approved adhesive.

The following fillings may be used:-

(a) Pentolite 50/50 } Abt. 6 oz. 11 dr.
 (b) R.D.X./T.N.T. 50/50 }

A 5 dr. C.E. pellet with one central perforation, paper wrapped and varnished, is positioned around the lower portion of the detonator tube and covered with the filling. The filling is retained by a cardboard disc secured in the body with approved adhesive.

After filling, a former plug fitted with a becket at one end is inserted in the detonator tube, the becket sitting snugly in the upper washer in the body of the mine. Closure is effected by a strip of adhesive tape secured over the washer, the tape is formed with a tear-off tab and bears the following printed legend:- "AFTER MINE IS LAID REMOVE THIS TAB TO INSERT DETONATOR".

Dimensions of the mine are $3\frac{5}{8}$ " x 2" (dia.). FIG.460 shows the filled mine with plug in position.

The DETONATOR used is the No.89 Mk.I consisting of a No.27 Detonator into the mouth of which is crimped a 1.7 grain detonator.

The STRIKER UNIT comprises a plastic housing which carries a spring loaded steel striker held in the cocked position by two small steel balls inserted in holes in the housing and retained in position by a plastic collar.

The PRESSURE PLATE is a circular steel disc having a circular bush which fits over the top of the striker housing.

FIG.461 shows the mine with detonator, striker-unit and pressure plate assembled. Details of marking are given in FIG.462.

Laying the mine

- (i) Dig a hole approximately the same size as the mine.
- (ii) Tear off sealing tab from top of mine.
- (iii) Extract the plug.
- (iv) Lower mine, open end uppermost, into the hole.
- (v) Insert a No.89 detonator with its red top uppermost into the detonator tube, if necessary gently pushing it down to the bottom of the cavity with the plug.
- (vi) Holding the lower, open end, of the striker housing in one hand, avoiding contact with the collar, place the pressure plate in position with the other hand so that its central bush rests on top of the striker housing.
- (vii) Holding the lower end of the striker housing, insert the striker unit with the pressure attached, into the mine and cover lightly with soil.

Care must be taken that no force is brought to bear on the pressure plate or striker unit top as 6 lb. to 12 lb. pressure will release the striker and detonate the mine.

Action

When a pressure of 6 lb. to 12 lb. is applied to the pressure plate and transmitted to the top of the striker housing, the force applied causes the housing to be pushed down through the collar. As soon as the two small steel balls pass through the collar they are released and allow the striker to be forced down the striker housing, thereby firing the detonator which initiates the explosion of the mine.

Packing

- | | |
|---|--|
| 6 paper Containers No.224, each holding 4 mines
(total 24 mines). | } Packed in Container, Ammn.
Q.F. 2 pr. Mks.IX to XA
guns, with packing piece.

Filled weight is approx.
32 lb. |
| 1 tinned plate box (painted khaki green)
containing 24 striker units. | |
| 1 tinned plate box (painted red)
containing 24 detonators. | |
| 1 paper Container No.225 holding 24 pressure
plates. | |
| 2 Containers, Ammn. Q.F. 2 pr. Mks.IX to XA guns (total 48 complete mines)
are then packed in the steel Box C.207 Mk.II stowage dimensions of
which are 13.2 x 12.1 x 18.4 inches. Filled weight is approx. 79 lb.
A $2\frac{3}{4}$ inch wide blue band is painted round the box near the top. | |

1156. CORDITE, S.C. & H.S.C. - NOMENCLATURE OF TUBULAR FORMS.

Approval has been given for the nomenclature of S.C. and H.S.C. Cordites to be amended so as to follow the general principle adopted for all Cordites.

An oblique stroke is to be inserted to separate the letters indicating the nature of the cordite from those indicating shape. Thus the following nomenclature will be used in future:-

(a) S.C. Cordite

S.C./T. to indicate Tubular

S.C./S. " " Slotted Tube.

(b) H.S.C. and H.S.C./K. Cordites

H.S.C./T. to indicate Tubular

H.S.C./K/T. to indicate Tubular in the case of flashless H.S.C.

1157. BOX, A.S.A., H.13.

Reference Bulletin No.33, Item 731, page 23. The abovementioned box with necessary packing pieces has been approved as an alternative package for .303" Blank ammunition. The box holds 72 Cartons A.S.A. No.16, each carton containing 20 rounds.

1158. ADDENDUM

Reference Item 1141, this Bulletin, Table of Abbreviation (page 6.).

Add:-

25 Pr. Smoke	25 pr. SMOK
25 Pr. Supercharge increment charges	25 pr. SUPER INCR
25 Pr. Normal charge increment charges	25 pr. INTER INCR

ENEMY AMMUNITION1159. GERMAN PUSH IGNITER DZ 35
(Druckzunder 35)

Fig. 463.

The DZ 35 push igniter is cylindrical in shape, and designed for use with improvised mines etc. The safety arrangement is a safety bolt which passes diametrically through the external portion of the plunger thereby preventing the latter being pushed in to fire a cap. It is reported that a pressure of between 130 lb. and 165 lb. is required to operate the igniter. A specimen tested functioned at a pressure of approximately 150 lb. The overall length is 2.67 inches and the diameter of the body 1.25 inches. It is varnished a copper colour.

Another type of DZ 35, made of brass similar in action but different in construction and with a body diameter of 1 inch is reported to be in existence. The pressure necessary to fire this type is considerably less than that required to function the one being described.

The aluminium body is a cylindrical casing shaped at the top to form an internal flange, and screwthreaded internally at its lower end to receive an aluminium closing plug with central channel containing the percussion cap. The central channel extends into a projection formed in the base of the plug for the insertion of a detonator when required. The projection is screwthreaded externally for insertion in the charge container and is closed by a screwed transit cap. The plug, when screwed home, is secured by a grub screw which passes through the wall of the cylindrical body. A thin cardboard washer fits on the underside of the plug and surrounds the projection.

Above the plug, is a sleeve with an external flange at its base end which forms a seating for the lower end of the steel spiral supporting spring surrounding its smaller diameter. Internally, the sleeve at its upper end acts as a guide to the plunger, its lower end is of greater diameter to allow the balls to be forced outwards when pressure is applied to the plunger.

The upper end of the supporting spring bears against the external flange of an aluminium plunger which is assembled from the inside of the casing so that its top end protrudes from the case whilst the lower end fits into the sleeve. The upper side of the flange bears against the underside of the internal flange at the top of the case and limits its upward movement. The protruding portion of the plunger is screwthreaded externally to receive a flat circular screwed head with milled edge.

An aluminium safety bolt with split ring at one end, and a retaining nut at the other, passes through a horizontal channel in the plunger below the milled head. A groove, semi-circular in section, is formed in the centre of the bolt to engage a spring loaded ball located in a vertical channel in the upper end of the plunger. The ball and spring are retained in position by a screwed plug.

The plunger is recessed from the base to accommodate the striker and its steel spring, and has two radial holes each locating a steel ball which engage a circumferential groove in the striker.

The steel striker has a stem formed at its upper end over which its steel spiral spring is assembled. The spring is held under compression between a flange on the striker and the upper end of the recess. A circumferential groove, with the upper side inclined, is formed in the striker body to engage with the two steel balls.

ACTION

To arm the igniter, the safety bolt is withdrawn by removing its retaining nut and pulling the bolt out of the plunger against the resistance of the spring-loaded ball.

When pressure is applied to the plunger it is forced into the body against the resistance of the supporting spring. When forced down sufficiently, the steel balls lose the support of the smaller diameter in the sleeve and are pushed outwards by the inclined surface of the striker groove under pressure from the striker spring which also drives the striker on the cap assembly.

1160. GERMAN GAINIE, MODEL 40 B.
(ZUNDLADUNG 40 B)

Fig. 464.

The gainie is used in conjunction with the AZ 38 fuze in hollow charge shell and is situated in the base of the shell cavity.

The steel body is cylindrical with a flat radiussed top and a flange at the base. Two rows of four flash holes are formed in the side of the body. Externally, excepting the top of the gainie which is not extended to form a neck, it is similar in shape and size to the model 40 gainie described in Bulletin No. 33, Item 744. The overall length of the gainie is 1.025 inches and its diameter at the body and flange is 0.747 inches and 0.95 inches respectively. The circular aperture at the head of the gainie is 0.325 inches in diameter.

Internally at the top, it is fitted with a suitably shaped bakelite washer above a transparent wafer of viscose paper which separate the washer and filling.

The filling consists of 78.5 grains of PENT/Wax (87/13), salmon pink in colour. The detonator capsule containing approximately 4.3 grains of lead azide under a thin layer of approximately .23 grains of lead styphnate fits into the bottom of a cavity formed in the top of the main filling. A silk fabric disc of open weave is inserted above the detonator filling and the mouth of the capsule is closed by an inverted flanged aluminium cup.

The base of the gainie is closed by a fibre plug having a cardboard disc on its inside and, on its outside is a stuck on paper disc bearing the marking "Zdlg 40 B".

ACTION

The action is the same as the Zdlg 40.

1161. GERMAN GAINIE MODEL 41
(ZUNDLADUNG 41)

Fig. 465.

This gainie is used in conjunction with the AZ 38 fuze in hollow charge shell and is situated in the base of the shell cavity.

The steel body is cylindrical in shape with a flange at its base and has a chamfered top on which is formed a tubular neck. Its overall length is 1.33 inches and its diameter at the body and neck is .73 inches and .32 inches respectively. There are no holes in the side of the body as in the case of the model 40 type of gainie. The neck fits into the lower end of the central tube in the shell.

Internally, at the forward end, it is fitted with a suitably shaped bakelite washer. The filling is the same as the Model 40 gaine described in Bulletin No. 33, Item 744, but two cardboard discs are inserted in front of the screwed plug in the base.

A green label, with red bar and marked "Zdlg 41" was stuck on the outside of the base plug.

ACTION

The action is the same as the Zdlg 40.

1162. GERMAN FUZE KZ 38 WITH GAINÉ

Fig. 466.

This fuze which may be identified by the stencilling "KZ 38" on the dome shaped body is, including the gaine, 1 oz. in weight and two inches in length, the length of the body protruding from the nose of the shell is 0.6 inches. The empty fuze is similar to the British fuze No. 250 Mk. II. The fuze is of the direct action type and the principal parts are, the body with adapter, striker guide, needle and hammer, arming sleeve and arming spring, stirrup spring and ferrule, 3 balls, igniferous detonator and gaine.

The dome shaped body has a flat nose and is prepared with an internal channel stepped in four diameters and screwthreaded internally at its base to receive an adapter. The smaller diameter at the forward end houses the head of a wooden hammer and below it, is a chamber to accommodate the arming sleeve after firing, and a second step which forms a shoulder and bearing surface for the upper end of the ferrule. The channel is closed at its front end by a copper disc 0.006 inches thick.

The adapter is screwthreaded externally to receive the body and to screw into the shell. Internally it is screwthreaded to receive the striker guide and at its upper end has a chamber to receive an arming sleeve and arming spring which surround the upper end of the striker guide. The sleeve and spring are retained in the unarmed position by a stirrup spring and ferrule. A pin through the side of the adapter prevents the ferrule from turning.

The striker guide is screwthreaded externally to suit the adapter and to receive a gaine body, and has a central channel. The upper part of the channel forms a guide for the hammer and needle, and the lower part accommodates an igniferous detonator held between a shoulder and a plug, with central fire channel, which screws into the bottom of the channel. Three radial holes are bored in the upper part of the channel and partially accommodate three balls which rest against the underside of the needle head and thereby hold the needle off the detonator. Before firing, they are retained in position by the arming sleeve.

The needle is of steel and flanged at its upper end to enable it to be engaged by the three balls and held in the safe position. A wooden hammer, shaped with a head, rests on the top of the striker and is retained in position by a copper disc which closes the nose of the fuze.

The arming sleeve is cylindrical and fits around the striker guide to retain the balls. It is flanged at its upper end to form a seating for the arming spring and has a curved periphery to suit the stirrup spring.

The stirrup spring is cylindrical, its lower edge has a number of external projections which fit under the ferrule and its upper edge has a number of internal projections which fit over the arming sleeve and keep the arming spring under compression.

The ferrule is cylindrical, its upper end engages a shoulder in the body and its lower end the stirrup spring. A pin engages a slot cut vertically in one side of the ferrule and prevents its rotary movement in the fuze.

The igniferous detonator contains about 0.5 grains of a mixture of mercury fulminate, potassium chlorate, antimony sulphide (with, possibly a small proportion of ground glass) followed by a thin layer of gunpowder. It is the same size as the igniferous detonator in fuze No. 250.

The gaine, approximately 1.05 inches long, is a steel cylindrical body closed at its bottom end and containing 7 grains of CE/TNT (40/60) pressed extremely hard into the base with a thin layer of the same composition in the form of loose crystals on top. Above this is an inverted cup shaped capsule containing a detonator composition consisting of 0.46 grains of CE under 6 grains of fulminate of mercury. The flash hole in the top of the capsule is closed by a fabric disc on its underside. The mouth of the gaine is screwthreaded to enable it to be screwed on the striker guide of the fuze, and contains a leather washer under a metal washer which fits over the detonator cap.

ACTION

This fuze is of the floating needle type and is not provided with a supporting spring, it therefore cannot be over emphasized that before being fired the closing disc in the nose of the fuze should be examined to see that it is not damaged or perforated, otherwise the round may be fired prematurely by air pressure acting directly on the hammer.

On firing, the ferrule sets back and takes the stirrup spring with it, thereby releasing the arming sleeve which is forced upwards by its spring and unblocks the three holes in the striker guide.

During flight, the needle and hammer tend to creep forward owing to deceleration, the three balls are released and fly outwards under centrifugal action and so release the needle.

On impact, the hammer is forced in driving the needle into the detonator which is fired and in turn sets off the gaine detonator and gaine which detonates the shell filling.

1163. GERMAN BASE FUZE Bd Z. 5127 WITH TRACER

Fig. 467.

This is a base fuze fitted with a tracer and is used in the APCBC shell for the 8.8 cm Flak 41 multiple purpose gun. The weight of the fuze with tracer is 11 $\frac{3}{4}$ oz. The tracer alone weighs $\frac{3}{4}$ oz. The fuze body is approximately 2.3 inches long, and screwthreaded externally at one end for insertion in the shell. The interior is divided into two compartments by a diaphragm formed in the body. The rear compartment contains the tracer and is rather smaller than that in the front which is screwthreaded internally and contains the fuze mechanism.

The fuze mechanism consists mainly of a tubular mechanism holder having at its rear end a fixed pellet containing a detonator and at its front end a striker with compressed spiral spring, two steel balls and an inertia collar.

The tubular holder is screwthreaded externally for approximately two thirds of its length from the base, its forward end is of slightly less diameter and is surrounded by a loose fitting inertia collar secured by a shear wire. The base of the holder is closed by a cup shaped pellet containing an igniferous detonator. Nearer the forward end of the holder are two radial channels diametrically opposite and closed on the outside by the inertia collar.

Two steel balls are held partially in the radial channels and partially in two recesses in the body of the striker thereby holding the latter off the detonator. One end of the striker spring, which is held under compression, bears against a shoulder in the channel at the forward end of the holder whilst the other end fits into the cup shaped body of the striker. Two flash holes are formed in the base of the striker body on diametrically opposite sides of the needle.

The front end of the fuze body is closed by a gaine containing cyclonite over lead azide and lead styphnate.

ACTION

Upon impact, the inertia collar sets forward and breaks the shear wire thereby allowing the steel balls under centrifugal action, to move outwards and unlock the striker. The striker under the action of its spring is forced back on to the detonator. The flash from the detonator passes through the flash channels on either side of the striker to the gaine at the forward end of the fuze.

TRACER

The tracer consists of a flanged hollow cylindrical body closed at its forward end by a steel disc, and provided with an external screwthread for insertion in the base of the fuze. Internally, it is lined with a metallic liner and at its forward end fitted with a cardboard disc. The tracer composition is retained by a celluloid closing disc let into an undercut recess in the base of the tracer.

1164. GERMAN HOLLOW CHARGE BOMB WITH PROJECTOR (FAUSTPATRONE)

Figs. 468.

This weapon is designed for use against armour at ranges up to approximately 30 yards. It is estimated that the hollow charge will perforate 6.5 inches of homogeneous hardened armour.

The streamlined bomb with a flat topped tapering impact cap is carried, with its flexible steel tail fins coiled, in one end of the tubular projector where it is secured by a pin. The projector, 31.5 inches long and 1.9 inches in diameter, is of the recoilless type, held by the operator, and is fitted with a sighting arm, a bolt action firing mechanism and a propellant charge of gunpowder. With the bomb inserted in the projector the weight is approximately 11 lb. 6 oz. and the overall length 41 inches. The impact cap of the bomb is painted buff colour; the rust proofed body is blue-black in colour; the tail portion, except the fins which are unpainted, is painted buff colour. The projector is painted buff colour and has stencilled on it, in red, an arrow pointing to the rear end with the words "Achtung! Feuerstrahl!". This wording is, in effect, a warning to beware of propellant gases issuing from the rear end of the projector.

BOMB

The hollow charge bomb is of light construction with an overall length of 19.5 inches and a maximum diameter of 5.6 inches. The bomb examined was deficient of the gaine and fuze and in this condition weighed 6 lb. 7½ oz. The steel body tapers towards the base where it is rounded and has a central hole and is fitted with an extension tube which normally contains a gaine and a base fuze. The lower end of the extension tube has a pressed screwthread to engage projections in the tail tube for the attachment of the tail to the bomb. The body contains a 3 lb. 7 oz. hollow charge of cyclonite and T.N.T. with a cavity liner in the form of a 60 degree cone. The top of the liner is shaped to form a cylinder for attachment to the body and for the assembly of the impact cap which is sprung into the cylinder. A steel ring is inserted between

the top of the filling and the cylindrical portion of the liner. Cavities for a base fuze and a gaine are formed in the lower part of the H.E. filling within the extension tube. The dimensions of the gaine cavity are suitable for the small P.E.T.N./Wax gaine "Kl.Zdlg 34 Hp" described in Bulletin No. 39, Item 989 but no information regarding the gaine or fuze used is available.

The tail unit of the bomb consists of a steel tail tube with a wooden stem carrying four flexible steel fins. The tail tube is shaped at the front end to fit over the rounded base of the bomb body and on the outside is fitted with small bracket to receive a pin which secures the bomb to the sighting arm on the projector for transport. The wooden stem to which the fins are riveted has a steel base cap.

PROJECTOR

The steel tubular projector with the propellant charge fitted inside weighs 4 lb. 14 $\frac{1}{4}$ oz. The tube has an internal diameter of 1.72 inches and is open at both ends. At the forward end of the tube a portion is cut away to accommodate the bracket on the bomb. The propellant charge is situated at 9.8 inches from the forward end of the projector and extends to within 17.2 inches from the rear end. The charge consists of 3 oz 5 $\frac{1}{2}$ drams of granular gunpowder in a cylindrical cardboard container. The container is 4.1 inches long and is secured in position by a screw inserted in the side of the projector. The ends of the container are made up of a number of cardboard discs, and a rectangular aperture in the side is closed by a piece of waxed transparent paper. The aperture is positioned to correspond with a flash hole in the side of wall of the projector communicating with the firing mechanism. A circular disc of rubber like material is inserted above the container to act as a cushion for the tail of the bomb.

The firing mechanism is contained in a casing in the form of a short tube attached to the side of the projector. A sighting arm is hinged to the forward end of the casing. The arm is of channel section steel with a sighting aperture near its centre and two notches at the forward end to engage the pin which secures the bomb to the projector for transport. At the hinged end of the arm a projection is formed which prevents the firing mechanism being cocked when the arm is folded down in the position for transport.

The firing mechanism consists of a striker with spring and a trigger in the form of a spring loaded plunger and a cocking bolt which acts against the firing end of the striker and carries a percussion cap.

The striker is rectangular in section and in the form of a rod enlarged at the pointed end and inclined at the opposite end. A cocking notch is formed at the commencement of the incline. The spiral spring is assembled over the striker between two circular end plates. The plates each have a rectangular hole for assembly on the striker. The plate at the forward end is supported by an indentation in the casing and that at the rear end by the enlarged head of the striker.

The trigger is in the form of an inverted steel cup, with rectangular holes in the side through which the inclined part of the striker passes, and contains a spiral spring. The spring is held in compression between the edge of the striker and the closed end of the cup and tends to move the trigger outwards through a hole near the forward end of the casing.

The cocking bolt enters the rear end of the casing and has a small handle screwed into it for manipulation. The bolt is retained in the casing by a pin fitted to a spring clip which fits around the casing. The pin is inserted through a hole in the casing and enters a slot in the tubular body of the bolt. The slot and pin limit the movement of the bolt and permit the bolt to be turned through 90 degrees. The forward end of the bolt has two short slots diametrically opposite and two long slots similarly placed. The short slots correspond to the position of the bolt handle and engage the enlarged head of the striker when the striker is in the uncocked position. The long slots are situated at 90 degrees from the short. The bolt contains a spiral spring held between its rear end and the pin of the spring clip, a small steel end plate being fitted at its forward end to bear against the pin. The percussion cap is carried in a steel cylindrical pellet inside the forward end of the bolt. A flash hole is formed in the side of the pellet corresponding to a similar hole in the bolt. The pellet is secured in the bolt by the metal around the hole in the bolt being turned into the hole in the pellet.

ACTION

The pin securing the bomb to the projector is removed before firing. The sighting arm is opened to a position at right angles to the projector and the weapon is laid by aligning the rim on the cylindrical part of the bomb with the target through the aperture in the sighting arm; the rim thus acting as a foresight. The weapon may be used in the standing, kneeling or lying position but care must be taken to place the weapon so that nothing obstructs the path of the propellant gases to the rear. According to a German training pamphlet, a jet of flame approximately 6 feet in length shoots out of the rear end of the projector on firing. The firer must wear a steel helmet and immediately after firing must take cover to avoid being hit by splinters.

The firing mechanism is cocked by pushing the bolt forward with the handle in the vertical position. The striker, engaged in the short slots in the front end of the bolt is moved forward with the bolt and the striker and bolt springs compressed. The inclined forward end of the striker emerges from the front end of the casing and, when the notch in the striker reaches the trigger, the spring in the trigger raises the cylindrical body so that the notch is engaged. The striker is then in the cocked position with the trigger and front end protruding from the casing. Unless the sighting arm is raised the projection near the hinged end of the arm obstructs the forward movement of the striker and prevents the mechanism being cocked. After cocking, the bolt is released and is returned to the withdrawn position by its spring. With the bolt in this position and the handle vertical, the short slots at its front end are still in alignment with the striker head. This is apparently intended as a safe setting for the cocked mechanism as the length of the slots would prevent the striker reaching the percussion cap in the bolt. Also the flash holes in the bolt and body are not coincident. When the bolt is turned through 90 degrees in a counter clockwise direction the long slots in its front end are brought into alignment with the striker head and the flash holes coincide. When the trigger is pressed in, it is disengaged from the striker notch and the striker is driven back by its spring to pierce the cap. The flash from the cap enters the projector through the flash holes and ignites the propellant charge which projects the bomb. The escape of some of the propellant gases through the rear end of the projector prevents the firer being subjected to a recoil force.

TO UNCOCK THE FIRING MECHANISM

The mechanism is cocked when the trigger is protruding from the casing. With the bolt handle vertical, push the bolt forward to its full extent so that the short slots engage the enlarged head of the striker. With the bolt held in this position, press in the trigger and then allow the bolt to be slowly pushed out to the withdrawn position by its spring. This movement permits the striker to move back to the uncocked position and its forward end will disappear into the casing.

1165. GERMAN 4 cm CARTRIDGE Q.F.H.E. (Bofors type)

Figs. 468 & 469.

The cartridge is used in the 4 cm Flak 28 an A.A. gun of the Bofors type. The length of the complete round is 17.7 inches and its weight is

approximately 4 lb 4 oz. The shell is painted yellow and stencilled in red, and has a red band painted above the driving band. The stencilling on the shell body, above the red band, includes the numeral "1" indicating the nature of filling. The shell is fitted with a single copper driving band.

The fixed Q.F. cartridge consists of the following components:-

Shell H.E. filled T.N.T. and Tracer composition
 Self destroying detonator
 Tracer igniter
 Fuze KZ 38 with gaine
 Brass case or steel case coated with brass
 Propellant charge of double base propellant with a nitrocellulose igniter
 Primer percussion C/33 St.

The complete round may be fired from the British 40 mm equipments.

SHELL (Fig. 469.)

The shell is essentially the original 1938 Bofors shell, modified to give a greater certainty of detonation and a longer range before self-destruction. Externally, it differs in that it tapers more sharply in its streamlined base. The weight of the shell filled and fuze is 2 lb. 2 oz. 1 dr, and its overall length when fuze is 7 inches. A cannellure is formed in rear of the driving band to enable the shell to be attached to the cartridge case. The body, at about its shoulder, is screwthreaded internally to receive an adapter which tapers to form the forward end of the shell body and to receive the gaine and fuze.

Internally the shell has two compartments containing the main H.E. filling and the tracer composition respectively, and a recess in the base containing the tracer igniter, all of which are interconnected. The bursting charge, in the forward compartment forming the front half of the shell body, consists of a 1 oz. $5\frac{1}{2}$ dr. pellet of pressed biscuit T.N.T. contained in a varnished carton with a cavity in the base to receive the self destroying detonator and another in the forward end to receive the gaine. The cavity in the base is fitted with a brass liner.

At the base of the bursting charge is a steel plate, with a central flash hole, which fits against an internal shoulder formed by the reduced diameter of the shell cavity and separates the bursting charge from the tracer composition. Between the steel plate and the bursting charge is a box cloth washer.

The self destroying detonator consists of 8.5 grains of C.E. over 6 grains of lead azide/lead styphnate (63/37) contained in an aluminium cylinder with a flash hole closed by a fabric disc in the base. The forward end of the cylinder is closed by an aluminium washer retained in position by turning over the mouth of the cylinder.

The tracer composition, pressed directly into a compartment of slightly less diameter and length than that containing the bursting charge, is a purplish composition weighing 1 oz. $2\frac{1}{4}$ dr. and consisting of resin (containing shellac) 10.6 per cent, magnesium - aluminium alloy (90/10) 30 per cent, strontium nitrate 59 per cent, volatile matter 0.4 per cent. The inclusion of aluminium increases the brilliance of the trace and the time of burning. The tracing composition is primed with a pellet of priming composition similar in appearance to the main

tracer filling but containing small grains of black powder. The priming composition surrounds a smaller perforated ignition pellet of fine grained gunpowder.

The analysis of the pellets is as follows.

	<u>Priming pellet</u>	<u>Ignition pellet</u>
Sulphur	9.0 per cent	4.4 per cent
Charcoal	12.3 " "	6.5 " "
Potassium nitrate	71.6 " "	44.5 " "
Magnesium	2.5 " "	18.8 " "
Berium peroxide	3.0 " "	24.7 " "
Resin	1.0 " "	2.0 " "
Volatile matter	1.0 " "	2.0 " "

The pellets are contained in a cylindrical recess formed in the base of the tracing composition. The compartment is closed at its base end by a zinc washer and paper disc varnished to its upper surface.

The trace burns for approximately 9.4 seconds and averages 2680 candle power when spinning at 30,000 r.p.m.

TRACER IGNITER (Fig. L70)

The tracer igniter is of the same design as that in the British 40 mm shell Mk. I. The body has a flange at its base and is recessed and screwthreaded to receive a pellet holder which screws on to a copper sealing washer. The recess is prepared at the base to accommodate a percussion cap kept in position by a brass washer and, at its forward end a hammer held off the cap by a stirrup spring. The pellet holder is recessed at the top and bottom to form a chamber for the magazine and upper part of the hammer respectively, the recesses are connected by a central channel. The magazine contains a gunpowder pellet and is closed at the top by an aluminium washer with a paper disc on its under side. The central channel is filled with pressed powder and has a rough surface to prevent the movement of the filling. The hammer is cylindrical with its lower part shaped to form a round headed striker and is prepared with two flash channels leading to a recess at its upper end. The stirrup spring is cylindrical with flanges formed by cutting the metal and bending it inwards to support the hammer and keep it clear of the cap until the gun is fired. The cap contains detonator composition.

ACTION

On acceleration, the hammer sets back overriding the flanges of the stirrup spring and strikes the percussion cap. The flash from the cap passes through the flash channels in the hammer and fires the gunpowder in the central channel and magazine which in turn ignite the tracer composition via its ignition and priming pellets. The trace enables the flight of the shell to be observed. If the fuze has not already functioned, the trace eventually detonates the self destroying detonator which in turn detonates the bursting charge of the shell.

FUZE KZ 38 WITH CAPSULE

This fuze air gauge is described elsewhere in this bulletin under the above heading.

CARTRIDGE CASE

The cartridge case is 12.25 inches in length and is of the normal Bofors type with a groove immediately in front of the flange and another in the base. Cases may be identified by the stamping

"4 cm 28" or "4 cm 28 St" on the base. The former is a brass case and the latter a steel one with a coating of brass. The case is secured to the shell by indenting it into a cannellure near the base of the shell.

PROPELLANT CHARGE

The propellant charge indicated by the black stencilling on the case is 275 g (9 oz 11 dr) Ngl RP - (234 • 2,2/0,8), and is fitted with an igniter. The analysis of the propellant and igniter of the round examined are as follows:-

Propellant - Nitrocellulose 55.92 per cent, nitroglycerine 34.07 per cent, diphenylamine 0.76 per cent, ethyl-centralite 5.15 per cent, unidentified oily substance 4.10 per cent.

Igniter - Nitrocellulose 93.25 per cent, nitroglycerine 3.31 per cent, diphenylamine 1.27 per cent, graphite 0.52 per cent, volatile matter 1.65 per cent.

PRIMER

The percussion primer of the round examined was the C/33 St. The primer is of the same design as the C/33 described in Bulletin No.32 Item 672, except that the body is of steel instead of brass.

VARIATIONS IN SHELL FILLINGS AND PRIMERS

In addition to the round described, two other rounds have been examined and found to be fitted with shell containing a bursting charge of 1 oz. 5³/₄ dr. of PETN/Wax (90/10) which will give an increased damage effect. The shell did not bear a nature of filling number but the red stencilling on the shell body above the driving band included the abbreviation "NP" denoting the nature of filling.

The tracer composition of these rounds did not contain aluminium, its analysis is as follows:-

Strontium nitrate 50.8 per cent, magnesium metal 31.2 per cent, barium nitrate 3.2 per cent, resinous matter 14.8 per cent.

One cartridge case was of the original Bofors design and was fitted with the larger German percussion primer C/12 described in Bulletin No.26, Item 460, and the other with the smaller German percussion primer C/13 described in Bulletin No.32, Item 671.

1166. GERMAN 8 cm MORTAR H.E. BOMBS 38 umg AND 39 umg.

According to a captured document, the H.E. bombs Wgr 38 and Wgr 39 (described in Bulletin 40 Items 1030 and 1031) designed to burst in the air after impact, are to be converted to normal H.E. bombs. The converted bombs will be designated "Wgr.38 umg" and "Wgr. 39 umg." and will be stencilled "38 umg" and "39 umg" respectively. These bombs range the same as the standard H.E. bomb "Wgr.34" described in Bulletin 32, Item 673.

1167. GERMAN CARTRIDGE, Q.F. 8.8 cm Flak 18 and 36 A.P.C.B.C. (8.8 cm Panzergranat Patrone)

The cartridge is used in the 8.8 cm Flak 18 and 36 (8.8 cm multi purpose gun) in the anti-tank role. The length of the complete round is approximately 34.3 inches and the weight 34 lb.

The fixed Q.F. cartridge consists of the following components:-

- Armour piercing shell fitted with penetrative and ballistic caps and filled H.E.
- Base detonating fuze with tracer.
- Brass case or steel case coated with brass
- Propellant charge of double base propellant with a nitrocellulose igniter and a lead wire, decoppering agent (1 mm in diameter)
- Percussion primer C/12 nAst.

PROJECTILE

The weight of the shell, filled and fuze, is approximately 21 lb. The projectile and cap are painted black. The general construction is the same as that of the 7.5 cm shell described in Bulletin No.25 Item 435, which includes a drawing. The length of the shell is 14.5 inches.

The shell body is of chromium molybdenum steel and is fitted with two driving bands of soft iron covered with copper. Two cannellures for the attachment of the case are formed behind the driving band and the base is screwthreaded to receive the fuze with tracer. The penetrative cap is of the same material as the body and is attached by a soldering process. The ballistic cap is of mild steel and is attached to the penetrative cap by spot welding at twelve points.

The bursting charge with exploder is contained in a light metal container shaped to fit the shell cavity except at the forward end where it is flat. The container is open at the base end, where it is turned over to form an internal flange. The space between the forward end of the container and the small end of the cavity contains a filling of inert composition. The bursting charge consists of T.N.T/Wax and is made up in two parts. The forward part is solid. The base part is in the form of a hollow cylinder to receive the exploder pellet. The exploder pellet of P.E.T.N./Wax is pink in colour and has a cavity formed in its base to receive the head of the fuze. The weight of the filling is approximately 5.5 ozs.

FUZE AND TRACER

The base fuze, which is stamped with the calibre and nature of the projectile i.e. "8.8 cm Pz gr" (8.8 cm AP projectile) and stencilled in white "40" is of the same type as that used in the 7.5 cm KWK shell (See Bulletin No.25 Item 435), but differs in the dimensions of the steel body which apparently functions as an adapter to enable this type of fuze to be used in shell of different calibres. The diameter over the threads is 2.1 inches and the length of the fuze 3.56 inches. The detonator contains a .32 grain filling of the following composition:- Mercury fulminate 25.8 per cent, potassium nitrate 36.9 per cent, antimony sulphide 29.5 per cent and ground glass 7.8 per cent. The tracer, screwed into the base of the fuze, is described in Bulletin No.32, Item 670.

CARTRIDGE CASES

Both the brass case and the steel case, coated with brass, bear the number "6347" stamped in the base. The steel case is readily distinguished from the brass by the letters "St" following the number. Both types are 22.4 inches long, increase sharply in taper near the mouth, and are necked. The primer boss is screwthreaded.

PROPELLANT CHARGE AND IGNITER

The propellant charge, in the form of tubular cords, is partially enclosed in a bag which fits over its base end and contains the igniter composition. The weight of the charge is 5.34 lb. The propellant is of the double base type and consists basically of nitrocellulose and diethylene glycoldinitrate and includes sodium bicarbonate. The tubes are graphited and have a glossy black appearance. The igniter composition

consists of greenish cylindrical grains of graphited nitrocellulose powder containing a small proportion of potassium nitrate.

The following markings are typical of markings stencilled on the bag in black:-

2,500 kg.
 Digl. RP. - 8 - (495 - 5,5/2,75)
 und
 Digl. RP. - 8 - (450 - 5,5/2,75)
 Dbg. 39/14
 La. 9.397.

PRIMER (Zündschraube C/12 nA St)

The percussion primer C/12 nA St is similar to the brass primer of the same number described in Bulletin No.26, Item 460, but is of steel.

1168. GERMAN CARTRIDGE, Q.F., 8.8 cm Flak 18 & 36 H.E. (8.8 cm Sprenggranate-Patrone L/4.5 (KZ))

Fig.471.

The cartridge is used in the 8.8 cm Flak 18 and 36 (8.8 cm multi-purpose gun). Cartridges may be fitted with the mechanical time fuze S/30 (Zt.Z.S/30) or the graze and direct action percussion fuze 23/28 (A.Z.23/28). The length of the complete round is approximately 36.7 inches and the weight 33 lb.

The fixed Q.F. cartridge consists of the following components:-

H.E. shell filled amatol
 Gaine C/98
 Mechanical, time fuze S/30 or graze and D.A. fuze 23/28
 Brass case 6347 or steel case, coated with brass, 6347 St.
 Propellant charge of double base propellant with a nitrocellulose igniter and a lead wire decoppering agent.
 Percussion primer C/12 nA St. or C/12 nA.

PROJECTILE

The weight of the shell, filled and fuze, is approximately 20 lb. The body of the shell is painted yellow. The amatol bursting charge is of the 40/60 variety and is filled by the direct casting method through the base. The weight of the filling is 1.9 lb. The walls of the cavity and the inner surface of the base plug are coated thinly with a bituminous composition. A steel exploder container for the gaine is screwed into the nose of the shell below the fuze hole. The exterior of the container is also coated with the bituminous composition.

GAINES

Details of the gaine C/98 are given in Bulletin No.32, Item 669.

FUZES

Details of the mechanical time fuze Zt.Z.S/30 are given in Bulletin No.33 Item 742, and fuze AZ 23/28 in Bulletin No.42, Item 1118.

CASE, PROPELLANT CHARGE, DECOPPERING AGENT AND PRIMER.

These are the same as those described for the A.P.C.B.C. round. The charge weight markings of 2.75 Kg. (5.65 lb.) and 2.29 Kg. (5.03 lb.) have been met with.

1169. GERMAN 8.8 cm Flak 41 CARTRIDGE Q.F. A.P.C.B.C./T.

Fig. 472.

This cartridge is used in the 8.8 cm Flak 41 gun presumably in the anti-tank role. The weight of the complete round is 46 lb. 6 oz. and its overall length is 45.8 inches.

The fixed Q.F. cartridge consists of the following components:-

Armour piercing shell fitted with penetrative and ballistic caps
and filled H.E.
Fuze Bd Z. 5127 with tracer
Brass case
Propellant charge of double base flashless propellant
Primer electric C/22.

SHELL

The weight of the shell, filled and fuze, is 22 lb. 5 $\frac{1}{4}$ oz. The exterior is painted black with a white tip on the ballistic cap and stencilled in red. It is fitted with two driving bands of soft iron. Two cannellures for the attachment of the case are formed behind the driving band and the base is screwthreaded to receive the fuze with tracer. A penetrative cap is attached to the body and a ballistic cap fits over the penetrative cap. The cavity for the bursting charge is smaller than that in the shell for the Flak 18 and 36. The bursting charge, identified by the numerals "92" stencilled on the shell body is cyclonite/wax (90/10) and is approximately 2 oz. 2 dr. in weight.

The weight of the empty projectile is 21 lb 7 $\frac{1}{4}$ ozs.

FUZE Bd.Z 5127 with tracer

Details of this fuze are given in this bulletin which includes a drawing of the fuze and tracer.

CARTRIDGE CASE

The cartridge case is of brass, 33.8 inches in length with a slight increase in taper near its mouth. The case is stamped in the base "8.8 cm Flak 41" and unlike most German cases does not appear to have been allotted a case model number.

PROPELLANT CHARGE AND IGNITER

The flashless propellant charge, as indicated by the stencilling on the case weighs 11 lb. 15 oz. and is made up of tubular cords consisting basically of nitrocellulose diethylene glycol dinitrate with the addition of nitroguanidene. The bag containing the charge, has an igniter containing 20 grams of nitrocellulose powder sewn to its base. The weight, nature and size of the propellant charge is stencilled on the case as follows:- "5.415 Kg. Gu. R.P. - 7,5 - (740 - 4,7/1,5). The case is also marked "Trophen" indicating the charge to be suitable for hot climates.

PRIMER ELECTRIC C/22

Details of this primer are given in Bulletin No.26 Item 464.

1170. GERMAN 8.8 cm Flak 41 CARTRIDGE Q.F. H.E.

This fixed Q.F. round is fired from the 8.8 cm Flak 41 gun. The weight of the complete round is 44 lb 12 oz. and the overall length 47.2 inches.

The complete round consists of the following components:-

H.E. Shell filled amatol (40/60)
 Fuze Zt Z S/30 Fgl. or AZ 23/28
 Gaine C/98 of the larger size
 Brass case
 Propellant charge of double base flashless propellant
 Primer electric C/22

SHELL

The weight of the shell, filled and fuze, is approximately 20 lb. 8 oz. The shell is painted yellow and stencilled in black. The numeral "13" stencilled on the shell shoulder indicates the bursting charge of Amatol 40/60 which weighs approximately 1.9 lb. The shell has two driving bands of iron and is fitted with an exploder container carrying the gaine Gr Zdlg. C/98. The shell is similar to the 8.8 cm Flak 18 and 36 H.E. Shell described elsewhere in this bulletin.

FUZES AND GAINE

Details of fuze Zt Z S/30 Fgl are given in Bulletin No.33, Item 743 fuze AZ 23/28 in Bulletin No.42, Item 1118, and the gaine Gr C/98 in Bulletin No.32, Item 669.

CARTRIDGE CASE AND PRIMER

The cartridge case and primer is identical to that used with the APCBC/T round.

PROPELLANT CHARGE AND IGNITER

The propellant is flashless, and basically of the same composition as that used in the APCBC/T cartridge. It is tubular in form but of slightly different size as indicated by the markings stencilled on the case. The bag containing the charge has an igniter containing 20 grams of nitrocellulose powder sewn to its base. The weight of the charge as indicated by the stencilling on the case is 5,355 Kg (15 lb.13 ozs.) and the stencilling "TROOPEN" on the case indicates the charge is suitable for hot climates. The designation indicating the nature size of the propellant, as stencilled on the case, is "Gu. R.P. - KN - (740 - 4,2/1,5).

1171. GERMAN 12.8 cm Flak 40 CARTRIDGE Q.F. H.E. Fuzed Zt Z S/30 (12.8 cm Sprgr Patr L/4,5)

Fig.473.

This fixed Q.F. Cartridge is used in the Flak 40 A.A. gun which may be static, mobile or mounted on railed vehicles. The length of the complete round is 58.5 inches and it weighs approximately 100 lb. 4 oz.

The complete round consists of:-

Shell H.E. filled Amatol 40/60
 Gaine Zdlg 36 Np.
 Fuze Zt Z S/30
 Brass cartridge case
 Propellant charge of tubular Digl.
 Primer electric C/22.

SHELL

The shell is painted yellow, stencilled in black and fitted with two iron driving bands. The bursting charge of Amatol 40/60 cast, indicated by the numeral "13" stencilled on the shoulder, weighs 7 lb. 7½ oz. An exploder container of the larger size, for the 36 gaine, is screwed into the fuze hole. The weight of the shell, filled and fuze, is 57 lb. 5 oz.

GAIN

The gaine used below the time fuze is the Zdlg 36 Np. described as a separate item in this Bulletin.

FUZE

The fuze, Zt. Z S/30 is described in Bulletin No.33, Item 742.

CARTRIDGE CASE

The brass cartridge case is the normal flanged type, 37.75 inches long with a slight increase in taper towards the mouth. The case model number "6311", and "Gerat 40" is stamped in the base. The effective capacity of the case is 864 cubic inches.

PROPELLANT CHARGE

The propellant charge consists of 9.62 Kg (21 lb. 3½ oz.) Digl RP - KN - (850 • 5,6/2) fitted with an igniter consisting of 239 grams of nitrocellulose composition.

PRIMER

Details of the electric primer C/22 are given in Bulletin No. 26, Item 464.

1172. GERMAN 15 cm (NAVAL) A.P.C.B.C. SHELL
Fig. 474.

This is a naval shell and is fired with a separate loading Q.F. cartridge. The approximate length of the shell is 24.8 inches and its weight filled and fuzeed is approximately 99 lb.

The exterior of the shell is painted yellow and stencilled in black and has a black painted tip on the ballistic cap. A large arrow on the ballistic cap, painted in black and pointing towards the base, readily distinguishes this shell with a base fuze from the H.E. shell which is similarly marked but has a nose fuze under the ballistic cap. The shell is fitted with two copper driving bands and, immediately behind the driving bands, a lead ring which acts as a decoppering agent. The light ballistic cap is screwed on to an adapter secured to the shoulder of the shell body.

External markings on the shell are shown in Fig. 474.

The base of the shell cavity is screwthreaded to receive a flanged base adapter which screws on to a lead washer fitting against a shoulder formed in the shell cavity below the thread. The adapter is screwthreaded internally to receive a steel container, for the gaine and fuze, which extends into a cavity in the bursting charge.

The bursting charge weighs 4 lb. 7½ oz. and consists of five pressed blocks of T.N.T/Wax corresponding in setting point to Service Grade 1. Between the whole charge and the walls of the shell are two sheets of paper. The forward block consists of 6 oz. TNT/Wax 75/25 in an aluminium container suitably shaped to fit the upper end of the shell cavity. The remaining blocks are contained in a cardboard carton and consist of two upper blocks of 13 oz. TNT/Wax 80/20 and 1 lb. 0½ oz. TNT/Wax 85/15 respectively, followed by two blocks consisting of 2 lb. 4 oz. TNT/Wax 95/5. The upper of the lower two blocks has a base cavity which, with the annular shaped lower block, forms a suitably shaped cavity to receive the steel exploder container.

Cardboard washers are fitted between the base adapter and the base of the filling in order that the filling may be held securely in the shell cavity.

Labels and stencilling on the filling were found as under.

Label on the nose pellet :-

Zweiteilige Sprengladung für
15 cm. Spgr L/4,2u. L/4,3 Bdz (m.Hb)
Nr 313 St 5114 (37/40a) u1
0,170 kg Fp 25 - elg umkr 40
Gefertigt: rdf 40 Lief 1.

Label on side of cardboard container:-

Zweiteilige Sprengladung f
15 cm. Spgr L/4,2u. L/4,3 Bdz (m.Hb)
Nr 313 St 5114 (37/40A) u2
0,370 kg Fp 20 }
0,470 kg Fp 15 } - elg umkr 40
1,020 kg Fp 5 }
Gefertigt: rdf 40 Lief 1.

Stencilled on cardboard container:-

Marine Abnahmestelle
(Eagle)
11/9

Label on base of cardboard container:-

Zweit. Sprengladung f 15 cm Spgr L/4,2u L/4,3 Bdz
m (Hb) Nr 313 St. 5114 (37/40 a)
0,170 kg Fp 25, 0,370 kg Fp 20, 0,470 kg Fp 15
1,020 kg Fp 5
elg umkr 40, Gefertigt; rdf 40 Lief 1.

GAIN

The gaine in the exploder container is the large size C/98 described in Bulletin No.32, Item 669.

FUZE

Details of the fuze are not yet available.

1173. GERMAN 15 cm (NAVAL) H.E.B.C. SHELL

Fig.475.

This is a naval shell and is fired with a separate loading Q.F. cartridge.

The exterior of the shell is painted yellow and stencilled in black and has a black tip painted on the ballistic cap. A large arrow on the ballistic cap, painted in black and pointing towards the nose, readily distinguishes this shell from the A.P.C.B.C. shell described in this bulletin. The shell is fitted with two copper driving bands and immediately behind them towards the base is a lead ring which acts as a decoppering agent. The overall length of the shell is 26.7 inches and its weight filled is approximately 100 lb. The shell is not issued fuze. External markings on the shell are shown in Fig.475.

The forward end of the shell body is screwthreaded externally to receive a light ballistic cap, and screwthreaded internally in two diameters to receive a long steel exploder container below the fuze.

The ballistic cap screw on to a shoulder and continues the external contour of the shell to the front. The cap has an aperture in the nose which is screwthreaded and closed by a screwed plug. A wooden distance piece, not shown in the drawing, extends from below this plug into the exploder container to retain the exploder in position during transportation.

The lower half of the steel container holds two small exploders each consisting of 14 dr. pellets of pressed cyclonite/wax 90/10 in aluminium cylinders.

The bursting charge consists of 8 lb. 3 oz. 4 dr. of TNT/wax in six pellets with several sheets of thin paper between the filling and the walls of the shell. The top pellet weighing 7 oz. 4 dr. is annular in shape and contained in an aluminium container suitably shaped to fit the forward end of the shell cavity, and fitted with a cardboard closing washer at the base. The remaining five pellets consist of 7 lb. 12 oz. pressed T.N.T. contained in a cardboard carton with a cardboard washer at the forward end and a cardboard disc at the base. The top pellet is annular in shape and surrounds the exploder container and the pellet next below it has a cavity to receive the base end of the exploder container.

The base of the shell is closed by a flanged screwed plug which screws into the shell body. A lead sealing washer fits between a shoulder formed in the shell body below the thread and the flange on the plug.

Labels and stencilling on the bursting charge are as under.

Label on side of cardboard container:-

Zweiteilige Sprengladung für
15 cm Spgr. L/4, 5u. L/4, 6 Kz (m.Hb)
Nr 313D. 5111 u2.
3,460 kg. Fp02 - hlu 40
Gefertigt: hlu 40 Lief 2.

Stencilled in circle on side of cardboard container:-

Marine Abnahmestelle
(Eagle)
11/9

Label on base of cardboard container:-

Zweiteilige Sprengladung für
15 cm Spgr L/4, 5u L/4, 6 Kz (m.Hb)
Nr 313D - 5111
3,46 kg Fp02 brutto
Gefertigt. hlu 40 Lief 2.

Label on aluminium container holding nose pellet

Zweiteilige Sprengladung für
15 cm Spgr L/4, 5u L/4, 6 Uz (m.Hb)
Nr 313R - 5111 il
0,211 kg Fp02 hlu 40
Gefertigt: hlu 40 Lief 2.

1174. GERMAN 15 cm (NAVAL) SEPARATE Q.F. CARTRIDGE

Fig. 476.

This is a separate loading naval Q.F. cartridge and weighs approximately 49 lb. 4 oz. and is fitted with a percussion primer C/12 na St.

PROPELLANT CHARGE

The propellant charge weighs approximately 29 lb. $3\frac{1}{2}$ oz. and is of the double base type consisting basically of nitrocellulose and diethylene-glycol-dinitrate in tubular form. The sticks are

32.5 inches in length with an external and internal diameter of .3 inches and .12 inches respectively.

The propellant bag is stencilled 13.25 kg R.P/38 Bu (825 . 7,5/3). An analysis of this type of propellant averages, nitrocellulose 66.98 per cent, diethylene-glycol-dinitrate 28.87 per cent, akardite 2.84 per cent, graphite 0.21 per cent, sodium sulphate 0.14 per cent, volatile matter 0.96 per cent.

Details of the igniter composition is not yet available.

CASE

The brass case is the normal flanged type 32 inches in length and fitted at the mouth with a brass lid which extends an additional 2 inches to the front. The base of the case is stencilled in black with the weight of the propellant charge and bears the stamping "L/45".

PRIMER

The percussion primer C/42 NA is described in Bulletin No.26 Item 460. The letters "St" added to the designation indicate that the primer is of steel.

1175. GERMAN 8.8 cm ANTI-TANK HOLLOW CHARGE ROCKET PROJECTILE

Figs. 477 & 478.

This self propelled streamline hollow charge rocket projectile is fired electrically from the German 8.8 cm anti-tank rocket projector, (Rakenton Panzerbüschese 43). The rocket is loaded into the rear end of the projector and retained in position by a retaining catch and spring loaded plunger. A jet of flame shoots out of the rear end of the projector when the rocket is fired.

The rocket consists of:-

- Hollow charge bomb filled Cyclonite/TNT (60/40)
- Fuze A.Z.5095
- Gain Kl.Zdlg.34. Np.
- Tail unit with propellant charge
- Electric Fuze and igniter
- Fin assembly.

The overall length of the complete round is 25½ inches and its weight 7 lb. 4 oz. The propellant is contained in the tail tube, and in flight the rocket is stabilised by fins and not by rotation. The rocket is painted a deep olive green and the bomb is stencilled in black.

BOMB Fig. 477.

The hollow charge bomb is of light construction, streamlined, and has a maximum diameter of 3.5 inches. The length of the bomb with fuze is approximately 13.75 inches. It consists essentially of two main parts, the bomb body containing the filling and the impact cap.

The bomb body is of thin steel, the upper half is cylindrical in shape and the lower half tapers towards its base. A tail adapter, fitted internally, and shaped to the bomb body, protrudes from the base; it is screwthreaded internally to receive the upper end of the tail unit. A fold at the forward end of the body enables the flanged base of the impact cap to be secured to it by a "U" section ring. The "U" section ring is retained in position by a thin tubular reinforcing case surrounding the bomb body at its maximum diameter. The reinforcing case has an internal flange at its forward end which fits over the "U" section ring, and has

its rear edge secured by turning it into a circumferential groove formed in the body.

The body contains a 1 lb. 0 $\frac{3}{4}$ oz. hollow charge of cyclonite and TNT, with a cavity liner approximately 3.7 inch deep, shaped like the stem half of a pear and terminating in a central cylindrical chamber of two diameters formed in the base of the filling. The lower portion of this chamber is larger in diameter and length than the upper, and accommodates the gaine under four cardboard washers. The base of the bomb body is closed by a cylindrical wooden block.

The impact cap, approximately 4.75 inch in length, is coned from its base to about half its length and terminates into a cylindrical head approximately 1.3 inches in diameter. The end of the head fits into an adapter, the forward end of which is reduced in diameter and screw-threaded internally to receive the fuze.

FUZE AND GAIN

Fuze AZ 5095 is described elsewhere in this bulletin as a separate item. The gaine, Kl Zdlg. 34 Wp. is described in Bulletin 39, Item 989, and in Fig. 392.

TAIL UNIT Fig. 478.

The tail unit including the fins has an overall length of 12.46 inches and weighs approximately 2 lb. 15 $\frac{1}{2}$ oz. It consists principally of the tail tube, venturi and fin assembly, propellant charge, two grids, steel collar, igniter system and an electric fuze.

The metal tail tube is cylindrical in shape, apparently solid drawn and turned on the outside, with an external and internal diameter of approximately 1.57 inches and 1.38 inches respectively, and an overall length of 10.69 inches. The forward end is closed and formed with an external screwed boss of smaller diameter which, in assembling, screws into the adapter at the base of the bomb. The rear end is screwthreaded externally to receive the venturi and fin assembly.

The venturi and fin assembly are an integral unit. The forward end of the venturi is screwthreaded internally to receive the rear end of the tail tube which screws in on to a shoulder. Immediately in rear of the shoulder, the venturi is sharply coned to a smaller diameter, and then opens to an angle of approximately 10 degrees to the centre line. The latter expanding portion is welded to the entry at the throat which is 0.52" in diameter. The fin assembly consists of a drum with six radial fins. The fins are made in pairs and welded to the drum.

The propellant charge weighs 6 oz. 2.8 dr and consists of seven tubular sticks of propellant each 7.9 inches long, 0.45 inches and 0.20 inches external and internal diameters respectively. Preliminary chemical analysis has shown that the propellant contains approximately 64.7 per cent nitrocellulose and 34.2 per cent diglycol dinitrate, and 1.1 per cent undetermined matter including stabilizer. A central stick of propellant is surrounded by the other six and held between two grids, one at each end of the propellant. The whole is in turn held between an igniter, forming part of the ignition system, in the forward end of the tail tube and a coned steel spacing collar at the rear.

Both grids are identical and each consists of four rectangular steel plates with two slots cut into one side to half the width of the plate. Four plates are assembled to form a cross like grid with nine squares of equal size. The size of the squares in the grid are such as to prevent the charge slipping through them. The base grid is supported by a steel spacing collar, coned internally, with its larger

diameter to the rear.

The ignition system consists of a fuze with priming composition, fitting into the venturi mouth, an igniter at the forward end of the tail tube, and a central celluloid tube with gunpowder pellets at each end.

The igniter is in the form of a pressed pellet of black powder in a flat circular aluminium capsule situated in the forward end of the tail tube. The mouth of the capsule faces towards the propellant and the composition is covered by a thin disc of cellophane like material.

The celluloid tubing is in two lengths, and is a sliding fit in the central stick of propellant. It contains no quickmatch. The forward end of the tube contains a cylindrical perforated pellet of gunpowder accommodated in the centre square of the forward grid. The rear end of the tube passes through the rear grid, and the cylindrical perforated pellet in this end is accommodated in the steel spacing collar.

The electric fuze consists of a metal tube; a bridge wire, two leads, and priming composition.

The front end of the tube is closed by a metal disc which is spun over the end of the tube. The tube contains the fuze bridge wire at the end of the two leads. The leads and bridge wire are held in position by a plug of polyvinyl chloride through which the leads pass, the metal tube being crimped at this point to prevent movement of either fuze wire or plug. The tube is filled with finely granulated reddish brown powder which surrounds the bridge wire. The powder consists of an oxide of lead, approximating in composition to red lead, bound together with nitrocellulose. The nitrocellulose constitutes less than 5 per cent of the composition.

The resistance of the bridge wire is approximately 10 ohms. The power, provided by the small projector generator, has a peak voltage of approximately 1.2 volts. It appears that the high sensitiveness of the fuze is due to the priming composition rather than the bridge wire.

The fuze is housed in a conical shape body of moulded plastic. The body is bored centrally in three diameters to make an internal flange near the base. The long chamber formed in front of the flange houses the tube portion of the fuze. The conical body is cemented into the divergent portion of the venturi which is closed by a metal cover through which the leads pass. The end of one lead is soldered to the fin assembly.

ACTION

Before loading, the safety pin is withdrawn from the nose fuze.

TAIL UNIT

On pressing the projector trigger, an electric current is generated which heats the bridge wire of the base fuze and fires the priming composition. The flash from the priming composition in turn ignites the gunpowder at each end of the celluloid tube and the igniter. The igniter ensures the complete ignition of the propellant charge. Pressure set up inside the rocket and escaping through the venturi propels the rocket forward.

BOMB

On impact, the impact cap is shattered and the fuze functions. The flash from the fuze passes through the cavity in the bomb filling to the gaine. This results in the detonation of the gaine which in turn brings about the detonation of the bursting charge. The "hollow" in the head of the bursting charge has the effect of concentrating the detonation forward on to the plate struck.

1176. FUZE AZ 5095

This fuze is used in the nose of the German 8.8 cm anti-tank, hollow charge rocket projectile.

The fuze is stencilled AZ 5095, and is essentially identical in design and external dimensions with Fuze AZ 5075 used in the nose of the 3.7 cm Pak hollow charge muzzle stick bomb and described in Bulletin 40 Item 1022 and Fig.402.

The materials of construction are, however, different, the four steel arms of the retaining spring which supports the arming sleeve are thinner, thereby permitting the fuze to be armed at a much smaller acceleration, also a safety pin which passes through the fuze body and a groove cut in the side of the arming sleeve is fitted.

The weight of the fuze is 3.02 oz. The diameter of the threads is 1.057 inches and the overall length 2.12 inches.

ACTION

The action of the fuze is identical with AZ 5075, but it is necessary to withdraw the safety pin before loading.

1177. GERMAN FUZE 1.I.gr.Z.23 nA in 21 cm (Wgr.42 Spr) H.E.B.C.Rocket

This fuze which weighs 12 oz. 15 dr. is stamped with the same designation, i.e. "1.I.gr.Z.23 nA", as that described in Bulletin No.40, Item No.1021 and Fig.401, but has several modifications.

To enable it to be used beneath the ballistic cap of the rocket projectile, the brass closing disc and collar also the wooden hammer in the nose of the fuze had been removed. The hammer is replaced by a wooden rod 4.57 inches long, and .394 inches in diameter except at the base end which is reduced to a diameter of .276 inches for a length of .71 inches.

The fuze differs from the one previously described and shown in Fig.401, in the following details.

- (a) The delay time "0,15" is stamped on the outside.
- (b) No grub screws are used to secure the three sections of the fuze body. The screwed junctions are secured by spinning.
- (c) The inertia pellet is made of steel instead of brass; the chamfered plug at the base end is made from light alloy and is secured by a steel pin with a black finish.
- (d) The collar weight is not brass plated. It is rust-proofed by some process which leaves a black matt surface. Unnecessary machining is dispensed with, i.e. internal chamfer at the bottom and the external chamfer at the top of the collar are omitted.

- (e) The collar holder is made of rust-proofed steel instead of brass.
- (f) The needle pellet is made of steel instead of light alloy. The needle is secured to it by turning over the metal.
- (g) The delay holder is stamped "0,24".
- (h) The components of the delay setting mechanism (slotted plug, screwed ring, and centrifugal bolt) are made from steel and rust-proofed.
- (i) The finish is generally inferior.

Until the fuze is armed by movement of the centrifugal segments, the collar is locked in place by the inertia pellet, but after arming, a sideways movement of the collar of approximately .15 inches will advance the inertia pellet sufficiently to fire the detonator. The weight of the collar is approximately 1 oz 6.6 gr. The force, applied at right angles to the axis of the fuze, required to overcome the resistance of the brass arms of the centering washer which holds the collar is about 22 lb.

FIG. 453. (ITEM. 1128.).
SHELL, Q.F. SMOKE EMISSION, 95mm. TK. HOW. MK. I
AMENDED M. OF F. DESIGN, DELAY No. 1.

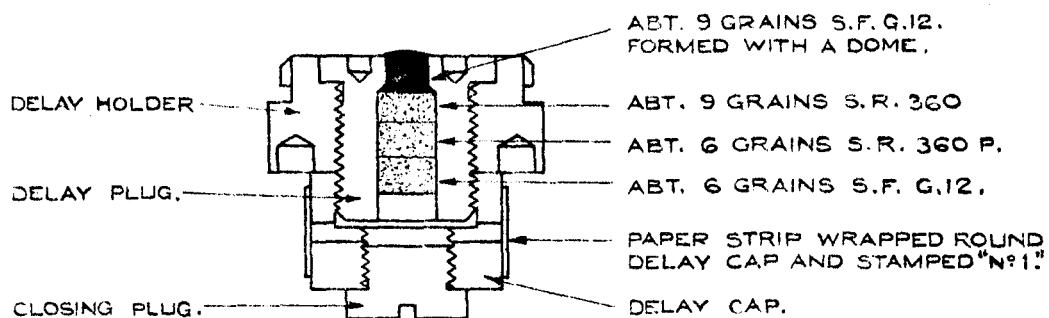
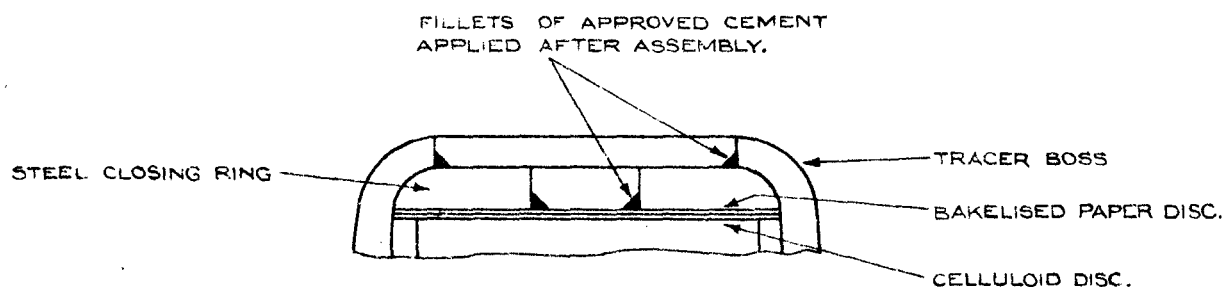
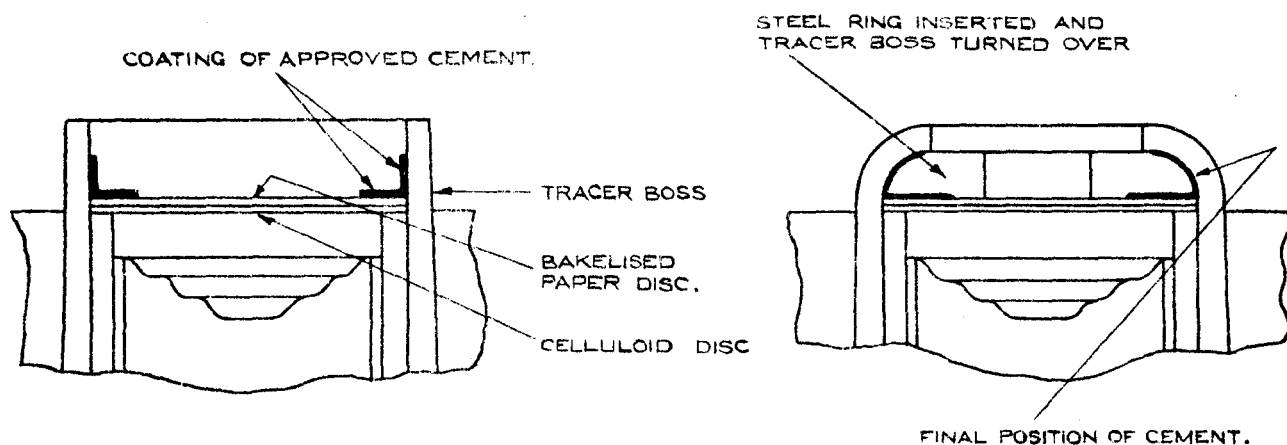


FIG. 454. (ITEM. 1129.)
MODIFICATION TO METHOD OF SECURING TRACER
N° 21. AND TRACER N° 22.

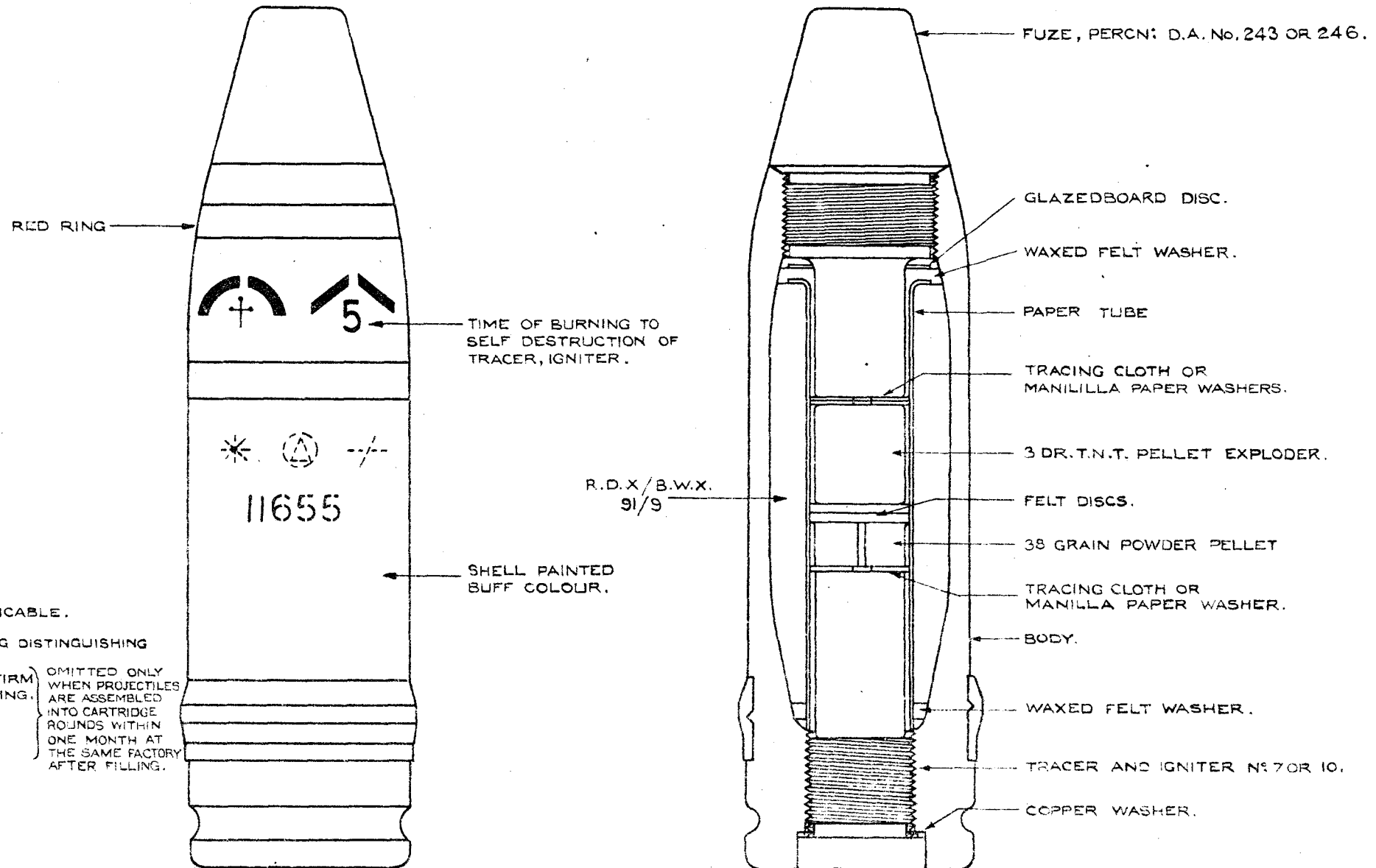


METHOD (i)



METHOD (ii)

FIG.455. (ITEM.1132.)
SHELL, Q.F., H.E. 2 PR. MK.II.T.



+ "7" OR "10" AS APPLICABLE.

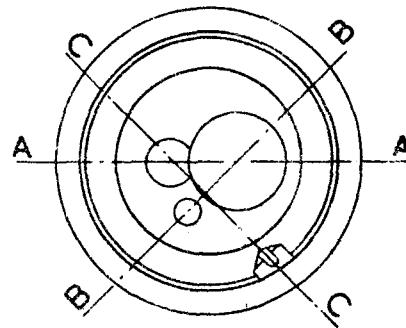
△ SERIES No IN RING DISTINGUISHING FILLED LOT.

* MONOGRAM OF FIRM OR STATION FILLING. OMITTED ONLY WHEN PROJECTILES ARE ASSEMBLED INTO CARTRIDGE ROUNDS WITHIN ONE MONTH AT THE SAME FACTORY AFTER FILLING.

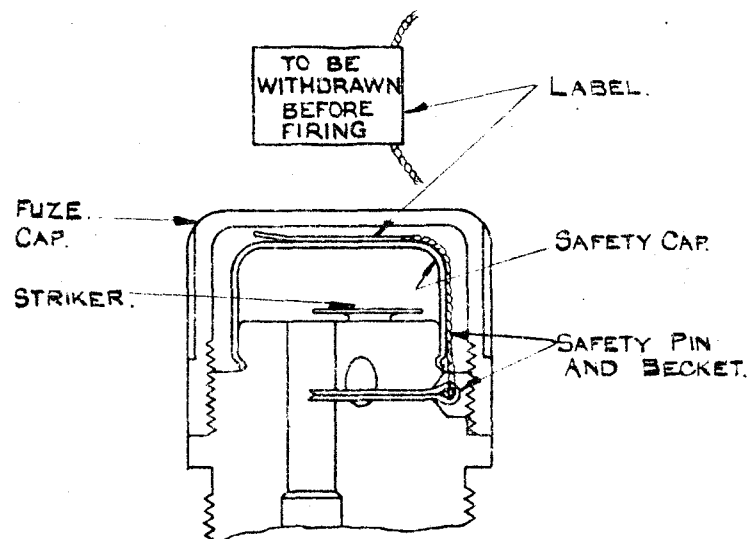
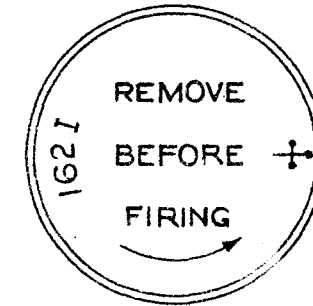
--- DATE OF FILLING (MONTH & YEAR.)

FIG. 456. (ITEM. 1138)

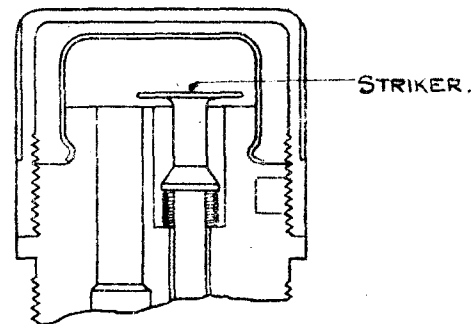
MODIFICATION TO FUZE D. A. №152 TO PERMIT AIR DROPPING



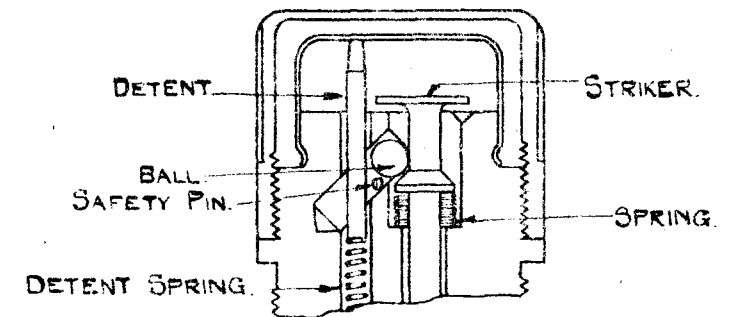
PLAN WITH CAP AND
SAFETY CAP REMOVED.



PART SECTION C.C.



SECTION A.A.



SECTION B.B.

FIG. 457. (ITEM 1141.)
TYPICAL OVER STENCILLING
MARKINGS ON PACKAGES.

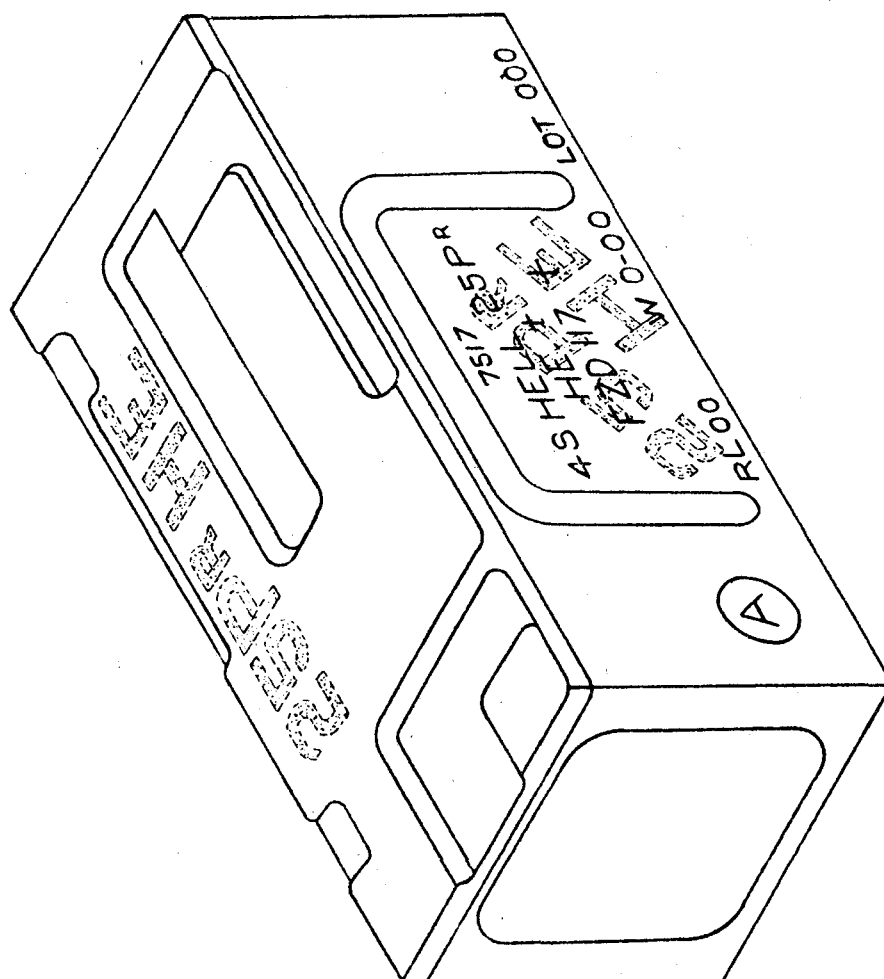
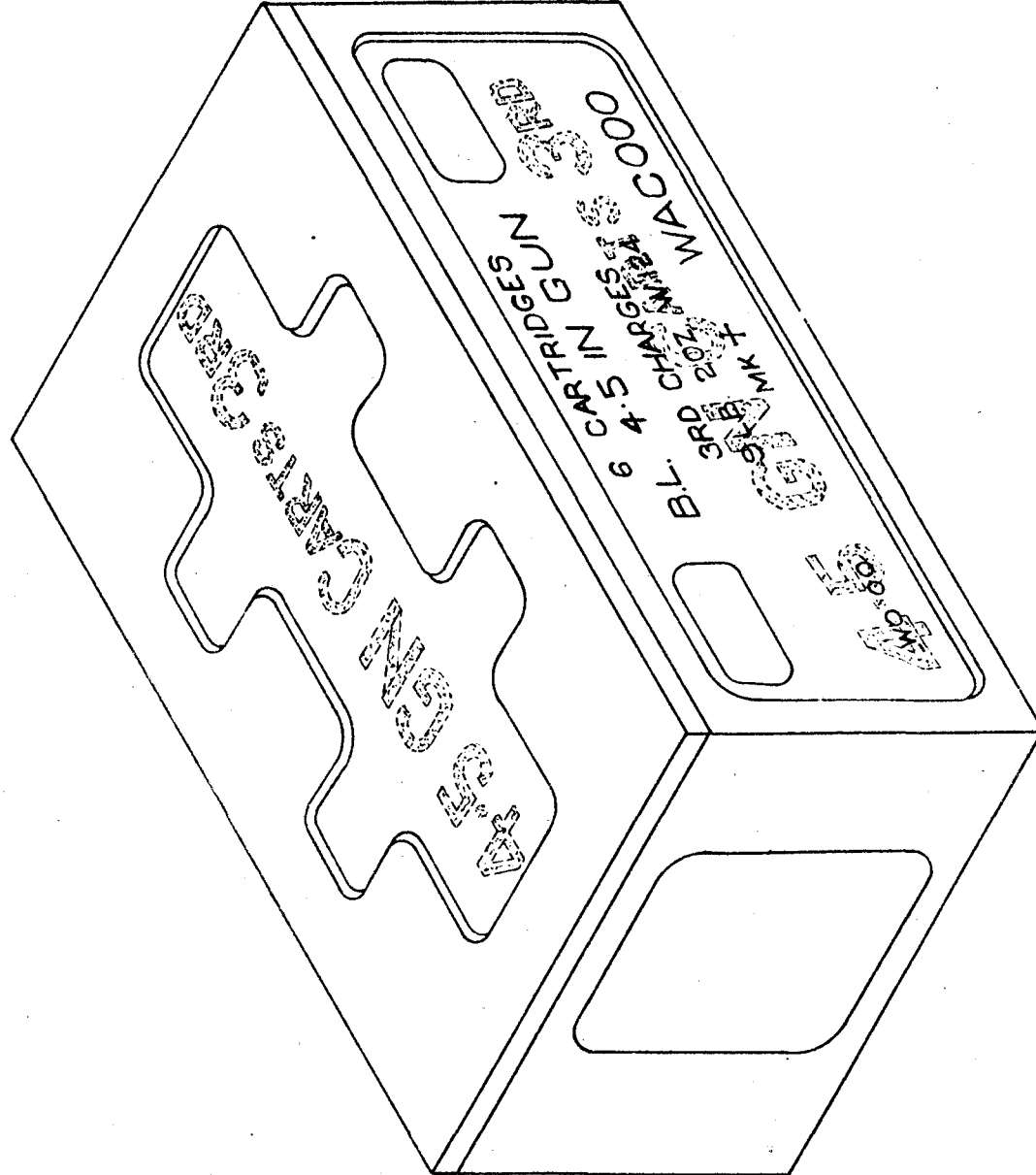


FIG. 458. (ITEM. 1146.)
IGNITER, ELECTRIC, N° 88 MK I

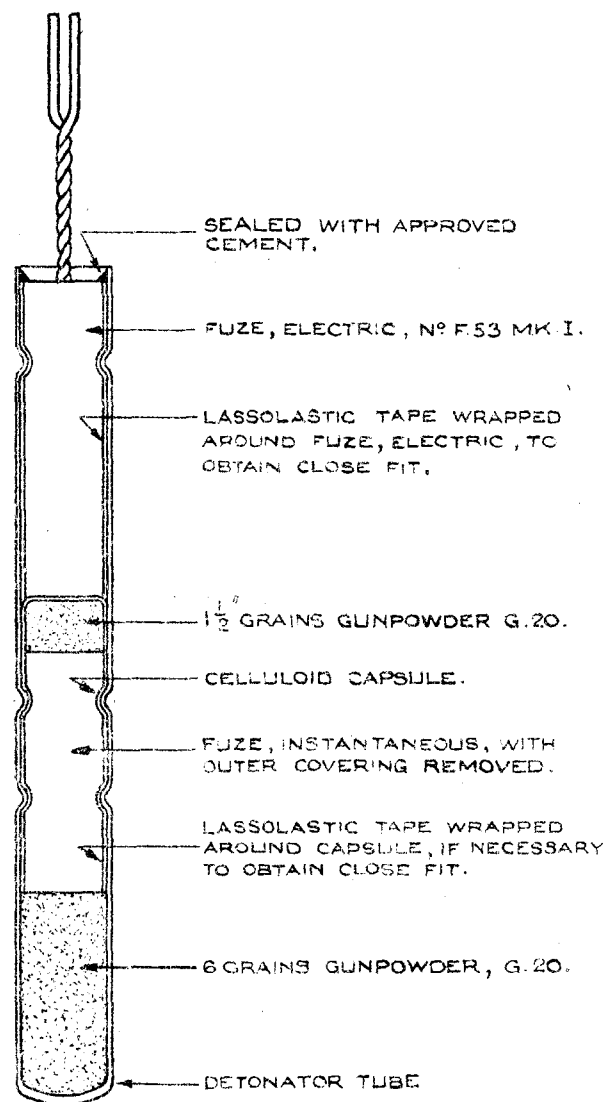


FIG. 459. (ITEM. 1147.)
IGNITER, N° 90. MK. I

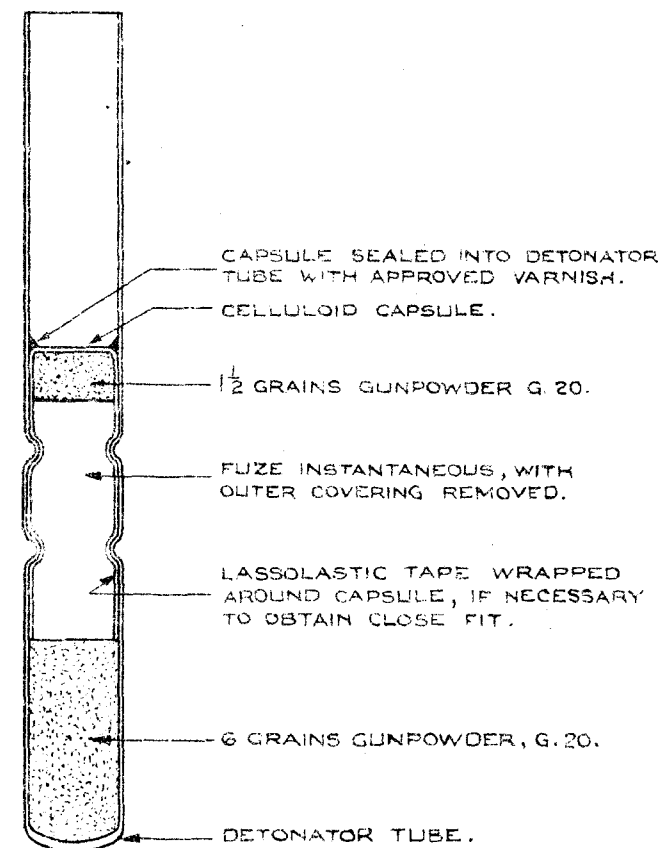


FIG. 460 (ITEM 1155)
 MINE, ANTI-PERSONNEL, Nº5, MARK I.
 SEE FIG. 462 FOR MARKING DETAILS.

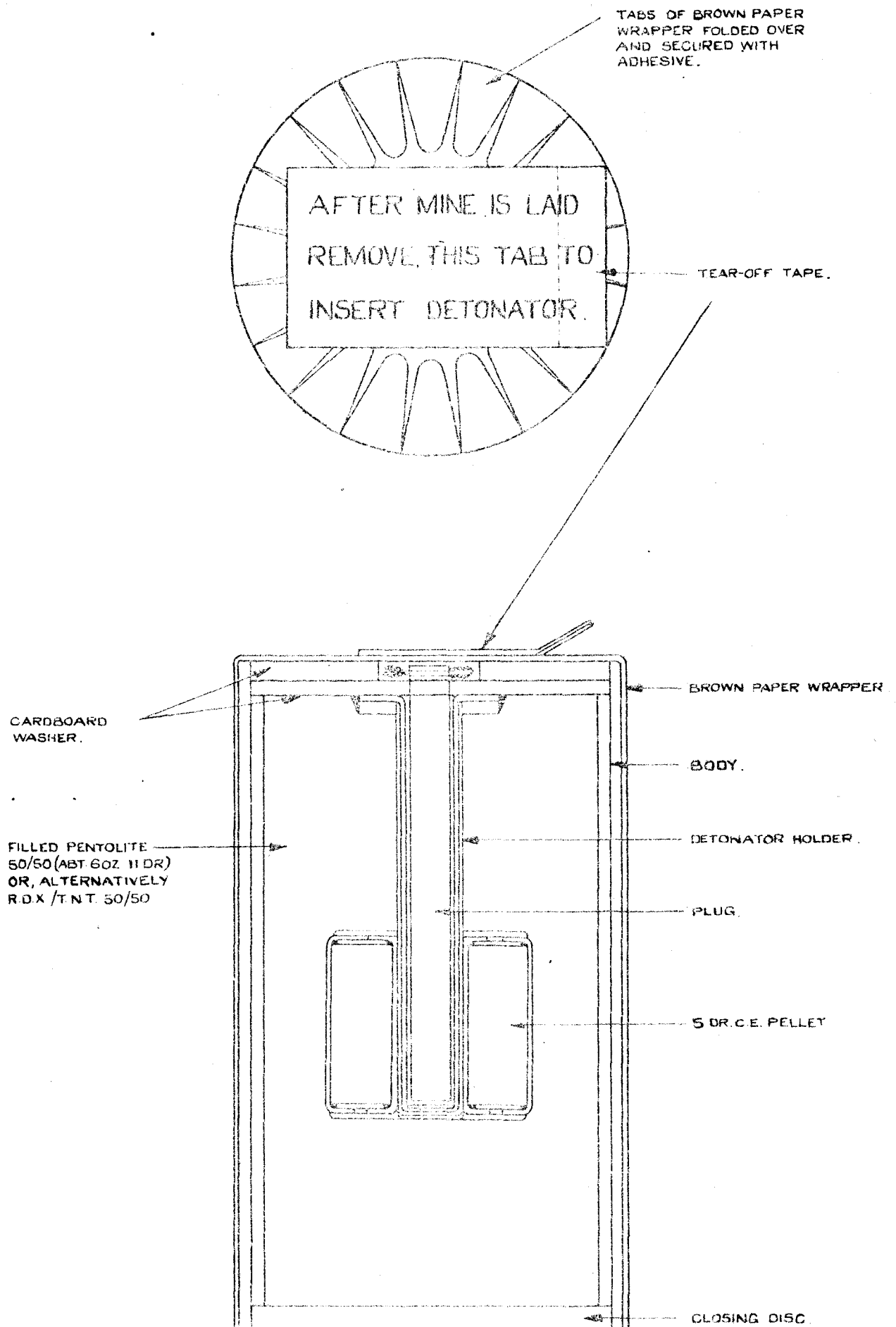


FIG 461 (ITEM 1155)
MINE, ANTI-PERSONNEL, N° 5 MK I. WITH DETONATOR,
STRIKER UNIT AND PRESSURE PLATE ASSEMBLED.

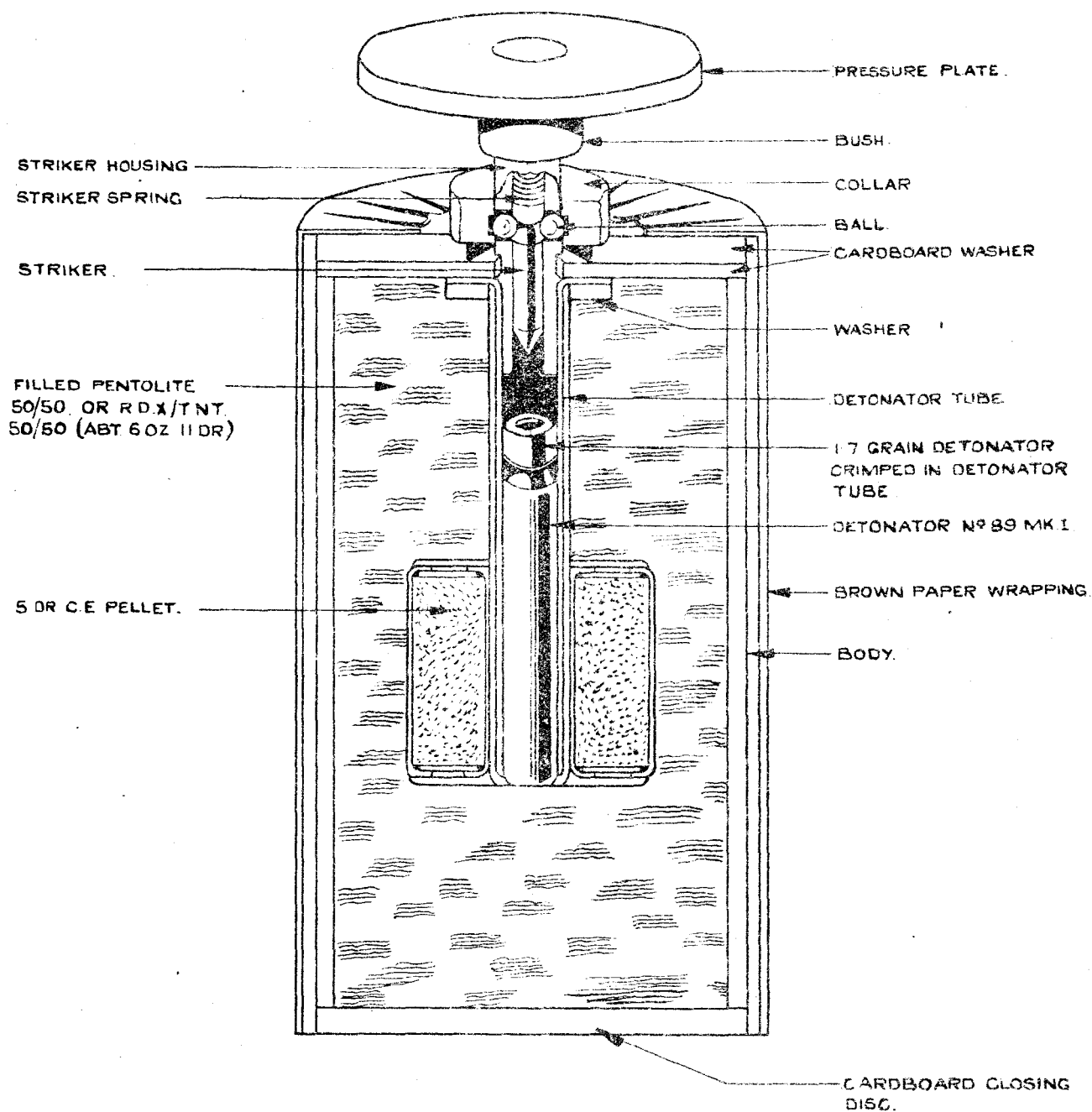
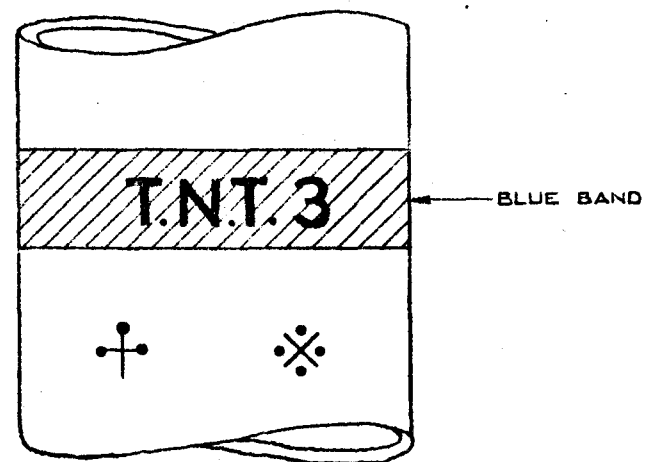
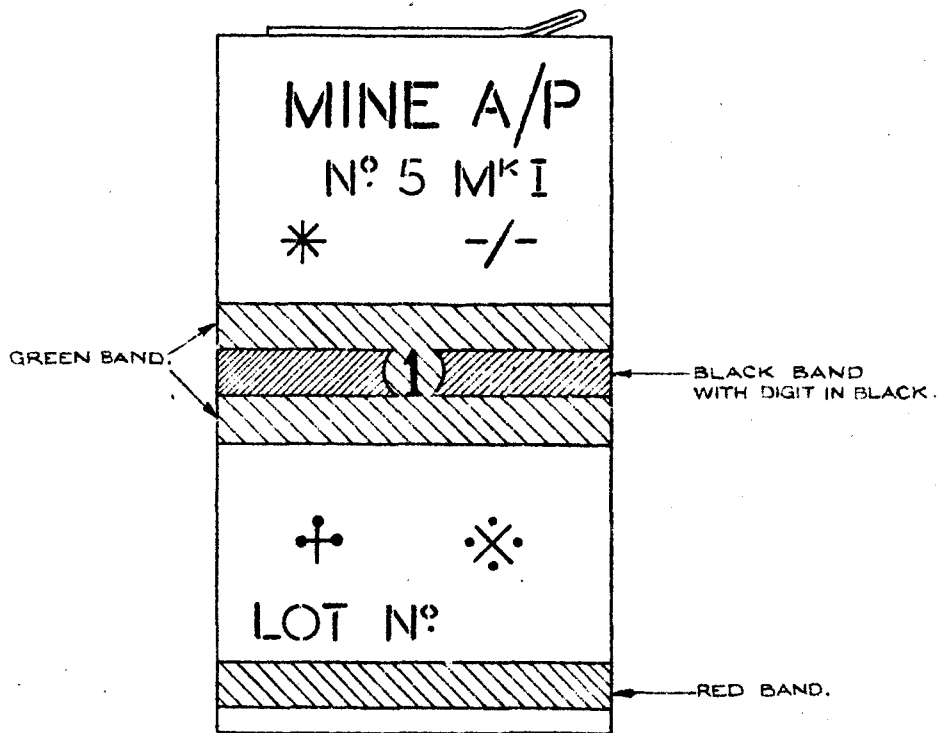


FIG. 462. (ITEM 1155.)
MINE, ANTI - PERSONNEL, Nº 5 MARK I
MARKING DETAILS.

FILLED PENTOLITE 50/50

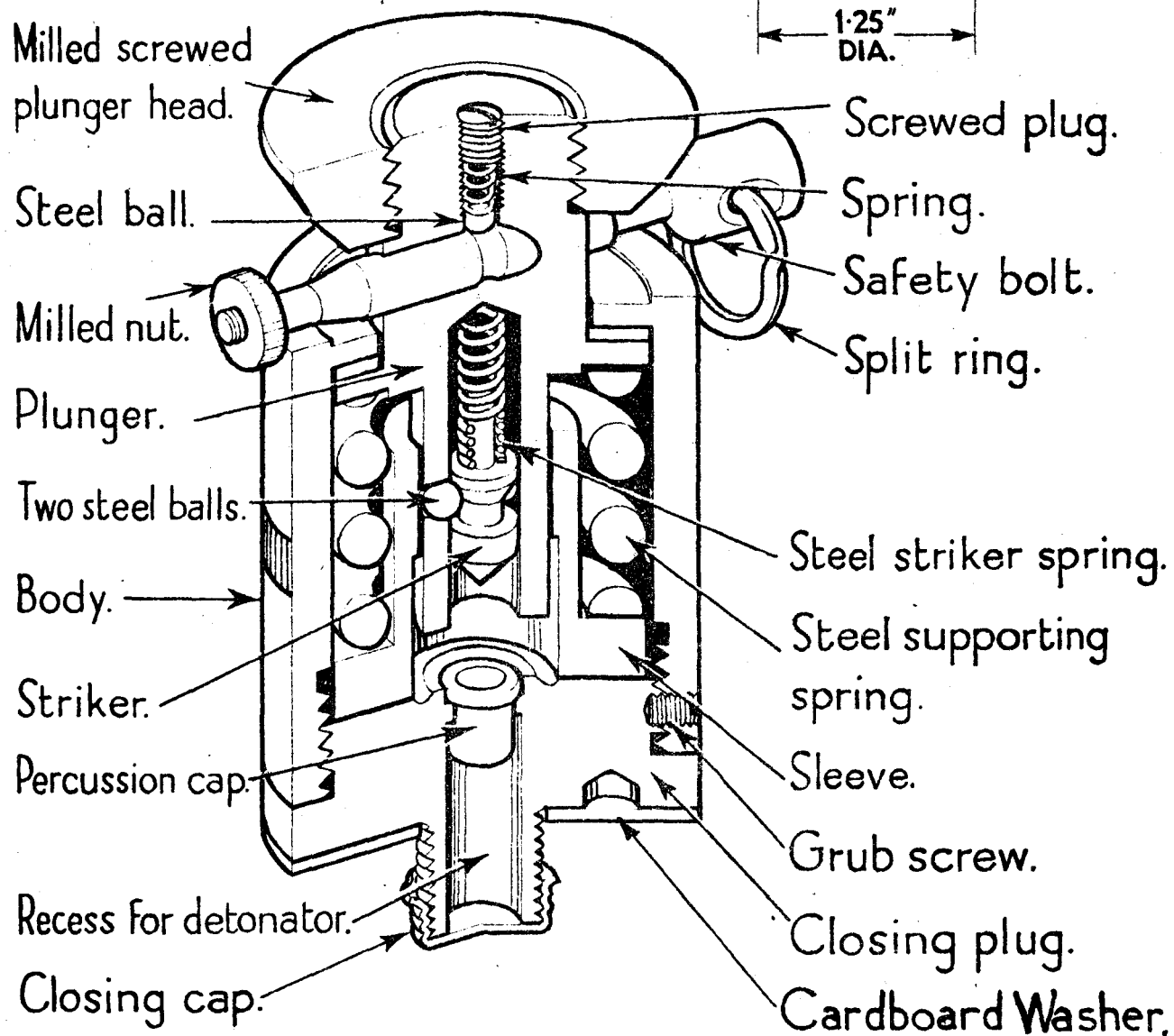
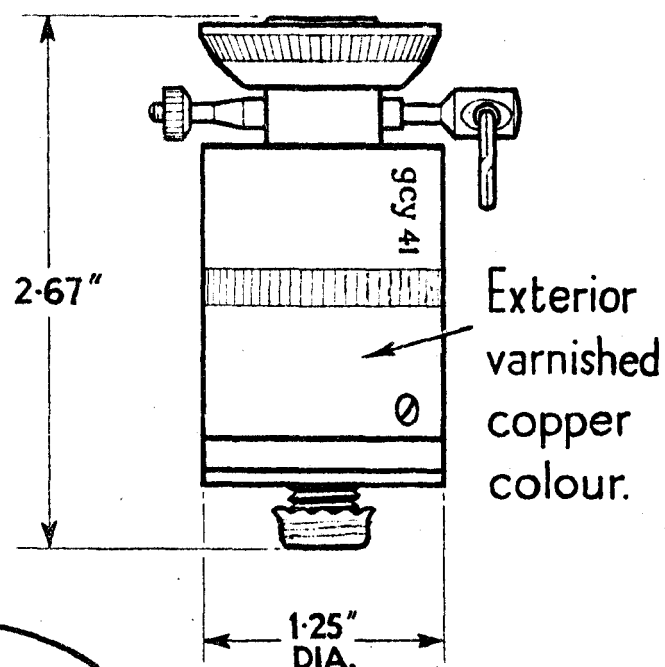
FILLED R.D.X./T.N.T. 50/50



- * CONTRACTOR'S INITIALS OR RECOGNISED TRADE MARK.
 - /- MONTH AND YEAR OF MANUFACTURE.
 - + MONOGRAM OF FIRM OR STATION FILLING.
 - * DATE OF FILLING (MONTH AND YEAR)
- ALL LETTERING IS IN BLACK.

GERMAN PUSH IGNITER DZ 35. (DRÜCKZÜNDER 35)

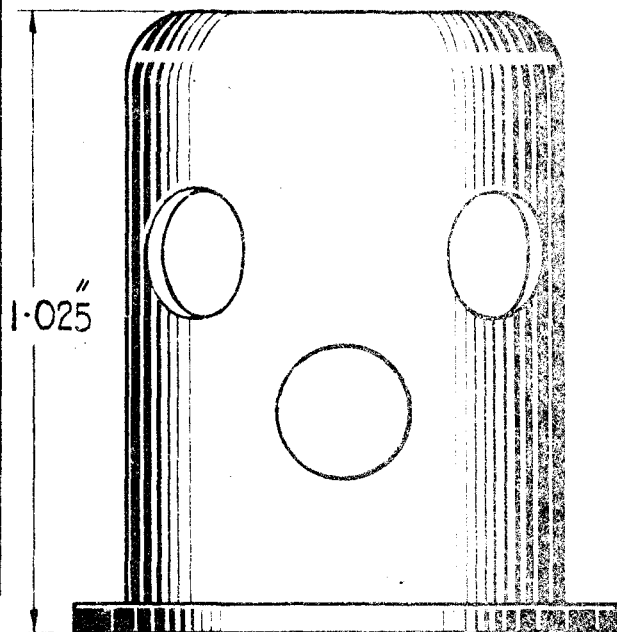
FIG 463 (ITEM. 1159).



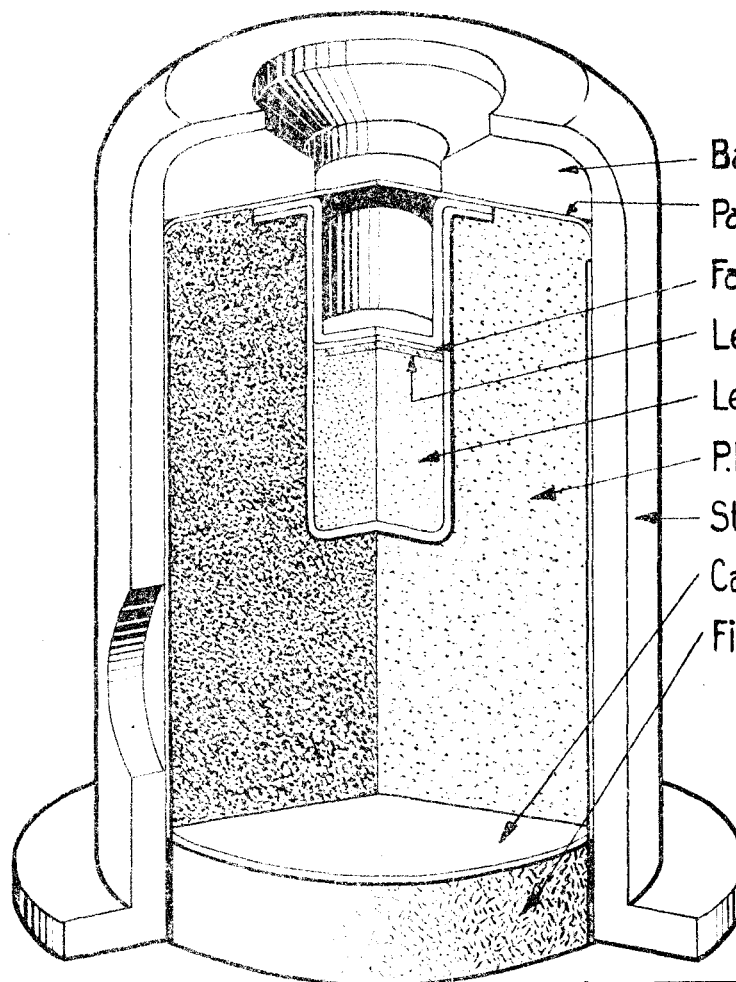
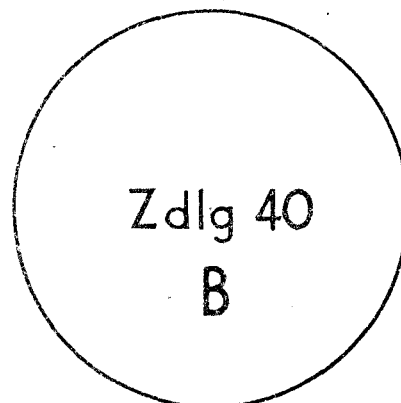
GERMAN GAINE 40 B.

ZÜNDLADUNG 40B.

FIG. 464 (ITEM. 1160.)



LABEL ON BASE.



Bakelite washer.

Paper disc.

Fabric disc.

Lead styphnate.

Lead azide.

P.E.T.N./wax 87/13.

Steel body.

Cardboard disc.

Fibre plug.

E.A.
MARKINGS
SK: N° 294.

I.P.C./D.O.

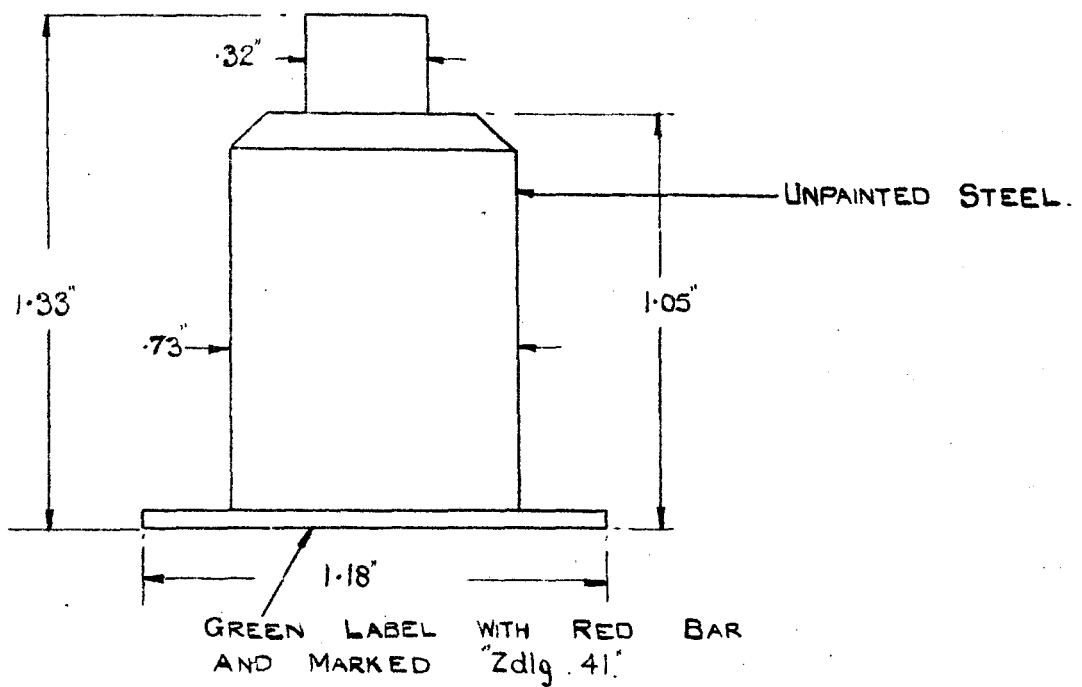
12-5-44.

GERMAN GAINE Zdlg. 41.

RECORD OF MARKINGS.

NOT SCALED.

FIG. 465. (ITEM 1161)



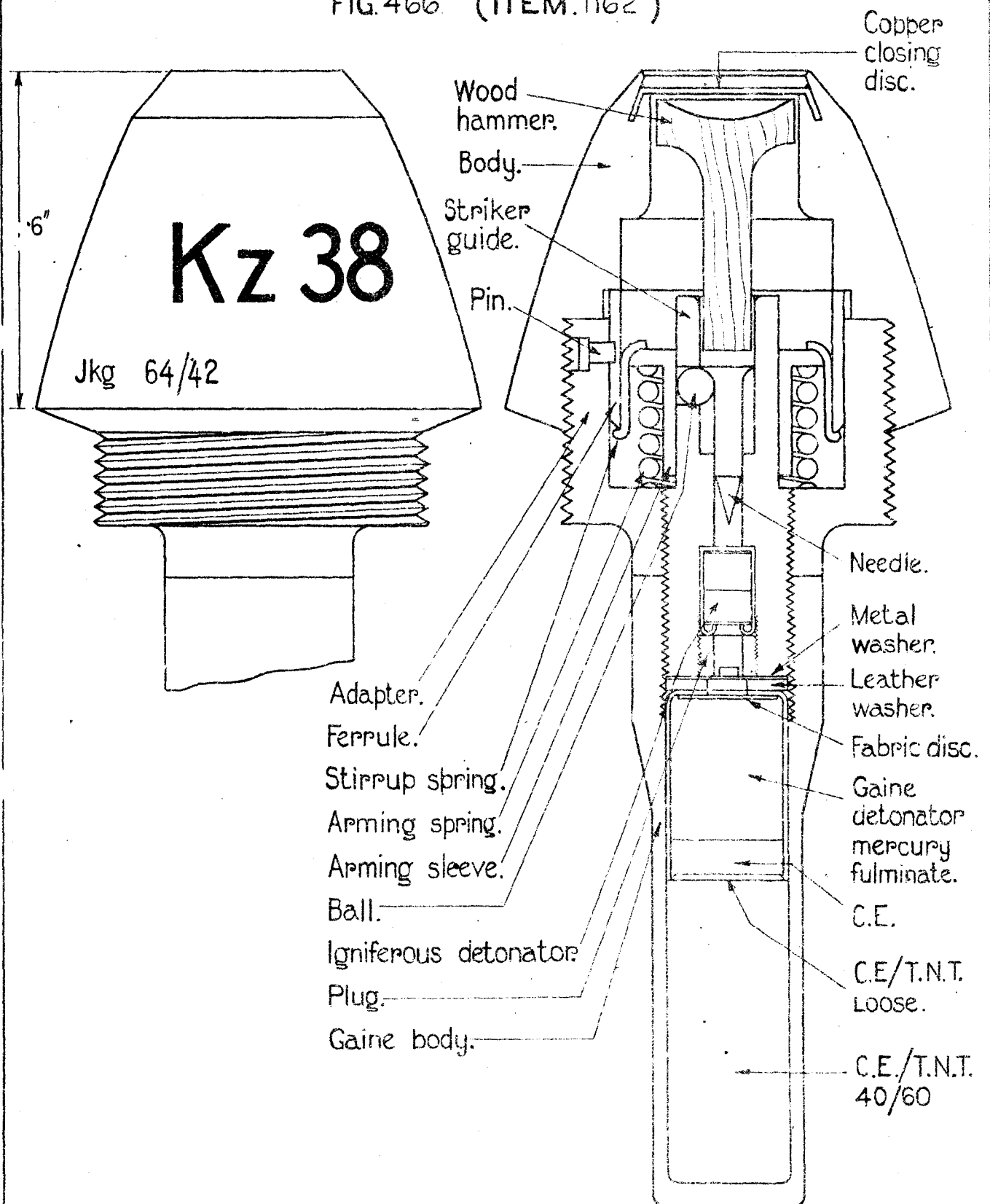
E.A.
MARKING.
SK. N° 293.

I.P.C./D.O.

6-5-44

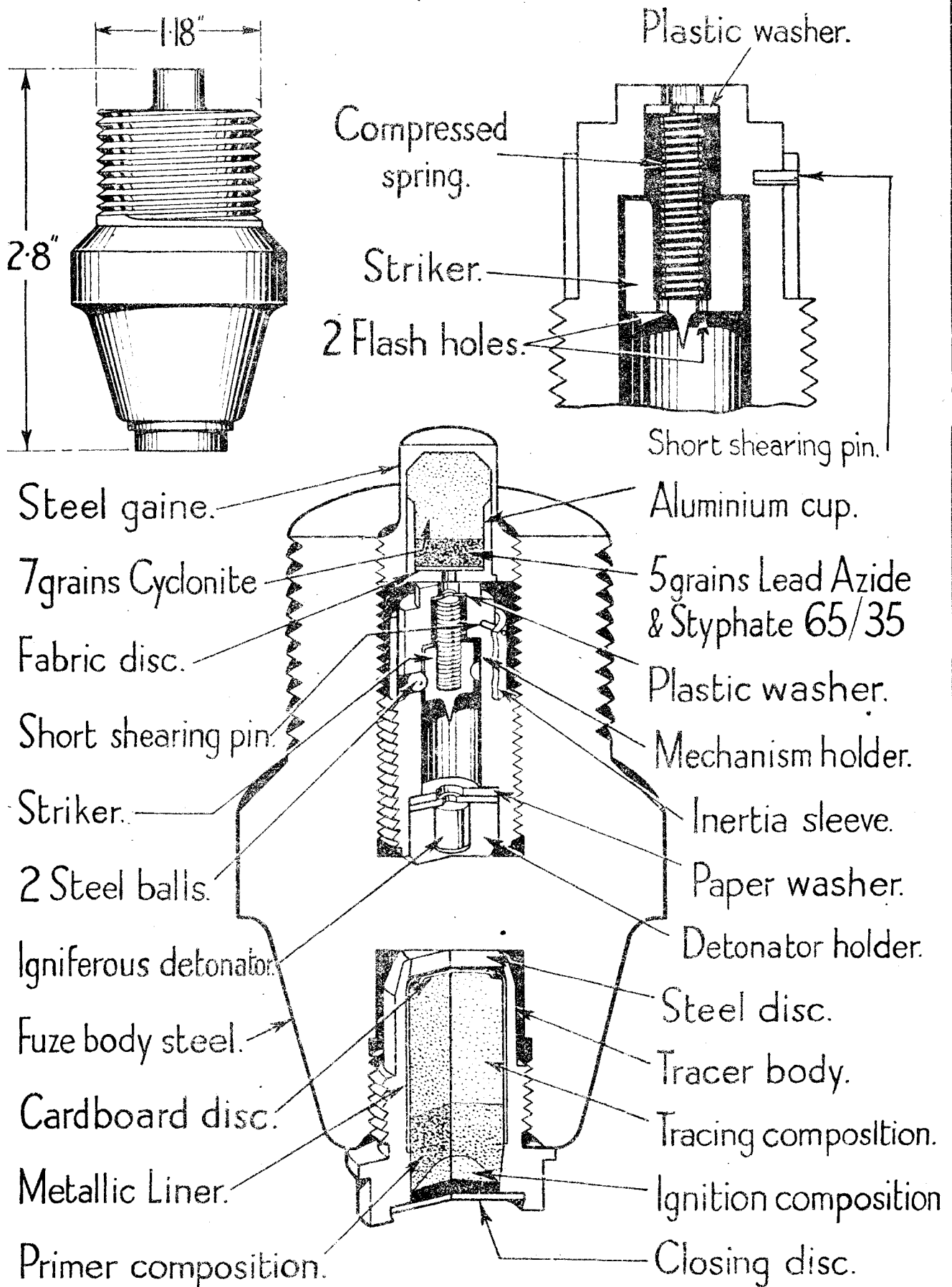
GERMAN FUZE Kz 38 WITH GAINE

FIG. 466 (ITEM. 1162)



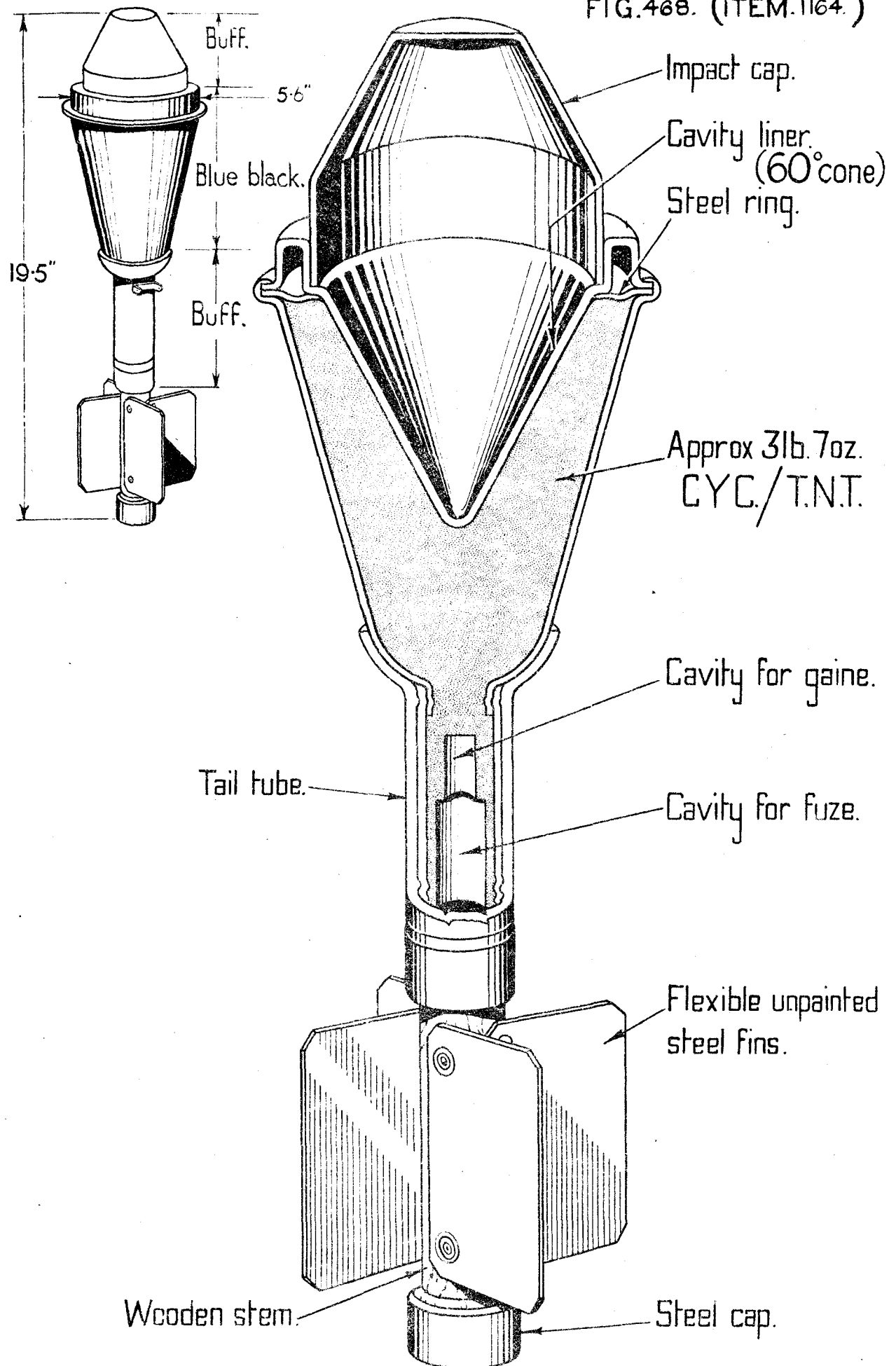
GERMAN BASE FUZE Bd.Z.5127 WITH TRACER.

FIG.467. (ITEM.1163.)



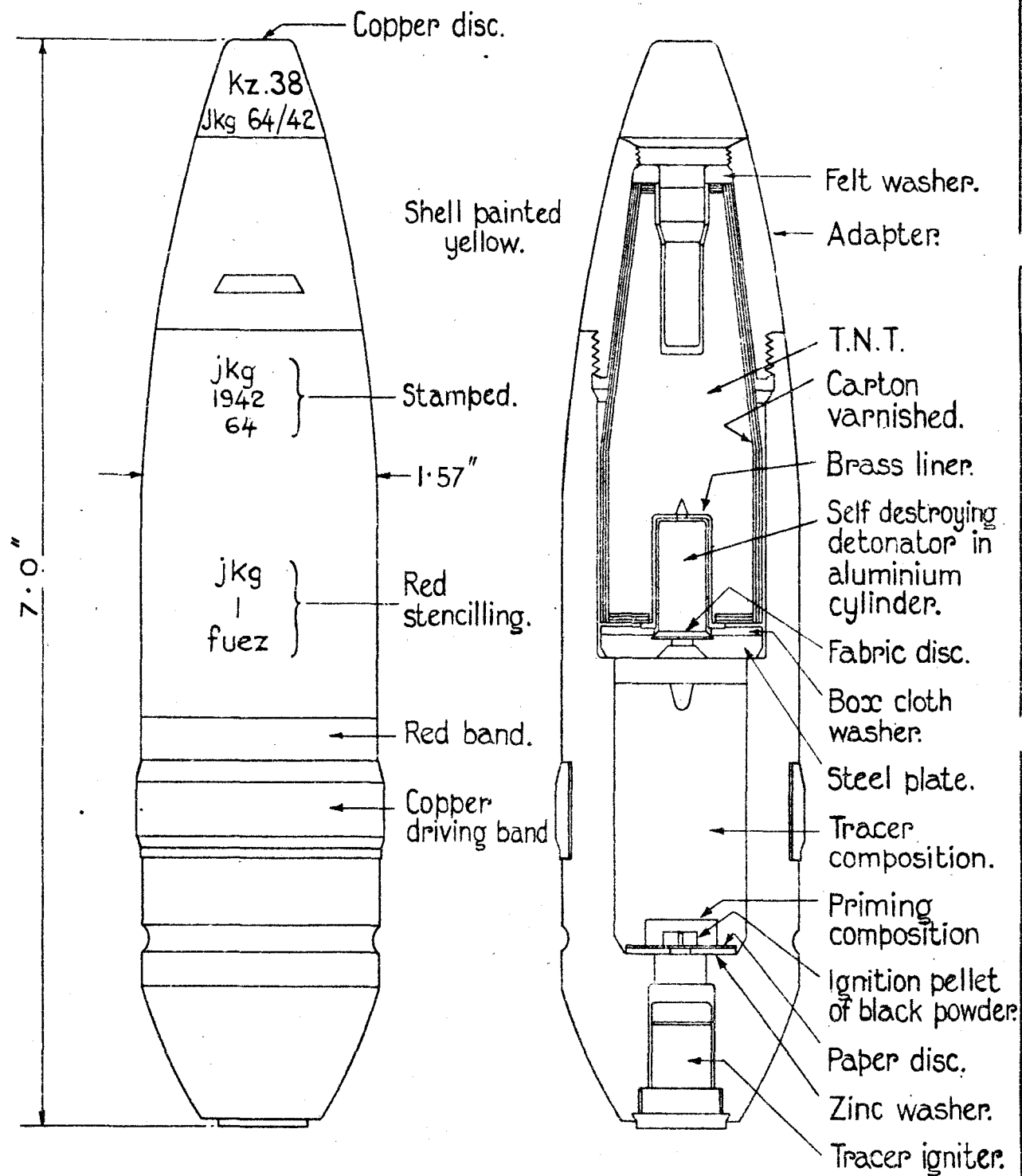
GERMAN HOLLOW CHARGE BOMB FOR FAUSTPATRONE.

FIG. 468. (ITEM. 1164.)



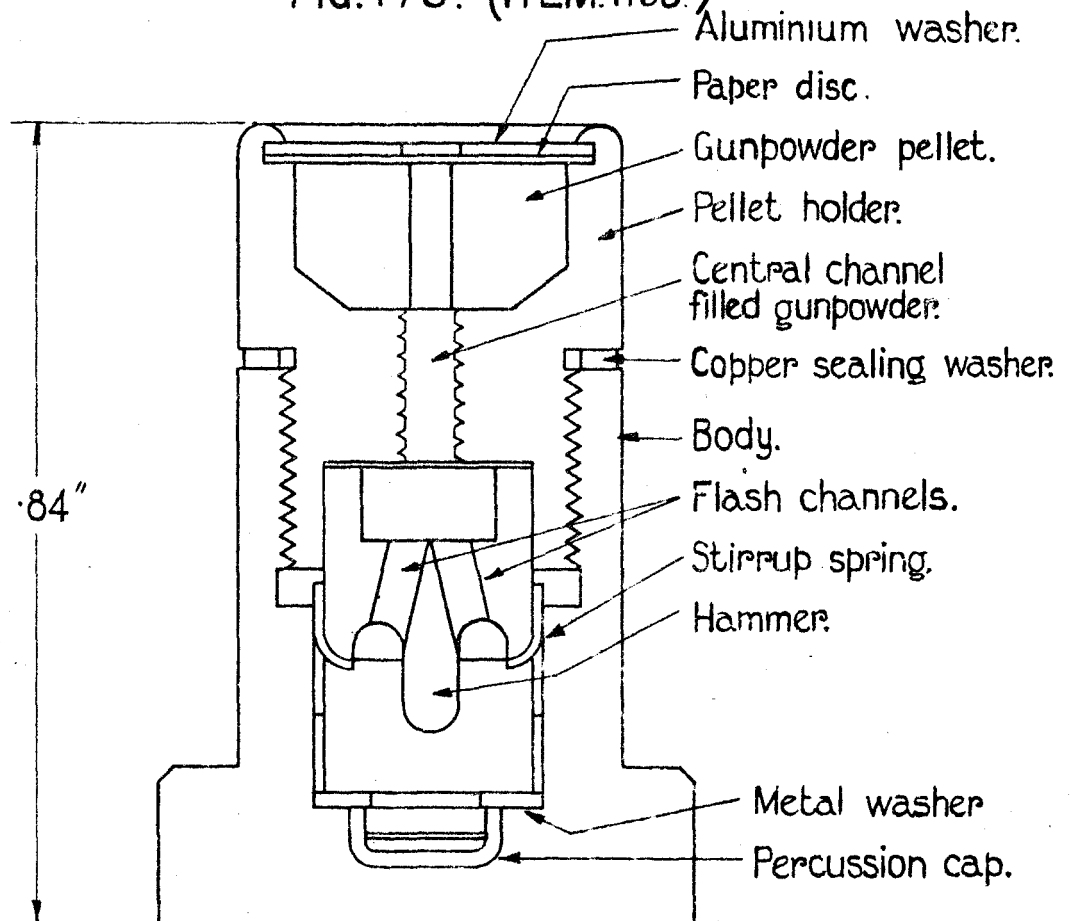
GERMAN 4 cm. SHELL (Bofors Type) FUZED Kz 38.

FIG. 469. (ITEM 1165.)



GERMAN TRACER IGNITER FOR 4cm. SHELL.

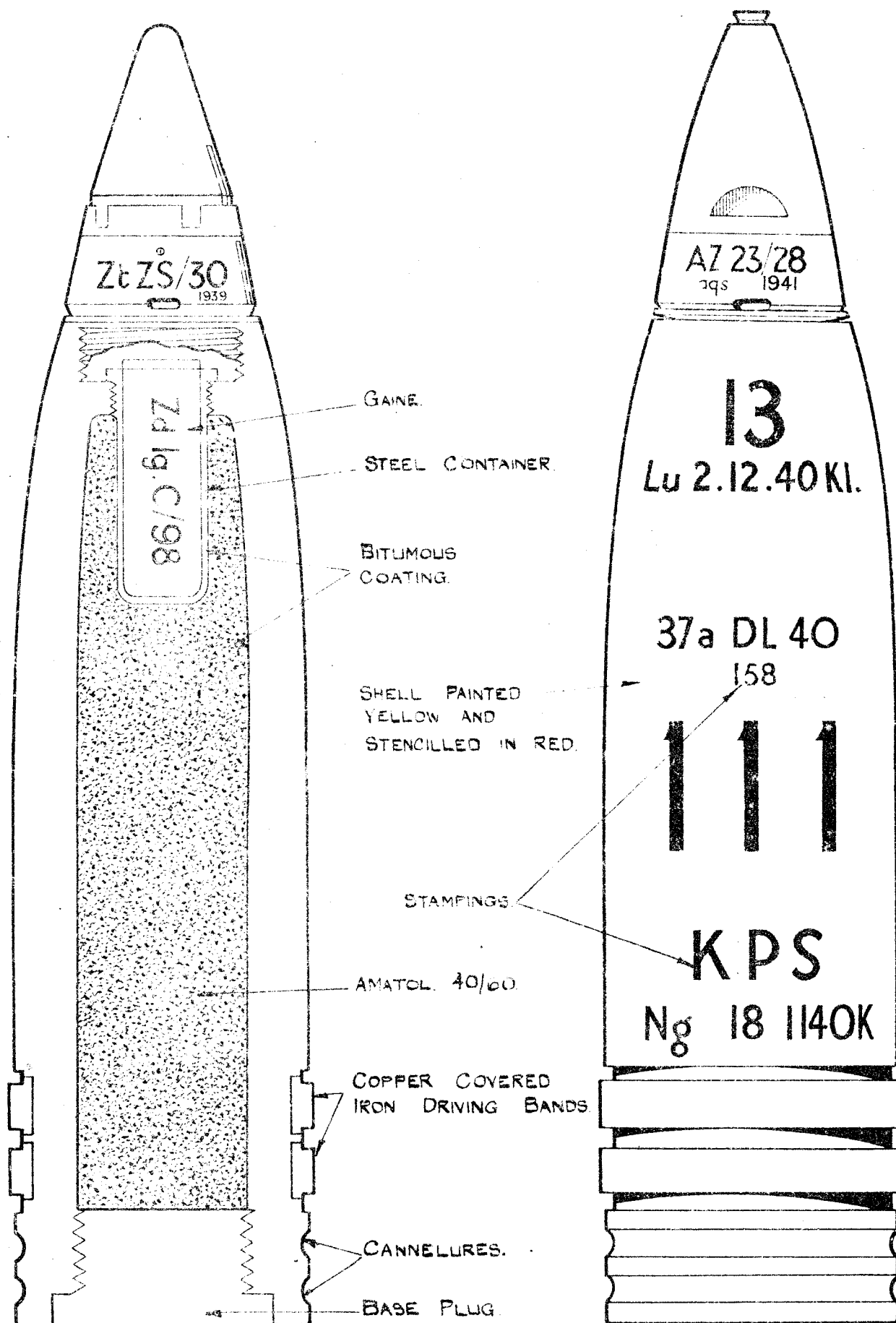
FIG.470. (ITEM.1165.)



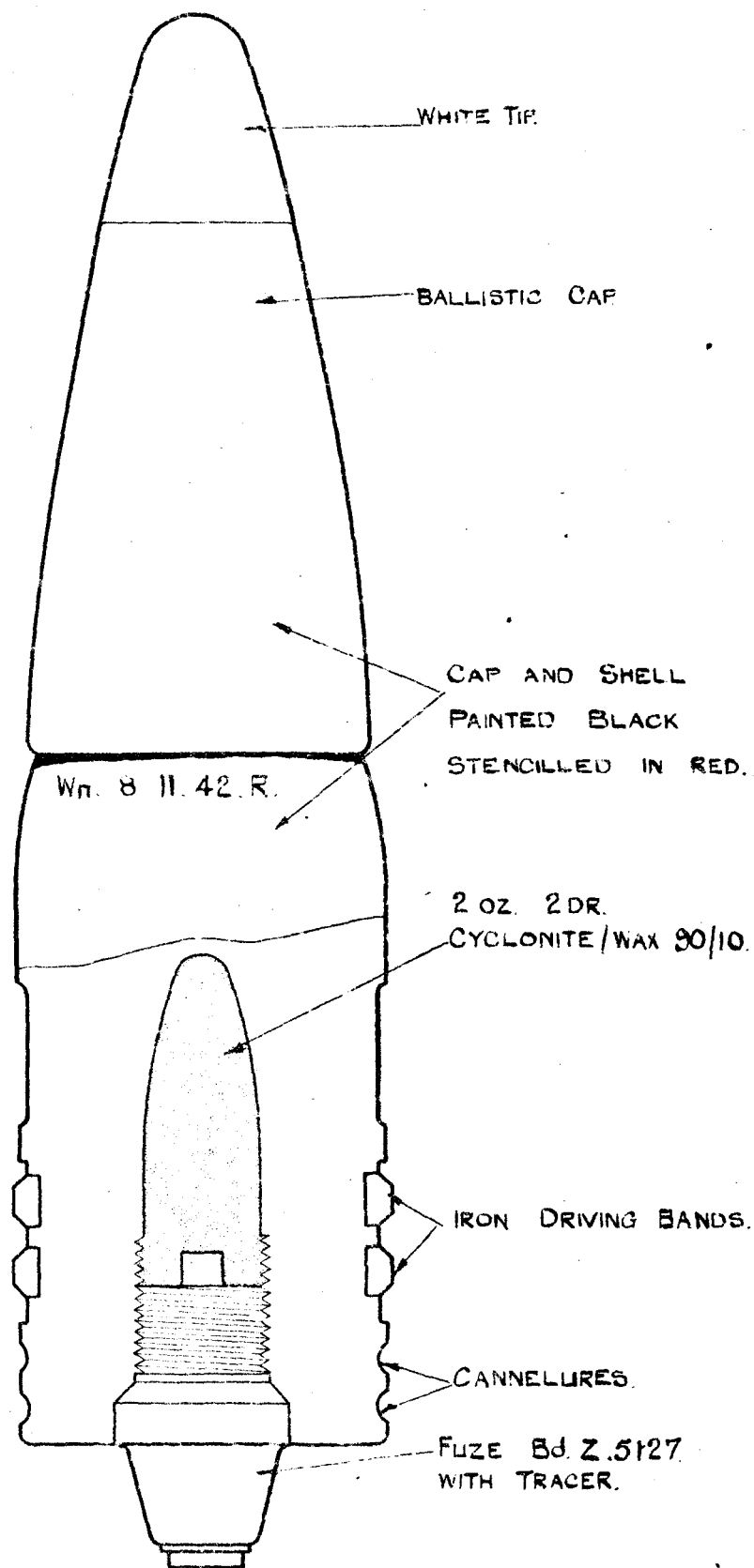
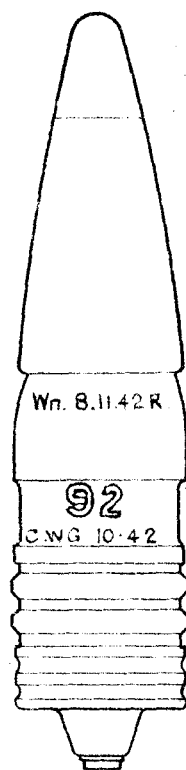
GERMAN 8.8 cm. FLAK 18 AND 36 SHELL H.E.

FUZED Zt.Z 6/30 OR AZ. 23/28

FIG. 471 (ITEM 1168)



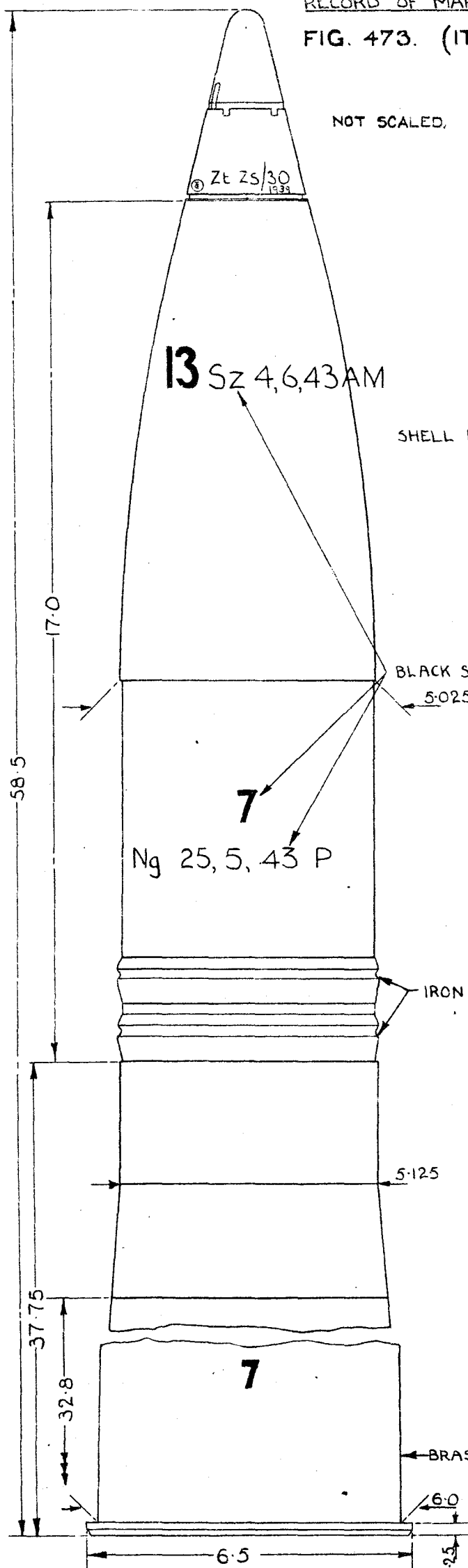
GERMAN 8.8 cm. FLAK 41 SHELL APCBC/T
FIG. 472. (ITEM 1169.)



GERMAN 12.8 cm. GERAT 40 CARTRIDGE Q.F. H.E.

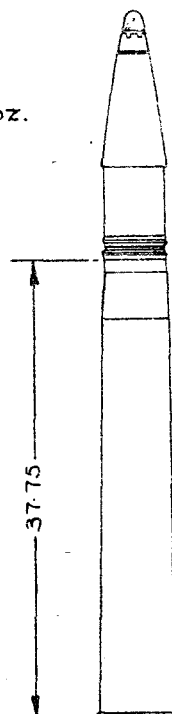
RECORD OF MARKING.

FIG. 473. (ITEM. 1171.)



NOT SCALED.

WEIGHT:-
100 LB. 4oz.



ONE LABEL INSIDE & ONE OUTSIDE.

12,8 cm Sprgr.
Patr. L/4,5
Zt Z. 5/30
Sz 4,6,43 A
70

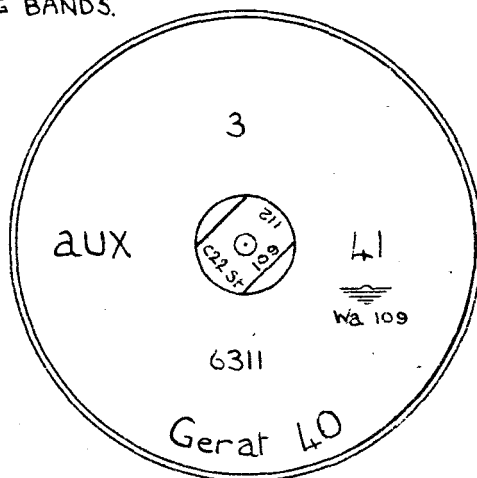
7

LABELS ON OUTSIDE.

Ohne mündungsfeuer-
dämpfende Kasu-Vorlage

Luftwaffen-Munition.
33 Gesamtgewicht 72 Kg

IRON DRIVING BANDS.



MARKING ON BASE (STAMPED).

BRASS CASE.

E.A.

MARKINGS.

S.K. No. 201.

I.P.C./D.O.

23-11-43

GERMAN 15cm. NAVAL A.P.B.C. SHELL.

FIG. 474 (ITEM. 1172)

BLACK TIP

BALLISTIC CAP

ALUMINIUM
CONTAINER.

TNT/WAX 75/25

TNT/WAX 80/20

TNT/WAX 85/15

PAPER CARTON.

TNT/WAX 95/5

STEEL EXPLODER
CONTAINER.

COPPER DRIVING
BANDS.

LEAD RING.

LEAD WASHER.

ADAPTER.

PLUG.

44.76 Kg

6132

Se. 41

Zwtl. a } rcf. 1.40
Spl. b }

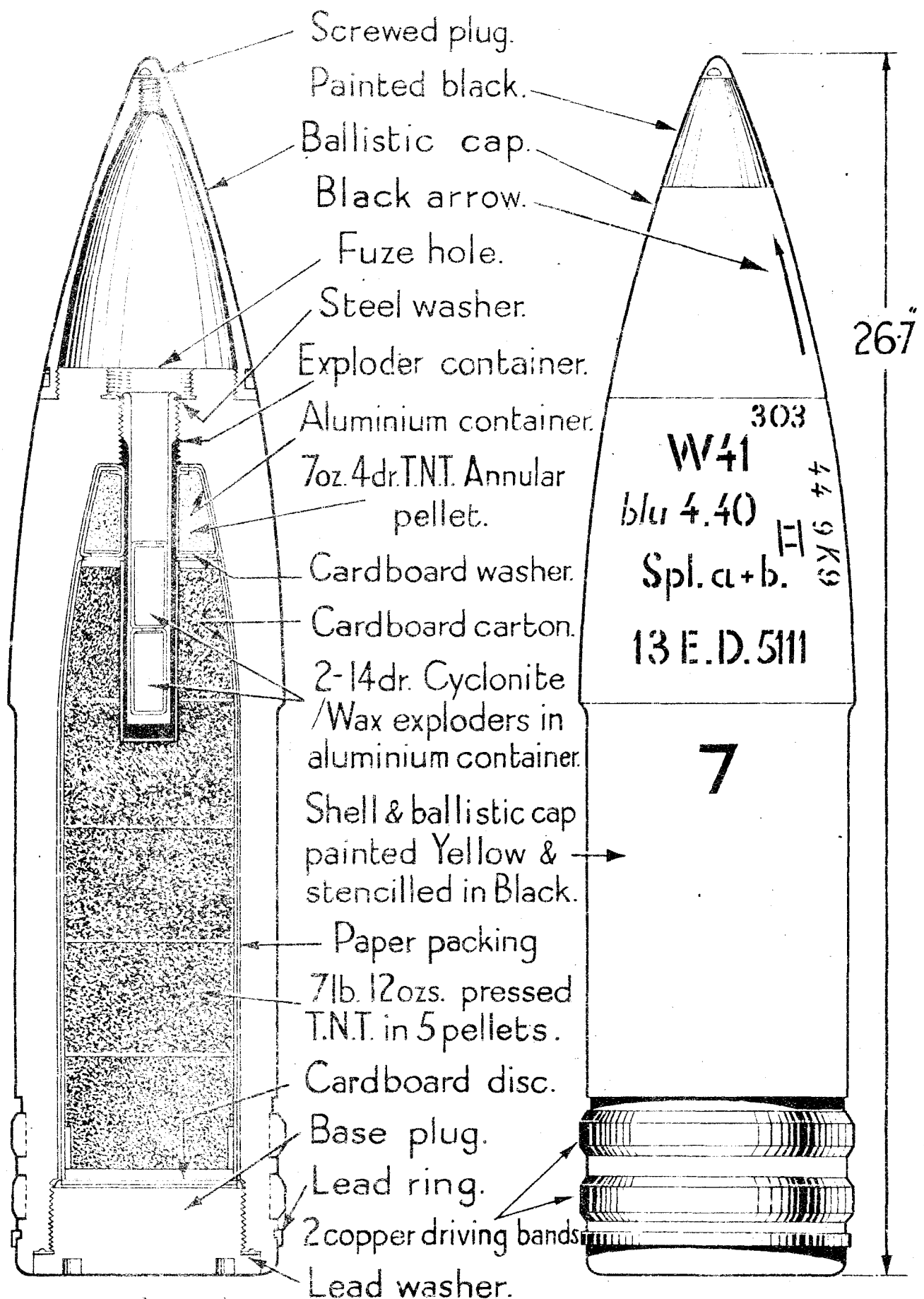
Z. Nr 313 St. 5114

Bldb 26

24.8"

GERMAN 15 cm NAVAL H.E. B.C. SHELL.

FIG. 475. (ITEM 1173.)

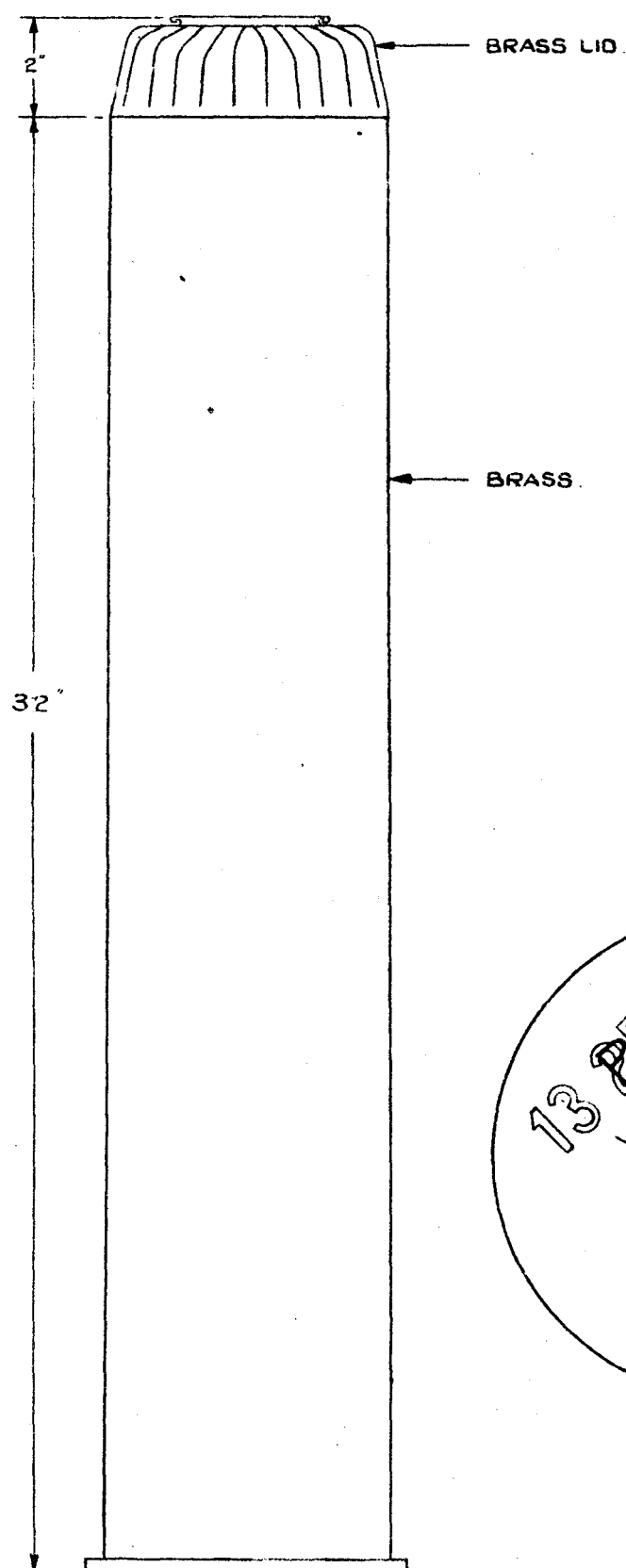


GERMAN 15cm SEPARATE Q.F. CARTRIDGE (Naval).

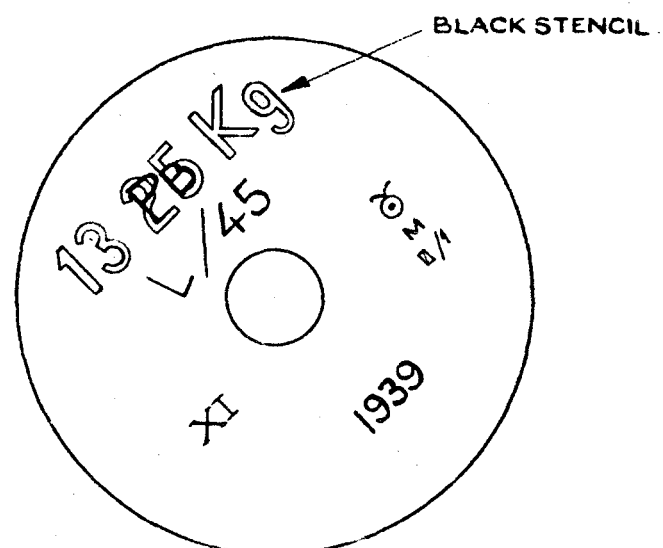
RECORD OF MARKINGS

FIG. 476 (ITEM 1174)

NOT SCALED.
WT. 49 LB. 4 OZ.



BASE STAMPINGS.

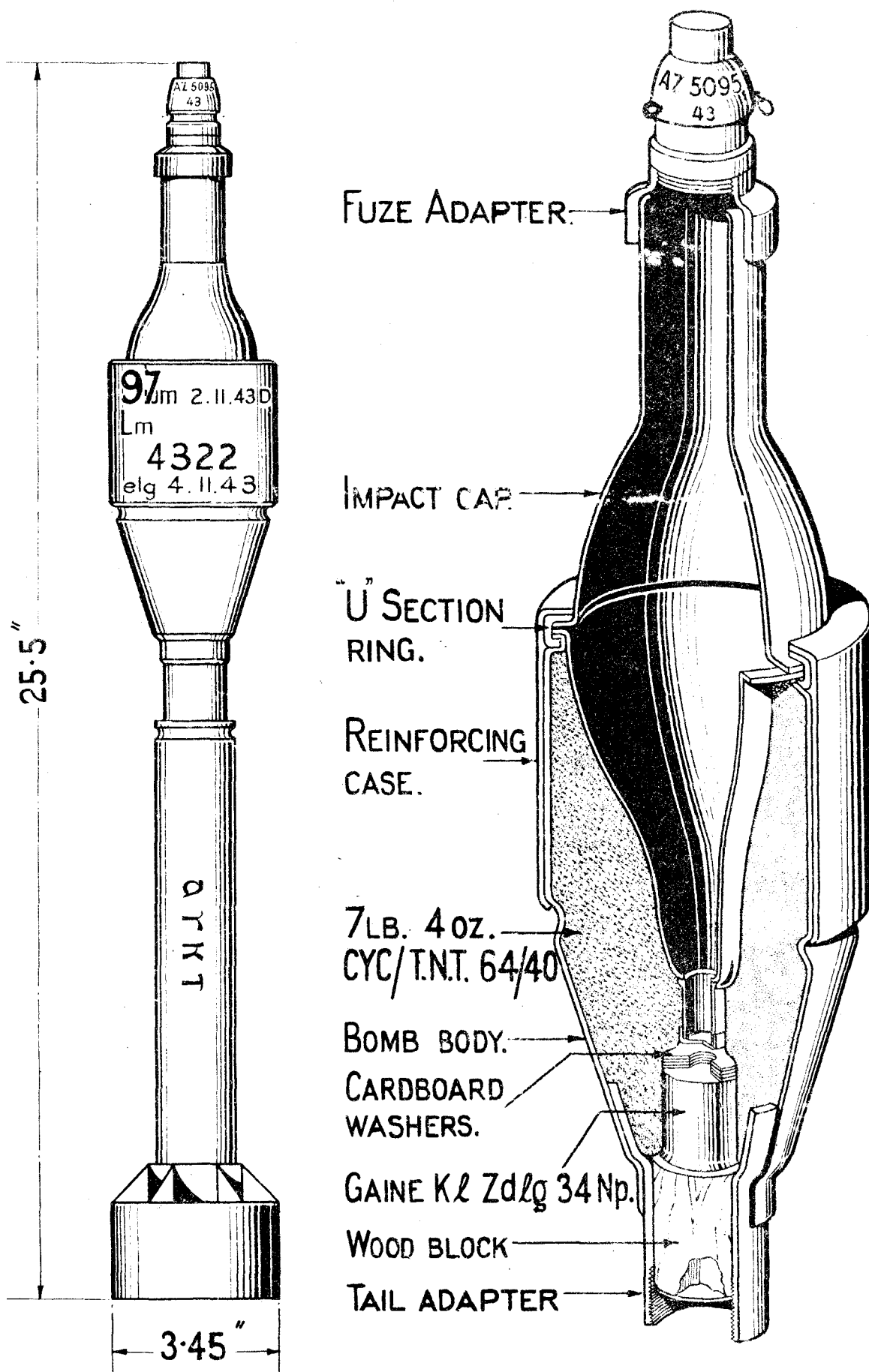


E.A.
MARKINGS.
Sk No 222.

IPC/DO
25-144

FIG. 477 (ITEM. 1175)

GERMAN 8-8cm ANTI-TANK HOLLOW CHARGE ROCKET PROJECTILE



GERMAN 8.8 cm. ANTI-TANK HOLLOW CHARGE ROCKET — TAIL UNIT.

FIG.478. (ITEM 1175.)

