

AMMUNITION BULLETIN Nº 48

ITEMS 1347-1396

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AMMUNITION BULLETIN NO. 48.

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ISSUED BY

CHIEF INSPECTOR OF ARMAMENTS.

Item No.

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 - Red and Green, Mk.1.
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- 1386. Fuze AZ 23 ung m.2V (FIG.571).
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- 1394. 8.6 c.m. Rocket Star projectile (FIG.583).
- 1395. Anti-personnel "Pot" mine A 200. (Behelfs-Schutzermine A 200) (FIG.584).

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- 1396. Anti-tank mine Type 93 (FIGS. 585 and 586).

1347. FUZES, T.D.E. Nos. 206 and 211. EXTENSION OF USE.

Approval has been given for the Nos. 206 and 211 Time fuzes to be used in Shell, Q.F., H.E. 5.25 in., Mk.I Gun only.

1348. CARTRIDGE CASES, Q.F. 6 Pr. 7 Cwt. of R.L. MANUFACTURE.

Instances have been reported of Q.F. 6 Pr. 7 Cwt. cartridge cases of R.L. manufacture being found soft underneath. It is notified for information that in order to bracket the period in which these cases appear to have been manufactured the following action has been agreed:-

- (a) All cartridges made up with R.L. 6 Pr. 7 Cwt. cartridge cases of Lots 60 to 90 to be withdrawn from the Service.
- (b) No further cartridges to be made up using R.L. 6 Pr. 7 Cwt. cases of Lots 60 to 90.
- (c) No 6 Pr. 7 Cwt. cartridge cases of R.L. manufacture, Lots 60 to 90, to be reformed.

1349. BOX, A.S.A. H.50 Mk.1. INCLUSION OF DRAINAGE AND VENTILATION HOLES.

Reference Bulletin No.45, Item 1244 and Bulletin No.47, Items 1300 and 1325. Experience in the Far East has shown the necessity for the inclusion of ventilation and drainage holes in non-watertight steel boxes. The design of the H.50 box has been modified to incorporate these.

1350. CARTRIDGE, Q.F. 25 Pr. SUPERCHARGE INCREMENT, CORDITE W.M.

Reference Bulletin No.43, Item 1150. Approval has been given for the Q.F. 25 Pr. supercharge increment of Cordite W.M., filled into a celluloid container, to be given a life of 3 years at 90°F.

1351. BOMBS, M.L., 2 inch MORTAR, H.E. - DUPLICATION OF BATCH MARKINGS.

Duplication of Batch markings, involving Batches B.14201 and B.14202 has occurred. In the event of it being necessary to report on these rounds, the particulars entered on the Batch Label in the package should be quoted.

1352. GENERATOR, SMOKE, No.8, Mark 6. (FIG.561).

The Generator is constructed of a steel body, with strap, a steel closing disc, 2 waxed strawboard washers and a rubber washer or gasket.

The Generator is filled with approx. 3½ lbs. of Smoke Composition S.R.269(M). Two discs of Cotton Cambric, the first primed with Composition S.R.252 and the second primed with sulphurless gunpowder, are placed on top of the Smoke Composition.

Igniter No.8 Smoke Generator Mk.2 is fixed to the cellulose acetate and closing discs. The Generator is sealed against water by a rubber washer or gasket.

Functioning is affected by connecting leads to an accumulator or dry battery or by firing from a 4 inch Discharger using a Cartridge Ballistite .303 inch H, Mark 12. The leads being out as near as possible to the clip holding igniter leads.

Emission of Smoke commences within 5 seconds and continues for 1¼ to 1½ minutes.

Stowage dimensions are H.3.89" x H.4.17" dia.

The exterior of Generator is painted Green.

Storage:- The Generator is placed in Group XI, Category X.

1353. PROJECTILES - MARKING.

Reference Bulletin No.37, Item 913. It is notified for information that approval has been given for the introduction of a new system of marking on filled projectiles. Consequent upon this Approval, the significance of the different forms of the filling ring have been changed and new markings introduced as follows:-

1. Red Filling Ring.

The following table provides information on the application of the Red Filling Ring to projectiles generally.

	Category	Old Marking (M. of F. Design No. on Store)	New Marking (One line code on Store)
(a)	Store filled and suitable for unrestricted issue	Ring of Red Crosses *	Plain Red Ring
(b)	Store filled and has limited life in hot climates.	Cross Bar Cross *	Cross Bar Cross
(c)	Store filled and restricted to temperate climates only.	Plain Red Ring *	Hatched Ring

* Applicable only to Stores filled H.E.

Projectiles, base fuze Lyddite filling also Mortar Bombs are at present marked with a plain Red ring which indicates suitability for unrestricted issue. If it is necessary to restrict projectile issue for any special reason in the future, the appropriate marking as indicated in the table above will be used.

2. Codification of Method of Filling Design numbers and related particulars.

- (i) One line code. In lieu of the Method of Filling design number, Monogram of firm or station filling and date of filling, a code number of the following form will be stencilled on filled stores:-

L6CY145

L6 = Code number for Type of filling (Type number)
as applicable.

CY = Filler, as applicable.

145 = Date (month and year), as applicable.

- (ii) Code number for Type of filling (Type number).

A type is determined by the initiating system of the store. For example, H.E. Stores have the following variables in the initiating system:-

- (i) Form of cavity (exploder container, paper container, nose adapter with paper tube etc.)
- (ii) Depth of cavity (dimension from lip to bottom of exploder container or paper tube etc.)
- (iii) Explodering (bag exploder, pellet exploder; size; number used etc.)

In the case of smoke stores the number and mark of smoke containers (canisters) and number used, have to be taken into consideration. Similarly stores which have variables not illustrated above have to be treated accordingly.

It may be necessary to differentiate between types where special explodering and/or fuzeing is a Service requirement.

Stores which differ from the main type in a minor way will be allocated a sub-type code number, e.g. where exploder pellets are used in lieu of exploder bags, and the main type code number was L1, the sub-type would be L1/1.

The term "Type of Filling" applies to the features referred to above and has no relation to the nature of filling such as T.N.T., Lyddite, S.R.264A(M) etc.

1354. FUZE, D.A. & PENON. No.119 and 119B - REJECTION OF ZINC ALLOY BODIES.

It is notified for information that stocks of filled 119 and 119B fuzes having zinc alloy bodies will not be assembled nor will empty fuzes be filled.

1355. GENERATORS, SMOKE - "OBSOLETE"

The undermentioned Smoke Generators have been declared "OBSOLETE":-

Generator, Smoke, No.4 Mks. 1 and 2.
" " No.5 Mks. 1 and 2.
" " No.8 Mks. 2 and 3.
" " No.12 Mk.1.
" " No.24 Mk.1. (See Bulletin No.39, Item 977).

1356. GRENADE, HAND, No.74 A.T. "OBSCULESCENT"

Reference Bulletin No.16, Item 184, Bulletin No.23, Item 374 and Bulletin No.32, Item 649. All Marks of the abovementioned grenade have been declared "OBSCULESCENT".

1357. CARTRIDGE, M.L. SIGNAL SUCCESS, 2 in. MORTAR - "OBSOLETE".

Cartridge, M.L. Signal Success, 2 in. Mortar, 73 Grain Ballistite Mk.1 has been declared "OBSOLETE".

1358. GRENADE, RIFLE, No.68, A.T. - OBSOLETE.

Reference Bulletin No.33, Item 704. The abovementioned grenade, Mks. 1 to 5, has been declared "OBSOLETE".

1359. FRACTION BOXES.

It has been pointed out that fraction packing of boxes is very wasteful of shipping space and more especially of carrier labour in operational theatres. It is notified for information that an absolute embargo has been placed on fractional packing of ammunition of any type when packed for use in the tropics.

1360. GENERATOR, SMOKE, No.24, MK.4. (FIG.559)

This Generator is similar in construction to the Mark 3, being of same plate and containing an Igniter Cup, screwed neck and cap with tear-off disc.

The Generator is filled with Smoke Composition FN.314 to within approx. 1 inch from the top.

The Igniter Cup contains a composite pellet of Composition S.R.252 and S.R.251, this latter being covered with a disc of primed cambric, and sealed with a celluloid cover, affixed to which is the Electric Igniter F.92.

This Generator has been introduced into the Service because it contains triple ignition system.

To function, having first removed the tear-off disc, any one of the following methods may be adopted:-

(1) Hand Ignition:- by applying portfire to celluloid.

(2) Electric " :- by connecting electric igniter leads to circuit.

(3) Relay " :- by inserting one end of relay igniter into the tube in celluloid cover, the other end of relay being inserted in the clip at the bottom of the previous generator from which relay ignition is required.

Effective emission of smoke commences within 1 minute and continues for 15 to 24 minutes.

The Generator is finished in Green and painted or stencilled similarly to the Marks 1, 2 and 3.

Storage dimensions are H.12.25" x H.8.07" dia.

Storage:- The Generator is placed in Group XI, Category X.

1361. GENERATOR, SMOKE, No. 2, MARK 5. (FIG. 560).

The empty Generator is constructed ofterne plate or sheet steel throughout and consists of body, top and bottom and igniter. The top is dished in the centre to form a 2 1/2 inch diameter boss to which a tear-off disc is fitted. The top and bottom are secured to body by a rolled joint and soldered.

The Generator is filled with Smoke Composition S.R. 264.A(M) or P.N. 307 to within approx. 1 inch from the top.

The Igniter cover is of celluloid sheet and is cemented to cap. The electric igniter No. 84 is housed in a depression formed in the igniter cover.

This Generator, like the Mark 4, is introduced into the Service because of the triple ignition system.

To function, having first removed the tear-off disc, any one of the following methods may be adopted:-

1. Hand Ignition:- by applying portfire to celluloid
2. Electric " :- by connecting electric igniter leads to circuit
3. Relay " :- by inserting one end of relay igniter into tube of celluloid cover, the other end of relay being inserted in the clip at the bottom of the previous generator from which relay ignition is required.

Effective emission of smoke commences within 5 seconds and continues for 11 minutes to 18 minutes.

The Generator is finished in green and painted or stencilled similarly to the Mark 4.

Stowage dimensions are H.12.25" x H.8.07" dia.

Storage:- the Generator is placed in Group XI Category X.

1362. GENERATOR CHEMICAL No. 30 Mk. 1. (FIG. 562).

The empty Generator is of tinned plate construction throughout, having top and bottom lid, the latter supporting Igniter Cup, secured by rolled joints. A tear-off strip is soldered to the top lid covering the slot provided for the emission of the Toxic Cloud.

The upper part of the body is filled with approx. 95 grams of DAK, DCK or DAK, this being separated from the Heater Pellet by a Felt Disc,

The Heater Pellet consists of 75 grams of Composition P.N. 35 or P.N. 447 with a pellet of 6 grams of Composition P.N. 383 or P.N. 446 let in at the bottom. A recess is formed in the bottom to take the Igniter Cup. The heater pellet is wrapped once by a strip of adhesive tape.

The Igniter Cup contains a pellet of approx. 2.4 grams of Igniter mixture P.N. 154, with approx. 1 gram of priming composition S.R. 252. A blob of Match Composition P.N. 196 is contained in the top of Igniter Cup.

The Bottom is closed by a lid fitting over the body and sealed with a sealing tape. The lid holds a hardwood striker, wrapped in waterproof paper and secured by adhesive tape.

To function, remove the tear-off strip from the top, the sealing tape and lid from the bottom and strike the Match Composition sharply with the hardwood striker.

The emission of Toxic Cloud commences within 15 seconds and continues for 55 seconds to 1 minute 35 seconds.

Stowage dimensions are H.4.1" x H.2.15" dia.

The Exterior of Generator is painted Light Grey with Green and White bands around the top.

Storage:- The Generator is placed in Group XIII Category X.

1363. BOMB, M.L. SIGNAL 2-INCH MORTAR:-

Single Star Red Mark 2
 Single Star Green Mark 2
 Multi-Star Red Mark 2
 Multi-Star Green Mark 2
 Multi-Star Red and Green Mark 2
Multi-Star White Mark 2

Single Star Red or Single Star Green Mk.2. (Fig.563)

The filling of the star unit, delay holder and complete assembly for the above types of bombs are depicted in Fig.563 (typical). The star case is of paper, grey, hard, wrapping and has a tin-zinc alloy cup supporting, secured in one end. After filling the star case is closed by 4 millboard discs. A compensating unit is placed on top of the assembled star in the body of bomb.

Multi-Star Red or Multi-Star Green, Mk.2. (Fig.564)

The filling of the star unit, delay holder and complete assembly for the above types of bombs are depicted in Fig.564 (typical).

The star container is of rocket paper, closed at one end by a timed-plate diaphragm having a central hole. The star cases are of paper, grey, hard, wrapping and after filling the cases are closed by a millboard disc and secured by a paper strip. The 9 stars, red or green as ordered, are placed in the star container in 3 tiers, a millboard spider is placed between the tiers and surrounding space filled with gunpowder. The star container is closed by a millboard disc.

Multi-Star Red and Green Mk.2. (Fig.565)

The filling of the star unit, delay holder and complete assembly is depicted in Fig.565. The filled star container and make up of stars, are similar to multi-star red or green, except that 10 Stars of the two colours are used, 5 red stars and 5 green stars, assembled in order as shown.

Multi-Star White Mk.2. (Fig.566)

The filling of the star unit, delay holder and complete assembly is depicted in Fig.566. The star case is of paper, hard, grey, wrapping covered with primed cotton cambric, and after filling the case is closed over a fusible alloy washer surrounded with sulphurless mealled gunpowder. Three white stars are placed in a bomb.

For all types of bombs, the method of assembly of delay holder, adapter, and tail unit with cartridge is similar to the Mark 1 Bombs. The dome sealing differs by being pushed in and pressed home by a special hand tool.

The Lids of these bombs are embossed for night identification as follows:-

One cross	for Single Star Red and two	for Multi-Star Red.
One triangle	for Single Star Green and two	for Multi-Star Green.
One cross and one triangle	for Multi-Star Red and Green	
Two parallel bars	for Multi-Star White	

The particulars of packages and weights are similar to the Mark 1, see Ammunition Bulletin No.14, Item 14.9.

1364. FUZES. ASSEMBLY OF FUZE COVERS

It is notified for information that relevant method of filling specifications for all current marks of the undermentioned fuzes have been amended to substitute the clauses detailed below in place of the present requirements for method of assembly of fuze cover and vacuum testing. The object of the amendment is to eliminate causes of defective production due to former methods of assembly and testing. No change in the Mark will be made but on introduction of the amendment a new Lot No. will be started.

Fuzes

Time, No.199 and 390.

Time and Percussion, Nos. 220, 221B, 222B and 223A.

Amendment

Assembly of fuze cover.

- (i) The rubber ring shall be inserted in the cover and pressed home firmly into the channel or recess provided to receive it.
- (ii) After checking that the fuze is correctly set "safe", the cover with rubber ring shall be pressed down securely on to the fuze body flange to form an airtight seal. The rubber ring must not be in contact with the time ring of the fuze.
- (iii) The securing band shall then be fitted to secure the cover to the fuze, the hole provided in the band being correctly registered with the Tommy hole in the fuze body. The securing band may be either of the channel pattern secured by lacing with soft copper wire, or of the "Phoenix" type secured by pressing down the lip of the band over the rim of the cover. In either case the band must engage securely after assembly both under the flange of the fuze body and over the rim of the cover.
- (iv) The fuzes with covers attached shall be tested under vacuum in an approved apparatus to ensure that they are airtight both at the fuze magazine and at the joint between fuze body and cover. The cement applied to the base of the fuze shall have been allowed to dry for not less than 24 hours before the vacuum test is made.

1365. SIGNAL 2-STAR RED & GREEN Mk.1/1
 SIGNAL DOUBLE STAR RED
 GREEN } Mk.1
 RED & GREEN }
 SIGNAL ILLUMINATING Mk.1.

These Signals are similar in construction to each other, being of tinmed plate, and consist of a body closed at one end by a cap soldered on. The other end is formed to take the screwed neck with a cap, slip disc and sealing washer. The body is fitted with a brown paper insulating tube and a steel star tube closed at one end by a disc brazed on.

The method of Ignition is in all respects the same as in the Signal 10 Star Mark 1. (See Item 1366 and Fig.567 this Bulletin).

The Signal 2 Star Red & Green Mk.1/1 (Fig.568) is filled with approx. 10 grams of Gunpowder, a red star followed by a Green Star. Approx. 60 grains of Composition S.R. 214 is pressed on top of the last star.

The stars are designed to be emitted within 2 seconds of ignition and rise to a height of 80 feet. They should burn for not less than 4 seconds and not more than 6 seconds.

The Signal Double Star Red, Green, or Red & Green Mk.1. (Fig.569) is filled with approx. 35 grains of Gunpowder, followed by two stars of the appropriate colours. A cork plug is inserted on top of the star and has two pieces of quickmatch threaded through it.

The stars are designed to rise to a height of 150 feet and burn for not less than 6 seconds and not more than 9.5 seconds.

The Signal Illuminating Mk.1. (Fig.570) is filled similarly to the

Signal Double Star (above) having one illuminating star in place of the two coloured stars.

The star is designed to rise to a height of 175 feet and burn for not less than 7 seconds and not more than 9.5 seconds.

This Signal is to be fired vertically.

For Colour Identification by day and by night, printed stars and embossed symbols are used as described on the Signal 10 Star Mk.1. The Signal Illuminating Mk.1 has no identification marking.

Stowage dimensions are H.5.0" x H.1.25" dia.

Storage:- These signals are placed in Group IX.

1366. SIGNAL 10-STAR RED MARK 1
GREEN MARK 1
YELLOW MARK 1
RED & YELLOW MARK 1
RED & GREEN MARK 1
- (Fig. 567)

The Empty Signal consists of a tinmed plate body to which is attached a steel Tripod, and Igniter contained in a screwed neck, the latter being fitted with a screwed cap and sealing washer of rubber. The bottom of the Body is closed with a cap soldered on. The three legs of the tripod are bound to the body with $\frac{1}{2}$ inch adhesive tape.

The body is fitted inside with a tinmed plate liner and steel Star tube which is closed at one end by a disc brazed on.

The Igniter consists of a striker pin held in a spring under compression by a release lever. The striker is poised over a capped 9 mm. cartridge case which has been cut down to a convenient length to hold 1 grain of Gunpowder.

The exterior of the Signal has printed coloured star or stars to indicate colour of stars, by day. These stars are embossed with symbols for identification by night.

A Red Star Signal has a red star and is embossed with a Cross.

A Green " " " " green " " " " " " Triangle.

A Yellow " " " " yellow " " " " " " Circle.

A Red & Green or Red & Yellow Star Signal has two stars, one each of the appropriate colour, embossed with the appropriate symbol, the star nearest the ignition end being the colour of the first star to leave the Signal.

The Signal is fired by removing the screw cap and pulling off the release lever. The initial delay from ignition to emission of first star is between 2 and 10 seconds. Each Star burns from 4 to 6 seconds with not less than 10 seconds interval between each. The first star should rise to a height of 50 feet, the remaining 9 stars not less than 100 feet.

Stowage Dimensions are H.20.3" x H.1.85" dia.

Storage:- The Signal is placed in Group IX.

1367. TRACER AND IGNITER, STEEL, No.14 Mk.2B and Mk.2E.

The abovementioned store has been declared "OBSCULESCENT".

1368. BOX, AMMUNITION, S.A. Nos. H.50 and H.56. STENCILLING.

Approval has been given for the use of the initial letter abbreviations, e.g. S.A.P./H.E.I., S.A.P./I., H.E.I.T./S.D., H.E./T. etc. where it is found there is insufficient room to stencil on S.A.A. boxes the abbreviations given in P.S.P.B. No.1, Pamphlet No.3a.

Code lettering, e.g. F.R.B., F.B., R.B.G.Y., R.G. etc. will not be used when stencilling boxes H.50 and H.56 containing 20 mm. ammunition.

1369. BOMBS, M.L., H.E. 2 in. MORTAR. MARKINGS ON CONTAINERS.

To provide the user with a rapid means of identification, each Container No.215 containing the above bombs will in future be marked around the centre with a 2 inch yellow band.

1370. CARTRIDGES, Q.F. 6 pr. 7 cwt. WITH D.S. PROJECTILES.

Approval has been given for Q.F. 6 pr. 7 cwt. A.P.D.S. Shot rounds with Cordite W.M.T. charges and rounds with N.H. powder and No.15 primers to be declared "Obsolescent". Also for the use of a nominal charge of 2 lb. 4 oz. 12 dr. N.H. 025 with Primer No.34 with D.S. Shot.

1371. CARTRIDGES, Q.F. 3.7 in. GUN. DUPLICATION OF BATCH MARKINGS.

Duplication of Batch markings, involving Batch No. B.5360 has occurred. In the event of it being necessary to report on these rounds, the particulars entered on the Batch Label in the package should be quoted.

1372. FUZES, TIME, Nos. 600, 610 and 620.

The abovementioned fuzes have been declared "Obsolete".

1373. BOMB, M.L. SMOKE, B.E. 3 in. MORTAR, 10 lb. Mk.1.

Consequent on none of the abovementioned bombs with steel body being made, the design is regarded as "cancelled."

1374. H.E. FILLINGS BASED ON R.D.X.

Reference Bulletin No.47, Item 1308. The following amendments are made:-

<u>Filling</u>	<u>Constituents</u>	<u>Code</u>
R.D.X. <u>Delete</u>	P.E.3. R.D.X. Poly-ise-butylene	4
<u>Substitute</u>	87.7% R.D.X. P.E.3. 10.5% Shell Mex Oil 119 0.6% Lecithin 1.2% Carbon black	4
<u>R.D.X./T.N.T. Add</u>	50% R.D.X. (B) Grade 2 50% T.N.T. Grade 1	T.N.T.11.
	50% R.D.X. (B) Grade 1 50% T.N.T. Grade 1	T.N.T.12.

1375. BOMBS, M.L. 3 in. and 4.2 in. MORTAR. FILLING OF

1. Tail Units (H.E. and Smoke Bombs)

Where current M. of F. and Assembly designs provide that any one of several Tail Units may be fitted to a given Mark of bomb, Tail Units of one Number only will be fitted to any one Filled Series.

e.g. If Tail Units Nos. 3, 6 and 8 are permissible for a given Mark of bomb, then any one Filled Series of this bomb will be fitted throughout with Tail Unit No.3, No.6 or No.8, according to the availability of permissible Tail Units.

Bombs fitted with mixed Tail Units will not be included in the same Filled Series.

2. Exploding (H.E. Bombs)

Where alternative methods of sealing and exploding are permitted for the same Mark of bomb, e.g. with Nose Adapter or with Exploder Container, a Filled Series will contain only ;

- (a) Bombs of the same Mark.
- (b) Bombs filled to the same Method of Filling design and of the same Type number.

1376. BOMB, INCENDIARY, 1 lb.

The abovementioned bomb has been declared "Obsolescent".

1377. PACKAGES, AMMUNITION. DISTINCTIVE MARKING FOR JUNGLE WARFARE.

Reference Bulletin No.43, Item 1149. Approval has been given for the diagonal stripes on Far East ammunition packages to be in yellow paint, as used in general stencilling, instead of middle buff or middle stone paint when stocks of the latter colours have been used up.

1378. FUZE, D.A. & PERCN. No.119 and 119B, Mks. 2 and 8.

Reference Item 1354 this Bulletin. Approval has now been given for the above fuze, Marks 2 and 8 (zinc alloy base) to be declared "Obsolete", except that fuzes already assembled to Q.F. 25 Pr. shell will be used up.

1379. CARTRIDGE, Q.F. 25 Pr. USE OF No.1 PRIMER DISCONTINUED.

Approval has been given for the discontinuance of the use of No.1 Primers in Q.F. 25 Pr. cartridges and for the relevant method of filling designs to be endorsed "OBSCULESCENT".

1380. PRIMERS, FIELD, C.E., 1OZ. - PACKING.

The use of Box, Guncotton Primers, Field, 1 oz. W.2, Mk.4 and Cylinder, Guncotton Primers, Field, 1 oz. Mk.4 has been extended to pack Primers, Field, C.E., 1 oz.

1381. PACKAGES, AMMUNITION, METHOD OF SECURING.

Approval has been given for Wire, Soft, Iron, 18-Gauge, suitably rustproofed to be used in lieu of Tarred String for securing fastenings or ammunition packages. This method will be introduced as soon as supplies of rustproofed (e.g. galvanised) wire are available.

The substitution of string by wire is desirable owing to the rapid deterioration of string ties during transit, especially on packages issued to the tropics.

1382. GRENADE, HAND, No.70.

The abovementioned Grenade Mk.1 has been declared "Obsolete" and the Mk.2 "Obsolescent".

1383. FUZE, PERCUSSION, BASE, LARGE, No.270 Mk.1.

The abovementioned fuze has been declared "Obsolescent".

1384. CARTRIDGE, Q.F. 95 MM. TK. HOWR. REDUCED CHARGE, H.E. SHELL.

Approval has been given for the refusing of the abovementioned cartridge with No.117 fuze in place of No.119 fuze, also for the use of the latter fuze to be forbidden with this ammunition.

1385. BOMBS, M.L. 3 in. MORTAR M. of F. DESIGNS (H.E.)

Reference Bulletin No.47, Item 1320, Table headed "BOMBS, M.L. 3 in. MORTAR (H.E.)" on pages 9 and 10. The Method of Filling designs quoted therein have now been declared "OBSOLESCE" and the necessary amendments to the table appear on Page 2 of this Bulletin. The following table gives details of new M. of F. Designs which supersede certain of the designs now rendered "Obsolescent" :-

Bomb	M. of F.	Nature of Filling	Cavity Depth Inches	Exploder	Fuze	Plug-fuze hole	Nose Container	Remarks
10 lb. Mk.2 or 3.	D2(L)302/GF/142 (Supersedes DD(L)9638).	T.N.T. or Amatol 50/50 topped T.N.T.	3.16	12 dr. C.E. Pellet or Expr. "R" C.E.	Peron. D.A. 152A or 162.	1.375 in. No.6 Mk.1 with leather washer.	YES	
10 lb. Mk.3	D2(L)301/GF/141 (Supersedes DD(L)11515)	T.N.T. or Amatol 50/50 topped T.N.T.	3.16	12 dr. C.E. Pellet or Expr. "R" C.E.	Peron. D.A. 152A or 162.	1.375 in. No.6 Mk.1 with leather washer.	NO	
10 lb. Mk.4	D2(L)300/GF/140 (Supersedes DD(L)12174)	Amatol 80/20 topped T.N.T.	3.16	12 dr. C.E. Pellet or Expr. "R" C.E.	Peron. D.A. 152A or 162.	1.375 in. No.6 Mk.1 with leather washer.	YES	
10 lb. Mk.4	D2(L)299/GF/139 (Supersedes DD(L)12215)	Amatol 80/20 topped T.N.T.	3.16	12 dr. C.E. Pellet or Expr. "R" C.E.	Peron. D.A. 152A or 162.	1.375 in. No.6 Mk.1 with leather washer.	NO	

1386. GERMAN FUZE A. Z. 23 umg m. 2V. (Fig.571)

This is a direct action and graze fuze similar to the A. Z. 23 umg 0,15, described in Bulletin No.42, Item 1117, but modified to incorporate an additional alternative delay. The fuze weighs 1 lb. 9 oz. 10½ dr.

The modifications are :-

- (a) The cavity in the base of the fuze body is deepened to enable a distance piece to be fitted above the delay holder.

The delay holder is provided with an additional vertical channel in a position at 90 degrees from the first channel. The effective length of the delay composition in the first channel is 0.169 inches and that in the second 0.122 inches.

The distance piece consists of a circular aluminium plate of the same diameter as the delay holder and approximately 0.23 inches thick. It is provided with central and displaced flash channels corresponding to the central flash channel and delay channel in the delay holder. A radial channel is cut in the underside to connect the central channel to the upper end of the second delay channel in the delay unit. The top and bottom faces are recessed, the former to accommodate an additional shutter and the latter to partially accommodate the centrifugal bolt of the lower shutter.

- (b) An additional detent with a shorter stem is provided in the body to control the additional shutter at the top of the distance piece. A grub screw in the side of the body limits the upward movement of the detent and prevents it rising above a position corresponding to the intermediate position of the other detent unit.

- (c) In consequence of the foregoing modifications the position of the setting marks on the head are altered. The short delay mark "0/2" is substituted for the old delay marking of "0/15" and the long delay mark "0/8" is stamped in the blank quarter. The head and cam surface are otherwise the same.

ACTION

The fuze head and contour of its cams are identical with that of the Fuze AZ umg 0,15 described in Bulletin No.42, Item 1117.

The fuze is set by turning the head to bring the appropriate setting mark in coincidence with the index mark.

The position of the detents and shutters at each setting are as follows:-

Setting	Long Detent	Lower Shutter	Short Detent	Upper Shutter
"+" (safe)	Full up	Open	Up	Open
"0/V" (no delay)	Half up	Open	Up	Open
"0/2" (short delay)	Down	Closed	Up	Open
"0/8" (long delay)	Half up	Open	Down	Closed

The oblique flash channel in the fuze body is always open and allows the flash from the detonator to ignite the long delay composition whatever the fuze setting.

When the fuze is set at "+", the shallow portion of the cam allows the long detent to be forced up by its spring so that its head locks the expanding spring ring and centrifugal segments in the safe position.

When set at "0/V", the detents permit both shutters to open under centrifugal action thus opening the central flash channel in the distance piece and delay holder so that the flash from the detonator passes direct to the magazine.

When set at "0/3", the long detent is forced down by the cam, thereby locking the lower shutter and closing the central flash channel in the delay holder. The flash from the detonator passes through the central and radial channels in the distance piece and ignites the short delay composition.

When set at "0/8", the short detent is forced down by the cam, thereby locking the upper shutter and closing the central flash channel in the distance piece and delay holder. The flash passes through the oblique flash channel in the fuze body and ignites the long delay composition.

1387. GERMAN FUZE 3.7 cm. KZ 40. (Fig.572)

This fuze which weighs 1 oz. 13 dr. is of the direct action and self destroying type and is used in Naval 3.7 cm. A.A. H.E. Shell. The fuze is made of a light aluminium alloy and may be identified by its designation "3.7 cm. KZ 40" which is stamped on the flange. The fuze is armed by a detonator which sets back on to a needle and ignites simultaneously a self destroying powder train, and a gunpowder pellet which releases a centrifugal safety arrangement for the direct action mechanism.

The fuze body is in two parts. The lower part is screwthreaded externally below a flange for insertion in the shell and above the flange to receive the upper part. Internally it is suitably bored to accommodate the direct action striker mechanism, arming device, and the self destroying arrangement. The base is recessed and screwthreaded to receive a detonator in a holder. The upper part is conical in shape with a flat top, and is bored centrally in two diameters to accommodate a hammer. The top is closed by turning in the edge over a disc, whilst the base is recessed and screwthreaded to receive the lower part of the fuze body.

Direct action mechanism

The direct action mechanism consists of a striker and a hammer. The striker is in the form of a needle with a cylindrical head and is housed in a central boring in the fuze body. The striker is held off the detonator by the prongs of a flat bifurcated brass slider which forms a safety arrangement. The hammer is in the form of a stem with a circular disc head and is housed in a central boring in the fuze head. The end of the stem is in contact with the head of the striker.

Safety and arming devices

To maintain the fuze in a safe condition before firing, the striker is kept off the main detonator by a centrifugal brass slider which is held in position by a detent resting on top of a gunpowder pellet.

The slider, which moves in a radial recess in the fuze body, is in the form of a rectangular bifurcated flat brass plate. Its outer edge is chamfered, and the prongs engage under the head of the striker.

The arming device comprises a set back detonator pellet, a helical spring and a needle. This device and the detent and gunpowder pellet of the safety arrangement are accommodated in two adjacent longitudinal borings which are connected by a radial channel near the base end.

The needle is fixed in the base of one of the borings whilst the detonator is maintained at the top away from the needle by the helical spring. The other boring is screwthreaded to receive a perforated screwed plug which supports the detent above the gunpowder pellet. The detent protrudes from the top of the plug and bears against the chamfer of the slider.

Self-destroying arrangement

Two longitudinal channels, diametrically opposite, are bored in the fuze body and are connected at the top by an annular channel, rectangular in section, in the top face of the body. The bottom end of one of the channels is connected by a short radial channel to the base of the boring which houses the arming device, whilst the bottom of the other leads to an oblique channel which emerges near the centre of the base of the fuze body.

Both channels and the annular channel contain a train of delay composition. In addition there is a small quantity of priming composition at the point adjoining the arming device and a booster composition at the other end of the delay train. A small igniferous detonator is embedded in the booster composition.

Two gas escape holes are provided, one leading from the powder pellet channel and the other from the delay channel.

ACTION

Direct Action

In the unarmed position the striker is held clear of the main detonator by the prongs of the slider which is retained in position by the detent resting on top of the gunpowder pellet.

On acceleration, the detonator of the arming arrangement sets back on to the needle. The flash from the detonator ignites simultaneously the priming composition of the delay train and the gunpowder pellet supporting the detent. The pellet is consumed and ceases to support the detent which is forced to the rear by the chamfered edge of the slider which moves outwards under centrifugal action. The slider no longer supports the striker thus arming the fuze.

On impact the hammer forces the striker on to the main detonator.

Self destroying action

If direct action has not occurred before the delay composition has burnt through, the flash from the igniferous detonator at the end of the train emerges through the oblique channel in the base of the fuze and initiates the main detonator.

1388. GERMAN FUZE Zt. Z S/30 Kurz

This mechanical time fuze with a clock spring drive is generally similar to the Zt Z S/30 fuze described in Bulletin No.33 Item No.742, and illustrated in Figs. 305 and 306. The fuze is used in the 8.8 cm. Gr. Br. Schr. Flak (Granate Brand Schrapnell Flak) (8.8 cm. A.A. Incendiary shrapnel shell) and is fired from the 8.8 cm. Flak 18,36 and 37 equipments. It may be identified by the designation "Zt Z. S/30 Kurz" stamped in the body just above the flange. The tip of the fuze is painted green. The whole of the body is made of steel and rustproofed by plating. The fuze weighs 1 lb. 4 oz. 9 dr.

The abbreviation "Kurz" in the designation of the fuze indicates that the actual running time is shorter than that corresponding to the fuze setting by 0.35 seconds. The shell thus bursts short and enables the ejected incendiary pellets to cover the target. This is accomplished by moving the position of the setting key locating slot through an angle of 4 degrees in relation to the mechanism.

The fuze mechanism differs from the Zt Z S/30 described in Bulletin No.33, Item No.742 as follows :-

- (1) The dome hand race and nose cap are of thinner section. The external dimensions are not significantly different.
- (2) The plates of the mechanism are of light alloy instead of brass. The bottom plate has a greater diameter than the other plates, but the space available for the gear train is not increased.
- (3) The hand is made entirely of light alloy.
- (4) The safety bridge is made of steel.
- (5) The trigger (see Fig.573) is of the same design as that of the Zt Z S/60 NA illustrated in Bulletin No.46, Item 1286, Fig.530, but is of thinner section. It requires a load of approximately 11 lb. to depress it.
- (6) The main spring barrel is made of steel with a grey metallic coating. The main spring is slightly stronger.
- (7) The hair spring of the escapement is of slightly thicker section which would cause the mechanism to run quicker.
- (8) The dome locking device has been modified. The two tapered locking plungers are the same in shape.
- (9) The centrifugal safety catch is made of light alloy and has been modified (see Fig.573). The stop pin on the underside of the catch and the curved slot in the lower plate, (which limits the movement of the safety catch in both directions) has been omitted. Instead, the inward movement of the catch is limited by a stop pin on the lower plate and its outward travel is limited by the side of the dome inset. An additional step is provided on the catch to lock it should the needle be released when the catch is in the safe position.

ACTION

The action of the fuze is the same as the Zt Z S/30 described in R.4775 Bulletin No.33, Item No.742.

1389. GERLIAN 8.8 cm. Kw.K.43 Cartridge Q.F. Hollow Charge with tracer
(8.8 cm. Gr. Patr 39 Hl Kw.K.43)

This fixed Q.F. round is used in the 8.8 cm. Kw.K.43 (tank) gun, Pak 43 (anti-tank) gun and the Stu 43 (assault) gun. The overall length of the complete round is 45.6 inches and it weighs 35 lb. 9 oz. The shell is painted the usual olive green and, with the exception of the abbreviation "FES" and four patches immediately in front of the driving band which are in white, the stencilling is in black. Exterior markings on the shell are illustrated in Fig.574.

The complete round consists of the following components:-

Shell Hollow Charge filled cyclonite/wax (95/5)
 Fuze AZ 38
 Gaine Zdlg 40 B.
 Tracer
 Propellant charge of Gudol type with igniter and flash reducer
 Case of steel coated with brass - model 6388 St.
 Primer Electric C/22 St.

SHELL (Fig.574)

The shell, filled and fuze, weighs 17 lb. 3½ oz. and excluding the fuze is 15.5 inches in length. The steel body is punched and drawn with a solid base which is streamlined and prepared to receive a tracer. The cavity for the bursting charge tapers towards the base, and an internal screwthread is formed above a shoulder at the front end for the assembly of the cap. It is fitted with two driving bands of the ferrous type as indicated by the stencilling "FES" on the body.

The bursting charge, indicated by the numeral "91" stencilled on the cap, is cyclonite/wax 95/5. It consists of two pressed blocks weighing 1 lb. 7 oz. in a waxed paper carton which is cemented to the wall of the shell cavity. A blue label, printed in black and affixed to the carton reads as follows:-

Sprengladung		
der 8.8 cm Gr	39 Hl.	
H.5.(K) elg	1943	
rdf	91	6/1943

A central channel is formed in the blocks and the top of the charge has a saucer shape cavity into which is fitted a light alloy tube and a flanged steel liner respectively. The liner is secured to the top of the tube. A steel flanged hollow frustum with two cardboard washers stuck to the upper side of the flange, is fitted above the liner. The flange is welded to the base of the frustum. The flanges of the cavity liner and the frustum are secured between a shoulder in the shell body and the base of the cap.

FUZE AND GAIINE

The fuze AZ 38 is described in Bulletin No.33, Item 741, and the gaine Zundladung 40 B in Bulletin No.43, Item 1160.

TRACER

The tracer is described as a separate item in this bulletin.

PROPELLANT CHARGE AND IGNITER

The propellant charge weighs approximately 4 lb. 2 oz. and consists of grey tubular sticks of Gudol in two lengths, each approximately 27½ inches and 25½ inches long, with a mean external and internal diameter of 0.267 inches and 0.22 inches respectively. An analysis of the propellant shows it consists of nitrocellulose 43.00 per cent, diethylene-glycol-dinitrate, 19.12 per cent, graphite 0.25 per cent, akardite 0.14 per cent, diphenyl-urethane 3.10 per cent, phenylethyl urethane 4.00 per cent, magnesium oxide 0.12 per cent, sodium sulphate 0.19 per cent, ash-sulphate 0.20 per cent, volatile matter 0.53 per cent. The charge is contained in a fabric bag with an igniter sewn to the base and is stencilled in black as under.

8.8 cm Kw.K.43
 8.8 cm Stu.K.43
 8.8 cm Stu.K.43/1
 8.8 cm Pak 43
 1.860 Kg
 GU.R-P - GO (700 . 7/6)
 (650)
 dbg : 1943/1
 KZU 13.4.43 XA

The igniter consists of 40 grams of Nz Man N.P. in the form of chopped cord, the composition being nitrocellulose 92.97 per cent, diethylene-glycol-dinitrate 1.21 per cent, diphenylamine 0.73 per cent, ethyl centralite 1.30 per cent, graphite 0.92 per cent, magnesium nitrate 0.12 per cent, sodium nitrate 0.96 per cent, ash sulphated 0.45 per cent, volatile matter 1.22 per cent.

A flash reducer consisting of 7 grams of potassium sulphate in a ring bag is added to the charge.

CARTRIDGE CASE

The case is of solid drawn steel coated with brass, and is necked at the mouth. Its length is 32.3 inches. The base is stamped with the modal number "6388 St - 8.8 cm Kw.K.43".

PRIMER

This is an electric primer C/22 St and is similar to the C/22 primer described in Bulletin No.26, Item 464, except that the body is of steel instead of brass, and the three key ways are replaced by two flats.

1390. GERMAN TRACER FOR 8.8 cm HOLLOW CHARGE SHELL (Fig.575)

This tracer weighs 4 oz. 6½ drams and has an overall length of 1.41 inches; the diameter over the threads is 1.02 inches. At rest, the trace burns for 5.8 seconds giving a steady white flame 2½ inches long. It is of a type which is also commonly used in 7.5 cm A.P. Shell.

The tracer consists of a steel body, two screwed steel retaining rings, a brass cylinder, a celluloid closing disc, tracer composition and priming composition.

The body is cup shaped and rust proofed and is formed with a thick flange at the mouth. It is screwthreaded externally below the flange for insertion in the base of the shell and internally at the mouth to receive the retaining rings. The cylinder contains the tracer composition and is secured in the body by the inner retaining ring. The hole in this ring forms a choke opening to the tracer.

The tracer composition is light grey in colour and weighs 172.8 grains and is pressed in with a spigoted drift which leaves a cavity in the base.

The priming composition is grey in colour and weighs 47.8 grains and is pressed in the cavity of the tracer composition and in the choke of the inner ring by a serrated drift.

The tracer is closed by a celluloid disc secured by the outer ring and is coated with a brown varnish.

1391. GERMAN HOLLOW CHARGE ANTI-TANK BOMB WITH PROJECTOR. Panzerfaust 60 m. (Figs. 576, 577 and 578.)

This recoilless weapon with its anti-tank bomb is a modified version of the Faustpatrone 2, now known as the "Panzerfaust 30", described in Bulletin No.43, Item 1164. It has been designed for use at longer ranges, up to a maximum range of 80 metres, by increasing the thickness of the projector tube and the weight of the propellant charge.

The bomb and projector are painted stone colour and, without the fuze and gaine, weighs 14 lbs. 12½ ozs. The fuze and gaine are issued separately and are inserted in the bomb by the user before preparing the weapon for use. External markings on the projector and bomb are shown in Figs.576. The stencilling "Vorsicht-Starker Feuerstrahl" and two arrows, in red, on the projector is a warning to take "Precaution" and to indicate that a "vigorous firestream" of propellant gases issue from the front and rear of the projector.

BOMB (Fig.576)

The bomb is practically identical in design and dimensions to the Panzerfaust 30, but differs in the method of attaching the head to the

tail. The cylindrical extension tube at the base of the bomb body which accommodates the gaine and fuze is a push fit into the socket of the tail unit; it is secured by a spring clip on the rim of the socket which engages a stud near the base of the body. A small pointed foresight is welded to the head of the bomb. The hollow charge consists of 3 lbs. $7\frac{1}{2}$ ozs. of cyclonite/wax.

GAINIE

This is a small PETN/Wax gaine in an aluminium case, the dimensions of which are identical with Kl. Zdlg. 34 Np described in Bulletin No.39, Item 989.

FUZE F.P.Z. 8001 (Fig.577)

Two types of fuzes, similar in principle and action but differing slightly in detail, are used. One is described in Bulletin No.44, Item 1208, and illustrated in Fig.483. The other is illustrated in Fig.577 of this Bulletin and differs from the former in the following detail :

- (i) The striker is heavier and more robust, and provides a platform for the expanding tape spring whilst the fuze is in the unarmed condition.
- (ii) The cylindrical steel container is closed by a dished washer under a detonator holder.
- (iii) A cardboard washer is fitted to the forward end of the fuze and surrounds the detonator.

The action of the fuze is the same as the Fuze F.P.Z.8001 described in Bulletin No.44, Item 1208.

PROJECTOR (Fig.578)

The projector consists of a steel tube 31.75 inches long, open at both ends, and has secured to its side near the forward end a suitably shaped bracket to which is fitted the firing mechanism and a hinged backsight. The tube has a wall thickness of approximately 0.1 inch and an external diameter of 2 inches. A slot is cut in the forward end of the tube to accommodate a bracket on the bomb tail. At approximately $12\frac{1}{2}$ inches from the forward end of the projector, there is a flash hole to which is fitted a steel cylindrical cap holder for housing a percussion cap. The holder is screwthreaded externally to receive a hexagonal nut which retains the percussion cap.

The percussion cap consists of a copper sheath containing cap composition and a brass anvil. The sheath is flanged at the top and is turned in at the base to secure the anvil.

The propellant charge is situated approximately 9.8 inches from the forward end of the projector. It consists of 4 ozs. 12 drs. of granular gunpowder in a cylindrical cardboard container, and is retained by a set screw in the projector diametrically opposite the flash hole mentioned above. A circular disc of rubber like material is inserted between the cardboard container and the tail of the bomb.

The firing mechanism is of the trip action type and is fitted to the bracket which is welded to the projector. It consists mainly of a firing lever, firing lever axis pin, flat striker spring with striker, and a safety catch, all of steel.

The firing lever is channel shape in section and is secured to the bracket at approximately its centre by its axis pin. The under side of the lever tapers from the centre to the forward end to allow it to be rocked on the axis pin when firing the weapon. Immediately in front of the axis pin, the sides of the lever are suitably shaped to form a recess in which slides the rear end of the safety catch. A tripping bar, in the form of a pin, is secured between the sides of the lever at the rear end.

The flat striker spring is approximately 3.8 inches long. Its forward end is secured to the bracket by a nut and bolt. The rear end of the spring is provided with a conical striker and is held away from the percussion cap by the tripping bar which is engaged under the rear end of the spring.

The safety catch is in the form of a suitably shaped pressed bar, "T" shaped at the rear end and provided with an operating handle in the form of a short steel rod at the other. The two projections at the "T" shaped end slide in the recesses in the sides of the firing lever. When pushed to the rear to the safe position marked "SICHER" the projections are accommodated in the narrow sections of the recesses and in this position prevent the firing lever being rocked to fire the weapon. When pushed to the front to the position marked "ENTSICHERT", the projections are withdrawn from the narrow sections of the recesses and thus allow the firing lever to operate and fire the projector.

The sighting arm is of channel section steel and tapers on the underside towards the front. Three apertures for sighting the weapon for 30, 60 and 80 metres range are cut in the arm, and each are marked "30", "60" and "80" respectively in black on white luminous paint. The arm is pivoted to the forward end of the firing mechanism bracket and, when folded down, its rear end pushes the safety catch into the safe position and also bears against the end of the firing lever thereby preventing movement of the latter to fire the weapon. Two slots at the forward end of the sighting arm engage a safety pin which also passes through a bracket on the bomb tail, to secure the bomb to the projector for transporting purposes.

PREPARATION FOR FIRING

Raise the spring clip on the tail unit and remove the bomb from the projector. Insert the gaine, closed end first, in the bomb and above it the fuze with its open end facing the gaine. Replace the bomb in the projector. Remove the safety pin securing the bomb to the sighting arm and raise the arm to a position at right angles to the projector. Push the safety catch forward to the "Fire" position. A label on the bomb shown in Fig. 576 illustrates the firing position.

ACTION

The firing lever is pressed down and the tripping bar raises the striker spring and striker until it trips and rebounds to fire the percussion cap. The flash from the cap ignites the propellant charge the gases of which project the bomb. The escape of some of the propellant gases through the rear end of the projector counteract any stresses which would otherwise cause the weapon to recoil.

1392. GERMAN 2.6 C.M. PISTOL H.E. CARTRIDGE WITH DELAY FULL IGNITER. Sprenggranatpatrone mit zeitzunder (Fig. 579)

This H.E. cartridge is used with the 2.6 c.m. smooth bore signal pistol and is intended for use in tank defence against infantry attack at very close range. The small propellant charge ejects the shell to a range estimated not to exceed 12 feet. The bursting charge is initiated by a percussion igniter which is operated by a pull wire. The igniter has a delay of one second.

The overall length of the complete round is 7.1 inches and it weighs 10 oz. 14 dr. The shell is painted yellow and stencilled along the side in black. External markings on the shell are illustrated in Fig. 579. Serrations half way around the rim of the case also assist in the identification of the round.

The round consists mainly of a shell filled Cyclonite/T.N.T. (50/50), a percussion igniter, a No. 8 detonator, a cartridge case with a percussion cap, and a small propellant charge of nitrocellulose powder.

SHELL

The filled shell weighs $8\frac{3}{4}$ oz. The body is a steel tube having a closed hemispherical nose and a wall thickness of 0.06 inches. It is approximately 5.1 inches in length. The base is closed by a steel plug which is bored centrally and screwthreaded to carry the igniter and detonator. It also has two holes drilled in each face. The two in the rear face are alternative holes to accommodate the end of a guide pin which facilitates the assembly of the round. The purpose of the two holes in the front face is unknown. The plug is secured by a deep cannellure which also serves to secure the shell to the case.

The bursting charge weighs 59.9 grams and consists of a cast filling of Cyclonite/T.N.T. which has a central cavity in the base to receive the detonator. A cardboard washer is positioned between the base of the bursting charge and the base plug of the shell.

PERCUSSION IGNITER AND DELAY UNIT

IGNITER

The igniter comprises the body, locking nut, striker with pull ring, retaining washer, striker spring and a pull wire. All except the body are made of steel.

The body is a die cast alloy tube with a perforated diaphragm near the base end. The forward end is screwthreaded internally to receive one end of the delay unit. Externally, it is screwthreaded at the forward end for insertion in the base of the shell, and near the rear end to receive a locking nut which prevents the igniter unscrewing in transit or in flight. The recess in rear of the diaphragm accommodates the retaining washer.

The striker and pull ring are stamped from 0.04 inch thick steel sheet. The striker has two projections near the forward end, and a notch near the rear end with one side inclined to facilitate the release of the pull ring. The end of the striker in rear of the notch engages in a slot in the pull ring. The pull ring is shaped to form a flat slotted stem with an integral ring at one end.

The retaining washer has a central slit through which passes the stem of the pull ring. It is secured in the base of the body by turning the end of the latter over it. Movement of the striker is prevented by the washer because the central slit in it is at right angles to the end of the striker.

The rear end of the igniter is thickly coated with a black elastic sealing composition to prevent penetration by the propellant gases.

An analysis of the composition shows it consists of synthetic rubber 45.3 per cent, carbon 32.7 per cent and magnesium-aluminium silicate 22.0 per cent.

The striker spring is helical and is held in slight compression between the projections on the striker and the diaphragm in the body.

The pull wire is 0.023 inches in diameter and approximately 17 inches in length. It is coiled inside the cartridge case to form a helical spring, one end being secured to the pull ring, whilst the other is secured to a base block inside the base of the case.

DELAY UNIT

The delay unit consists of a steel tube containing a main filling of delay composition with a small pressing of priming composition at each end.

The tube is 0.75 inches in length and is screwthreaded externally at one end for insertion in the igniter. The delay composition is reddish-brown in colour and weighs 6.27 grains. The priming compositions are coloured black and each weigh 0.72 grains.

The compositions as found by analysis consist of:-

	Main filling	Priming Compositions	
		Base pressing	Forward pressing
Barium nitrate	13.7 per cent	(b) 5.0 per cent	(b) 4.0 per cent
Red Lead	39.0 " "	33.0 " "	32.0 " "
Zirconium (metal)	18.7 " "	54.0 " "	55.6 " "
Silicon (element)	27.5 " "	(b) 4.0 " "	(b) 6.2 " "
Nitrocellulose	(a) 0.2 " "	2.0 " "	1.2 " "

Note (a) Probably derived from priming compositions.
(b) Probably derived from main filling.

A paper percussion cap is inserted between the delay unit and the striker. It consists of a small quantity of Potassium chlorate/Red phosphorus (50/50) between a red and a white paper disc. The discs are stuck together by a thin varnish.

DETONATOR (Sprengkapsel No.8)

The detonator is the standard German No.8 A1. and is the type illustrated in Fig.580 and Marked "T".

CARTRIDGE CASE

The case is 7.7 inches long and is of the built up type. It consists mainly of the wall, base piece and a base block, all of steel.

The wall is attached to the base by fitting its rear edge into an annular recess in the base and turning over the rim. Half the circumference of the rim is serrated for identification purposes. The centre of the base is pierced and pressed inwards to form a cap recess.

The base block is cylindrical and is secured in the bottom of the case by cannelluring. It is bored centrally in two diameters to fit over the boss of the cap recess and to form a chamber to accommodate the forward end of the percussion cap and the propellant. The outer circumference of the rear face of the block is recessed to form a step. Near the edge it is bored longitudinally in two places, diametrically opposite. One is in two diameters and has the end of the pull-wire secured in it by means of a small pin, the other houses one end of an assembly pin which is secured by burring. The pin passes through the coiled pull-wire and its other end fits in one of the holes in the rear face of the shell base plug.

PROPELLANT

The propellant weighs 0.46 grains and consists of four greenish yellow discs of nitrocellulose. The discs are held firmly in the base block between the percussion cap and a millboard disc. An analysis of the propellant shows it consists of nitrocellulose 90 per cent, diphenylamine 8.5 per cent, and volatile matter 1.5 per cent.

PERCUSSION CAP (Fig.579)

The percussion cap is similar to the commercial type of cap in the German S Mine Igniter 35, described in Bulletin No.38, Item 951, page 19.

ACTION

When the percussion cap is struck, the small propellant charge ejects the shell. Tension on the pull wire, aided by set back, withdraws the striker and retaining washer to the rear thereby releasing the pull-ring, which rides over the inclined notch in the striker. During flight, the striker spring having been compressed reasserts itself and the striker is forced on the cap which ignites the delay unit. After a delay of approximately one second the delay unit initiates the detonator and main firing.

1393. GERMAN 8.6 cm. ROCKET H.E. PROJECTILE

8.6 cm. R.SPGR 400
(Figs. 581 and 582)

This is a self propelled base venting H.E. Rocket projectile. It is fired by percussion and the venturis are inclined to the axis of the rocket to rotate and stabilise it in flight. The overall length of the complete round is 16.25 inches and its maximum diameter is 3.35 inches; it weighs 17 lb. 15 ozs. The head is painted yellow and the tail unit green. Exterior markings are shown in Fig.581 and are stencilled in black. It is estimated that the projectile will reach a maximum height of about 8,000 feet if fired vertically.

The complete round consists principally of :-

Shell filled T.N.T.
Gaine Zdlg C/98 Np
Base fuze
Tail unit with propellant charge
and ignition system

SHELL

The body is of steel, 9.6 inches long and 3.35 inches in external diameter. The head is closed and dome shape, and the base is screw-threaded internally to receive the forward end of the tail unit. The bursting charge consists of 1 lb. 13½ ozs. of T.N.T. in three pressed pellets. The top pellet is solid and conforms to the internal contour of the head, and has a short cavity in the underside. The other two are annular. The charge is contained in a waxed paper carton having a central cardboard liner, in two diameters, which accommodate the gains above the base fuze. The carton is cemented to the walls of the shell body. A label affixed to the carton is printed as follows:-

Sprldg. f. 8.6 cm. R. Sprgr
Fp. 0.2 (sulfitri)
rdf. 1. 19/1944

GAINS. Zalg. C/98 Np.

The gains is the standard Zalg. C/98 Np. described in Bulletin No.26, Item 464, and illustrated in Fig.170, but has a spring-loaded aluminium distance washer instead of a leather washer.

FUZE (Fig.582)

This is a direct action fuze with provision for self destruction. It is cylindrical in shape, 3.7 inches overall in length and 1.02 inches in diameter, and weighs 9 ozs. 14 drs.

The fuze comprises three main parts, a fuze mechanism unit with detonator, self destroying unit and a delay holder which screw together as illustrated in Fig.582. All metal parts excepting the detonator are made from steel.

Fuze Unit

The fuze unit consists of a body, striker, two balls, creep spring, expanding spring ring and a detonator holder with detonator.

The body is in two parts. The lower part is cup shaped with thin walls and is screwthreaded internally at the mouth to receive the upper part of the fuze body. The base is bored centrally to accommodate the head of the striker and is reduced in diameter and screwthreaded externally for insertion in the self destroying unit. The upper part of the fuze body is screwthreaded externally below a flange and is provided with a projection on its underside. The projection and top of the body are recessed and the recesses are connected by a central boring which forms a guide for the needle. The lower recess accommodates the needle end of the striker and the creep spring. The top recess is screwthreaded to receive the detonator holder.

The striker comprises a cylindrical pellet with a needle at one end. The pellet is recessed circumferentially near the base of the needle to partially accommodate two balls which retain the striker in the safe position. The balls are retained by an expanding spring ring.

The creep spring is helical, and is seated between the top of the recess in which it is accommodated and the needle pellet.

The detonator holder is in the form of a perforated screwed plug. The detonator is retained by turning in the holder at the outer end of the perforation.

Self destroying unit.

The self destroying unit is situated between the fuze unit and delay holder. It accommodates two increments of gunpowder and an obturating cup.

The body is provided with two spanner flats and its base is reduced in diameter and screwthreaded for insertion in the delay unit. It is bored centrally in three diameters. The top and largest recess is screwthreaded to receive the base of the fuze unit; the centre provides a chamber containing 0.368 grams of gunpowder in an inverted obturating cup in contact with 0.036 grams of gunpowder in the bottom which forms a fire channel.

Delay holder.

The delay holder is provided with two spanner flats in its side, and in its base there is a screwthreaded projection for insertion in the

forward end of the rocket tail unit. It is bored centrally to form, a recess at the top which is screwthreaded to receive the base of the self destroying unit, and a channel which is filled with 1.675 grams of delay composition. An analysis of the composition shows it consists of potassium nitrate 66 per cent, sulphur 17 per cent, charcoal 7 per cent and antimony sulphide 10 per cent. The base of the delay channel is slightly increased in diameter and contains 0.155 grams of gunpowder including less than 10 per cent of potassium nitrophenate.

ACTION

Normal

In the unarmed position the striker is held clear of the detonator by the two balls which are retained by the surrounding expanding ring.

During flight, heat from the propellant ignites the gunpowder and delay composition. Centrifugal action causes the balls to move outwards and the surrounding spring to expand leaving the striker supported by the creep spring. On deceleration the balls and spring ring move forward into the space provided whilst the creep spring prevents forward movement of the needle. On impact or graze the needle is carried on to the detonator.

Self destruction

When direct action does not occur before the delay composition has burnt through, the gunpowder confined in the obturating cup is ignited and explodes and thus forces the striker forward to carry the needle onto the detonator.

TAIL UNIT

The tail unit is similar to that of the German 8.6 cm. wire barrage projectile described in Bulletin 47, Item 1340, but its length is $6\frac{1}{2}$ inches instead of $4\frac{1}{2}$ inches.

The propellant weighs 2 lbs. 8 ozs. and consists of a solid cylindrical block of compressed gunpowder. The composition of the propellant as found by analysis shows it consists of potassium nitrate 75.5 per cent, carbon 15.35 per cent and sulphur 9.15 per cent.

1394. GERMAN 8.6 cm. ROCKET STAR PROJECTILE (Fig.583)

This is a self propelled base venting star rocket projectile. It is fired by percussion, and the venturis are inclined to the axis of the rocket to rotate and stabilize the projectile in flight. The overall length of the complete round is 16.7 inches and its maximum diameter is 3.35 inches; it weighs 11 lb. 7 oz. The rocket is painted grey and has a white tip. Exterior markings, stencilled in white, are shown in Fig.583. It is estimated that the rocket will reach a maximum height of 8,000 feet if fired vertically when the star and parachute are ejected at this height.

The complete round consists principally of the body, parachute, parachute housing, star, ejection charge, delay igniter, and a tail tube with propellant charge and ignition system.

The body is tubular, approximately 10.4 inches long, and is made from sheet steel. A circumferential rib is formed approximately midway between the centre and the base. The base is screwthreaded internally for the attachment of the tail tube.

The parachute housing is a suitably shaped metal container 6.13 inches long and 3 inches in diameter, split longitudinally into two halves. The forward end is closed and dome shaped to serve as the head of the rocket and a circumferential rib is formed at the base of the dome. The base is provided with a central opening through which the shrouds pass. The housing is a sliding fit into the rocket body and is secured and sealed by two strips of adhesive tape, one of which is passed over the dome to seal the split.

The parachute, when opened, is 2 feet 3 inches in diameter, and consists of eight triangular panels of artificial silk coloured red and yellow alternately. The panels are sewn together and reinforced along the seams and outer edges by $\frac{1}{2}$ inch wide tape. The outer ends of the radiating tapes extend beyond the edge of the canopy and are looped for the attachment of the shrouds. There are eight shrouds consisting of four

lengths of stranded copper cable, each 6 feet long and looped so that shrouds diametrically opposite are continuous cable. The loops in the end and centre of the cables are secured by a crimped soft metal seal which is covered by a length of insulation tape. The shrouds are attached to the star by a metal link and shackle.

The star weighs approximately 2 lb. 7½ oz. and consists mainly of a cylindrical steel container, star composition, priming composition, a wood block, a thin millboard disc and a steel closing disc.

The container is made from soft steel 0.075 inches thick, and is 3.85 inches long and 2.92 inches in external diameter. The outer surface is scored with a large number of longitudinal lines. The base of the container is turned in to form a central aperture approximately 1.5 inches in diameter. The top is closed by turning the edge over the steel closing disc.

The star composition consists of a pressed cylindrical pellet weighing approximately 1 lb. 6½ oz. The base of the composition is primed with a layer of gunpowder approximately 0.05 inches thick.

The composition, as found by analysis, consist of :-

	Star Composition	Priming Composition
Aluminium	15.2 per cent	-
Barium nitrate	48.7 " "	
Potassium nitrate	15.5 " "	75.2 per cent
Sulphur	15.9 " "	9.2 " "
Charcoal	3.0 " "	14.4 " "
Volatile matter	0.2 " "	0.8 " "
Undetermined matter	0.7 " "	1.2 " "

The star has a time of burning, at rest, of approximately 36 seconds and a light intensity of approximately 52,000 candles.

The wooden block with the millboard disc on its underside is inserted above the star composition. The block is 2.8 inches in diameter and 0.55 inches in length, and is provided with a central hole 0.8 inches in diameter.

The closing disc is 0.1 inches thick and has a central perforation into which is welded a loop to suspend the star from the parachute.

The tail unit, ejection charge and delay unit are identical to that of the German 8.6 cm. wire barrage projectile described in Bulletin 47, Item 1340.

The propellant weighs 1 lb. 10¾ oz. and consists of a solid cylindrical block of compressed gunpowder. An analysis of the propellant shows its composition to be potassium nitrate 76.1 per cent, carbon 14.4 per cent and sulphur 9.4 per cent.

ACTION

The action is similar to the German 8.6 cm. wire barrage projectile described in Bulletin 47, Item 1340.

1395. GERMAN ANTI PERSONNEL "POT" MINE A.200.

(Behelfs - Schutzermine A.200)

(Fig.584)

This anti personnel mine is illustrated in Fig.584. It is fitted with a crush actuated type of chemical igniter which screws into the top of the body. The mine, complete with igniter and detonator, weighs approximately 10¾ ozs.; its overall height is 3.6 inches and the diameter of the body is 2.6 inches. It is painted buff.

The mine consists mainly of a small steel "pot" with a H.E. filling, a detonator container and an igniter adapter both of plastic, a German No.8 detonator or a French No.7 commercial detonator, and a chemical igniter.

The body is 2 inches deep and 2.6 inches in diameter and formed with a flanged rim. It is pressed from mild steel strip approximately 0.04 inch thick. The body is closed by a 0.06 inch thick flat steel cover which is secured by turning its edge over the flange of the body. The centre of the cover is provided with a pressed screwthread to receive the detonator container.

The H.E. filling is in granular form and weighs from 3 to 4 ozs.; it does not completely fill the body. An analysis of the composition shows

it consists of Picric acid 47 per cent and Trinitro-meta-cresol 53 per cent.

The detonator container is a flanged cylinder in two diameters closed at the base. The open end is increased in diameter and is screwthreaded, externally below the flange for insertion in the body of the mine, and internally to receive the igniter adapter.

The igniter adapter is screwthreaded, externally below a flange for insertion in the mouth of the detonator container, and internally to receive the igniter.

DETONATOR

The No. 8 detonator is illustrated in Fig. 580 and is of the type marked "T".

The French No. 7 commercial detonator is approximately the same dimensions externally and weighs 2.7 grams. The filling consists of 0.6 grams of picric acid and 0.35 grams of mercury fulminate in a brass capsule.

IGNITER

This means of ignition is termed a "Buck" igniter (In German - "Chemischer Zünder Buck").

The igniter is in the form of a cylindrical capsule with a screw-threaded projection on its underside for insertion in the mine. It contains a filling of hydrated aluminium silicate above a mixture of finely powdered potassium chlorate and a carbohydrate, and a glass capsule containing concentrated sulphuric acid.

The body of the igniter is an inverted aluminium cylinder formed with three circumferential cannelures about the centre. It is secured to a brass base piece by turning the mouth into an annular groove where it is secured by a bituminous substance. The base piece is made in two diameters and is bored centrally to form two chambers separated by a perforated diaphragm. Externally, the larger diameter is grooved circumferentially for the attachment of the body. The smaller diameter is screwthreaded externally for insertion in the mine and is fitted with a synthetic rubber washer and a "screwed on" brass protecting cap; the latter is removed when the igniter is fitted to the mine.

The compositions of the main filling consists of an increment of hydrated aluminium silicate above another comprising a mixture of 87 per cent potassium chlorate and 13 per cent carbohydrate. The filling is retained by a thin paper disc stuck on the inside of the base piece.

The glass ampoule contains 97-98 per cent sulphuric acid and is embedded in the main filling.

ACTION

A load of approximately 60 to 90 lbs. crushes the glass ampoule and the sulphuric acid reacts with the potassium chlorate/carbohydrate composition producing a flash which in turn initiates the detonator and main filling.

1396. JAPANESE ANTI TANK MINE TYPE 93. (Figs. 585 and 586.)

This mine is approximately 6.5 inches in diameter, 1.9 inches overall in height and complete with igniter weighs 3 lb. 4½ oz. It is painted a dull brown colour; exterior markings are shown in Fig. 585. The mine is designed to be functioned by pressure applied to a percussion fuze.

The mine consists principally of a container, a main filling of cast picric acid weighing approximately 1 lb. 15 oz., an exploder pellet of loosely pressed picric acid weighing 1½ oz. and an igniter assembly.

Container

The container is cylindrical and made up of two halves each pressed from annealed phosphorus-deoxidised copper-zinc alloy sheet, and secured together by corrugating their sides. The upper half is dome shape with a flat top and central hole. The underside of the flat top is reinforced by a soldered-on thin steel washer. To the centre of the

washer is soldered a flanged brass ring which is screwthreaded internally to receive a brass milled cap. The cap is in the form of a shallow cup which is screwthreaded externally below a shoulder for insertion in the body. A leather washer is fitted to the cap to give it a tight fit. Two brass strips are soldered to the sides of the container, diametrically opposite, and each are fitted with two brass D-rings which are used for anchoring or carrying the mine. To the centre of the inside of the bottom half of the container is soldered a brass washer with thickened centre which is screwthreaded internally to receive the base of the igniter assembly.

The overlap of the two portions of the cover is sealed with bituminous paint, while the interior of the container is painted with black enamel.

Filling

The main filling is in the form of a cylindrical slab of cast picric acid 6.4 inches in diameter and 1.1 inches thick with a central hole 1.7 inches in diameter to accommodate an exploder. The slab is covered with thick yellow paper which is varnished to the outside. The edges of the slab are protected by a strip of cotton fabric resembling a very light blanket which laps over the faces of the slab. It is secured by string which is threaded along the edges of the fabric, drawn tight and knotted.

The exploder consists of an annular pellet of loosely pressed picric acid, weighing approximately $1\frac{1}{2}$ oz., completely enclosed in a varnished cardboard container. The inner diameter of the pellet is approximately $\frac{3}{4}$ inch and its length 1 inch. The pellet surrounds the igniter assembly.

IGNITER ASSEMBLY

The igniter assembly weighs 1 oz. 9 dr. and comprises a brass cylindrical container housing a fuze and gaine.

The base of the container is reduced in diameter and screwthreaded externally for insertion in the bottom of the mine body. The mouth is increased in diameter to form a flange which is screwthreaded internally to receive the fuze. Two slots are cut in the top of the flange to facilitate the insertion of the igniter assembly into the mine by the aid of a tool.

FUZE (Fig.586)

The fuze consists mainly of a body, striker, striker spring, shearing wire, safety cap, detonator and detonator holder. The shearing wire and safety cap are made of copper and brass respectively, the remaining components are made of steel.

The body is made in two parts which screw together. The bottom part is tubular and formed with a perforated diaphragm which is suitably shaped to provide a guide for the striker needle. The recesses on each side of the diaphragm are screwthreaded, to receive the detonator holder in the bottom and the head of the body at the top. The head is bored centrally and turned in at the top to house the striker mechanism. The walls are increased in thickness near the centre and form a flange which is screwthreaded and chamfered. The flange is bored horizontally to receive the striker shearing wire. Below the flange it is screwthreaded for insertion in the bottom part of the body.

The striker is a cylindrical stem which is increased in diameter at one end to form the head at the base of the needle. The stem is bored longitudinally for more than half its length and screwthreaded to receive a spigot in the safety cap. The head is pierced horizontally to receive the shearing wire.

The shearing wire is of copper, 0.079 inches in diameter, and passes through the striker, fuze body and container.

The striker spring is helical and is held in compression between the head of the striker and the turned in top of the fuze body.

The safety cap is cup shaped and internally has a central spigot formed in the base. The spigot is screwthreaded for insertion in the stem of the needle and when screwed home takes the pressure of the spring loaded striker off the shearing wire.

The detonator holder is cylindrical with an external annular recess near the base. The forward end is screwthreaded externally for insertion in the base of the fuze body. The top and bottom faces of the holder are recessed and connected by a short fire channel. The recess in the top houses the detonator and that in the bottom contains a perforated pellet of black powder.

The detonator consists of a copper cup which has a perforated base and is filled with a composition of fulminate and glass. The perforation is closed by a thin disc of tinfoil and the mouth of the cup is closed by a thin dished copper disc.

GAINES

The gains consists of a cylindrical pellet of C.E. weighing approximately 1.35 grams wrapped in paper, and measures 0.59 inches in diameter and 0.3 inches in length. A small central cavity in the top of the gains accommodates a lead azide detonator weighing 0.3 grams, under a thin disc of tinfoil.

Additional safety

A brass cylinder, with a soldered on brass washer, placed over the striker safety cap forms an additional safety device. A lug on the washer forms an indicator and has a Japanese character on it meaning "safe".

ACTION

The fuze is armed by unscrewing the milled cap and removing the cylinder with washer and the safety cap. The milled cap is then replaced.

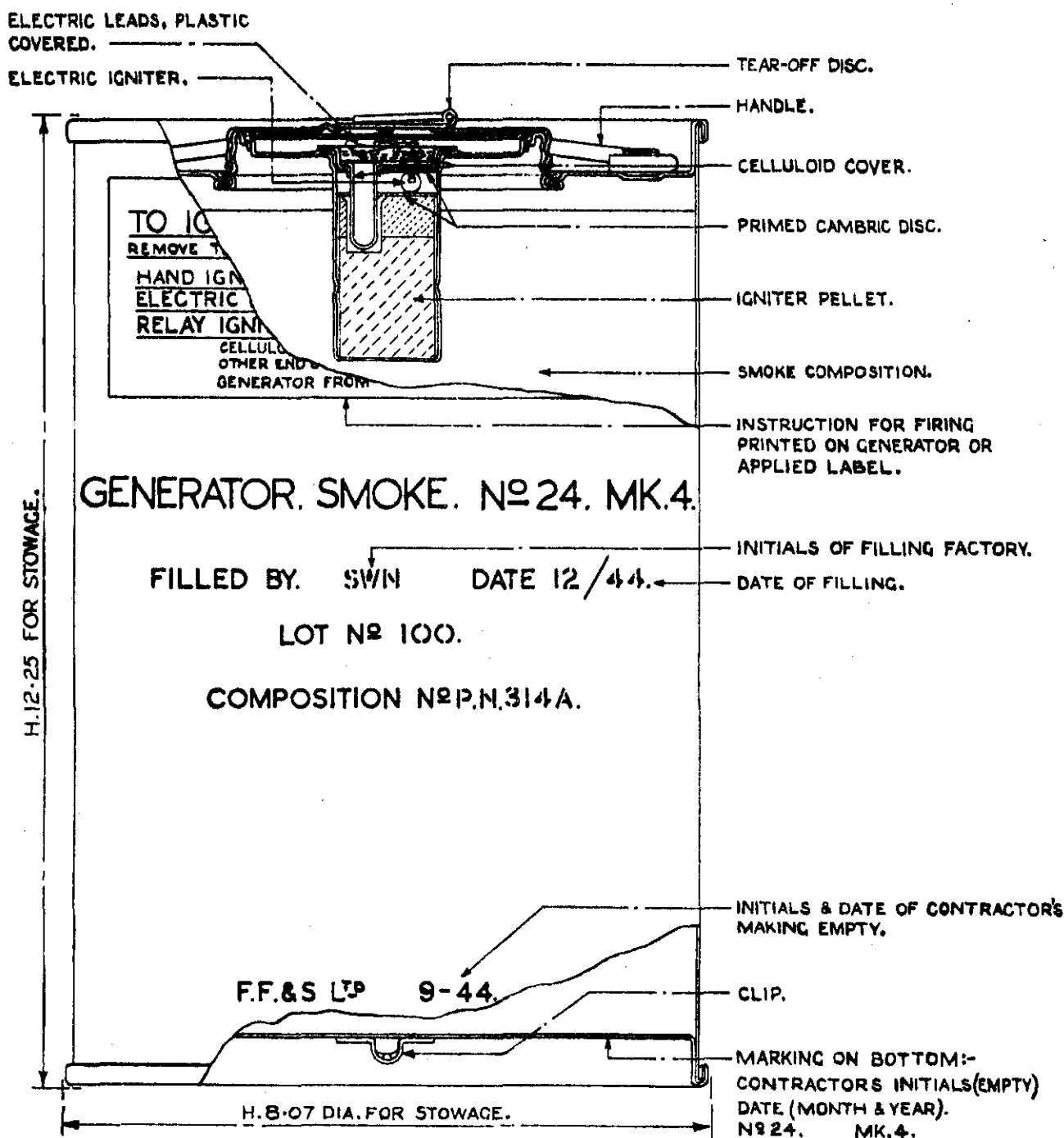
Pressure on the striker breaks the shearing wire and the striker is forced on the detonator by its spring. The flash from the detonator initiates the gunpowder pellet and gains which in turn detonates the exploder and main filling.

FIG. 559. (ITEM.1360.)
GENERATOR, SMOKE, N° 24.MK.4.

M.1848. **GENERATOR, SMOKE, N° 24, MK.4.**
TO IGNITE :-
REMOVE TEAR-OFF DISC & FOR
HAND IGNITION :- APPLY PORTFIRE TO CELLULOID.
ELECTRIC IGNITION :- CONNECT LEADS TO CIRCUIT.
RELAY IGNITION :- INSERT ONE END OF RELAY IGNITER IN TUBE OF CELLULOID COVER AND BIND IN POSITION WITH ELECTRIC LEADS. OTHER END OF IGNITER TO BE INSERTED IN CLIP AT BASE OF GENERATOR FROM WHICH RELAY IGNITION IS REQUIRED.

DETAILS OF INSTRUCTIONS ON LABEL.

EXTERIOR OF GENERATOR PAINTED GREEN
 MARKING PRINTED IN BLACK.



**FIG. 560. (ITEM.1361.)
GENERATOR, SMOKE, №24. MK.5.**

H.1631. GENERATOR, SMOKE, №24, №5.
TO IGNITE:-
REMOVE TEAR-OFF DISC & FOR
HAND IGNITION:- APPLY PORTFIRE TO CELLULOID.
ELECTRIC IGNITION:- CONNECT LEADS TO CIRCUIT.
RELAY IGNITION:- INSERT ONE END OF RELAY IGNITER IN DEPRESSION IN CELLULOID AND BIND IN POSITION WITH ELECTRIC LEADS. OTHER END OF IGNITER TO BE INSERTED IN CLIP AT BASE OF GENERATOR FROM WHICH RELAY IGNITION IS REQUIRED.

DETAILS OF INSTRUCTIONS ON LABEL.

EXTERIOR OF GENERATOR PAINTED GREEN
MARKING PRINTED IN BLACK.

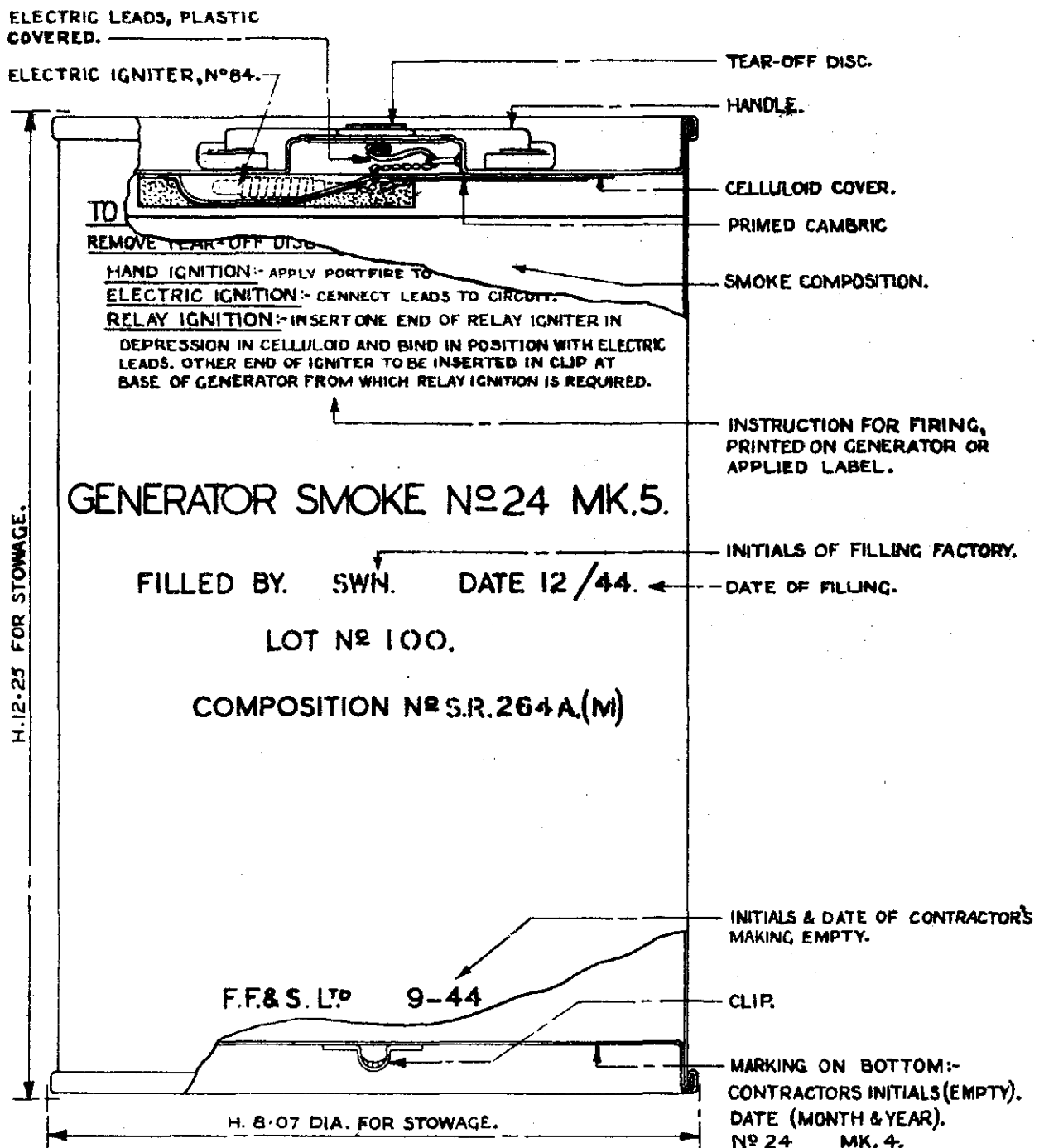


FIG. 561 (ITEM.1352)
GENERATOR, SMOKE, N°8, MK.6.

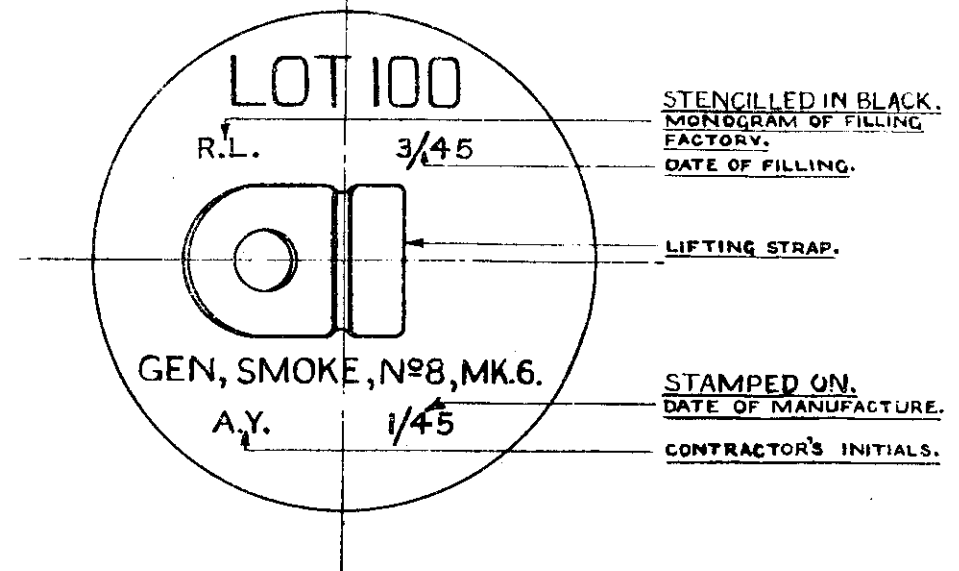
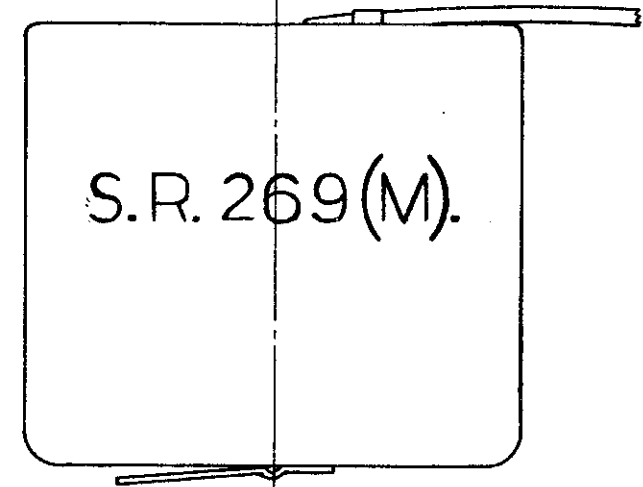
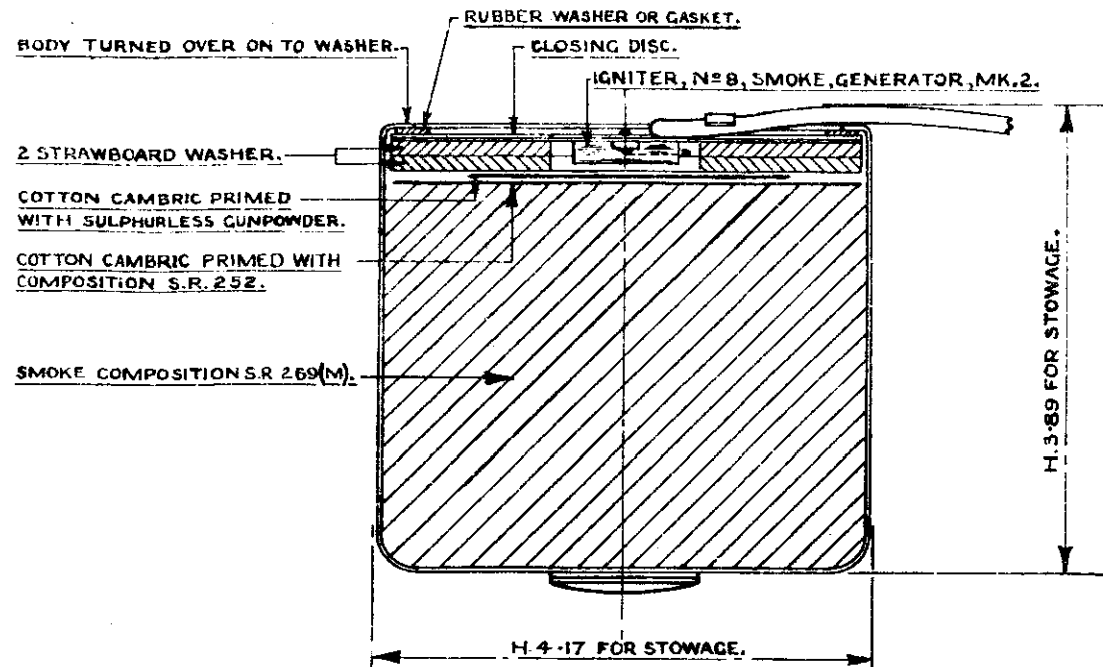
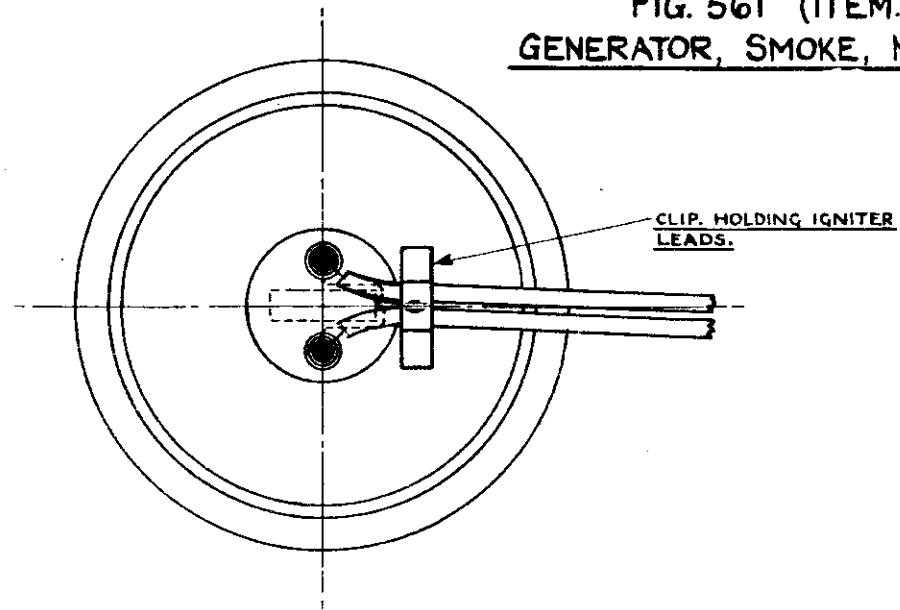


FIG. 562. (ITEM.1362)
GENERATOR, CHEMICAL, N°30, MK.I.

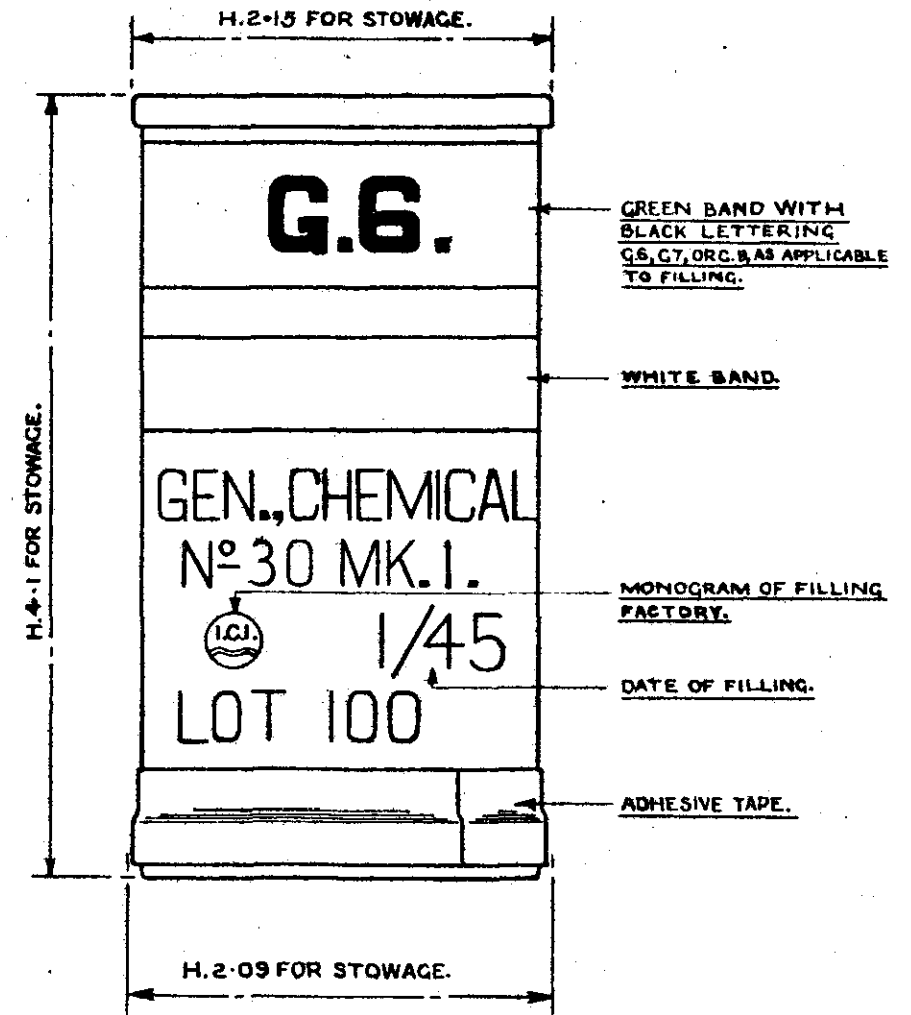
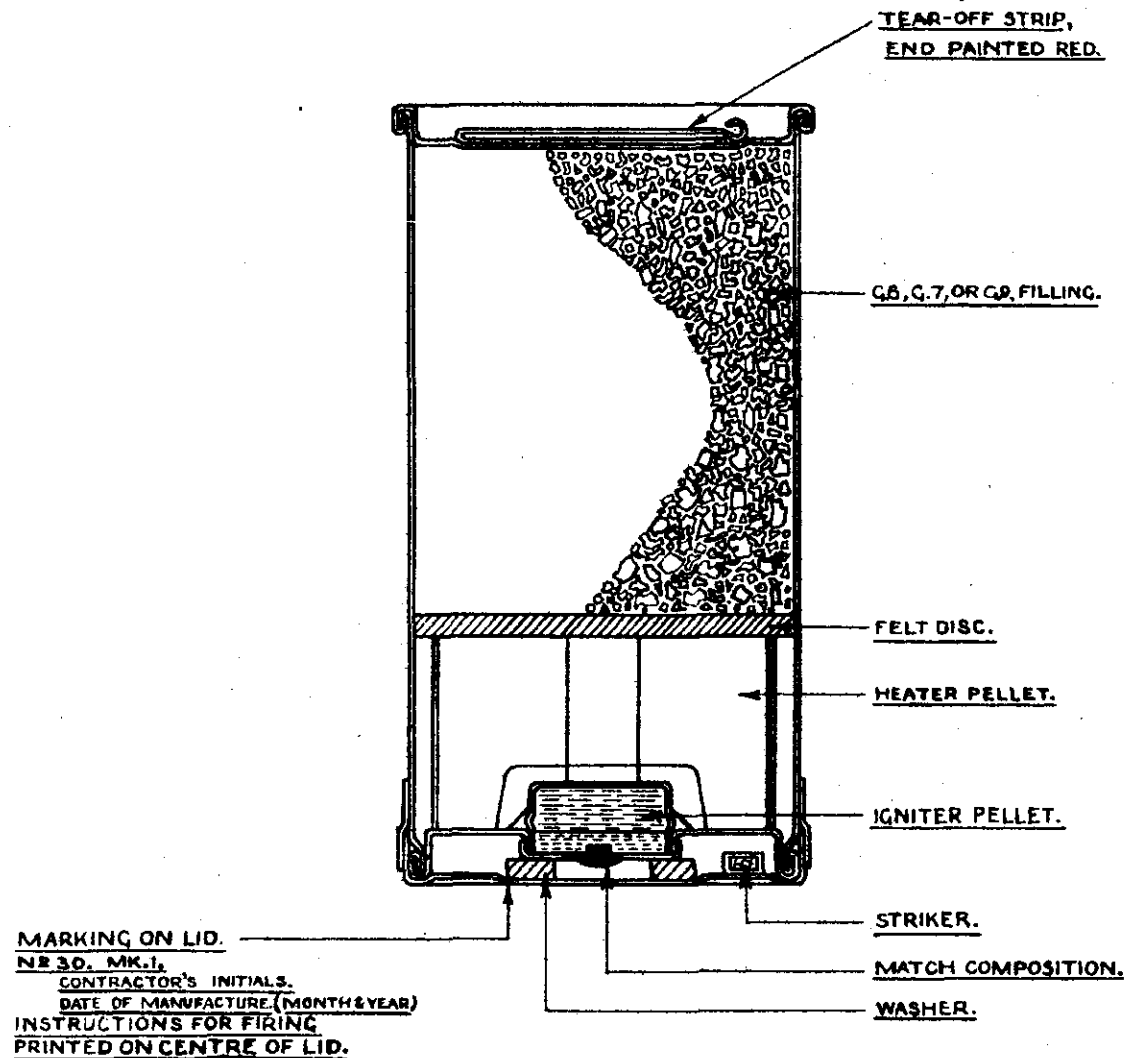


FIG. 563. (ITEM.) 1363.)

BOMB M.L. SIGNAL, 2 INCH MORTAR. { SINGLE STAR RED MK.2.
SINGLE STAR GREEN MK.2.

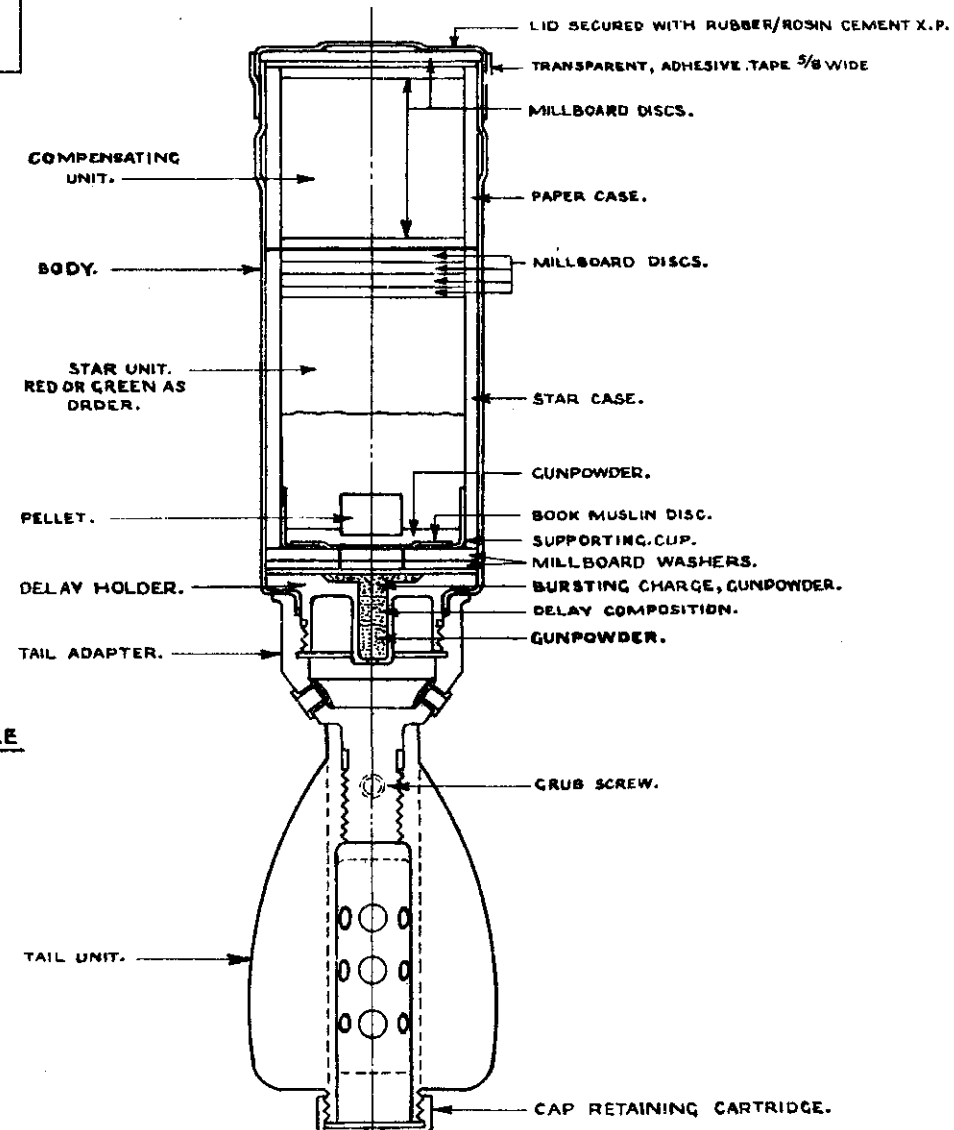
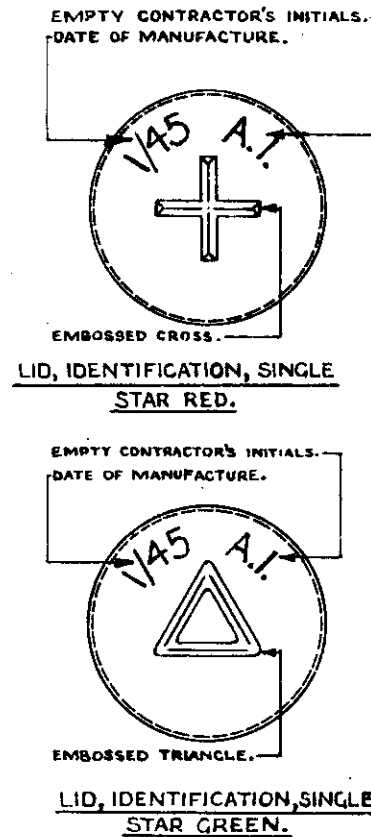
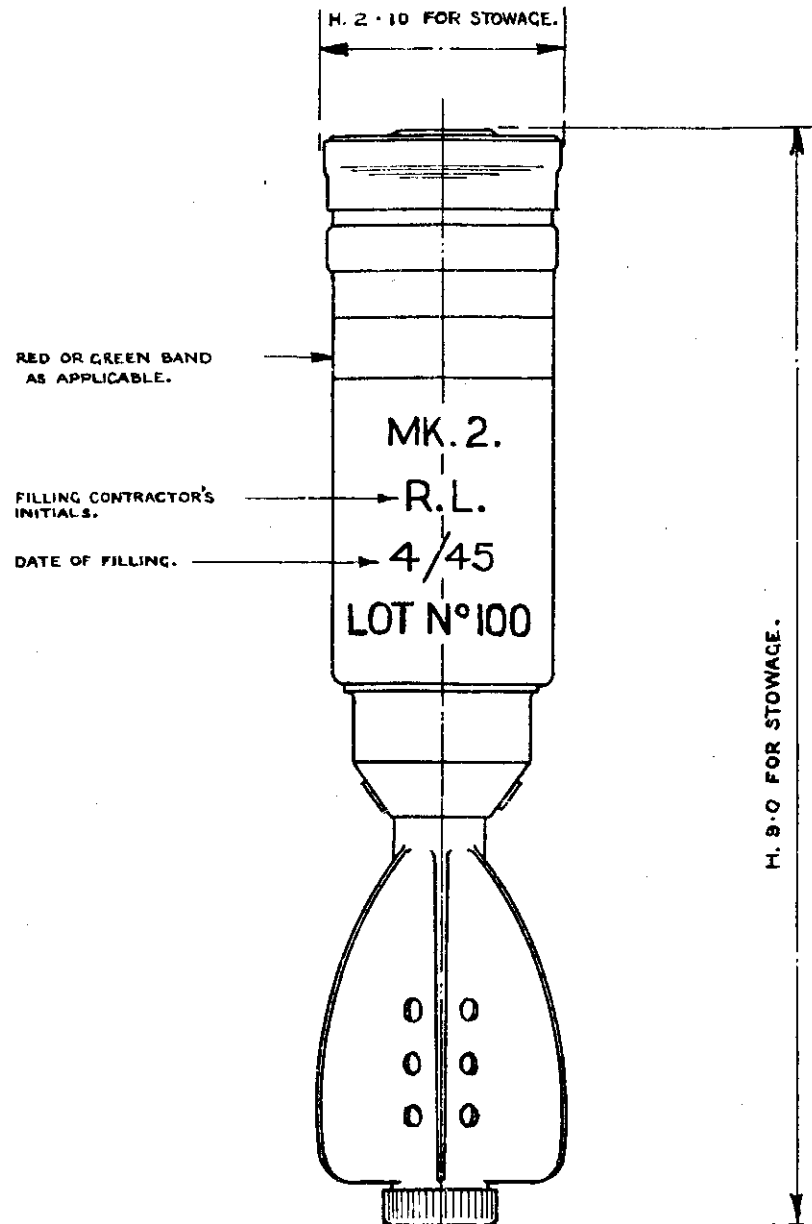
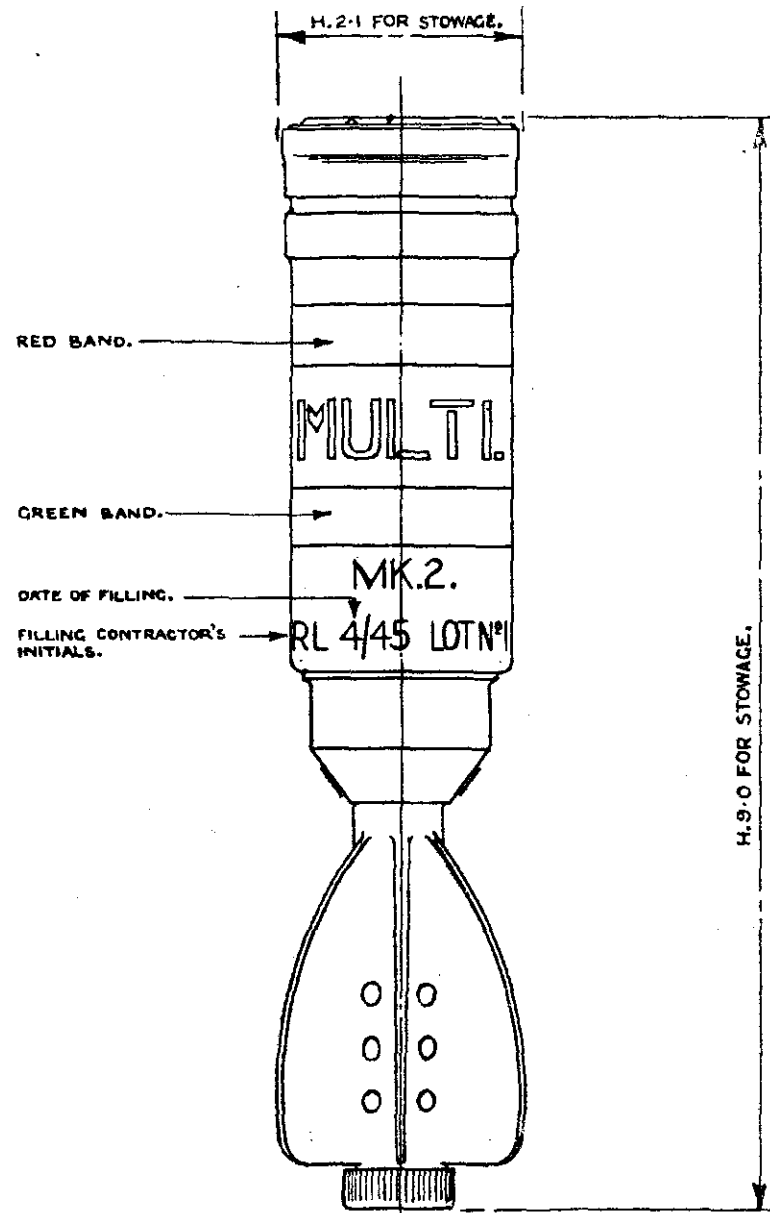
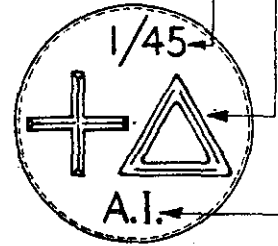


FIG. 565. (ITEM. 1363.)
BOMB M.L. SIGNAL 2-INCH MORTAR, MULTI-STAR RED AND GREEN MK.2.



EMPTY CONTRACTOR'S INITIALS.
 EMBOSSED CROSS AND TRIANGLE.
 DATE OF MANUFACTURE.



LID, IDENTIFICATION,
 MULTI-STAR, RED & GREEN.

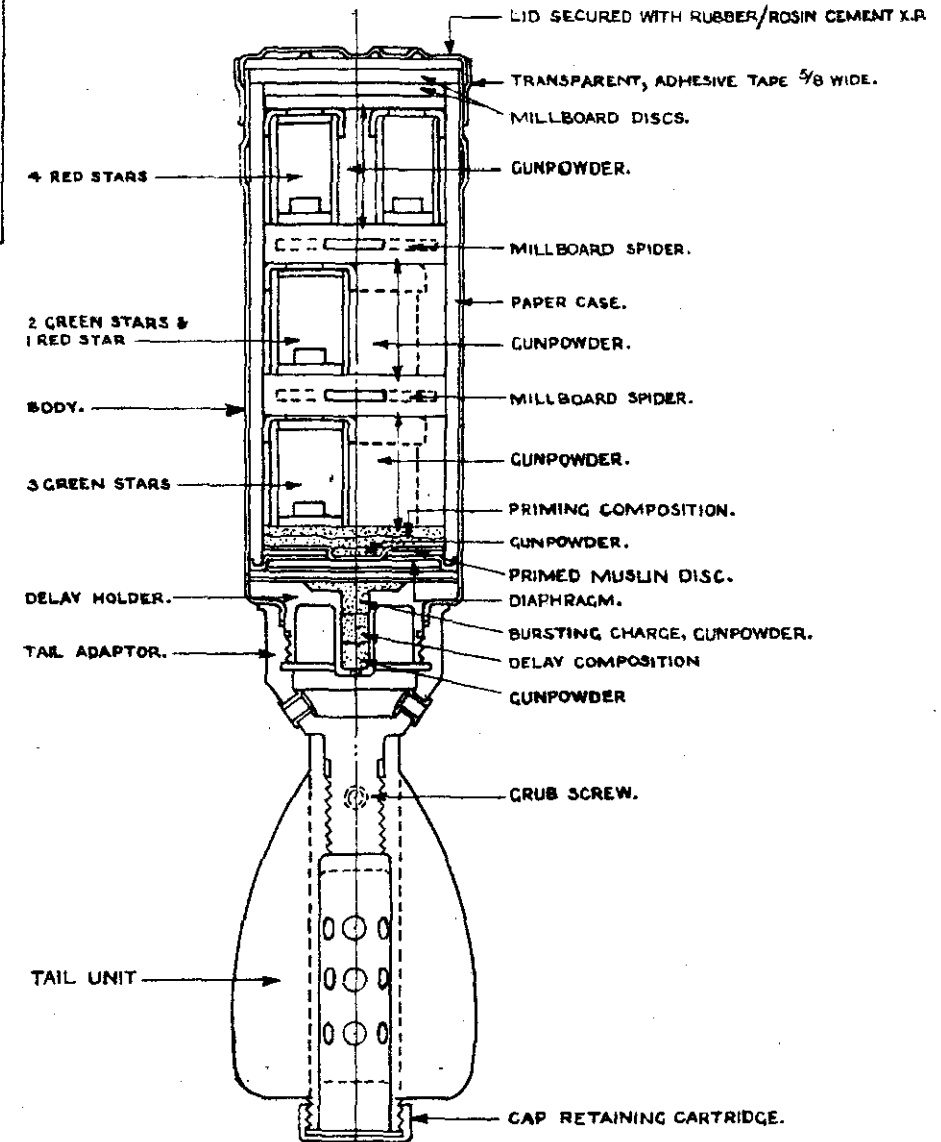
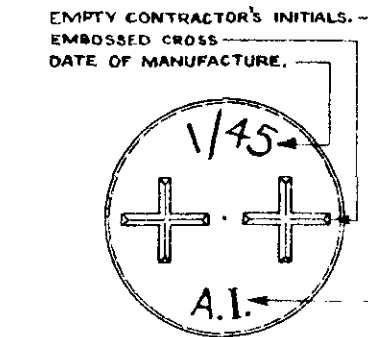
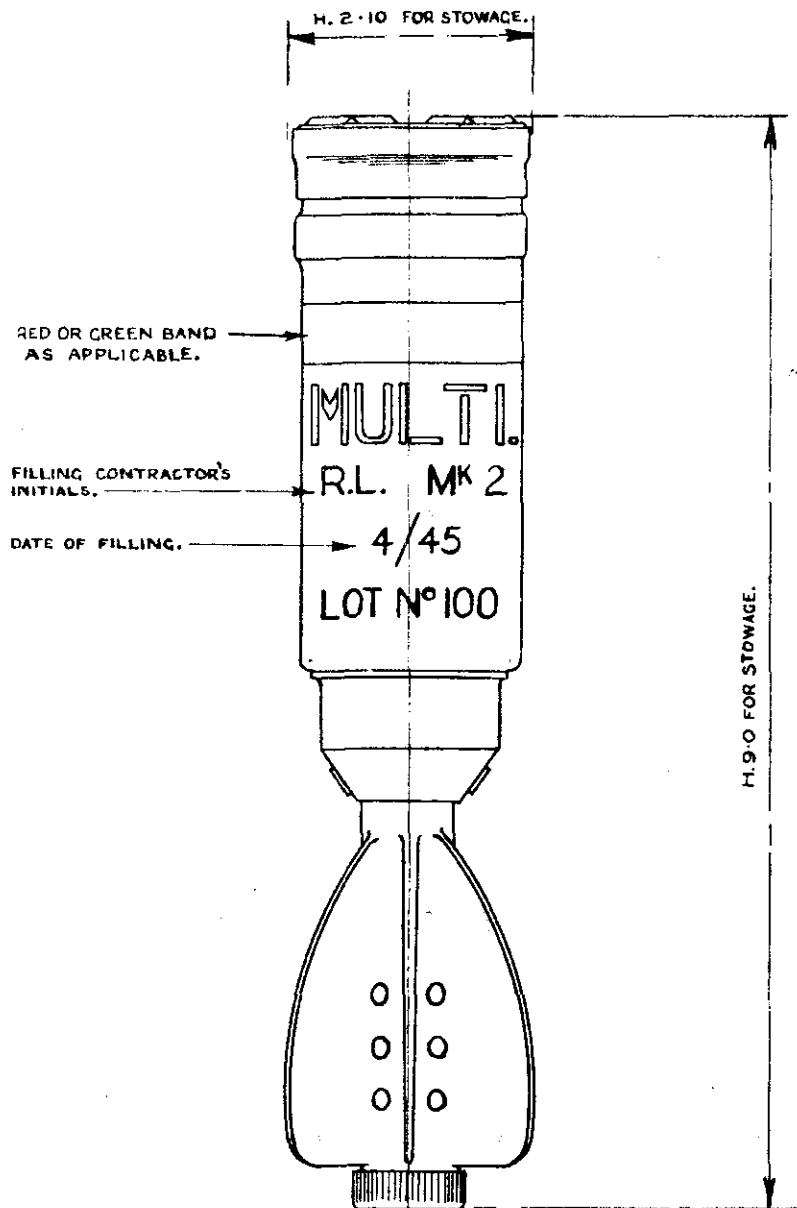
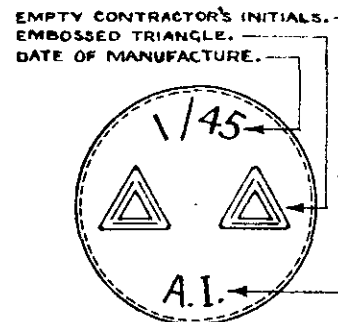


FIG. 564. (ITEM.1363.)
BOMB M.L. SIGNAL, 2-INCH MORTAR, { MULTI-STAR RED MK 2
MULTI-STAR GREEN MK 2.



LID, IDENTIFICATION, MULTI-STAR RED.



LID, IDENTIFICATION, MULTI-STAR GREEN.

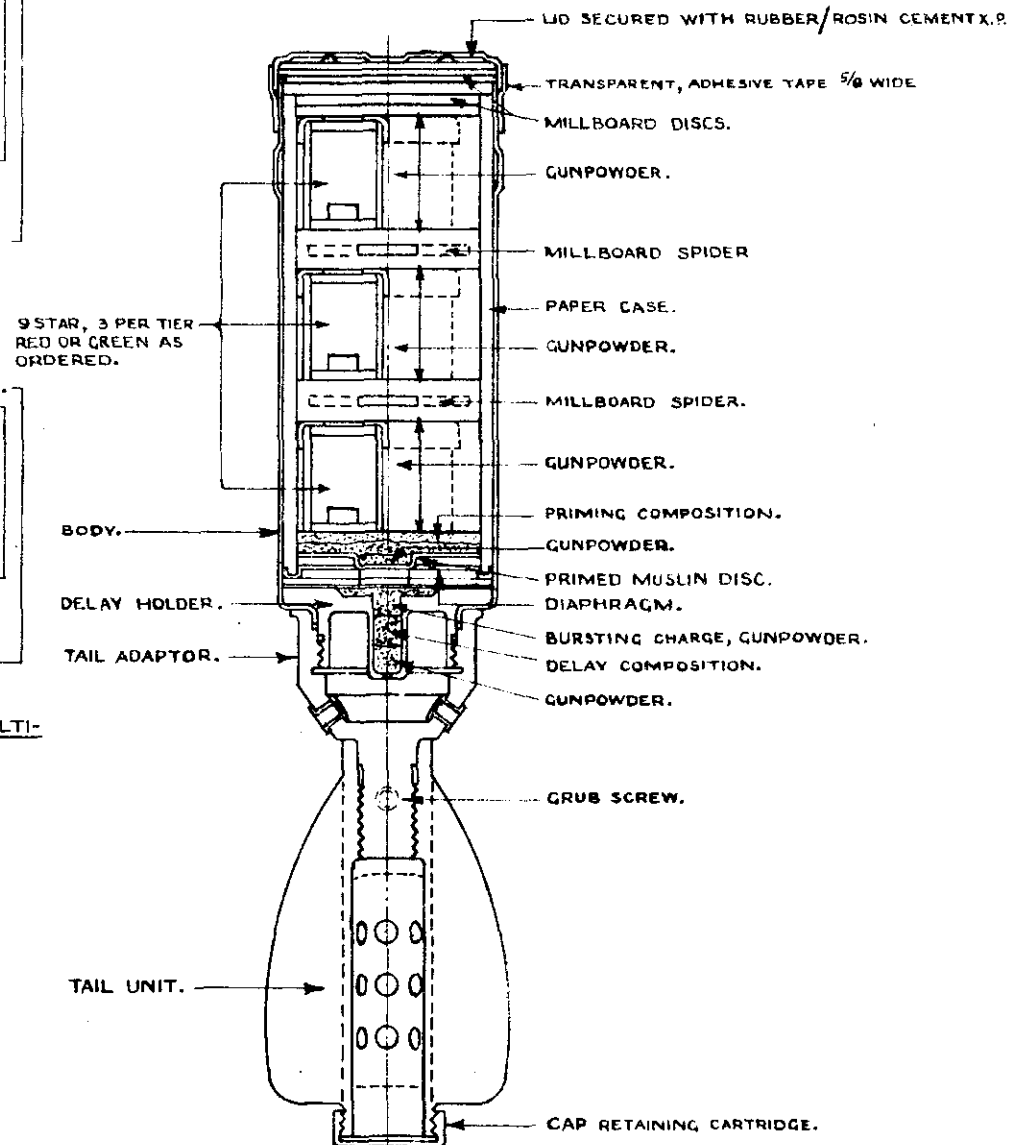
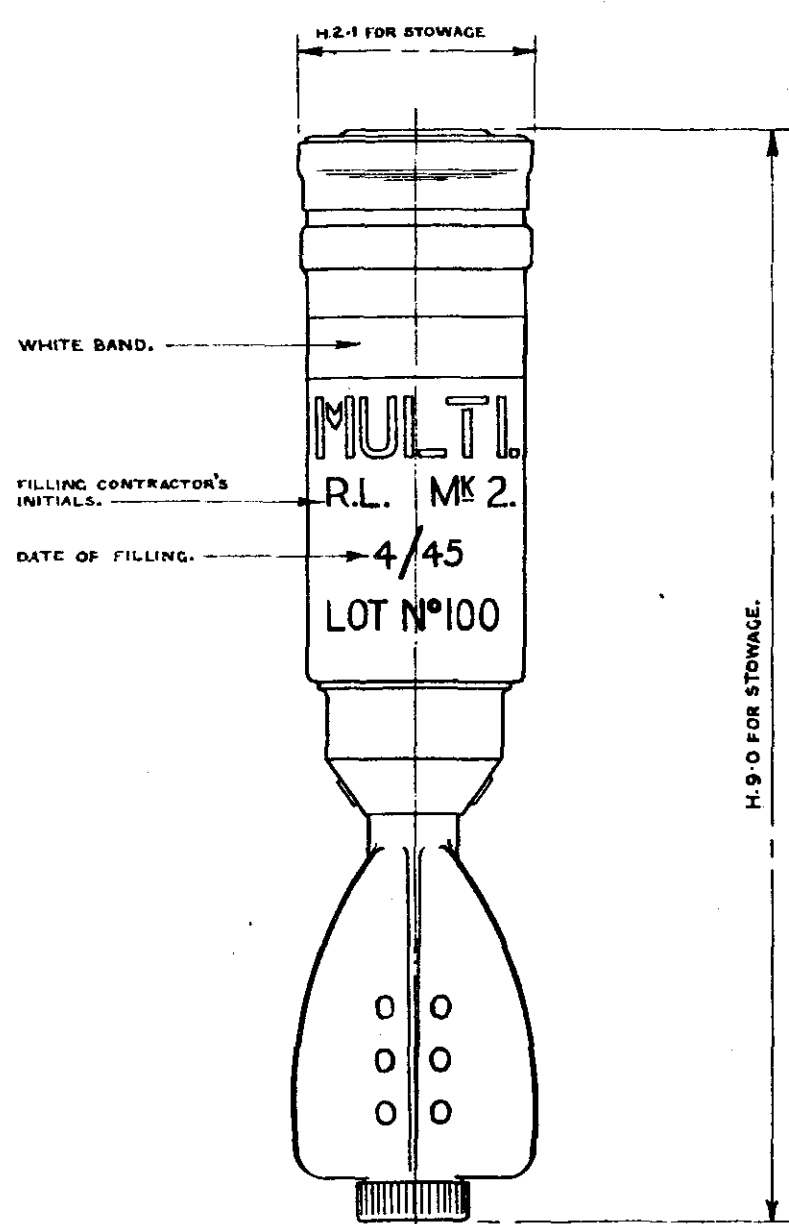


FIG. 566. (ITEM. 1363.)
BOMB M.L. SIGNAL, 2 INCH MORTAR, MULTI - STAR WHITE MK. 2.



EMPTY CONTRACTOR'S INITIALS.
 EMBOSSED PARALLEL BARS.
 DATE OF MANUFACTURE.

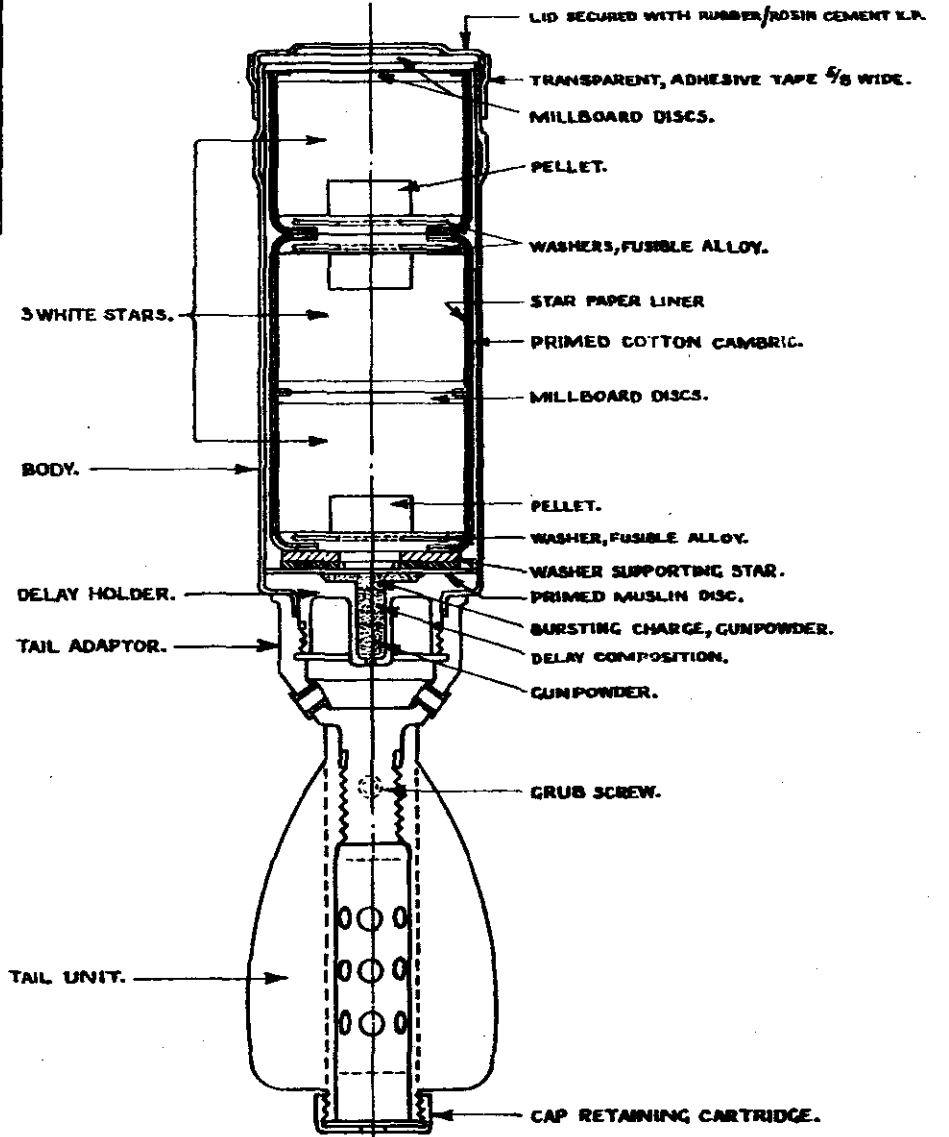
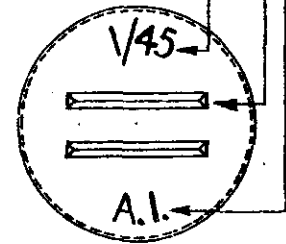


FIG. 567. (ITEM. 1366)
 SIGNAL, 10 STAR RED, GREEN, YELLOW, RED & GREEN, OR RED & YELLOW, MARKI

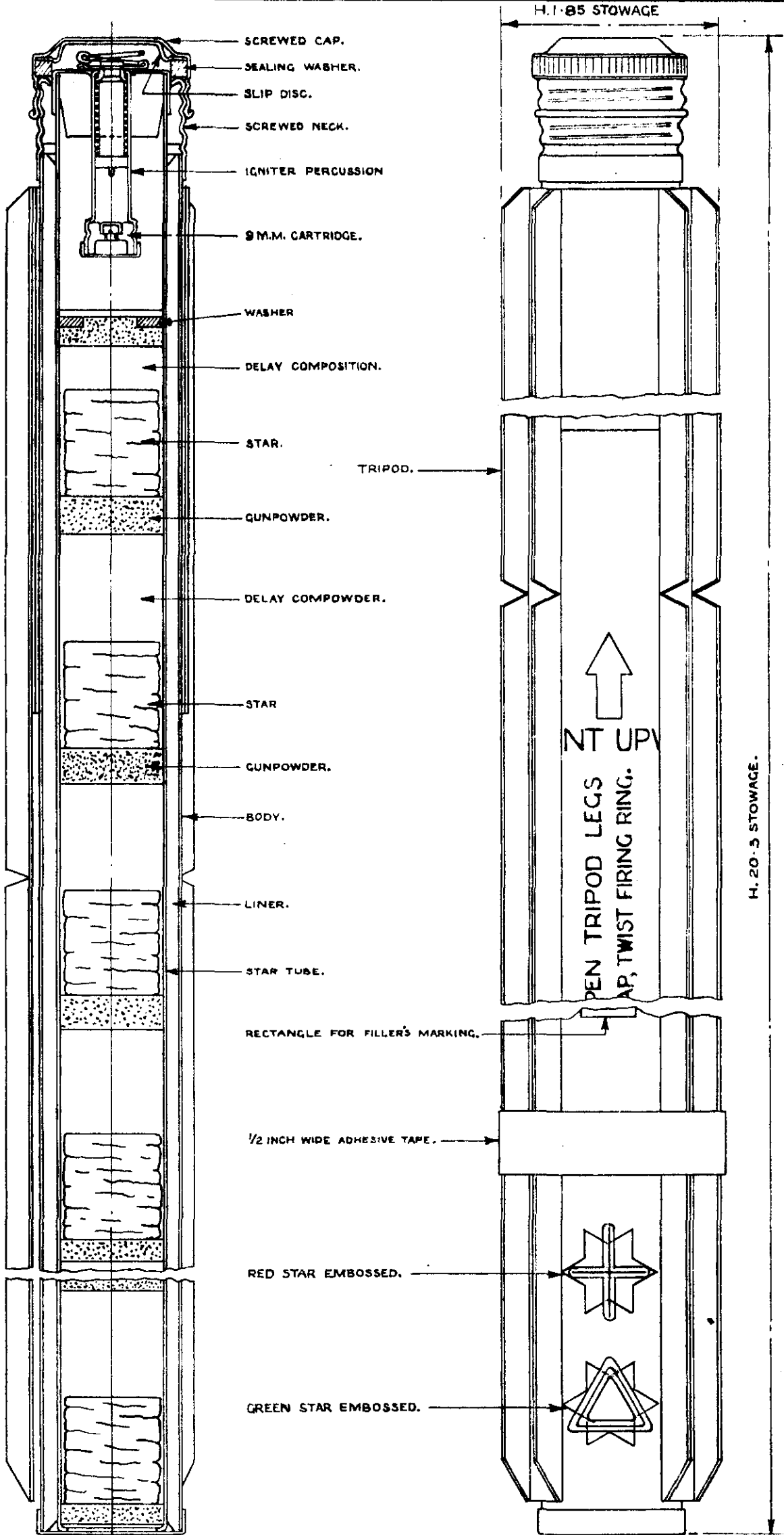


FIG. 568 (ITEM.1365)
SIGNAL 2 STAR RED & GREEN MARK 1/1

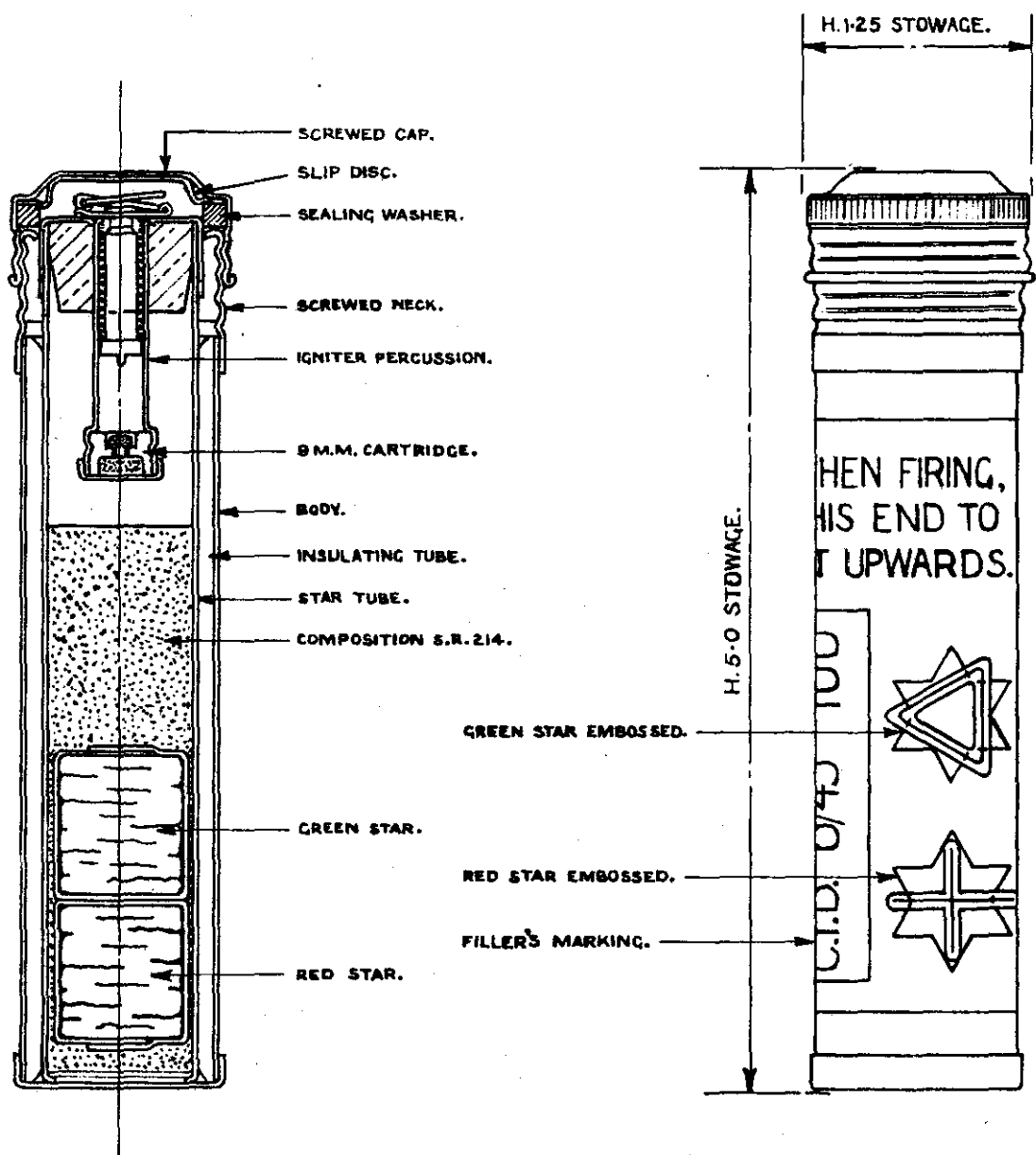


FIG 569 (ITEM.1365)
SIGNAL DOUBLE STAR, RED, GREEN, OR RED AND GREEN MK. I.

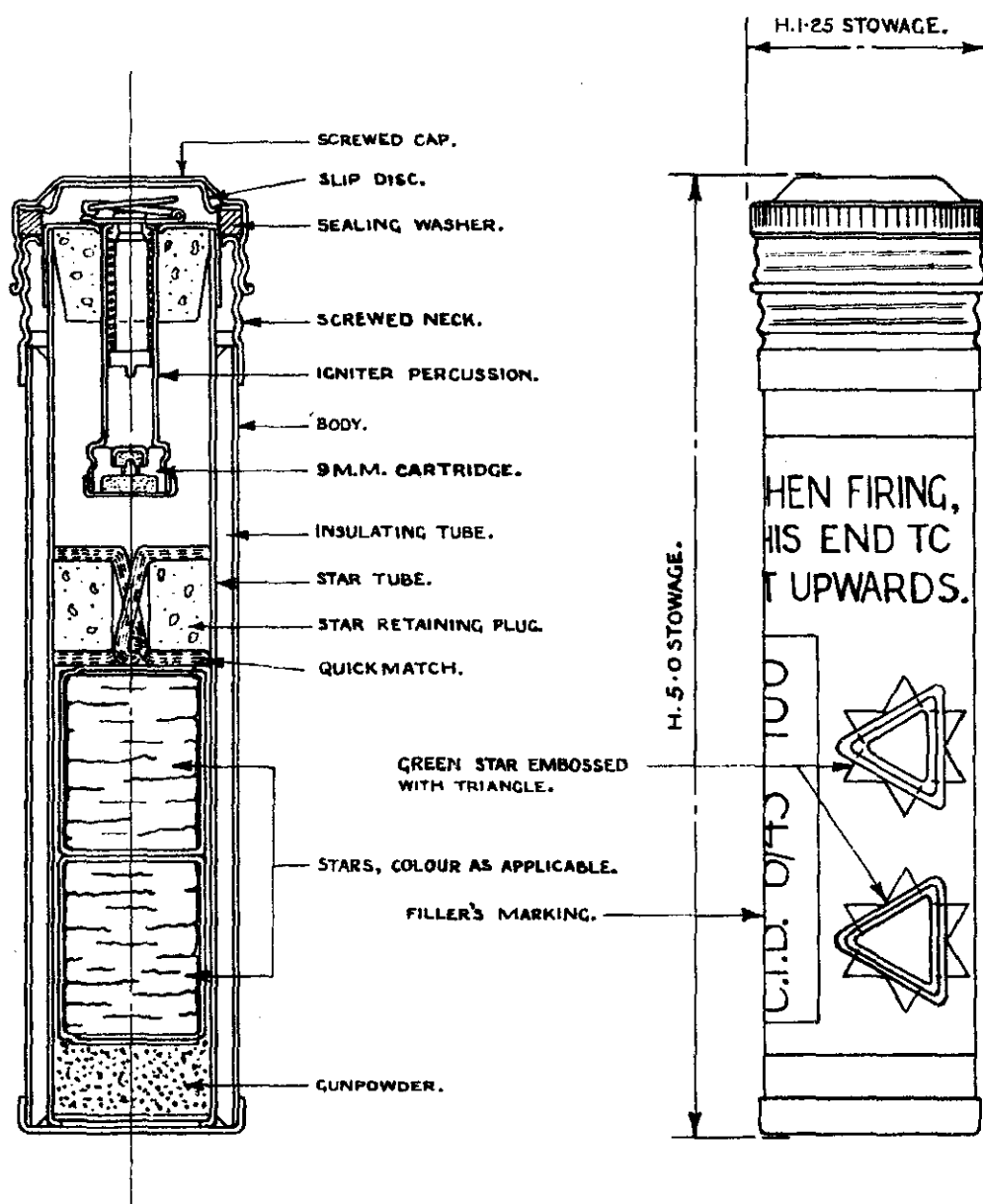
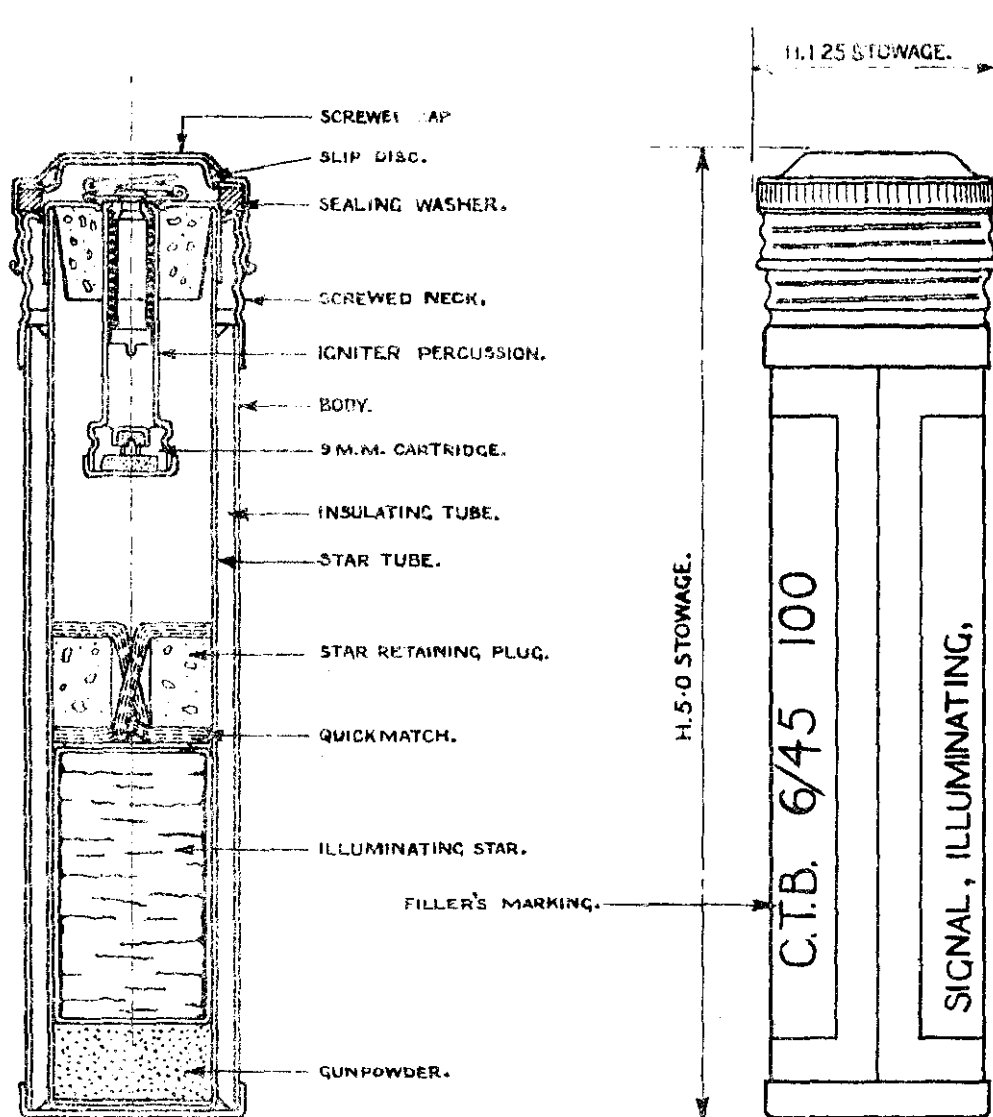


FIG. 570 (ITEM.1365)
SIGNAL, ILLUMINATING, MARK I.



SETTING HEAD.

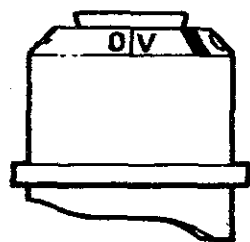
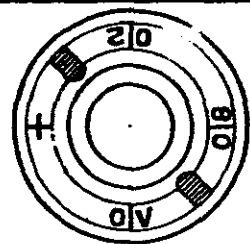
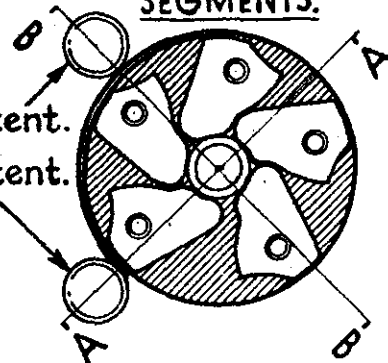
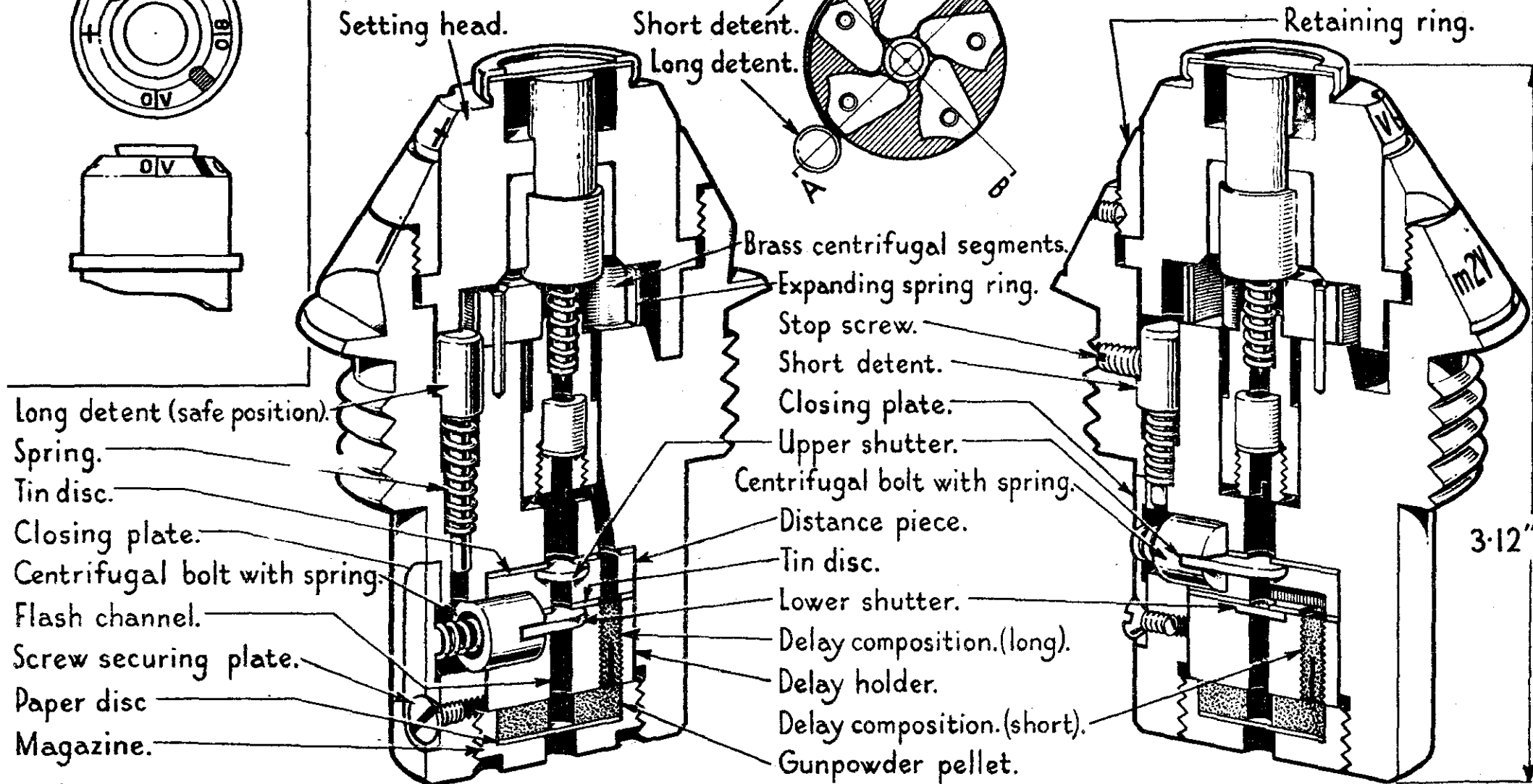


Fig. 571 (Item 1386)

BRASS CENTRIFUGAL SEGMENTS.



GERMAN FUZE AZ 23 UMG M 2V.



SECTION THROUGH A-A.

SECTION THROUGH B-B.

Fig. 572 (Item 1387)

GERMAN FUZE 3.7cm KZ40.

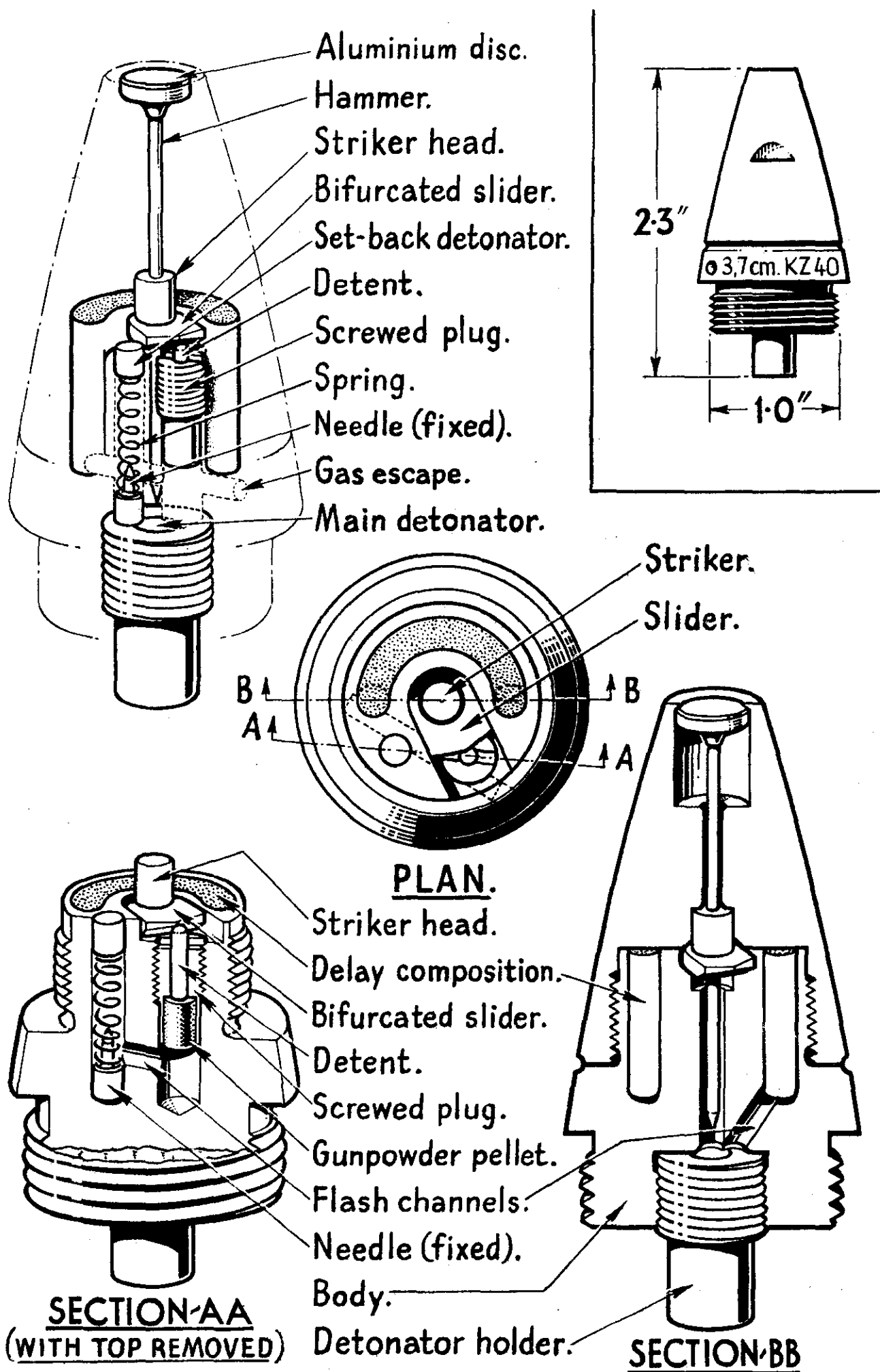


Fig. 573 (Item 1388)

GERMAN FUZES Zt. Z. S/30 & Zt. Z. S/30 Kurz.
(Trigger and safety catch arrangement.)

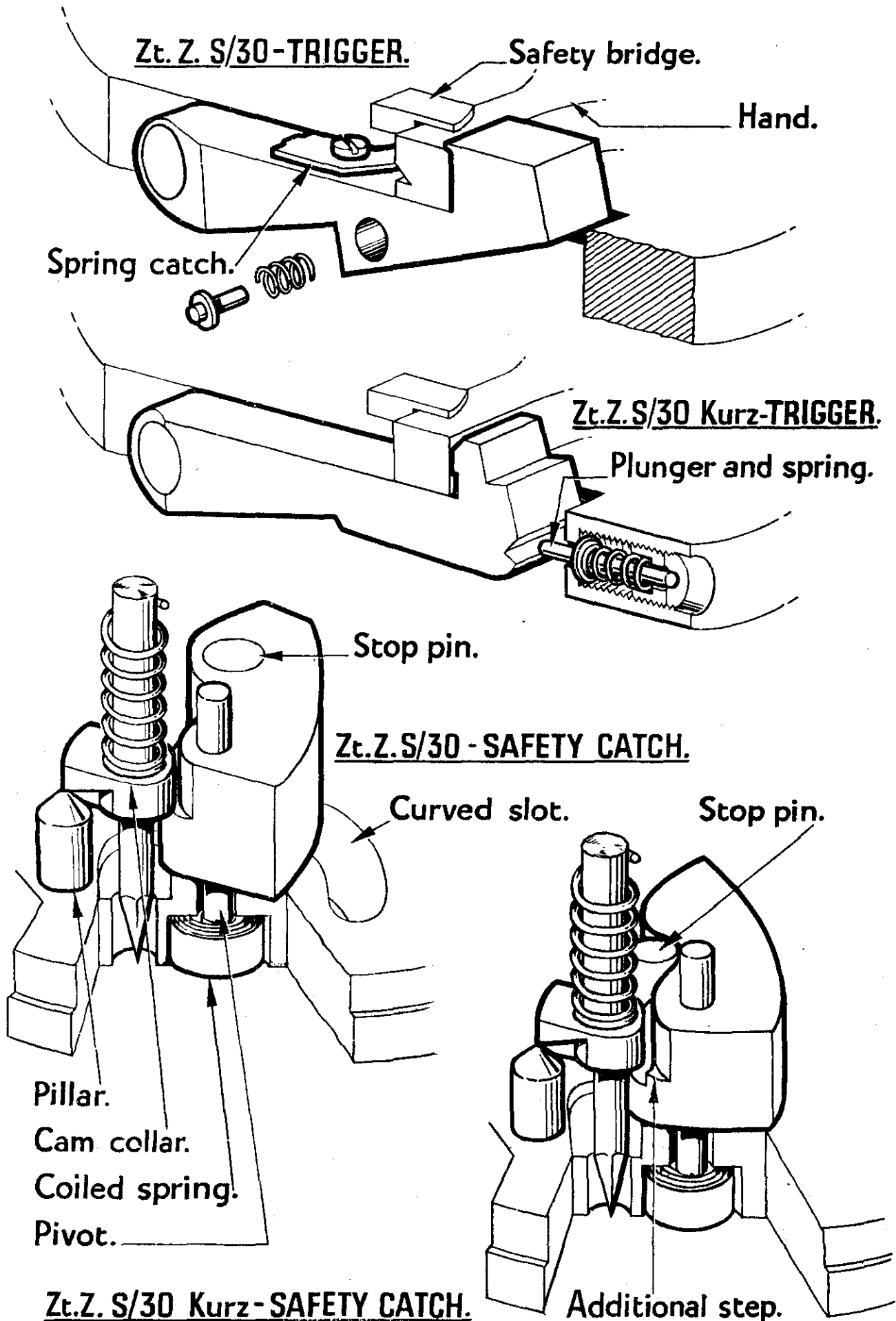


Fig. 574 (Item 1389)

GERMAN 88cm. Kw.K 43 HE. HOLLOW CHARGE SHELL
WITH TRACER (88 cm.Gr 39 HI).

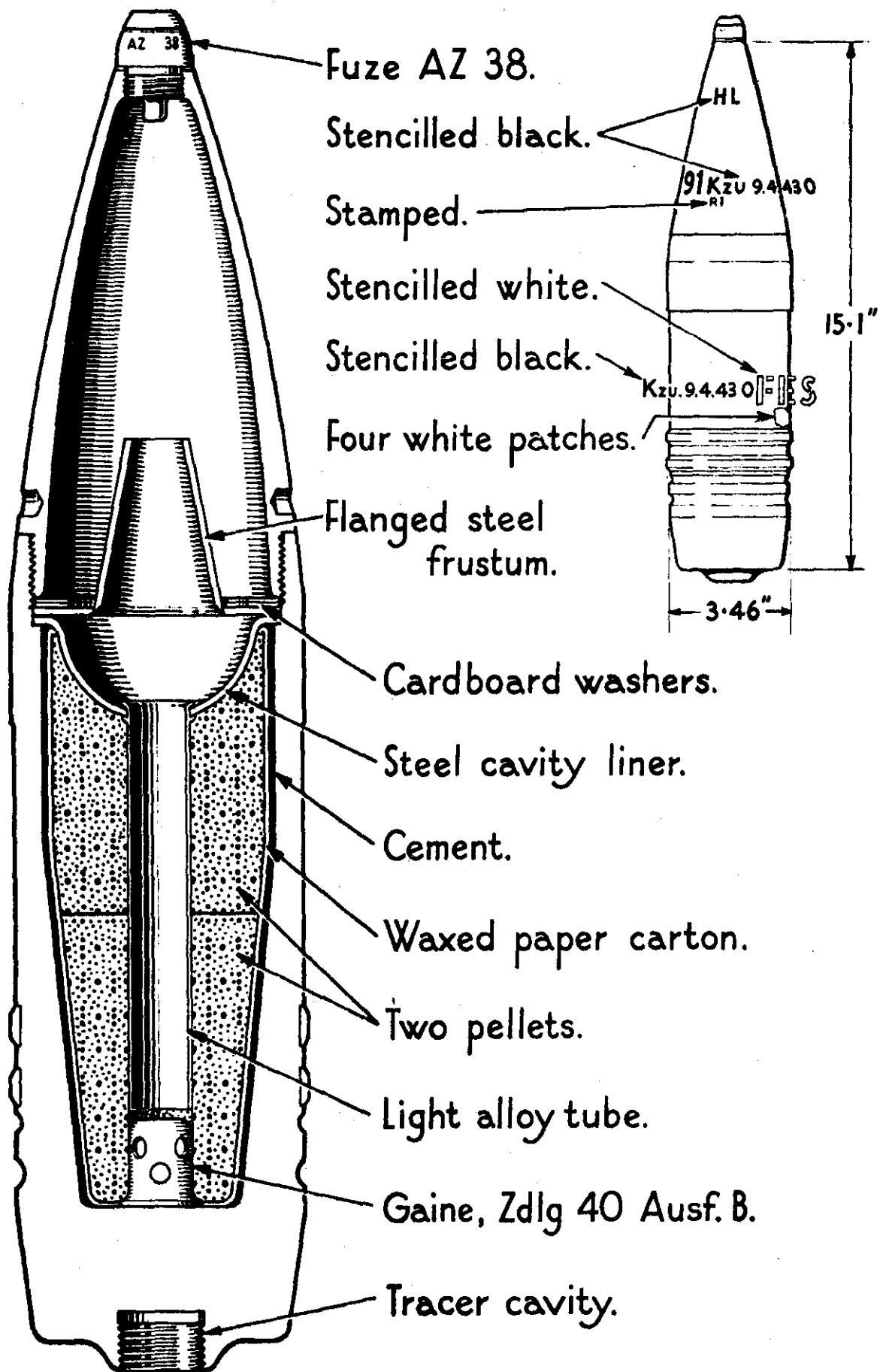


Fig. 575 (Item 1390)
GERMAN TRACER for 8.8 cm. HOLLOW CHARGE SHELL.

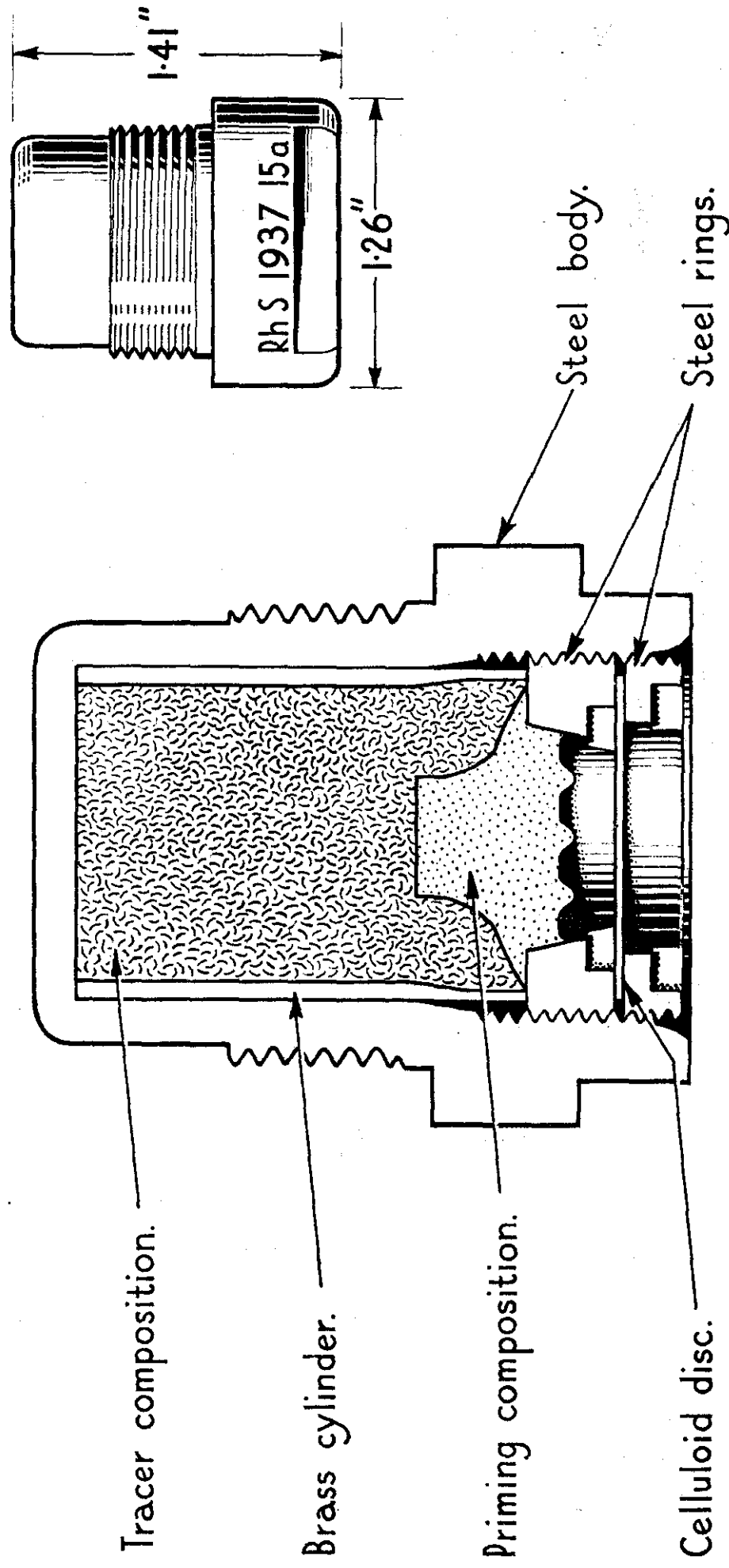


Fig. 576 (Item 1391)

GERMAN HOLLOW CHARGE A/Tk. BOMB...with PROJECTOR.
(Panzerfaust 60m.)

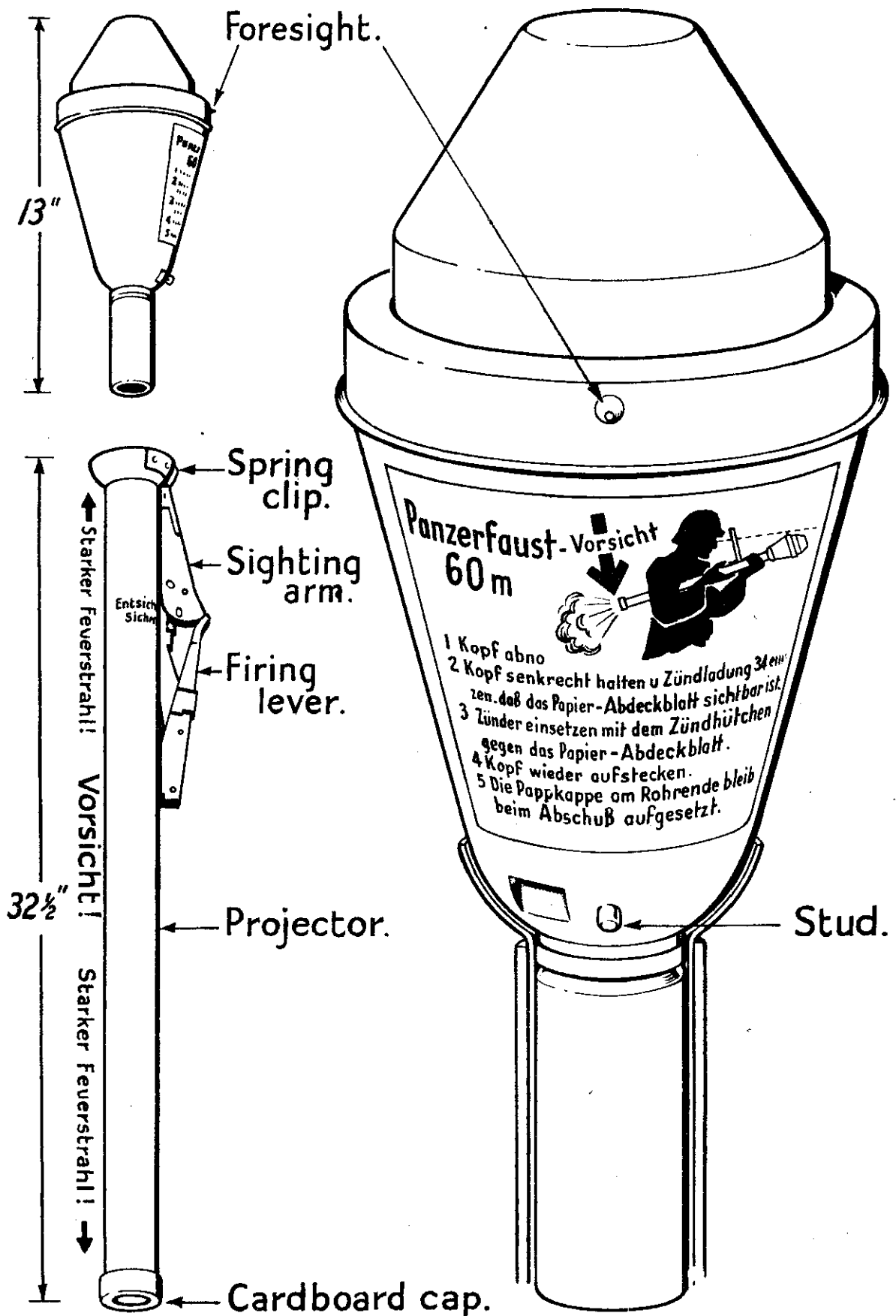
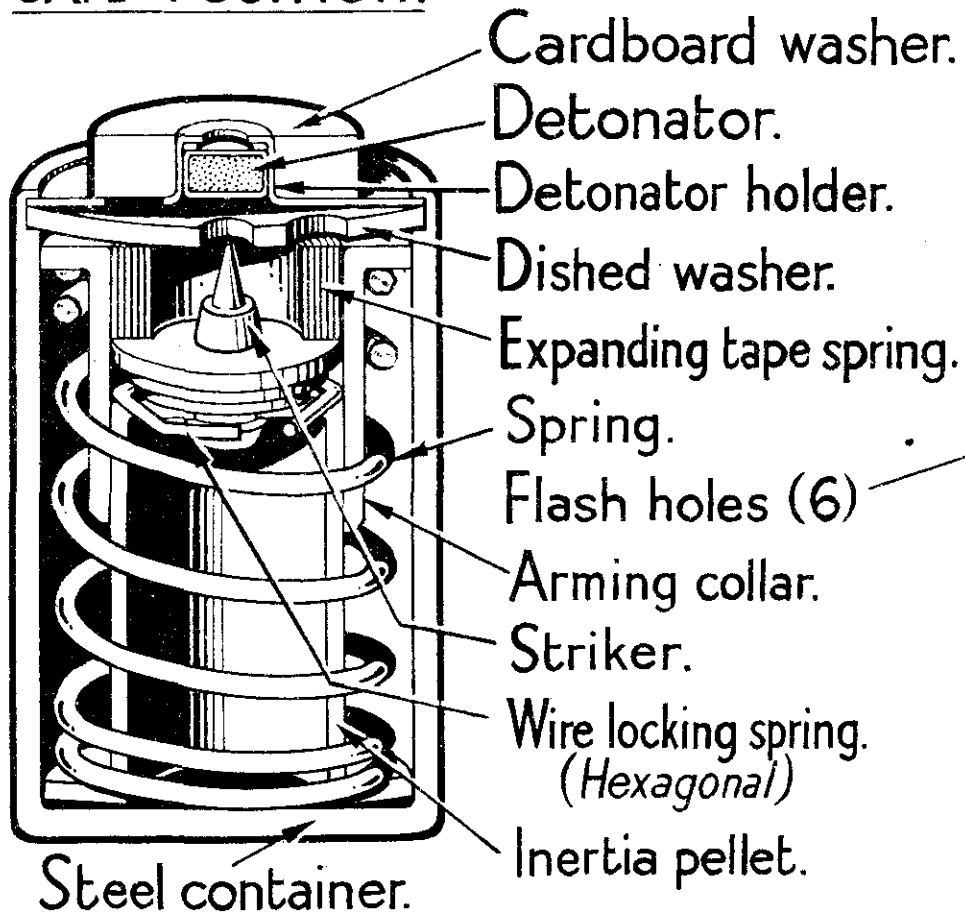


Fig. 577 (Item 1391)

GERMAN FUZE F.P.Z 8001
for HC ANTI-TANK BOMB (Panzerfaust)

"SAFE" POSITION.



"ARMED" POSITION.

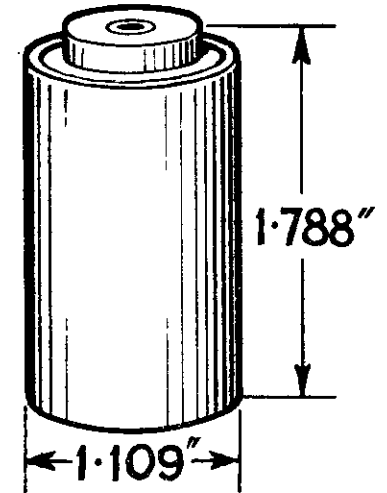
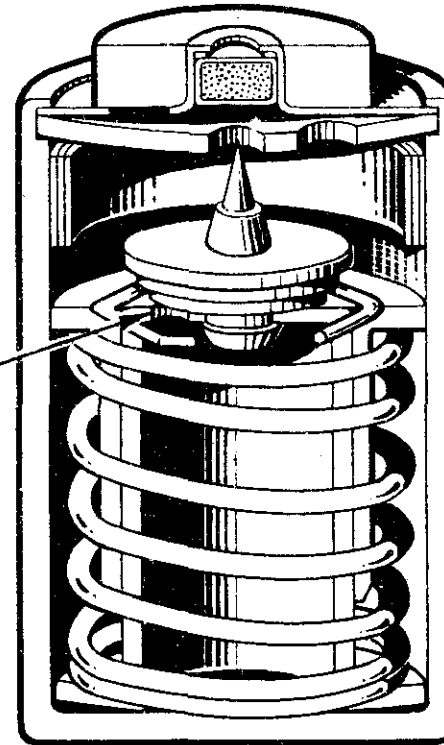


Fig. 578 (Item 1391)

GERMAN HOLLOW CHARGE A/Tk. BOMB with PROJECTOR.
(Panzerfaust 60m)

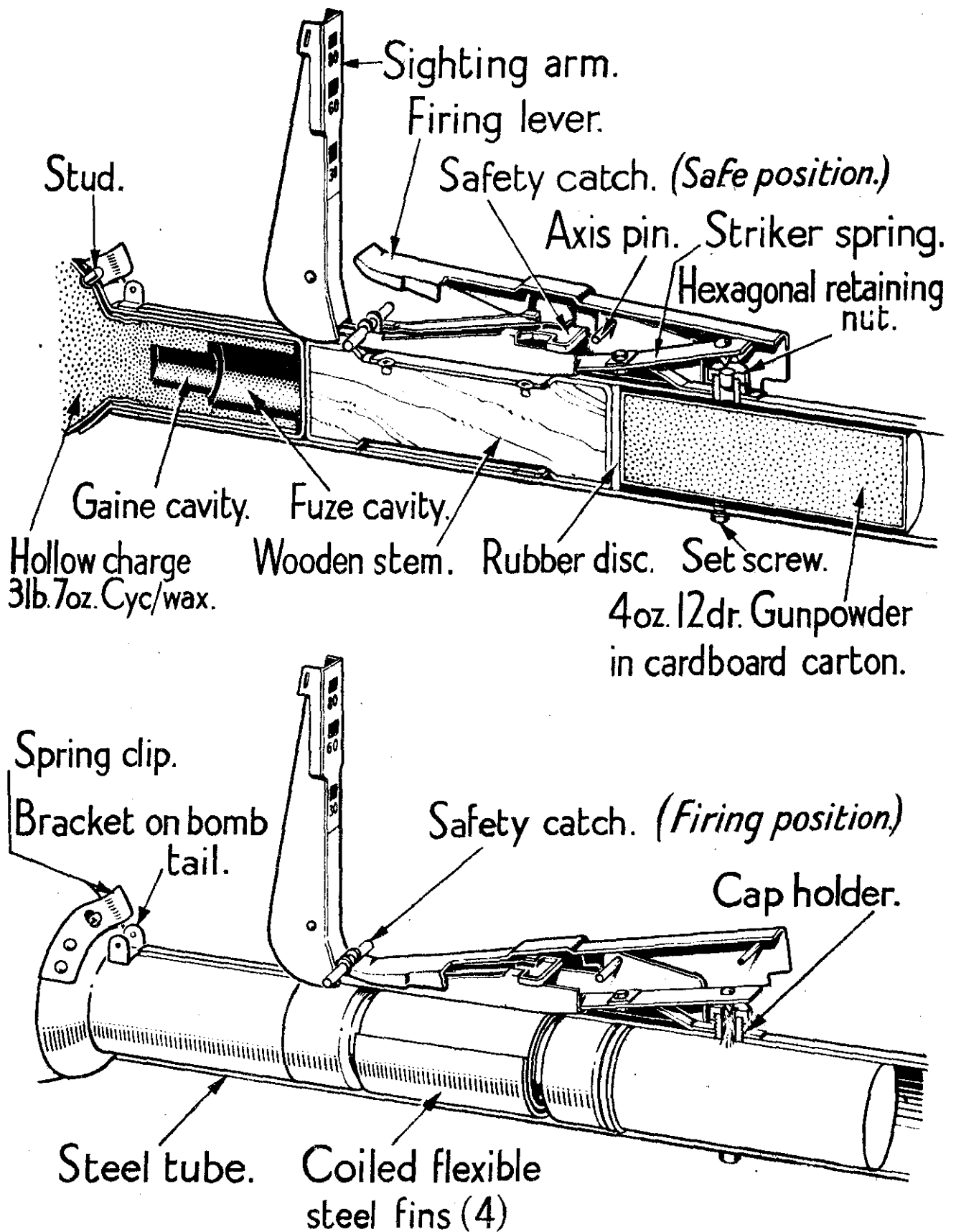


Fig. 579 (Item 1392)
GERMAN, 2.6 cm. H.E. PISTOL CARTRIDGE.

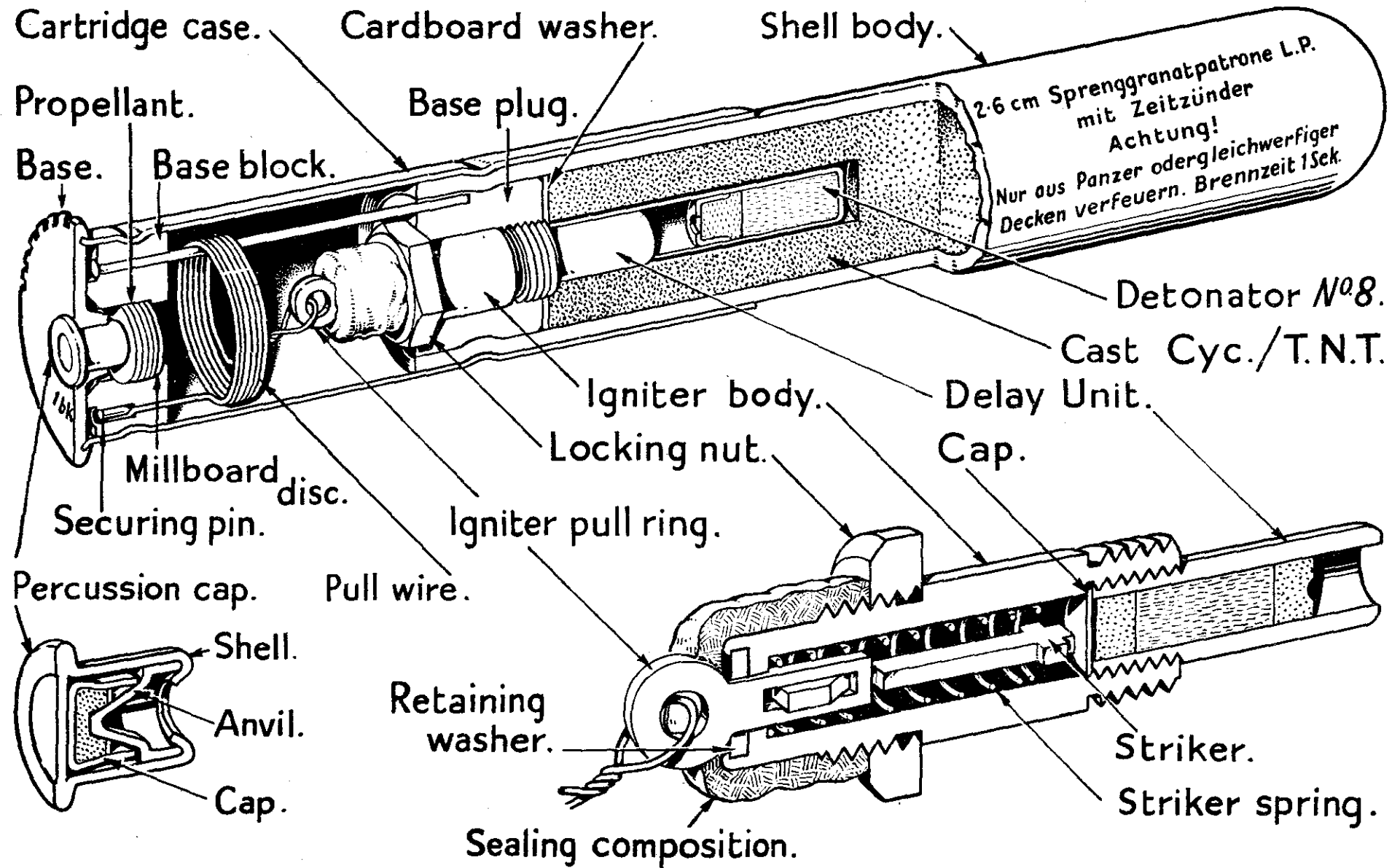
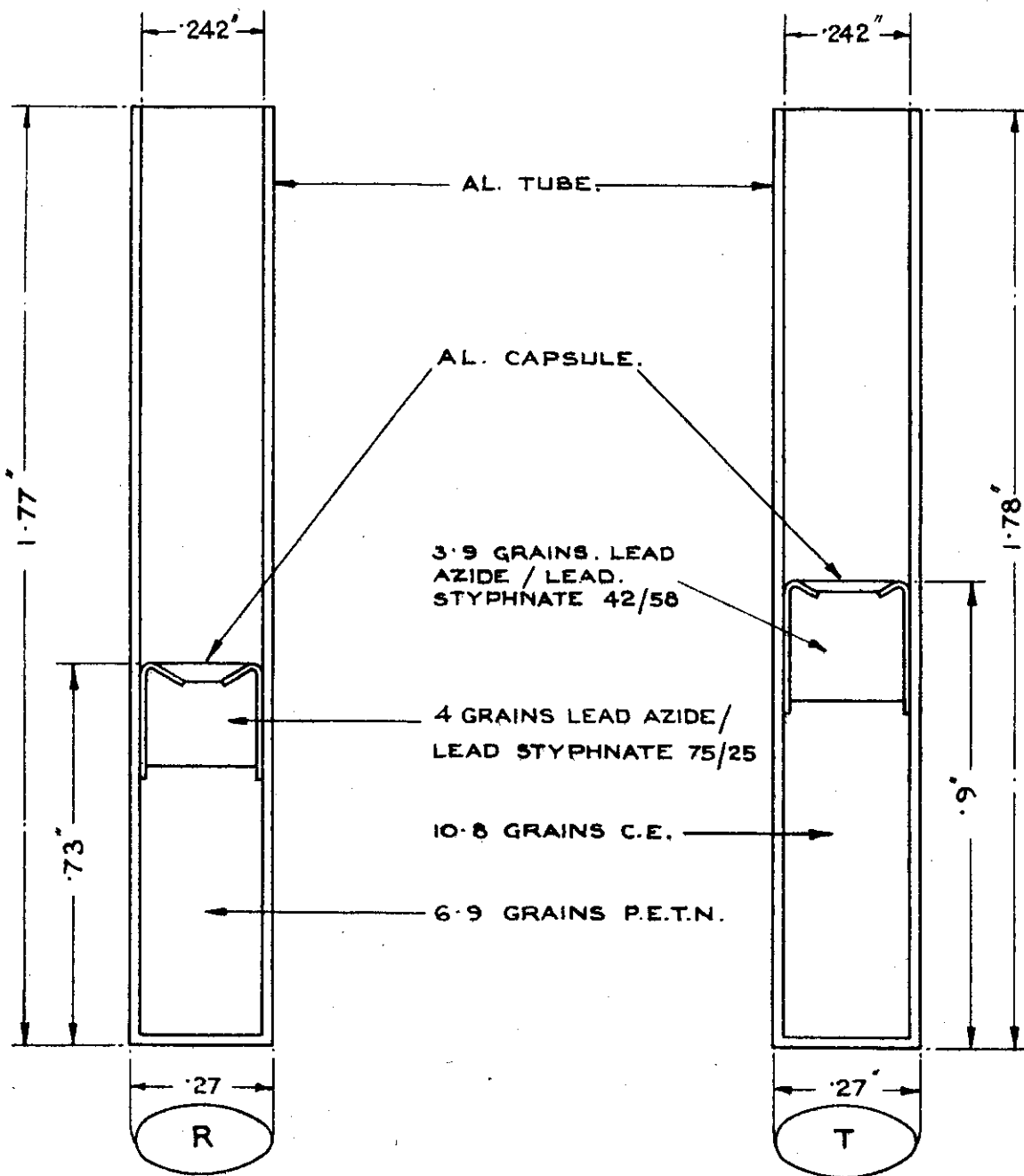


Fig. 580 (Item 1392).
GERMAN DETONATORS No 8.
 (Methods of filling.)



GERMAN 8.6 c.m. ROCKET H.E. PROJECTILE. (8.6 c.m. R Sprgu 400).

Fig. 581 (Item 1393)

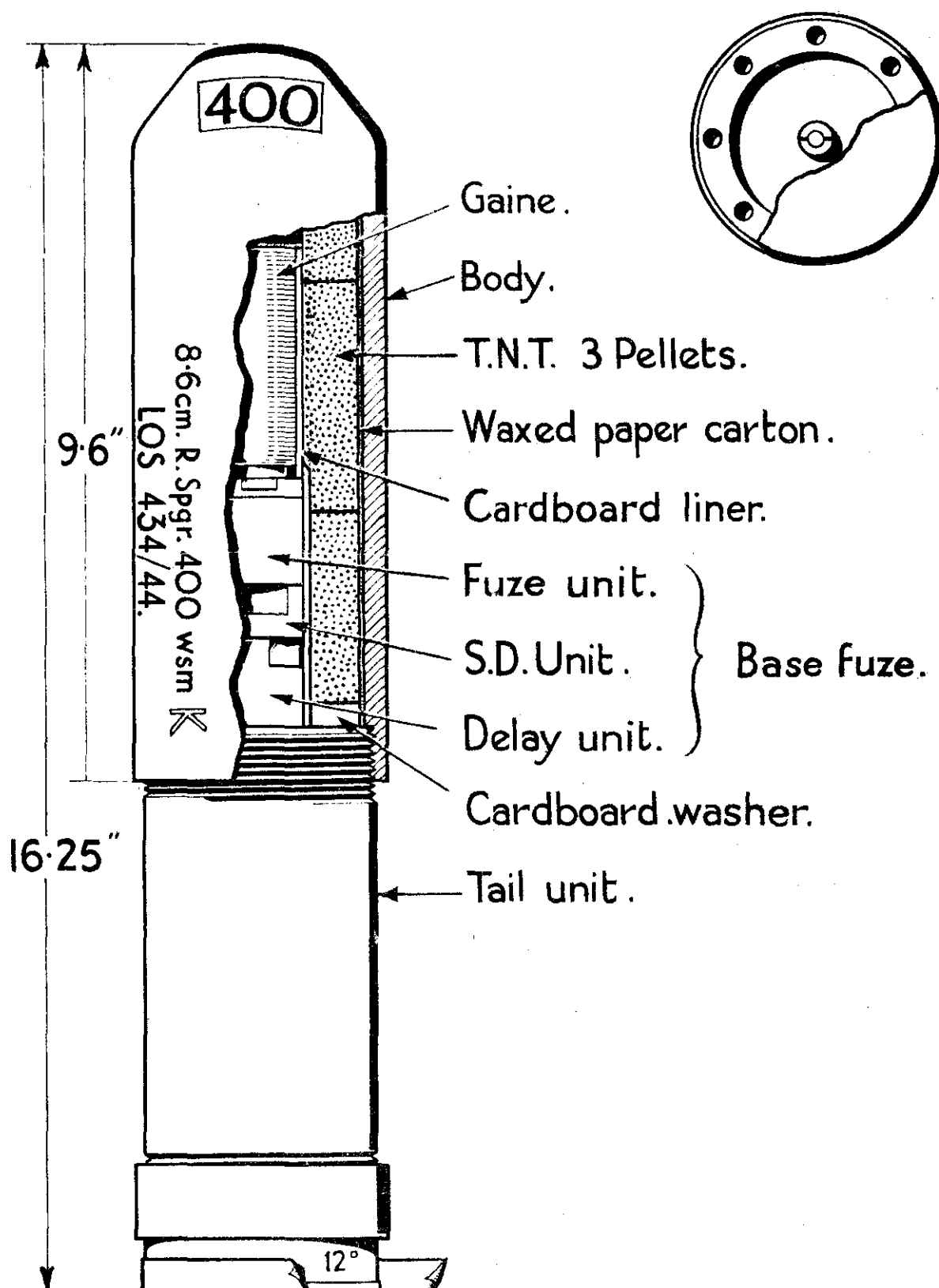


Fig. 582 (Item 1393)
GERMAN FUZE, FOR
8.6 cm ROCKET H.E. PROJECTILE. (8.6 cm R Spgr 400.)

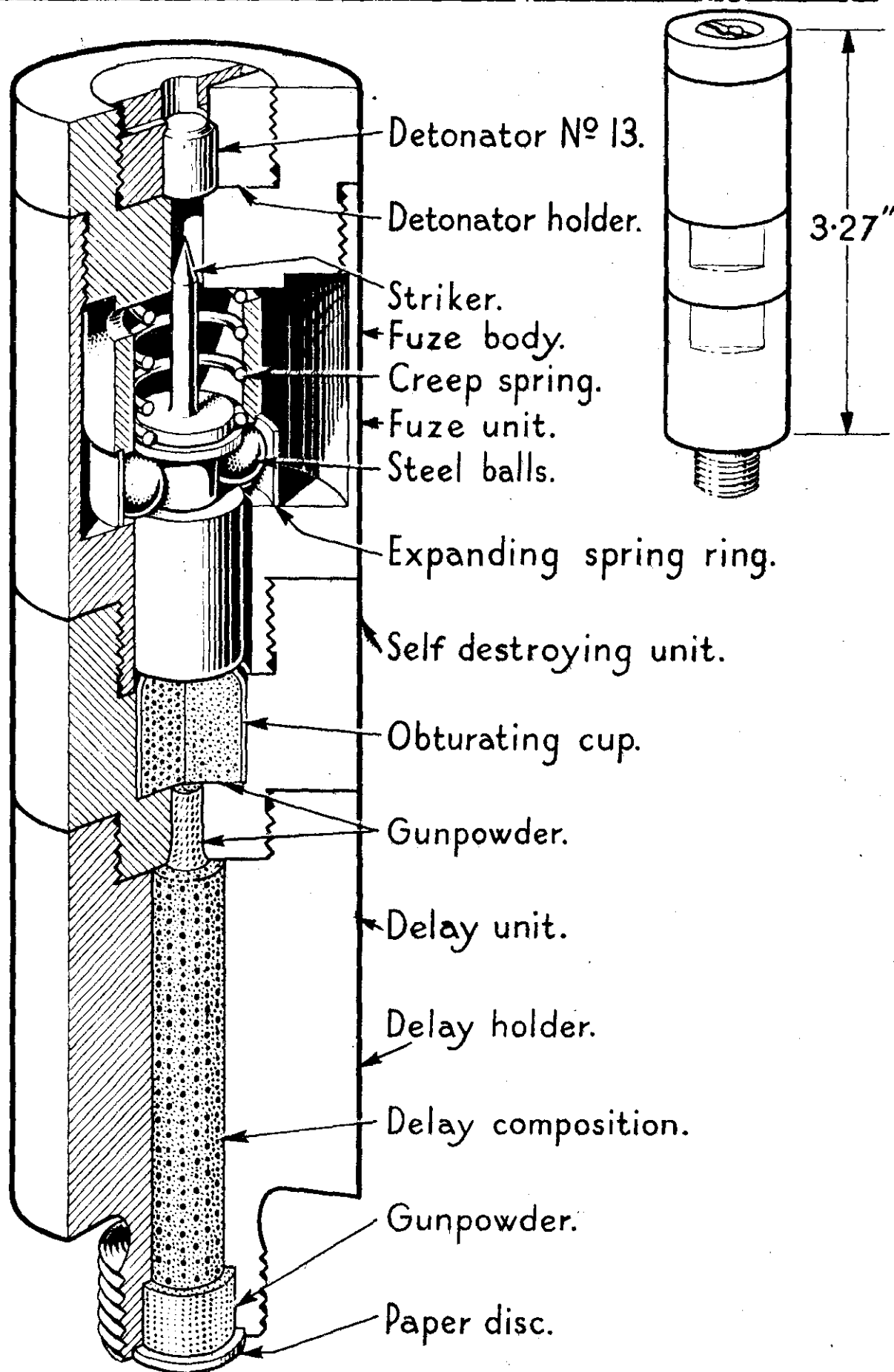


Fig. 583 (Item 1394)
GERMAN 8.6cm. ROCKET STAR PROJECTILE.

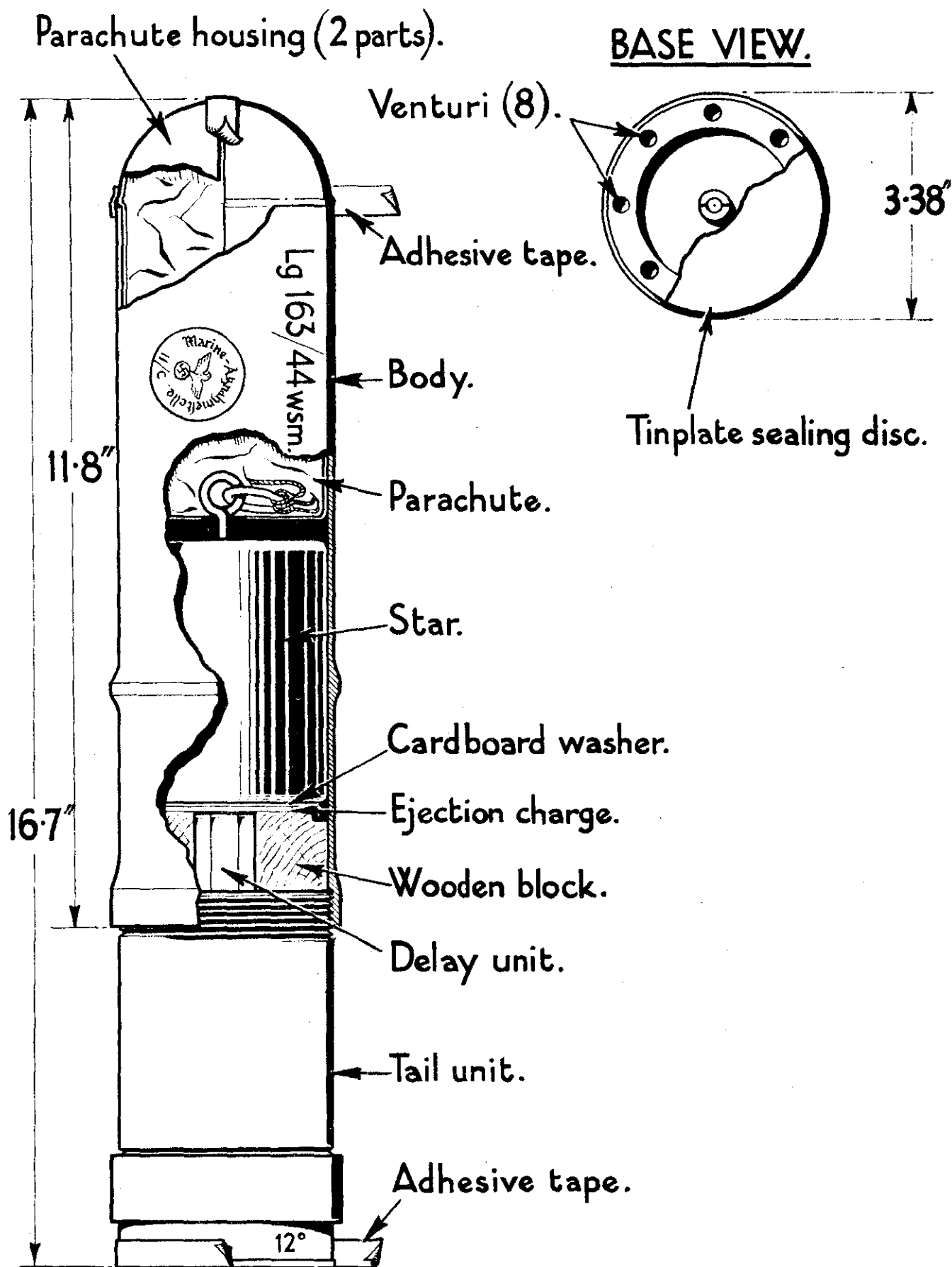


Fig. 584 (Item 1395)

GERMAN ANTI-PERSONNEL "POT" MINE A200
(Behelfs - Schutzenmine A200)

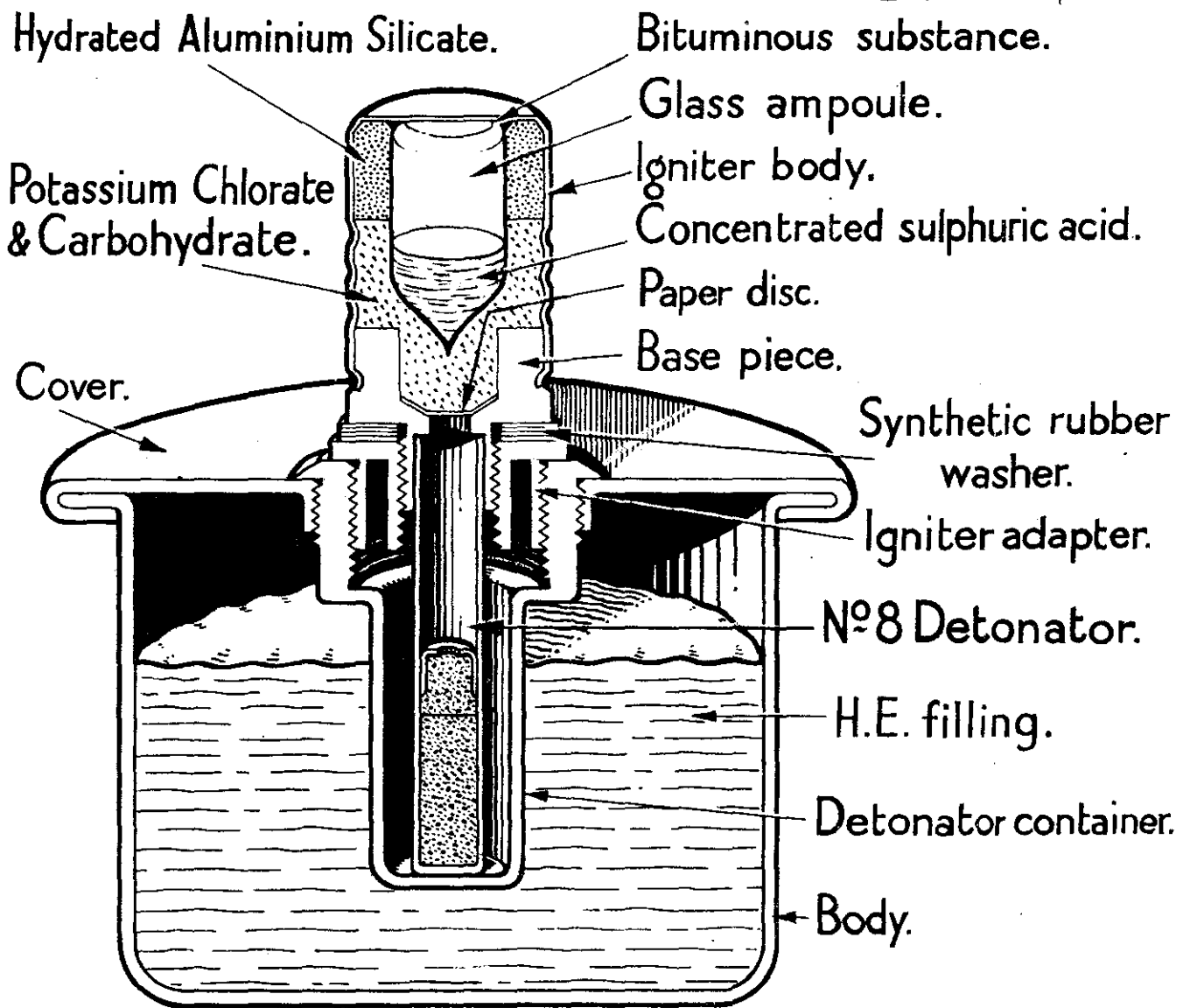
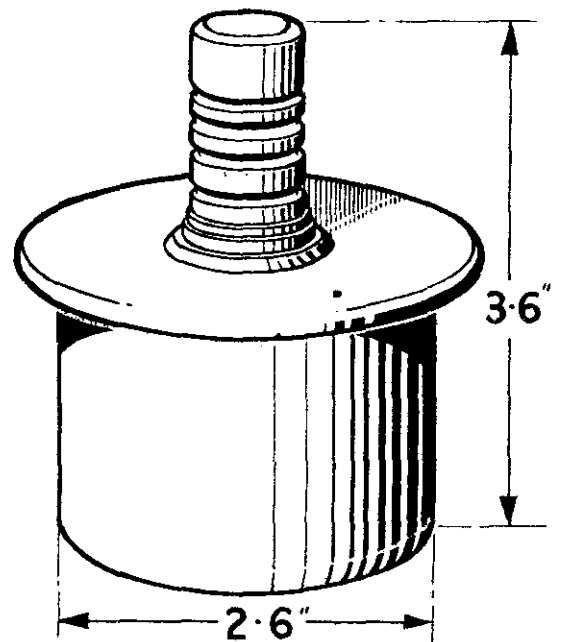


Fig. 585 (Item 1396)

JAPANESE ANTI-TANK MINE. TYPE 93.

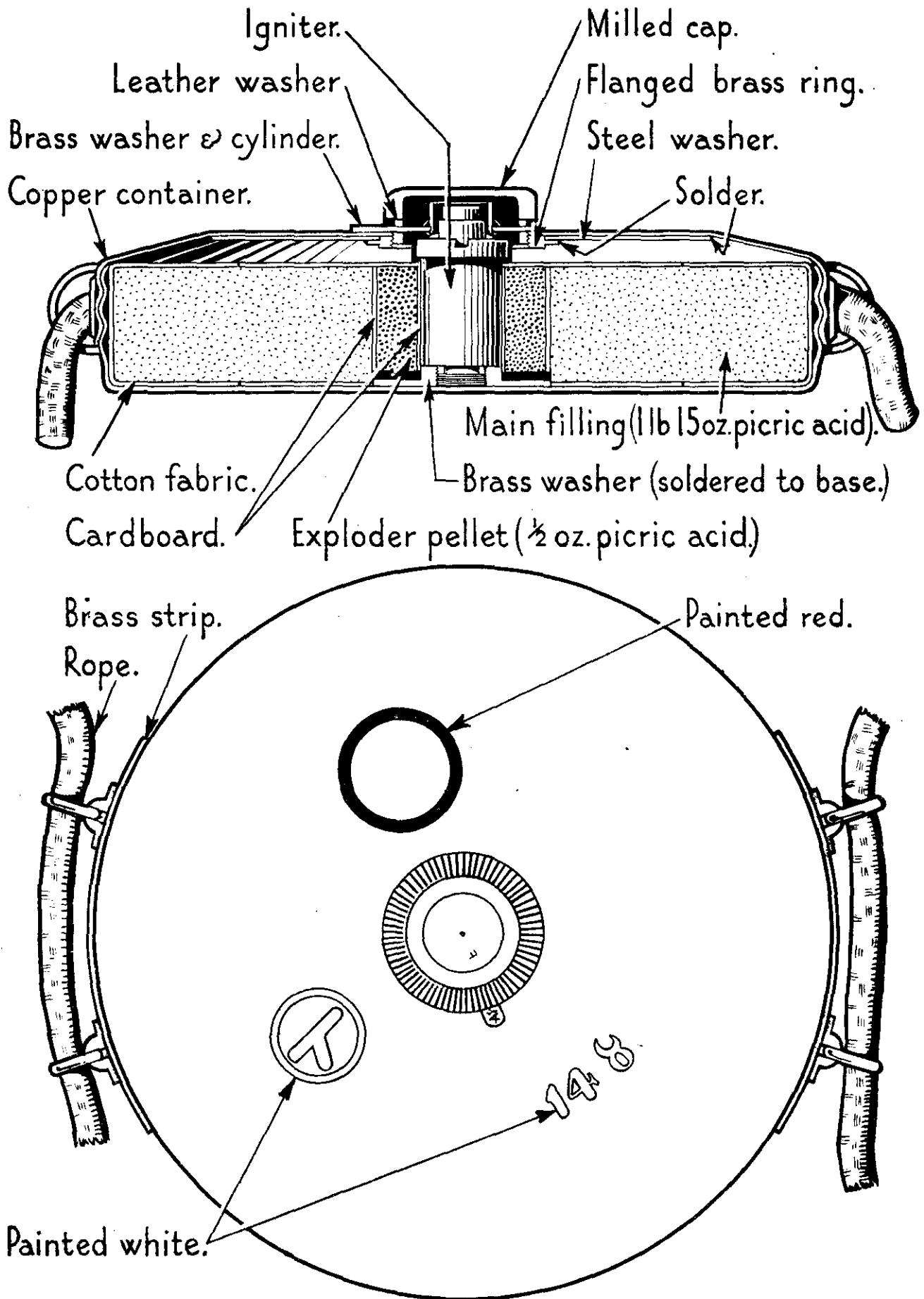


Fig. 586 (Item 1396)

JAPANESE FUZE
FOR
ANTI-TANK MINE TYPE 93.

