

AMMUNITION BULLETIN Nº 49

ITEMS 1397-1446

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MINISTRY OF SUPPLY
AMMUNITION BULLETIN NO.49.

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Issued by:
CHIEF INSPECTOR OF ARMAMENTS.

ITEM NO.

1419	Ammunition - B.L. 6-inch Howitzer Mk.I - obsolete.
1439	" - B.L. 6-inch Gun Mk.19 - obsolete.
1436	" - B.L. 12-inch How., B.L. 9.2-inch How., and B.L. 9.2 inch Gun Mk.13, 13 m and 13A - obsolete.
1437	" - S.B. 3-inch Gun - obsolete.
1412	" Annual Inspection and Proof.
1415	Bangalore Torpedo 2-inch Mk.I - obsolescent and Mk.2 - obsolete.
1418	Bombs M.L. 3-inch Mortar - Primary and augmenting cartridge combinations.
1422	Bombs Demolition No.1 40-lb. Mk.I - obsolete.
1423	" H.E./A.T. Infantry projector A.T. Mk.I, 1A, 2 and 3 - obsolescent.
1432	Boxes Cartridge Q.F. 25-pdr. C.206 Mk.2 and 3, and C.314 Mk.I - obsolescent.
1405	Boxes Explosives M.328 Mk.I - Design approved.
1413	Cartridge Q.F. 77 mm. S.V. N.H., A.P.D.S. Shot - M. of F. design approved.
1428	Cartridge 105 mm. M.3 How., Filled 1-lb. 5-oz. Cordite WM.017 Mk.I - M. of F.
1428	Cartridge 105 mm. M.2.A.I. How., Filled 2-lb. 8-oz. Cordite WM.029 Mk.I - M. of F.
1426	Cartridge Q.F. 5.25-in. Mk.2 Gun Filled 12-lb. 12-oz. Cordite N/S.164-048, Mkcs. 3 and 4 - Design approved.
1431	Cartridge S.B. M.L. 4.2-in. Mortar:- Augmenting 350 grs. Cordite W.016 or WM.017 Mkcs. 1 & 2 N.R.N. No.9 Mk.I. Streamline Augmenting 450 grs. N.R.N. No.9 Mk.I - obsolescent.
1440	Cartridge M.L. 2-in. Mortar or Bomb Thrower, Smokeless 50 gr. Ballistite Mk.I.
1404	Cartridge S.A. Rifle Grenade .303-in. Cordite H. Mk.2. - obsolete.
1402	Cordite N.S. 164-048 Lot T.773 (for temperate climates only).
1424	Detonators No.98 Mk.I - obsolete.
1427	" No.83 Mk.2.
1411	Fuzes Percussion No.232 Mk.III - obsolescent
1400	" Time and Percussion No.222.B. - modification.
1408	Generator Smoke No.17 Mk.I, No.25 and No.26 Mk.I - obsolescent.
1416	" " No.18 Mk.I - obsolescent.
1425	Grenades Rifle No.63 Smoke Mk.I and Mk.I.Z. - obsolete.
1434	" Hand No.73 A.T. Mk.I - obsolete.
1398	" " No.74 A.T. Mk.I - obsolete.
1435	" " No.75 A.T. Mk.I - obsolete.
1427	" " No.75 A.T. Mk.3 - obsolete.

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1429 Grenades Hand No.77 F.M. Mk.2 - obsolete.
 1421 " " No.79 Smoke Mk.I - obsolete.
 1410 " " No.82 Mk.I - obsolescent.
 1399 Packages - Ammunition. Stencilling and Labelling.
 1406 " - non-tropical. Special marking "NOT TROPICALLY PACKED".
 1401 Primer, Percussion Q.F. Cartridge No.27 Mk.I and Mk.3 -
 Advance of Mark.
 1417 Projectiles - Paint on driving bands.
 1430 Shell Q.F. Smoke B.E. 25-pr. Mk.7B and 8B - obsolete.
 1414 " " H.E., S/L., 25-pr. Packing when Fuzed No.117 or 119.
 1409 " " S.A.P. 4.5-in., 4.7-in. and 5.25-in. M. of P.
 design amended.
 1397 Simulators Gun - flash No.4 Mk. 1 & 2 and No.5 Mk.I - Design
 cancelled.
 1433 { Simulators M.G. A/B No.1 Mk.I, 2 and 3 - nomenclature.
 " R.F. A/B No.1 Mk.I, 2 and 3 - "
 1420 " R.F. Mk.I - obsolescent.
 1438 { " Signal A/B No.1 Mk.I - nomenclature.
 " " A/B No.2 Mk.I, 2 and 3 - nomenclature.
 1403 Striker Mechanisms No.2 Mk.I and No.3 Mk I (Grenades) -
 obsolescent.
 1407 War time concessions - approved.

ENEMY AMMUNITION

GERMAN

1441 Fuze 5 cm. Kopf 2.2.Zerl P (Figs. 587 and 588).
 1442 5 cm. Flak 41 Cartridge Q.F. H.E./T. (5 cm. Spgr Gr 41 L'Spur)
 (Fig. 589).
 1443 Tracer for 5 cm. Flak 41 H.E./T. Shell (Fig. 590).
 1444 Primer Percussion Q/32 St. (Fig. 591).
 1445 3 cm. Rifle Illuminating Grenade (Gewehr Fallschirmleuchtgranate)
 (Fig. 592).
 1446 Hollow Charge sticky anti-tank grenade (Panzerhandmine S.S.)
 (Figs. 593 and 594).

1397. SIMULATORS, GUNFLASH, NOS. 4 & 5. DESIGN CANCELLED.

Reference Bulletin No.32, Item 638 and Bulletin No.41, Item 1046. The designs of the Simulator, Gunflash, No.4 Mks. 1 & 2 and No.5 Mk.1 have been declared "Cancelled".

1398. GRENADE, HAND, NO.74 A.T., MK.I - "OBSOLETE".

The abovementioned Grenade and its associated stores, i.e. Detonator, No.74 A.T., Grenade Mk.1, Carrier No.74 A.T. Grenade, Mk.1 and Crate, No.74 A.T. Grenades, G.69 Mk.1, have been declared "Obsolete".

1399. STENCILLING AND LABELLING ON AMMUNITION PACKAGES.

Approval has been given for stencilling to take the place of labelling for both outer and inner ammunition packages.

Labels affixed with adhesive have been found unsatisfactory after transport and storage under tropical conditions for the following reasons:-

- (a) labels become illegible due to the effects of "weathering" on pencil and ink markings.
- (b) labels are wholly or partly, lost or mutilated.
- (c) adhesives and varnishes tend to obscure details.
- (d) moisture from the label is sealed under a complete film of varnish and this moisture causes corrosion of metal parts to which the label is attached.

Batch labels, Packer's labels and Linen Station labels will remain unaffected for the present; instructions for their replacement will be issued later.

1400. FUZE, TIME AND PERCUSSION, NO.222.B. - MODIFICATION.

A modification to the method of filling Fuze No.222.B. to give muzzle safety, has been approved for any future filling; fuzes so filled will become Mk.4.

The modification consists of a powder delay pressed into the flash-hole in the lower fuze ring and is designed to delay functioning of the time action until the shell is well clear of the muzzle, the "safety distance" being approximately 150 yards.

1401. PRIMER, PERCUSSION, Q.F. CARTRIDGE, NO.27 MK.1 - ADVANCE OF MARK.

The abovementioned primer is also a Naval Store but differs in respect of cap filling. The Land Service cap is filled Q.F. composition and the Naval Service cap is filled 'A' Mixture.

Approval has been given for an advance in Mark from 1 to 3 of future production of this primer when the cap is filled Q.F. composition in order to distinguish it from the Naval primer. Mk.2 has already been allocated to Air Service.

1402. CORDITE, N.S. 164-048. LOT T.773.

The abovementioned Cordite Lot (Ctge. Q.F. 3.7 in. Gun Mks.1-3) has been sentenced "For Temperate Climates only".

1403. STRIKER MECHANISM NO.2 Mk.1 and No.3 Mk.1.

Reference Bulletin No.44, Item 1186. The abovementioned striker mechanisms have been declared "Obsolescent".

1404. CARTRIDGE, S.A. RIFLE GRENADE, .303 in. CORDITE H., MK.2.

The abovementioned cartridge has been declared "Obsolete" for Land Service.

1405. BOX, EXPLOSIVES, M.328 Mk.1.

Reference Bulletin No.38, Item 939. The above plywood box, to hold 20 1-lb. slabs, C.E./T.N.T. in a paper sack, has been approved. Stowage dimensions are 13 inches x 8 inches x 6.25 inches.

14.06. PACKAGES, NON-TROPICAL. SPECIAL MARKING ON CERTAIN PACKAGES.

The undermentioned stores, when packed in any way other than 100 per cent "Jungle Packs", that is to say - correct outer jungle package, correct jungle container or inner package and correct jungle method of sealing (fabric adhesive waterproof tape) - will bear the special marking "NOT TROPICALLY PACKED" on the outer package.

This special marking will be applied in $\frac{3}{4}$ inch yellow lettering on that side of the package on which the operational marking appears; it will be placed below the operational marking which may be raised slightly to accommodate it.

Stores concerned are:-

P.I.A.T.	Flare Trip Wire Mk.1.
All 1" Signal Cartridges	Grenade No.70 all Marks.
Signals One Star	Rifle Grenade Nos. 85, 87, 88
Signals Two Star	and 89.
Signals Double Star	Thunderflash Mk.8.
Signals Ten Star	Grenade Anti-tank No.82.
Grenade No.36M.	" " No.75 Mks.2
	and 3.
	Junction Box Safety Fuze Mk.1.
	Detonators, Multiple No.93 Mk.1.

14.07. WAR TIME CONCESSIONS.

War time concessions enumerated under paragraphs (A), (B) and (C) below, have been approved.

(A) Concessions withdrawn and no longer permitted owing to improved conditions.

Marking and Stencilling Cartridges.

Q.F. (Fixed) Cartridges.

Omit F.F. Monogram and date from boxes and cartridge cases.

Q.F. (Separate) Cartridges.

Charge Bags. Omit all detail except charge numbers and propellant lot number.

Boxes and Cartridge Cases.

Omit (1) Charge weight (2) F.F. Monogram and date.

B.L. Cartridges.

B.L. How. Charge Bags. Omit all detail except Charge numbers, propellant lot number, nominal charge weight of complete cartridge and description of propellant.

B.L. Gun Charge Bags. Omit F.F. Monogram and date.

Boxes. Omit F.F. Monogram and date except for Ctges. B.L. 7.2 in. How. for which all Markings are required.

Cartridges.

Undyed (in lieu of dyed) shalloon for 6 in. 26 cwt. How. Ctges. for 100 lb. S/L shell, such cartridges being distinguished by a circumferential red band (printers ink) 1 in. deep round each charge bag.
25 pr. bags - use of undyed material.

Clearing and Lacquering Cartridge Cases.

Lacquering - to be eliminated for all charges except flashless cordites (i.e. R.D.N. and R.D.Q.) and 2 pr. Mk.8 gun cartridges.

Cleaning. Clean cases will be dusted and the primer hole threads cleaned immediately before filling. Other cases, i.e. those which cannot be cleaned by dusting, will be washed and buffed as required by the filling cartridge specification before filling.

Felt - proofing waived.

1407. WAR TIME CONCESSIONS (Contd.)

(B) Concessions considered suitable for permanent adoption:-

Cartridges.

Cartridge, Q.F. 3.7 in. Gun. Design DD(L)7831A (Type 1) - For the reduction in the number of external ties in the make-up of cartridges of above type to three, one positioned to hold the foil in place, one central and the third slightly below. The latter two to retain the core.

Cartridge Cases. Stencilling - When the surface of a case will allow the stencilling to be carried out satisfactorily without previous preparation by rubbing with a fine emery cloth, the latter operation as required by the relevant Specification may be waived.

Boxes, Ammunition, Q.F. 3.7 in. Gun, C.213.

Boxes for Repair.

The following instructions will be observed when dealing with the repair of boxes:-

1. Boxes with lifting bands in serviceable condition will have the bands replaced after repairs to boxes have been executed.
2. Boxes with lifting bands in unserviceable condition will have the bands removed, while the fixing screws should be replaced in bushes ready for use in the future if required.
3. Boxes without lifting bands - no action to be taken with regard to provision of bands.

Cases, Cordite, C.128 - Repairs.

Unserviceable fearnought strips need not be replaced when cases are repaired, and are to be removed from cases which are otherwise serviceable.

(C) Concessions to continue subject to periodical review:-

Cartridges.

Use of Mineral Jelly and Dinitro-alpha-naphthol (D.A.N.) for silk sewing and tying materials - dispensed with.

Use of paper non-absorbent for wrapping - dispensed with.

3.7 in. How. Cartridges - use of rings, paper, split, discontinued when packed in Cylinders No.239, Mk.3.

Chemical Tests waived.

Chemical tests of the following materials will be waived if used on stores which are shellacked or paraffin waxed:-

Printers ink
Paste
Glue

Chemical tests of the paper, millboard, glazedboard etc. of the undermentioned stores (which are shellacked, painted or paraffin waxed) will be waived:-

Cylinders, paper, Nos. 1 and 2 (25 pr.)
Lids, glazedboard (3.7 in. How.)
Cups, leatherboard (25 pr.)
Liners and Discs (B.L. Cartridge Cylinders)
Containers, Q.F. and B.L. Cartridges
Carriers, M.L. Mortar Ammunition

These will be reviewed not later than 1.1.46.

1408. GENERATORS, SMOKE, "OBSCULESCENT".

Approval has been given for the undermentioned Smoke Generators to be declared "Obsculescent":-

Generator, Smoke, No.17 Mk.1.

" " No.25.

" " No.26 Mk.1. (See Bulletin No.34, Item 795).

1409. SHELL, Q.F. S.A.P. 4.5-in., 4.7-in. and 5.25-in. - M. of F. DESIGN AMENDED.

Reference Bulletin No.45 Item 1245, page 19. The M. of F. Design No. DD(L)17504 for 5.25-in. Shell Mk.4 has been amended to include EDX/WAX/P.L. as an alternative filling.

1410. GRENADE, HAND, NO.82 Mk.1 - OBSOLESCENT.

The abovementioned grenade has been declared "obsculescent".

1411. FUZE, PERCUSSION, NO.232, Mk.1.M. - OBSOLESCENT.

Consequent on there being no further requirement, the above-mentioned fuze has been declared "Obsculescent".

Filled Lots 1 to 26 may be accepted for Service but no further filling will take place.

1412. ANNUAL INSPECTION AND PROOF OF AMMUNITION.

It is notified for information that Annual Inspection and Proof of Ammunition etc. in Land Service will be re-introduced early in 1946 and will be carried out by R.A.O.C. technical ammunition staffs under the direct control of War Office.

1413. CARTRIDGE, Q.F., 77 mm., S.V., N.H., A.P.D.S. SHOT.

The abovementioned cartridge to M. of F. Design DD(L)17985, has been approved - Charge Weight 3 lb. 7 oz. - N.H.025.

1414. SHELL, Q.F., H.E., S/L., 25-PR. PACKING WHEN FUZED NO.117 or 119.

Approval has been given for the abovementioned shell to be issued to any theatre of war fuzed with Fuzes No.117 or No.119 and not plugged. Heretofore, for issue to tropical areas, 25-pr. shell with Fuzes No.117 or No.119 have been packed plugged. This approval applies only to Fuzes No.117 and No.119.

1415. BANGALORE TORPEDO, 2 INCH, MK.2.
IGNITER, BANGALORE TORPEDO, MK.2.
FUZE INSTANTANEOUS DETONATING MINE, CONTACT A.T.:
MKS. 4, 4C, 5 AND 5C.

The above stores have been declared obsolete.

BANGALORE TORPEDO 2 INCH MK.1.
CHARGE DEMOLITION NO.7, 35-lb., MK.1.
SWITCH:-

NO.1, PULL, MK.1.

NO.2, PRESSURE, MK.1 & 2.

NO.3, RELEASE MK.1.

The above stores have been declared obsculescent.

1416. GENERATORS, SMOKE NO.18 MK.1.
BOX, SMOKE, GENERATORS, M.116 MK.2.

The abovementioned stores are declared "Obsculescent" for Land and Naval Services.

1417. PROJECTILES, GENERAL - PAINT ON DRIVING BANDS.

Approval has been given for the painting of driving bands of projectiles B.L. and Q.F. separate loading guns as follows:-

Painting on shell bands:-

- (1) On single banded shell, paint will be allowed on the band except on the highest diameter gauging surface.
- (2) On double banded shell (when bands are situated together at the rear of shell) the rear band may be painted all over, but the front band will be painted as at (1) above.
- (3) On shell which have one band at the rear end and one shoulder band, the shoulder band will be painted all over and the other band will be painted as at (1) above.
- (4) On shell which have two bands in rear position and one or more shoulder bands, the shoulder bands and the rear main band will be painted all over, the other band will be painted as at (1) above.

14.18. BOMBS M.L. 3 INCH MORTAR - PRIMARY AND AUGMENTING CARTRIDGES
COMBINATIONS.

Where circumstances do not permit the use of existing approved combinations of primary and secondary cartridges, approval has been given for other combinations to be fired as set out in the table below. The table includes all possible combinations of primary and secondary cartridges which may or may not be fired in the various marks of M.L. 3 inch mortar barrels.

"Long range charges" are all possible combinations to give approximately 2800 yards range.

"Short range charges" are all possible combinations to give approximately 1600 yards range.

Table of Charges which may or may not be fired according to the
type of barrel used.

Mark of Mortar	Charges which cannot be fired.	Charges which can be fired.
All Mark 2 mortars which can be identified positively as of U.K. production.	Any primary + 6 x 210 grs. N.C. (Y) + 12 x 100 grs. N.C. (Y) + 12 x 65 grs. 81 mm. mortar powder. + 12 x 72 grs. M.4X.	All Short range and Long range charges using N.R.N.9., N.C. rifle powder Mark 8Z and W.M.017 as secondary propellant.
All Mark 2 mortars of other production.	All long range charges	Short range charges only.
Mark 4.	-	All charges.
Mark 5.	-	All charges.

1419. AMMUNITION, B.L. 6 INCH HOWITZER MK. 1.

Ammunition for the B.L. 6 inch 26 cwt. Howitzer Mk.1. is declared obsolete.

11.20. SIMULATORS RIFLE FIRE { 10 Minute
1/2 Hour Mk. 1.
2 Hours

The abovementioned simulators are declared obsolescent.
(Bulletin No.41, Item 1057 refers).

1421. GRENADES HAND NO.79 SMOKE MK.1.

The abovementioned grenades are declared obsolete (Bulletin No.32, Item 637 refers).

1422. BOMB DEMOLITION NO.1 40-lb. MK.1.

The abovementioned bomb and associated stores have been declared "obsolete".

1423. BOMB H.E./A.T. INFANTRY PROJECTOR A.T. MK.1, 1A, 2 and 3.

The abovementioned bomb is declared obsolescent.

1424. DETONATOR NO.98 MK.1.

The abovementioned detonator is declared obsolete.

1425. GRENADES RIFLE NO.63 SMOKE MK.1 and MK.12.

The abovementioned grenades are declared obsolete.

1426. CARTRIDGE Q.F. 5.25-in. MK.2 GUN FILLED 12-lb. 12-oz. CORDITE N/S 164-048, MKS. 3 & 4.

A design for the abovementioned cartridges has been approved

1427. GRENADE HAND NO.75 A.T. MK.3.
DETONATOR NO.83 MK.2.

The abovementioned grenade and detonator are declared obsolete.

1428. CARTRIDGES, 105 mm. M.3. HOW., FILLED 1-lb. 5-oz. CORDITE W.M.017 MK.1.
CARTRIDGES, 105 mm. M2A1. HOW., FILLED 2-lb. 8-oz. CORDITE W.M.029 MK.1.

Method of filling designs D2(L)1830/GF/494 and D2(L)1829/GF/494 governing the filling of the abovementioned cartridges, have been approved for use with paper shot to design DD(L)15539.

1429. GRENADE HAND NO.77 F.M. MK.2.

The abovementioned grenade has been declared obsolete (Bulletin No.33, Item 699 refers).

1430. SHELL Q.F. SMOKE, B.E. 25 pr. MK.7B and 8B.

The abovementioned smoke shell is declared obsolete.

1431. CARTRIDGES S.B. M.L. 4.2-in. MORTAR AUGMENTING 350 GRAINS CORDITE W.016 or W.M.017 MK.1 and 2. N.R.N. NO.9 MK.1.
CARTRIDGES S.B. M.L. 4.2-in. MORTAR STREAMLINE AUGMENTING 450 GRAINS N.R.N. NO.9 MK.1.

The abovementioned 350 grains and 450 grains Mk.1 augmenting cartridges, with celluloid containers of the "built-up type" and cartridges of cordite W. and W.M. Mk.2 in moulded celluloid containers, are declared obsolescent.

1432. BOXES CARTRIDGE Q.F. 25-pr. C.206 MKS. 2 and 3, and C.314, MK.1.
CONTAINERS CARTRIDGE NO.211 MKS. 1 and 2.
CYLINDERS CARTRIDGE NO.436 MK.1 and 509 MK.1.

The abovementioned packages are declared "obsolescent" being replaced by Box C.324 and Cylinder No.527.

1433. SIMULATORS M.G. A/B NO.1, MKS.1, 2 and 3. } NOMENCLATURE
SIMULATORS R.F. A/B NO.1, MKS.1, 2 and 3. }

The abovementioned simulators are re-designated as shown below.

OLD NOMENCLATURE	NEW NOMENCLATURE
SIMULATORS M.G.: - 10-mins. Mk.1. $\frac{1}{2}$ -hour Mk.1. 2-hours Mk.1.	SIMULATORS M.G. A/B No.1:- Mk.1. Mk.2. Mk.3.
SIMULATORS R.F.: - 10-mins. Mk.1. $\frac{1}{2}$ -hour Mk.1. 2-hours Mk.1.	SIMULATORS R.F. A/B No.1:- Mk.1. Mk.2. Mk.3.

List of changes Nos. B.9833 and B.9834 refer.

1434. GRENADES HAND No.73 A.T.

The abovementioned grenades are declared obsolete (Bulletin No.19, Item 265 refers).

1435. GRENADE HAND NO.75 A.T. MK.1.

The abovementioned grenade is declared obsolete (Bulletin No.23, Item 373 refers).

1436. ORDNANCE B.L. 12 INCH HOWITZER.

" " 9.2 INCH HOWITZER.

" " 9.2 INCH GUN MK.13, 13 $\frac{1}{2}$ and 13A.

The ammunition for the above equipments is declared obsolete or is restricted in use.

1437. S.B. 3-IN. GUN.

The ammunition for the S.B. 3-inch Gun is declared obsolete.

1438. SIMULATOR SIGNAL A/B NO.1. MK.1.

SIMULATOR SIGNAL A/B NO.2. MKS.1, 2 and 3.

The nomenclature of the abovementioned stores have been amended as shown below.

OLD NOMENCLATURE	NEW NOMENCLATURE
BOMBS SIGNAL PINTAIL MK.1. (L. of C.B.9826 refers)	SIMULATORS SIGNAL A/B NO.1 MK.1.
BOMBS PINTAIL: - 10-mins. Mk.2. $\frac{1}{2}$ -hour Mk.2. 2-hour Mk.2.	SIMULATORS SIGNAL A/B NO.2 :- Mk.1. Mk.2. Mk.3.

1439. ORDNANCE B.L. 6-INCH MK.19 GUN.

The ammunition and associated stores for the above-mentioned gun are declared obsolete or are restricted in use.

1440. CARTRIDGE M.L. 2-INCH MORTAR, OR BOMB THROWER SMOKELESS
50 GRAIN BALLISTITE MK.1.

Approval has been given for a strip of Celluloid sheet 0.005 inch thick and 2.2 inches square to be used in steel tail units of 2 inch Mortar bombs with the abovementioned cartridge. The cartridge is restricted for use in only steel tail units of 2-inch Mortar bombs and must be used in conjunction with the celluloid strip.

ENEMY AMMUNITION

GERMAN

1441. GERMAN FUZE 5 CM. KOPF Z.2.ZERL.P. (Figs. 587 and 588).

This is a sensitive direct action fuze incorporating a pyrotechnically operated self-destroying device with two alternative delays, and is used in the 5 cm. H.E./T. shell described in Item No. 1442 of this bulletin. The fuze weighs 2 oz. 2 dr.; the diameter over the threads is 1.1 inches. It is made of light alloy except where otherwise stated in the description below. The designation of the fuze "5 cm. Kopf Z.2.Zerl.P" is stamped in the flange.

Because of the number of explosive compositions employed in the fuze and its complicated design, letters are used in the following description and in the illustrations for ease in identification.

Fuze body. (Fig. 587)

The fuze body is in two parts. The bottom part is screwthreaded, below the flange for insertion in the shell and above the flange to receive the top part. Internally there are five longitudinal borings suitably arranged around a central boring to accommodate a direct action striker mechanism, a safety and arming device, and a self-destroying arrangement. The base is recessed and screwthreaded to receive a gaine. The top part of the fuze body is conical in contour with a flat top. It is bored centrally in three diameters to accommodate a hammer and the head of the striker. The top is closed by a thin disc which is secured by turning the metal over its edge; the joint is sealed with varnish. The underside is recessed and screwthreaded to receive the bottom part of the fuze body and is secured by a steel grub screw. There is an annular channel, square in section, in the underside of the skirt of the top part, which contains a felt ring to give slight resistance to a delay setting ring interposed between the skirt and the flange of the fuze body.

Direct action mechanism. (Fig. 587)

The direct action mechanism (see section AA) consists of a striker and a plastic hammer. The striker is in the form of a needle with a cylindrical head and is housed in the central boring in the fuze body. It is held in the safe position by the prongs of a brass bifurcated slider which forms part of the safety arrangement. The hammer is moulded in black plastic and is in the form of a stem with a concave disc head. The end of the stem is in contact with the head of the striker.

Safety and arming devices. (Fig. 587)

To maintain the fuze in a safe condition (see section AA) before firing, the D.A. striker is held off the main detonator by the prongs of a rectangular forked brass slider in a radial recess in the top face of the lower part of the fuze body. Movement of the slider is obstructed by a detent which protrudes into the recess and bears against the outer edge of the slider which is chamfered to facilitate its release.

The detent is supported on a pellet of pressed gunpowder (F), weighing 0.06 gram, in a screwthreaded holder in boring (a) which communicates with borings (b) and (c) through a horizontal channel (f). This channel is drilled from the outside of the fuze body and its outer end is closed by a plug and sealed with luting.

The arming device (see section XX) is accommodated in boring (b) and comprises a steel striker, steel spring and an igniferous detonator. The detonator rests on the bottom of the boring whilst the striker is maintained at the top by the spring. The top of the boring is closed by a screwed plug.

Self-destroying arrangement. (Fig. 588)

The self-destroying arrangement is designed to enable time to self-destruction to be set for short or long duration. It is contained in three of the longitudinal borings, (c), (d) and (e) which are connected at the top by an approximately semi-circular channel, rectangular in section, machined from the top face of the body. This rectangular channel is closed by the top part of the fuze body which is screwed up tight, and no provision is made to prevent the composition flashing over.

The bottom of longitudinal boring (c), in addition to being connected via channel (f) to the bottom of boring (b) which houses the arming device, connects with a second horizontal channel, at approximately right angles to (f), which serves as a vent. The vent is closed by a disc which is waterproofed by luting.

The bottom of longitudinal borings (d) and (e) each lead to oblique channels which emerge near the centre of the base of the fuze body immediately above the main detonator. Boring (d) may be opened or closed by a shutter attached to the delay setting ring.

At the lower end of boring (c) is an increment of priming composition (B) approximately 0.32 inch long and weighing 0.17 grams. The remainder of this boring, the semi-circular channel and the upper end of boring (e) contain 0.3 grams, 0.7 grams and 0.25 grams of delay composition (A) respectively. Below the delay composition in boring (e) is a stemming of about 0.1 grams of relay composition (C) in which is embedded an igniferous detonator identical with that in the arming device. Boring (d) contains at its upper end a perforated gunpowder pellet (E) weighing 0.035 grams. Below this pellet, the boring is reduced in diameter and may be closed by an interrupter shutter attached to the delay setting ring. A recess at the lower end of the boring below the shutter is stemmed from the base of the fuze with 0.19 grams of relay composition (D). The top of this recess is connected to the main detonator of the fuze by an oblique channel, and the bottom is closed by a screwed plug sealed with luting.

Filling compositions.

The filling compositions as found by analysis are as follows:-

Fillings	Weight	Colour	Composition		
	<u>grams</u>				
(A) Delay composition	1.25	Yellow	Nitrocellulose	18.3	per cent
			Lead chromate	79.8	" "
			Silicon	1.9	" "
(B) Priming composition	0.17	Brown	Nitrocellulose	11.0	" "
			Calcium silicide	14.1	" "
			Red lead	74.9	" "
(C) Relay composition	0.10	White	Resin	3.2	" "
			Potassium perchlorate	54.7	" "
			Lead ferrocyanide	42.1	" "
(D) Relay composition	0.19	White	Resin	4.8	" "
			Potassium perchlorate	58.9	" "
			Lead ferrocyanide	36.3	" "
(E) Perforated gunpowder pellet	0.035	Black	Sulphur	8.4	" "
			Potassium nitrate	76.7	" "
			Charcoal	14.9	" "
(F) Gunpowder pellet	0.06	Black	Sulphur	9.5	" "
			Potassium nitrate	73.8	" "
			Charcoal	16.7	" "

Delay setting ring and shutter. (Fig.588)

The delay setting ring carries the shutter and is held lightly between the flange of the fuze body and a felt washer. The periphery of the ring is knurled and conforms to the general contour of the fuze body. Grooves above and below the knurled surface are filled with soft luting, the main constituent being mineral jelly. An index mark on the ring is used in conjunction with a letter "K" (Kurz - short setting) and a letter "L" (Lang - long setting) stamped in the fuze body. When set at "L", the ring is retained in position by a steel locking pin and plunger. This locking pin is carried in a vertical boring in the ring and is supported by a plunger with its spring which is accommodated immediately below it in a recess in the flange of the fuze body. On acceleration the pin and plunger set back, and the pin enters the recess in the flange thereby preventing the ring turning. During flight it is retained in this position by friction due to centrifugal action.

The shutter is flat and triangular with rounded apices. It is secured in a socket in the ring by two pins which are an easy fit in their holes. The pins are retained by the adjacent portions of the fuze body. One of the apices of the shutter projects towards the centre and slides in a recess in the fuze body thereby opening or closing a flash channel in the short delay according to the setting. The recess limits the lateral movement of the shutter and setting ring.

There is no device to lock the ring when set at "K", it is retained in this position during flight by the rotational movement of the fuze.

Gaine.

The gaine is a standard "Duplex kapsel" percussion detonator. A light metal cup shape body is screwthreaded externally near the mouth for insertion in the base of the fuze body. It is closed by an inverted light metal cup, having a base 0.05 inch thick, which fits into the mouth. The filling consists of 0.4 grams of Tetrazene/lead azide (6/94) pressed in the cup over a booster of 5 grams of P.E.T.N. in the gaine body.

ACTION

The fuze is set for either short or long delay by turning the setting ring to bring the index mark to the appropriate setting "K" or "L" thereby opening or closing the shutter respectively.

Direct action. (Fig.587)

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 (F).

On acceleration the striker of the arming device sets back on the detonator. The flash from the detonator ignites simultaneously the priming composition (B) of the delay and the gunpowder pellet (F). The pellet is consumed and in approximately 0.5 seconds ceases to support the detent which is then 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. During flight creep action holds the striker off the main detonator.

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

Self-destroying action. (Fig.588)

Fuze set for short delay "K" (Shutter open)

If direct action has not occurred during flight, the delay composition (A) burns and after approximately 7 seconds ignites the gunpowder pellet (E) above the shutter recess. The flash passes through the flash channel and ignites the relay composition (D), which in turn initiates the main detonator.

Fuze set for long delay "L" (Shutter closed)

The shutter being closed the delay composition (A) continues to burn for approximately 16 seconds and ignites the relay composition (C) which initiates the detonator embedded in it. The flash from this detonator initiates the main detonator.

GERMAN 5 CM. FLAK 41 CARTRIDGE Q.F. H.E./T.

5 CM. SFGP GR 41 L'SPUR

(Fig.589)

This fixed Q.F. round is used in the 5 cm. Flak 41 gun. The weight of the complete round is 9 lb. 7½ oz. and its overall length 20.9 inches. The shell is fitted with a single driving band of the non ferrous type and is painted yellow, except below the driving band where it is painted black. The stencilling is in black; exterior markings on the shell are shown in Fig.589.

The complete round consists of the following components :-

H.E. Shell filled T.N.T. with a PETN/Wax exploder
Nose D.A. fuze "Kopf Z.2.Zerl P" with self-destroying
arrangement and two alternate delays

Tracer

Steel case coated with brass

Propellant charge

Percussion primer C/32 St.

SHELL (Fig.589)

The filled shell with fuze and Tracer weighs 4 lb. 13 oz. It is fitted with a single iron driving band and has a cannelure in rear of the driving band for the attachment of the cartridge case. The base is recessed and screwthreaded to receive the tracer. The cavity for the bursting charge is cylindrical and approximately 0.95 inches in diameter. The wall thickness is 0.47 inches instead of 0.32 inches which is the normal thickness of 5 cm. H.E. Shell.

The bursting charge consists of 2 oz. 3.3 dr. of T.N.T. in two pellets and an exploder pellet of P.E.T.N./Wax weighing 14 drs. in a waxed paper carton. The T.N.T. pellets are coated with paraffin wax and each are approximately 1.73 inches in length. The bottom pellet is rounded slightly at the base to suit the shell cavity. The exploder pellet has a cavity at the top to receive the detonator holder at the base of the fuze. A green label, printed in black, is affixed to the base of the charge and reads as follows:-

Sprengladung. Ll. VII I			
Np.10	rdf	40	
Fp	02	(Sulfittri)	
	krl	40	
rdf	16	75/40	

Two thin paper washers are inserted between the top of the charge and the fuze.

FUZE AND TRACER.

The fuze and tracer are described as separate items in this bulletin. Items No.1441 and No.1443 refer.

CARTRIDGE CASE.

The case is of steel, solid drawn and coated with brass. The length of the case is 13.6 inches. It is of the normal Bofors type with a groove immediately in front of the flange and may be identified by the stamping "5 cm. Flak 41" in the base.

PROPELLANT CHARGE AND IGNITER.

The propellant charge weighs 1 lb. 8 oz. 7 dr. and is made up of tubular cords consisting basically of Nitrocellulose and Diethylene-glycol-dinitrate. The length of the cords is 9.24 inches and the mean external and internal diameter is 0.104 inches and 0.035 inches respectively. The cords are loose in the case; there is no propellant bag. The case is stencilled "690.g. Digl. RP.-K- (235 - 2,5/1)".

The igniter composition weighs 10.3 grams and is contained in a flat circular rayon bag. It consists of the usual chopped green cords. The upper fabric disc of the bag is stiffened by means of a disc of green propellant composition attached by three sewings.

The analysis of the propellant and igniter composition is as follows:-

	Propellant	Igniter	
		Disc	Chopped Cords
Nitrocellulose	61.2 per cent	64.3 per cent	90.7 per cent
Diethylene-glycol dinitrate	26.8 " "	-	4.81 " "
Nitric ester	-	32.0 " "	1.55 " "
Ethyl centralite	8.10 " "	1.62 " "	-
Mineral jelly	1.73 " "	-	-
Resinous matter	0.30 " "	-	-
Volatile matter	0.84 " "	1.0 " "	1.16 " "
Graphite	0.24 " "	-	0.22 " "
Magnesium nitrate	0.58 " "	-	-
Ash sulphated	0.16 " "	-	-
Diphenylamine	-	0.2 " "	0.60 " "
Water sol: salts	-	0.3 " "	-
Potassium nitrate	-	-	0.48 " "
Nitrated products of stabiliser (by diff.)	-	-	0.48 " "

PRIMER

The primer is the C/32 St which is described as Item No. 1444 in this bulletin.

1443. GERMAN TRACER FOR 5 CM. FLAK 41 H.E./T. SHELL. (Fig.590)

The tracer weighs 6 oz. 10 dr. and has an overall length of 2.10 inches; the diameter over the threads is 1.25 inches.

The tracer consists of a steel body, a steel disc, steel cup shape liner, a celluloid closing disc, tracer composition and priming composition.

The body is tubular and the wall is thickened and screwthreaded externally near the rear end for insertion in the shell. The rear end is formed with an internal shoulder and is closed by a yellow opaque celluloid disc which is secured by turning in a lip of metal and sealing it with brown varnish. The front end is closed by turning the edge over a steel disc after the filled liner has been inserted.

The tracer composition is light grey in colour and weighs 24.2 grams. It is pressed into the liner in four increments, the first three with a flat drift and the last with a serrated drift.

The composition as found by analysis consists of barium nitrate 55.4 per cent, magnesium metal 21.1 per cent, sodium oxalate 10.4 per cent, wax (and/or resin) 1.1 per cent, volatile matter 0.9 per cent, organic matter 11.1 per cent.

The priming composition is dark grey in colour and weighs 3.3 grams and is pressed in with a serrated drift. The composition as found by analysis consists of potassium nitrate 58.2 per cent, antimony trisulphide 14.8 per cent, charcoal (containing resinous matter) 20.4 per cent, sulphur 5.5 per cent and volatile matter 1.1 per cent.

1444. GERMAN PRIMER PERCUSSION C/32 St. (Fig.591)

This primer is identical in external dimensions with the percussion primer C/12 described in Bulletin No.26, Item 460; the diameter over the threads is 1.072 inches.

It consists mainly of a steel body, a brass anvil plug, an enclosed percussion cap, two increments of gunpowder and a steel closing washer.

The body is flanged and provided with two spanner flats in the base. Internally it is recessed in two diameters, the smaller of which in the base is screwthreaded to receive the anvil plug whilst the larger provides a magazine for the main filling. The thickness of the base in rear of anvil plug is 0.05 inches.

The anvil plug is screwthreaded externally, and recessed in the rear end to receive the percussion cap which fits over a short anvil. Two fire channels are provided in the sides of the plug, and the forward end is slotted for assembly purposes.

The cap is a brass shell containing 6.39 grains of cap composition consisting of mercury fulminate 30.1 per cent, potassium chlorate 36.1 per cent, antimony sulphide 26.9 per cent and ground glass 6.9 per cent. The composition is retained in the cap by a thin tinfoil disc.

The magazine contains a pellet of gunpowder weighing 39.0 grains over 15.3 grains of granular gunpowder. The composition of the gunpowder, as found by analysis, is as follows:-

Composition	Gunpowder pellet	Grain gunpowder
Potassium nitrate	75.4 per cent	76.8 per cent
Sulphur	10.0 " "	13.0 " "
Charcoal	14.6 " "	15.2 " "

The gunpowder pellet is covered by a paper closing disc under a steel washer which is retained by turning the rim of the magazine over it. The magazine is sealed by thickly coating the washer and paper disc with varnish.

1445. GERMAN 3 CM. RIFLE ILLUMINATING GRENADE.

(Gewehr Fallschirmleuchtgranate) (Fig.592)

This parachute illuminating grenade is fired from the 3 cm. rifled discharged cup, which can be fitted to the 7.92 mm. German rifle, using a 1.5 gram propelling cartridge fitted with a wooden bullet. The grenade is used to provide illumination at night, particularly against armour, at ranges up to 650 metres. The filled grenade weighs 9 oz. The body is of steel and varnished brown, the nose cap is painted white, and the pre-rifled base piece is of brown plastic. Exterior markings are shown in Fig.592.

The grenade consists mainly of a body, nose cap, a pre-rifled base piece housing a main long delay and ejection charge, and an inner container housing a parachute, flare, short delay and ejection charge.

Body and nose cap.

The body is made from seamless steel tube and is approximately 5.3 inches long and 1.75 inches in diameter. The wall thickness is 0.035 inches except at the top where it is reduced both inside and outside to a minimum of 0.017 inches. The top is closed by a thin steel conical nose cap which is secured by lightly turning in the top of the body around the base of the cap. One end of a steel chain is riveted to the apex on the inside of the cap. Internally, at the base end of the body, is a steel collar secured by six spot welds. The collar is screwthreaded to receive the base piece. The body is heavily varnished inside and out with a semi-transparent pale yellow varnish.

Base piece.

The base piece is moulded from brown plastic and is provided with eight lands and grooves. Above the lands, it is reduced in diameter and screwthreaded for insertion in the grenade body. The rear portion is recessed in two diameters and is screwthreaded to receive a delay assembly. This recess is in communication, through a central channel, with an ejection charge in a cup shape cavity in the front face. The front face is also provided with two deep recesses, diametrically opposite to accommodate two steel locating pins the ends of which engage in corresponding recesses in the inner container and the star composition and prevent rotation relative to each other and the grenade body.

The delay assembly comprises a steel delay holder, brass tube containing delay composition and a steel screwed retaining plug. The holder is cup shape and perforated in the base. The tube is housed in the holder and contains, in addition to the delay composition, a layer of priming composition at the bottom and another of flashing composition at the top. The holder is retained in the base piece by the screwed plug. The plug is recessed at the top to receive the base end of the holder, and is provided with a small perforation in the base, displaced from the centre, to enable the delay composition to be ignited by flash from the propellant charge.

An analysis of the priming, delay and flashing composition is as follows:-

	Compositions		
	Priming	Delay	Flashing
Potassium nitrate	66 per cent	33 per cent	77 per cent
Nitrocellulose	6 " "	48 " "	-
Sulphur	-	3 " "	8 " "
Charcoal	} 28 " "	5 " "	15 " "
Antimony sulphide		11 " "	-
Weights (gramme)	0.022	0.102	0.020

The delay burns for 6.5 seconds during flight before initiating the ejection charge.

The ejection charge consists of 6.5 grains of loose granular gunpowder and does not completely fill the cavity. It is in contact with the flash composition in the delay holder and is retained by the base of the inner container housing the flare and parachute. A delay cup which protrudes from the base of the inner container intrudes into the cavity and is surrounded by the loose grains of gunpowder.

Inner container.

The inner container consists of a seamless steel tube, 4.7 inches long and 1.06 inches in diameter, closed at the bottom by a composite assembly of steel stampings. The thickness of the container wall and the stampings is approximately 0.02 inches.

The top of the container is open and is cut on one side to form a tongue which is softened by heat treatment and bent inwards. The inner end of the chain attached to the nose cap is secured to this tongue by a small rivet. A steel disc, with a semi-circular segment cut out to permit passage of the chain, is placed on the top of the container and is retained by the base of the nose cap. Near the bottom of the container the walls are folded inwards to form a circumferential rib and the bottom edge is rolled in to form a flange which secures the base plate of the composite assembly.

The composite assembly consists of a base plate reinforced on its underside by a steel washer attached by two spot welds, and two similar steel flanged cups. The centre of the base plate is stamped to form a perforated cup which projects rearwards and contains composition for the second delay. There are two holes, diametrically opposite in the plate, through which are inserted the flanged steel cups accommodating the ends of the two locating pins. The cups project inside the container and are secured by their flanges between the base plate and its re-inforcing washer.

The perforated cup in the base plate is filled with a heavily consolidated gunpowder delay pellet under a pellet of priming composition. The exposed underside of the gunpowder pellet is serrated and the priming pellet is in contact with the ejection charge of the composite flare above. An analysis of the pellets is as follows:-

	Delay pellet	Priming pellet
Potassium nitrate	72.6 per cent	46.5 per cent
Antimony sulphide	-	46.0 " "
Sulphur	10.0 " "	-
Charcoal	17.4 " "	2.5 " "
Iron and alumina oxides	-	4.0 " "
Unidentified	-	1.0 " "
Weights (grams)	120	110

Flare.

The flare is a heavily consolidated cylindrical pellet and consists of illuminating composition (grey in colour) a first priming composition (black in colour) and an intermediate priming composition (orange-yellow-grey in colour). The priming compositions are slotted to fit over the cups for the locating pins in the bottom of the container. The first priming composition also functions as an ejection charge for the flare and parachute. The top of the pellet is covered by a cardboard disc through which a loop of steel wire is passed and embedded in the illuminating composition. The loop is attached to the lower end of a chain connected to the parachute. The whole of the surface of the flare, with the exception of the black priming composition, is thickly covered with a cream coloured nitrocellulose varnish. The total weight of the composite pellet including varnish, cardboard disc and wire loop is 1 oz. 14.5 dr.

The composition of the pellet as found by analysis are as follows:-

	First priming	Intermediate priming	Illuminating
Potassium nitrate	54.7 per cent	46.0 per cent	-
Barium nitrate	24.2 " "	-	-
Sulphur	9.2 " "	-	-
Charcoal	11.9 " "	-	-
Magnesium	-	6.0 " "	29.5 per cent
Aluminium	-	19.8 " "	-
Tetranitrocarbazole	-	23.2 " "	-
Sodium nitrate	-	-	55.4 " "
Sodium oxalate	-	-	11.4 " "
Wax	-	-	3.7 " "
Weight (grams)	1.54	4.61	46.84

Parachute.

The parachute and shrouds are made from rayon and is 28 inches in diameter when opened; the shrouds are each $18\frac{1}{2}$ inches long. The lower end of the shrouds pass through a cardboard disc and are tied in a knot immediately below it. The cords are spaced equi-distant around the disc and the knot is secured to the underside by an adhesive varnish. A steel split ring connects short loops of the shrouds below the knot to a chain attached to the flare. The chain is approximately $13\frac{3}{4}$ inches long and is similar to that attached to the nose cap. The parachute is folded and held firmly in the upper part of the container between tightly fitting wads of thick cardboard.

PROPELLING CARTRIDGE.

This cartridge consists of the normal small arm 7.92 mm. varnished steel case fitted with a wooden bullet.

The rear half of the bullet is plain, cylindrical in contour, and slightly smaller in diameter than the ordinary 7.92 mm. ball round. The forward half is reduced in diameter and tapers to a rounded tip. It is secured in the neck of the case by heavily rolling in the mouth. There are no wads in the case below the bullet.

The propellant consists of 22.9 grains of flake nitrocellulose powder, greenish yellow in colour, similar in form to that in the cartridge used with the German hollow charge rifle grenade described in Bulletin No.39, Item 988.

The cap shell is of steel, plated internally and externally with white metal. The cap composition weighs 0.46 grains and consists of lead styphnate 36 per cent, barium nitrate 38 per cent, calcium silicide 14 per cent, undetermined matter 2 per cent.

ACTION.

On acceleration, the flash from the propellant charge passes through the flash hole in the base plug and ignites the delay composition which burns for 6.5 seconds during flight before igniting the ejection charge which ejects the inner container. The steel disc at the top of the container ensures ejection of the nose cap without damaging the top of the container. The container is checked in its flight and its rotational speed reduced by the nose cap spinning around the container at the end of the connecting chain, thereby producing conditions more favourable for the ejection of the parachute. The softened tongue of the container is at the same time pulled outwards to avoid damage to the parachute and flare during ejection. Heat from the ejection charge, ignites the second delay in the projection at the base of the container which burns for approximately 1.5 seconds and then ignites the first priming composition. This composition ejects the parachute and flare from the container whilst the intermediate priming composition ignites the flare. The flare is then suspended from the parachute.

1446. GERMAN HOLLOW CHARGE STICKY ANTI-TANK GRENADE.

Panzerhandmine SS.

(Figs. 593 and 594)

This hollow charge anti-tank hand grenade is designed to be either placed on a tank or lobbed at it from a short distance. It is initiated by a mechanism which combines a percussion pull igniter for use when the grenade is placed on the tank, and an impact fuze which is designed to function at all angles of impact when the grenade is thrown. When thrown, the fuze is armed by the drag of a piece of cloth which is tied to an arming sleeve. The cloth also forms a streamer to assist in keeping the sticky end of the grenade in the direction of the target. Without the igniter and fuze, the grenade weighs 14 oz. 11 dr. and has an overall length of 7.5 inches. The body is painted olive green and a white band is painted below a press on lid which protects the sticky end. The handle is unpainted and rust proofed.

The grenade consists mainly of a tapered body containing a hollow charge with, at one end a flat sticky pad protected by a press on lid, whilst the other end has a small handle which houses the percussion igniter and the impact fuze.

The body is approximately $4\frac{1}{2}$ inches in length and made from mild steel approximately 0.5 mm. thick. The wall is parallel for about 1.2 inches from the forward end and tapers towards the rear. About the centre of the parallel portion it is cannellured to provide a seating for the flange of a hollow charge liner. The rear end is suitably turned and crimped over the flange of a collar which houses an exploder pellet. The collar is screwthreaded externally to provide a means of securing the handle to the body.

The grenade filling weighs 7 oz. 4 dr. and consists of a hollow charge of Cyclonite/TNT (50/50) with an annular exploder pellet of PETN/Wax (90/10) in the base. The wax contains a pink dye. A main detonator consisting of a deep flanged aluminium cup containing a lead/azide composition is accommodated centrally in the pellet.

The cavity liner is of steel and in the form of a flanged truncated cone, opening at an inclusive angle of 32 degrees. The wall thickness of the liner tapers from 0.12 inches at the mouth to 0.04 inches at the base. The flange of the liner is pierced by eight equidistant holes and is secured between the cannellure in the grenade body and a flanged distance sleeve which fits in the mouth of the body. The sleeve is secured in the body by six indentations in the walls.

The forward end of the body is closed by a thin metal cup shape flanged holder to which is riveted a felt pad impregnated with an adhesive substance consisting mainly of a mineral oil/polyisobutene composition. The holder is secured to the distance sleeve by a "U" section ring which is crimped over their flanges. The sticky felt pad is protected by a thin steel pull-off lid which is provided with a wire handle.

The grenade handle is made from thin steel. It is tubular and formed in two diameters with a conical neck in the centre. The larger end houses the fuze mechanism and is screwthreaded internally to receive a flanged retaining plate and the base of the bomb, whilst the smaller end houses the friction igniter. There are two tongues cut in the wall of the larger end which are bent inwards to form a seating for the retaining plate, and two holes diametrically opposite in the neck of the handle receive two tongues of an arming sleeve which fits around the smaller end of the handle.

The retaining plate has a raised centre which forms a cone bearing surface for one end of the fuze, and is pierced centrally to provide a flash hole. The flanged periphery is screwthreaded and the plate screws into the end of the handle on to the tongues.

FUZE (Fig. 594)

The fuze is designed to function at all angles of impact and is housed between the conical neck of the handle and the cone of the retaining plate. The mechanism consists mainly of an inertia pellet, a detonator holder and a creep spring. The inertia pellet is in the form of a steel thimble with a conical base and an internal hollow spigot in which is secured a needle. A central hole in the base of the pellet leads to three longitudinal slots in the spigot below the needle and forms a flash channel through which the flash from the percussion igniter passes to initiate the fuze detonator. The detonator holder is cylindrical and dome shape at the top; a circumferential channel is cut around its centre. It is bored centrally in two diameters to accommodate and form a seating for one end of the creep spring and to form a guide for the needle. An igniferous detonator is secured in the top of the needle guide. The holder is a sliding fit in the inertia pellet and the needle is held away from the detonator by the helical creep spring.

Arming arrangement.

The arming arrangement consists of a wire spring, an arming sleeve, a piece of cloth and a spring safety clip.

The wire spring is anchored, at one end, to the base of the spigot in the inertia pellet, and passes through a slot in the side and up the exterior. The free end is bent over to engage the circumferential channel in the detonator holder thereby preventing movement of the inertia pellet and holder and locking them in the safe position.

The arming sleeve fits loosely over the stem of the handle and has two tongues which pass through holes in the neck of the handle and up the side of the inertia pellet. In the safe position, one of the tongues retains the wire spring against the side of the inertia pellet and engaged in the channel of the detonator holder. Tied to the arming sleeve is a piece of white cloth, loaded at the free end with a sewn in metal pellet. The sleeve is retained in the safe position and prevented from moving down the stem of the handle by, a spring safety clip which fits around the stem between the bottom of the arming sleeve and a hexagonal nut on the friction igniter. A piece of string, with a porcelain bead at the free end, is tied to the clip.

Percussion Igniter (Brennzünder mit Schlagbolzen)

The igniter is similar in external appearance and marking to the German friction igniter for egg grenade described and illustrated in Bulletin No. 28, Item 521. The body and percussion mechanism is identical with that of the igniter in the German 2.6 cm. Pistol H.E. Cartridge described and illustrated in Bulletin No. 48, Item 1392, except that the body is made from brass.

The delay unit consists of a steel tube containing delay composition. It is screwthreaded externally at one end for insertion in the igniter body whilst the other end is closed by a perforated cap.

The paper percussion cap is inserted between the end of the delay unit and the striker.

ACTION.

When placed on the tank.

The press-on lid protecting the sticky pad is removed and the grenade is stuck on the tank by hand. The igniter is initiated by unscrewing the blue cap and pulling the cord. Tension on the cord withdraws the pull ring and retaining washer to the rear thereby releasing the pull ring which rides over the inclined notch of the striker. The striker spring having been compressed re-asserts itself and the striker is forced on the percussion cap which ignites the delay composition. After a short delay, the flash from the delay unit passes through the fuze mechanism to the fuze detonator which initiates in turn the main detonator, exploder pellet and the main filling.

When thrown at the tank.

Before throwing the grenade, the spring safety clip is removed from the handle and the arming sleeve is held by the hand in the safe position.

During flight, the white cloth drags the arming sleeve to the rear thus releasing the wire spring and unlocking the inertia pellet and detonator holder of the fuze. The needle is then held away from the detonator by the creep spring. On impact, the needle is forced on to the detonator by direct action. On graze, the needle is carried on to the detonator or it may be forced on it by sideways movement of either the detonator holder or inertia pellet. The flash from the fuze detonator initiates the main detonator.

FIG. 587.(ITEM 1441.)
GERMAN FUZE 5cm. KOPF. Z 2 ZERL P.

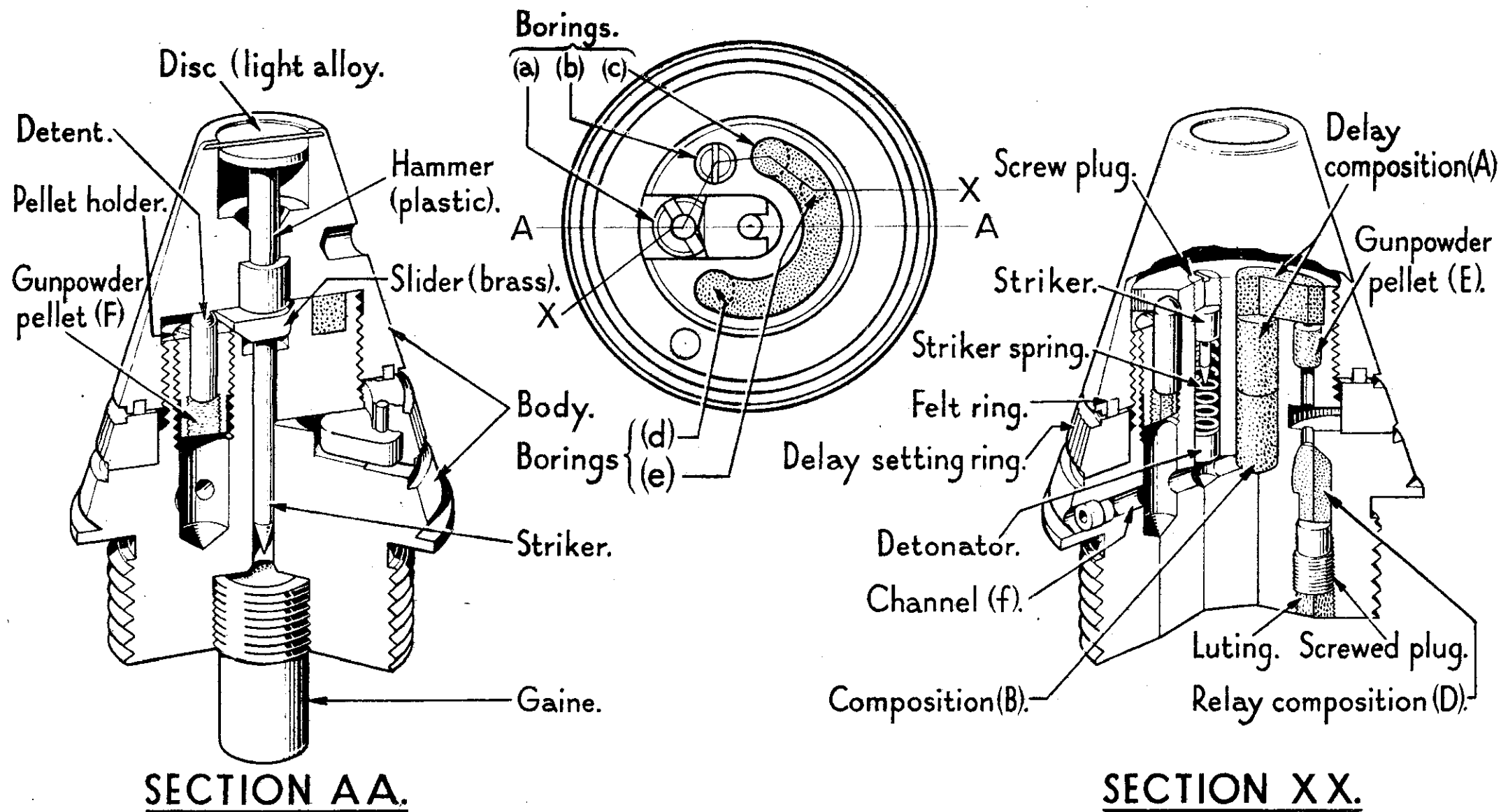


FIG. 588 (ITEM 1441.)
GERMAN FUZE 5cm. KOPF. Z 2 ZERL P.

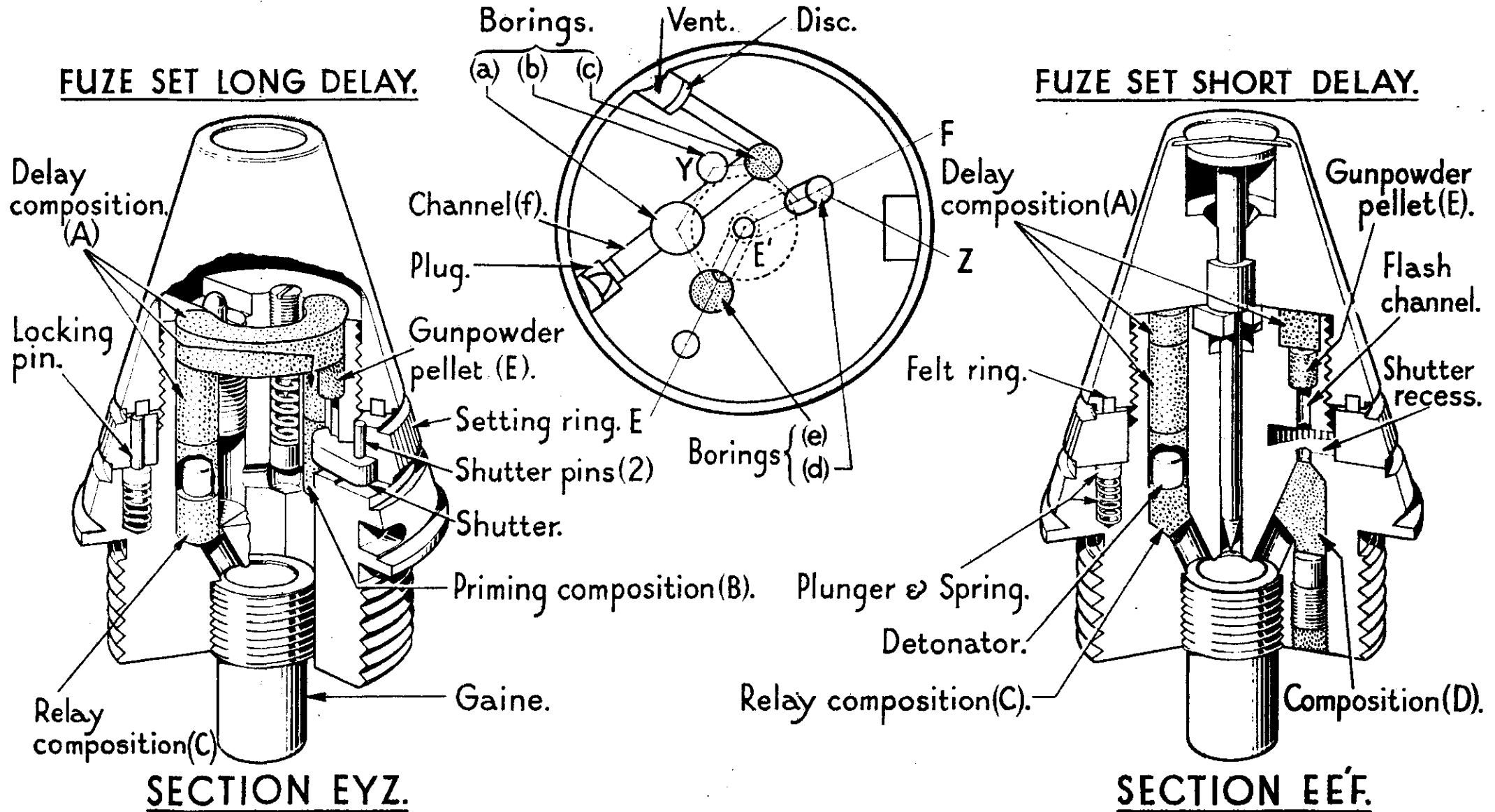


FIG. 589 (ITEM 1442.)
GERMAN 5 cm. FLAK 41 SHELL, H.E./T.
5 cm. Spgr. Gr. 41 L'Spur.

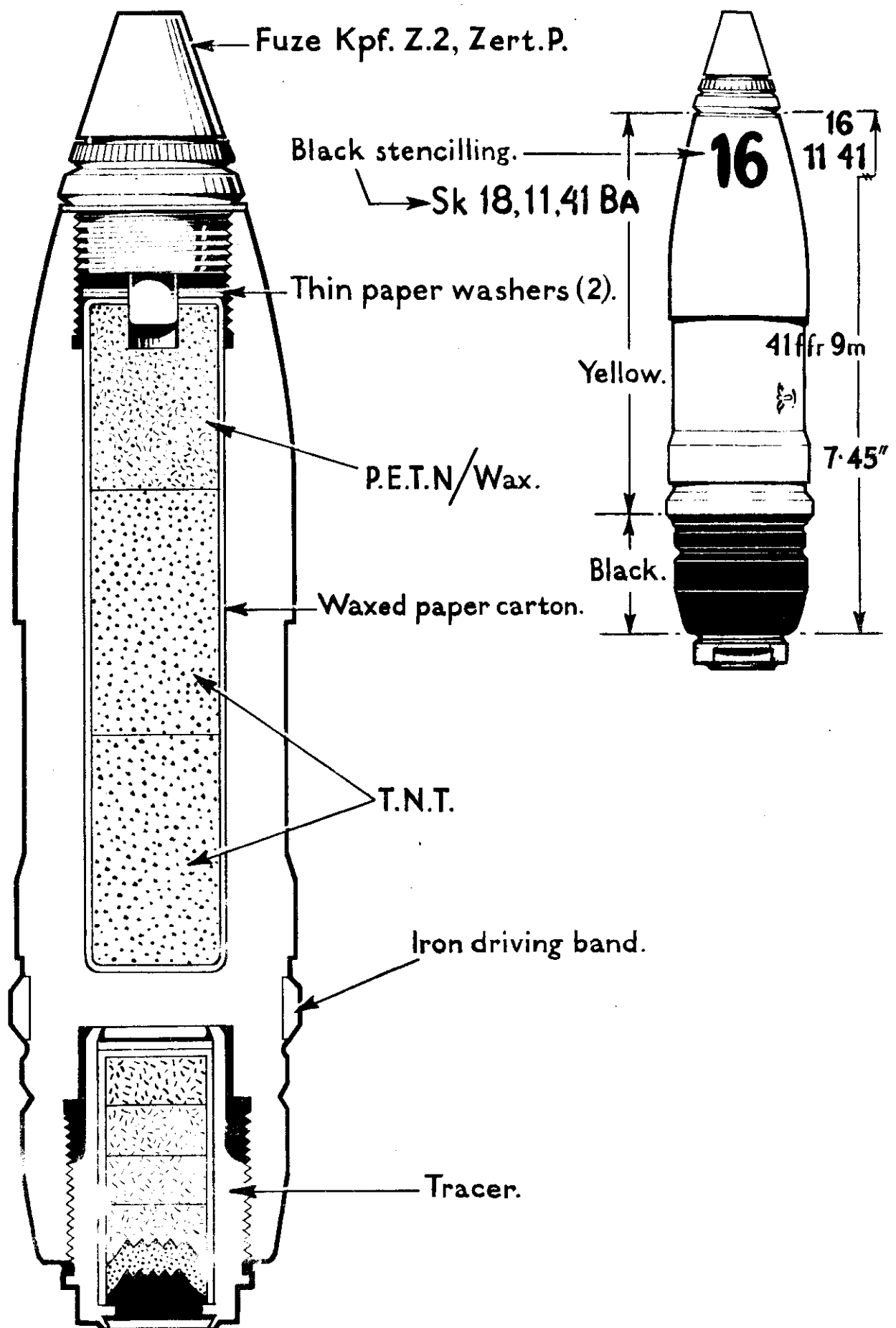
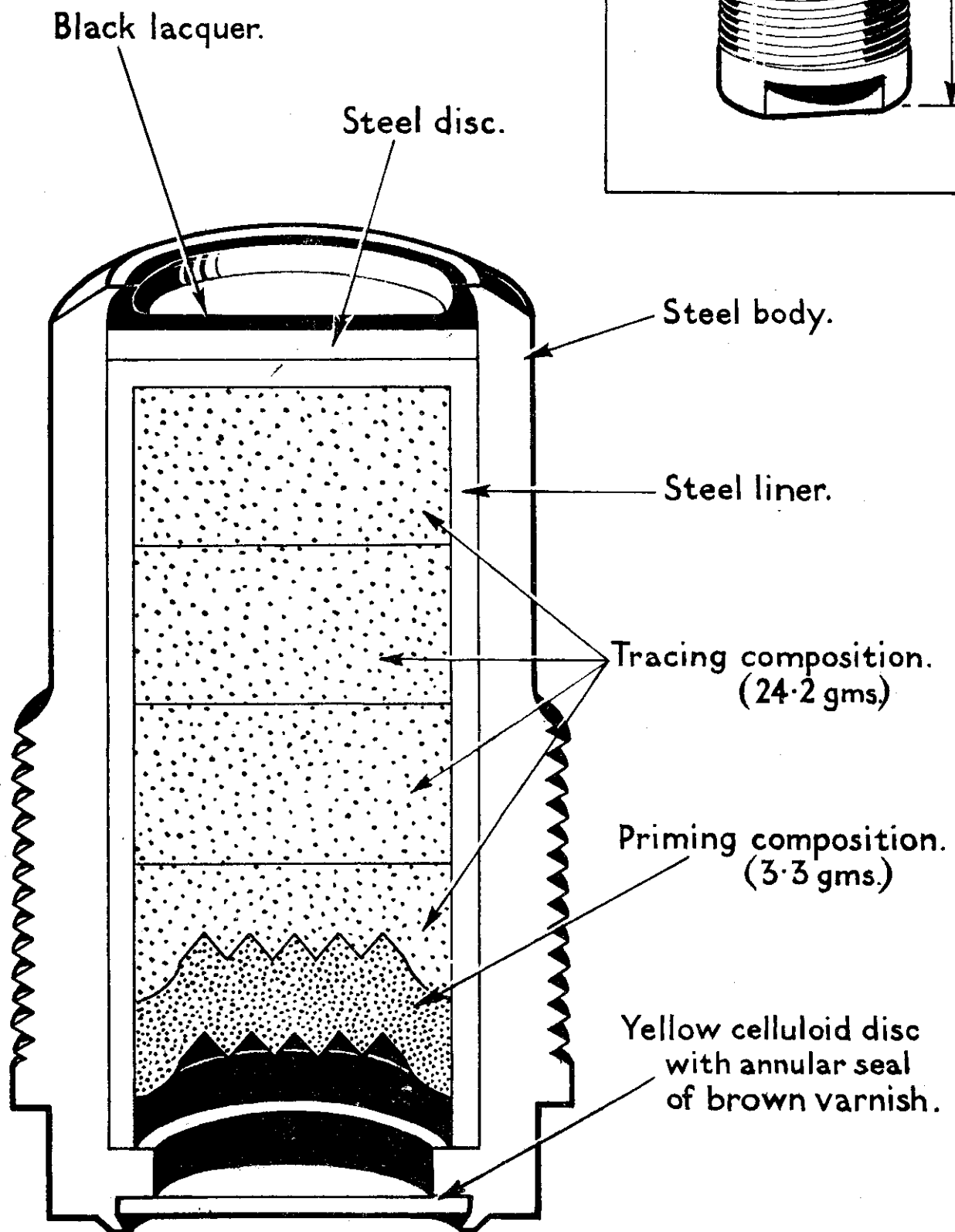
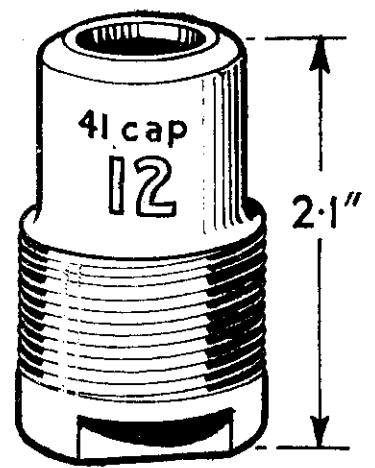


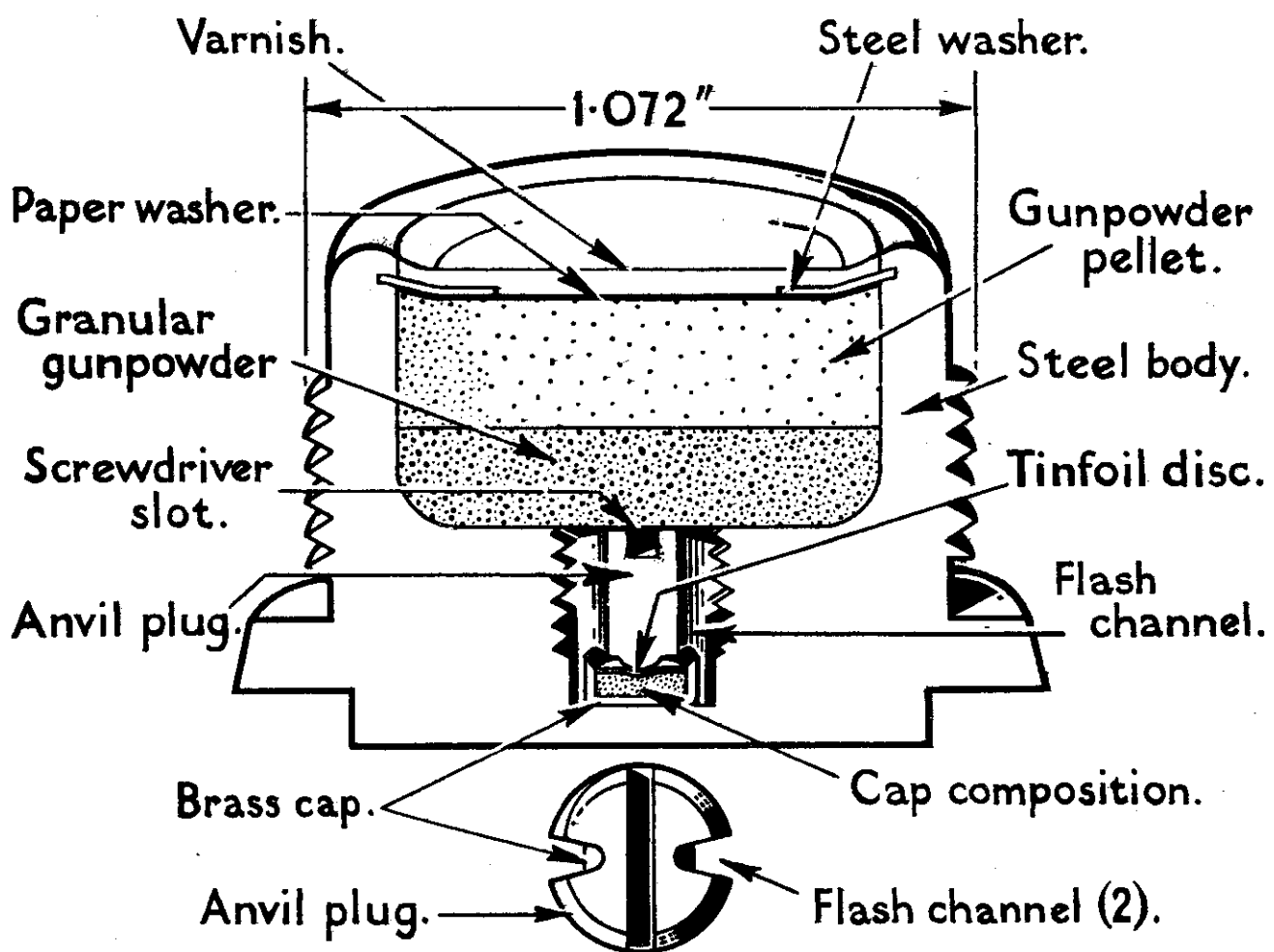
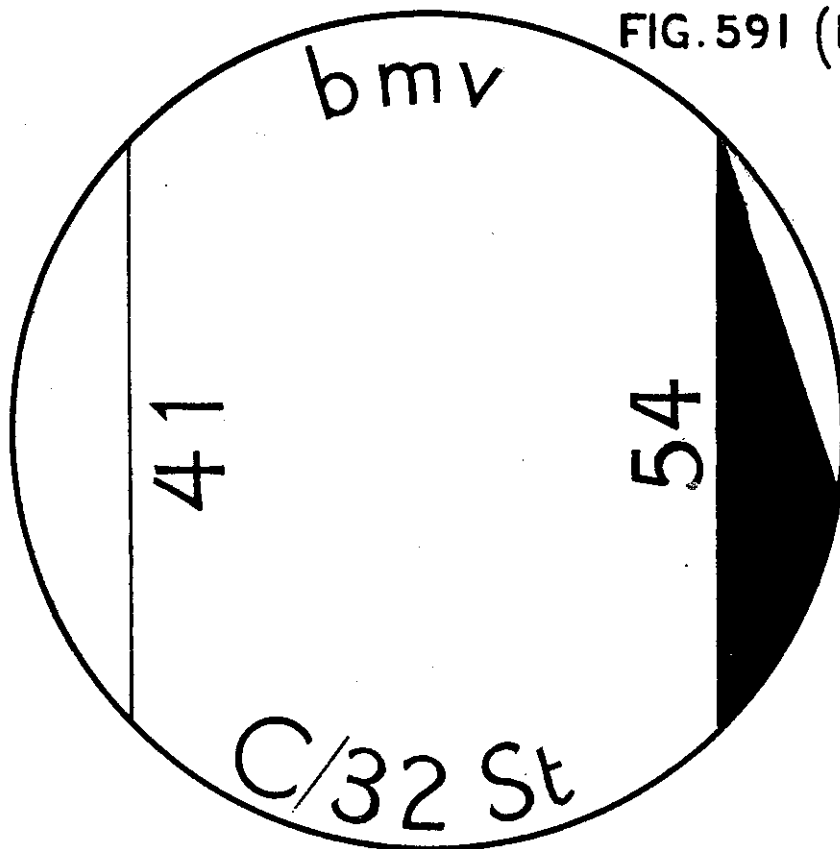
FIG. 590 (ITEM 1443.)

GERMAN TRACER for
5cm. FLAK. 41 H.E./T. SHELL.



GERMAN PERCUSSION PRIMER C/32 St.

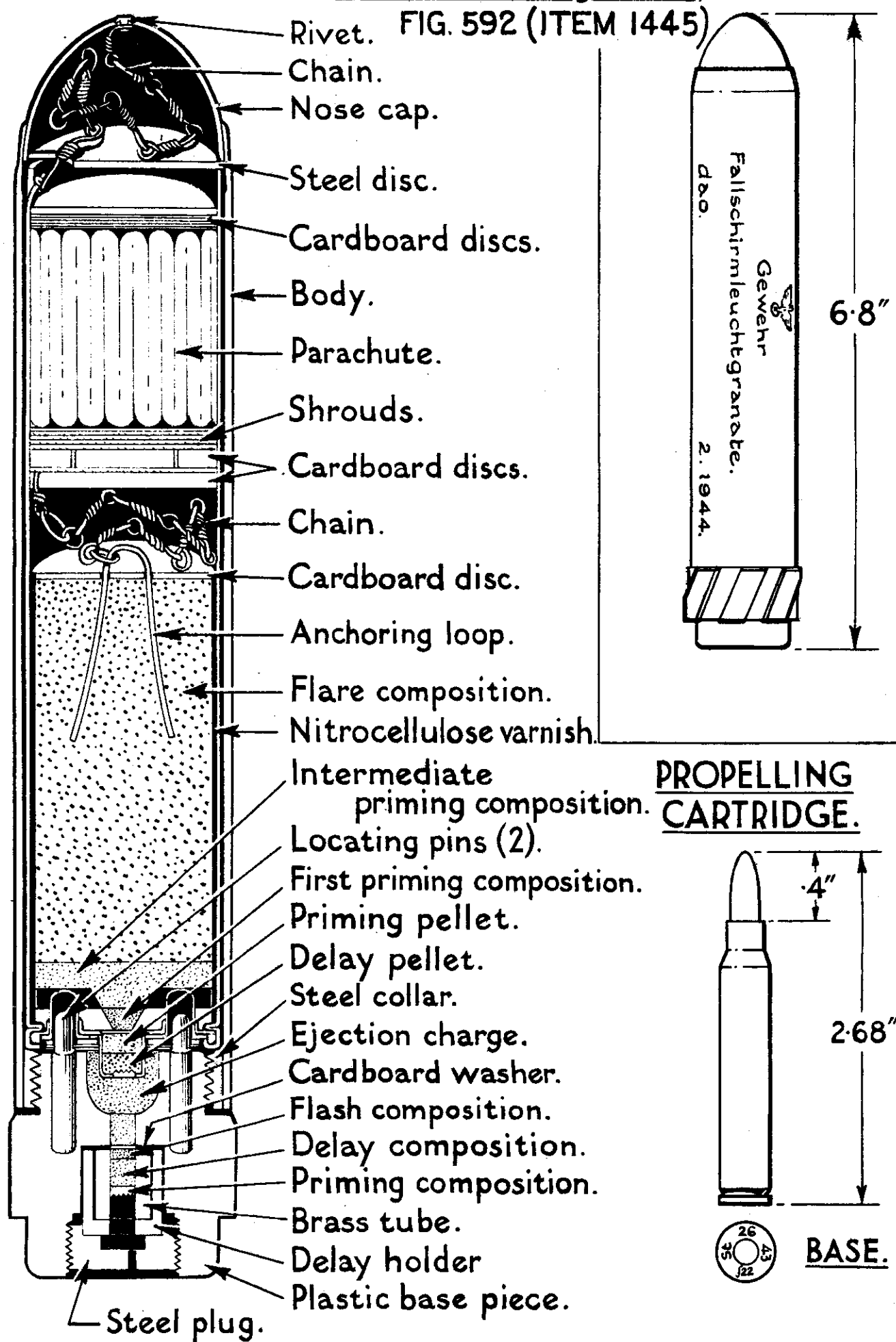
FIG. 591 (ITEM 1444)



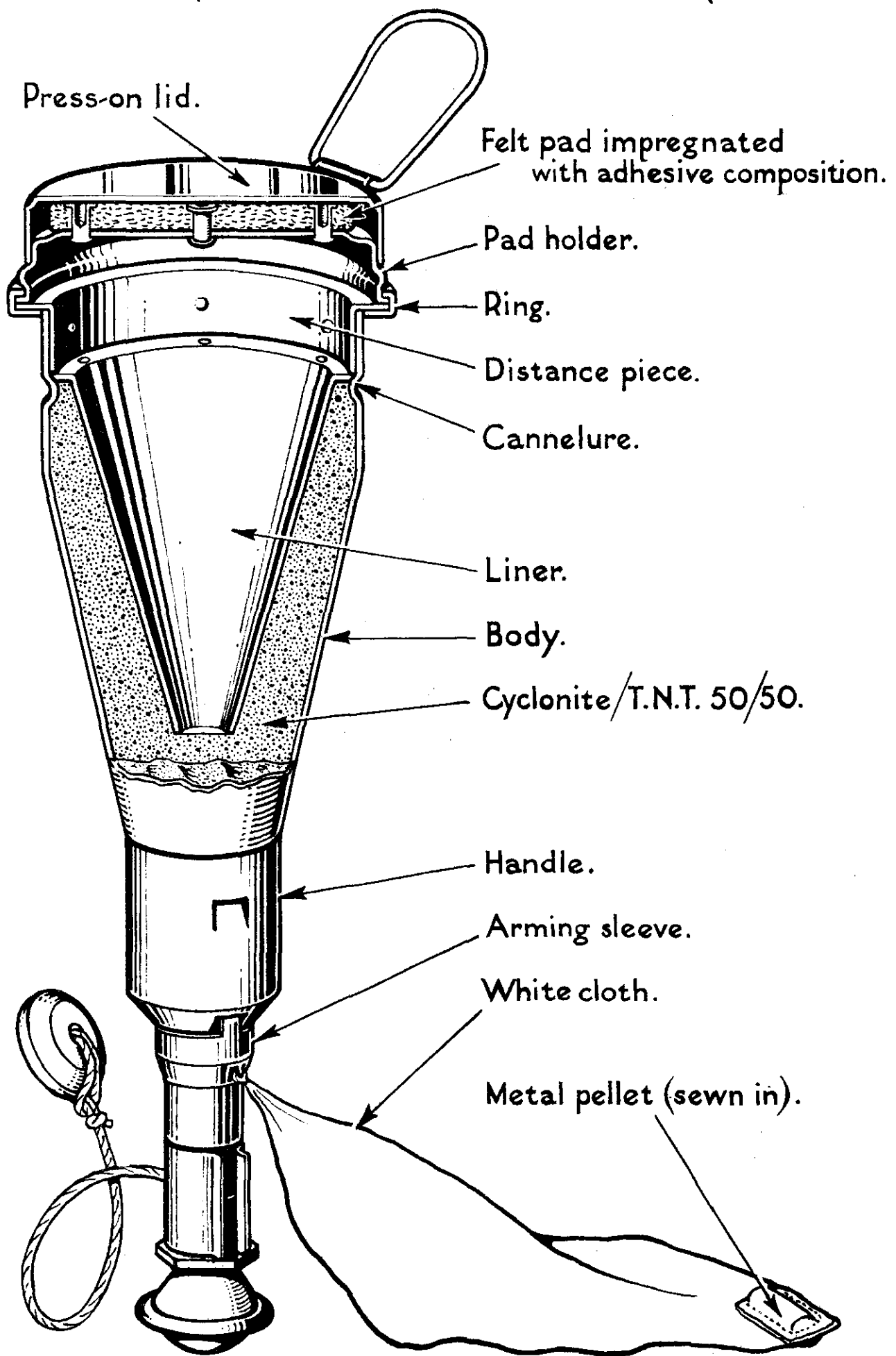
PLAN OF CAP-ANVIL ASSEMBLY.

GERMAN 3cm. RIFLE ILLUMINATING GRENADE.

(Gewehr Fallschirmleuchtgranate.)



GERMAN HOLLOW-CHARGE STICKY ANTI-TANK GRENADE.
(Panzerhandmine S.S.) FIG.593 (ITEM 1446)



FUZE from GERMAN HOLLOW-CHARGE STICKY A.T. GRENADE.

(Panzerhandmine S.S.) FIG. 594 (ITEM 1446)

