

DEPARTMENT OF THE ARMY TECHNICAL MANUAL
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER

TM 9-1985-2
TO 11A-1-26

GERMAN EXPLOSIVE ORDNANCE

(BOMBS, FUZES, ROCKETS
LAND MINES, GRENADES
AND
IGNITERS)

at

DEPARTMENTS OF THE ARMY AND THE AIR FORCE
MARCH 1953

ounces of powdered picric acid, and carries the top plate which is fixed by means of a rolled, overlapping flange 0.2 inch thick.

In the center, the top plate bears a screw thread into which is screwed an adapter which takes the igniter. The adapters found in different specimens are of different materials, such as brass and plastic in various colors, suggesting local manufacture of not very high standard.

OPERATION. A moderate pressure on the top of the igniter crushes the metal drum and the glass ampoule inside it. The acid pours into the white powder and a flash results from their chemical interaction, setting off the detonator, and in turn, the mine.

REMARKS. This mine was manufactured for the Germans by the French. There are other variations of this mine which embody minor manufacturing differences.

BZ-24, NbBZ-38 (FRICTION PULL TYPE)

DATA:

Length: $2\frac{9}{10}$ inches.

Diameter: $\frac{1}{4}$ inch O. D.

Material: Soft lead sheath, brass fitting, steel tube.

DESCRIPTION. The igniter consists of a lead tube or sheath connected to a threaded brass fitting by a steel tube. The steel tube is threaded on both ends and contains the powder delay pellet. The lead sheath contains a copper capsule which holds the friction composition. A friction wire is coiled to provide resistance to pulling and is joined to the pull loop. The pull loop extends through the lead tube, which is flattened or pressed together at the upper end, thus preventing the loop and friction wire from being freely and inadvertently withdrawn. A protective cap which protects the delay pellet must be removed before using the igniter. A colored band at the base of the lead sheath is presumed to identify the type of delay pellet contained. The NbBZ-38 has a white band for purposes of identification. (See fig. 249.)

OPERATION. When the loop is pulled, it frees itself from the soft lead tube, drawing the friction wire through the friction composition contained in the capsule. The resulting flame ignites the delay pellet. When the delay pellet burns through, it ignites a fuze or a detonator attached

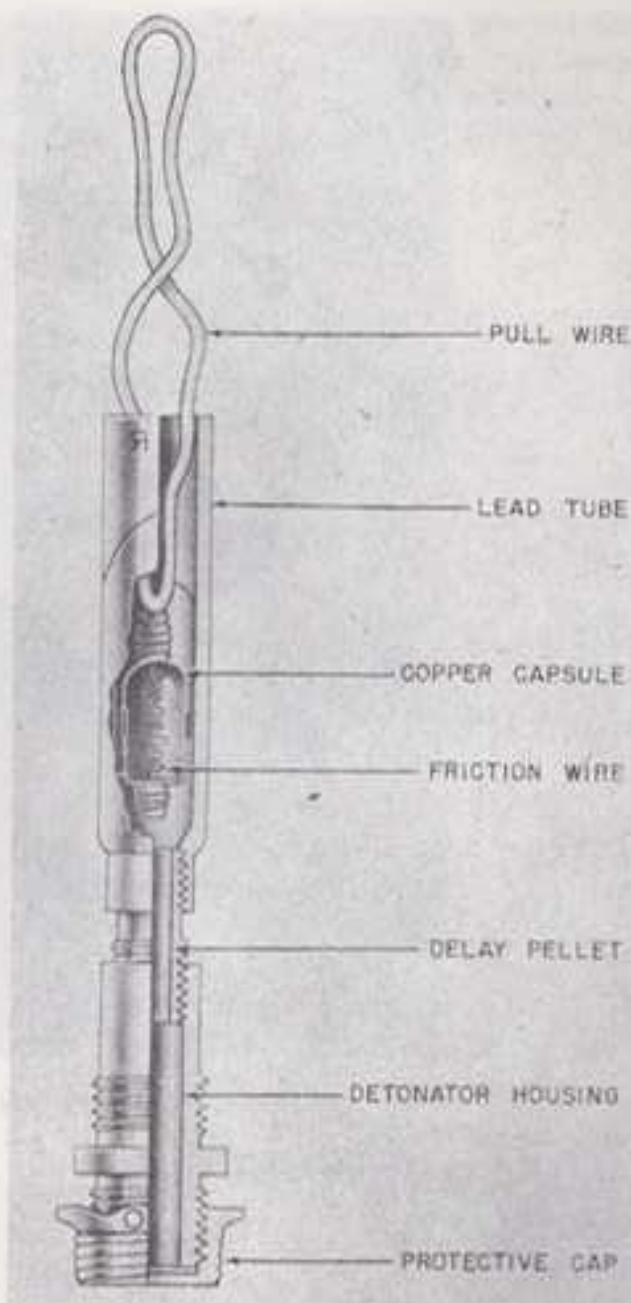


Figure 249—BZ-24 Friction Igniter Pull Type;
NbB Z-38 Friction Igniter Pull Type

to the fitting. The pellet used with the stick grenade has a delay of $4\frac{1}{2}$ seconds.

EMPLOYMENT. This igniter is used with the German "stick" grenade and also the smoke grenade. When used with the stick grenade, the entire igniter is screwed into the head end of the handle by means of the threads on the fitting. The loop is attached to the trip cord in the handle of the grenade.

The igniter used with the stick grenade is marked "BZ-24" and the igniter used with the smoke grenade is the NbBZ-38.

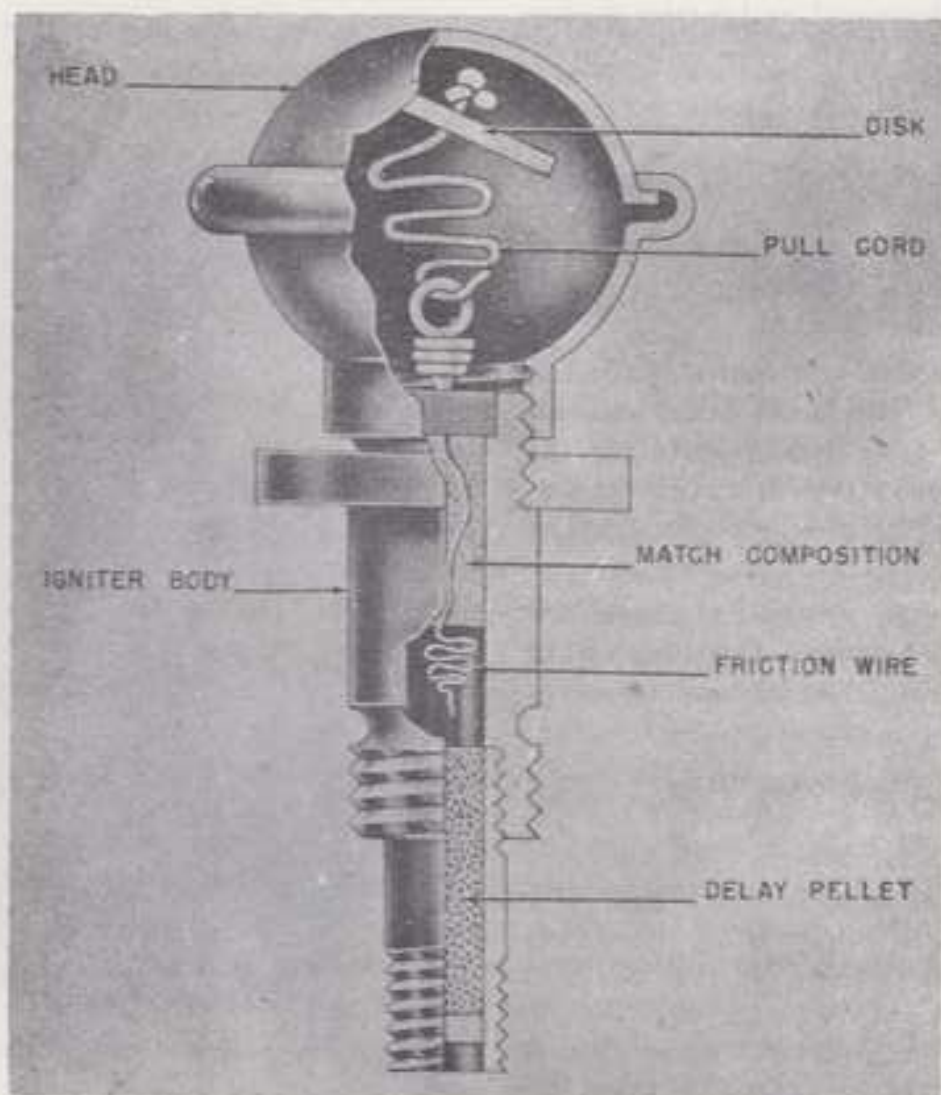


Figure 250—B. Z. E. Friction Igniter Pull Type

B. Z. E. FRICTION PULL TYPE

DATA:

Length: $2\frac{1}{10}$ inches.

Diameter: $\frac{7}{8}$ inch O. D.

Color: Blue with egg grenade; red with smoke flare.

Material: Brass body; steel tube.

DESCRIPTION. The short body of this igniter is usually made of brass and contains a friction composition in which a friction pull wire is cast. (See fig. 250.) The lower end of the friction wire is coiled to provide resistance which serves to ignite the friction composition when the wire is drawn through it. The upper end of the friction wire has a loop to which is fastened one end of a cord about $2\frac{1}{4}$ inches long. The free end of the cord is attached to a disk which is within the head. The steel tube attached to the body contains a "delay pellet" of compressed powder,

which in turn, serves to ignite a fuze or detonator. **OPERATION.** When the head is unscrewed and the cord is pulled out, the friction wire ignites the friction composition and this in turn ignites the compressed powder delay pellet in the steel tube. When the delay pellet burns through, it ignites the attached fuze or detonator.

EMPLOYMENT. When used with the "egg" grenade, the igniter head under present practice is colored blue and the body is fitted with a 4-second delay pellet in the tube. When used with "message tubes" smoke flare, the igniter head at present is colored red and the body is fitted with a 1-second delay pellet in the tube.

BZ-39 (FRICTION PULL TYPE)

DATA:

Length: 3 inches.

Diameter: $\frac{1}{4}$ inch O. D.

Material: Aluminum.

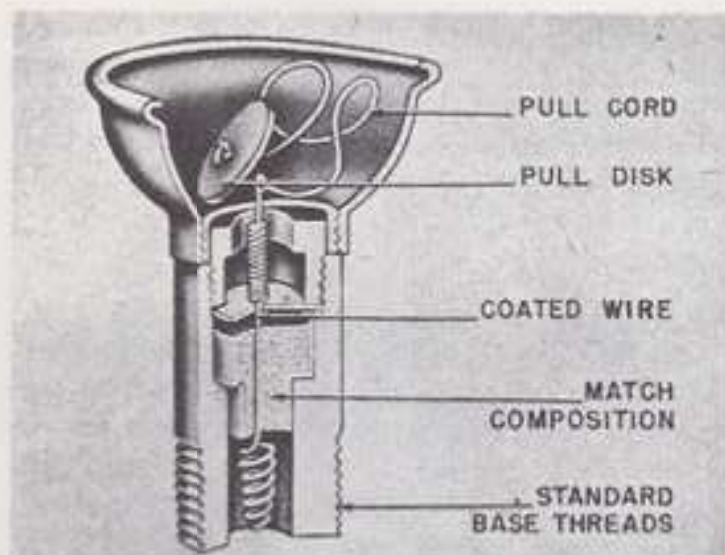


Figure 252—ZDSCHN-ANZ-39 Friction Igniter Pull Type

OPERATION. The spherical cap is unscrewed and the friction wire is pulled through the friction composition by means of the pull disk and cord to ignite the friction composition.

EMPLOYMENT. This igniter is primarily used for the ignition of safety fuze in demolition work. Also, it is used to ignite smoke candles, to booby trap Tellermines and grenades, and to set off improvised mines and booby traps.

ANZ-29 (FRICTION PULL TYPE)

DATA:

- Length: 1½ inches.
- Diameter: 1.2 inches O. D.
- Color: Unpainted.
- Material: Brass.

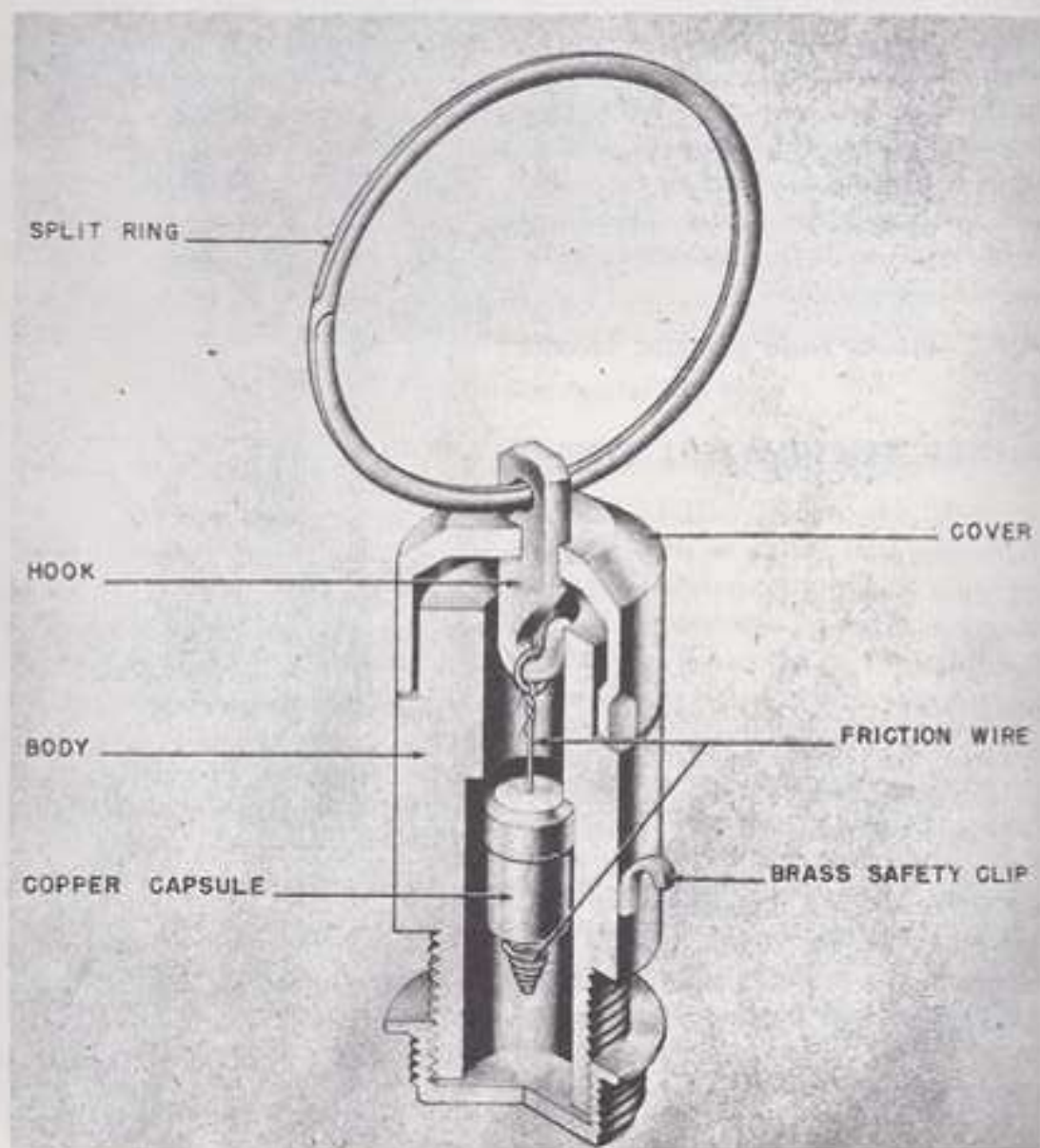


Figure 253—ANZ-29 Friction Igniter Pull Type

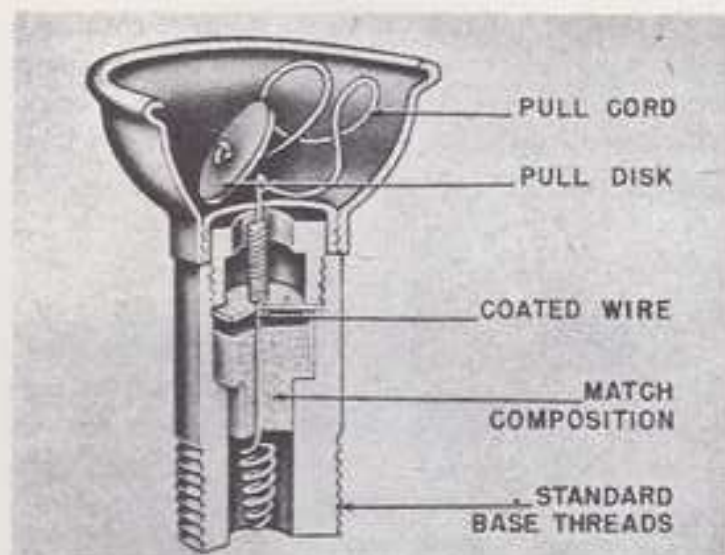


Figure 252—ZDSCHN-ANZ-39 Friction Igniter Pull Type

OPERATION. The spherical cap is unscrewed and the friction wire is pulled through the friction composition by means of the pull disk and cord to ignite the friction composition.

EMPLOYMENT. This igniter is primarily used for the ignition of safety fuze in demolition work. Also, it is used to ignite smoke candles, to booby trap Tellermines and grenades, and to set off improvised mines and booby traps.

ANZ-29 (FRICTION PULL TYPE)

DATA:

- Length: 1½ inches.
- Diameter: 1.2 inches O. D.
- Color: Unpainted.
- Material: Brass.

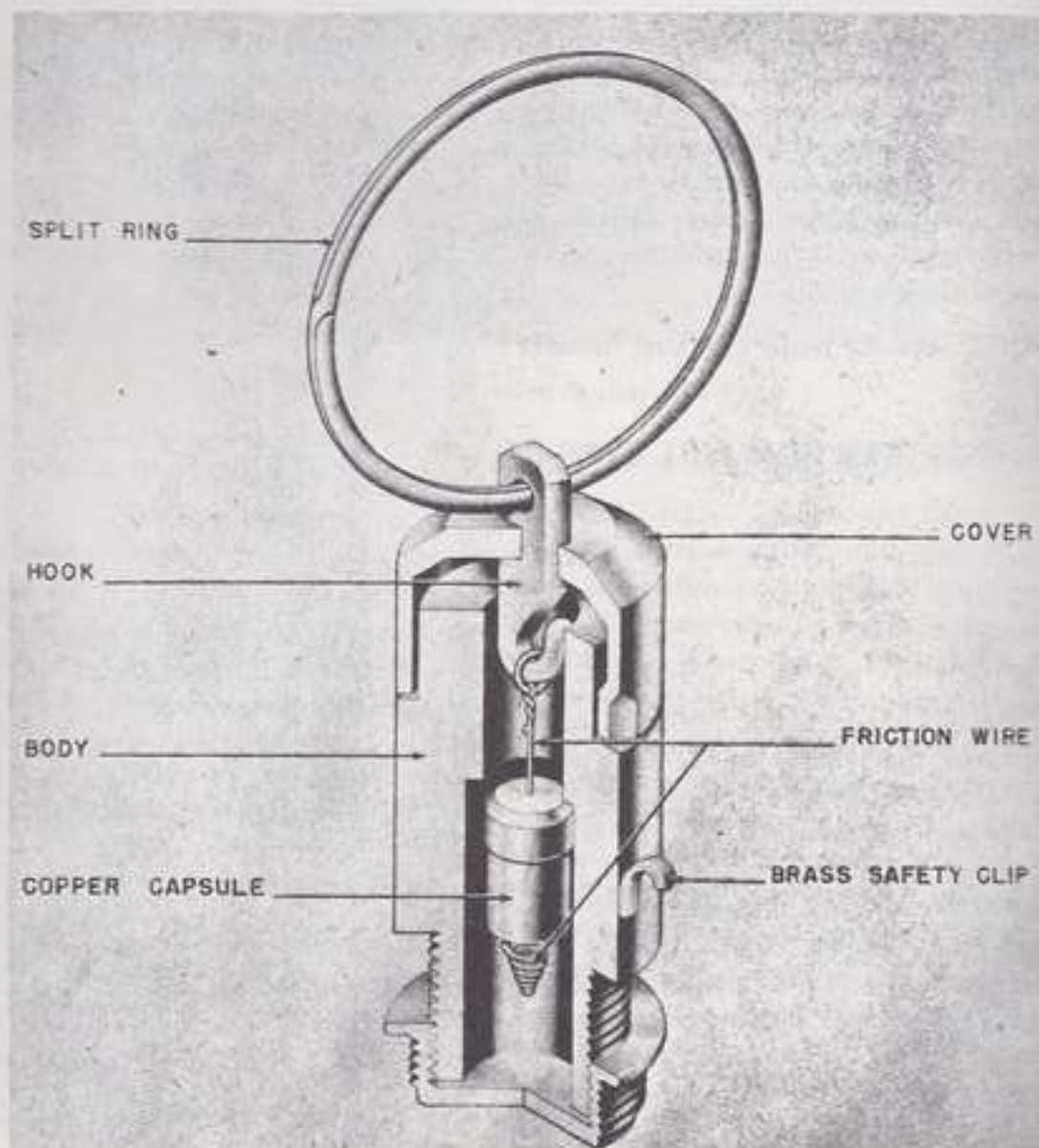


Figure 253—ANZ-29 Friction Igniter Pull Type

main parts: The upper casing, the base plate, the clockwork and striker mechanism, and the explosive filling. It is of sheet steel approximately 1 mm thick. (See fig. 283.)

UPPER CASING. The upper casing of sheet metal is of one piece and has strengthening corrugations on its upper surface. Situated centrally is an opening 1 inch in diameter, through which protrudes the release button keyed to a metal release fork. In the upturned lip of the opening is a small slot $\frac{3}{8}$ inch long to allow passage of the arming bar. This latter is a thin steel bar having a ring at its outer end. The clockwork mechanism winding post protrudes through the upper casing and the hole is made weatherproof.

BASE PLATE. The base plate is of sheet steel and has a circumferential lap joint to secure the upper casing. This base plate is not secured to the internal parts.

EXPLOSIVE FILLING. The explosive filling consists of two circular segments of cast TNT enclosed in waxed paper. The lower portion has a housing for the cap and standard detonator assembly.

STRIKER MECHANISM. The internal metal structure consists primarily of a semicircular metal plate to which all the parts are clamped. On the underside of the plate is fixed the striker assembly, consisting of a spring-loaded metal striker. The metal sear is pivoted and is held down at its inner end by means of the small spring fitted to the release button fork. The sear holds back the striker at the beveled stop so long as pressure is applied to the release button. The striker is further secured before arming by the safety pin which is of thin steel wire 2 inches long and passes through a small slot in the base plate and terminates in a small ring.

CLOCKWORK MECHANISM. The clockwork mechanism consists of a strong main spring which drives the governing spinner by a set of gear wheels enclosed in metal casing. The mechanism is wound at the post by means of a key. (No specimen of this latter has yet been recovered.) In the safe position the clockwork is jammed by the arming bar which also holds down the release fork and button.

No exact figure can be given for necessary pressure to hold down the release button, but this is

probably between 4 to 6 pounds. The device will function when the button is allowed to rise about $\frac{1}{2}$ inch.

OPERATION. To arm, the clockwork mechanism is wound and the device placed under any object, for instance a mine. The arming bar is then pulled out by means of a cord or wire attached to the ring.

When released, the clockwork runs for about 35 to 40 seconds and the expanding mainspring gradually forces the safety pin ring outwards, thus withdrawing the safety pin. This latter operation taking an average of 10 to 15 seconds. The striker is now only retarded by means of the sear, which in turn, is held in place by the compressed spring of the release button. Removal of the weight from the release button allows the striker spring to force up the sear by means of the beveled stop. The striker thus moves forward to fire the cap and so detonates the TNT. Such detonation, if under an antitank mine, would thereby also detonate the mine.

EMPLOYMENT. This mechanism is used beneath land mines as an antilifting and antiremoval device.

STICK HAND GRENADE MODELS 24 AND 39, STIELHANDGRANATES 24 AND 39

DATA:

Model 24:

- Over-all Length: 1 foot 2 inches.
- Diameter of body: $2\frac{3}{4}$ inches.
- Color of Body: Olive drab.
- Weight: $\frac{1}{2}$ pound.
- Weight of Explosive Filler, 6 ounces.
- Explosive Filler: TNT.
- Igniter: B. Z. 24.
- Delay: 4 to 5 seconds.

Model 39:

- Over-all Length: 1 foot 4 inches.
- Color: Olive drab.
- Weight: 1 pound 6 ounces.
- Weight of Explosive Filler: 7 ounces.
- Igniter: B. Z. 24.
- Effective Blast Radius: 16 yards.
- Delay: 4 to 5 seconds.

DESCRIPTION. These grenades are similar in all characteristics except size.

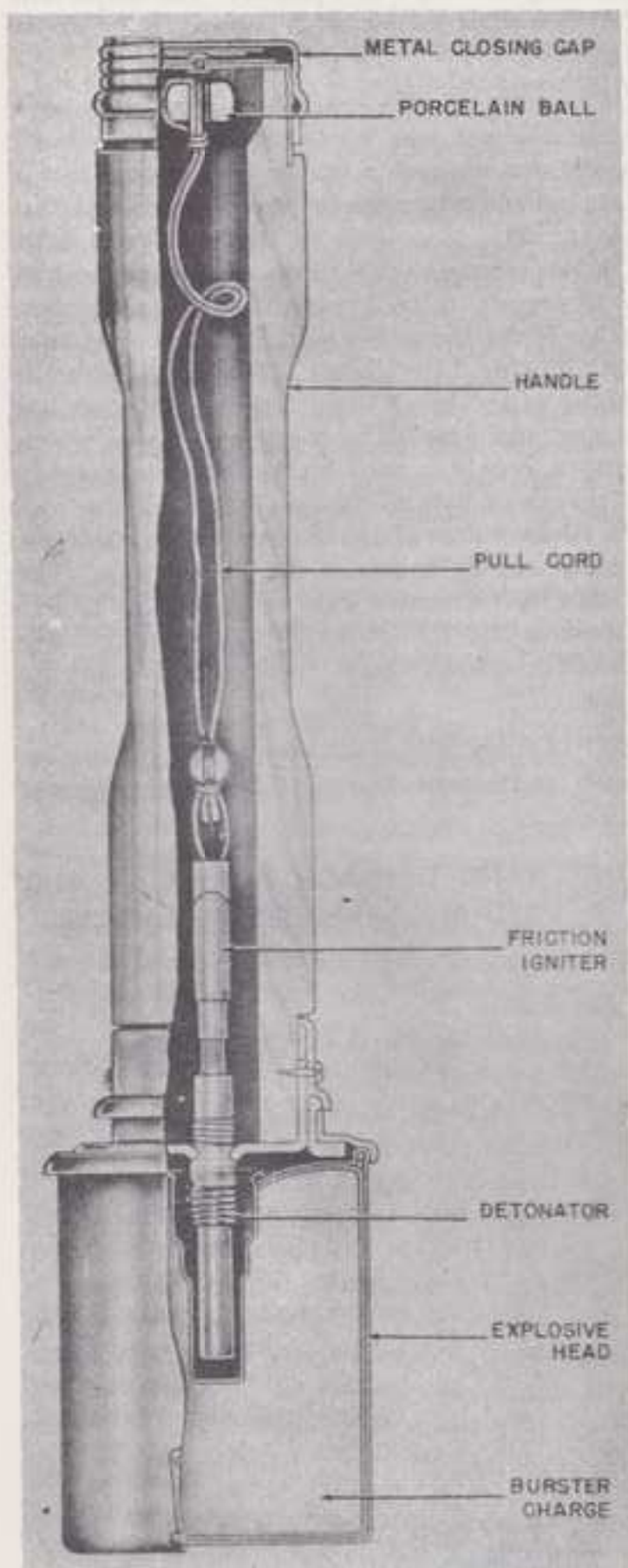


Figure 284—Model 24 Stick Hand Grenade; Model 29 Stick Hand Grenade

These grenades consist of a thin iron or steel casing, or head, containing the explosive filler, which is screwed onto a hollow wooden handle, through the center of which runs a double length of cord. This cord is attached at one end to a lead ball which is part of the igniter, and at the other end to a porcelain ball. The cavity in which the porcelain ball rests is closed by a metal cap that screws on. Inside the cap is a spring-actuated metal disc that prevents movement of the porcelain ball. (See fig. 284.)

These grenades use igniters B. Z. 24 consisting of a lead tube or sheath connected to a threaded brass fitting by a short steel tube. The steel tube is threaded on both ends and contains the powder delay pellet. The lead tube contains the copper capsule which holds the friction composition. The friction wire is cast in the friction composition and contained in the capsule which is coiled at the bottom to provide resistance to pulling and joined to the "pull" loop at its opposite end. When the loop is pulled, it frees itself from the lead tube drawing the wire through the friction composition and the resulting flame ignites the delay pellet.

OPERATION. The metal cap is unscrewed from the handle and the porcelain ball is pulled. This will pull a wire through the delay pellet. The grenade is then thrown and after a 4- to 5-second delay the delay pellet will initiate the detonator.

STICK HAND GRENADE, MODEL 43, STIELHANDGRANATE 43

DATA:

Over-all Length: 1 foot 3 inches.
 Diameter of Body: $2\frac{3}{4}$ inches.
 Weight: $\frac{1}{2}$ pound.
 Weight of Explosive Filler: 6 ounces.
 Explosive Filler: TNT.
 Igniter: B. Z. E.
 Delay: 4 to 5 seconds.

DESCRIPTION. This grenade consists of a thin iron or steel casing, or head, containing the explosive filler. This is secured to the wooden stick handle by four deep stabs. (See fig. 285.) The igniter screws into the top of this head and is of the standard pull friction type, had a blue head and a 4- to 5-second delay.

This grenade differs from the standard Model 24 stick grenade only in the position of the igniter

Igniter: B. Z. E.

Delay: 4 to 5 seconds.

DESCRIPTION. This is a small thin-cased offensive type grenade with a high proportion of a low-grade explosive. It is ignited by a friction type igniter and a 4- to 5-second delay pellet. (See fig. 286.) This grenade uses the B. Z. E. friction-type igniter. The short body of this igniter is usually made of brass and contains a friction composition in which a friction pull wire is cast. The lower end of the friction wire is coiled to provide resistance which serves to ignite the friction composition when the wire is drawn through it. The upper end of the friction wire has a loop to which is fastened one end of a cord. The free end of the cord is attached to a disk which is within the head. The head screws on to the top of the body and a steel tube containing the delay pellet screws into the bottom of the body.

OPERATION. The igniter head is unscrewed and pulled, thus drawing the wire through the friction composition and igniting the delay pellet. The grenade is then thrown and after a delay of 4 to 5 seconds the delay pellet will initiate the detonator thus setting off the explosive filler.

REMARKS. There has been found a practice

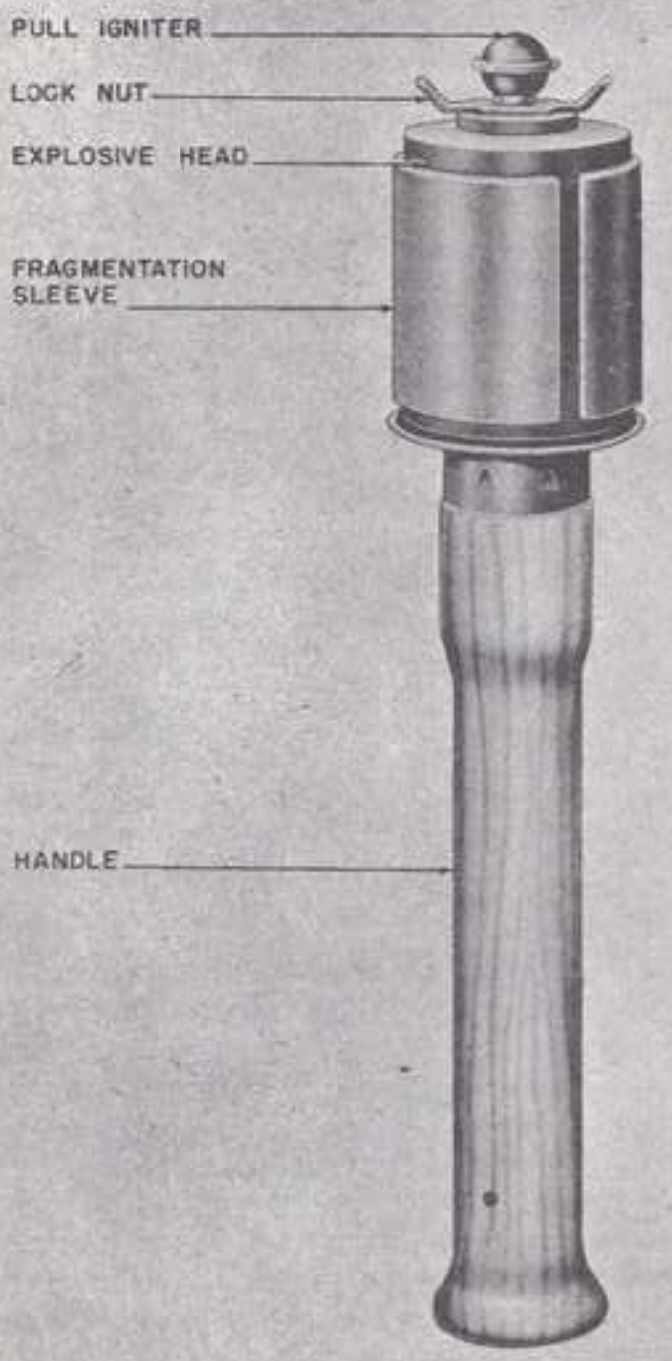


Figure 285—Model 43 Stick Hand Grenade

and method of affixing the explosive head to the stick handle. Usually this type is found with a fragmentation sleeve.

**EGG-TYPE HAND GRENADE,
EIERHANDGRATE 39**

DATA:

- Over-all Length: 3 inches.
- Maximum Diameter: 2 inches.
- Color: Black body with blue igniter head.
- Weight: 12 ounces.

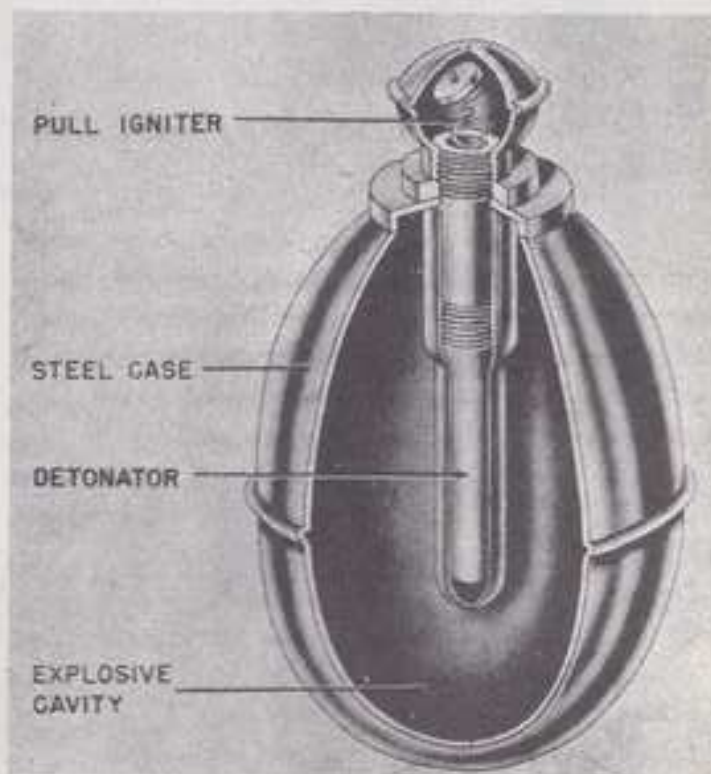


Figure 286—Egg Type 39 Hand Grenade

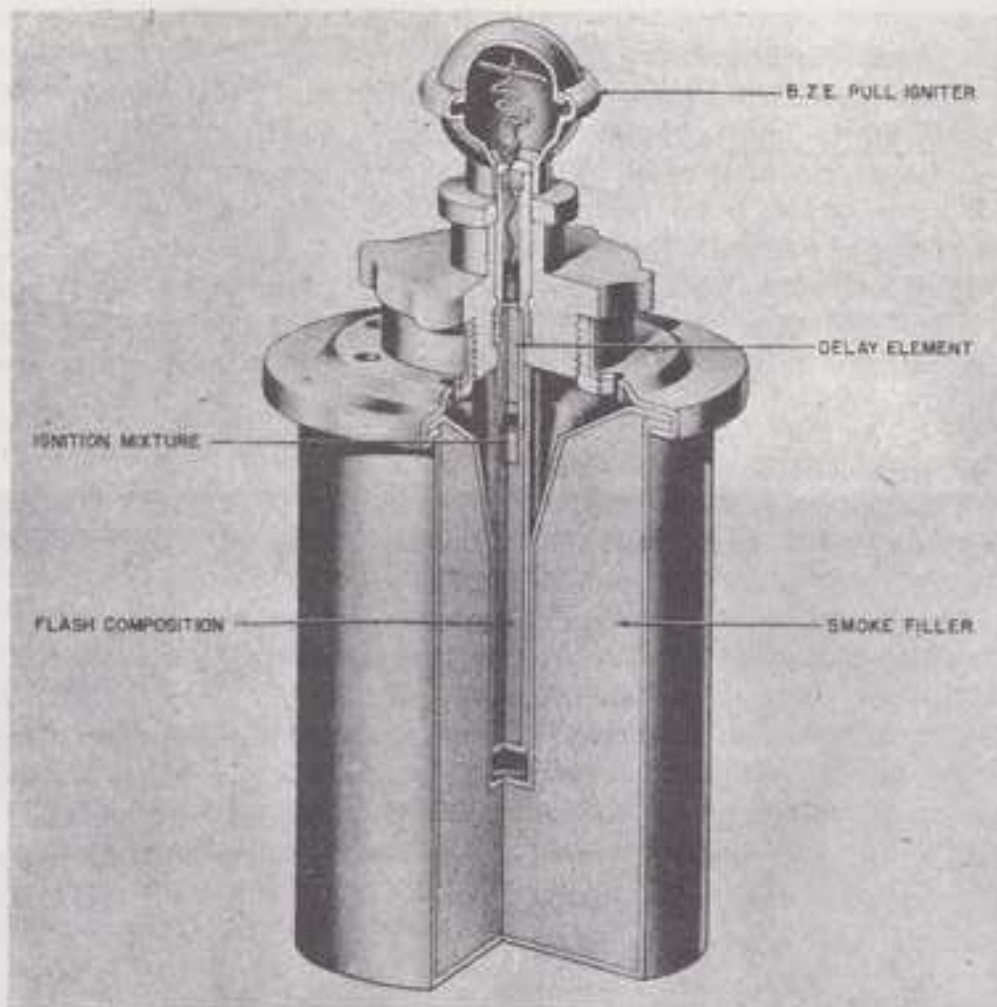


Figure 291—Type 41 Smoke Hand Grenade

the handle, before throwing, by a metal cap at the base of the handle. The body is made in two pieces crimped together and attached to the handle by a metal band. (See fig. 290.)

The fuze is located at the top of the handle and consists of a striker which is held away from the primer by a creep spring and two steel balls. The two balls fit into a recess in the striker and are held outward by a safety pin fitting between them, thus causing them to bear against the top of the striker housing and prevent the striker from moving down. Attached to the safety pin is a small length of tape which is held in by the metal cap and a semicircular clip attached to one fin and fitting around the handle.

Beneath the primer and in the base of the handle is a detonator and a picric acid gaine. The main filler is cast around a cone in the body to give a hollow-charge effect.

OPERATION. Before throwing, the cap over the end of the handle is pulled off and the fins held

against the handle.

When the grenade is thrown, the four fins fly out because of their spring ribs. When the clip attached to one fin is pulled away from the housing, this releases the tape which unwinds and pulls the safety pin out of the striker. During flight the safety balls move in freeing the striker which compresses the creep spring on impact setting off the primer, detonator, gaine and main filling.

SMOKE HAND GRENADE 41 AND PROTOTYPE NEBELHANDGRANATE 41

DATA:

Over-all Length: 4.7 inches.

Maximum Diameter: 2.3 inches.

Color: Olive drab.

Total Weight: 21 ounces.

Filling: (HC) Berger type mixture. Zinc and Hexachlorethane.

Ignition: B. Z. E.

Delay: N4 Ignition Tube: 4½ seconds.

GERMAN EXPLOSIVE ORDNANCE

DESCRIPTION:

PROTOTYPE. This grenade consists of a body which is the head of the smoke hand grenade 39 into which the B. Z. E. igniter is fitted by means of an adapter made of some synthetic resin. The adapter is threaded externally to screw into the neck of the grenade body and internally to receive the igniter. The closed end of the ignition tube is painted green. Nb. Hgr. 39 is stencilled in white over a broken white band around the body.

It has the eight smoke emission holes of the Model 39.

MODEL 41. This grenade is of the same construction as the Nebelhandgranate 39 and the Nebelhandgranate 41 prototype. However, the body has been modified so that in order to take the B. Z. E. igniter an adapter is not necessary. A dished plate with a small central neck in the top replaces the old wide screw neck plate which required the adapter. There are only two smoke

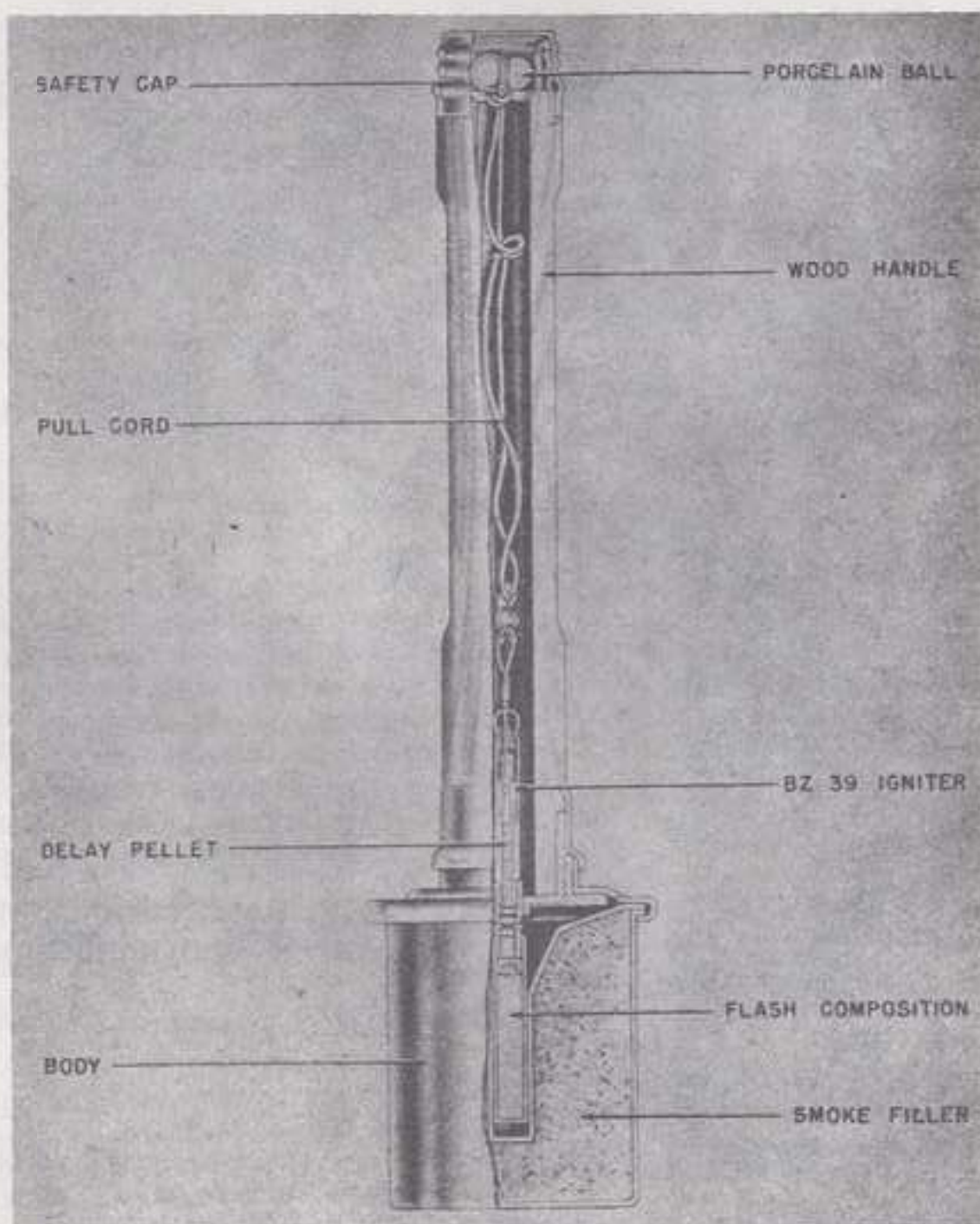


Figure 292—Type 39 Smoke Hand Grenade

emission holes. The letters Nb. Hgr. 41 and a broken line are stencilled in white on the grenade body. (See fig. 291.)

OPERATION. The igniter and adapter are removed from the grenade body. The N4 ignition tube is inserted, painted end first, into the central channel of the grenade head. The adapter and igniter are then replaced. The blue painted cap in the igniter is unscrewed and pulled. This functions the igniter. The grenade is then thrown and after the 4½ second delay has elapsed, smoke is emitted through the emission holes for 2 minutes. Because of the short duration of the smoke, this grenade is used when accuracy in placing a small screen is most important, such as screening machine gun nests and pill-boxes.

**SMOKE HAND GRENADE 39
(NEBELHANDGRANATE 39)**

DATA:

- Total Weight: 1 pound 14 ounces.
- Over-all Length: 14 inches.
- Ignition: B. Z. 39.
- Delay: 7 sec.-N4 Ignition Tube.
- Filling: (HC) Berger mixture, zinc and hexachlorethane.
- Color: Olive drab.
- Markings: White band 8 inches wide around center of handle and lettering Nb. Hgr. 39 stencilled in white around the body above a broken white band.

DESCRIPTION. This grenade closely resembles the H. E. stick grenade 24 in external form and size. However, instead of the H. E. filling this grenade is filled with a Berger smoke mixture. There are eight holes in the base of the head through which the smoke escapes. The handle has three horizontal corrugations at the screw cap end to assist in differentiation by touch. (See fig. 292.)

OPERATION. Insert the friction igniter into the handle and then place the open end of the flash cap into the recess in the top of the friction igniter, finally screwing the head onto the handle. Then, by removing the screw cap and pulling the igniter, the delay is ignited and the grenade may be thrown. Smoke is emitted for two minutes. Because of the short duration of the smoke, this grenade is used where accuracy in placing a small

screen is most important, such as screening machine gun nests and pillboxes.

SMOKE GRENADE (BLENDKORPER 14)

DATA:

- Over-all Length: 6 inches.
- Maximum Diameter: 2½ inches.
- Total Weight: 13.2 ounces.
- Filling: (FM) (Titanium Tetrachloride).
- Weight of Filling: 10.6 ounces.

DESCRIPTION. This grenade is a tear drop shaped glass flask sealed at the upper end by drawing out the flask. The sealed tip is protected by a cardboard sleeve, sealed with a plaster of paris type material. (See fig. 293.)

OPERATION. The munition is used by throwing against a hard surface which breaks the flask. The titanium tetrachloride then vaporizes, forming an effective smoke cloud if relative humidity is high. The smoke cloud is then at low relative humidity.

EMPLOYMENT. The grenade is used to produce a small smoke screen to blind the enemy. It is also used to patch gaps in larger screens.

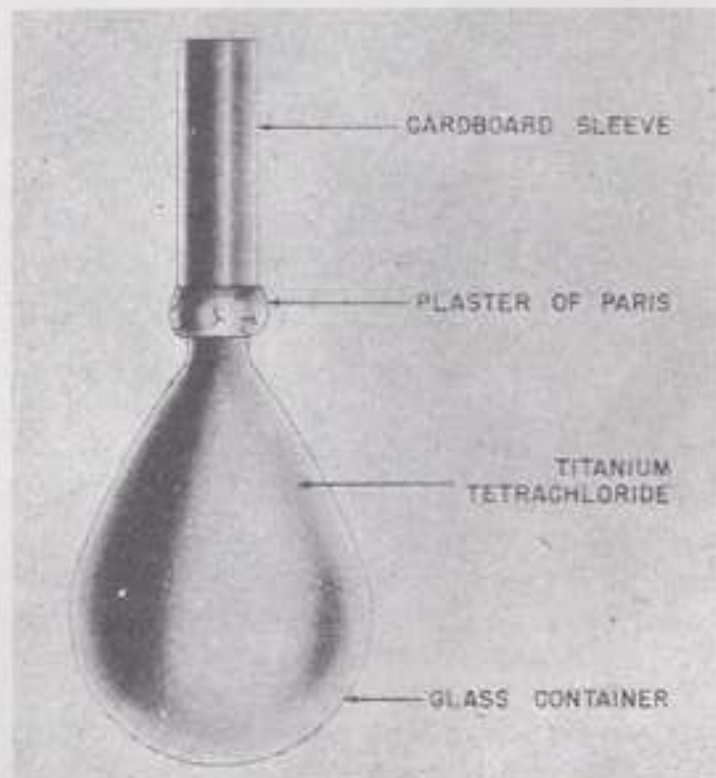


Figure 293—Blendkorper 14 Smoke Hand Grenade