

CHAPTER 8

GERMAN

MINE TACTICS, MINES
AND FUZES



MINE TACTICS

80.01. GENERAL

Germans employ essentially the same principles in mine-field siting as those outlined in American and British mine-field policies. Maximum use is made of surprise. Natural and artificial barriers are utilized fully to force approaching vehicles to cross the mine field. Mine fields are closely coordinated with antitank and supporting-weapon fire. Extensive use is made of antipersonnel mines and booby-trapped antitank mines.

80.02. TYPES OF MINE FIELD

a. The Germans distinguished between laying mines broadcast and in regular fields. Strict rules regulating the laying and recording of patterned mine belts have been drawn up by the German General Staff. Frequently it has proved possible to forecast the location of every mine in a section once the first few have been located. In such fields the mines are laid at regular intervals in equidistant rows, the mines of one row lying behind the gaps in the row in front, sometimes centrally, sometimes offset. Where speed is the main consideration, or during a withdrawal, mines are laid indiscriminately and in small groups. During the later stages of the North African campaign mines usually were laid in this way, causing considerable delay and casualties even though frequently the mine fields were not covered by fire. This practice may be expected in all future campaigns when the enemy is in full retreat and does not expect to reoccupy lost ground.

b. The main belts of a major antitank mine field laid in uniform pattern normally consist of antitank mines with a sprinkling of antipersonnel mines in the forward edge of the field. Both types may be fitted with antilifting devices, and some of the antipersonnel mines normally have trip-wires attached. In some cases these mines are placed in the intervals between the diagonal wires of a double-apron fence, with trip wires fastened to the diagonals. The trip wire is the first part of the fence touched by the approaching enemy.

c. Frequently a number of antitank mines are laid in the forward edges of antipersonnel mine fields to prevent the use of armored vehicles for detonating the main belt of antipersonnel mines.

d. The forward edges of mine fields of all types often are sown with explosive charges placed in wooden boxes fitted with pressure fuzes. These act as both antitank and antipersonnel mines, and tend to prevent determining the exact location of mines by use of detectors.

e. Forward of most regular fields, and particularly in front of lanes, mines may be found widely spaced or scattered at random in unmarked groups. Mines also are laid in spurs running at right angles to the forward edge of the mine field to damage vehicles moving along the field in search of lanes.

80.03. TYPICAL GERMAN MINE-FIELD PATTERNS

a. The pacing method normally is used to establish the locations of individual mines in a mine-belt section. Five paces is the normal interval between mines. Both hasty and deliberate mine-belt sections are used.

b. An example of the lay-out for a German hasty mine belt is shown in figure 80.03a.

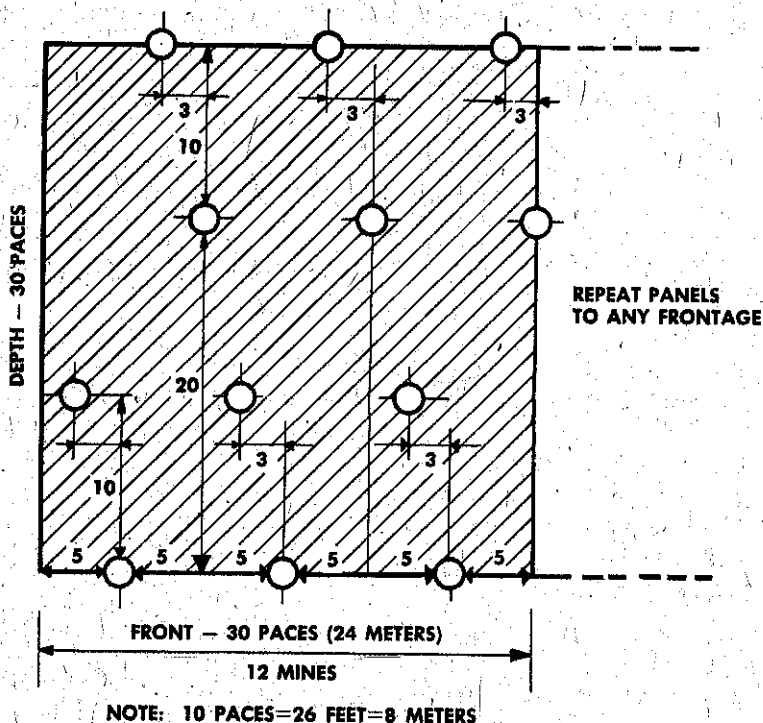
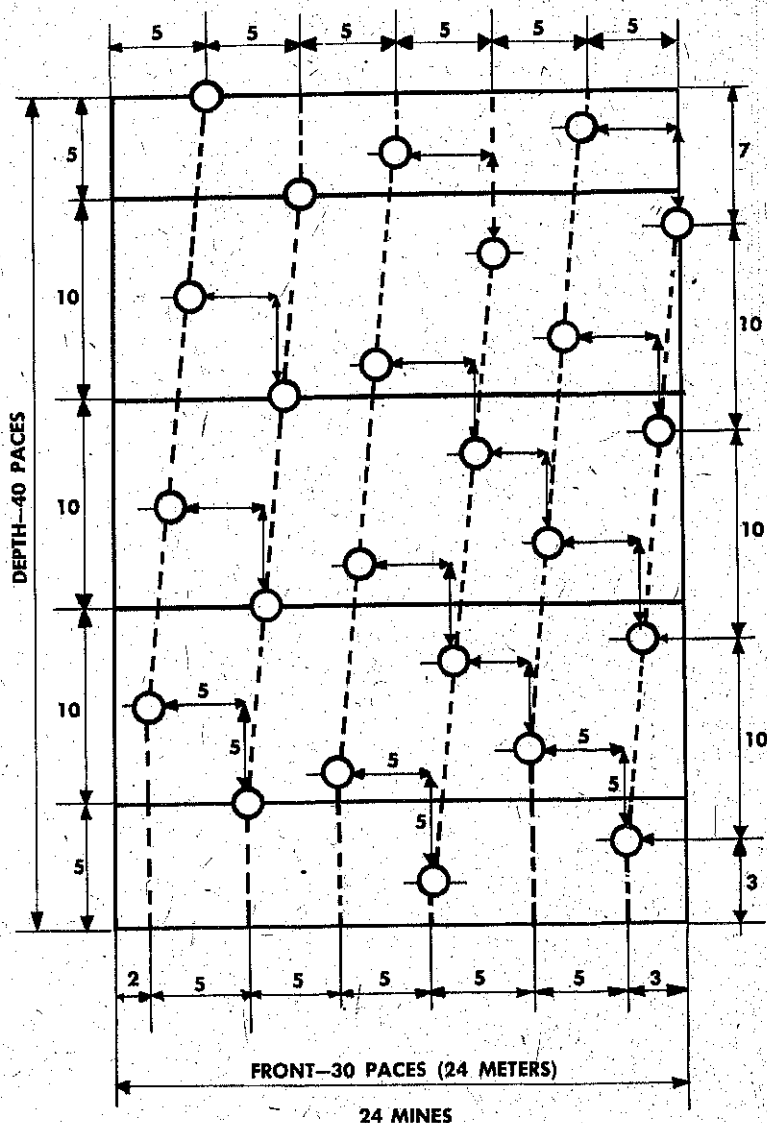


Figure 80.03-a. German Hasty mine field pattern.

It has sections 30 paces wide by 30 paces deep, or approximately 80 by 80 feet. Each section contains 12 mines. The density averages 1 mine per 2 yards of front. The sections are repeated to extend the mine belt as desired.

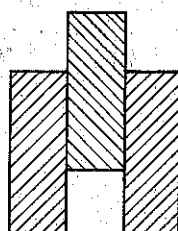
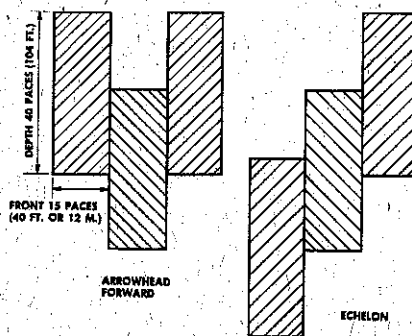
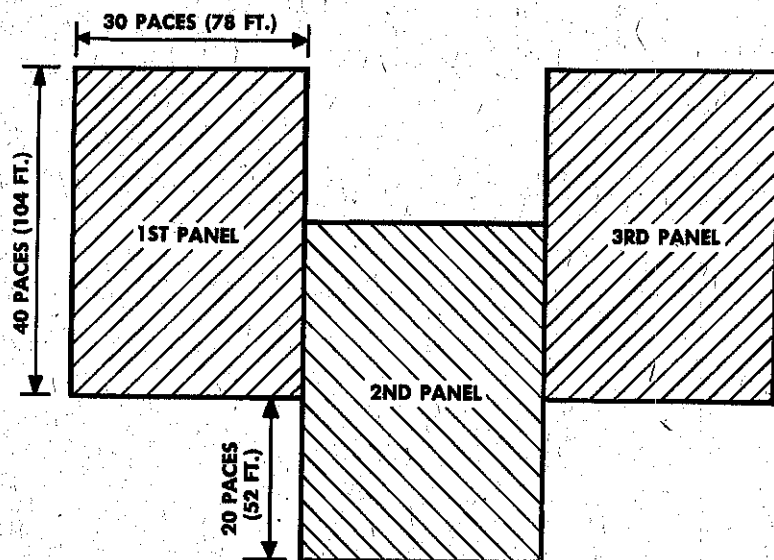
c. A typical German deliberate mine belt is shown in figure 80.03-b.



NOTE: 10 PACES=26 FEET=8 METERS

Figure 80.03b. German deliberate mine-field pattern.

This mine belt is laid in sections 30 paces wide by 40 paces deep, or approximately 80 by 105 feet. The section contains 24 mines. The density averages 1 mine per yard of mine-field front. The sections usually are staggered, and for extensive mine belts are combined in units of three or four as shown in figures 80.03c, and 80.03d.



NOTE: EACH PANEL, 15x40 PACES, CONTAINS 24 MINES WITH CLOSE SPACING.

Figure 80.03c. German panel arrangement.

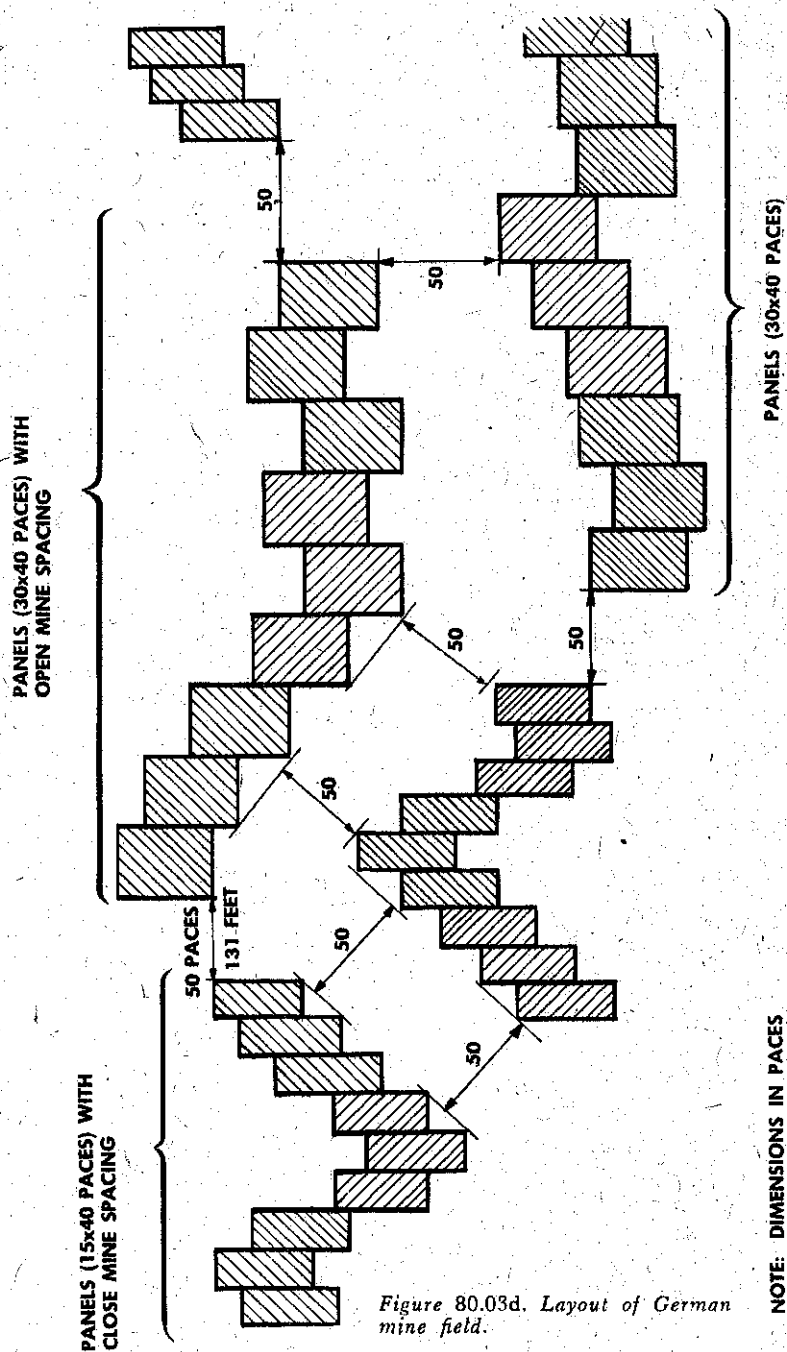


Figure 80.03d. Layout of German mine field.

80.04. PROTECTION OF MINE FIELDS

The Germans teach that mine fields must be covered by fire, although during the withdrawal in North Africa many nuis-

ance fields were left unmarked and without fire cover. It is common for a regular mine field to have at the rearward edge a listening post of two men and about 70 or 80 yards to their rear a covering party of four or five men with one or two light machine guns.

80.05. IRREGULAR OR NUISANCE MINE FIELDS

a. An indication of the haste with which the German withdrawals in Tripolitania and Tunisia were carried out was the comparative rarity of regular mine fields and the large number of small nuisance fields which were laid. These nuisance fields contained many different types of mine, often were unmarked, and showed every evidence of having been laid in a hurry. The consequent lack of uniformity made their detection and clearance a laborious and dangerous business. Though no consistency was noted in lay-out and types of mines used in such fields the Germans showed certain marked preferences in their choice of sites for them.

(1) In general, mines were laid either close to or on roads, on airfields and railways, and along telegraph-line routes.

(2) The surfaced portion of roads usually defeated the hasty mine layer, but khaki-painted Tellermines sometimes were placed on the road where it dipped sharply, in the hope that drivers would be unable to check their vehicles in time to avoid them.

(3) The main effort was directed towards catching vehicles off the road at narrow places where they had to pull out to pass and at entrances to defiles where they had to pull off the road and wait for vehicles moving in the opposite direction. Other places frequently sown with antitank mines were turn-outs, sharp bends which fast-moving traffic might overshoot, the unsurfaced island sometimes found at crossroads, berms, and well-worn wheel ruts.

(4) Efforts to evade detection included—

(a) Burying mines as much as 24 inches below the surface where they would explode only after the passage of a number of vehicles had compacted the earth cover sufficiently to operate the fuze.

(b) Putting explosives in wooden boxes to foil mine detectors.

(c) Marking tire prints in the earth on top of the mine by drawing a detached axle and wheels over it.

b. The Germans showed considerable ingenuity in siting random antipersonnel mines on the line of the British advance. Road demolitions were plentifully sown with S mines, and kilometer posts at points where vehicular drivers would have to dismount to read the directions were similarly treated. S mines also were placed in ditches often close to the trip-wire peg of another mine. Trip wires of white string were difficult

to see against a background of sand but the pegs to which they were attached, and sometimes a peg at the actual mine, pointed to the presence of S mines with pull fuzes. S mines with push fuzes normally were buried with the prongs either level with the surface of the ground or projecting about 3 inches above it, sometimes carefully camouflaged with twigs. S mines with push-firing devices also have been found sometimes buried to a depth of 4 inches.

c. Nuisance fields on lines of communication generally were closely spaced—occasionally so closely as to cause sympathetic detonation, particularly when the mines were laid with their pressure plates almost flush with the surface of the ground and only lightly covered with earth.

80.06. MARKING

German methods of marking mine fields are not uniform. The front edge of the field often is unmarked, the rear edge seldom so. Some fields have been found both unmarked and unwired. Certain markings usually indicate the presence of mines. The following are typical examples of such markings:

a. Double-apron fence on the enemy side and a single trip wire on the friendly side, or the reverse.

b. A single knee-high wire, cattle fencing, and empty mine crates.

c. Notices bearing the word "Minen" fixed to the perimeter wiring, the wording facing away from the mines.

d. In Tunisia ration boxes and pickets marked the corners of some fields.

e. Parti-colored red and white rectangular boards, or luminous strips visible at night, sometimes marked lanes.

f. Jerricans on kilometer posts indicate mines in the vicinity, and small pickets have been found marking mined turn-outs.

g. Empty mine containers normally are buried or dumped some distance away from the field. The buried crates may be used as reference points by the Germans, as S-mine crates have been found buried flush with the ground at the foot of the telegraph pole nearest to a nuisance field on the roadside.

h. Definite reference points generally are lacking; the Germans probably locate their fields by taking azimuth and distance from kilometer posts, track junctions, or other fixed objects or points.

i. Individual mines sometimes are disclosed by the disturbed appearance of the ground above them, and many hundreds of mines in Tunisia thus were detected by eye.

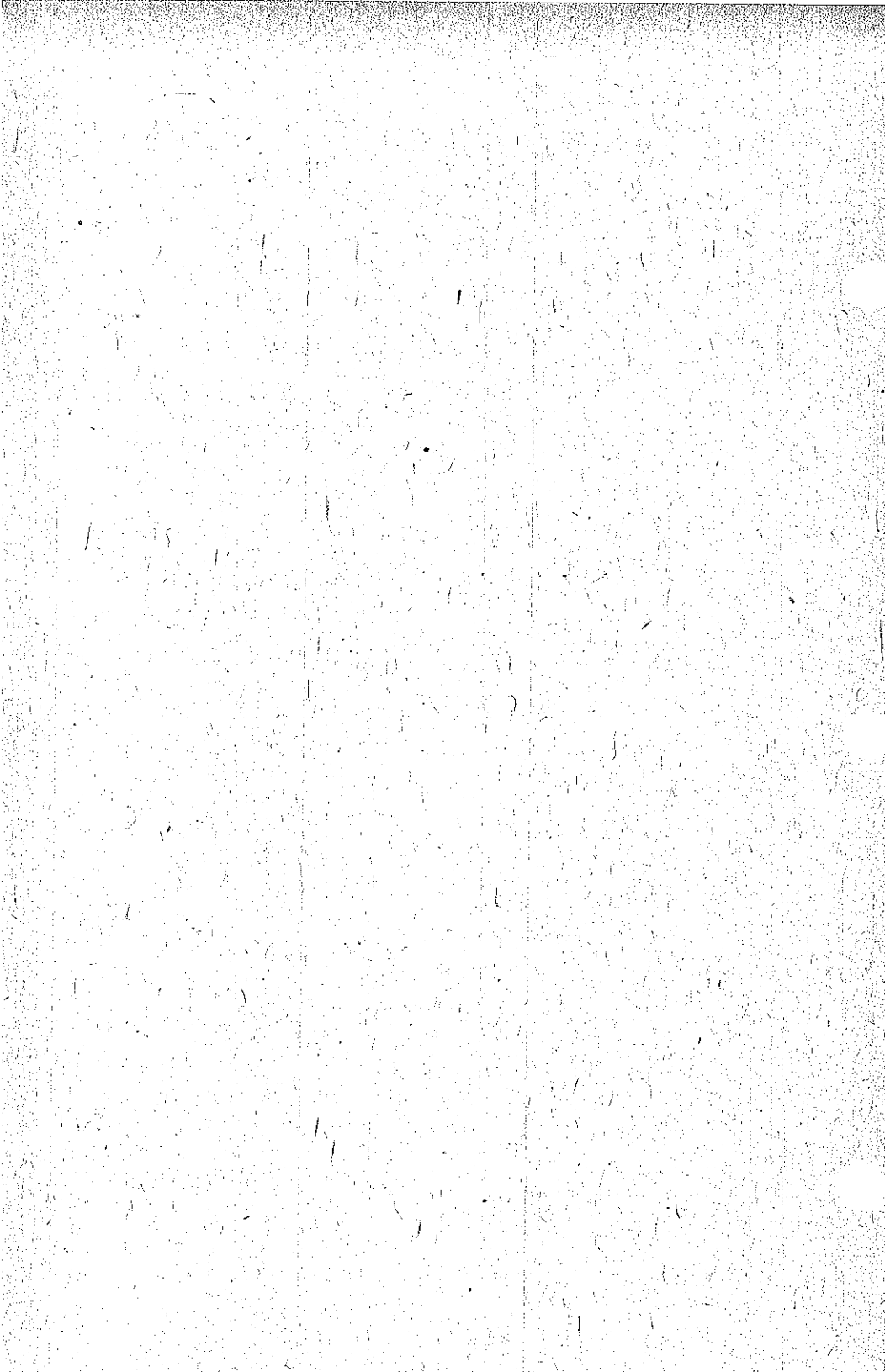
80.07. ANTILIFTING DEVICES AND BOOBY TRAPS

The proportion of mines having antilifting mechanisms varies greatly from field to field; in some cases every mine is thus treated and in others none, or only a few, depending on the haste of laying. Examples of the commonest methods observed in North Africa are:

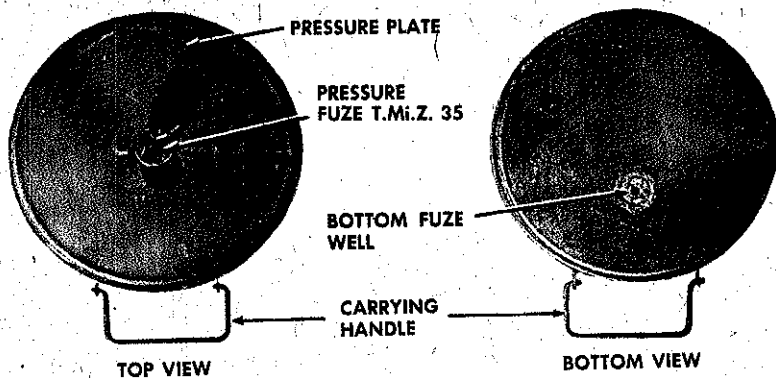
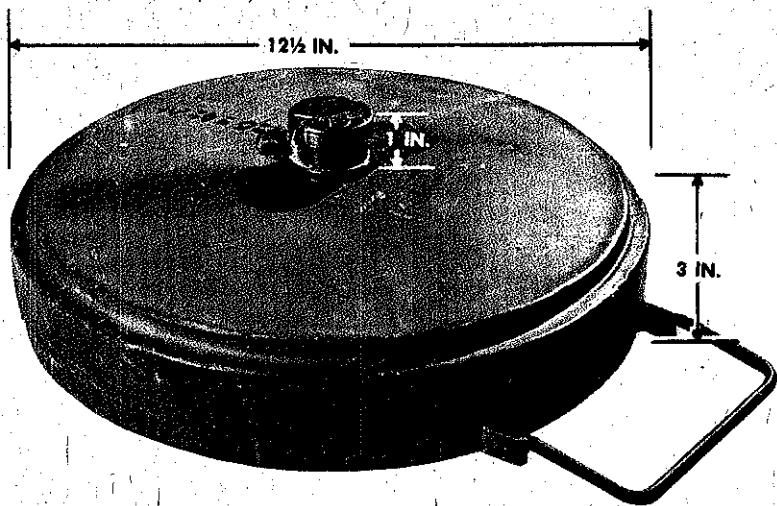
- a. Tellermine were laid upside down with pressure fuzes in the base well.
- b. Tellermine were laid on the surface with the fuze set at "safe" and with a wire attached to the base or handle leading to a pull fuze fitted in either a 3-kilogram charge or in another Tellermine buried underneath.
- c. Armed and buried Tellermine commonly were attached by two separate wires to an S mine fitted with two pull fuzes, buried about 5 feet away.
- d. In some cases the wire from a pull fuze—presumably in the side pocket—led from a Tellermine to a stake about 1 foot away, so anyone digging around the mine would depress the wire and fire the charge.
- e. A wire attached to a pull fuze in an S mine was found anchored to a small bush; when the bush was removed the mine exploded.
- f. British GS MK IV mines were laid with a wire leading to a pull fuze in a 3-kilogram explosive charge. Lids of both British GS MK II and Italian B 2 mines are reported to have been similarly treated.

80.08. DUMMY MINE FIELDS

German dummy mine fields take various forms. In some cases a trip wire is laid to give the appearance of a mine-field perimeter wire, with the usual lanes, and the ground is disturbed at regular intervals. Scrap metal is placed in shallow holes to cause a reaction in the mine detector. Smoke candles were buried 4 inches below the surface in one of the dummy fields at Merduma West landing ground. The lids of Italian B 2 mines frequently were laid in dummy fields, wired in, and booby traps interspersed.



GERMAN TELLERMINE 35



TYPE. Antitank mine

COLOR. Gray or dark green, European pattern; tan, desert pattern

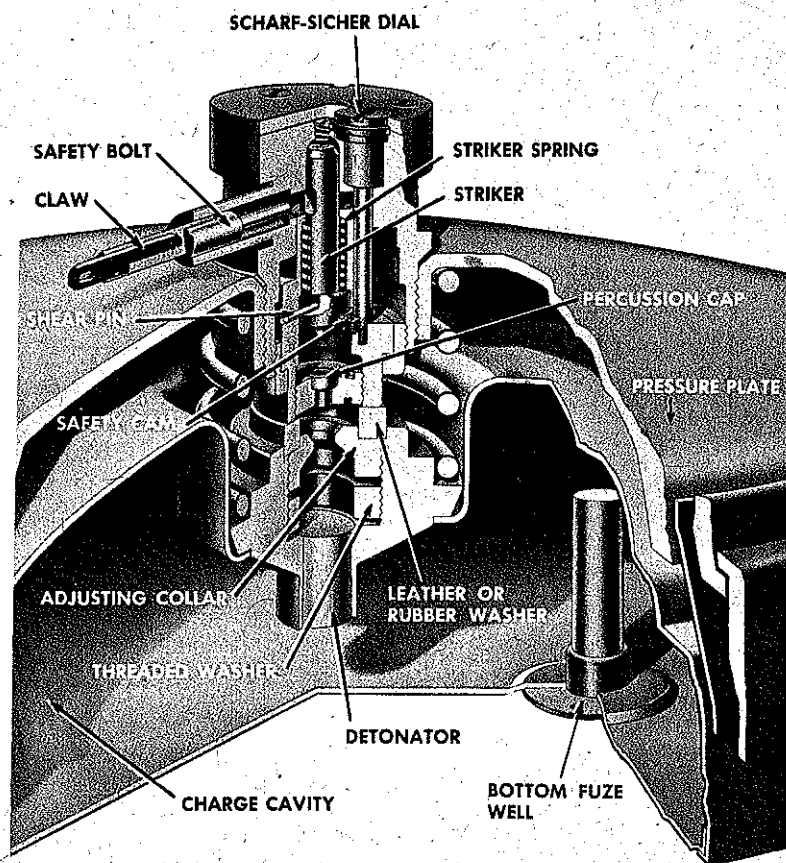
CASE. Steel

WEIGHT. 20 pounds

EXPLOSIVE. 12 pounds TNT

EFFECT. Disables tanks

GERMAN TELLERMINE 35



FUNCTIONING

1. Pressure of 200-400 pounds on pressure plate depresses plate and fuze housing.
2. Fuze housing presses on top of striker, shearing shear pin which holds striker in cocked position.
3. Driven by striker spring, striker sets off percussion cap, detonator, booster, main charge.

FUNCTIONING OF SAFETIES

Fuze T. Mi. Z. 35 has two safeties, as follows:

1. Safety bolt, which passes through slotted hole in top of striker and prevents it falling. Bolt pulled out by a claw.
2. Rod attached to SCHARF-SICHER dial with cam at lower end. When dial is set at SICHER (safe), cam is beneath striker. When set at SCHARF (armed), cam is withdrawn. Main use of this safety cam is to take pressure off shear wire when striker is not in use.

GERMAN TELLERMINE 35

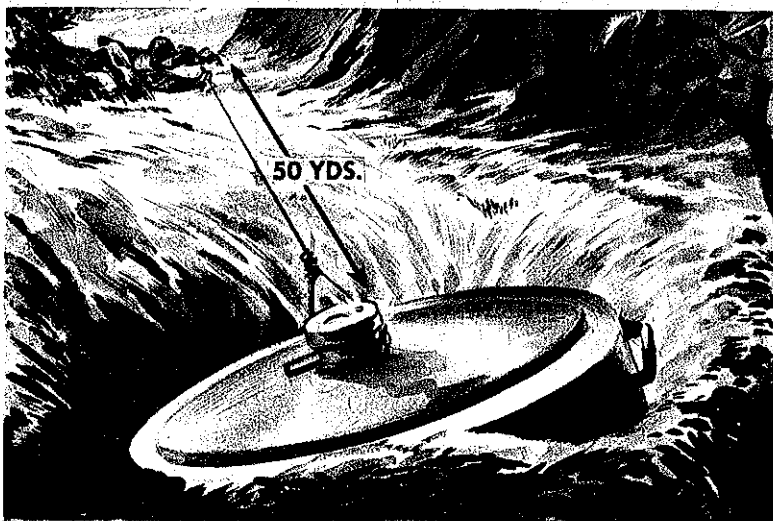
DISARMING

Mine has *shear-pin* fuze. Blast or other disturbance may have partially sheared pin. If disturbed, do not attempt to disarm or defuze. Destroy in place with explosive. Or, lying prone, pull mine loose with 50-yard rope or wire, drag to safe place, and destroy.



IF UNDISTURBED

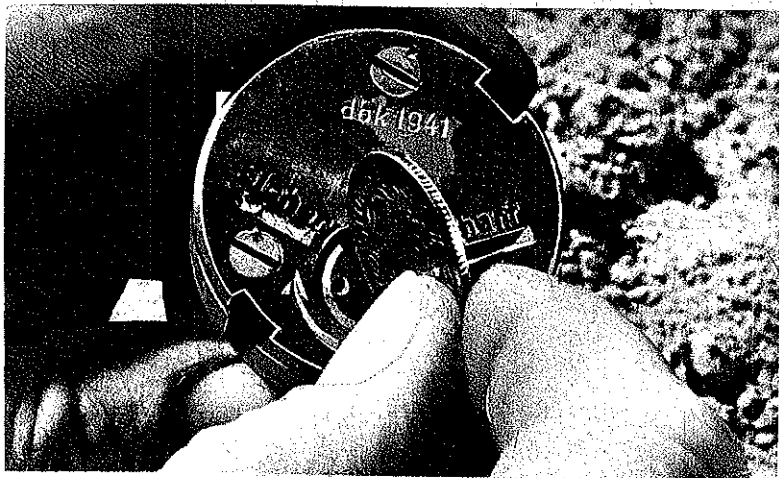
1. Press safety bolt home. If safety bolt does not press home easily *do not force*. Treat as disturbed mine.



2. Pull mine from hole with 50-yard rope or wire. Or, seek and disarm secondary fuzes (page 85.01-a) and lift mine.

GERMAN TELLERMINE 35

DEFUZING



1. After disarming, remove fuze and turn dial from SCHARF to SICHER. Use coin or knife—not screwdriver.



2. Tape or wire safety bolt in place; replace fuze in mine.

INSTALLING AND ARMING

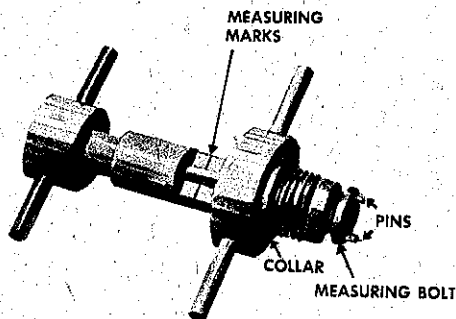
(For booby-trapping, see page 85.01-b).

1. Dig circular hole 7 inches deep, $1\frac{1}{2}$ feet across at bottom, 3 feet across at top.
2. Place mine in hole, with handle horizontal or down—not up.
3. Turn dial from SICHER to SCHARF.
4. Cover mine, and from safe distance withdraw safety bolt.

ASSEMBLING

Use standard Tellermine tools, since correct assembly cannot be made without them. If improperly adjusted, mine will not function properly.

1. With small screwdriver, loosen set screw in adjusting collar.
2. Using Tellermine box spanner, adjusting collar and threaded washer.
3. Insert detonator whose protective label is undamaged.
4. Screw threaded washer in position, tighten with box spanner.



TELLERMINE ADJUSTING GAGE

5. Screw collar in place, using Tellermine adjusting gauge as follows to obtain proper clearance between washer and collar.
 - a. Slip leather or rubber washer onto gauge as far as collar at base.
 - b. Screw gauge into cover and tighten.
 - c. Press measuring bolt down, turn until adjusting pins engage holes in collar.
 - d. By rotating bolt right or left bring mark on measuring bolt to same height as mark on gauge casing.
 - e. Release measuring bolt and unscrew gauge.
6. Screw in set screw tightly. If it coincides with one of sockets in washer, turn collar $\frac{1}{8}$ inch to left before screwing.
7. Place sealing ring and washer over head of collar. Mine now is ready for fuzing.
8. If adjusting gauge is not available, an approximate adjustment can be obtained by screwing the threaded washer down tight on the detonator and screwing in the adjusting collar in $4\frac{1}{2}$ turns.

RE-USE

Immediately before reusing, test fuze as follows:

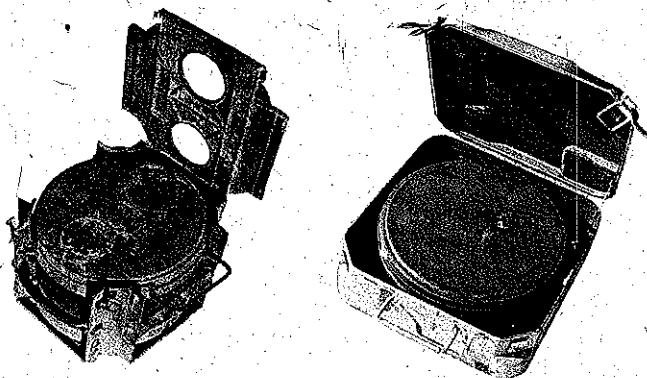
1. Remove fuze and hold away from mine.
2. Turn dial from SICHER to SCHARF, and, pointing bottom of fuze away from body, withdraw safety bolt. If fuze fires, pin was sheared.

GERMAN TELLERMINE 35

3. If fuze does not fire, turn dial from SCHARF to SICHER, push in safety bolt with claw, and replace fuze in mine.

PACKING AND TRANSPORTING

Transported with disarmed fuze in place. Has two German cases: one holds two mines, weighs 51 pounds loaded; the other holds one mine, weighs 28 pounds loaded.

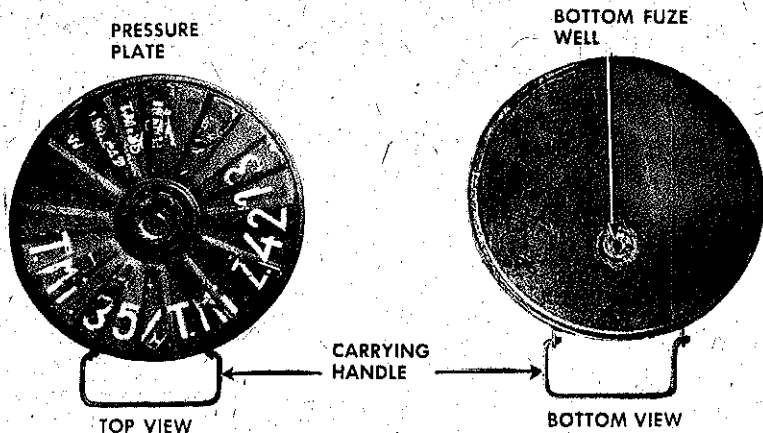
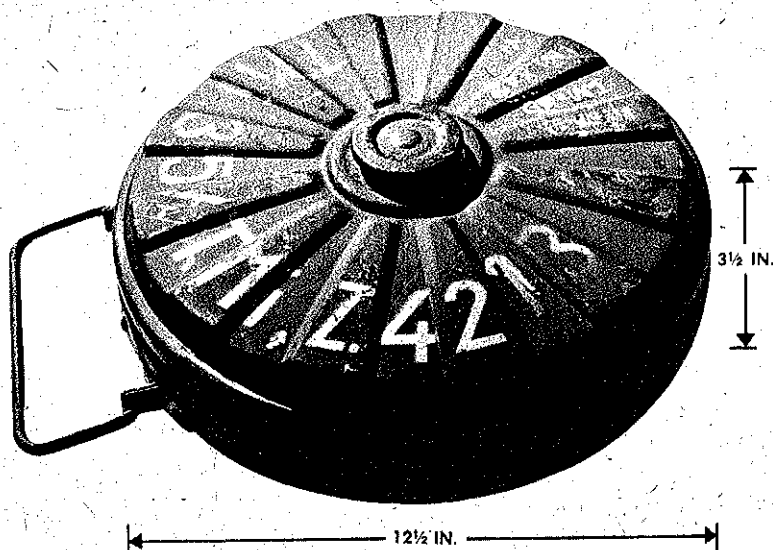


NOTE

Tellermine 35 has been used with fuze T. Mi. Z. 42, and opening in cover filled with screw plug. If used this way, treat like Tellermine 42.

SPACE FOR NOTES

GERMAN TELLERMINE 35 (STEEL)



TYPE. Antitank mine

COLOR. Gray

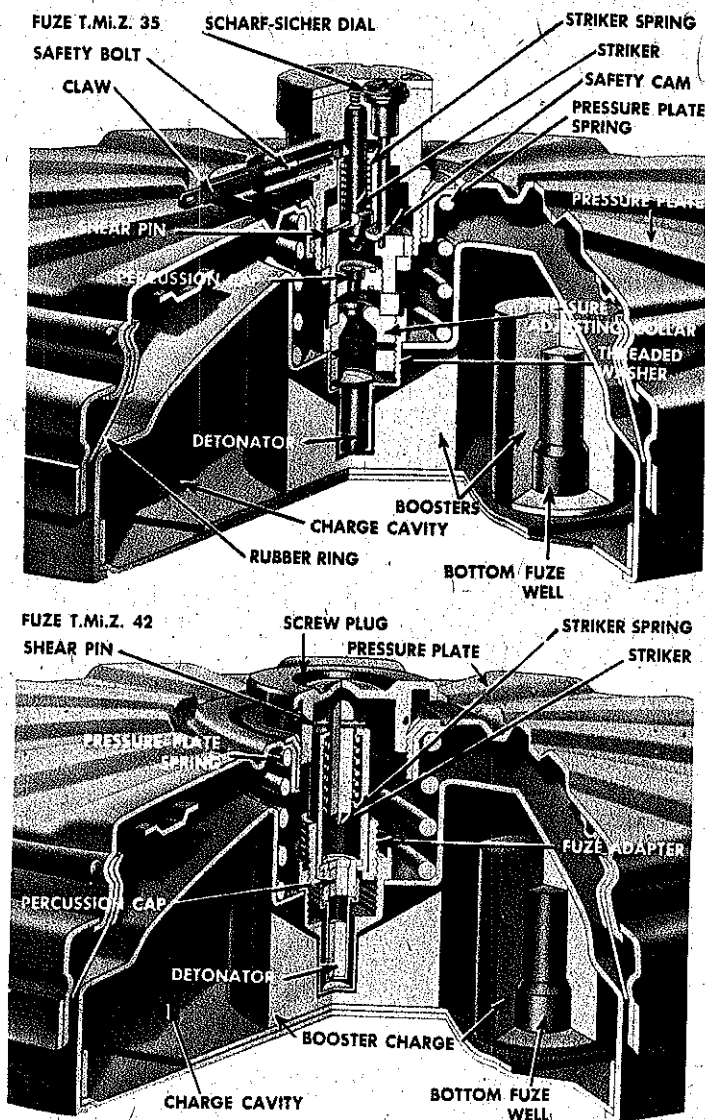
CASE. Steel

WEIGHT. 21 pounds

EXPLOSIVE. 12 pounds TNT

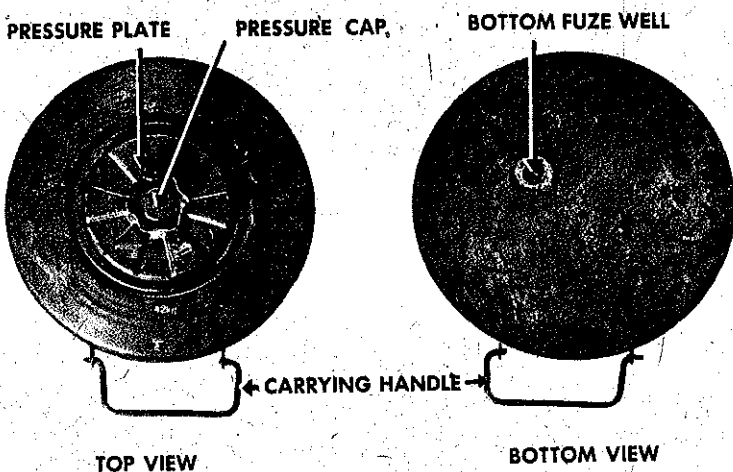
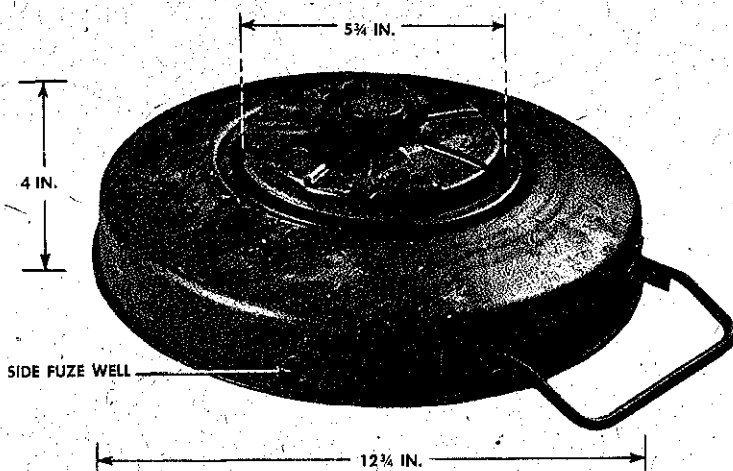
EFFECT. Disables tanks

GERMAN TELLERMINE 35 (STEEL)



The Tellermine 35 (steel) is a modification of Tellermine 35. It uses either fuze T. Mi. Z. 42 or fuze T. Mi. Z. 35. If used with fuze T. Mi. Z. 35 (screwed into cover plate), treat exactly like Tellermine 35 (page 81.01). Detonator and adjusting collar are in place in the mine. If used with fuze T. Mi. Z. 42 (screw plug in cover plate), treat exactly like T. Mi. 42 (page 81.03-c). Detonator and adjusting collar are removed and a fuze adapter is installed. Screw plug takes place of hexagonal cap.

GERMAN TELLERMINE 42



TYPE. Antitank mine

COLOR. Gray

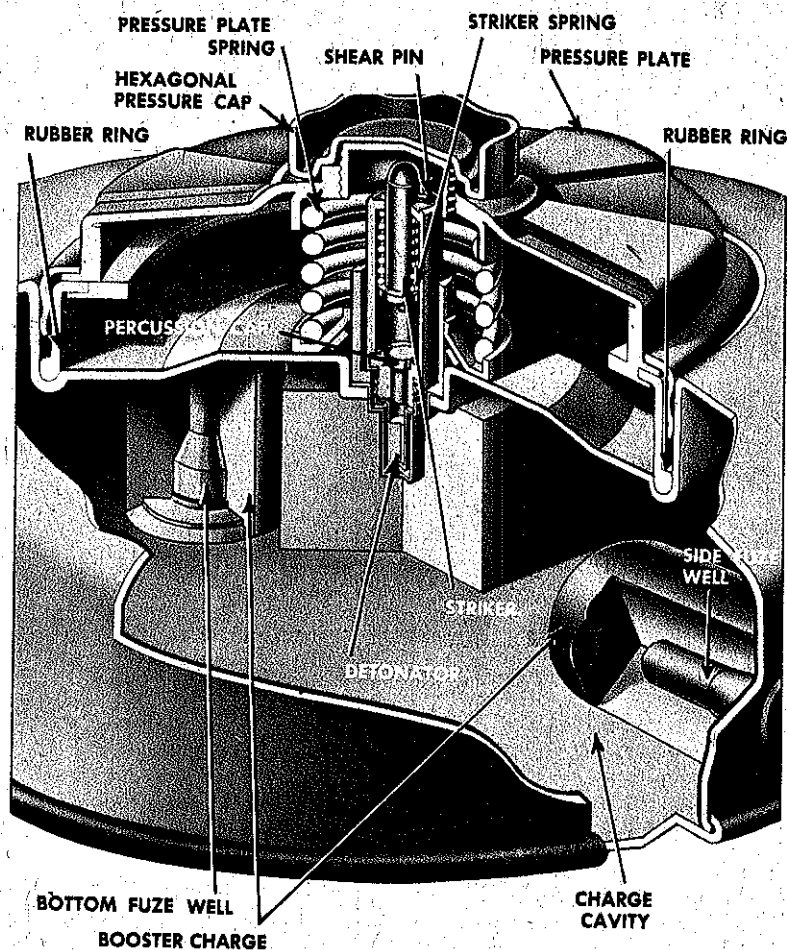
CASE. Steel

WEIGHT. 20 pounds

EXPLOSIVE. 12 pounds TNT

EFFECT. Disables tanks

GERMAN TELLERMINE 42



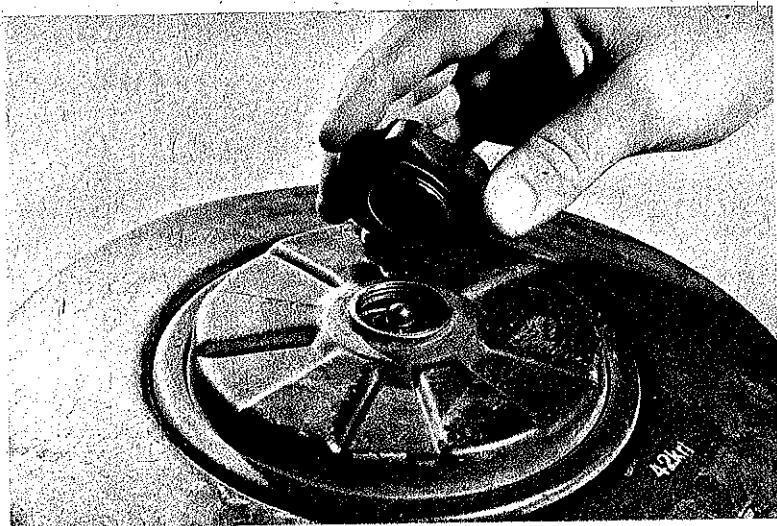
FUNCTIONING

1. Pressure of 250-400 pounds on pressure plate depresses hexagonal cap and top of striker.
2. Striker shears shear pin.
3. Released striker, driven by spring, explodes percussion cap—booster—main charge.

GERMAN TELLERMINE 42

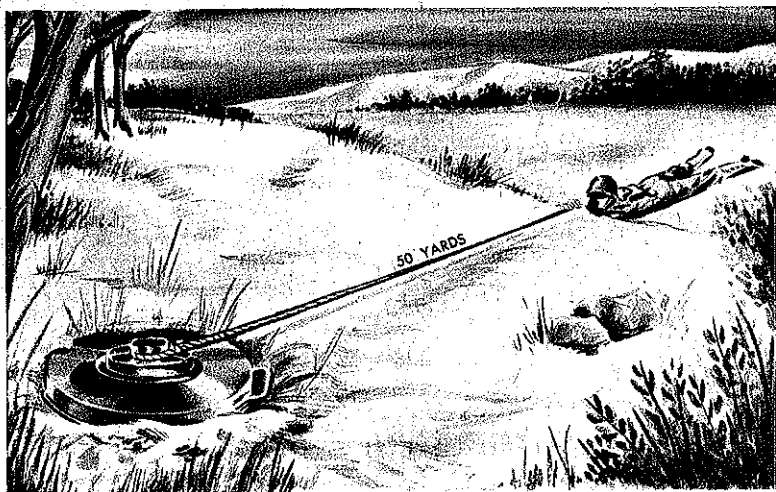
DISARMING

Mine has *shear-pin* fuze. Blast or other disturbance may partially shear pin. If there is evidence of disturbance, do not attempt to disarm or defuze. Destroy in place with explosive; or, lying prone, pull mine loose with 50 yards of rope or wire, drag to a safe place, and destroy.



IF UNDISTURBED

1. Remove hexagonal cap, lift out fuze, and replace cap.



2. Pull out mine with 50 yards of rope or wire; or, search for and disarm secondary fuzes (page 85.01-a), and then lift mine.

GERMAN TELLERMINE 42

DEFUZING

In this mine disarming, as explained above, is defuzing.

INSTALLING AND ARMING

(If mine is to be booby-trapped, see page 85.01-b.)

1. Dig circular hole 7 inches deep, $1\frac{1}{2}$ feet across at bottom, and 3 feet across at top.
2. Set mine in hole, with handle horizontal or down—*not up*.
3. Remove hexagonal cap, insert fuze.
4. Replace cap, cover mine.

PACKING AND TRANSPORTING

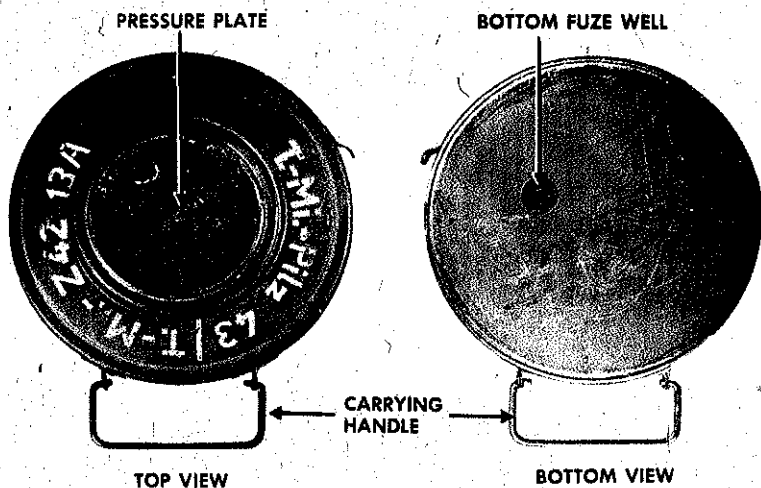
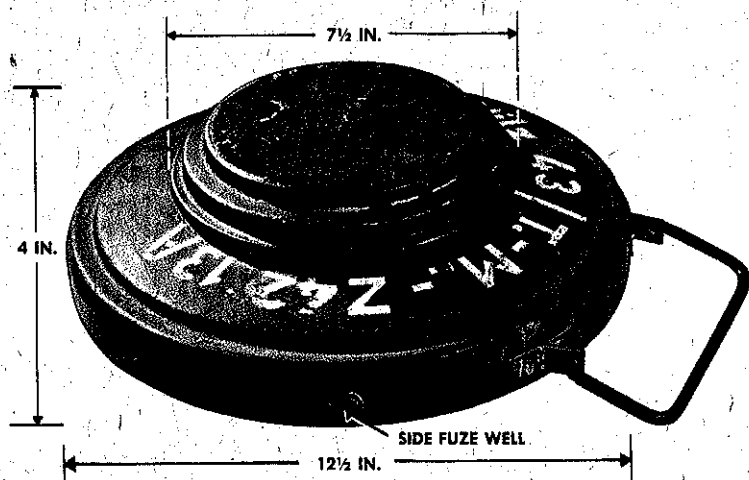
Transport mine and fuze separately, using either one- or two-mine carrying case. Latter, loaded, weighs 51 pounds. One-mine case, loaded, weighs 28 pounds.

RE-USE

Examine shear pin and cap for deterioration or evidence of having been fired. If hexagonal cap is in place, it is almost certain explosive in mine is in good condition.

SPACE FOR NOTES

GERMAN TELLERMINE 43 (MUSHROOM)



TYPE. Antitank

COLOR. Gray

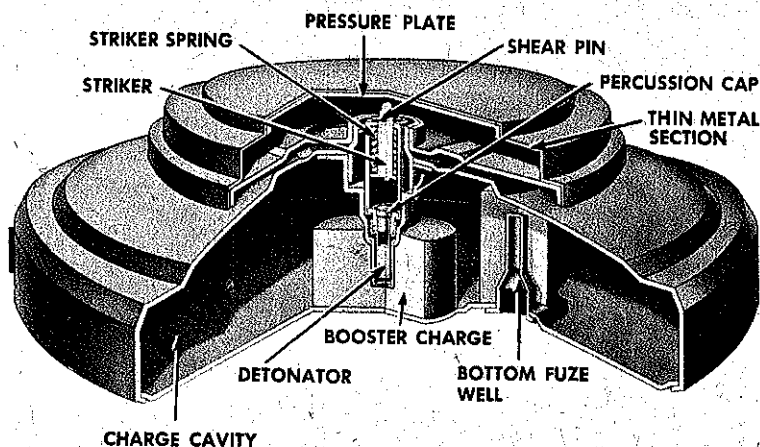
CASE. Steel

WEIGHT. 18 pounds

EXPLOSIVE. 12 Pounds TNT

EFFECT. Disables tanks

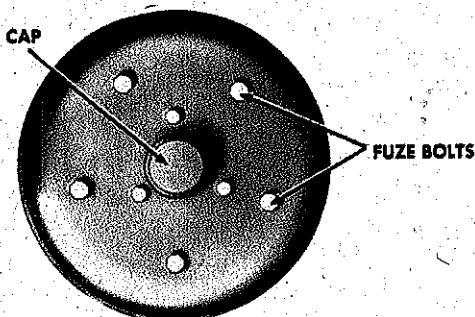
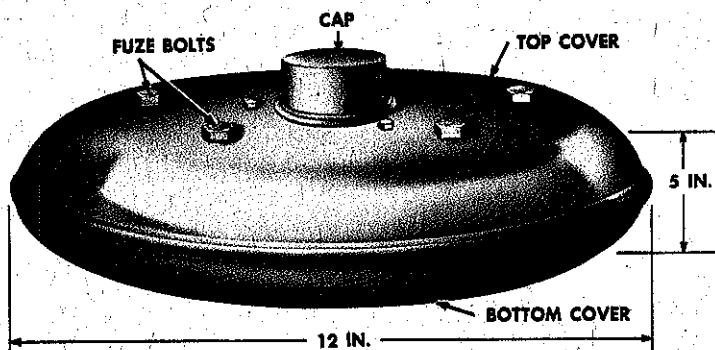
GERMAN TELLERMINE 43 (MUSHROOM)



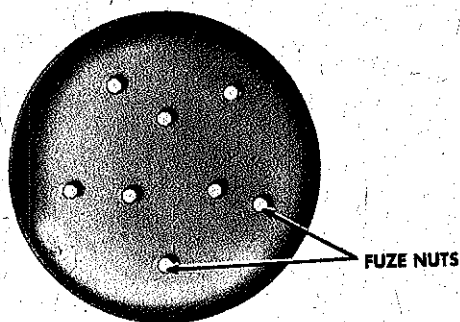
T. Mi. 43 (mushroom) is a modification of T. Mi. 42 (page 81.03), uses same fuze (T. Mi. Z. 42), and is handled same way. Principal difference is that the entire pressure plate T. Mi. 43 (mushroom), rather than just hexagonal cap as in T. Mi. 42, unscrews to uncover fuze. Initial resistance to pressure is provided by thin walls of pressure plate rather than by an inner spring.

SPACE FOR NOTES

GERMAN L. P. Z. MINE



TOP VIEW



BOTTOM VIEW

TYPE. Light antitank mine, convertible to antipersonnel.

COLOR. Gray

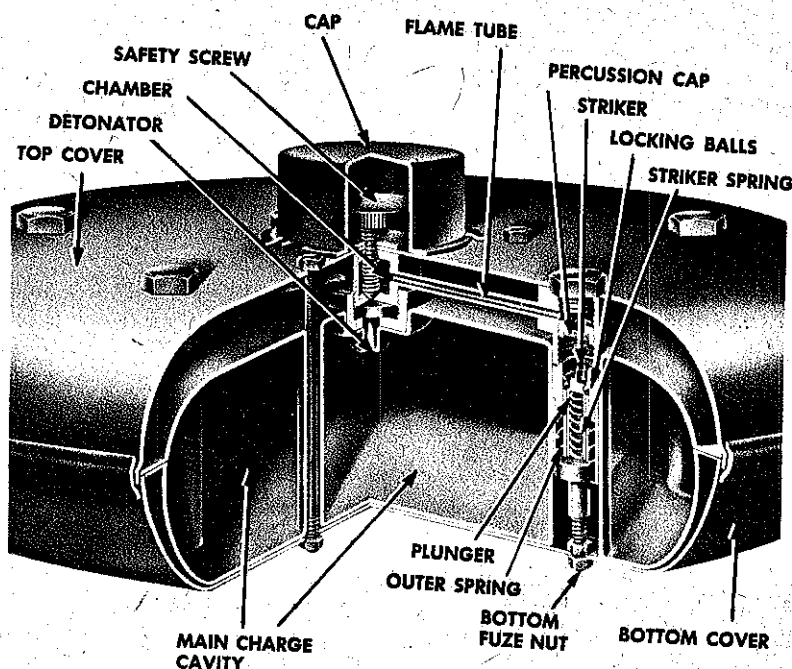
CASE. Sheet metal

WEIGHT. 9 pounds

EXPLOSIVE. 5 pounds TNT

EFFECT. Disables vehicles, breaks tracks on light tanks, sometimes on medium tanks

GERMAN L. P. Z. MINE



FUNCTIONING

1. Pressure crushes mine covers, pushes one or more fuze housings downward over their plungers. NOTE. If mine is used against personnel, bottom fuze nuts are removed and mine, resting on threaded end of plungers, is placed on flat, hard surface. Light pressure on mine cover depresses entire mine and forces plungers upward into fuze housings.
2. Either action compresses outer spring, allows steel balls to be forced outward into upper recesses, releasing striker.
3. Released striker, driven by striker spring, explodes percussion cap.
4. Flame from cap travels through flame tube and chamber, ignites detonator—booster—main charge.

FUNCTIONING OF SAFETY SCREW

When safety screw is screwed tightly clockwise, and white line marked **SICHER** on screw head is opposite white mark on mine, beveled end on screw closes flash hole leading to detonator.

GERMAN L. P. Z. MINE

DISARMING



1. Unlock bayonet catches, remove cap above safety screw.

2. Turn safety screw tight, clockwise, until line marked SICHER coincides with white mark on case.

3. Lying prone, pull mine from hole with 50 yards of wire; or disarm booby traps and lift mine from hole without tilting. Before setting down, examine to see if all bottom nuts are in place. If not, defuze immediately.

DEFUZING

1. Stand mine on edge and remove five top fuze bolts and cap-holders and caps.

2. Turn mine upside down, remove all bottom nuts.



3. Remove tape from joint between covers, and pry loose bottom cover.

4. Remove felt washers from fuze bases, and lift explosive body from top cover.

5. Unscrew retaining collar, and remove detonator.

6. Reassemble case.

GERMAN L. P. Z. MINE

INSTALLING AND ARMING

With mine covers, fuzes, and detonators in place--

1. For antitank use, remove cap, unscrew safety screw.
2. For antipersonnel use, remove bottom nuts from fuzes; set on flat, hard surface; remove cap; unscrew safety screw.

PACKING AND TRANSPORTING

Germans transport mine complete with detonator and fuzes, safety screw turned down firmly. Safer to transport with cap holders and caps removed. Wooden box containing five mines weighs about 60 pounds.

RE-USE

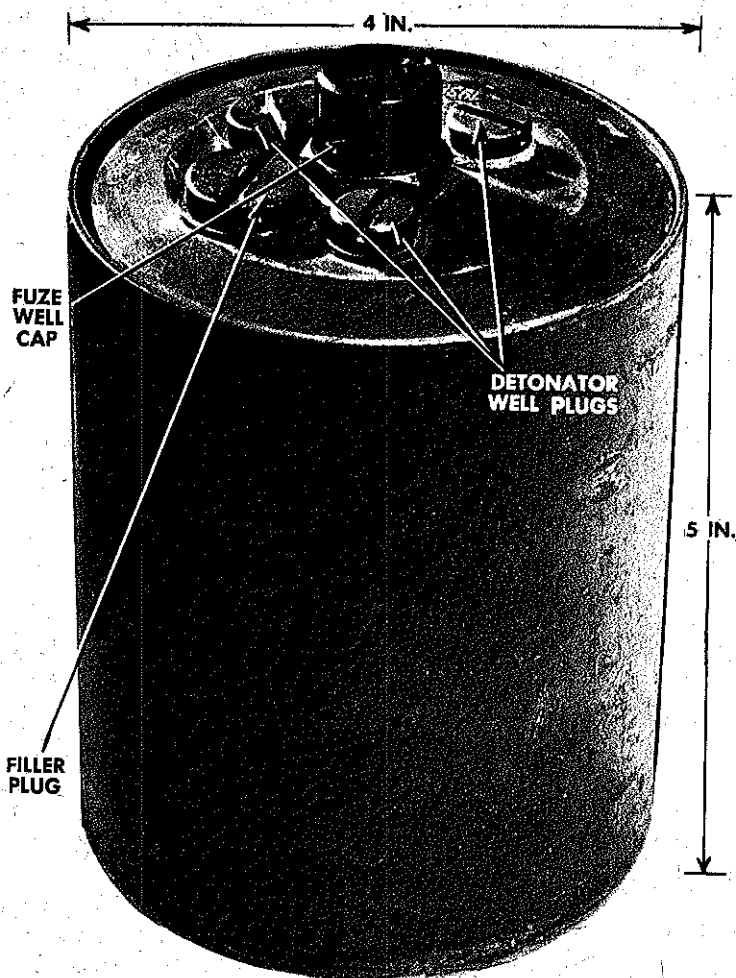
If tape is undamaged, and cap over safety screw is in place, mine probably is serviceable. Check to see percussion caps are in position before installing.

CAUTION

Without nuts on fuze plungers mine is so sensitive that its own weight is almost enough to set it off.

SPACE FOR NOTES

GERMAN "S" MINE



TYPE. Bounding antipersonnel mine

COLOR. Olive-drab

CASE. Steel

WEIGHT. 9 pounds

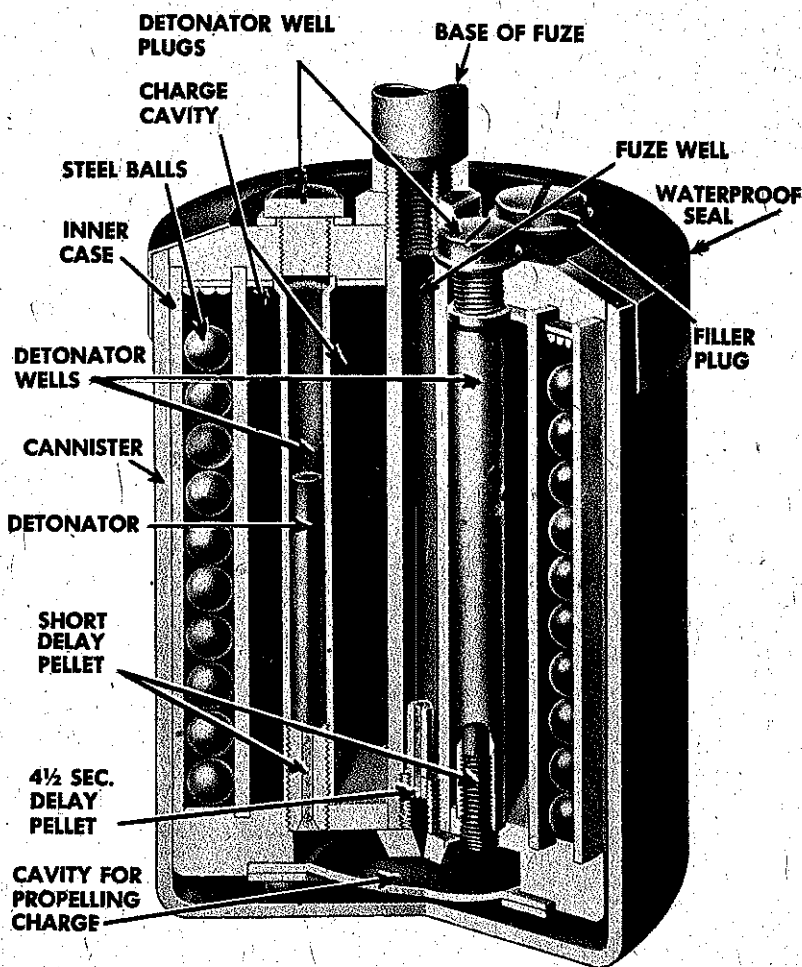
EXPLOSIVE. 6.5 oz. TNT

EFFECT. Causes casualties up to 150 yards

RE-USE

Examine mine for signs of rust or deterioration around fuze well, detonator wells, or top edge. If mine has seal around top edge, and cap on fuze well, probably it is in good condition.

GERMAN "S" MINE



FUNCTIONING

Pressure fuze S. Mi. Z. 35, pull fuze Z. Z. 35, pull tension-release fuze Z. U. Z. Z. 35, or electric fuze E. S. Mi. Z. 40, commonly are used with this mine. Other standard German fuzes may be used.

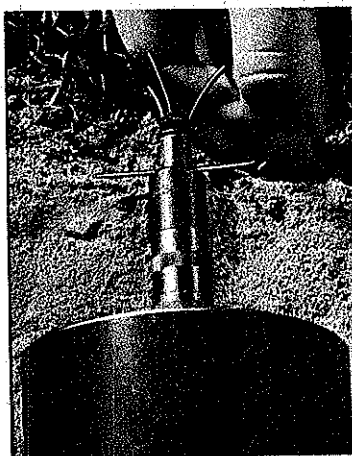
IN ALL TYPE FUZES

1. Flash from fuze sets off 4½-second-delay pellet.
2. Pellet ignites black-powder propelling charge.
3. Powder charge projects inner case upward and at same time ignites short-delay pellets.
4. Short-delay pellets set off detonators and main charge when mine is 3 to 7 feet in air.
5. Main charge scatters 320 steel balls and fragments of case, up to 200 yards.

GERMAN "S" MINE

DISARMING

Disarming the "S" mine means disarming attached fuze or fuzes.



1. Insert pin in safety hole.
2. Cut any trip wires after checking anchor ends.
3. Check for booby traps and remove mine from hole.

DEFUZING



1. Remove fuze or fuzes.
2. Unscrew three plugs from detonator wells; remove detonators.
3. Replace plugs; place cap on or plug fuze well.

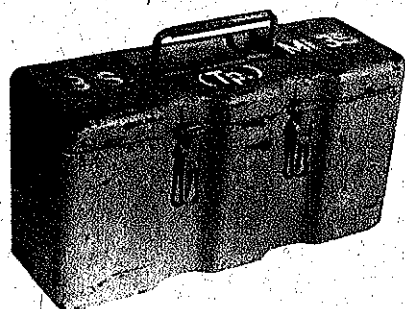
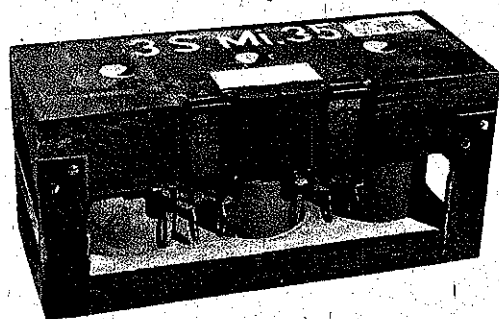
GERMAN "S" MINE

INSTALLING AND ARMING

1. Remove three screw plugs from detonator wells, insert either three standard German detonators or three United States non-electric blasting caps, OPEN END DOWN.
2. Replace screw plugs.
3. Remove cap from fuze well, attach pressure fuze, or Y connector and two pull fuzes.
4. Place mine in hole so that ends of pressure prongs or pull rings are just above ground level; if pull fuzes are used, attach trip wires, ANCHOR END FIRST.
5. Cover and camouflage mine; remove safety pins.

PACKING AND TRANSPORTING

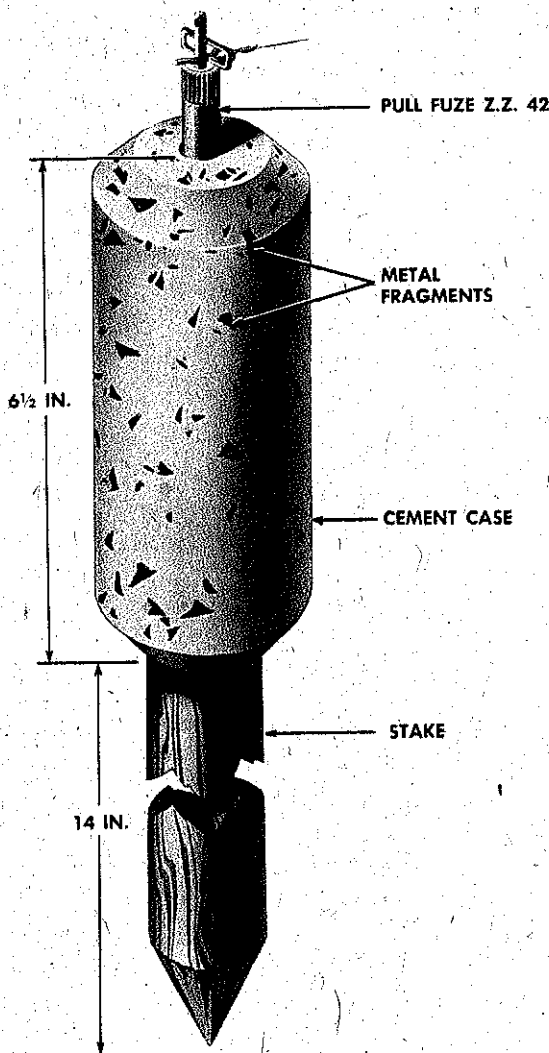
Store and transport "S" mines with detonators removed, plugs in detonator wells, cap on fuze well. Watertight, pressed-metal carrying case, containing three mines, weighs 33 pounds. Wooden case containing three mines weighs about 35 pounds. Fuzes and other accessories are packed separately.



NOTE

Some of latest "S" mines have a spring beneath each detonator-well plug. This holds detonators in contact with short-delay pellets and insures uniform explosion; has no effect upon disarming or installation. In some mines balls are diamond shape, or pieces of $\frac{3}{8}$ -inch steel rod.

GERMAN STOCK MINE (CONCRETE)



TYPE. Antipersonnel

COLOR. Gray

CASE. Concrete with inserted steel fragments

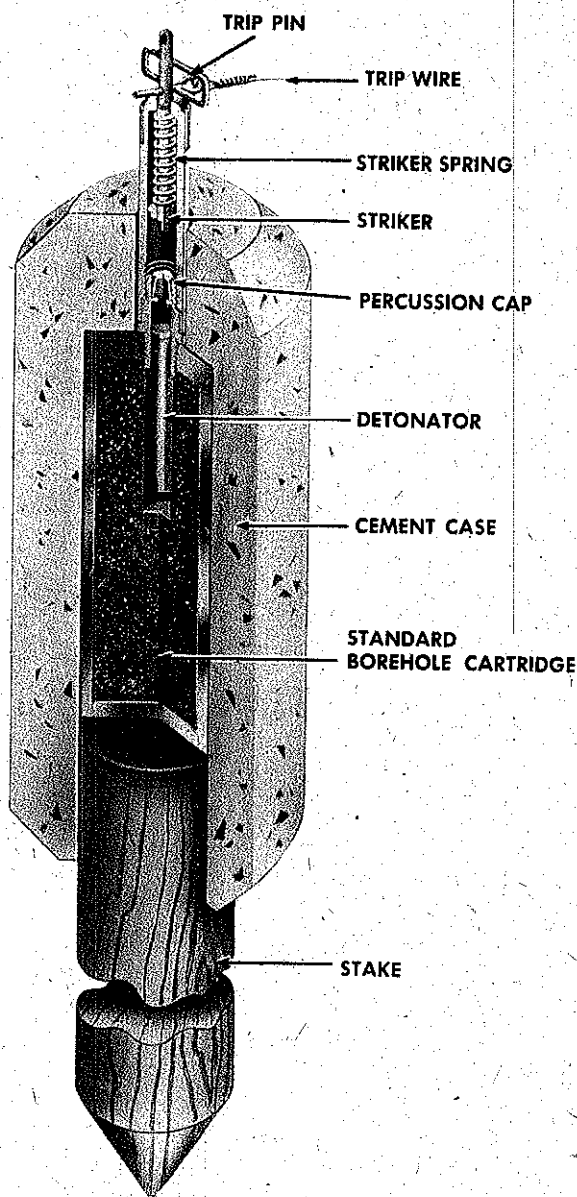
WEIGHT. 4 1/2 pounds

EXPLOSIVE. Standard German borehole charge

EFFECT. Causes casualties up to 50 yards

EMPLOYMENT. With trip wires and pull fuze Z. Z. 42, issued with it
Also used with pull fuzes Z. Z. 35 or Z. U. Z. Z. 35.

GERMAN STOCK MINE (CONCRETE)



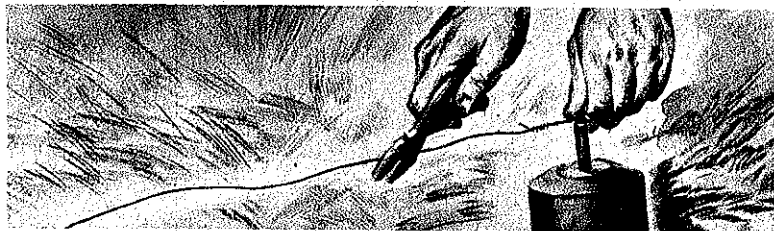
FUNCTIONING

1. Pull on trip wire withdraws pin from striker of Z. Z. 42 fuze.
2. Released striker, driven by spring sets off percussion cap—detonator—borehole charge.

GERMAN STOCK MINE (CONCRETE)

DEFUZING

IF PULL FUZE Z. Z. 42 IS USED—



1. Hold pin firmly in place, cut trip wire.

CAUTION

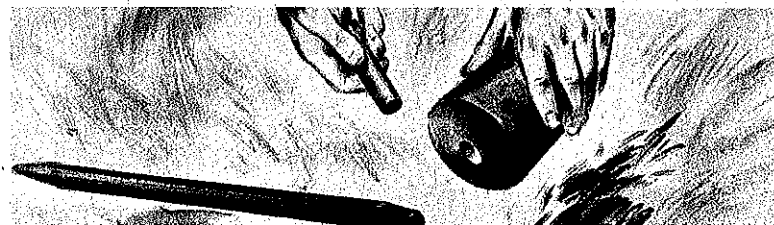
If pin is partially pulled out, do not attempt to disarm. Explode from safe place by charge placed near mine.



2. Remove fuze and detonator.



3. Pull mine and stake loose with 50-yard length of wire. Stake may be booby-trapped.



4. Remove stake and charge from mine.

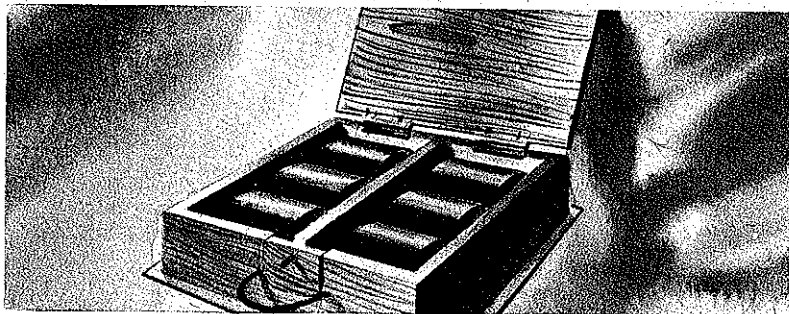
IF PULL FUZE Z. Z. 35 or Z. U. Z. 35 IS USED, insert safety pin before cutting trip wire; then repeat above procedure.

GERMAN STOCK MINE (CONCRETE)

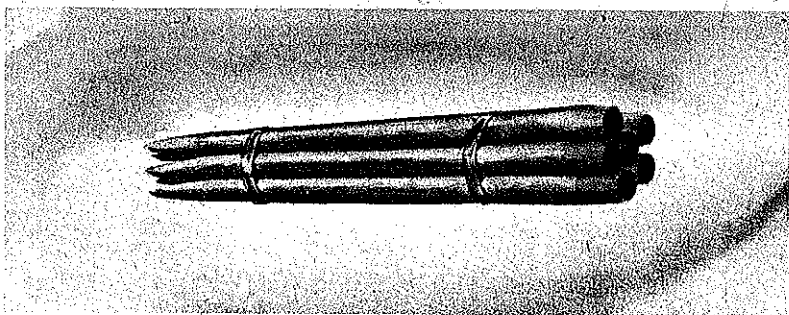
INSTALLING AND ARMING

1. Drive stake until about 5 inches remains above ground.
2. Assemble mine by inserting German standard borehole charge in bottom and screwing into top of charge either pull fuze Z. Z. 42 or Z. Z. 35, with German detonator or U. S. nonelectric cap attached.
3. Impale mine on stake; or, if tree is used, tie mine to tree and plug hole in bottom. Germans provide cork plug for this. If fuze Z. Z. 35 is used, drive second stake, higher than and alongside mine, so that trip wire will run up over it and pull upwards on fuze when tripped.
4. Anchor trip wire.
5. Attach loose trip wire to pin if fuze Z. Z. 42 is used, or to trip-wire slot if fuze Z. Z. 35 is used. Camouflage.
6. Pull safety pin if pull fuze Z. Z. 35 is used.

PACKING AND TRANSPORTING

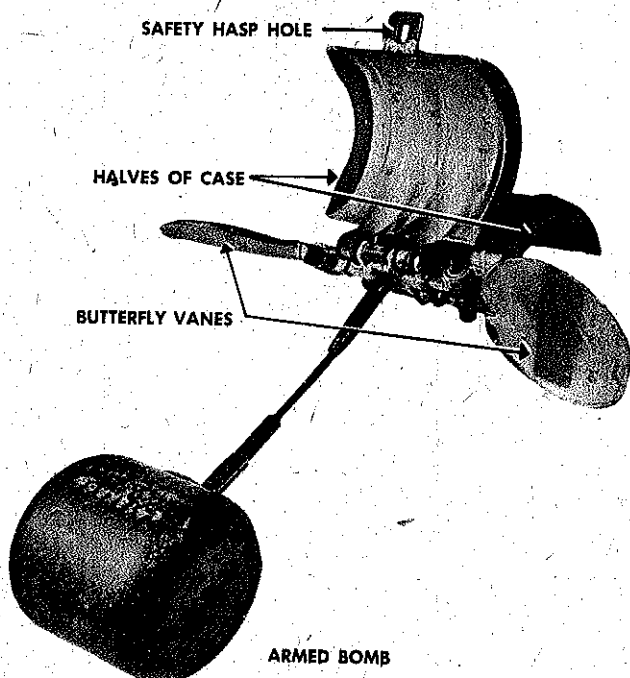


Wooden chest containing six mines weighs about 39 pounds.



Stakes, in bundles of six, furnished with chests. Fuzes, borehole charges, and detonators are obtained from German demolition stores.

GERMAN BUTTERFLY BOMB



TYPE. Antipersonnel bomb

COLOR. Green-gray

CASE. Sheet metal

WEIGHT. $4\frac{1}{2}$ pounds

EXPLOSIVE. Yellow TNT (7.5 oz.)

EFFECT. Causes casualties within a radius of 50 feet

EMPLOYMENT. Dropped from low-flying aircraft.

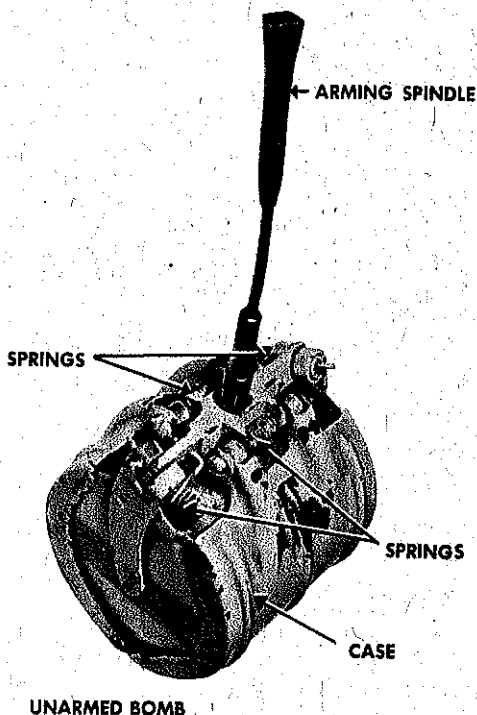
PACKING AND TRANSPORTING

Container holds 23 bombs.

CAUTION

Three types of fuze have been found in bomb. In 41 fuze, selector screw can be set at ZEIT to explode bomb 3 seconds after arming, or at AZ to explode on impact. Clockwork in 67 fuze is adjustable for delays of 10, 20, or 30 minutes. ZEIT and AZ often are stamped on this fuze for deception. Fuzes 70 (A) and 70 (B) are antihandling devices, probably similar in action to that in Italian thermos bomb. Bombs extremely dangerous when armed with them.

GERMAN BUTTERFLY BOMB



FUNCTIONING

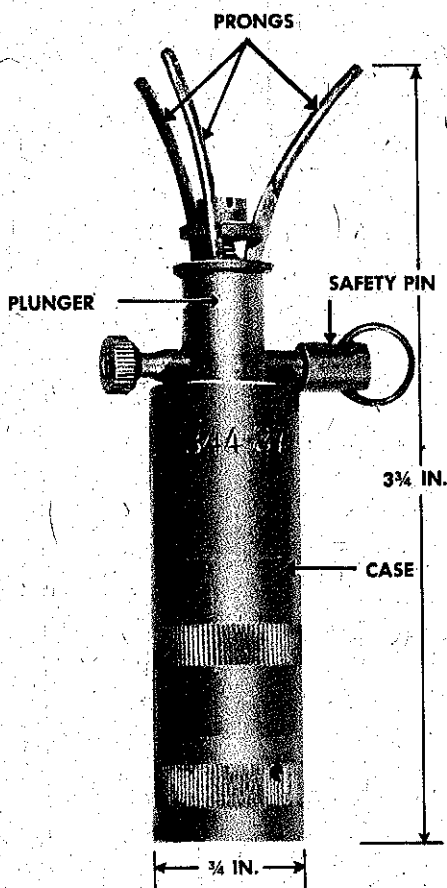
1. Container holding 23 bombs opens after falling predetermined distances, allowing bombs to scatter.
2. Springs force apart two halves of bomb case.
3. Halves of case and two butterfly vanes move to top of spindle wire, arming bomb.
4. Bomb explodes at predetermined time, on impact, or when handled, depending on type of fuze installed.

DEFUZING

If case still is closed, bomb is unarmed and fuze may be removed. If bomb is armed, wait 45 minutes. To destroy bomb, build sandbag wall around it and, from behind sandbags, pull bomb with rope; or, set off small charge next to it.

SPACE FOR NOTES

GERMAN PRESSURE FUZE S. MI. Z. 35



TYPE. Pressure fuze

COLOR. Olive-drab

CASE. Aluminum

EMPLOYMENT

This is the standard German pressure fuze for the "S" mine. Usually only tips of prongs are above ground surface.

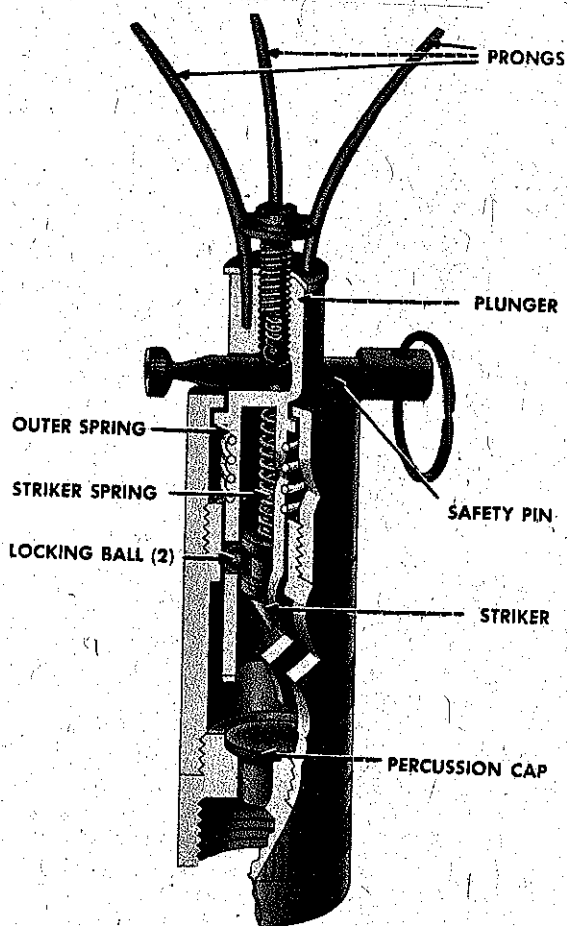
PACKING AND TRANSPORTING

Use standard German fuze container.

RE-USE

Before reuse, check fuze by testing safety pin to see if it can be withdrawn, and looking at cap to see if it has been fired. Do not test by firing, as fuze cannot be recocked without special tools.

GERMAN PRESSURE FUZE S. MI. Z. 35



FUNCTIONING

1. With safety pin removed, 8-10 pounds pressure on prongs overcomes resistance in outer spring, and depresses plunger.
2. This permits two locking balls to be forced outward, releasing striker.
3. Released striker, driven by striker spring, explodes percussion cap.

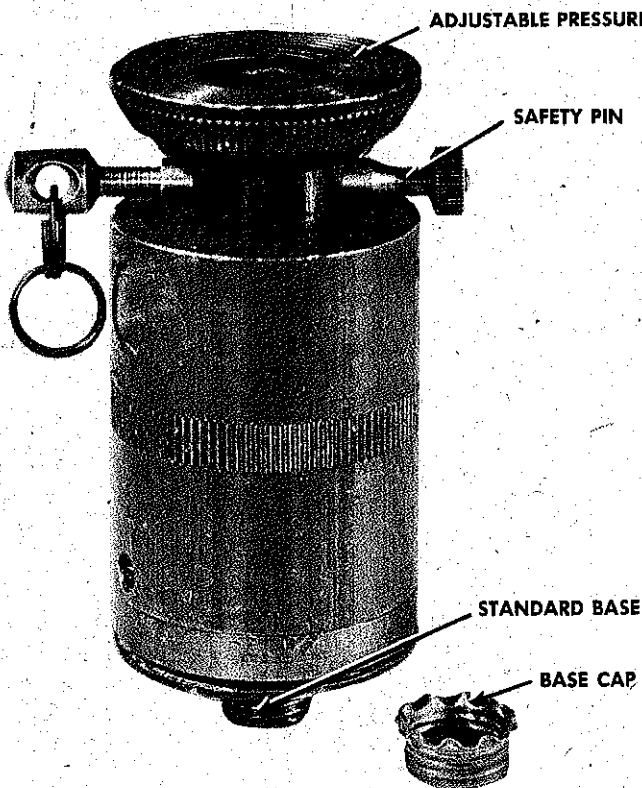
DISARMING

Insert pin or wire in safety hole.

INSTALLING AND ARMING

1. Attach fuze to mine.
2. Install mine and camouflage.
3. Remove safety pin.

GERMAN PRESSURE FUZE D. Z. 35



LARGE TYPE

TYPE. Pressure fuze

COLOR. Large type, brown; small type, unpainted

CASE. Large type, aluminum; small type, brass

EMPLOYMENT

Large type generally used in improvised wood mines; small type for booby-trapping.

DISARMING

Insert safety pin in hole of plunger.

DEFUZING

1. Remove fuze and detonator from charge or mine.
2. Detach detonator from fuze. No detonator if used with "S" mine.

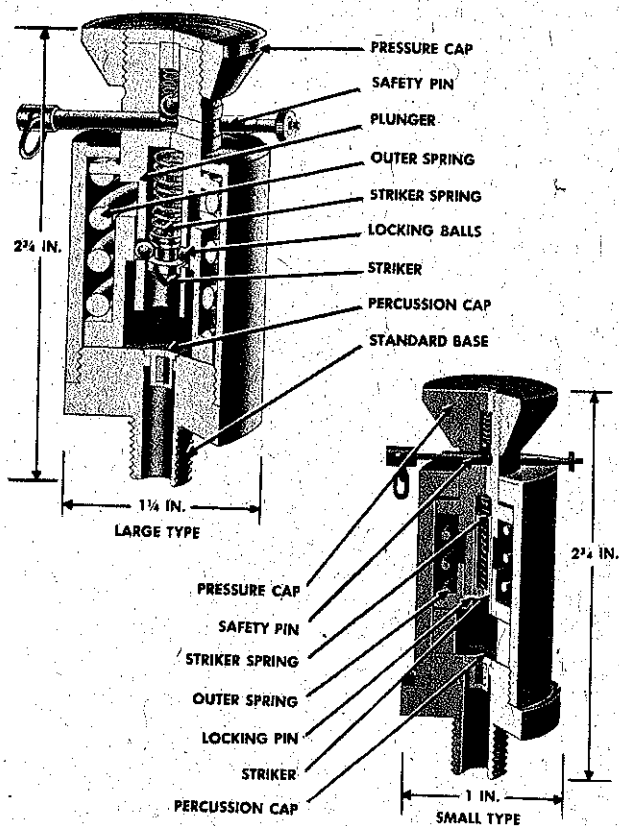
PACKING AND TRANSPORTING

Use standard German fuze container.

RE-USE

Examine to see an unfired cap is in place.

GERMAN PRESSURE FUZE D. Z. 35



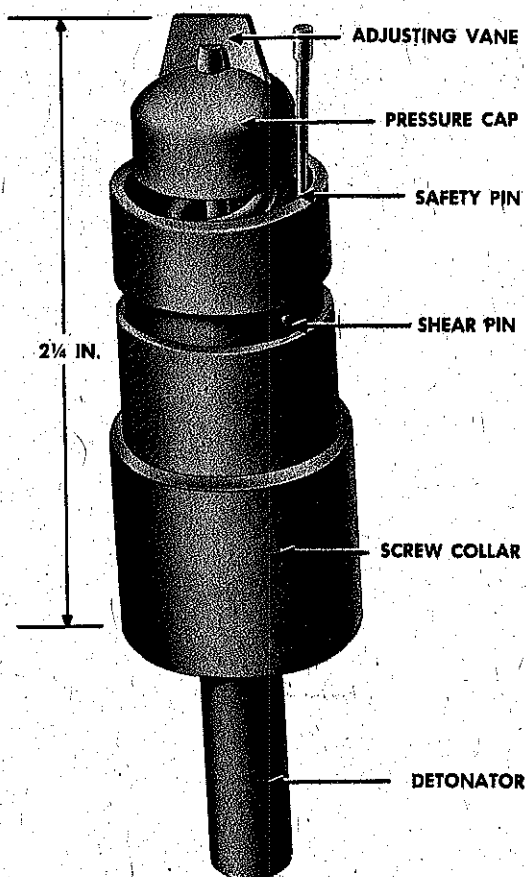
FUNCTIONING

1. Pressure (130-160 pounds for large type, 15-20 pounds for small type) on pressure cap forces plunger downward against resistance of outer spring.
2. Two locking balls (large-type fuze) or two locking pins (small-type fuze) are forced outward into lower open space, releasing striker.
3. Released striker, driven by striker spring, sets off percussion cap.

INSTALLING AND ARMING

1. Attach German detonator to base of fuze or wedge United States nonelectric cap into it.
2. Attach fuze to charge or mine. Detonator must go inside mine.
3. Adjust height of pressure cap. By raising or lowering pressure cap, vary distance top of mine must be depressed to bear on cap, thereby varying operating pressure of mine.
4. Remove safety pin.

GERMAN PRESSURE FUZE PX 32



TYPE. Pressure fuze

COLOR.

CASE. Metal

EMPLOYMENT. With improvised mines

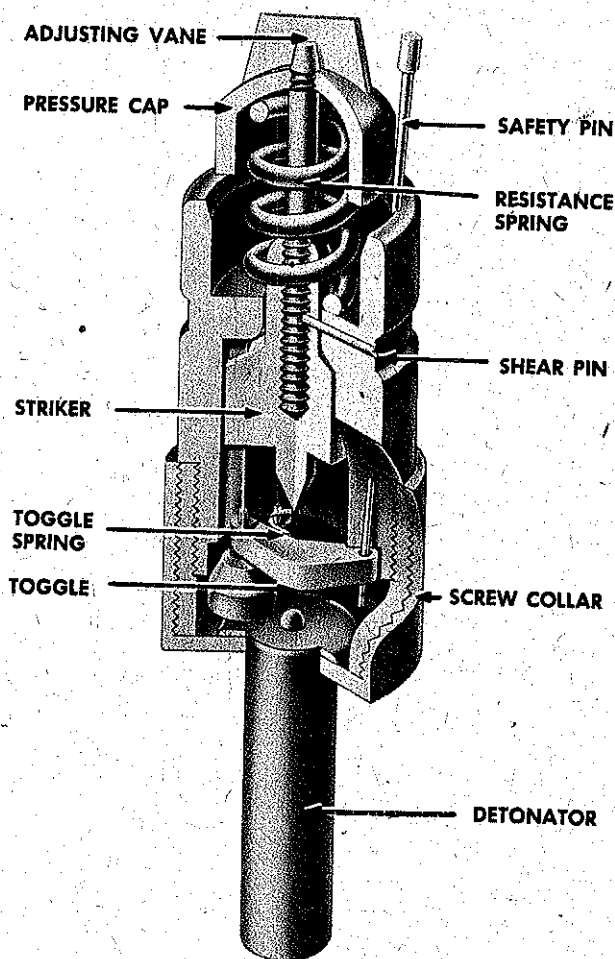
DISARMING

Remove fuze and attached detonator from charge.

INSTALLING AND ARMING

1. Fuze comes with detonator attached. If detonator has been removed, remove screw collar at base, insert standard German detonator, screw on collar to hold in place.
2. Insert detonator in charge.
3. Remove safety pin.

GERMAN PRESSURE FUZE PX 32



FUNCTIONING

1. Pressure on pressure cap overcomes resistance in spring, shears shear pin, and forces striker onto percussion cap.
2. Flame from percussion cap ignites attached detonator.

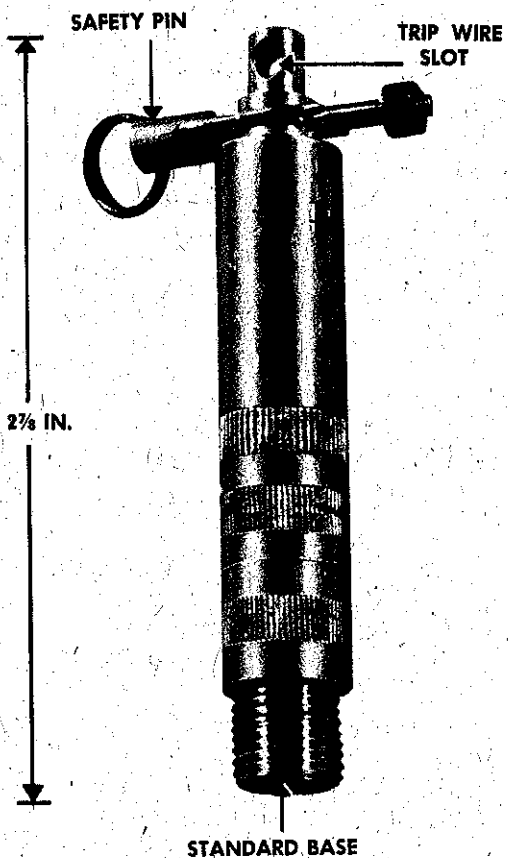
FUNCTIONING OF SAFETY

Safety pin holds toggle in position covering percussion cap. When pin is removed, toggle spring swings toggle away from above cap. Fuze should not be reused if safety pin is withdrawn.

PACKING AND TRANSPORTING

Fuze transported with cap and detonator in place. Use standard German metal fuze container.

GERMAN PULL FUZE Z. Z. 35



TYPE. Pull fuze

COLOR. Unpainted brass

CASE. Brass

EMPLOYMENT

Standard for "S" mines and prepared charges, for booby-trapping Tellermine, and for booby traps employing trip wires. Threaded base fits all standard charges, grenades, and mines.

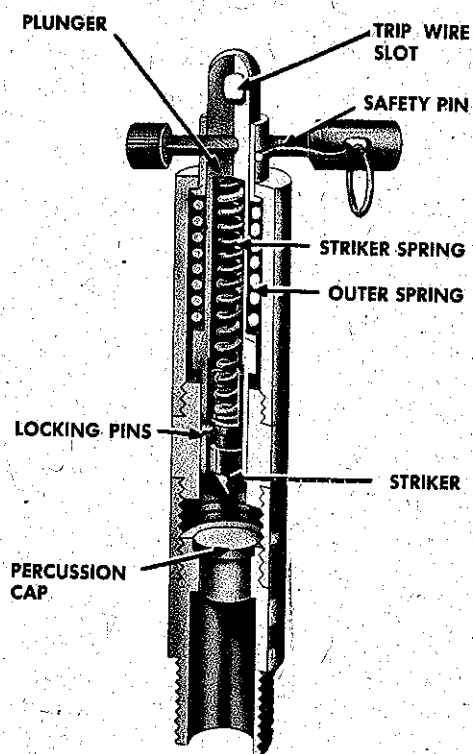
PACKING AND TRANSPORTING

Use German standard fuze container.

RE-USE

Check fuze by testing safety to see if it can be withdrawn, and look at cap to see if it has been fired. Do not test by firing, as fuze cannot be reset without special tools.

GERMAN PULL FUZE Z. Z. 35



FUNCTIONING

1. Pull on trip wire moves plunger upward against resistance of outer spring.
2. Two locking pins are forced outward when they come opposite open spaces, releasing striker.
3. Released striker, driven by striker spring, sets off percussion cap.

DISARMING

1. Insert pin in safety-pin hole.
2. Remove trip wire, first checking anchor end.

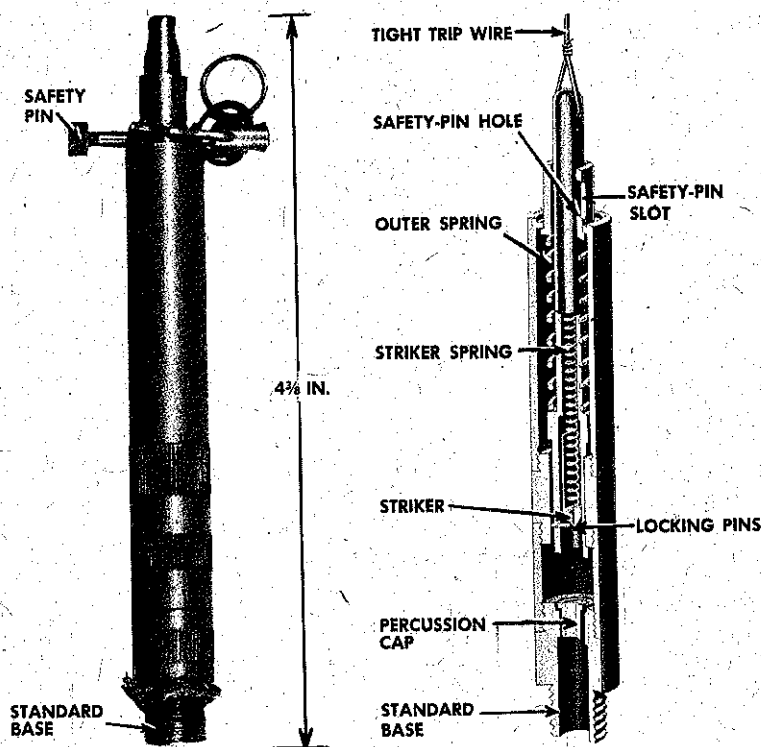
DEFUZING

1. Remove fuze and detonator from charge or mine.
2. Remove detonator from fuze.

INSTALLING AND ARMING

1. Attach German detonator to base of fuze, or wedge United States nonelectric cap into it.
2. Attach fuze to mine or charge, detonator inside.
3. Attach loose trip wire, first to anchor then to trip wire slot.
4. Unscrew nut and remove safety pin.

GERMAN PULL-RELEASE FUZE Z. U. Z. Z. 35



TYPE. Either pull or tension-release fuze

COLOR. Unpainted

CASE. Brass

EMPLOYMENT

Used with "S" mines, prepared charges, and booby traps.

FUNCTIONING

Trip wire on this fuze must be under tension. Fuze is fired by pulling on trip wire; or, by loosening, cutting, or breaking it.

1. Pull on trip wire pulls plunger upward against resistance of outer spring; two locking pins are forced outward into upper open space, releasing striker.

2. When trip wire is cut, outer spring forces plunger down until two locking pins are forced outward into lower space, releasing striker.

3. In either case released striker, driven by striker spring, sets off percussion cap.

GERMAN PULL-RELEASE FUZE Z. U. Z. Z. 35

DISARMING

1. Insert pin in safety slot.
2. Remove trip wire, first checking anchor end.

DEFUZING

1. Remove fuze and detonator from charge.
2. Detach detonator from fuze.

INSTALLING AND ARMING

1. Attach German detonator to base of fuze, or wedge U. S. nonelectric cap into it.
2. Attach fuze to charge or mine. Detonator must go inside charge.
3. Anchor trip wire.
4. Attach trip wire to trip-wire slot, adjusting tension so that safety pin comes just past middle of safety-pin slot.
5. Remove nut and pull out safety pin.

PACKING AND TRANSPORTING

Use German standard fuze container.

RE-USE

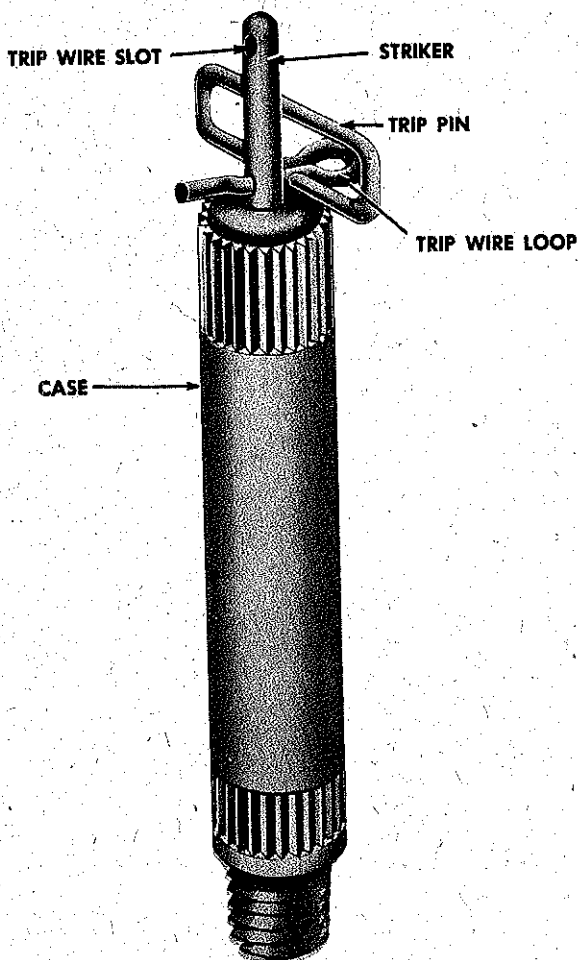
Examine fuze to make sure unfired cap is in place.

NOTES

This fuze has proved so dangerous to use that a number have been returned to the factory and modified. The modified fuze is stamped NUR ZUGZUNDER (only pull fuze). Interior works are the same, but trip-wire slot has been cut off end of plunger, and fuze is tripped by withdrawal of safety pin to which trip wire is attached.

SPACE FOR NOTES

GERMAN PULL (BAKELITE) FUZE Z. Z. 42



TYPE. Pull

COLOR. Unpainted

CASE. Bakelite

EMPLOYMENT. In booby traps and with stock mine

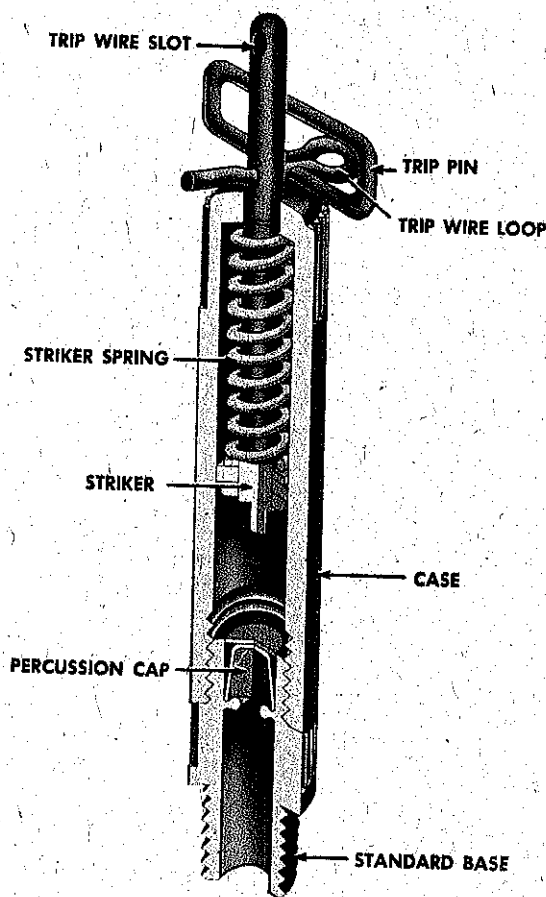
PACKING AND TRANSPORTING

This fuze comes as part of STOCK MINE SET. If carried separately, put cap over its base and/or carry in German standard fuze container.

RE-USE

Before using as pull-type fuze, make sure spring is strong enough to hold safety pin firmly.

GERMAN PULL (BAKELITE) FUZE Z. Z. 42



FUNCTIONING

1. Pull on trip wire withdraws trip pin, releasing striker.
2. Striker, driven by spring, explodes percussion cap.

DEFUZING

1. Hold pin in position, cut trip wire near trip pin.
2. Remove fuze and detonator from charge.

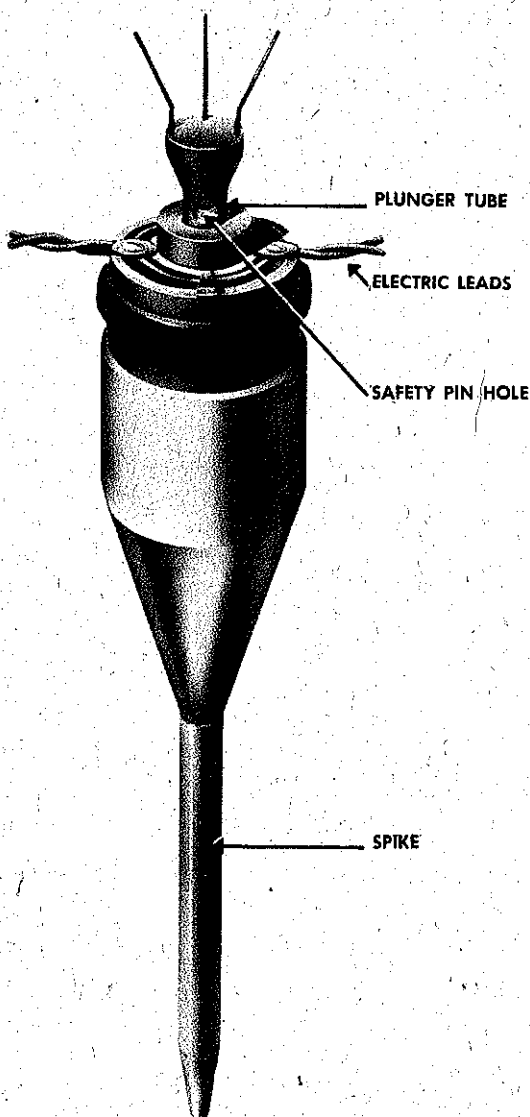
INSTALLING AND ARMING

1. Attach detonator.
2. Insert in charge.
3. Anchor far end of wire.
4. Fasten other end to trip pin, making sure wire is *not* taut.

NOTE

This fuze can be used as a release fuze by removing trip pin and holding striker in a cocked position with a tight trip wire.

GERMAN ELECTRIC FUZE E. S. MI. Z. 40



TYPE. Pressure

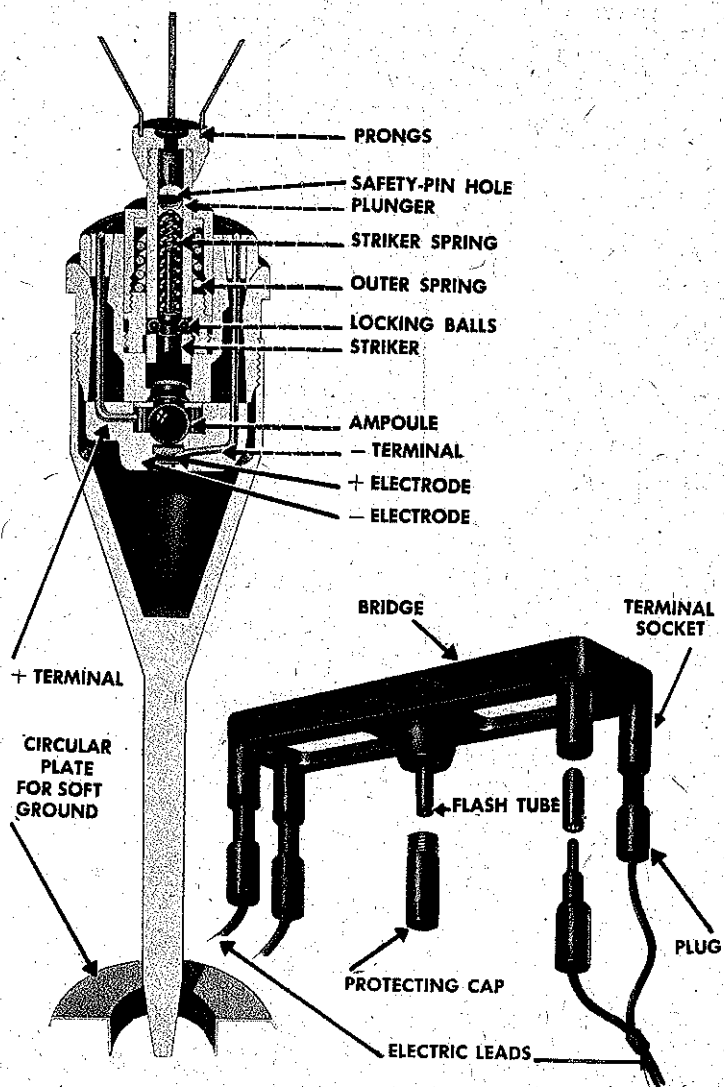
COLOR. Initiating fuzes, black; firing bridge, aluminum

CASE. Initiating fuzes, ebonite; firing bridge, aluminum

EMPLOYMENT

To explode German "S" mine. For each "S" mine, use a firing bridge and two chains of nine electric fuzes each.

GERMAN ELECTRIC FUZE E. S. MI. Z. 40



FUNCTIONING

1. Pressure on prongs of electric fuze depresses plunger.
2. Two steel balls disengage from groove in head of striker, releasing striker.
3. Striker, driven by spring, breaks ampoule.
4. Electrolyte in ampoule sets up electric current between electrodes.
5. Current induces flash, in flash tube of firing bridge, exploding mine.

GERMAN ELECTRIC FUZE E. S. MI. Z. 40

DISARMING

To disarm chain of electric fuzes, remove lead plugs from sockets in bridge.

To disarm individual electric fuzes, insert nail in safety-pin hole in top of plunger tube.

INSTALLING AND ARMING

1. Connect in parallel two chains each of nine electric fuzes, with 2 feet $7\frac{1}{2}$ inches of wire between fuzes, and 5 feet 3 inches between end fuzes and plugs.
2. Make two furrows in ground to receive wires, drive down fuzes to top of safety transit cap.
3. Test electric leads with lead tester by plugging into tester and short-circuiting most distant fuze.
4. Unscrew safety transit cap, release safety-pin rings from plunger tubes, attach withdrawal cords to rings.
5. Screw firing bridge onto "S" mine and set mine in U-clamp.
6. Insert red plug in red bridge socket, and black in black.
7. Pull withdrawal cords.

PACKING AND TRANSPORTING

Case carries U-clamp, bridge, and two metal bars each holding mine fuzes in sockets.

RE-USE

Test leads before re-using.

NOTE

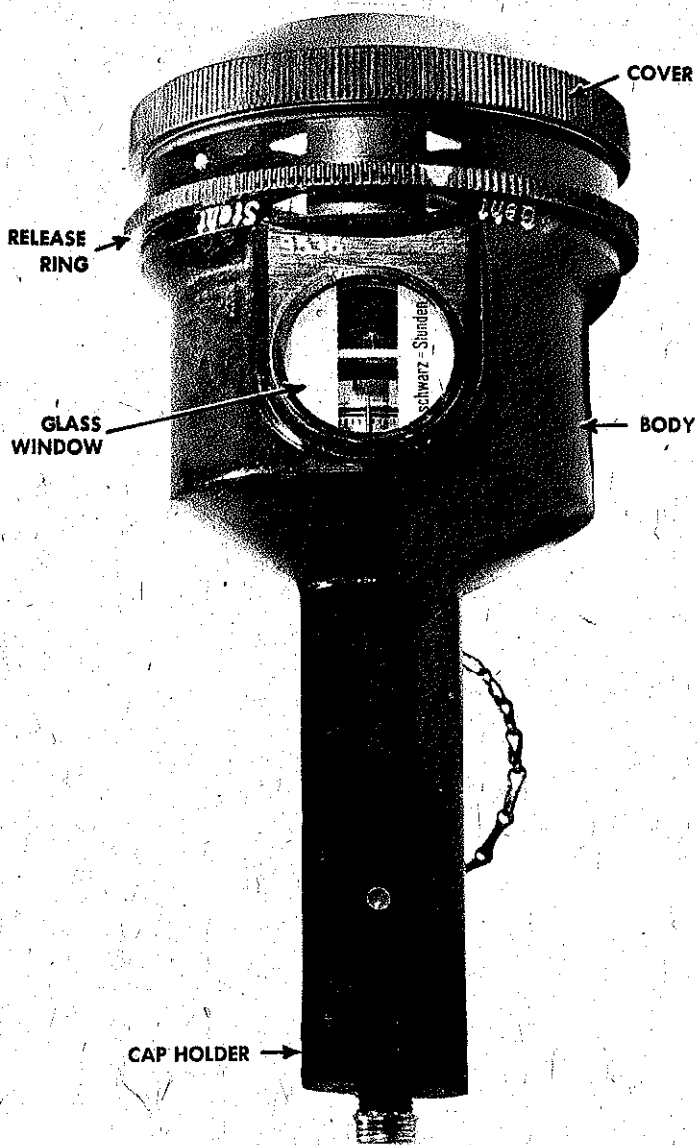
Pressure bar, 1 foot $4\frac{1}{2}$ inches long, can be placed between prongs of adjacent fuzes.

SPACE FOR NOTES

GERMAN ELECTRIC FUZE E. S. MI. Z. 40

SPACE FOR NOTES

GERMAN CLOCKWORK LONG-DELAY FUZE



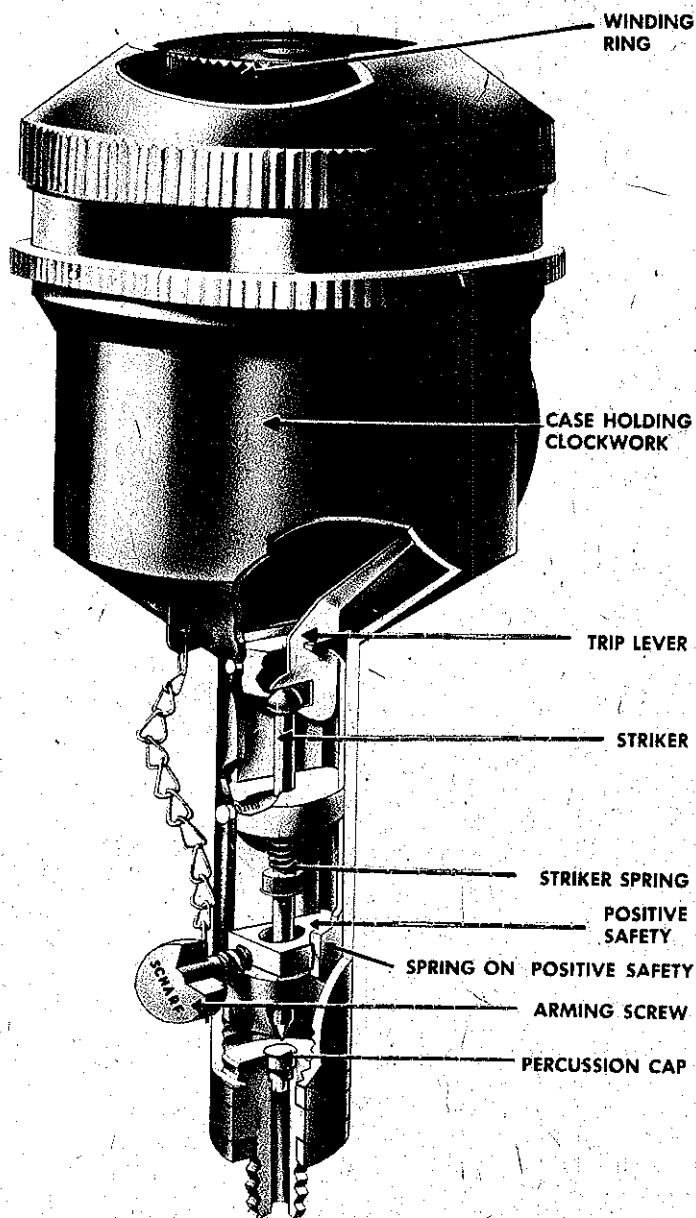
TYPE. Clockwork

COLOR. Black

CASE. Aluminum casting or Bakelite

EMPLOYMENT. For large-scale delayed demolitions. May be set for $\frac{1}{4}$ -hour to 21-day delay

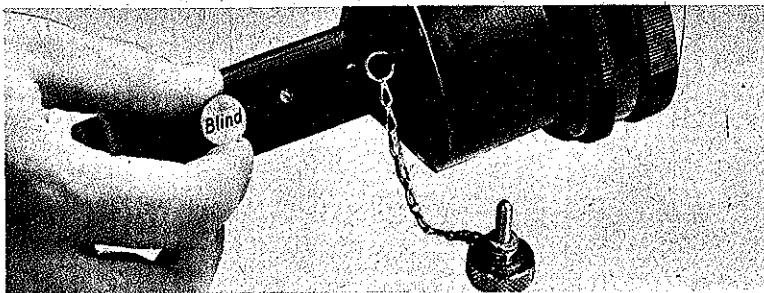
GERMAN CLOCKWORK LONG-DELAY FUZE **FUNCTIONING**



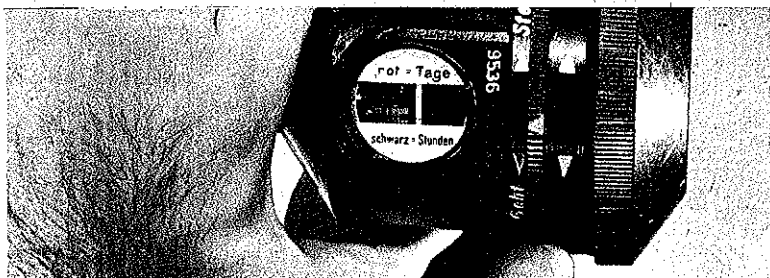
1. At end of delay period, lever arm on rotating control disk in clockworks bears against trip lever, disengaging striker.
2. Striker, driven by spring, explodes percussion cap in base.

GERMAN CLOCKWORK LONG-DELAY FUZE

DISARMING

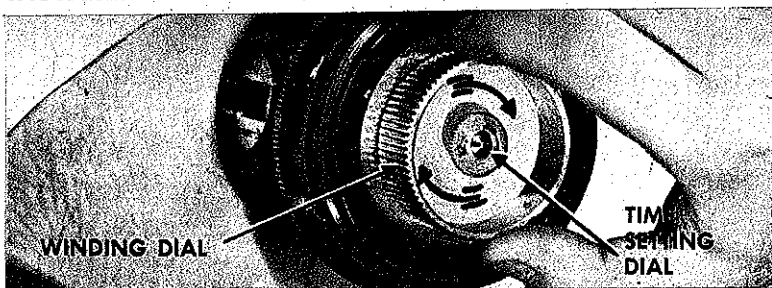


1. Remove set screw marked SCHARF to allow spring to push safety block between striker and cap, and screw in plug marked BLIND.



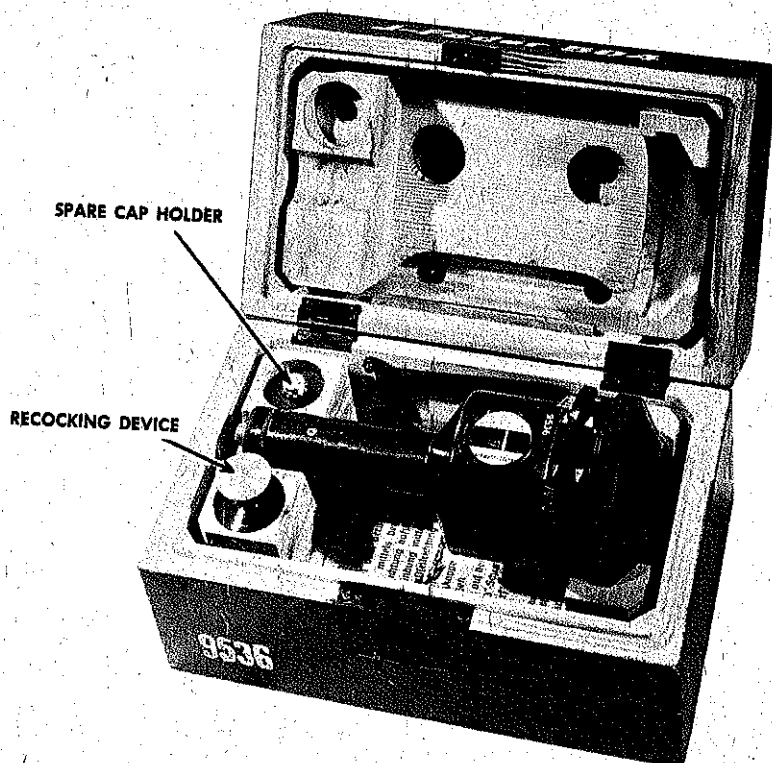
2. Turn red mark on release ring from GEHT (go) to STEHT (stop), arresting clockwork.
3. Remove fuze and detonator from charge.

INSTALLING AND ARMING



1. Unscrew cover and wind clock by turning knurled cylinder clockwise.
2. Set time-setting knob for desired delay. Setting is visible through glass window, TAGE for days and STUNDEN for hours.
3. Attach detonator to cap holder, insert in charge.
4. Remove plug marked BLIND and screw in fully set screw marked SCHARF.
5. Turn red mark on release ring from STEHT to GEHT.

GERMAN CLOCKWORK LONG-DELAY FUZE



PACKING AND TRANSPORTING

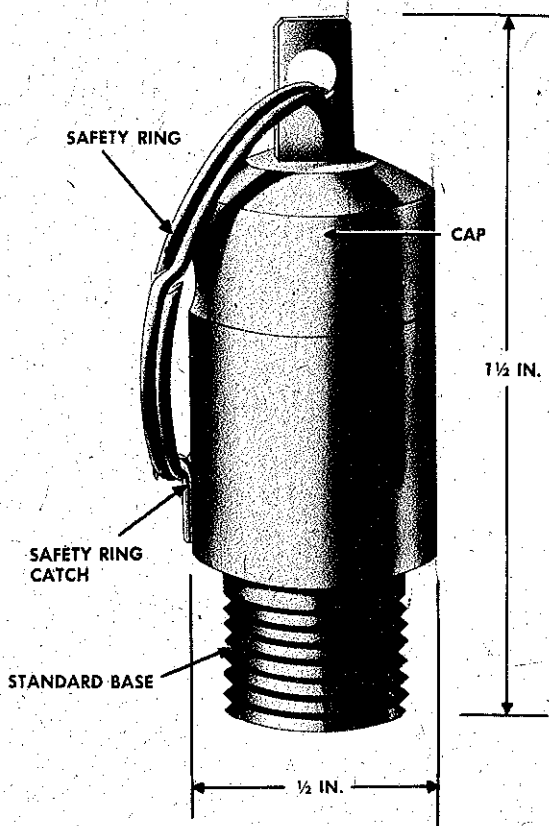
Fuzes individually packed in black wooden boxes stenciled "J-Feder 504." Cap holder and cocking device inserted in welled blocks.

RE-USE

Test fuze, with percussion cap removed, by setting clockwork for $\frac{1}{4}$ hour. After testing, recock striker with recocking device.

SPACE FOR NOTES

GERMAN FRICTION FUZE ZDSCHN. ANZ. 29



TYPE. Pull-friction fuze

COLOR. Unpainted

CASE. Brass

EMPLOYMENT

Attached to either safety fuze or detonator to set booby traps, to booby-trap mines, to ignite smoke candles and prepared charges.

DISARMING

Safe to handle as found. Fasten safety ring to body of fuze with tape to prevent its being pulled. Discard if ring has been partially pulled.

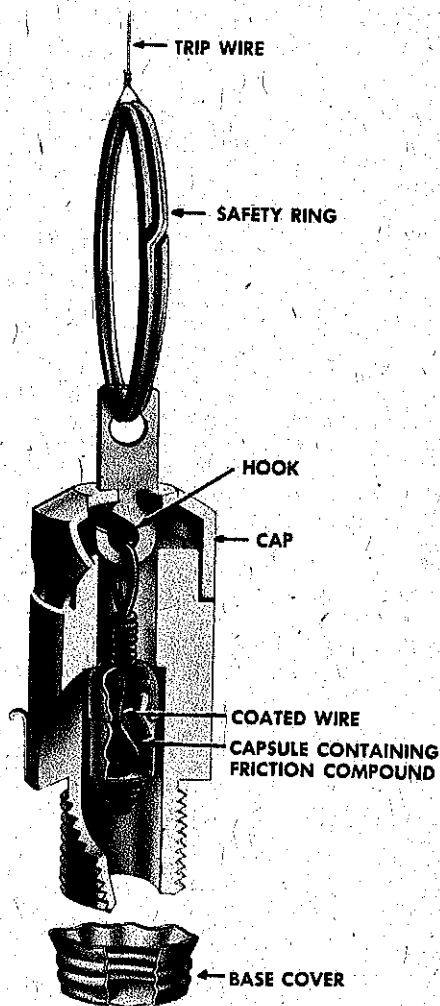
DEFUZING

Remove fuze and detonator from charge, detach detonator.

PACKING AND TRANSPORTING

Fuze is easily damaged by moisture. Pack in waterproof case, with cover cap in place on fuze base.

GERMAN FRICTION FUZE ZDSCHN. ANZ. 29



FUNCTIONING

1. Pull on trip wire attached to safety ring separates cap and hook from body.
2. Hook draws coated wire through friction compound, causing flame to spout out opening in threaded base.

INSTALLING AND ARMING

1. Attach German detonator to base of fuze, or wedge United States nonelectric cap into it. Length of safety fuze may be inserted between fuze and detonator.
2. Attach fuze to mine or charge. Detonator must be inside.
3. Detach safety ring from side of mine.
4. Attach loose trip wire to safety ring.

GERMAN FRICTION FUZE ZDSCHN. ANZ. 39

REMOVEABLE
HEAD

STANDARD
BASE

2 1/2 IN.

TYPE. Pull friction fuze

COLOR. Field gray

CASE. Aluminum

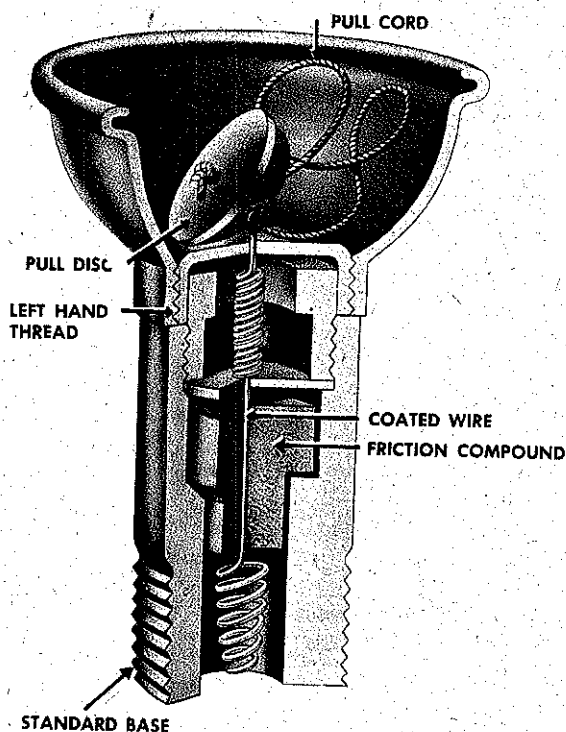
EMPLOYMENT

Primarily used for the ignition of safety fuze in demolition work. Also used to ignite smoke candles, to booby-trap Teller-mines and grenades, and to set off improvised mines and booby traps.

PACKING AND TRANSPORTING

Important to keep fuze dry. With cap and base cover in place fuze is fairly waterproof. However, it should be stored and transported in a watertight container.

GERMAN FRICTION FUZE ZDSCHN. ANZ. 39



FUNCTIONING

WITH CAP REMOVED

1. A pull on pull disc and cord—
2. Draws the coated wire through the friction compound—
3. And ignites the friction compound, which shoots flame out the open end of the threaded base.

DISARMING

1. Unfasten pull cord from anything to which it might be attached.
2. Remove fuze and detonator from charge.
3. Detach detonator from fuze and replace cap if available.

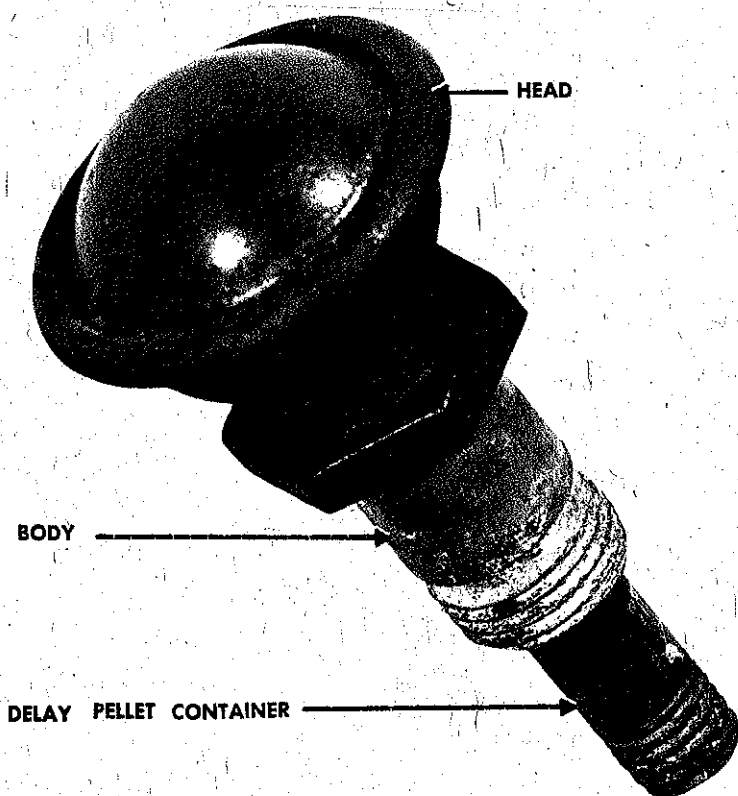
INSTALLING AND ARMING

1. Attach German detonator to base of fuze, or wedge U. S. nonelectric cap into it.
2. Attach fuze to mine. Detonator must be inside.
3. Remove cap (left hand thread to distinguish from friction fuze B. Z. E.), attach trip wire, and conceal.

RE-USE

Examine for signs of water deterioration before using.

GERMAN FRICTION FUZE B.Z.E. WITH DELAY PELLET



TYPE. Pull

COLOR. Head blue when used with "egg" grenade; red when used with "message-box" smoke flare

CASE. Brass body; steel tube

EMPLOYMENT. Generally with "message box" smoke flare and "egg" or "shaving stick" grenades

RE-USE

Check for presence of delay pellet in steel tube.

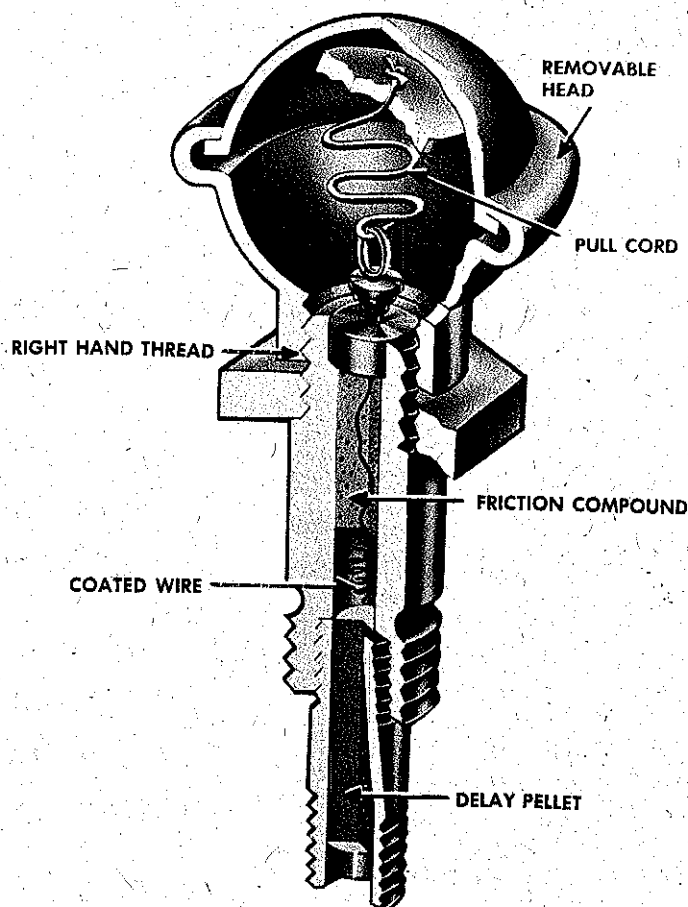
NOTES

Blue pellet used with "egg" grenade gives $4\frac{1}{4}$ -second delay.
Red pellet used with "message-box" smoke flare gives 1-second delay.

CAUTION

Germans vary color of head and length of delay. Always check delay before using.

GERMAN FRICTION FUZE B.Z.E. WITH DELAY PELLET



FUNCTIONING

1. When head is unscrewed and cord pulled, coated wire ignites friction compound in body.
2. Flame from compound sets off delay pellet in tube.
3. Burning pellet ignites attached fuze or detonator.

DISARMING

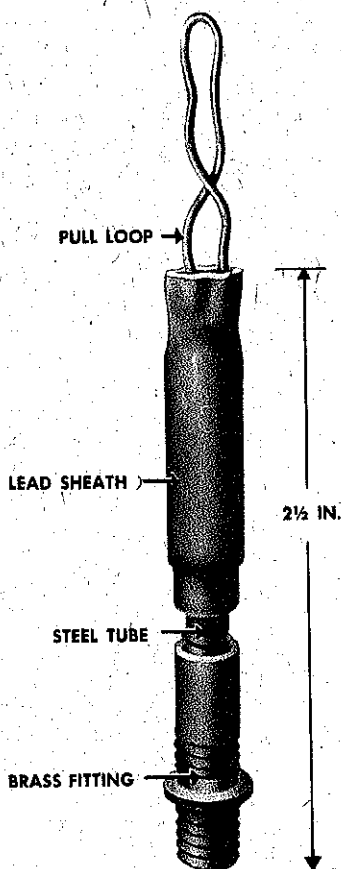
When head is screwed to body, fuze is safe to handle. If fuze is found with trip wire—

1. Cut trip wire near pull wire.
2. Unscrew head of fuze.

INSTALLING AND ARMING

1. Screw into grenade or flare.
2. Unscrew head of fuze (right hand thread to distinguish from friction fuze Zdschn. Anz. 39).

GERMAN FRICTION FUZES B. Z. 24 AND NB. B. Z. 38, WITH DELAY PELLETS



TYPE. Pull

CASE. Soft lead sheath; brass fitting; steel tube

EMPLOYMENT. B. Z. 24 fuze generally used with "stick" grenade;
Nb. B. Z. 38 with smoke grenade.

RE-USE

Make sure lead sheath is flattened at end, to prevent accidental firing.

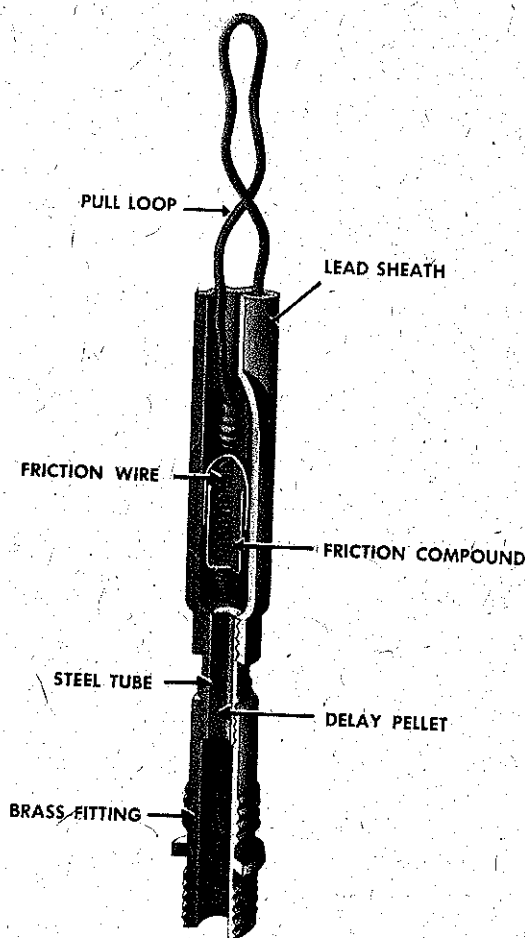
NOTE

Band at base of lead sheath on Nb. B. Z. 38 appears to be white.
Pellet in B. Z. 24 igniter has $4\frac{1}{2}$ -second delay.

CAUTION

Duration of delay frequently is reduced in booby-trap installations, making grenades extremely dangerous.

GERMAN FRICTION FUZES B. Z. 24 AND NB. B. Z. 38, WITH DELAY PELLETS



FUNCTIONING

1. When pulled, loop is freed from flattened lead sheath, drawing coated wire through friction compound in capsule.
2. Resulting flame ignites delay pellet.
3. Burning pellet ignites fuze or detonator attached to fitting.

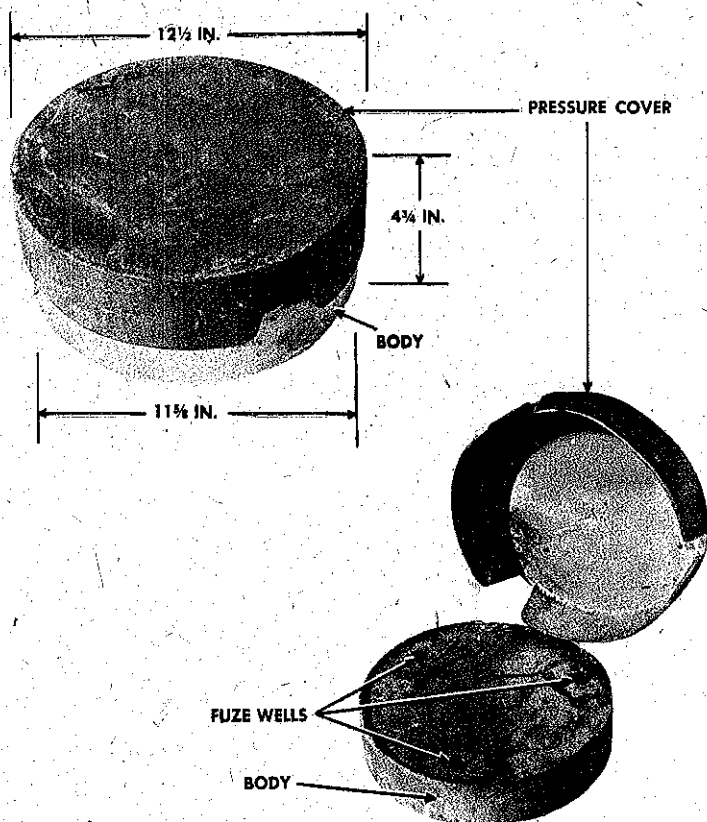
DISARMING

Enclose pull loop completely in lead sheath, flatten sheath; or, cut pull loop near friction wire.

INSTALLING AND ARMING

1. Unscrew cap from fitting.
2. Screw entire fuze into head end of grenade.
3. Attach fuze loop to trip cord in grenade.

GERMAN ALUMINUM MINE



TYPE. Improvised antitank mine

COLOR. Tan

CASE. Aluminum alloy from salvaged aircraft

WEIGHT. 14 to $16\frac{1}{2}$ pounds

EXPLOSIVE. 7 to 9 pounds of cheddite with tolite boosters

EFFECT. Disables tanks

PACKING AND TRANSPORTING

In transporting, remove fuzes and place adhesive tape over holes in lid.

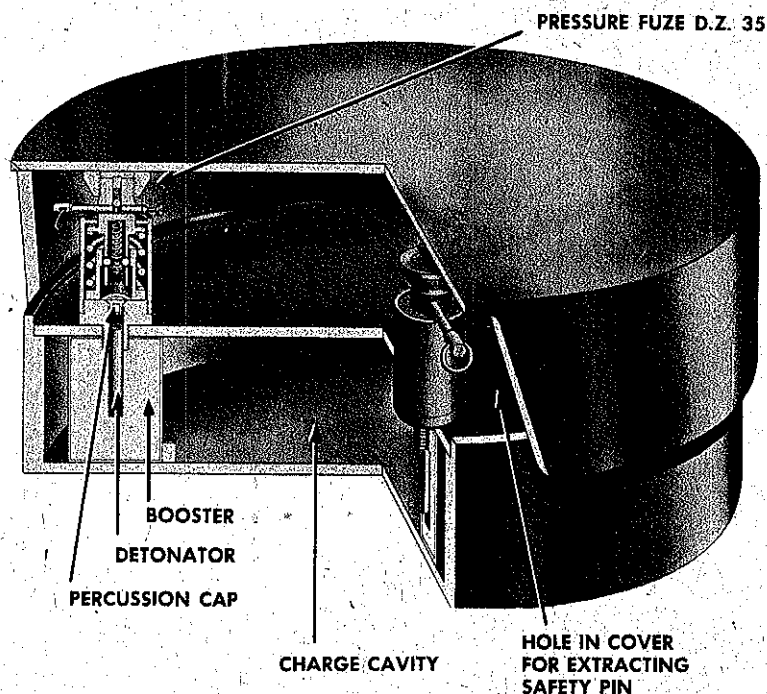
RE-USE

If T. Mi. Z. 42 fuzes are used, make sure shear pins are not partially cut.

NOTE

Can be detected by mine detector.

GERMAN ALUMINUM MINE



FUNCTIONING

1. Pressure of 130 pounds on sides to 390 pounds in center depresses cover and sets off one or more of three pressure fuzes, either German D. Z. 35 or T. Mi. Z. 42.
2. Fuzes explode detonators, boosters, main charge.

DISARMING

1. Remove cover.
2. If fuzes are D. Z. 35, insert nails or stout wires in safety-pin holes; if T. Mi. Z. 42, remove from mine.

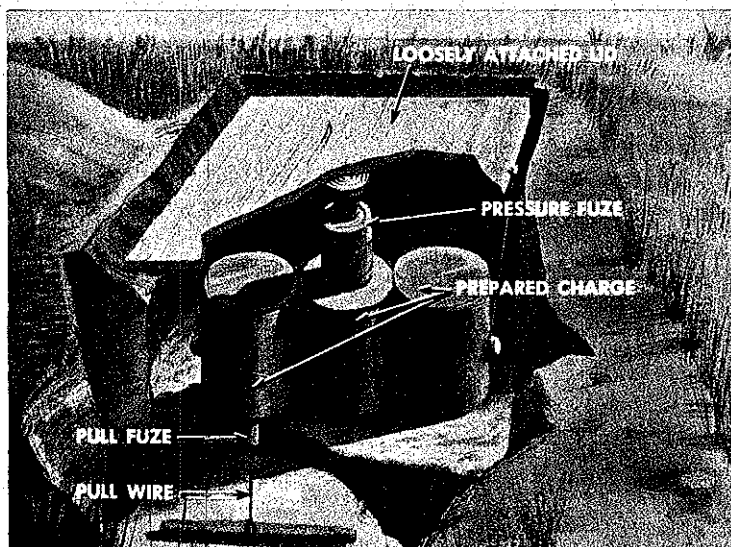
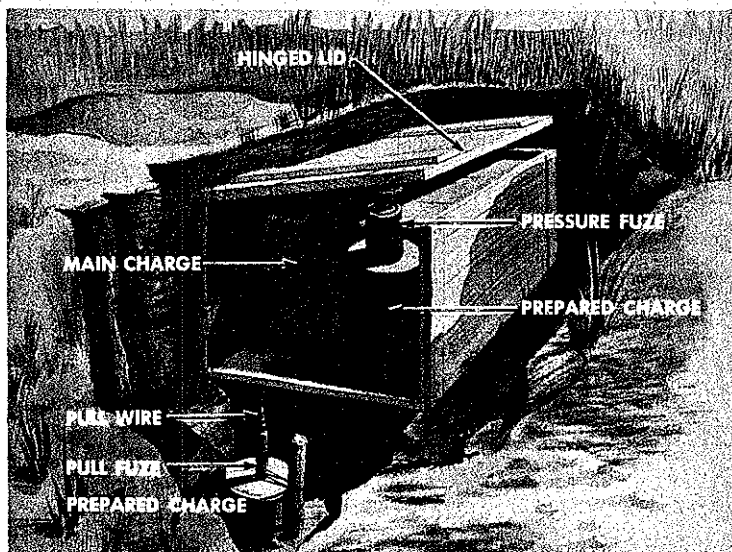
DEFUZING

1. Remove D. Z. 35 fuzes.
2. Unscrew detonators from fuzes.
3. Replace cover.

ARMING AND INSTALLING

1. Screw detonators on fuzes, making sure safety pin is inserted in D. Z. 35 fuzes.
2. Remove mine cover.
3. Install fuzes, making sure pressure heads are adjusted equally.
4. Replace cover.
5. Remove safety pins from D. Z. 35 fuzes by pulling on attached cords.

GERMAN IMPROVISED WOODEN BOX MINES



TYPE. Antitank mine

COLOR. Tan

CASE. Wooden box

WEIGHT. 7 to 20 pounds

EXPLOSIVE

5 to 18 pounds of trinitol, borehole charge (model 28), or metal-container HE charge (models 24 and 28).

GERMAN IMPROVISED WOODEN BOX MINES

FUNCTIONING

1. Pressure on hinged or loosely attached lid depresses pressure cap of pressure fuze, usually D. Z. 35 type.
2. Fuze explodes detonator in prepared charge, which acts as booster setting off main charge.

DISARMING

1. Investigate for pull fuzes. If one is attached to lid of mine, cut pull wire and remove lid; or, from covered position, pull off lid with 50 yards of rope or wire.
2. Insert safety pin in pressure fuze.

DEFUZING

1. Unscrew pressure fuze from prepared charge.
2. From covered position, pull out mine with 50 yards of rope or wire.
3. Wait at least 10 seconds before leaving position, in case delay-action secondary fuze has been attached.

INSTALLING AND ARMING

1. Place box packed with explosive in hole.
2. Attach pull fuze to side or bottom.
3. Screw into prepared charge pressure fuze with detonator.
4. If feasible, attach pull fuze to lid.
5. Remove safety pins.
6. Cover with 5 to 6 inches of earth; camouflage.

RE-USE

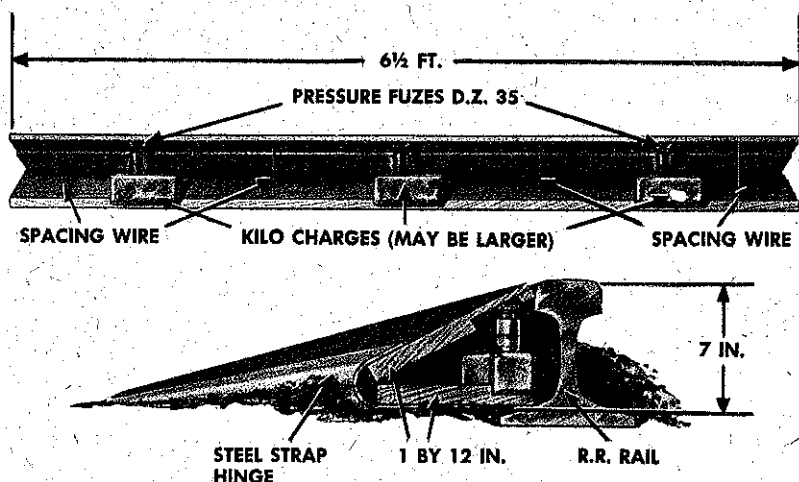
Inspect explosive carefully for deterioration.

NOTE

Mines buried 5 to 6 inches cannot be detected by mine detector.

SPACE FOR NOTES

GERMAN IMPROVISED RAMP MINE



TYPE. Antitank

COLOR. Natural

CASE. Wood

EXPLOSIVE. Three or more standard kilo cartridges

EFFECT. Disables tanks

EMPLOYMENT

Laid at railroad crossing, simulating ramp to assist vehicles in crossing rails.

FUNCTIONING

Pressure on hinged plank depresses pressure caps on three pressure fuzes, setting off percussion caps—detonators—kilo cartridges.

DEFUZING

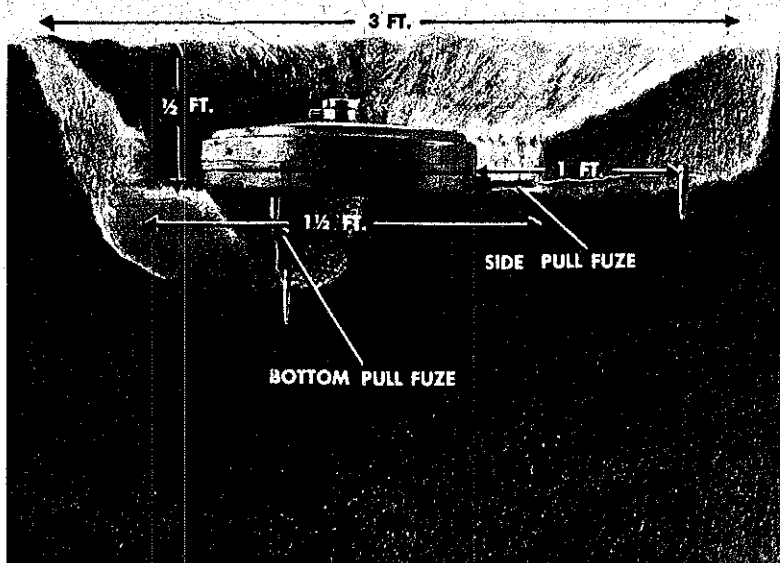
1. Examine for booby-trapping.
2. Cut tie wires and lift lid.
3. Insert safety pins in D. Z. 35 push fuzes.
4. Remove fuzes from charges, charges from mine.

INSTALLING

Use standard procedure for installing any improvised mine using D. Z. 35 fuzes.



GERMAN BOOBY-TRAPPED TELLERMINES



The Germans usually booby-trap mines to make removal of their mine fields and road blocks more hazardous and time-consuming. The number booby-trapped depends upon the time spent in laying the field, and on its importance. For this purpose the Tellermines have two secondary fuze wells, one in the side and the other in the bottom. (See sections 81.01-81.04, Tellermines.) Any of the standard pull fuzes, with detonator attached, fits into these wells.

DISARMING AND DEFUZING

To disarm and defuze a booby-trapped mine, cautiously uncover top of mine and disarm main fuze. Then remove mine by attaching a 50-yard rope or wire and pulling it from the hole. IF A SILENT LIFT IS REQUIRED—

1. Cautiously uncover top of mine and disarm main fuze.
2. Gradually scoop earth away from sides of mine until secondary fuze on side is found.
3. Disarm side fuze.
4. Commence about 6 inches from edge of mine and dig beneath it, locating bottom fuze.
5. Disarm bottom fuze.
6. Cut both trip wires, remove mine from hole.
7. Remove fuzes from mine.

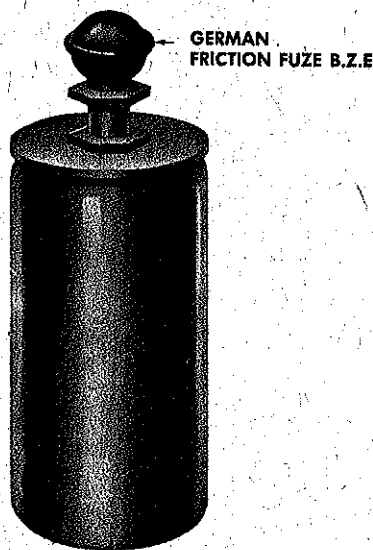
GERMAN BOOBY-TRAPPED TELLERMINE

INSTALLING AND ARMING

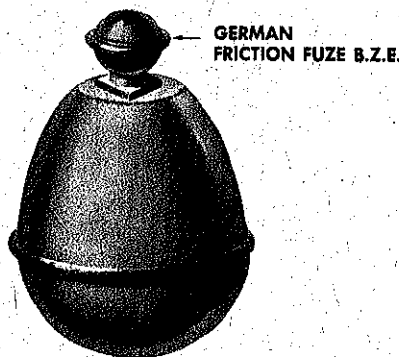
1. Dig a hole $\frac{1}{2}$ -foot deep, $1\frac{1}{2}$ feet in diameter at bottom and 3 feet at the top.
2. Dig two trenches into hole, each about one hand wide. Make one trench $\frac{1}{2}$ -foot deeper than mine hole and extending to its middle, the other same depth as mine hole and extending about 1 foot from side.
3. Drive stake at end of each trench.
4. Attach standard German detonators, or wedge U. S. non-electric caps into bases of two pull fuzes.
5. Insert pull fuzes in wells in Tellermine.
6. Attach short length of trip wire to trip-wire slots and safety pins on fuzes.
7. Place mine in hole; attach loose ends of trip wires to stakes, arrange safety-pin wires for easy removal.
8. Fill bottom hole; remove safety pin from bottom fuze.
9. Fill around sides of mine, remove safety pin from side fuze.
10. Arm main fuze.
11. Cover mine.

SPACE FOR NOTES

GERMAN BOOBY-TRAPPED GRENADES



SHAVING STICK GRENADE



EGG GRENADE

German grenades employ a friction fuze with a $4\frac{1}{2}$ -second delay pellet so the grenade reaches the target before exploding. Friendly troops using captured grenades sometimes find they explode immediately upon pulling the friction wire. This means grenades have been booby-trapped by removing the delay pellet. Before using captured grenades, examine as follows:

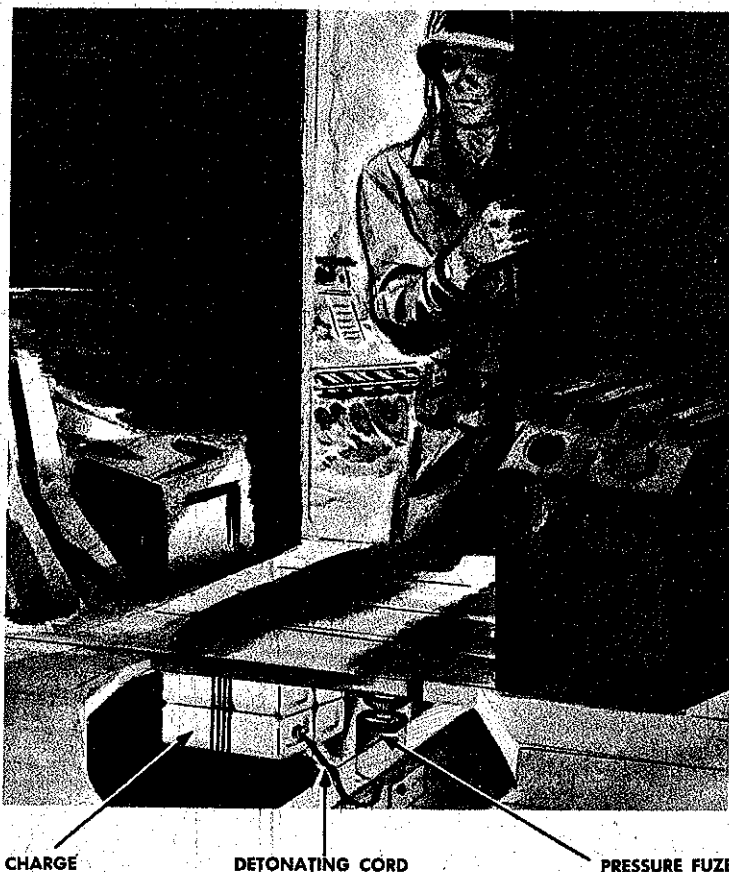
1. Remove fuze from one grenade, examine pellet, jerk pull wire, and time its delay before firing.
2. Remove all fuzes. Pellet, located in tube between fuze and base, should be solid and dry. A pin hole through it will make it burn much more rapidly.
3. If pellets are same as one tested, reassemble grenades and mark them with delay period.

GERMAN BOOBY-TRAPPED GRENADES

This booby-trapping is most easily done with grenades employing friction fuze B. Z. E. with delay pellet. Friction fuze Zdschn. Anz. 39, having the same general appearance but no delay pellet is substituted. It may be identified either by color or by the fact that its removable head has left hand thread rather than right hand thread as in friction fuze B. Z. E.

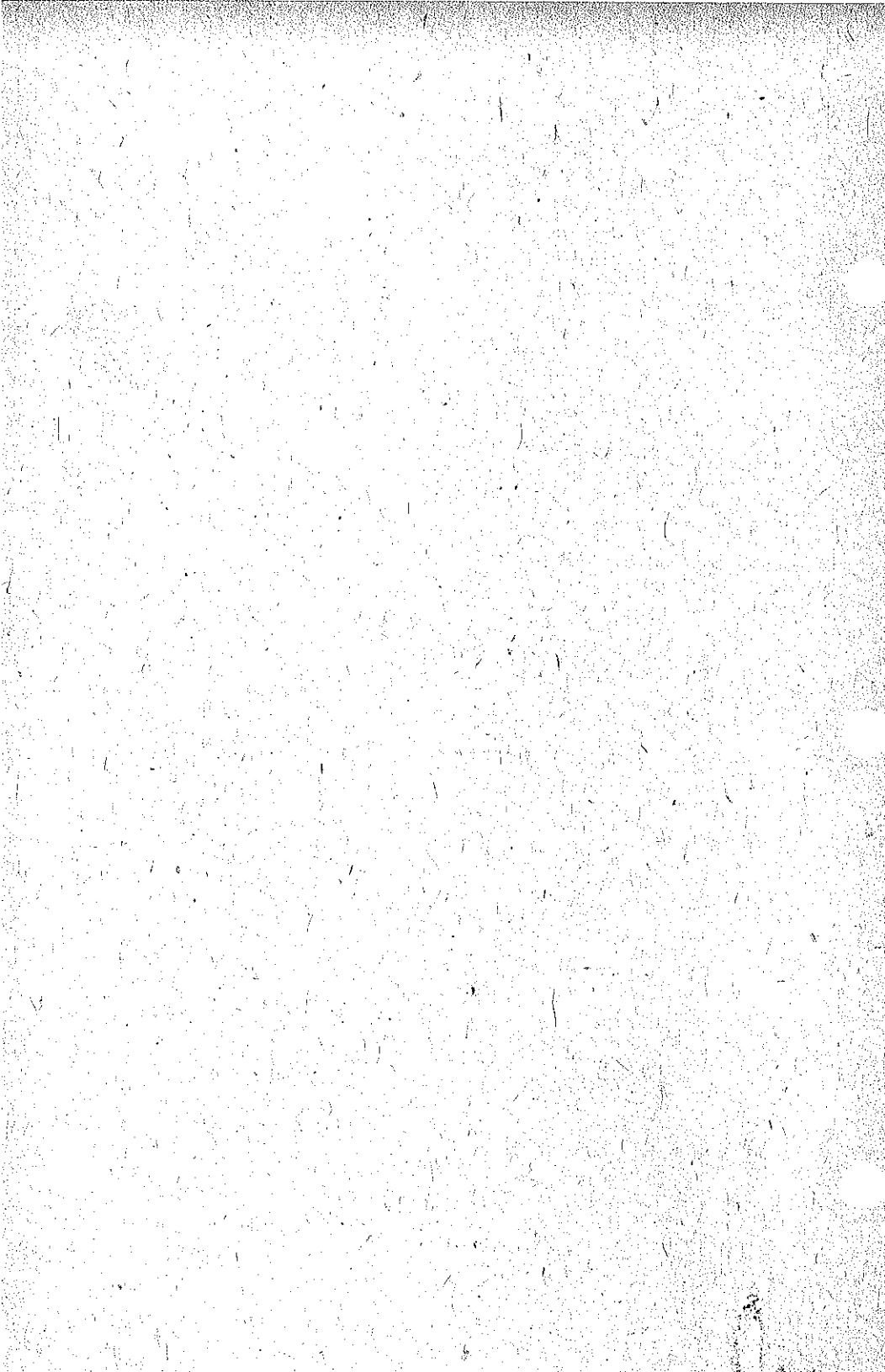
SPACE FOR NOTES

GERMAN PUSH-FUZE TRAPS

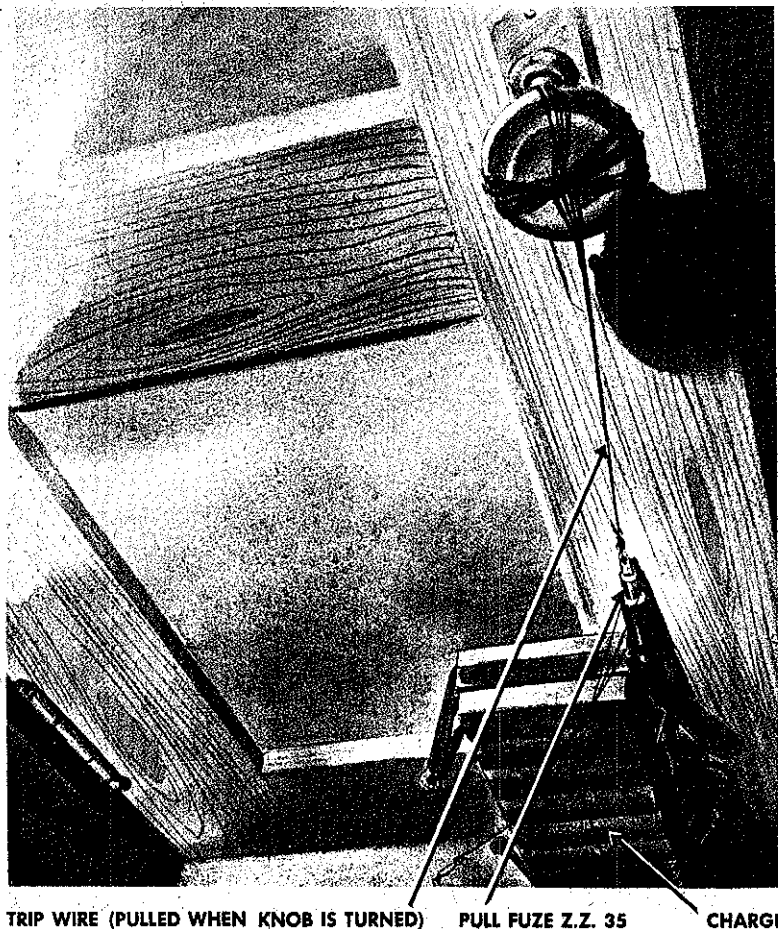


Germans leave booby traps for the unwary to tread on, particularly in populated places but also in the fields. The fuze may be either D. Z. 35, S. Mi. Z. 35, or Es. Mi. Z. 40. The charge may be an "S" mine, a grenade, one or more slabs of tolite, a Tellermine, or a shell or bomb. To find and disarm these traps—

1. Examine carefully for pressure firing devices all loose floor boards, trench boards, areas just in front of wheels of abandoned vehicles, any recently disturbed patches of ground, and similar suitable locations.
2. Identify fuze and disarm.
3. Remove fuze and detonator from charge, and charge from its locations.



GERMAN PULL-FUZE TRAPS



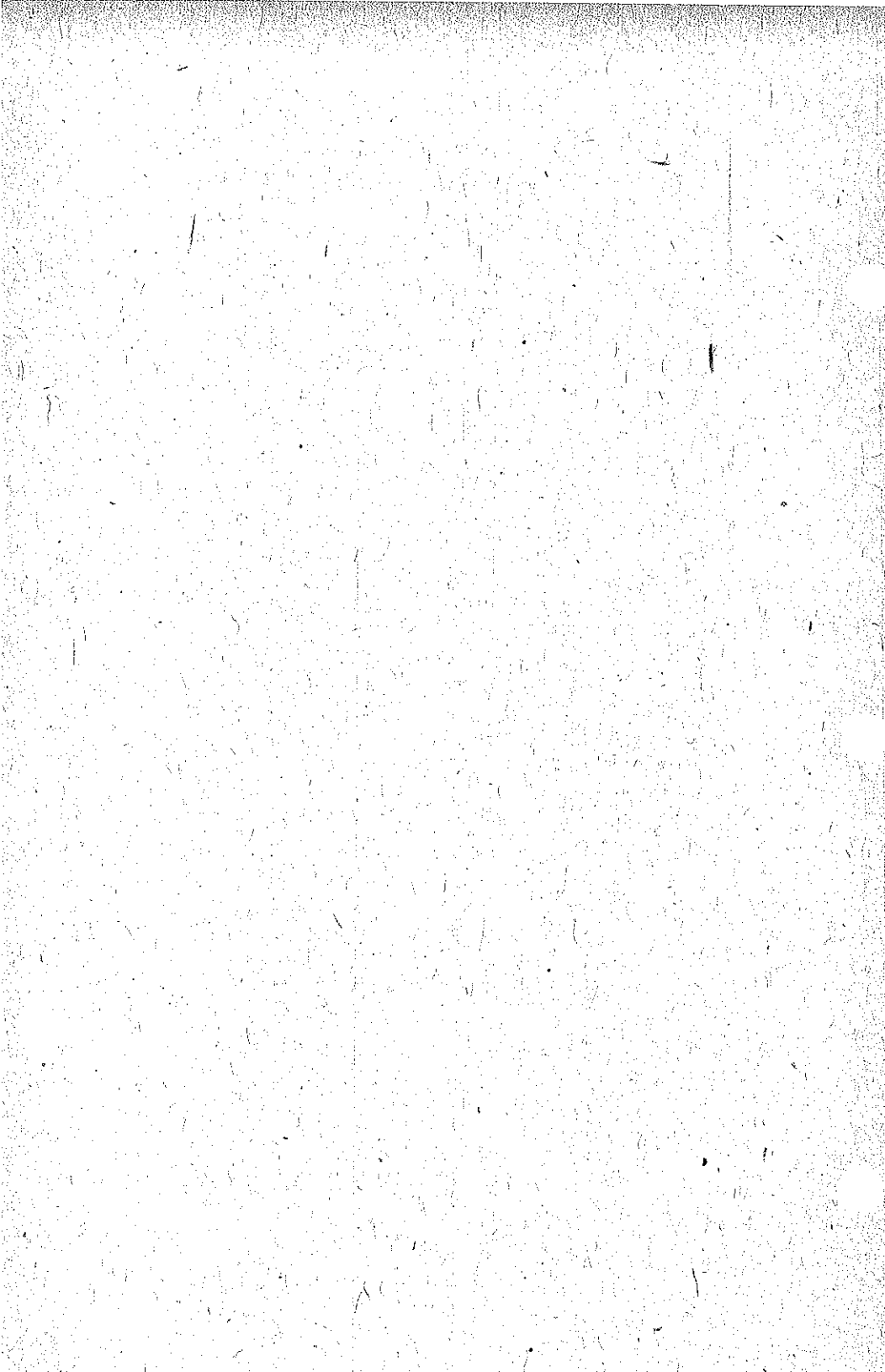
German fuzes Z. Z. 35, Z. U. Z. Z. 35, and the various friction fuzes, are commonly used in booby traps. The above illustration of a booby-trapped door is a simple example. The charge employed usually consists of two to eight slabs of Tolite, two to eight cylindrical cartridges, an "S" mine, Teller mine, or one or more grenades. To discover these traps and disarm them—

1. Never disturb any movable object without first searching for attached trip wires.

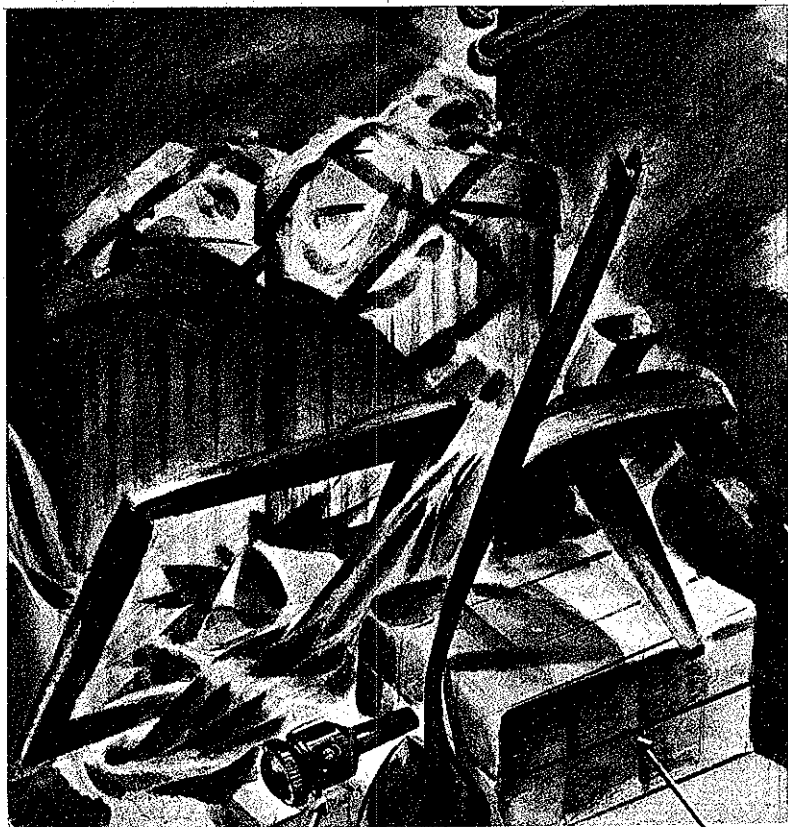
2. Follow all trip wires to their source.

3. Identify fuze and disarm.

4. Remove fuze and detonator from charge, and charge from its location.



GERMAN TIME-DELAY FUZE TRAPS



GERMAN LONG DELAY FUZE

LARGE CHARGE

A favorite German trick is to leave large charges of explosive—as much as 2,000 pounds—in abandoned buildings. Basements are favorite locations, though stoves, furnaces, chimneys, attics, and cupboards have been used. Clockwork fuzes are used, set for delays from several hours to many days. To find and disarm this type of booby trap—

1. Systematically search all buildings, particularly prominent ones, since Germans booby-trap them on theory they will be used for higher headquarters. Look in all nooks and crannies, examine all piles of rubble, being careful of other types of booby traps.
2. If found, either rope off building and area as unsafe, or find and disarm fuzes and remove charges carefully, piece by piece.