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## CHAPTER 1

# GENERAL

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### SECTION I

**11.01. SCOPE** This manual covers the employment, types, and characteristics of land mines and booby traps of various nations. It includes methods to locate, disarm, defuze, and remove these obstacles.

#### 11.02. LAND MINES

**a.** A land mine is an encased charge of explosive fitted with detonating device or devices designed to be actuated by vehicles or personnel

**b.** There are two common types

(1) Antitank mines designed to immobilize track or wheeled vehicles, and normally employed in mine fields. Antitank mines vary greatly in the amount of explosive they contain. The normal charge is 6 to 12 pounds. Usually they are not dangerous to personnel passing over them, since heavy pressure is necessary to detonate them. The impact of a running man may set off an antitank mine.

(2) Antipersonnel mines are used primarily to produce casualties to personnel on foot. They may be placed for specific tactical purposes, such as the protection of mine fields or other obstacles, or to give local security; or they may be placed as nuisance mines to harass and delay. They are not effective against armored vehicles. Explosive charges usually vary from  $\frac{1}{4}$  to 4 pounds.

**c.** Improvised land mines frequently are used when issue mines are either unsuitable or unavailable for a particular antitank or antipersonnel mission. They may contain any of the standard explosives, and may be set off by either standard or improvised fuzes. Improvised mines are particularly dangerous to remove, and time-consuming to install.

d. Types infrequently used for railway and bridge mining are large and complex special mines, containing a heavy charge. Their use is restricted by transportation and supply problems, and the time necessary for their installation.

e. Frequently dummy mines are used in place of real mines. They may consist of any scrap material available. They are laid in false mine fields, and may be used to supplement the real mines in a real mine field. Their main purpose is to delay the enemy by causing him to use time to investigate and remove them.

f. Practice mines are used for training purposes. They contain no explosive charge, but are similar in construction to real mines. They may be equipped to produce a puff of smoke when run over by a vehicle.

### 11.03. MINE FIRING DEVICES

a. **Fuze** The term "fuze" as used in this manual covers igniters, switches, and firing devices, and applies to the device which produces the flame or concussion to set off the charge. Fuzes operate by applying or releasing of pressure, by pull on a trip mechanism, by the release of a tension wire, or by a delay-action mechanism. Definitions of fuze types are—

(1) **PERCUSSION FUZE** A percussion fuze is one in which the percussion cap is set off by a blow from a spring or pressure-actuated striker.

(2) **FRICTION FUZE** A friction fuze is one composed of substances which are set aflame by applied friction.

(3) **CHEMICAL FUZE** A chemical fuze is one which utilizes the chemical reaction between selected substances to produce a high-intensity flame or a closed circuit.

(4) **TIME FUZE AND DELAY-ACTION FUZE** The time fuze and delay-action fuze are mechanically or chemically controlled detonating devices which function at a specified time interval after actuation. The controlling timing element in the fuze differentiates it from other fuzes.

b. **Trip cord or wire** A trip cord or wire is a low cord or wire attached to the main or secondary fuze of a mine or other explosive charge for the purpose of actuating the fuze.

c. **Sympathetic detonation** Sympathetic detonation is detonation induced by an explosion of another charge nearby.

### 11.04. MINE EMPLOYMENT AND MINE-FIELD TERMINOLOGY

a. **Fuzing a mine** Fuzing a mine is the process of inserting the detonator and fuze assemblies. The mine is safe to handle but not to transport or store.

b. **Defuzing a mine** Defuzing is the reverse of fuzing. The

mine, detonator, and fuze assemblies must be so packed that mines are safe for transport and storage.

**c. Arming a mine** Arming a mine is removing all safety devices so the mine is ready to function.

**d. Disarming a mine** Disarming a mine is replacing pins, clips, or other safety devices so the mine cannot be exploded accidentally by vehicles or personnel. A disarmed mine is not necessarily safe for transport and storage.

**e. Mine belt** A mine belt is a strip of ground which contains mines laid to a standard pattern.

**f. Mine section** A mine section is one of the areas into which a mine belt is divided to facilitate laying and recording mines, and to allow for changes in direction.

**g. Mine density** Mine density is the number of mines per yard of front. The normal mine density of mine belts is  $1\frac{1}{2}$  mines per yard of front.

**h. Mine-belt pattern** Mine-belt pattern is the arrangement of mines in a mine belt. The arrangement may include antitank, antipersonnel, and booby-trapped antitank mines.

(1) **UNIFORM-PATTERN BELT** Uniform-pattern belts employ uniform spacing of mines throughout the field.

(2) **EXTENDED-PATTERN BELT** The mines are laid in considerable depth, and the rows of mines nearest the enemy are spaced more widely. Extended-pattern belts are those normally employed.

(3) **HASTY-MINE BELT** A hasty mine belt is one in which the mines are laid in a shallow regular pattern and are located by pacing.

(4) **DELIBERATE MINE BELT** This is one in which the mines are laid in greater depth than in a hasty mine belt and are located by accurate measurements. Either the uniform or extended pattern belts may be used.

**i. Mine field** A mine field includes the entire extent of a mined area. It may have one or more belts, and may contain scattered mines located between and in front of mine belts.

(1) **HASTY MINE FIELD** This consists of one or more hasty mine belts.

(2) **DELIBERATE MINE FIELD** This consists of one or more deliberate mine belts.

(3) **PROTECTIVE MINE FIELD** A protective mine field is one which provides local security for a defense area.

(4) **TACTICAL MINE FIELD** A tactical mine field is one placed to break up and canalize the enemy's attack formations and to hold him in areas covered by intense defensive fires, particularly those of antitank and automatic weapons.

(5) **NUISANCE MINE FIELD** A nuisance mine field is one placed to delay enemy approach to a position. Usually such fields are sited along roadsides, and in turn-offs, favorable assembly areas, and bivouac locations. Normally they employ a high percentage of antipersonnel mines.

(6) **DUMMY MINE FIELD** A dummy mine field is an area having the appearance of a real mine field.

**j. Suspect area** A suspect area is one thought to contain mines.

**k. Mine road block** A mine road block is used to cover a narrow front where a deep pattern cannot be employed. Its normal density is three mines per yard of front.

**l. Clearing** Clearing a mine field is removing all mines from it.

**m. Mine-field lane** A mine-field lane is a passage cleared of mines and marked so vehicles and personnel may travel safely through the mine field.

**n. Breaching** Breaching a mine field is clearing one or more lanes through it.

**o. Booby-trapped mine** A booby-trapped mine is one having a device which will cause detonation when the mine is moved. The device may be attached either to the mine itself or to a second mine or auxiliary charge laid underneath.

### 11.05. BOOBY TRAPS

**a.** A booby trap is a device so arranged in connection with an explosive charge that any disturbance of the device detonates the charge.

**b.** They are used against personnel. Their principal mission is to delay, demoralize, and cause casualties. Booby traps may be installed in conjunction with raids on positions, along routes of enemy advance, or with antitank mines to prevent their removal.

**c.** They may be encountered under any circumstances, but usually are found in mine fields, in abandoned buildings and vehicles, or attached to articles of equipment. Ingenuity of installation largely determines their effectiveness. Occasionally a second trap is placed near the first one to prevent its removal.

**d.** Booby traps are operated by any of the following methods:

- (1) Direct pressure on a concealed mechanism.
- (2) Lifting some apparently harmless object off a concealed mechanism.
- (3) Moving some concealed object, such as a thin trip wire, connected to a concealed mechanism.

e. Troops must be trained to detect and disarm booby traps. As booby traps rely for their success entirely on surprise, the charge and the operating mechanism always will be either concealed or made to resemble some common, harmless object. Wires generally are employed in booby-trap installations, and usually are the primary evidence of booby-trapping. The detection of booby traps requires knowledge of enemy booby-trap equipment, its normal employment, and how to disarm it. Thorough training is necessary to develop ability in visual and manual investigation. All personnel must be trained to—

- (1) Exercise extreme caution wherever booby traps may be encountered.
- (2) Watch closely for unnatural objects or conditions.

f. Disarming booby traps always is dangerous, but casualties can be avoided if the proper precautions are taken. Normally one person examines and disarms a booby trap, while the others remain at a distance.

- (1) A locality to be investigated is divided into zones. Traps are cleared systematically from each zone before proceeding to the next. When a trap is found, the method of disarming is determined before the trap is disturbed in any way. No attempt is made to disarm it until its method of firing is understood.

- (2) Most of the standard booby traps are fitted with one or more safety devices, usually a pin. First the hole from which the pin has been withdrawn is located. Then a nail or piece of wire is inserted in this hole. Normally this makes the mechanism safe.

- (3) The entire length of trip wires and lead wires is carefully examined to make certain there is no trap at the opposite end which might explode if the wire were cut. This examination also includes a search for pressure operated devices. It must be ascertained that the wire is not an electric lead wire. This prevents completing a firing circuit by cutting a double electric lead wire with pliers, or closing an electric relay by breaking a circuit. Finally, the wires are cut.

- (4) Delayed-action traps usually are difficult to locate because they have no external firing agency and can well be concealed. They are safe until the time set for their explosion. On discovery of delayed-action traps the fuze mechanism must be located and disarmed.

- (5) Each booby trap must be viewed with caution and respect. Its disarming and removal must be considered a new problem in which nothing is taken for granted.



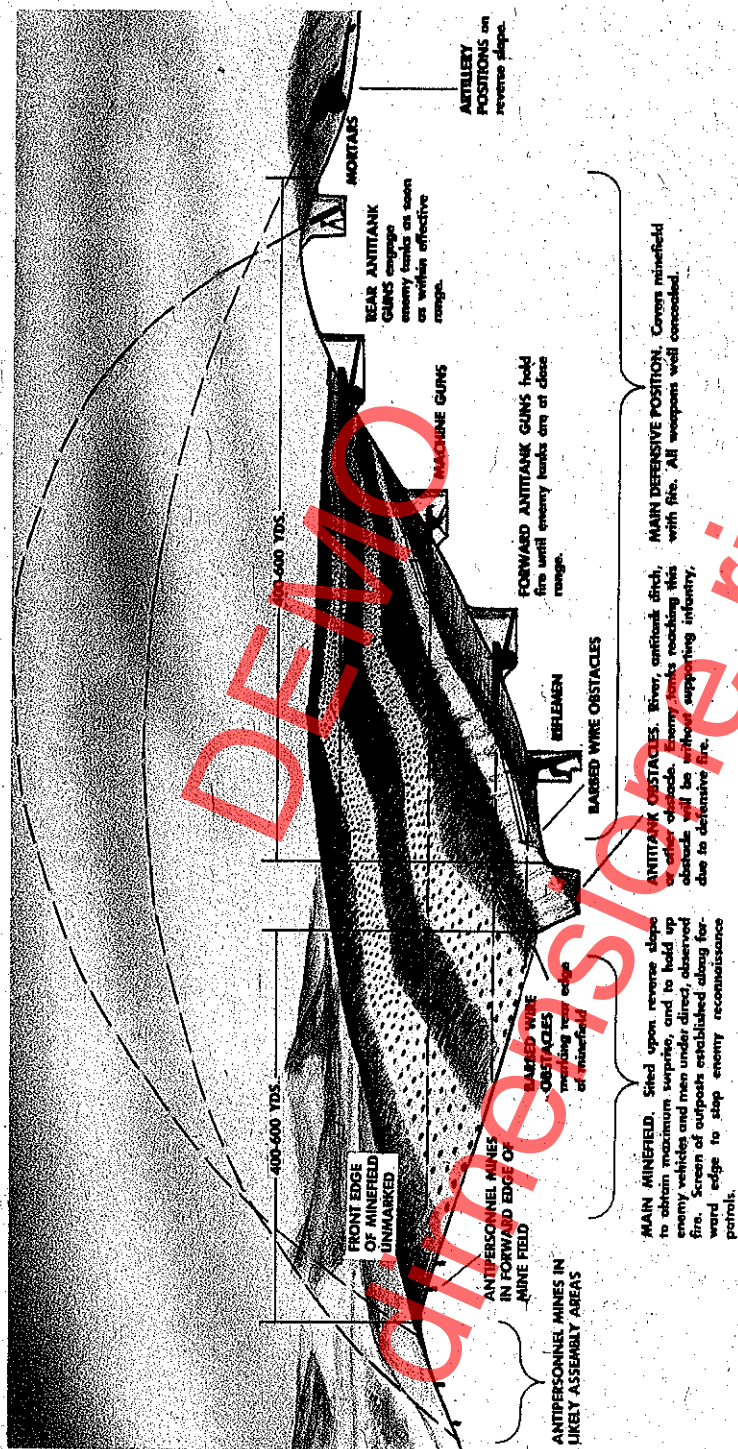


Figure 21.02. Ideal lay-out of antimechanized defensive position (schematic).

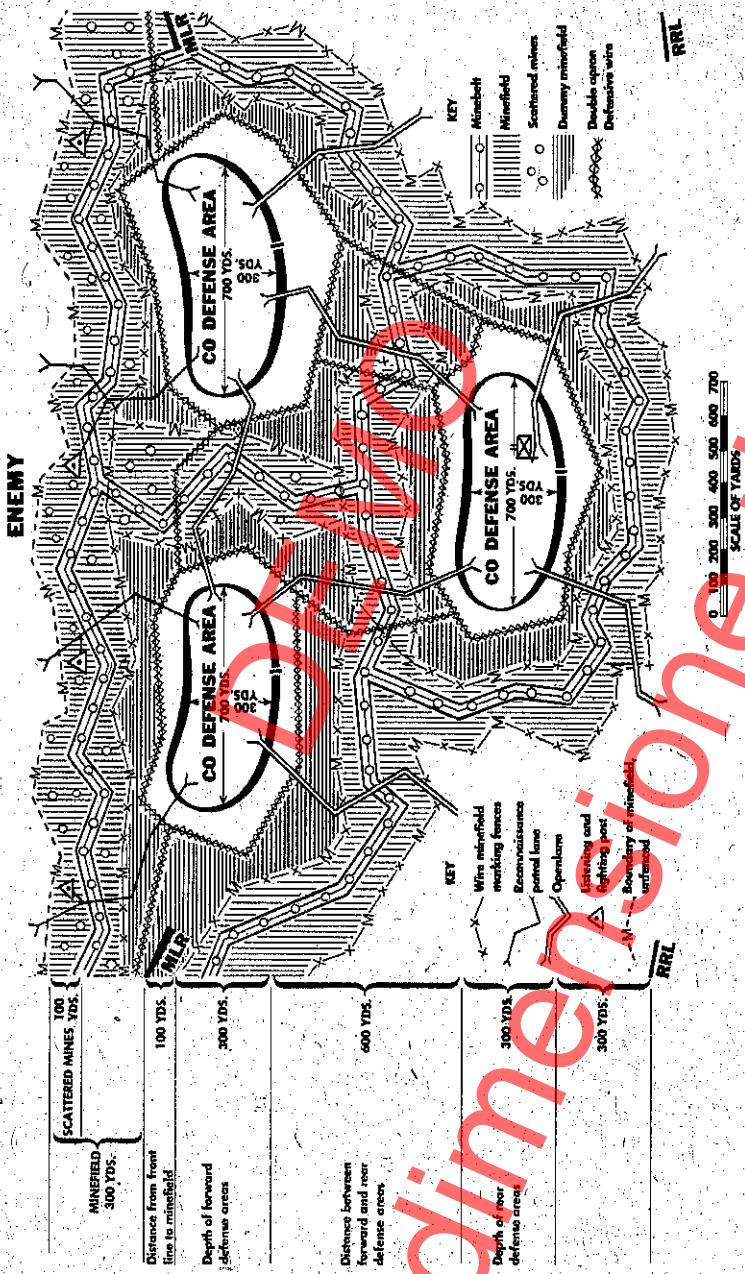


Figure 21.04. Battalion protected by mine field

**DANGER  
MINES**

RED

**DANGER**  
TARMAC ONLY  
CLEAR OF MINES  
FOR NEXT 10 MILES

RED

**DANGER**  
MINES BOTH  
SIDES OF ROADS  
TARMAC & SHOULDERS  
CLEAR OF MINES  
FOR NEXT 5 MILES

RED

**DANGER  
BOOBY TRAPS**

RED

**SAFE  
LANE**

Figure 21.08c. Standard types of mine danger signs.

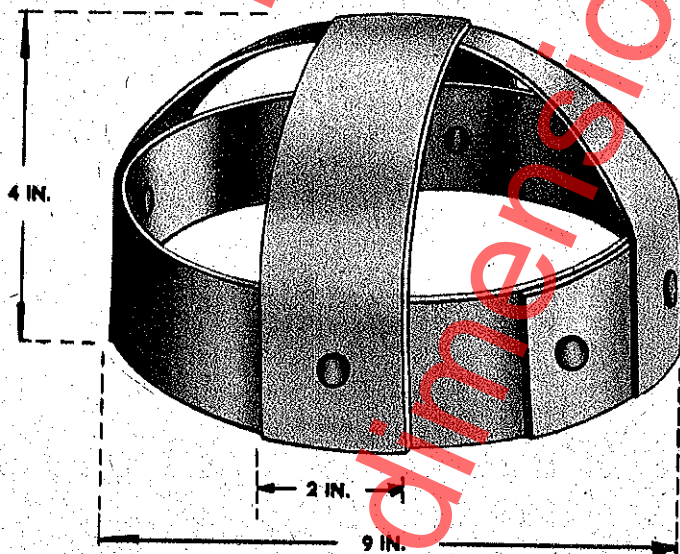


Figure 21.08d. Individual mine marker.

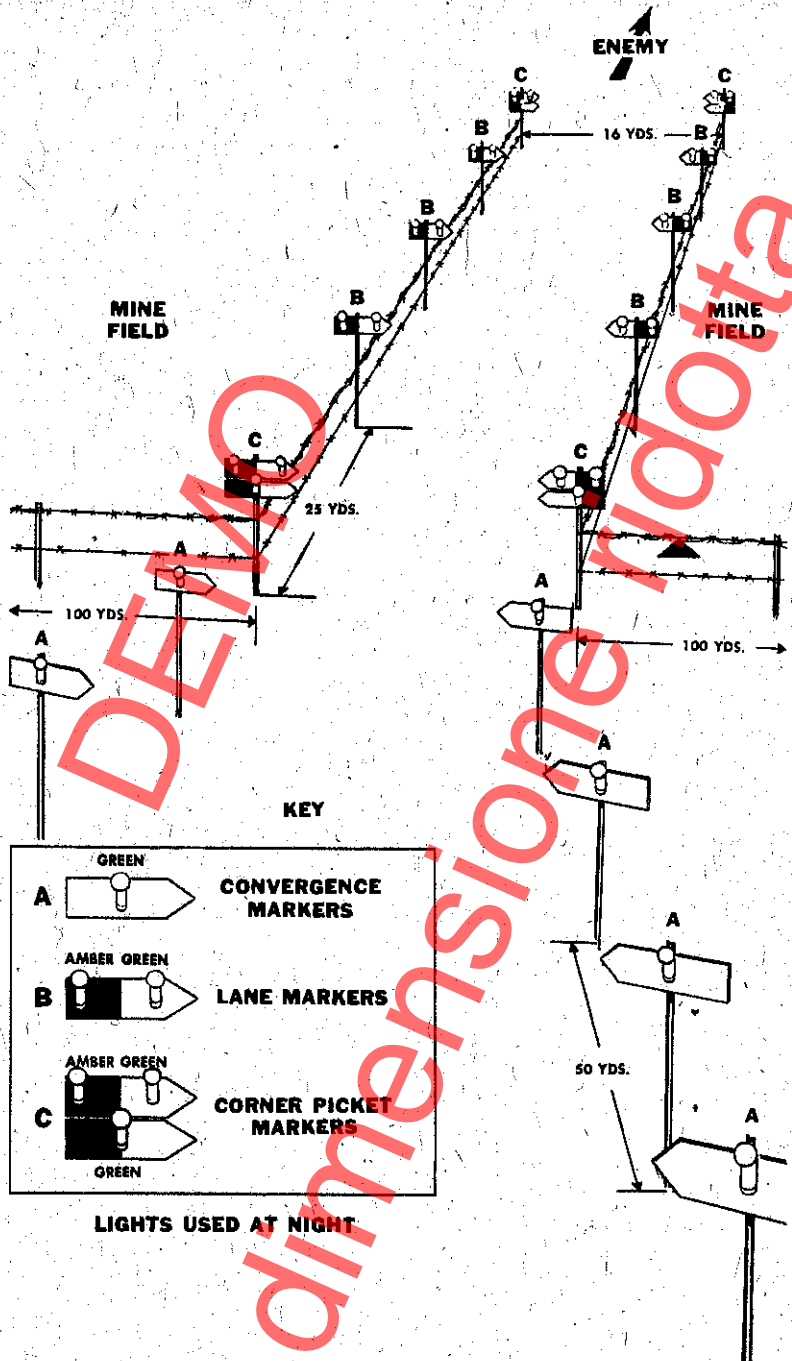


Figure 43.09a. Mine-field lane marking.

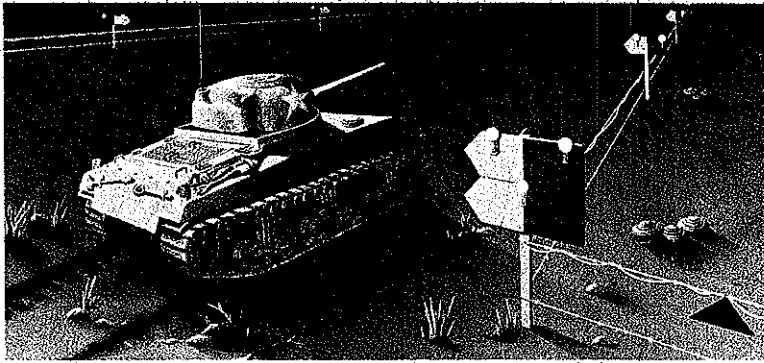


Figure 43.09b. Night view of mine-field lane marking.

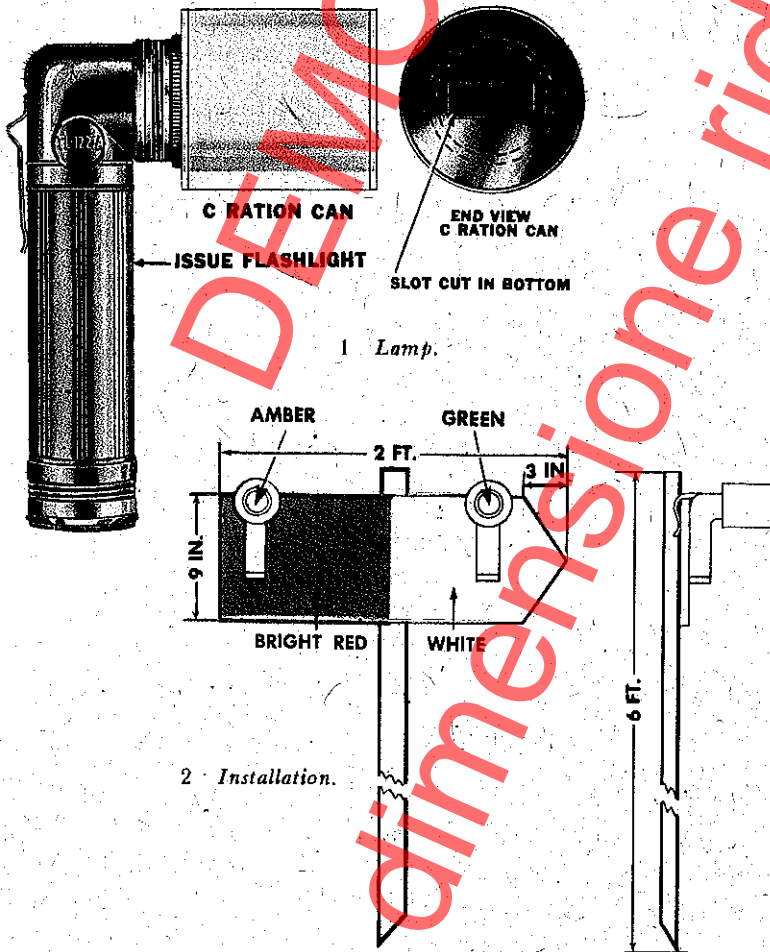


Figure 43.09c. Improvised mine-field lane-marker lamp.

above the ground so drivers, particularly tank drivers, can see markers and lights clearly.

**d.** Converging markers on long pickets are placed at 50-yard intervals on the friendly side of the lane. They should extend a minimum of 150 yards to the rear of the lane opening. At night green lights or luminous discs are mounted on them.

**e.** The rear mine-field boundaries are marked with long pickets on which barbed wire and white tape are strung for 100 yards on each side of the lane. Standard mine-field marker signs are placed on this fence.

**43.10. CHECKING THE LANE** When the lane has been cleared of mines and marked, and before it is opened to traffic, a pilot vehicle passes through it to test for any mines which may not have been discovered.

**43.11. MAINTENANCE AND TRAFFIC CONTROL** A squad from the unit which cleared the lane remains at the site to maintain markers and to improve the lane. Rigid traffic control is necessary at each lane to regulate speed of vehicles and to avoid congestion. This control is provided by the higher command.

## 43.12. PRODDING METHOD OF MINE-FIELD BREACHING

**a. Objective** The prodding method of mine-field breaching is designed to clear initially an 8-yard lane, later widened to the standard 16-yard width.

**b. Method** Either a bayonet or the mine probe, M1, may be used.

(1) The bayonet is inserted 2 to 4 inches in the ground at a 45° angle (fig. 43.12a).

(2) The mine probe M1, is a 3½-foot hollow metal cylinder, jointed at the center, having a 9-inch steel point at the lower end. When the entire probe is used, the prodder stands and holds the probe in one hand (fig. 43.12b). When striking a foreign object, the hollow tube emits a distinctive sound. When the lower half is used, it is used like the bayonet (fig. 43.12c).



Figure 43.12a. Bayonet used as probe.



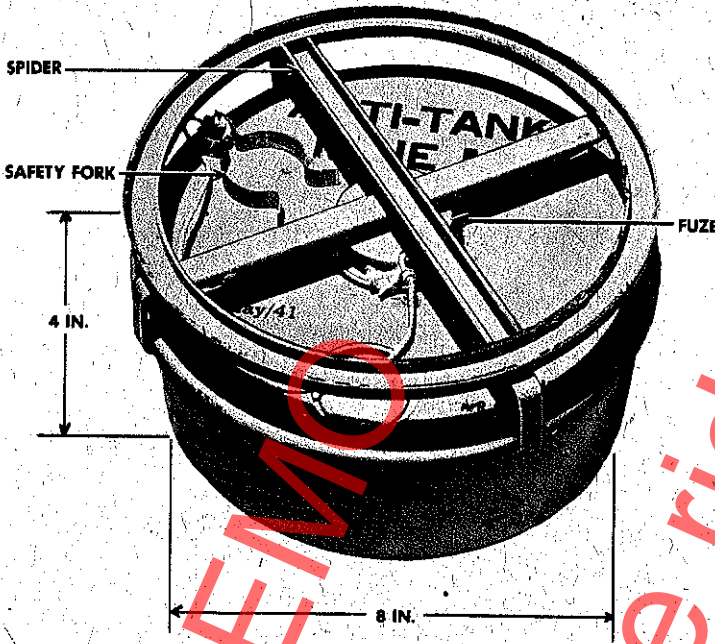
Figure 43.12b. Probe M1.



Figure 43.12c. Probing with lower half of probe M1.

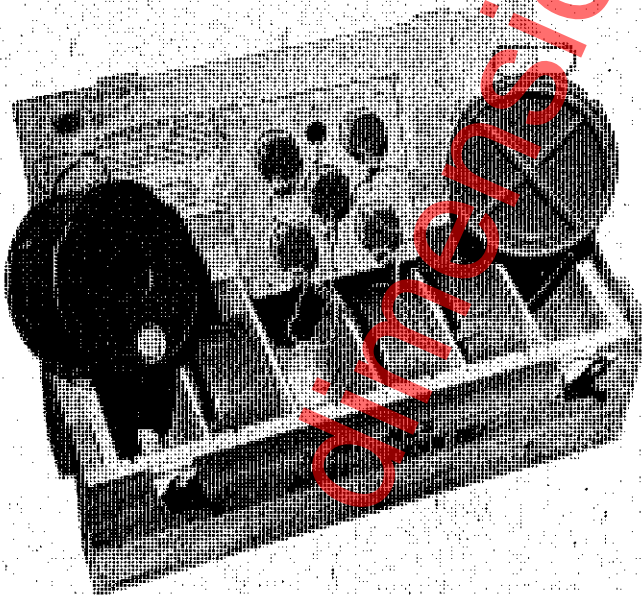


# U. S. ANTITANK MINE M1

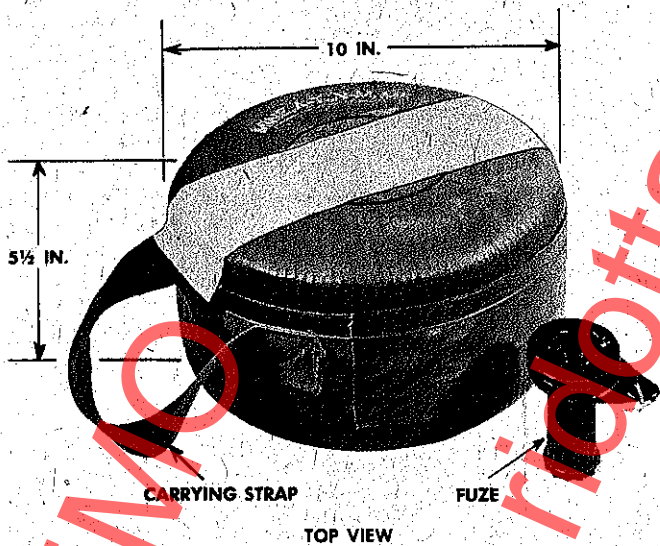


The principal difference between the two models is that in the mine M1 the booster is an integral part of the fuze; in the mine M1A1 the booster is a separate part.

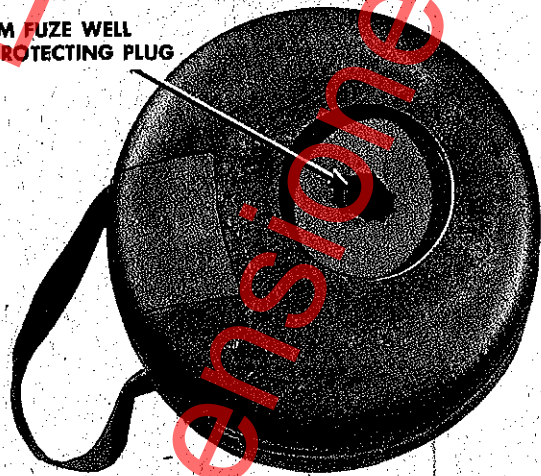
## PACKING AND TRANSPORTING



# U. S. ANTITANK MINE M5



BOTTOM FUZE WELL  
WITH PROTECTING PLUG



**TYPE.** Antitank

**COLOR.** Olive-drab

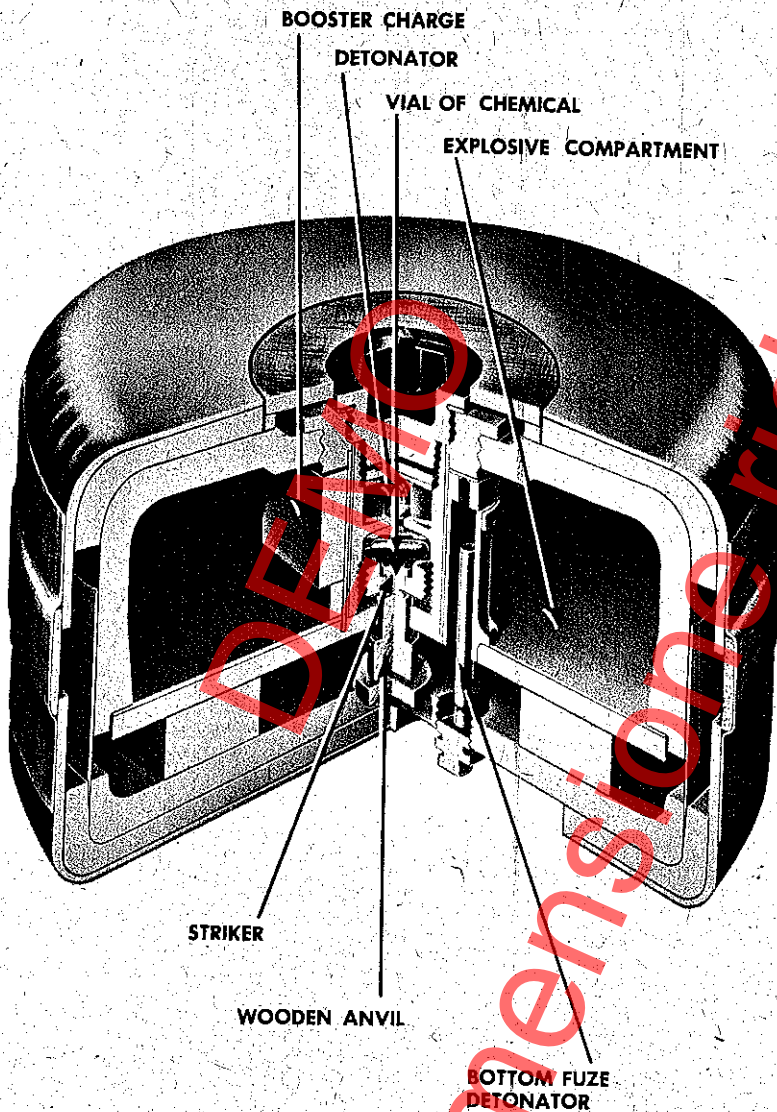
**CASE.** Nonmetallic

**WEIGHT.** Approximately 14.5 pounds

**EXPLOSIVE.** 5.6 pounds, tetrytol or TNT

**EFFECT.** Disables tanks, destroys vehicles

# U. S. ANTITANK MINE M5



## FUNCTIONING

1. A pressure of 275 to 425 pounds causes striker, bearing on wooden anvil, to break glass vial containing chemical.
2. Mixture of chemical in glass vial with chemical substance surrounding the vial causes flash.
3. Flash created by mixture of chemicals sets off detonator—booster—main charge.

# U. S. ANTITANK MINE M5

## INSTALLING AND ARMING



1. Unscrew safety cap from base of fuze and examine fuze to see that it is not broken or otherwise unserviceable.



2. Remove adhesive cover from fuze cavity and see cavity is free of foreign material. Insert fuze into cavity and screw tight by hand.



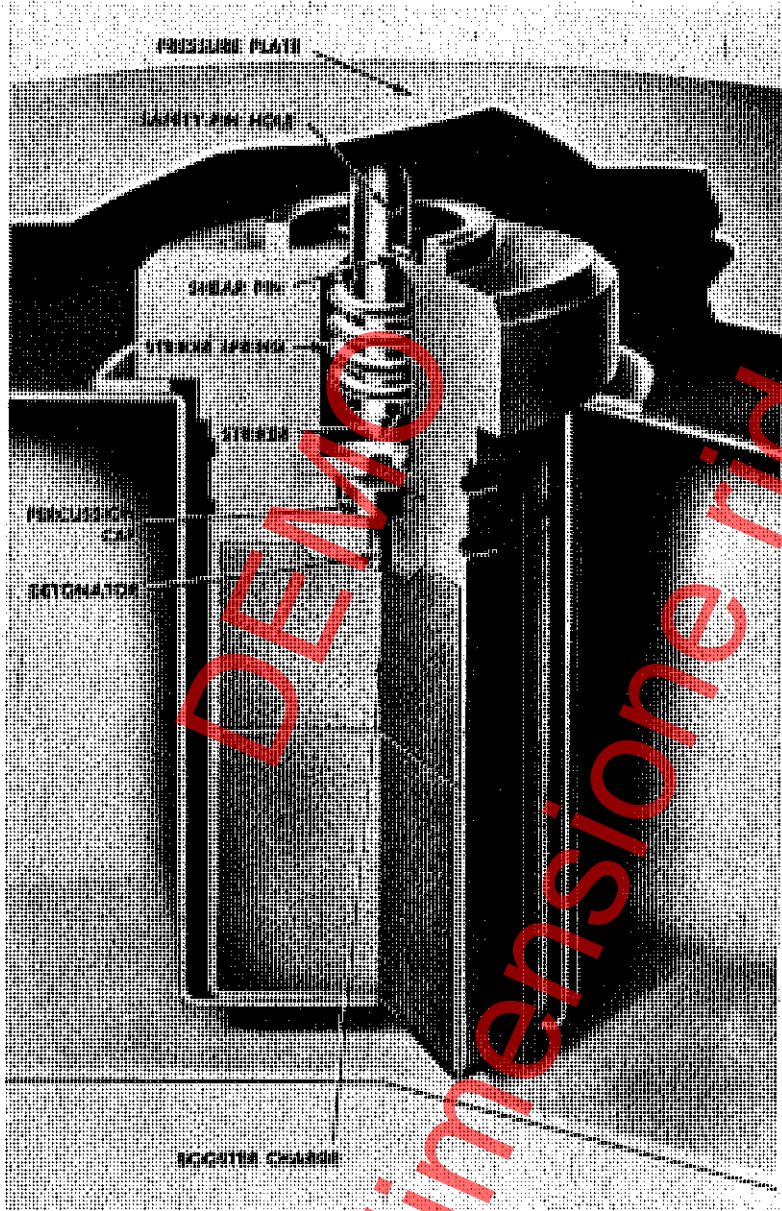
3. Place mine in hole with its surface not more than 1 inch below original ground surface. Remove safety ring.



4. Screw fuze tight by hand.

5. Pack earth around sides of mine, and camouflage.

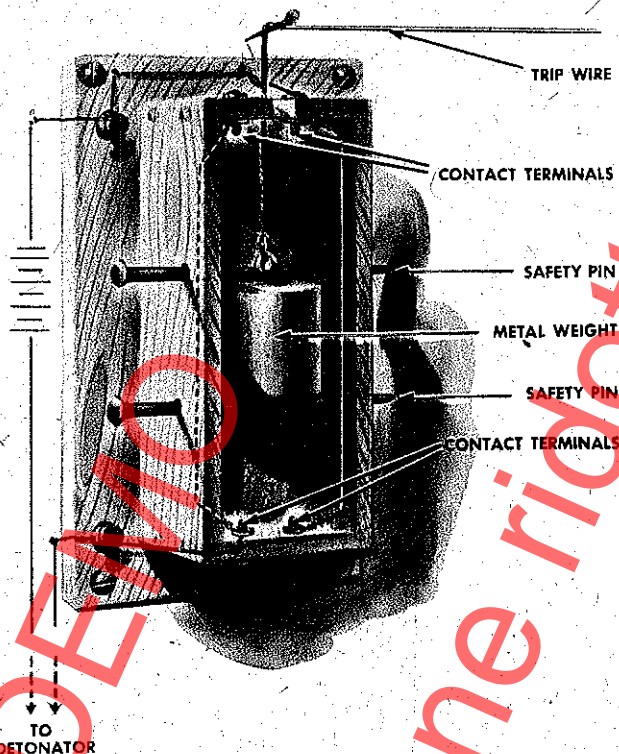
# BRITISH C. S. MARK IV MINE



## FUNCTIONING

1. Pressure forces pressure plate down onto striker.
2. Striker is pushed down, cutting shear pin.
3. Released striker fires percussion cap—detonator—booster—main charge.

# BRITISH PULL OR RELEASE ELECTRIC FUZE



**TYPE.** Improvised electric contact

## **EMPLOYMENT**

As circuit closer for electrically fired booby-trap charge.

## **FUNCTIONING**

Additional pull or release of tension in trip wire raises or lowers metal weight, which acts as bridge between contact terminals to complete circuit.

## **INSTALLING AND ARMING**

Construct as shown in illustration. Battery can be mounted on backboard so switch and battery form a single assembly. Arm as follows:

1. Test for short circuit and for break.
2. Adjust trip-wire tension and insert safety pins so weight hangs between them without touching either.
3. Connect charge.
4. Remove safety pins.

## **DISARMING**

Disconnect battery.

# BRITISH RELEASE FUZE WITH RIFLE



BRITISH RELEASE  
FUZE NO. 3

DETONATING CORD

CHARGE

May be used in booby trap installed under flooring as shown in sketch.

## INSTALLING

Follow directions for installing release fuze (see page 63.06-b).

## DISARMING

Locate fuze, identify, and follow directions for disarming it (same reference).