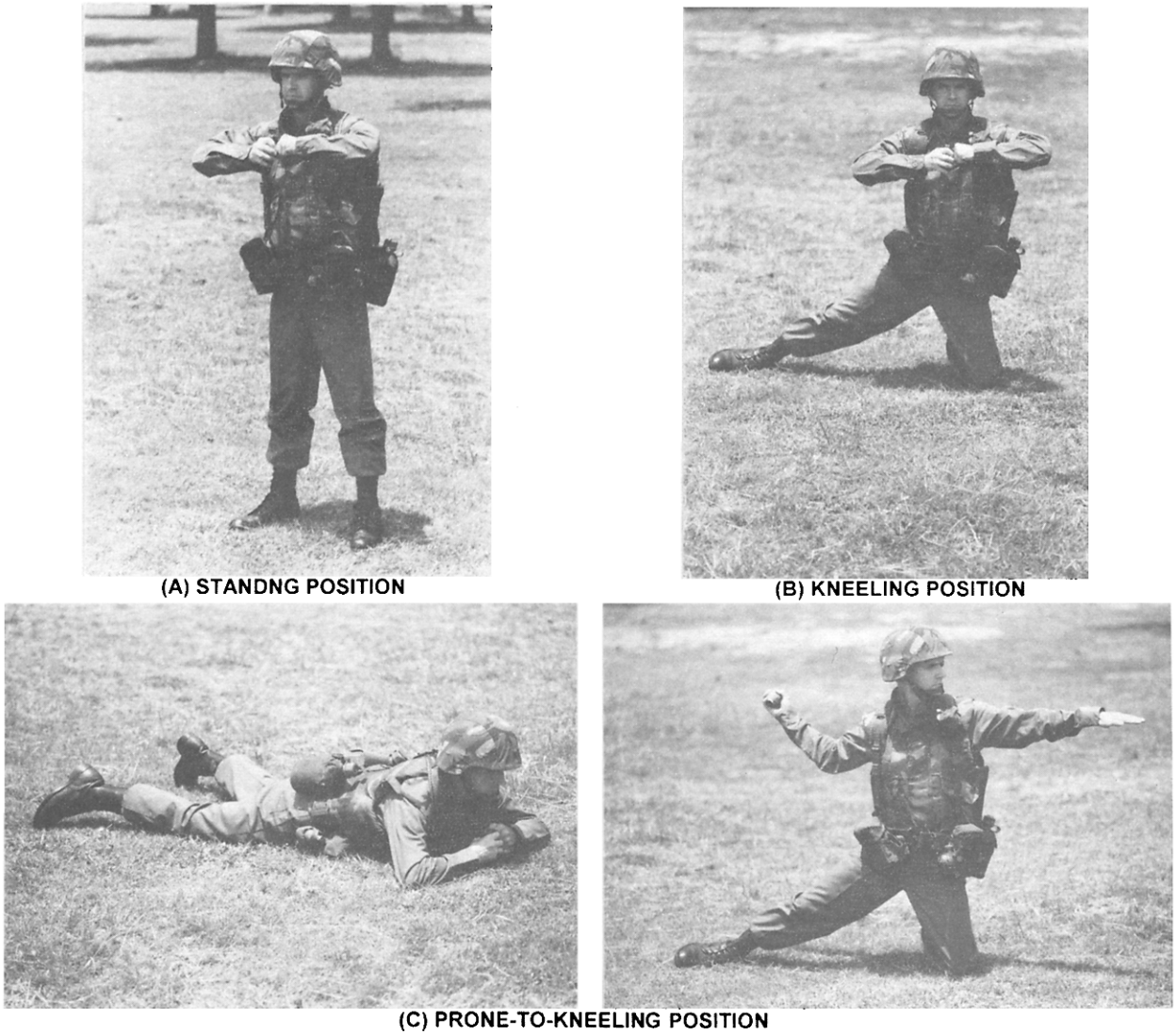

Figure 12-11.—Throwing positions.

view A). Remove the safety pin with a pulling, twisting motion. If the situation permits, you should observe removal of the safety pin.

NOTE

When the safety pin cannot be pulled out, shorten the distance between the legs of the safety pin to aid in its removal. However, if the grenade is not used, spread the legs of the safety pin for safety in carrying.

3. As you remove the safety pin, immediately look toward your target.

4. Throw the grenade with an overhead throwing motion, keeping your eyes trained at all times on the target. Release the grenade somewhere forward of your body and in your general field of vision (fig. 12-10, views B and C). In this way you take advantage of the hand-and-eye coordination inherent in most people.

5. Follow through on your throwing motion beyond the point where you released the grenade (fig. 12-10, view D). This follow-through improves distance and accuracy and relieves the strain on your throwing arm.

6. When available, duck behind cover to avoid being hit by fragments of the grenade. When no cover is available, drop to the prone position with your helmet facing in the direction of detonation.

Although proper positioning techniques of throwing hand grenades are usually stressed during

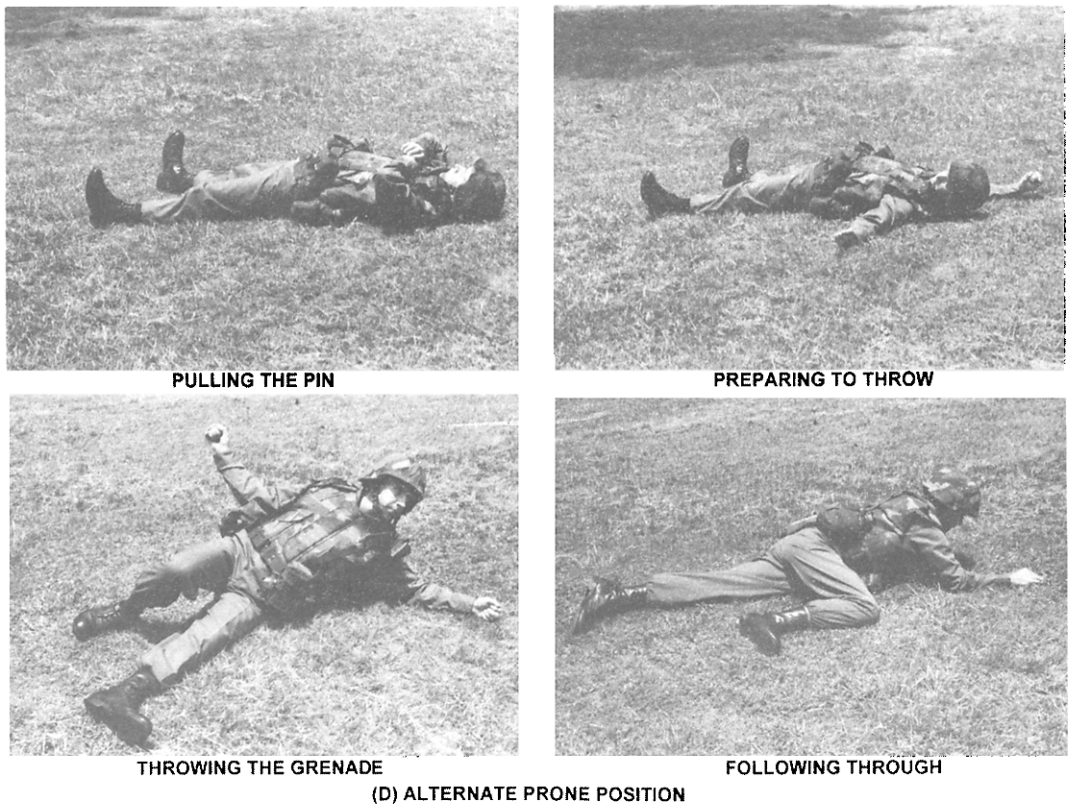

Figure 12-11.—Throwing positions—Continued.

military training exercises, your position during a combat situation is dictated by the amount of available cover and the location of the target. The positions given below point out the use and limitations of each position.

The STANDING POSITION (fig. 12-11, view A) is the most natural one from which to throw grenades. This position allows you to obtain the greatest possible throwing distance. To throw from this position, use the instructions listed above and shown in figure 12-10.

The KNEELING POSITION (fig. 12-11, view B) reduces the distance that you can throw a grenade. Use this position when you have only a low wall, a shallow ditch, or a similar type of cover to protect you. To throw from this position, use the following instructions:

1. Using the proper grip and holding the grenade shoulder high, kneel in the most comfortable manner.

2. Throw the grenade with a natural throwing motion. Push off with your trailing foot to put more force in the throw.

3. As you release the grenade, drop to the prone position or behind available cover to reduce your exposure to fragmentation.

Use the PRONE-TO-KNEELING POSITION (fig. 12-11, view C) when no cover is available and the grenade must be thrown a greater distance than is possible from the prone position. To throw from this position, use the following instructions:

1. Face the target and assume the prone position. Hold the grenade forward of your head where you can observe the grenade as you remove the safety pin.

2. After the safety pin is removed, quickly assume the kneeling position.

3. After throwing the grenade, quickly return to the prone position with your helmet facing in the direction of the target.

The ALTERNATE PRONE POSITION (fig. 12-11, view D) reduces both throwing distance and accuracy. This position should be used when you are pinned down by hostile fire and are unable to rise and engage your target. To throw from this position, use the following instructions:

1. Lie on your back with your body perpendicular to the intended line of flight of the grenade. Hold the grenade at shoulder level as in the standing position

2. Your right leg (left leg for left-handed throwers) should be cocked with your foot braced firmly against the ground. After removal of the safety pin, hold the grenade away from your body with your arm cocked for throwing.

3. With your free hand, grasp any object that is capable of giving you added leverage. This leverage will increase your throwing distance. In throwing the grenade, push off with your rearward foot to give added power to your throw. After throwing the grenade, roll over onto your stomach and press yourself flat against the ground.

HAND GRENADE SAFETY

This section deals with safety precautions that must be observed by the handlers and throwers of all hand grenades and by other persons who may be located within the danger area of the grenade.

Any handler or thrower of a casualty-producing hand grenade or person who is within the danger area (approximately 50 meters) of the grenade must wear a steel helmet.

No hand grenades, other than fuzed practice grenades, should be defuzed by any person EXCEPT qualified and authorized ordnance maintenance personnel.

When handling grenades armed with an impact detonating fuze, you should NOT release the safety lever before throwing NOR observe the impact of the grenade. Wait at least 5 minutes before approaching a dud. If a grenade armed with an impact detonating fuze is accidentally dropped after the safety pin has been removed, the grenade MUST be picked up and thrown to a safe area. Under NO circumstances should the grenade be kicked or tossed into a sump or ditch, since any sudden jarring of the grenade after the arming delay is expended causes detonation.

Do NOT remove the safety pin on a grenade until you are ready to throw it. In training, once you remove the safety pin, it must not be placed back into the grenade; tine grenade must be thrown.

You, or anyone else not experienced in ordnance disposal, must not recover, handle, or otherwise tamper with dud grenades.

If you should accidentally drop a casualty-producing hand grenade after pulling the safety pin, shout GRENADE to alert other personnel in the area and ensure that the grenade is picked up and thrown in a low arc into a safe area.

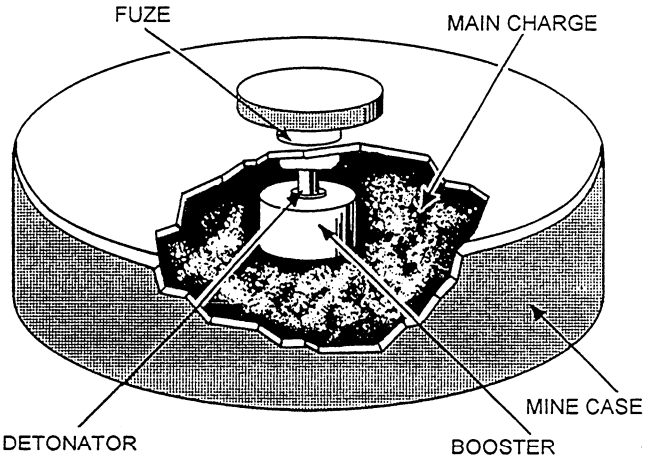

Figure 12-12.—Typical pressure type of land mine mechanism.

Under no circumstances should you attach grenades to clothing or equipment by the PULL RING. Attaching grenades to clothing or equipment by the pull ring can easily result in the safety pin being accidentally removed from the grenade.

When handling a noncasually-producing hand grenade, such as the chemical type, you should not be closer than 10 meters to the grenade while it burns. You should not look directly into the thermite mixture since it may cause temporary blindness or even permanent eye damage.

The safety lever of a chemical hand grenade, other than the ABC-M25A2, should not be released before the grenade is thrown because of its extremely short time-delay period.

Riot control hand grenades should not be thrown into a closed area nor should they be detonated within 5 meters of personnel.

Smoke hand grenades should not be used in a closed area.

At least a 30-minute waiting period should elapse before you approach a chemical grenade dud, and then only authorized ordnance-disposal personnel should approach it.

LAND MINES

A land mine is a concealed explosive charge, placed in an area where it can be detonated by contact with enemy personnel or vehicles. Detonation can be initiated by pressure, pull, or electrical action. The mechanism of a pressure mine is shown in figure 12-12. The mine is buried with the fuze pressure plate just above the ground surface and detonates when the plate is pressed down.

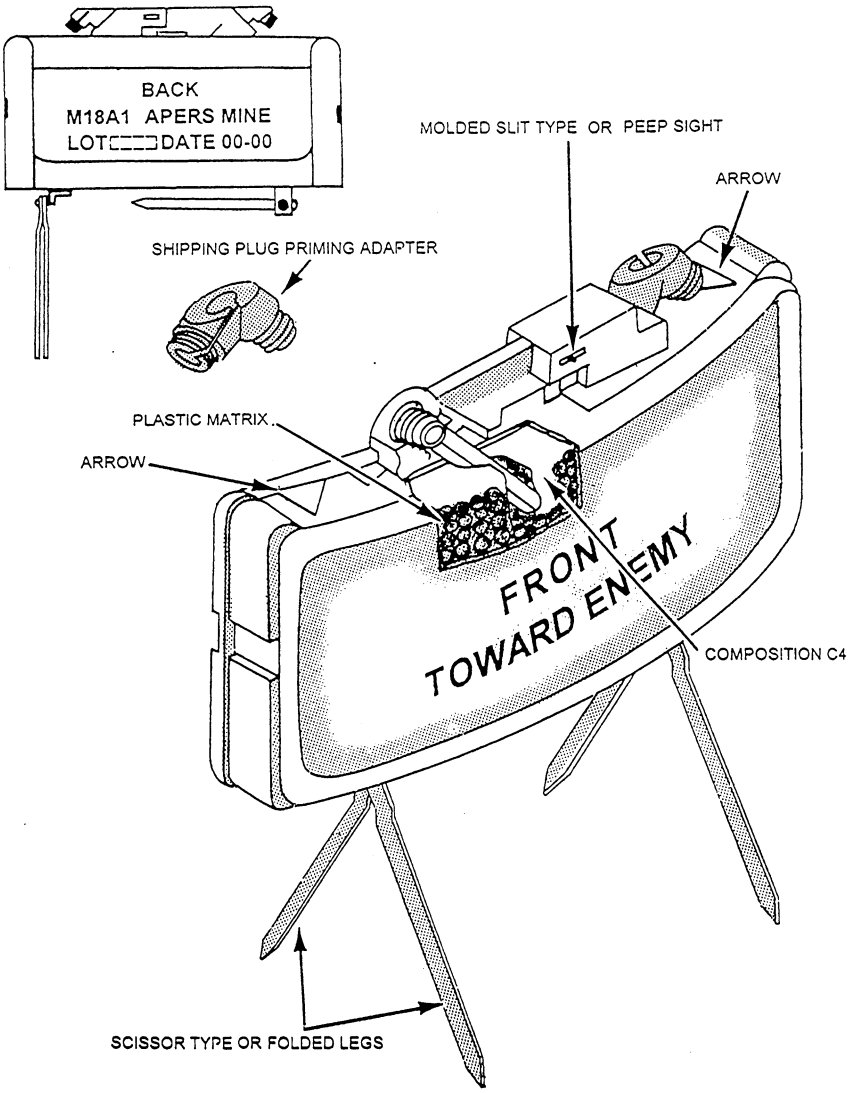

Figure 12-13.—The M18A1 antipersonnel mine (Claymore).

A pull-action mine is one that is detonated by the pull on a trip wire, stretched where enemy personnel or vehicles may contact it. A pull-action mine is usually a pressure mine. Whether it is used as a pull-action or pressure mine depends on whether or not the ground surface makes the concealment of a trip wire possible.

For pressure installation, bury the mine with the top of the fuze flush with the ground surface and only the prongs protruding above it. Install the trip wire with the top cap of the fuze and the prongs protruding above the surface. Run trip wires from the fuze cap to stakes or other anchorages, in feasible directions.

An electrical-action mine can be exploded by a remote-control firing device of the type used for blasting in construction.

Except for the M18A1 antipersonnel mine described below, mines are NOT authorized for use by the Naval Construction Force (NCF). Personnel who encounter other types of mines should not attempt to disarm or use them or handle them in any manner. When located in the field, you should mark the mines clearly and furnish their locations to the battalion security officer or authorized ordnance disposal personnel.

M18A1 CLAYMORE MINE

The Ml8A1 Claymore mine, currently the only mine authorized for use by the Seabees, is used only as an electrically controlled, one-shot weapon. It is used for support of other weapons used in the final protective fire of the unit.

The M18A1 antipersonnel mine (fig. 12-13) was standardized in 1960. It is a directional, fixed-fragmentation mine and is designed primarily for use against massed infantry attacks. The Claymore mine is

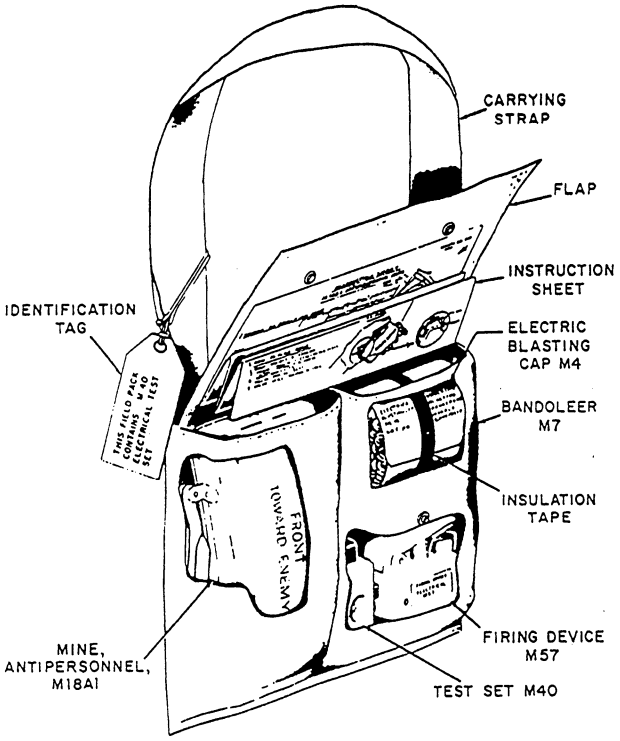

Figure 12-14.—The M18A1 antipersonnel mine and accessories packed in the M7 bandoleer.

equipped with a fixed plastic, slit type of sight, adjustable legs, and two detonator wells. The mine and all its accessories are carried in the M7 bandoleer (fig. 12-14).

The mine weighs about 3 1/2 pounds and is 8 1/2 inches long, 1 3/8 inches wide, and 3 1/4 inches high.

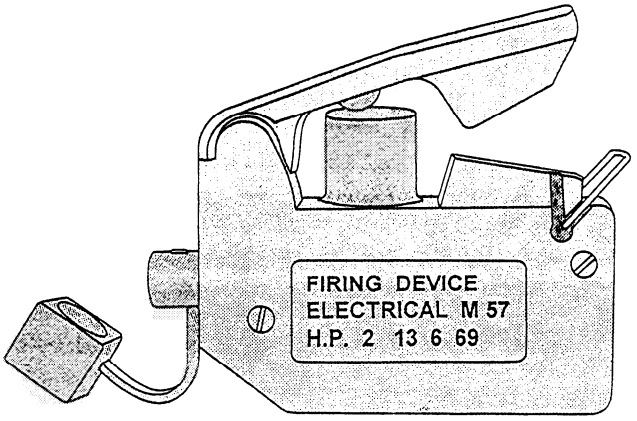

Figure 12-16.—The M57 firing device.

The outer surface is a curved rectangular, olive drab, molded plastic case. The front portion of the case has a fragmentation face containing steel spheres embedded in a plastic matrix (enclosure). The back portion of the case contains 1 1/2 pounds of Composition C4 (composite explosive).

When detonated, the Ml8A1 mine projects steel fragments over a 60-degree fan-shaped pattern approximately 6 feet high and 50 meters wide at a range of 50 meters (fig. 12-15). These fragments are moderately effective up to a range of approximately 100 meters and can travel up to 250 meters. The optimum effective range–the range at which the most desirable balance is achieved between lethality and area coverage–is 50 meters.

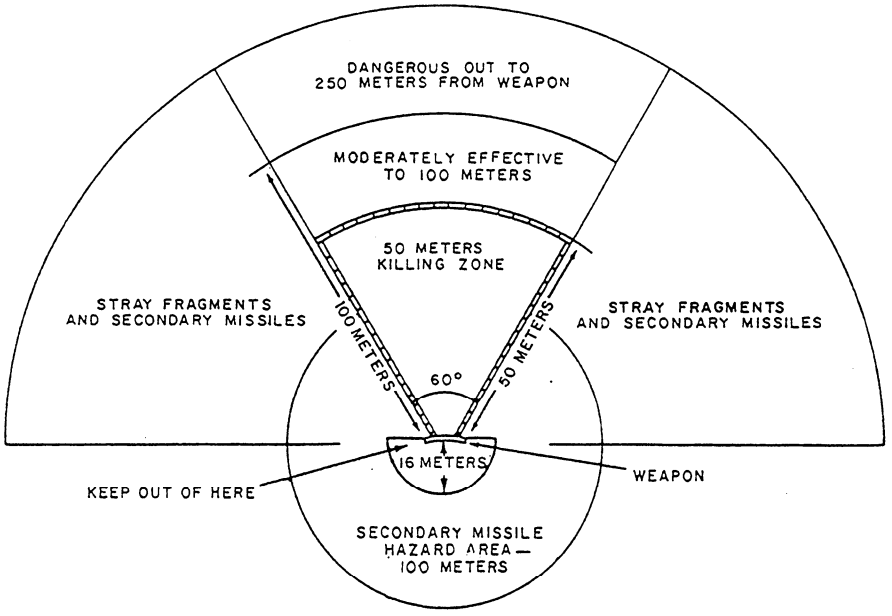

Figure 12-15.—Range and effects of the M18A1.

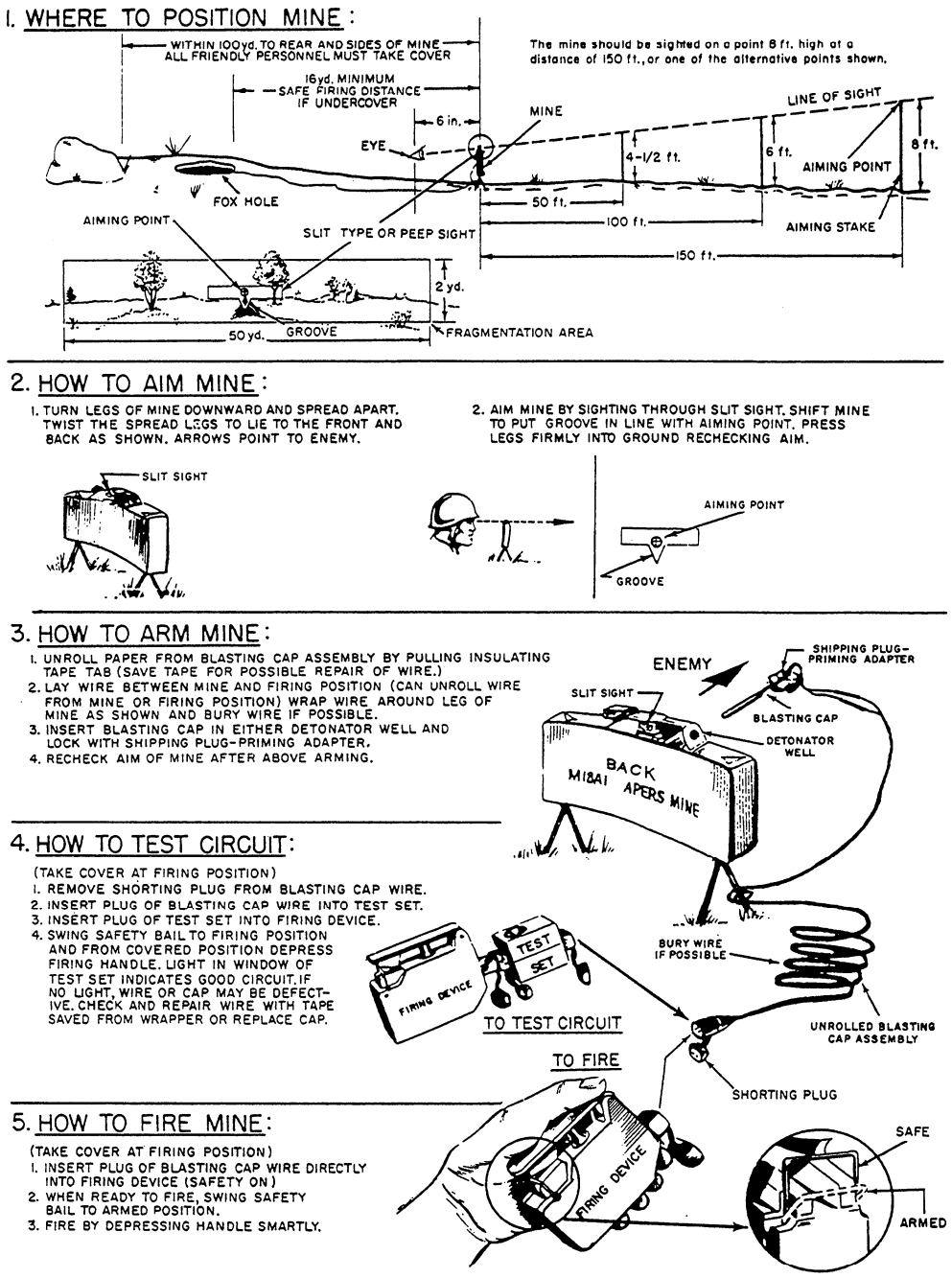

Figure 12-17.—The instruction sheet attached to the M7 bandoleer.

M57 FIRING DEVICE

One M57 firing device (fig. 12-16) is issued with each Ml8A1 mine. The device is a hand-held pulse generator. A squeeze of the handle produces a double 3-volt electrical pulse of sufficient energy to fire the electric blasting cap through the 100 feet of firing wire issued with the mine. On one end of the firing device is a rubber connecting plug with a dust cover.

The safety bail on the firing device has two positions. In the upper SAFE position, it acts as a block between the firing handle and the generator. In the lower FIRE position, the generator can be activated.

INSTALLATION AND FIRING

Complete instructions for installing, arming, testing, and firing the Ml8A1 antipersonnel mine are attached to the flap of the M7 bandoleer. The instruction sheet is shown in figure 12-17, and the directions should be carefully followed by users of these mines.

COVERAGE AND METHODS OF FIRE

Since the Ml8A1 can only be fired once, FIRE DISCIPLINE is of major importance. The mine should not be used against single personnel targets; rather, it should be used for its intended purpose–massed personnel. When lead elements of an enemy formation approach within approximately 20 to 30 meters of the mine, it should be detonated.

EFFECTIVE COVERAGE of the entire front of a position by the mines can be accomplished by placing them in a line no closer together than 5 meters and no farther apart than 45 meters. A preferred lateral and rearward separation distance is approximately 25 meters.

METHODS OF FIRING the Ml8A1 mine can be in either the controlled or uncontrolled role. An uncontrolled mine is essentially a booby trap, and its use by Seabees is not authorized. In a controlled role, the operator detonates the mine as the enemy approaches within the killing zone. The operator can, by use of either an electrical or a nonelectrical firing system, control detonation. In almost all cases, mines used by the Seabees are fired electrically with the M57 firing device.

TRIP FLARES

A trip flare is used primarily to illuminate and to give warning of attacking or infiltrating enemy troops. Normally, it is placed in the path of, and activated by, an advancing enemy. Trip flares are usually available to an individual or small unit and can provide temporary close-in illumination. Trip flares are not suitable for producing continuous illumination and have little, if any, application in other than defensive operations.

The M49 trip flare resembles a hand grenade in size and shape, except that it is provided with a bracket for attachment to a tree or post and a trigger mechanism for firing. The flare burns with a yellowish light and illuminates an area radius of approximately 300 meters. The trip fuze M12 resembles the hand grenade fuzes for cylindrical hand grenades, but it has no body tube or delay charge.

The flare has a laminated paper body, containing an 1 1-ounce flare charge and is closed at both ends by metal caps. The upper cap has taped holes and a threaded central hole for the trip fuze M12. The mounting bracket and trigger mechanism are attached to the base cap. The bracket consists of a triangular anchor clip with one hole at its lowest end, for insertion of a nail, and two square holes to permit engagement with tabs of the mounting plate, which also has two holes for insertion of nails. The trigger mechanism consists of a spring-loaded trigger. One end of the trigger has the spring assembly anchored thereto and has a hole for insertion of the trip wire. The other end of the trigger has a narrow tongue used to hold the safety lever in place when the trigger is turned in the vertical position. The spring is wound around the trigger pivot.

The location chosen for the flare should be to the right (looking toward the enemy) of the field to be illuminated, so the trip wire, when attached, runs to the right of the flare when facing the trigger. Using two of the nails supplied, nail the holder plate with ends of the two tabs upward to a stake, post, or suitable support at the height desired for the trip wire (usually 15 to 18 inches above the ground). Mount the flare by sliding the two square holes of the anchor clip over the mating tabs on the holder and press the flare down until it is locked in position. If desired, a third nail maybe driven through the hole in the lower end of the anchor clip.

Fasten one end of the trip wire to the post, stake, or other rigid object at the desired distance from the flare (usually about 40 feet) and at the right of the flare when facing the flare trigger.

Press the fuze safety lever down with one hand and rotate the trigger one-quarter turn counterclockwise against the spring pressure with the other hand to the vertical position, so the lower end of the safety lever is behind the upper end of the trigger.

Pull the loose end of the trip wire taut and fasten it to the hole in the lower end of the trigger.

At this point, check to see that the trip wire is taut and fastened at both ends, and the trigger is vertical with the fuze safety lever behind the upper end of the trigger so when the pull ring and safety pin are withdrawn, the safety lever is still held by the trigger.

Hold the lever with one hand while carefully withdrawing the pull ring and safety pin from the flare fire.

Carefully release the hold on the safety lever, while making sure the lever is held in place by the upper end of the trigger.

To remove a trip flare, carefully depress the safety lever to align the holes in the lever and the fuze and insert the safety pin. Detach the trip wire from the trigger while holding the safety lever against the flare and rotate the trigger to its original position. Remove the nails from the holding plate and the anchor clip. Return the flare to its original position and packing.

BOOBY TRAPS

A booby trap can be an explosive charge, a nonexplosive device, or other material. Its intended use is to incapacitate, wound, or kill an unsuspecting person when he disturbs an apparently harmless object or performs a presumably safe act. Two types are in use: improvised and manufactured. Improvised booby traps are constructed from standard firing devices, explosives, weapons, missiles, or other materials generally used for other purposes. They are placed wherever enemy troops are likely to assemble or pass, such as in buildings, shelters, minefields, fords, around obstacles, and along paths, roads, and bridges. Improvised booby traps are often attached to some object that can be used or that has souvenir appeal. Manufactured booby traps are standard devices made at a factory. They are useful objects, such as pipes, books, or bottled drinks, that explode when picked up or used. When left scattered about by a retreating force, they inflict casualties and cause confusion among advancing enemy troops.

EXPLOSIVE DEVICES

Booby traps laid in and along paths and trails are both delaying and frustrating obstacles to foot troops and patrols. Improvised shrapnel charges use either pressure-release or pull or pull-release firing devices. Pressure-release devices are placed under stones, wood, or other objects, and pull or pull-release firing devices are tied to a trip wire stretched across the path. Fragmentation hand grenades are often used for this purpose. One use is to place the grenade (with safety pin removed) under an object, so the safety lever is released when the object is moved.

Other uses include the following:

GRENADE TRAP. A fragmentation grenade is attached to low underbrush, an anchor stake, or a tree trunk alongside the path. One end of a trip wire is tied to an anchor stake across the path, then stretched to the fragmentation grenade where the other end is tied to the grenade safety ring. A pull on the trip wire removes the safety ring, firing the grenade.

HAND GRENADE IN CAN. A C-ration can is attached to an anchor stake or tree trunk alongside the path. A hand grenade is placed base first into the can so the can retains the safety lever in the safe position. One end of a trip wire is tied to an anchor stake across the path, and the wire is stretched across the path and tied to the hand grenade. The grenade safety pin is then removed. A pull on the trip wire pulls the grenade from the can, thus releasing the safety lever and firing the grenade.

MUD BALL MINE. The safety pin is removed from a fragmentation hand grenade and replaced with a 10- to 12-inch wire. A base of mud is molded around the grenade, leaving the ends of the wire exposed. When the mud has hardened enough to hold the grenade safety lever in place, the wire is removed, thus arming the grenade; however, the grenade cannot detonate until its mud case is broken. The mud ball is placed on a trail or anywhere troops may walk Stepping on the ball breaks the dried mud and releases the safety lever, detonating the grenade.

NONEXPLOSIVE DEVICES

Guerrilla forces, particularly in jungle areas, often use booby traps that do not use explosives but are equally effective as casualty producers. All the devices are improvised from locally available materials-nails, bamboo, ropes, vines, stones, logs, and rubber-to serve the conditions that prevail at that particular time and place. The devices discussed in this section have been encountered on many occasions, but variations of these devices should be expected.

PUNJI STAKES. Punji stakes are needle-sharp bamboo spikes, sometimes barbed or fire-hardened, used to injure unsuspecting persons who step or fall on them. The pointed ends are often treated with excrement or poison so the wounds become infected or even cause death. Punji stakes are placed in the ground so they protrude just enough to inflict injury. They are often used on prospective landing zones to wound personnel as they jump from a helicopter to the ground. Punji sticks are sometimes used along paths to hamper movement. Quite often they are placed on the banks of gullies and streams where troops are likely to jump from one side to the other. They are also used along roads at the entrances to villages or at ambush sites.

FOOT TRAPS. These are small pits combined with spike board plates or punji stakes that are placed along roads, paths, and trails or wherever foot traffic is likely.

Spike board foot traps are small pits–the bottoms of which are lined with boards through which spikes have been driven. The top of the pit is camouflaged. A person stepping on the camouflage material falls through and impales his foot on the spikes. The pits are usually about 18 inches square and 12 inches deep. The spikes used in these devices vary greatly, depending on what is available. Long nails, unimproved or sharpened or barbed, are the type most commonly used. Heavy gauge

wire and metal rods, such as welding rods, have also been used. The spikes are driven through small lengths of board and placed on the ground in dense grass and undergrowth. Stepping on one of the devices causes a serious foot wound requiring evacuation of the victim.

DEADFALLS. Various devices are suspended in the dense foliage above jungle paths and trails, designed to fall or swing in an arc so as to strike intended victims as they pass below. They are released when unwary victims step on or strike with their foot a trip wire stretched across the path. Some of the devices used include the mace (a spike-studded log), the spike ball (a concrete or mortar ball into which spikes have been cast), and other deadfalls equipped with spears or spikes.

COUNTERMEASURES

Individual mines and booby traps are most often detected by visual means, by probing, or by electrical detection. Knowledge of the mining practices of a particular enemy often aids in locating mines. The following are likely locations for mines or booby traps:

1. Potholes, road patches, or soft spots in surfaced roadways.

2. Under the edges of road surfacing at the junction of the surfacing and the road shoulder.

3. On road shoulders where mines are easily laid and camouflaged.

4. At locations that block logical bypass routes around a blown bridge or cratered road.

5. Around the edges of craters and ends of damaged bridges or culverts. Antipersonnel mines are sometimes placed in craters if the craters are likely to be used as shelter from enemy artillery fire or air bombing.

6. In barbed-wire entanglements, wire fences, and similar obstacles. In any other type of obstacle, such as abandoned vehicles or among felled tree trunks or limbs across roads or trails.

7. Near an unusual object that may have been placed by the enemy for his own use, such as a minefield marker.

8. In places where it is natural to drive a vehicle, such as turnouts, parking lots, in front of the entrances to buildings, narrow alleys, and airfield runways.

9. Near bodies or souvenir materials, such as pistols, field glasses, and bottles of liquor.

10. In likely bivouac or assembly areas and in buildings suitable for use as command or observation posts.

In spite of a high incidence of mine and boobytrap activity and ingenious methods and techniques, effective defensive measures can be developed and applied in the field. The enemy is not infallible; he does make mistakes, and the material used in mine and booby-trap activities is rarely 100 percent reliable. But do NOT help the enemy by making careless mistakes of your own, such as throwing caution aside when going to the aid of shipmates who have become mine casualties. Learn ways to defend yourself against enemy mines and booby traps.

SAFEGUARD MATERIAL. From ports of entry to the most remote battle areas, the enemy makes every effort to obtain needed material and equipment. Enemy efforts can be thwarted by proper safeguards and policing of the battle area. You can do little to prevent the enemy from picking up artillery and mortar dud shells, but you need not litter the battle area with discarded hand grenades, ammunition, mines, and other items that the enemy can convert to his own use in mine and booby-trap activities.

SAFE INTERVALS. Enemy success in mine warfare is drastically reduced when safe intervals are maintained in the movement of troops and vehicles. The effect of many antipersonnel mines and most hand grenades is such that more than one individual can become a casualty within the effective casualty radius. Well-placed antitank or antivehicular mines can be equally effective against vehicles in convoy that follow too closely.

TRACK VEHICLES. Wheeled and tracked vehicle operators should follow in the tracks of the vehicle ahead when the vehicle is in sight. This reduces the possibility of detonating a pressure-activated mine that the vehicle ahead may have missed. On the other hand, old tracks should be avoided if possible because mines may well be placed in old tracks.

CONTROL VEHICLE SPEEDS. Though battles have been won through rapid and violent attacking maneuvers, speed of itself does not ensure success. It can just as well cause you to become careless or reckless, which is what the enemy relies on in his employment of mines and booby traps. The speed and spacing of vehicles should be varied to make the timing of controlled detonated mines difficult.

SANDBAG VEHICLES. Sandbag the flooring of vehicles to provide protection for mounted personnel. In addition, place a heavy rubber mat over the sandbags to reduce the possibility of injury from fragments, such as stones, sand, shrapnel, and pieces of the bags. To further reduce these chances, sandbags should not be filled with rocks or sand with room in it. When riding in sandbagged vehicles, help protect yourself by keeping your arms and legs inside.

DISPERSE KEY PERSONNEL. Key personnel who are prime targets for controlled installed mines must NOT congregate in one vehicle but should be dispersed throughout the column in the convoy.

DO NOT TRAVEL ALONE. Whenever possible, a vehicle should avoid traveling as a single unit. Doing so makes it a good target for guerrillas seeking weapons and other equipment.