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COUNTERINSURGENCY

LESSONS

LEARNED

NO. 53

(DJSM - 545 - 66)

(REVISED)

**VIET CONG IMPROVISED EXPLOSIVE
MINES AND BOOBY TRAPS (U)**

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HEADQUARTERS
UNITED STATES MILITARY ASSISTANCE COMMAND, VIETNAM
APO San Francisco 96243

MACJ343

29 September 1966

SUBJECT: Counterinsurgency Lessons Learned No 53 (Revised): Viet
Cong Improvised Explosive Mines and Booby Traps (U)

TO: SEE DISTRIBUTION

1. Attached as an inclosure is a revised edition of Lessons Learned No 53. This issue of Lessons Learned supersedes Lessons Learned No 53 dated 6 December 1965.

2. This publication is a more complete treatment of Viet Cong mine and booby trap techniques than its predecessor based on recently acquired intelligence on this subject. In this respect it is an expansion of the previous issue rather than a change.

FOR THE COMMANDER:

1 Incl
as

E. W. Cannon
E. W. CANNON
Major, AGC
Asst AG

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1. (U) BACKGROUND: During the French and Viet Minh conflict the Viet Minh used improvised explosive mines and booby traps effectively to harass, slow down and demoralize the French forces. The Viet Cong (VC) have improved upon their predecessor's techniques and are using emplaced munitions as an effective weapon. This effectiveness is attested to by the high percentage of US casualties which are caused by VC mines and booby traps. It is quite evident that we must learn something of the munitions and their use by the VC.

2. (U) PURPOSE: To familiarize all personnel with VC techniques for improvising explosive mines and booby traps and with various methods used by the VC to employ these devices.

3. (U) GENERAL:

a. The VC are very resourceful and make maximum use of all explosive ordnance at their disposal. It is a known fact that the Viet Cong police the battle area for unexploded ordnance (duds), modify them for use as mines or booby traps, or use the explosive as a filler for locally manufactured munitions. They even go so far as to cut large aerial bombs open to gain access to the explosive for other uses. Items of this nature, upon discovery should be reported immediately to the nearest Explosive Ordnance Disposal (EOD) Unit.

b. A booby trap is a hidden explosive charge having its firing mechanism so placed that it is detonated when an apparently harmless object is disturbed by an unsuspecting person. A booby trap consists of a firing device (fuzing system) and an explosive charge. The explosive charge may be any explosive: demolition charges, artillery and mortar projectiles, bombs, land mines or grenades. Therefore, it is apparent

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that a land mine may also be a booby trap and that it is merely a means of employing an explosive charge.

4. (U) FUZING SYSTEMS:

a. General: All the standard initiating principles of fuzing used in US munitions can be expected to be used by the Viet Cong. These initiating actions include pressure, pressure release, pull friction, pull release, chemical delay, mechanical delay and controlled firing. The complexity of the fuzing systems, their ingredients as well as their purpose, is only limited by the ingenuity of the man who constructs them. Thus, as many of the VC fuzing systems are locally produced, it would be impossible to enumerate all the variations of fuzing systems found. General and basic principle systems will be discussed. It must be remembered that one or more fuzing systems or principle of fuzing may be found on any given piece of ordnance. An explosive item that is primarily designed to be control fired may also have a pressure release firing device attached. Remember: CAUTION OR COFFIN!

b. Pressure Type Fuzes: Pressure type fuzes are probably the simplest to produce locally. The basic components are a firing pin, primer, and detonator. A pressure type fuze can be made from a nail, a rifle cartridge and a block of wood, (Figure 1). It may also be more complex with a firing pin retained in a cocked position by a key slot which, when depressed releases the firing pin. The Viet Cong makes extensive use of modified mortar and artillery fuzes as pressure firing devices.

c. Pressure Release Type Fuzes: Pressure release type firing devices, normally called "mouse traps", can be easily made from commercial mouse traps. The principle behind this type is that the removal of the weight releases a compressed spring which forces the striker to fire the device. The most common pressure release type used by the Viet Cong is the grenade fuze (Figure 2). The VC makes extensive use of grenade fuzes for booby traps. Normally, the delay element is replaced with an explosive relay to obtain an instantaneous detonation.

d. Pull Type Firing Device: The most common pull type firing device used by the Viet Cong is the pull friction fuze, similar to the ones found in VC and Chicom stick grenades (Figure 3). When used as a mine or booby trap fuze, the delay element is usually removed and replaced with an explosive relay to obtain an instantaneous detonation after ignition. The pull type firing device is characterized by a slack trip wire. Although mechanical pull type fuzing devices have not been recovered recently, many were used against the French, and it is believed

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that mechanical firing devices are in the VC supply system. A Chicom or VC version of the Russian MVD firing device is most likely to be used in Vietnam because the MVD was widely used in Korea after Chicom intervention.

e. Pull Release Type Firing Device: Pull release types are designed for actuation by either an increase (pull) or decrease (release) of tension in a taut wire (figure 4). Pull release firing devices are also called tension release devices. Extreme caution must be observed when encountering a taut trip wire, as a cocked striker is always used in this type of fuze and any movement of the wire or ordnance may activate the striker. To render a pull release device safe, the striker must be blocked with a positive safety between the striker and the primer. Pull type devices rigged for a pull release normally activate when the trip wire is broken.

f. Control or Command Fired Fuzing Systems: All the firing devices mentioned previously can be command fired by a person lying in wait. The fuzing system is activated by pulling and/or releasing an extension of the trip wire when a suitable target presents itself. The most common method of controlled firing by the Viet Cong is by electrical means. This is accomplished by inserting an electrical blasting cap into the ordnance, laying a firing cable to a concealed position and connecting an electrical source (battery or blasting machine) when the target comes within range. The Viet Cong use this method in all types of ordnance (Figure 5) - including underwater mines. The VC have also been known to use radio controlled triggering devices that are activated by signal transmissions on selected frequencies.

g. Delay (time) Firing Devices: A clockwork delay type and chemical delay type have been encountered in Vietnam. The clockwork delay is the most common. One type of VC clockwork delay firing device is made from commercial watches. Two contacts are added; one to the hands and the other to the face of the watch. When the set time runs out, the circuit is completed to an electric blasting cap. Small alarm clocks have also been used, utilizing the clock's alarm system to complete a circuit. Chemical delay devices were used by French forces in Vietnam and may still be encountered. These are similar to the US firing device, demolition delay type, M-1.

5. (CMHA) MAIN CHARGES:

a. General. Any explosive item may be used as a mine or booby

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trap. A few of the main charges and some of the methods for their employment by the Viet Cong will be discussed in the following paragraphs. It must be kept in mind that methods used for one type of ordnance, in many cases, are applicable to all.

b. Grenades. Many small grenade like explosives are used by the VC as antipersonnel (AP) mines. Striker release pressure and pull friction grenade fuzes with the delay element removed are used in these small items. Some examples of how these small items have been used are (Figure 6):

(1) As a booby trap: A grenade was placed under a rice bag in a VC safe haven. When friendly forces picked up the rice bag the grenade exploded.

(2) As an AP mine: A small AP mine was attached to the side of a tree with a trip wire across the trail. The trip wire was a monofilament cord resembling fish line leader and difficult to see. Unfortunately, a friendly patrol didn't see a trip wire until it was too late.

(3) As an AP mine: A grenade with its pin removed was placed in a hollow length of bamboo. A trip wire was attached to the grenade. A pull on the trip wire would have pulled the grenade from the bamboo releasing the handle and allowing the striker to make its run. Fortunately, this device was discovered before it could do any damage.

(4) As a booby trap: Grenades or small AP mines are attached by trip wires to such items as fence gates, doors, VC flags or flag poles or any other object that friendly forces may move or destroy.

(5) As a booby trap: Grenades were placed in the thatched roof of a house. The pins were pulled and handles were tied down with string or rubber bands. When friendly forces burned the house, they were surprised by grenades exploding in the area. Nobody was injured.

(6) As a booby trap: One of the latest items to be picked up is one that looks like a standard hand grenade. There is just one minor difference, squeezing the safety handle will cause this little booby trap to detonate. Remember pressure on the safety handle rather than release of the safety handle detonates this one. It fires instantaneously, there is no delay.

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(7) As a sabotage device: A standard hand grenade was dropped into a gas tank after the safety pin was removed and the safety lever taped to the body of the grenade. The type of tape used (masking cellophane, friction, etc) and the agitation of the gasoline controls the amount of time it takes for the adhesive to dissolve which allows the safety lever to fly off and activate the grenade. Tests with various types of tape indicate a minimum of 50 seconds (friction tape) to a maximum of 5 hours (Cellophane "Scotch" tape). Yes, a standard hand grenade will readily fit into the wide mouth gas tank fuel intake on many of our vehicles but please don't try it.

(8) As aerial burst ammunition: A grenade launching device used against helicopters as well as troops and vehicles is one of the latest devices (Figure 7). A hole is dug in the ground, explosives are placed in the bottom, the hole is filled with dirt and a board with hand grenades attached is placed on top of the dirt. This little gadget is command fired electrically. If used against helicopters the hole is dug straight down, if for use against troops or vehicles the hole is angled and more or less aimed. NOTE: This launcher has also been found loaded with BLU/3 bomblets in place of grenades.

c. Artillery and Mortar Ammunition: All sizes of artillery and mortar ammunition are used by the VC as mines. They use the smaller projectiles for AP mines and the larger ones as antivehicular mines. Both types may be equipped with any of the firing devices mentioned in paragraph 4. Electrically controlled firing is often used to detonate these types of main charges. A few methods of employment are listed below (Figure 8).

(1) A 155mm artillery projective was buried in a dirt road and wired to be fired electrically. The charge was detonated under a US officer riding in a 1/4 ton vehicle. Many incidents are recorded of larger artillery shells having been planted in roads and control fired when a prime target presented itself.

(2) During a recent operation, a large number of mortar and artillery rounds (75-105mm) were suspended from trees and control detonated when US troops came within range.

(3) A 105mm round was found under the floor of a building in a VC area. It was prepared to be detonated by a pressure type fuze under a loose board.

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(4) Any application used with the grenade type mines can be used with mortar and artillery ammunition. 60mm mortar rounds have been recovered with grenade fuzes attached and undoubtedly were intended for use as mines - the delay element had been removed from the fuze.

d. Bombs: The VC consider the 20 lb fragmentation bombs to be excellent antipersonnel mines. The larger bombs (from 100 to 1000 lbs) will stop and destroy any vehicle on the roads (Figure 8). The VC are using more and more bombs as mines and are known to use excessive amounts of explosive to do a job. Bombs are usually used in VC safe havens, preplanted on likely avenues of approach, and are control fired when friendly forces advance. The VC are also using the BLU/3 bomblet to a great extent as booby trap devices (Figure 9). In discussing the BLU/3 bomblet it is well to note that many BLU/3 bomblets have been modified by the VC before emplacement. When a bomblet is found the area around it should be carefully checked since one of the VC modifications converts these bomblets to anti-personnel mines. This is done by burying the bomblet in the ground and using the standard fuzing as a pressure activated firing device.

(1) Another application of the BLU/3 bomblet is used in a "Rube Goldberg" type device. A rock is suspended over the bomblet and when a trip wire is pulled the rock drops on the striker detonating the bomblet instantaneously (Figure 9).

e. Locally Manufactured Mines: The homemade or locally manufactured mines come in many sizes, shapes and forms. They may be constructed of light metal, cast iron, cement, or explosives packed into bamboo tubes or wrapping paper. The intended use for a mine normally governs its size, shape and construction. The VC have produced a large number of underwater mines in addition to land mines that have also become more or less standard items. These items along with other VC land mines are illustrated in the J-2 VC War-Material Handbook. Some of the more common locally manufactured mines are illustrated in figure 10.

(1) The most famous and fast becoming the most widely used VC locally produced mine is their directional mines (claymore type). These items have been found in sizes ranging from approximately 8 inches in diameter to 12 inches in diameter. These mines are designed to project a large number of fragments in one principal direction by an explosive force. The effective range is approximately 200 meters with a dispersion area of 16 to 20 meters at this range. The VC directional

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mine has been used against troops, helicopters in landing areas, light vehicles, and as a terrorist weapon. This item is normally control fired but has been found fused with other firing devices to include delayed fuzing.

(2) Any type of container may be used as a mine. Two very simple and easily manufactured explosive items were discovered during a recent US operation. One item consisted of a bamboo tube filled with explosive and a standard VC pull friction grenade fuze altered for instantaneous detonation (Figure 11). The other was explosive wrapped in black plastic with a cocked striker mechanical grenade fuze (Figure 12).

f. Foreign Manufactured Items: Any emplaced munitions that are in the Communist Bloc inventory may be introduced into the Viet Cong arsenal. For example, friendly forces recently captured an antitank land mine and a new type of hand grenade. Both of these items were of Communist Bloc origin and it was the first time that they have been found in Vietnam (Figure 13).

(1) The first is a Chicom copy of Russian Grenade, RGD-5. This is a copy of the latest Soviet fragmentation grenade. It is egg shaped and has a sheet metal body which encloses a fragmentation liner. It is functionally similar to the US M26 except for its fuze. The fuze is a copy of the Soviet UZRC fuze and has a delay of approximately three and one half seconds. As with other grenades the VC can be expected to use this item as an antipersonnel booby trap. It has an effective fragmentation radius of approximately 20 meters.

(2) The second is a metallic antitank mine. This mine is either the Soviet model TM-4C or a copy similar to it. It is 12.2 inches in diameter by 2.9 inches high and contains approximately 12.6 lbs of TNT. There is a fuze well in the top center with a secondary fuze well on the side of the mine case. The mine fuze is a pressure type and any other type of firing device could be used in the secondary fuze well.

6. (CMHA) VC TERRORIST EXPLOSIVES: The Viet Cong have often employed terrorist explosives against US personnel and installations. These explosives have been covertly introduced into various US compounds and other places frequented by Americans and have been overtly delivered by terrorists against passing US vehicles. Some of the methods and devices employed are discussed below:

a. A footlocker addressed to a US Officer was delivered to a

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BOQ. This footlocker contained over 100 pounds of explosive material with a clockwork activated fuze. Personnel working in the BOQ were about to deliver it to the room number indicated in the address, but became suspicious when they realized that the name in the address was not the same as that of the officer occupying the room. The footlocker was opened and the bomb was disarmed minutes before it was to detonate.

b. A hand grenade was placed in the front suspension system of a jeep in such a way that any movement of the vehicle would dislodge it, thus releasing the handle and causing it to explode.

c. A fountain pen was left on the floor of a vehicle to be picked up and examined by some unsuspecting person. When X-rayed it was found that the pen contained sufficient explosive to blow a man's hand off. It was rigged to explode when the cap was removed.

d. Cigarette lighters of the Zippo type have been delivered to US advisors and left where they would be easily found. These lighters are explosive booby traps that detonate when the unsuspecting person attempts to light it.

e. Grenades have been camouflaged in bread, briefcases and baskets of fruit. On a recent occasion, a loaf of bread containing a grenade was thrown into the back of a US Navy truck. Personnel riding in the truck bed were able to throw it out before it exploded. Although two individuals received wounds, more serious injury and probable death were avoided.

f. Directional mines (Claymore type) have been hidden in the saddlebags of bicycles and motor bikes. Automobiles have been made into large bombs by filling door panels, seats and trunks with explosives. These type bombs or mines need not be within close proximity of the target to cause death and destruction. It may be well to note here that the VC employs a directional mine which is almost an exact copy of the US M18.

g. Recently a bartender in a Vietnamese bar frequented by Americans as well as Vietnamese discovered what appeared to be two packs of cigarettes left by customers. When he picked them up they seemed a little too heavy for cigarettes, he very wisely called the police who in turn contacted Explosive Ordnance Disposal (EOD) personnel. The innocent looking cigarette packs turned out to be anti-personnel bombs, which fortunately, had never been activated (Figure 14).

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7. (U) SUMMARY: The Viet Cong have had long and successful experience in improvising and employing explosive mines and booby traps, using whatever material - man made or natural - that is available. The lack of technical sophistication employed in their manufacture renders these devices all the more dangerous. Only by thorough knowledge of the construction and employment of this ordnance can their value to the VC be negated and friendly lives be saved.

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Major, AGC
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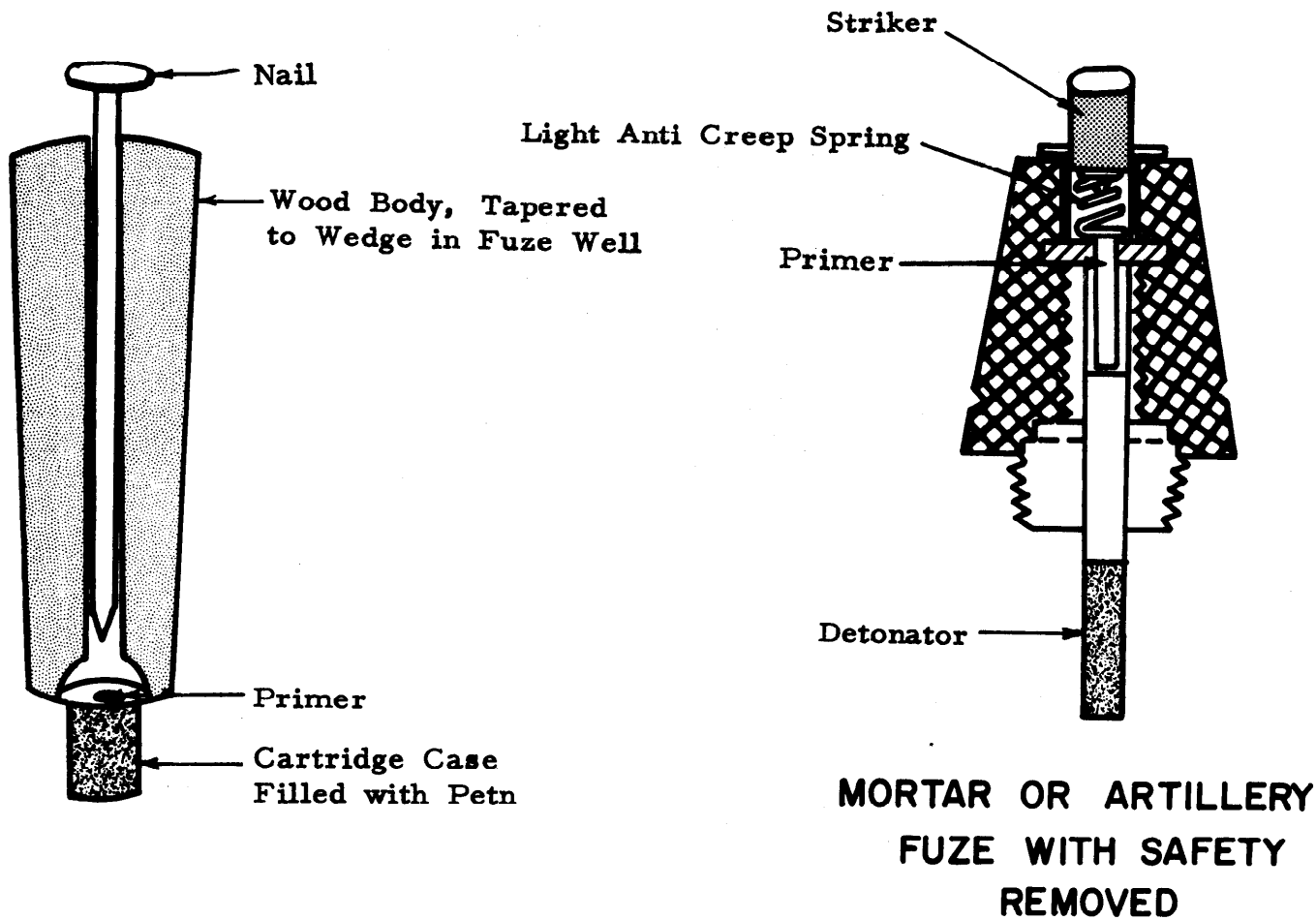
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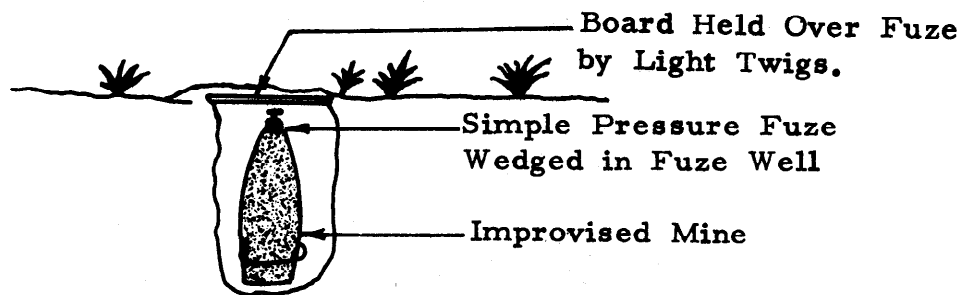


Figure 1. Pressure Type Fuzes

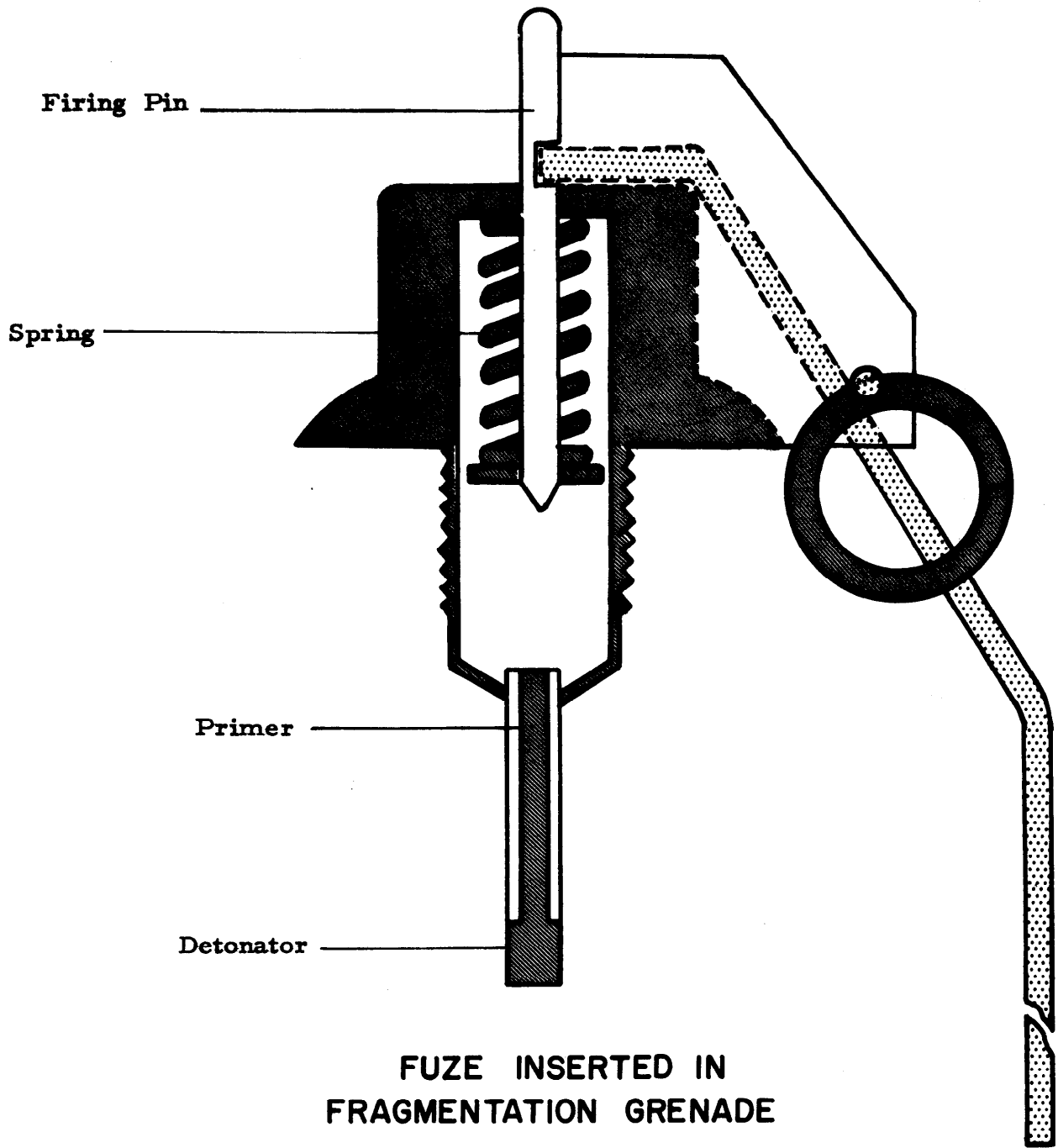


Figure 2. Pressure Release Type Fuzes

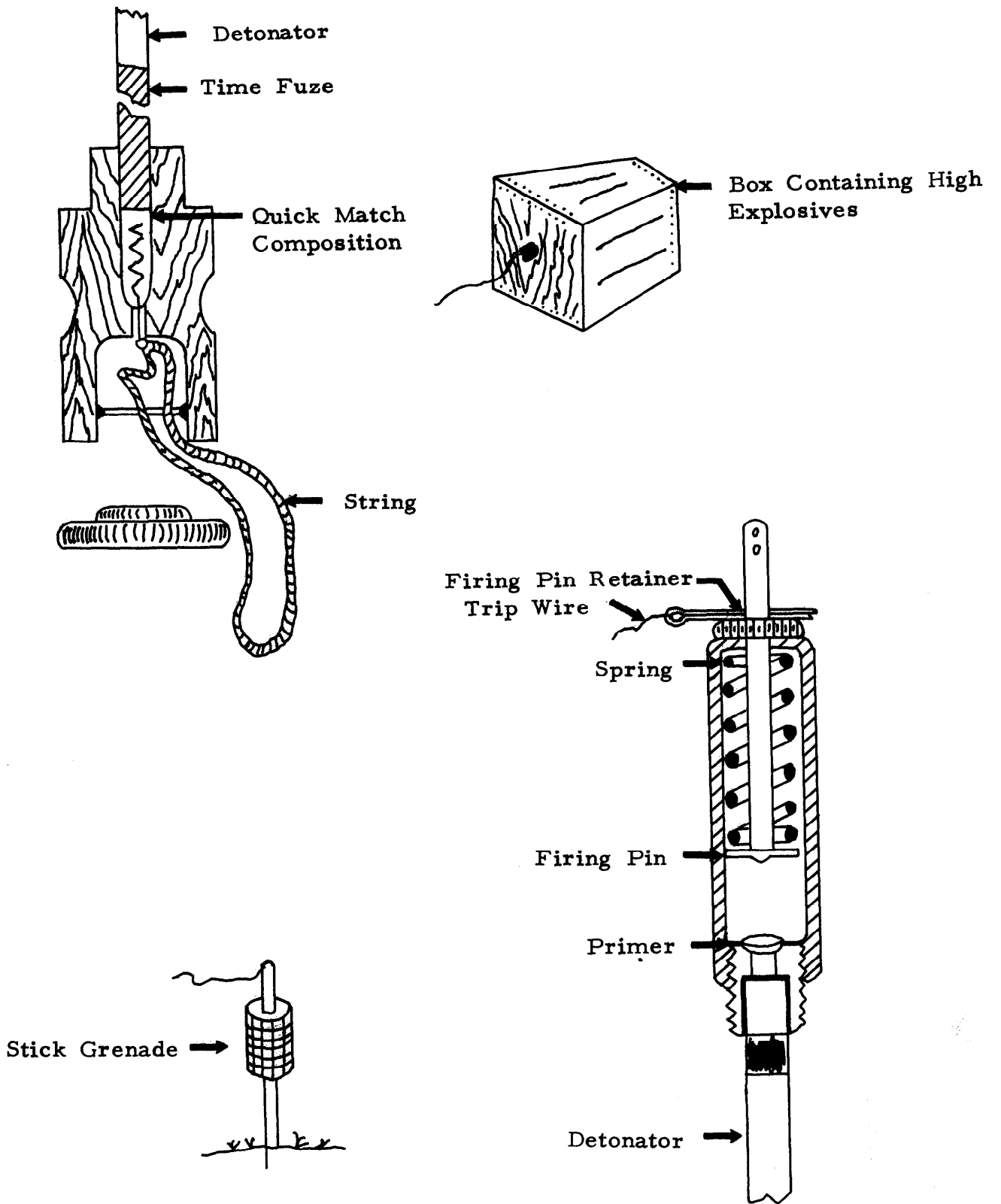


Figure 3. Pull type firing device.

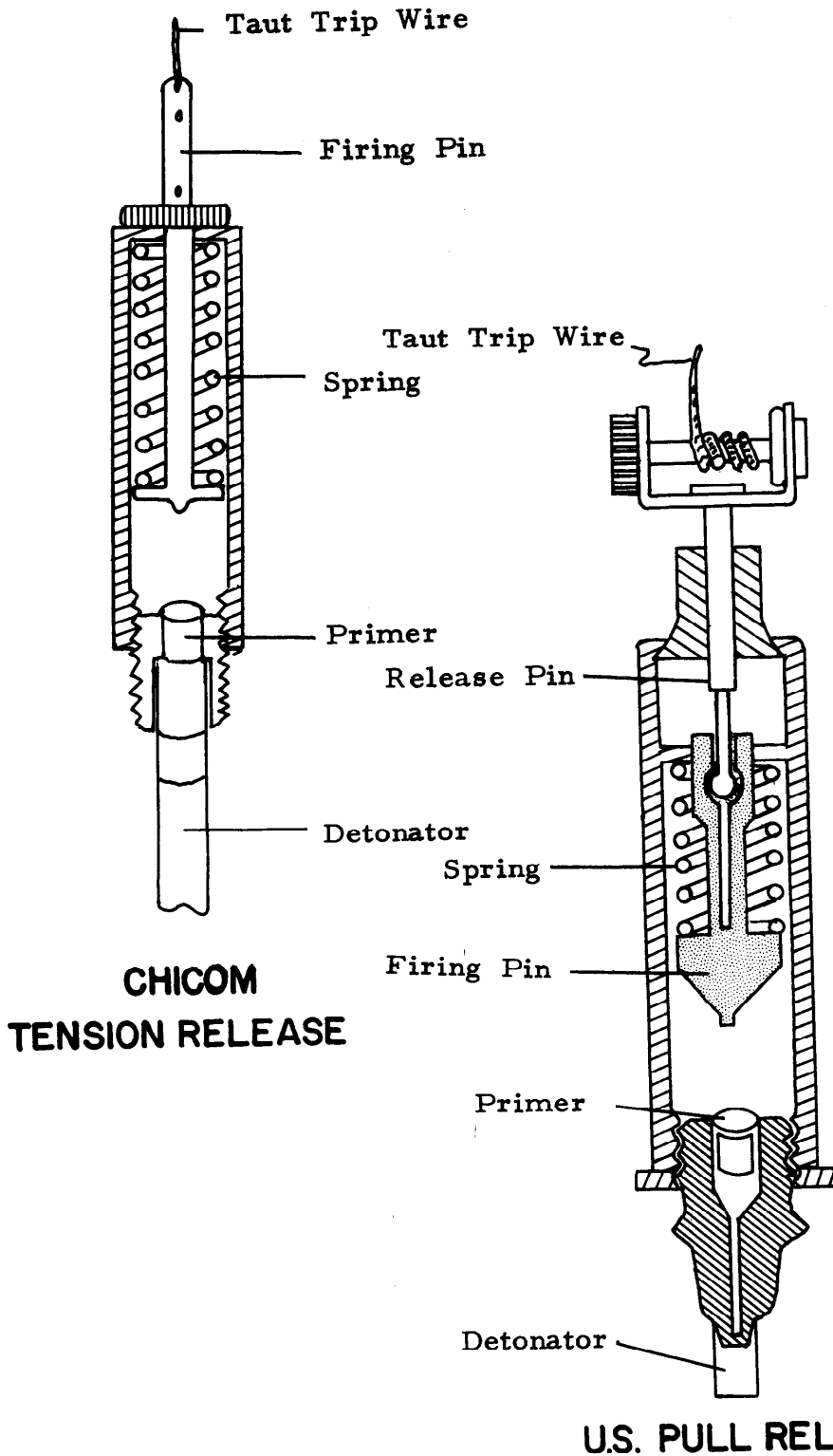


Figure 4. Pull Release and Tension Release Firing Devices

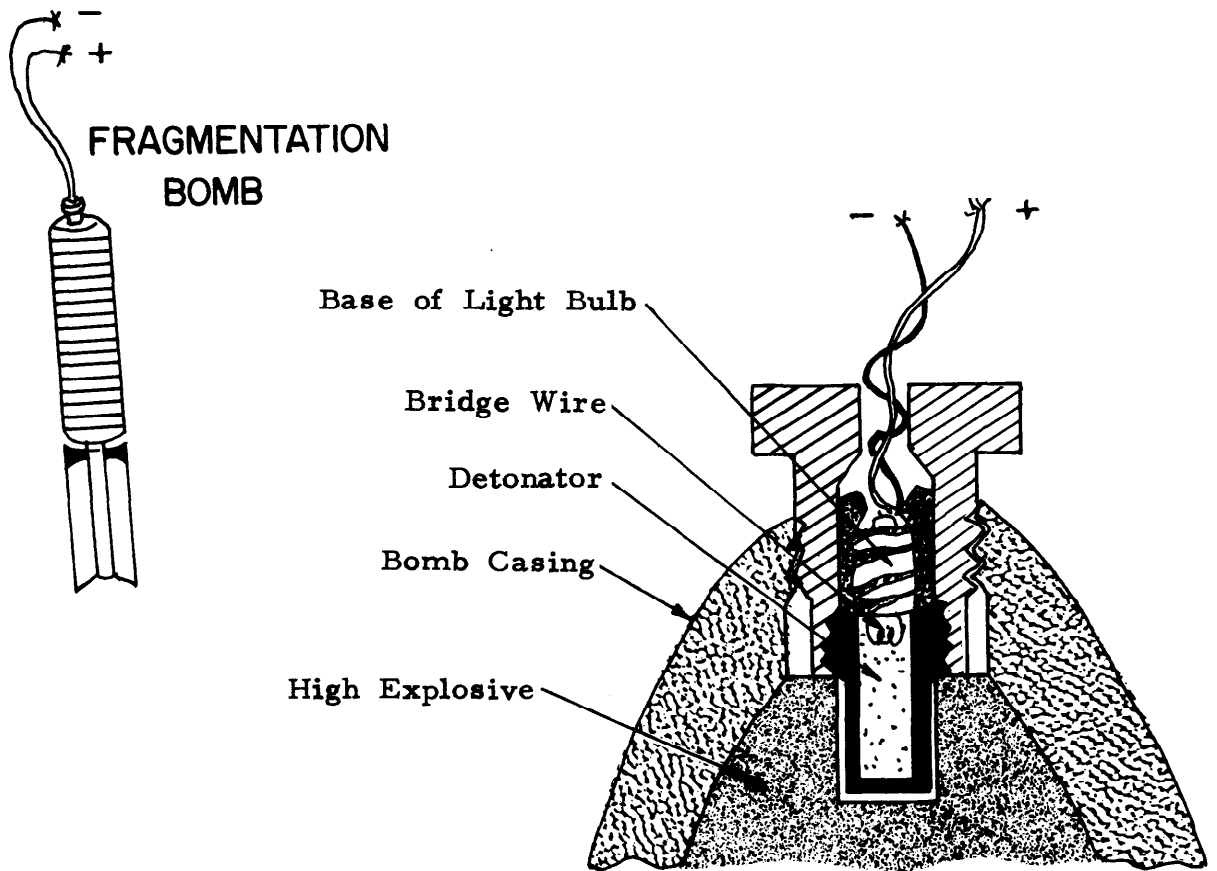
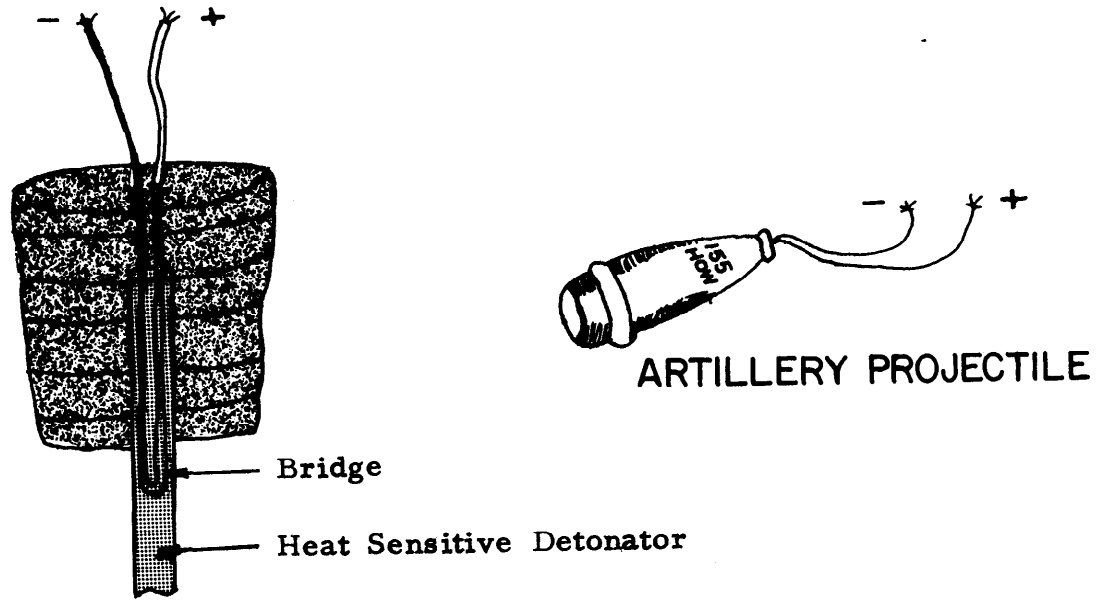


Figure 5. Controlled Fuzing Systems

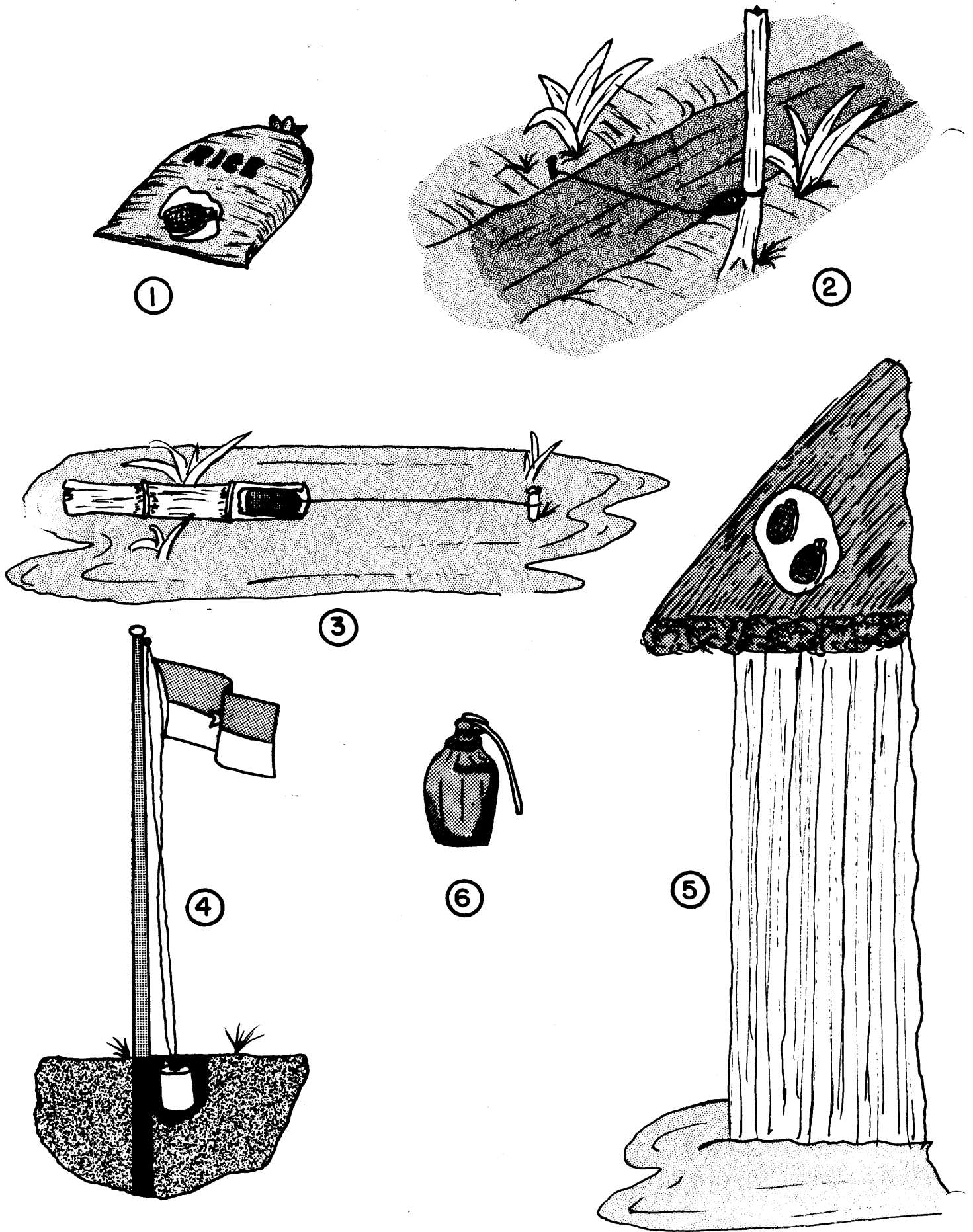
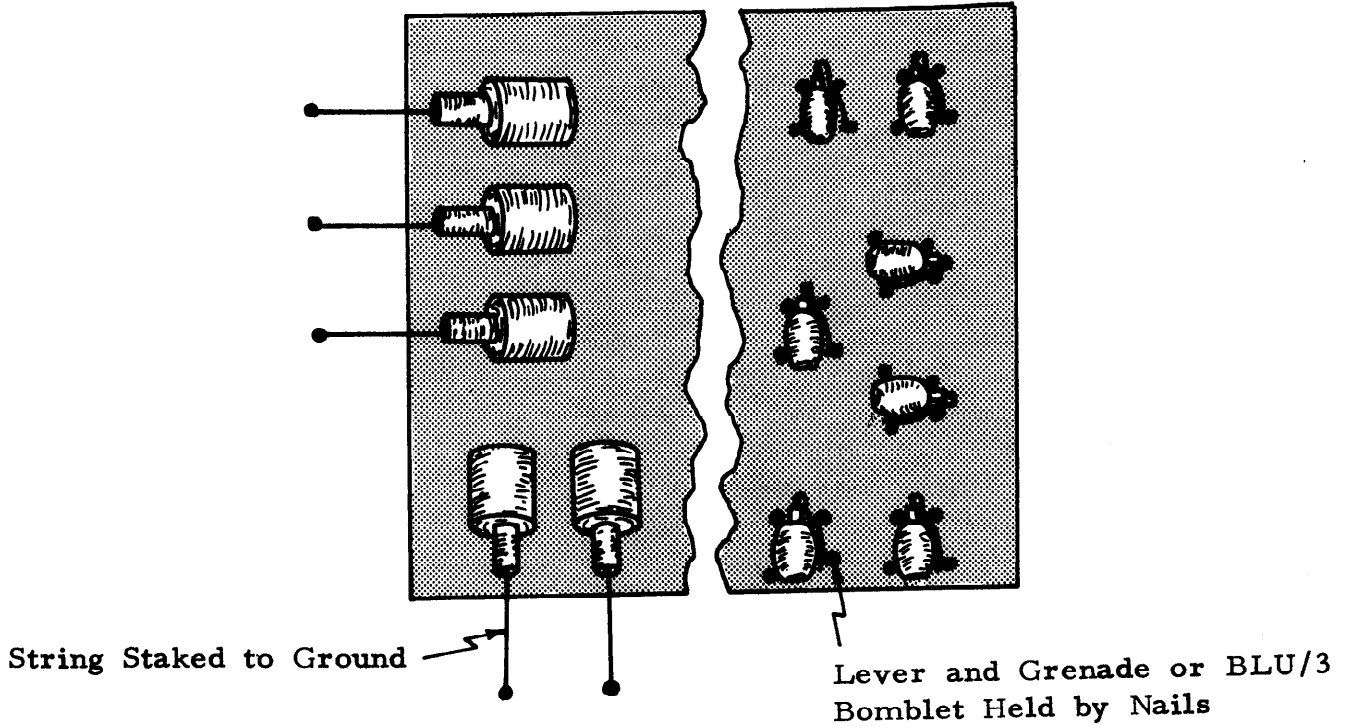


FIGURE 6. Some Methods of Employing Small Explosive Items.

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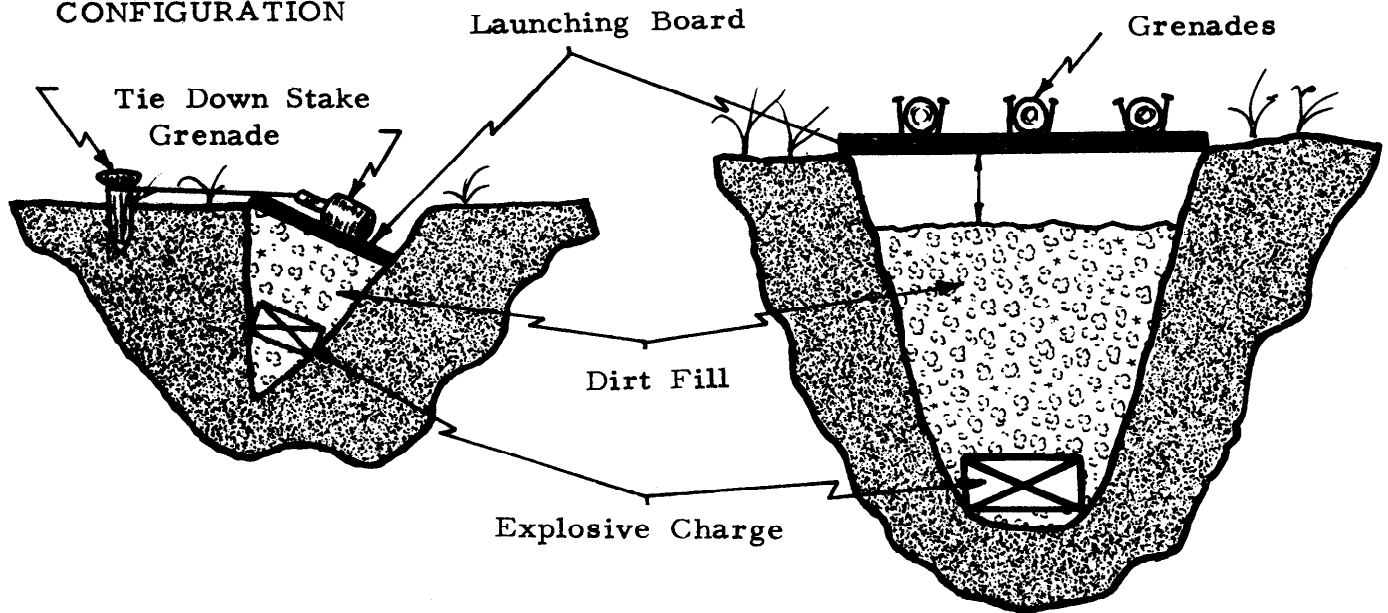
Pull Friction Fuze Pressure Release Fuze



SIDE VIEW

ANTI-HELICOPTER CONFIGURATION

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Figure 7. Grenade Launching Holes.

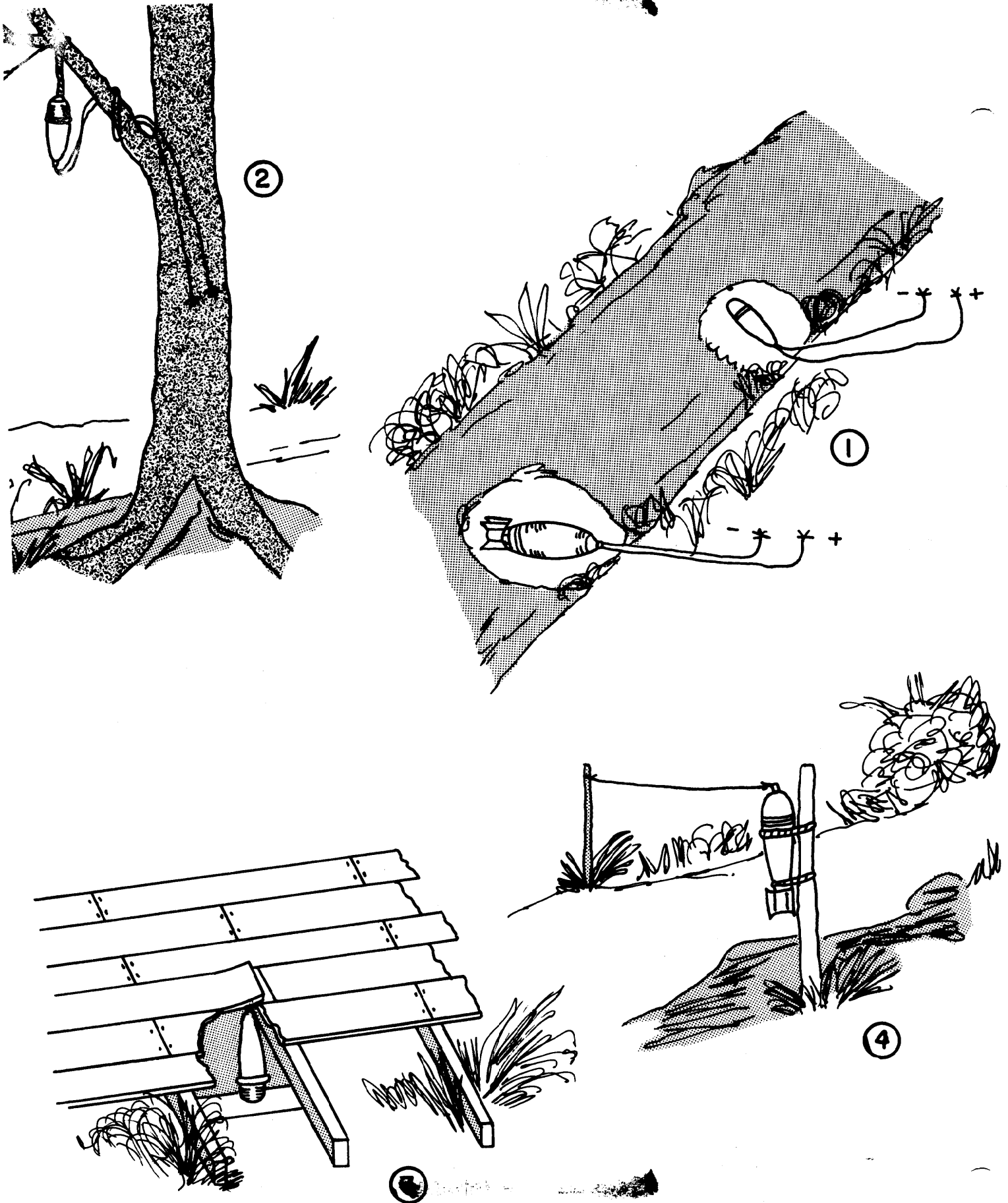
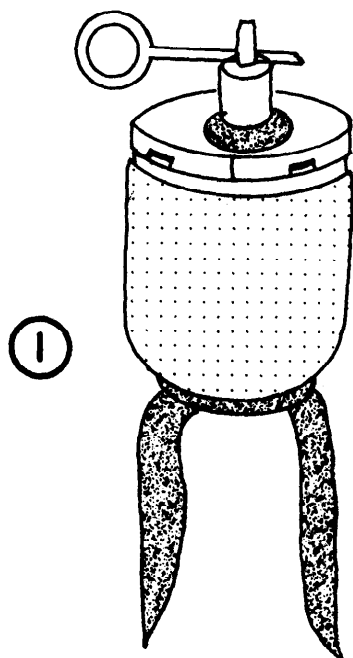
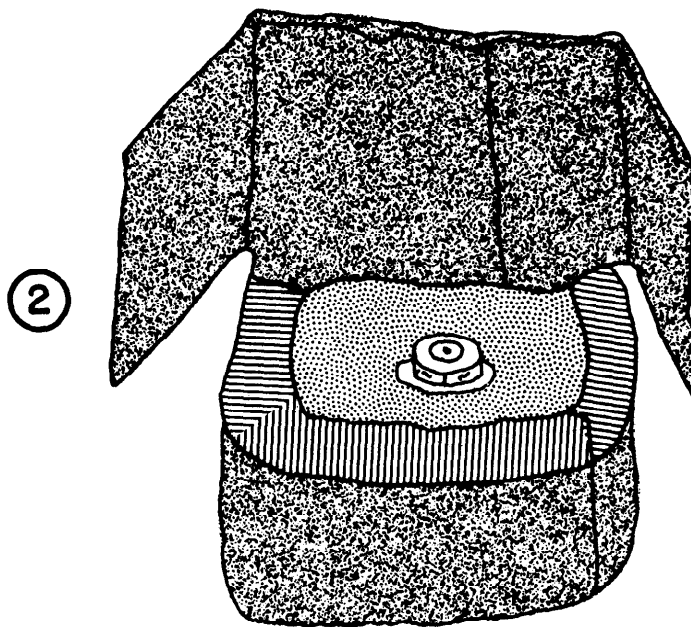


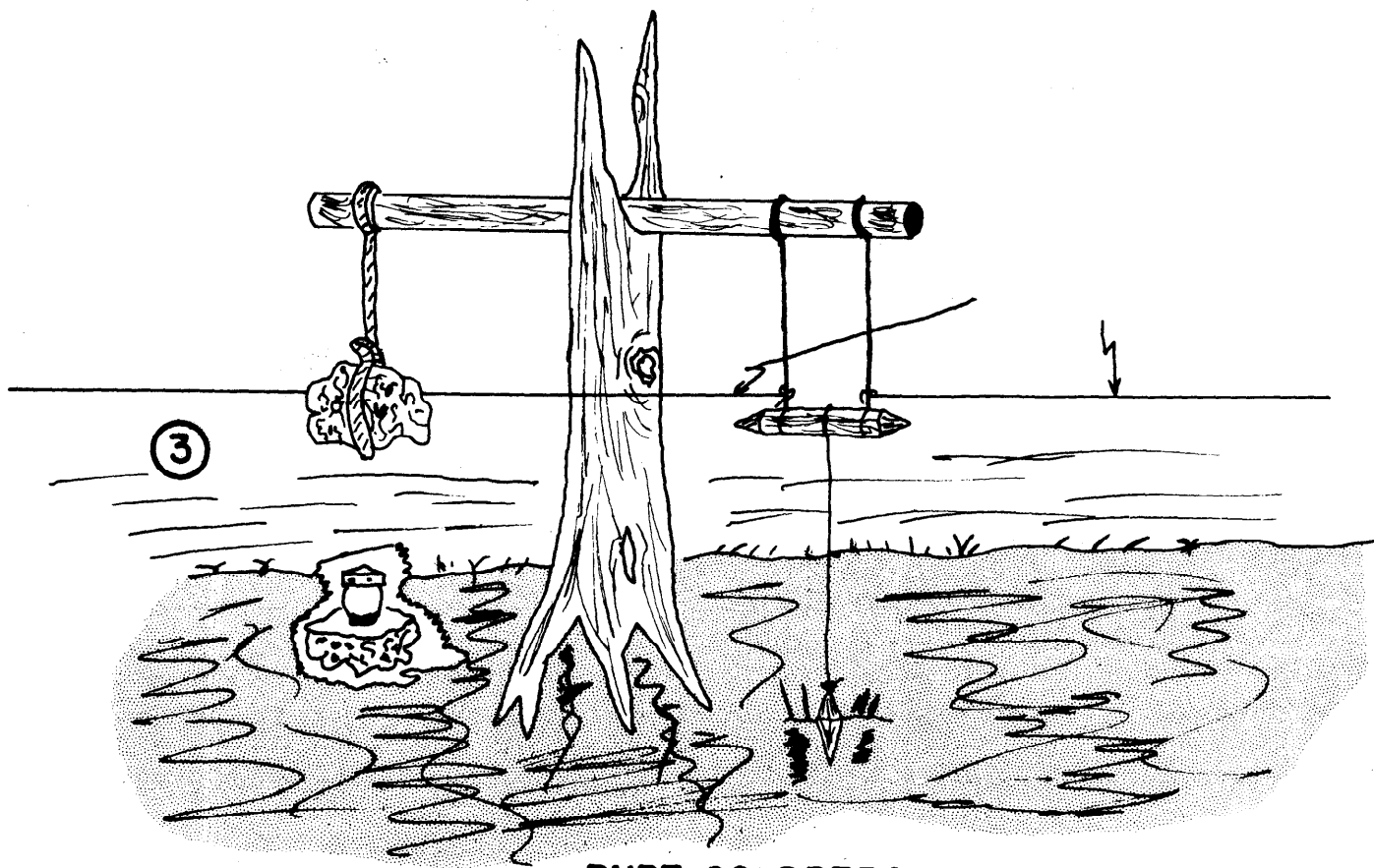
FIGURE 8. Some Methods of Employing Improvised Mines.



PULL TYPE

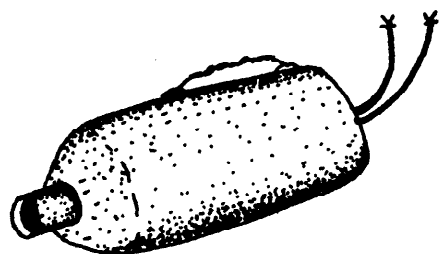


PRESSURE TYPE DETONATOR
FOR IMPROVED MINE

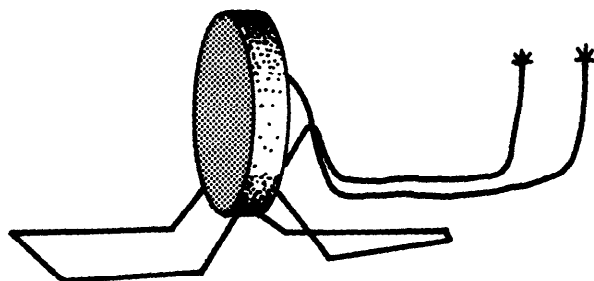


RUBE GOLDBERG

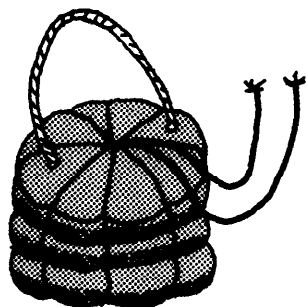
FIGURE 9. BLU/3 Bomblet Employment.



13LB CEMENT



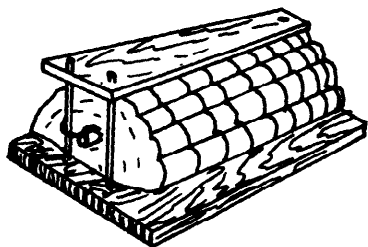
**DIRECTIONAL
(CLAYMORE TYPE)**



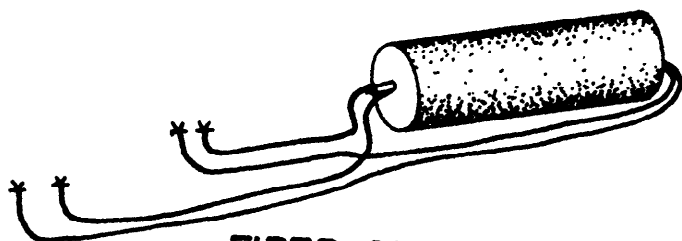
BASKET



SHAPED CHARGE

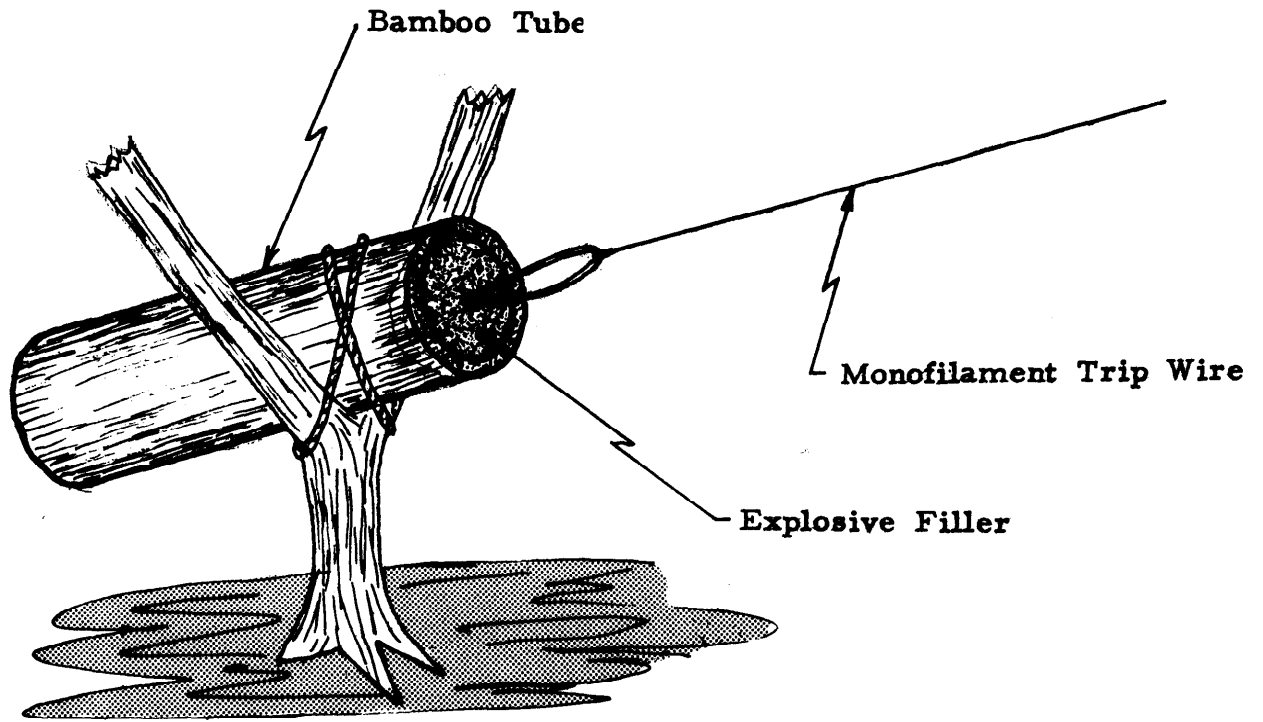


CEMENT TURTLE



FIBER OR SHEET METAL

FIGURE 10. Some VC Locally Manufactured Mines.



MINE TIED IN CROTCH OF BUSH RIGHT OFF OF TRAIL AND MARKED WITH BROKEN SAPLING APPROXIMATELY 3 FEET IN FRONT OF MINE.

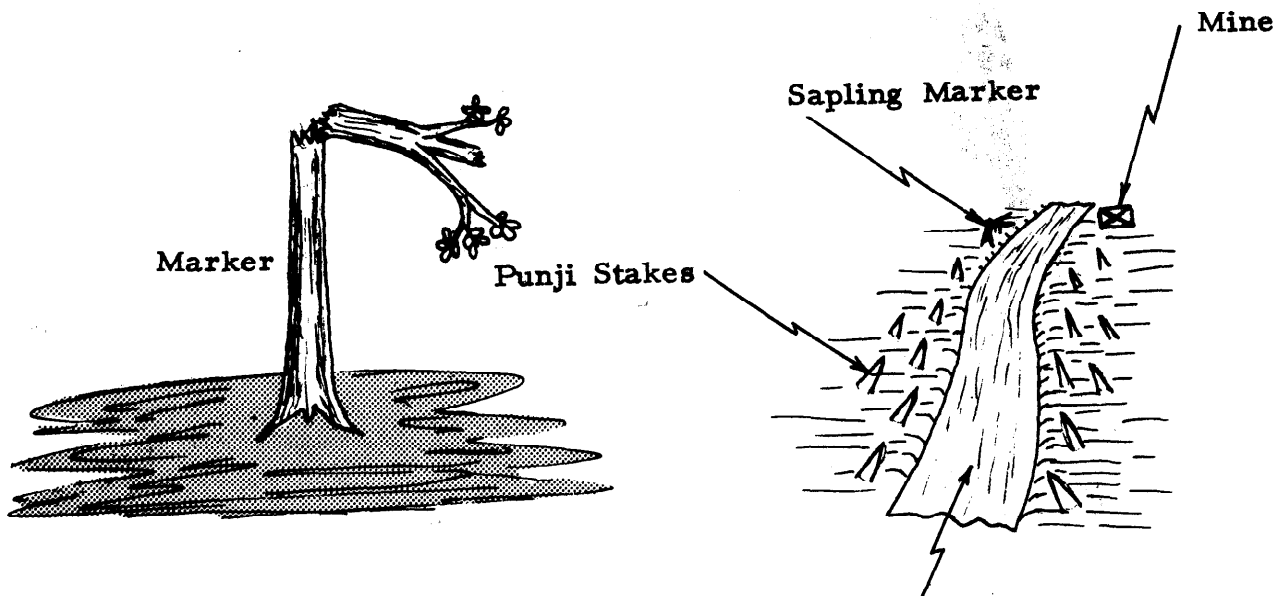


Figure 11. VC locally manufactured explosive item.

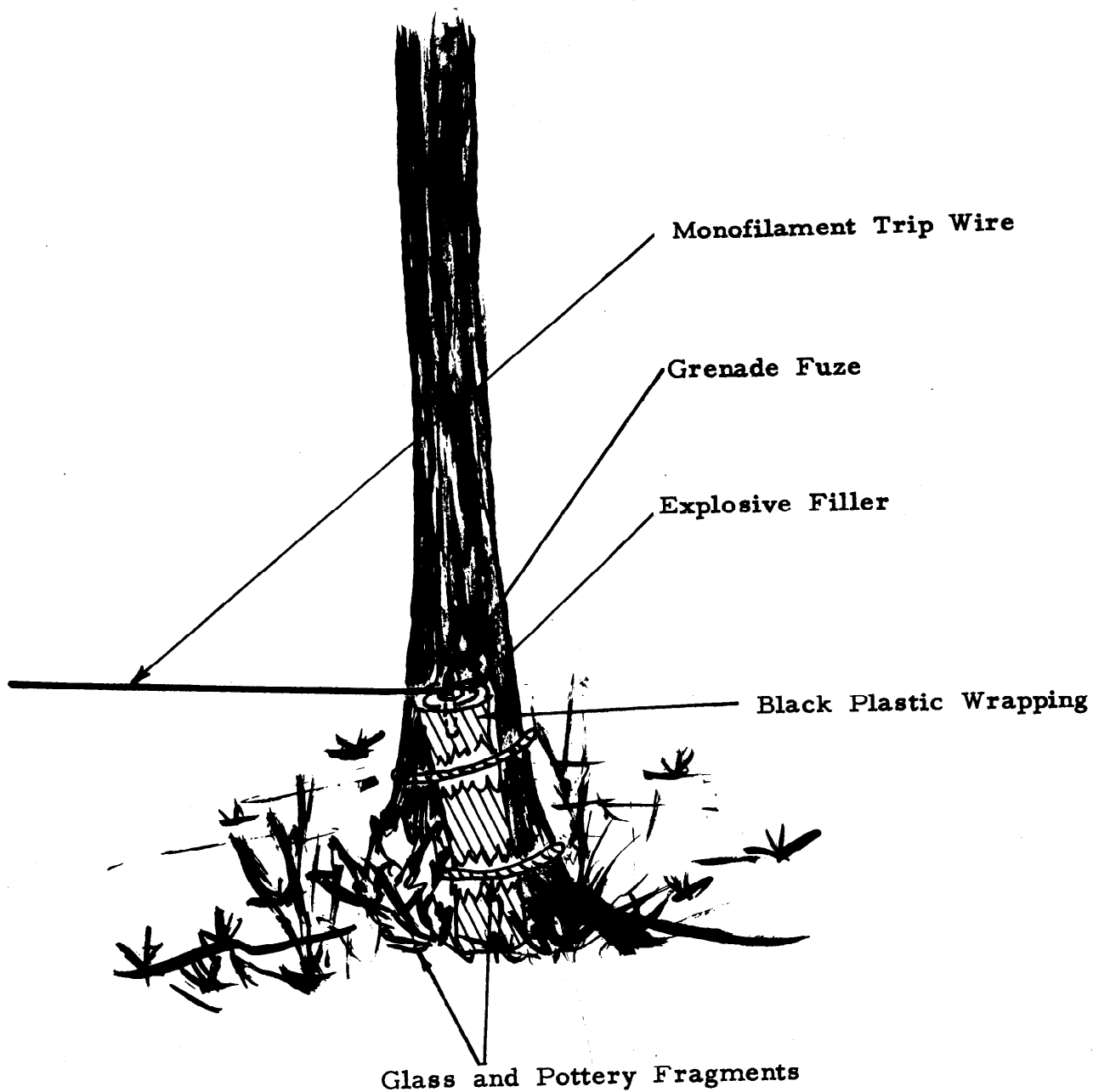
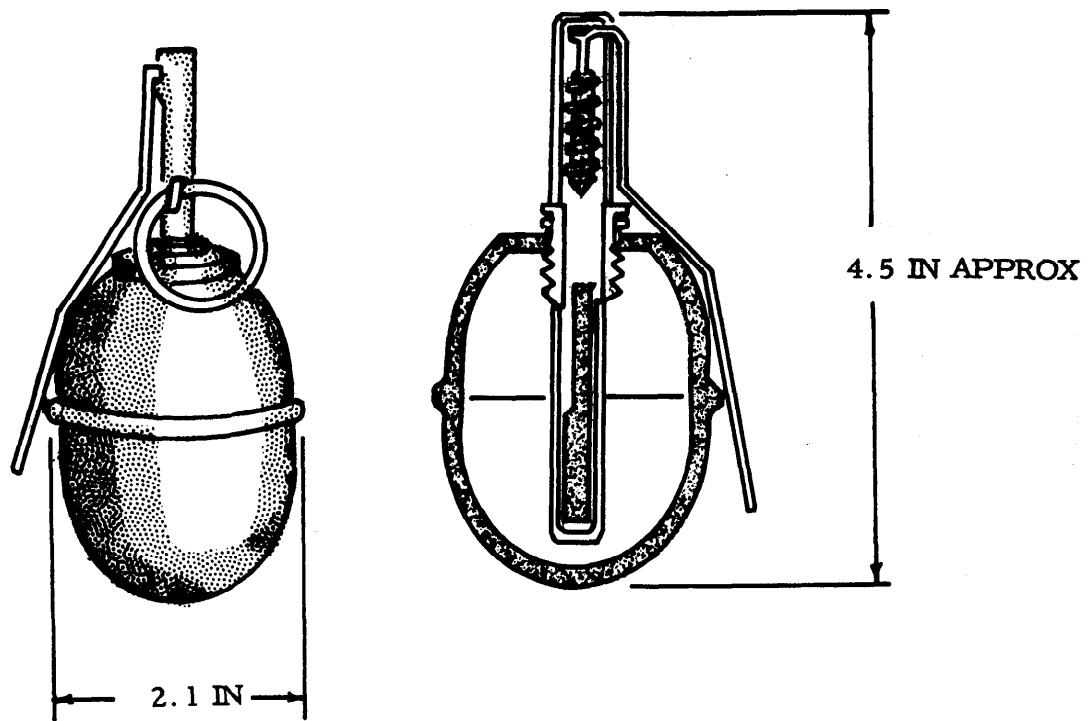


Figure 12. VC locally manufactured explosive item.

CHICOM COPY OF USSR
RGD 5 GRENADE



MINE, ANTI TANK, METALLIC

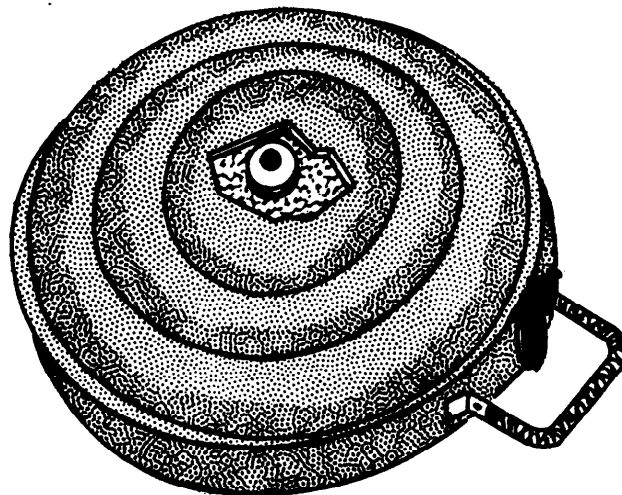
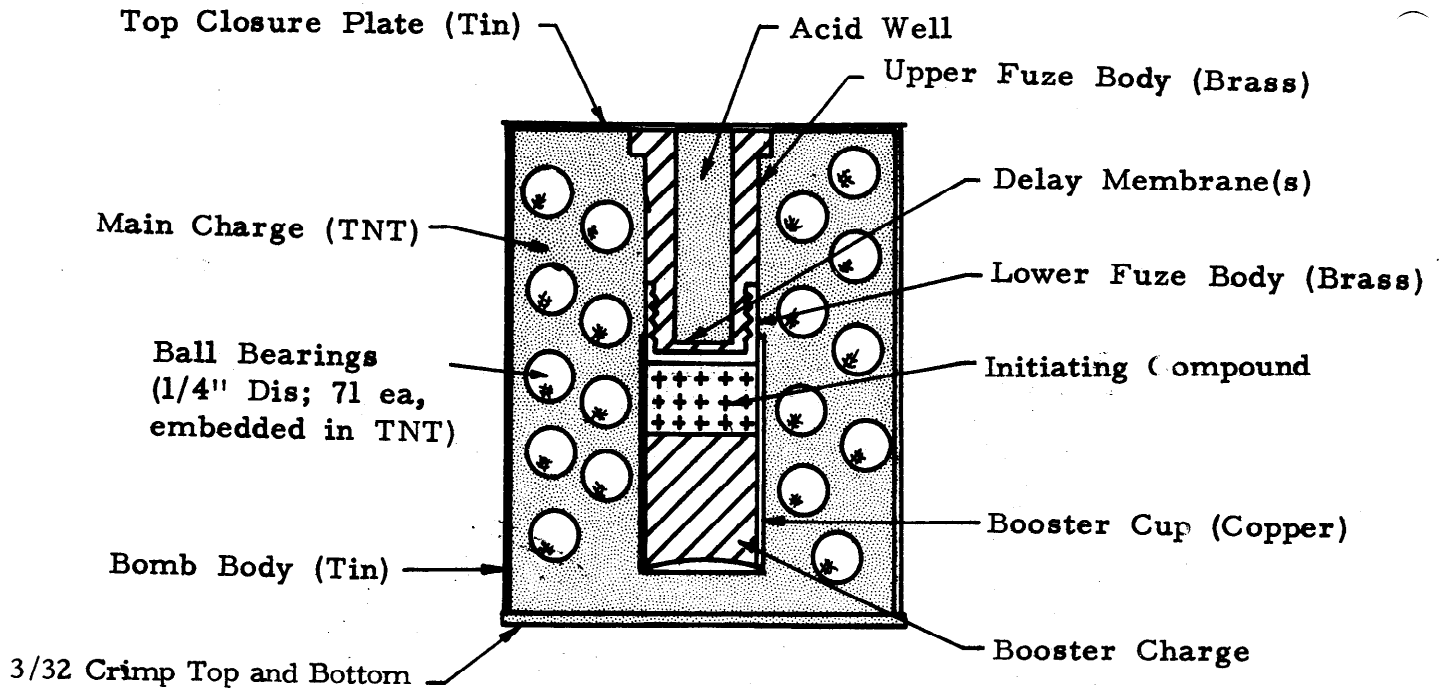


FIGURE 13. Foreign Manufactured Explosive Items.

~~CONFIDENTIAL~~
MODIFIED HANDLING AUTHORIZED UNCLASSIFIED



~~CONFIDENTIAL~~
MODIFIED HANDLING AUTHORIZED

Figure 14. Cigarette Pack Bomb

UNCLASSIFIED