

Fig. 1. 75 grenade (Mark 1), sectional view

1. No. 75 grenade (See Fig 1)

Section 4.—SERVICE BULK EXPLOSIVES
(likely to be available to arms other than RE)

(a) *Description.*—This is a screw cap metal container filled with 14 lbs of HE with a special primer inside the container at the opposite end to the screw cap (see Fig 1). On top of the container is a pressure plate with special pockets underneath for the detonator and igniter sets used when the grenade is employed as an anti-tank mine (see Military Pamphlet 45, Part 1). Twelve grenades are packed in a tin box with 24 detonator and igniter assemblies.

75 grenades do not readily deteriorate in temperate climates. In a tropical climate deterioration is more rapid. The grenade measures 7 ins by 3½ ins by 2 ins and weighs 2½ lbs.

The No. 75 grenade should be used exactly as the Mk 1 in demolition work.

The grenade is the demolition charge which will be mainly used by arms other than the RE. The other bulk explosives which are below may be issued as replacements.

(b) *Initiation.*—The grenade will be initiated by wrapping three turns of detonator cord (see Sec 5) round the end containing the primer, as shown in Fig 6. It is NOT to be detonated by the igniter set supplied for use when it is employed as an anti-tank mine. An attempt is made to initiate it with detonator and safety fuse or detonating fuse in one of the normal detonator holes, which are up to 50 per cent may result. There are two reasons for this. First, when the detonator is fired by the igniter set (i.e. when in use as an anti-tank mine), the pressure on the plate tends to press the detonator down on to the priming charge. This does not occur when the grenade is used as a demolition charge. Secondly, the safety fuse may contract in length as it burns and draw the detonator back so that it is not directly over the priming charge when it explodes.

2. Demolition Slab, CE/TNT

(a) *Description.*—This is a milkbowl container measuring 4½ ins by 2½ ins by 1½ ins filled with a yellow high explosive. The total weight is 1 lb. It has two holes for the special 1-centimetre primer, which will not be issued with the slab when it is used by arms other than the RE. Fourteen slabs are packed in a wooden box or a gunotton tin box (see para. 3 below). The slab has excellent keeping qualities in all climates, and is not affected by moisture.

(c) *General*.—Both types of primers are normally packed 10 in a tin or cardboard cylinder, and 6 cylinders in a wooden box. Primers are considerably more sensitive to shock than bulk HE, but at the same time they are perfectly safe to handle if reasonable care is exercised. As already noted they may be set on fire or detonated by a rifle bullet.

Note.—For boxing and initiation of primers see Figs 3 and 4.

2. *Detonators*.—The standard service detonator is the No. 27 Mk 1, which is used for initiating service primers and detonating fuses. It consists of a small metal tube 1½ in long, closed at one end, and will fit into the seal hole in the service primers described above. The tube is half filled with sensitive HE which will detonate when initiated by safety fuse or instantaneous fuse. No detonators are packed in special tins, 2½ in a tin. The tin which contains a rectifier, which is a small wooden tool used for closing properly the size of the hole in Mk 1 function primers when the detonator will not fit. It is unlikely that there are any of these primers still in operational use.

No. 8 commercial detonators may be issued in lieu of the No. 27 No. 27, and have identical properties. Commercial detonators are packed in stout, 100 in a square tin. Care must be taken to empty sawdust from the detonator before using.

When inserted into the primer the closed end of the detonator should be about ½ in out of the fur end of the axial hole, the object being to get the filling of the detonator in the centre of the primer. It is IMPORTANT that the detonator should not protrude on the far side of the primer. This may cause failure.

Occasionally detonators are very sensitive and may detonate even if dropped on hard ground. They should be treated therefore with care. In particular NEVER APPLY PRESSURE TO THE SEALED END OR POKE THE FILLING WITH ANYTHING HAND SECH AS A PIN OR MATCH STICK. The explosion of a detonator in a man's hand is sufficient to blow off several fingers.

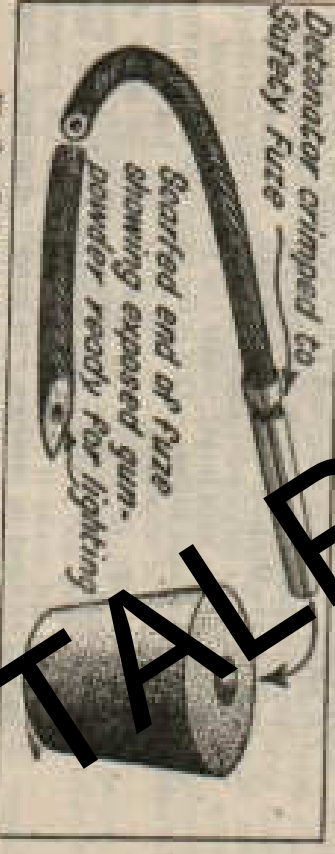


Fig 2. Safety fuse, No. 27 detonator and 1 oz. primer

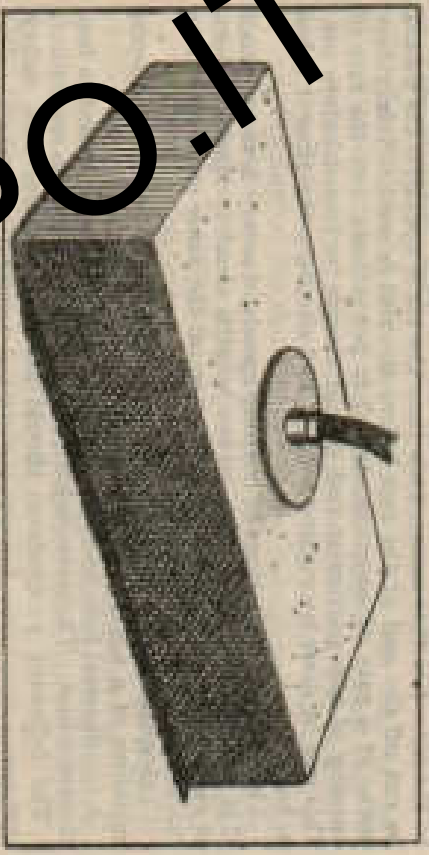


Fig 3. Primer, detonator and safety fuse



Fig 4. CE/TNT slab with primer, detonator and safety fuse

For special notes on storage of detonators see Sect 7. Fig 2 shows the normal method of initiating the detonator with safety fuse. This is fully described in para 4 below.

3. *Safety fuse*.—The standard British service safety fuse No. 11 Mk 1 has a black gunpowder core in a black waterproof cover. The fuse is packed 48 ft in a sealed circular tin. If the sealing of the tin is found to have been broken the fuse should be treated with suspicion as it may have been affected by damp. The gunpowder core is extremely susceptible to damp and quickly becomes useless if exposed

25 are packed in a small tin. This cap is crimped over the end of the safety fuse, which is cut square. To light the safety fuse rub the match composition along the outside of a safety match box or special brandard. These lighters are also very susceptible to damp, the composition on the end being similar to that on a safety match. Therefore keep the tin shut and use up one tin before opening another.

Note.—In addition to the lighters described above, the pull switch described in Military Training Pamphlet No. 40, Part I, may be used for lighting safety fuse, but only in emergency, as up to 25 per cent failures may be expected. It is crimped onto the fuse in the same way as the percussion lighter.

(iii) Safety precautions when using gunpowder. NEVER use less than 6 in. of safety fuse. Always crimp the lighter firmly on to the fuse.

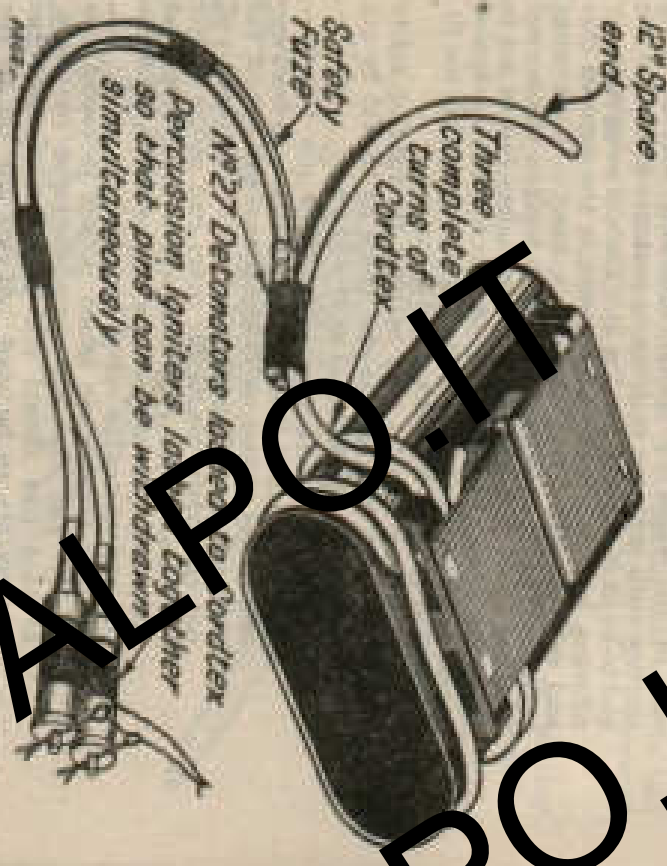


Fig 4. No. 27 Detonator connected to Cordtex Percussion lighters. *Note: so that pins can be withdrawn simultaneously*

(g) Testimony of charges with safety fuse and detonator. There are several common causes of failure with a safety fuse and detonator initiating set. These are—

Failures at the detonator end of the safety fuse, caused by—

- (i) The end of the fuse being roughly cut, resulting in either the gunpowder core being spilled out of the end, or the covering being frayed and blocking the "light" of flame from the fuse on to the detonator.
- (ii) The end of the fuse being damp, resulting in the fueling out of the gunpowder core. This may be caused by the end of the fuse being damp to start with, or by the detonator containing a few drops of moisture which damp the end of the fuse after insertion, or by the fuse becoming damp after assembly through lack of protection.

The end of the fuse not being held up against the face of the detonator, either because it was not pressed home originally, or because it has been pulled out slightly after poor crimping, or because failure to remove sawdust or other foreign material from the detonator.

- (iv) The end of the fuse being damaged as in (i) above.
- (v) The end of the fuse being damp when inserted into the lighter, or becoming damp after insertion, as in (ii) above.

(vi) The fuse not being held up against the cap as in (iii) above.

All these failures may be avoided by taking particular care—
To use dry stores.
To make up the sets, in accordance with para. 4 (a), using a sharp knife, cutting on a firm surface, etc.
To protect the sets from rough handling and damp after assembly.

All ranks concerned must understand the possible causes of failure and must also realize that however much care is taken, no initiating set can ever be guaranteed as 100 per cent certain. The set cannot be tested, as the only test is to fire it. Consequently on all important demolition work, particularly assault work, and preferably always, TWO INITIATING SETS SHOULD BE USED. This gives a reasonable guarantee against failure. The use of two sets, whatever the importance of the job, is a good habit to form (see Fig 6).

It must be realized that a successful demolition depends primarily on successful initiation of the detonators, and that the safety fuse is the weakest link in the chain. It is emphasized again that damp is the chief enemy.

5. Detonating fuse.—Safety fuse is unsuitable for setting off several charges simultaneously (see para 3 (a)), or for a charge which is remote from the firing point, owing to the very long lengths which would be required and the time involved. In such cases therefore detonating fuse is employed. The speed of detonation of this fuse is approximately 200 miles per minute. Detonating fuse is described in sub-para (a) below. British detonating fuse is known as Cordtex.

(a) Description.—Cordtex is a white flexible cord about 1/4 in diameter with a high explosive core. It will fit into a detonator. The explosive core is a white powder.

Cordtex is supplied on wooden reels carrying 500 ft. The covering of the fuse is waterproof, but the core is rendered insensitive by damp which may enter through the end. For this reason 12 ins should be cut off the reel and discarded before use, and a 12-in spare end left on joints. Detonating fuse should be handled with care in the same way as bulk high explosive.

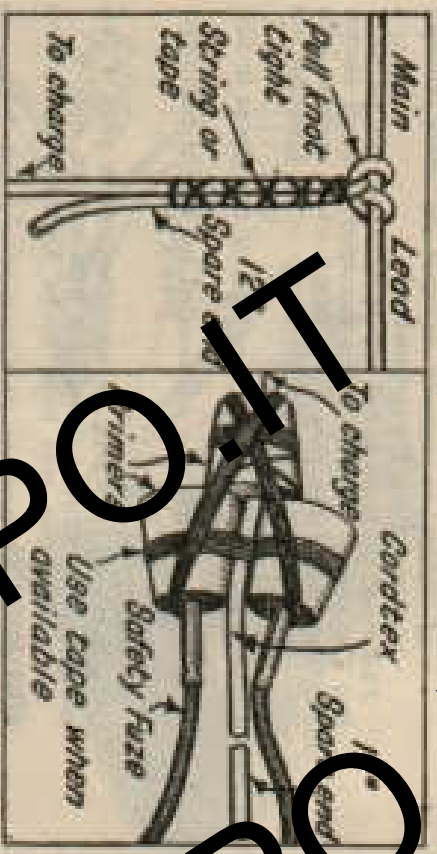


Fig 7. Cordtex clove

Fig 8. Alternative initiation of cordtex

(b) Initiation.—Cordtex can be initiated by a detonator, but for the reasons given in para 4 (a) two detonators should normally be used each with its own safety fuse. Lash the detonators firmly to the fuse (see para 4 (a) in Fig 11). See that the detonators are in good contact with each other as well as with the detonating fuse. It is particularly important that the closed ends of the detonators be lashed on to good contact with the fuse. The small gap may well cause failure. In emergency one detonator and safety fuse may be used. Where the detonating fuse is unimpacted

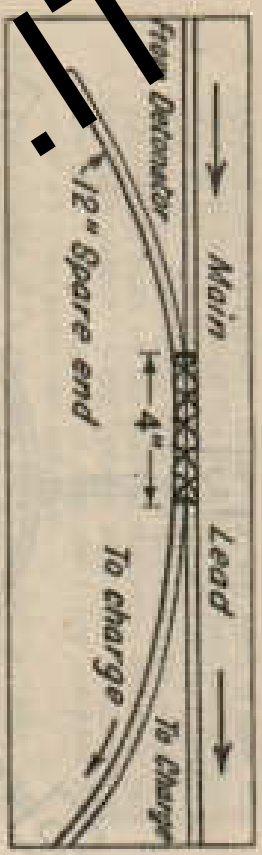


Fig 9. Cordtex lap joint—Not to be used on ring main

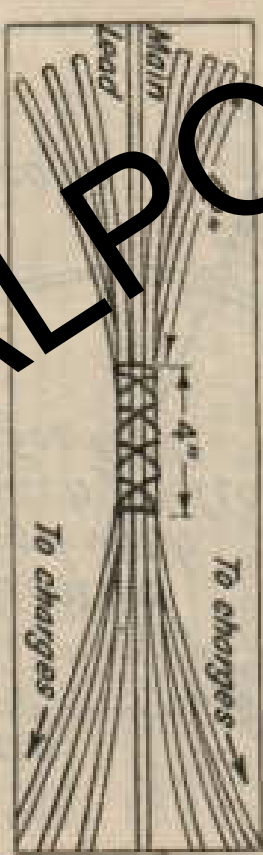


Fig 10. Cordtex junction box



Fig 11. Initiation of cordtex (using 2 detonators to initiate the tail of fusure).

of being damp or where the demolition is very important initiate the fuse with 3 primers, 2 detonators and 2 lengths of safety fuse as shown in Fig 8.

(c) Joints.—The detonating wave will pass from one cordtex lead to another if there is sufficient contact. Such contact can be achieved by tying the branch lead round the main lead with a clove hitch (see Fig 7). This knot must be pulled tight. Alternatively, joints can be made by lashing the two leads concerned together so that they are in good contact for at least 4 ins (see Fig 9). Multiple junction boxes can also be made up in this way (see Fig 10). MAKE ALL SPARE ENDS IN JOINTS OF ANY KIND AT

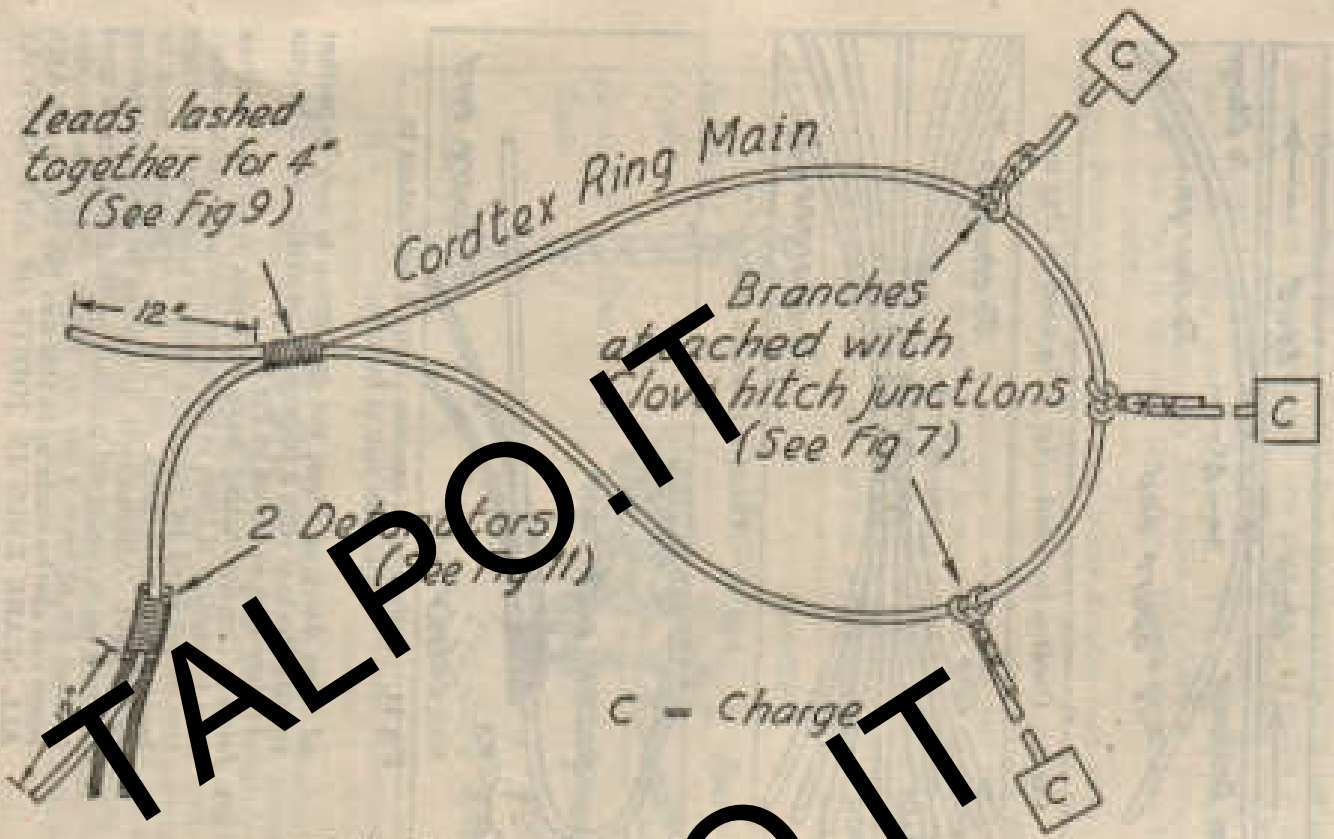


Fig 12. Simple cordtex or primacord ring main

LEAST 12 IN. LONG. If the 4-in lap joint is used the branch should come off the main in the direction in which the detonating wave will travel, like the points on a railway track. The detonating wave will not normally cross a lap joint which leads off the main in the wrong direction, just as a train cannot "jump" points which are in the wrong direction. In the case of a ring main (see sub-para (d)) ALWAYS use double-hitch junctions.

(d) Firing charges of 75 grams, CE/TNT, GC or "gug" with a diameter of 1/4 in. As already stated, all charges should be initiated by a primer. To initiate a primer run the end of the wire through it and tie a thumb-knot in the end of the fuse to prevent it from coming out. If this is not sufficient, wedge it in with a small piece of wood or paper.

Note.—The 75 gram charge has a special primer incorporated in its design, initiated with 3 turns of cordtex round the end opposite the filter cap as shown in Fig 6.

(e) Ring Main.—The most efficient method of firing more than one charge simultaneously is by the use of a ring main made up with the existing fuse (see Fig 12). The main is initiated with two detonators and two lengths of safety fuse as already described.

(f) Primacord.—The standard American detonating fuse and has a yellow braided cover. It is issued in 100 ft reels. Its properties are exactly similar to those of cordtex and it should be handled in exactly the same way.

g. Instantaneous fuse.—This is a thick orange-colored fuse with a black granular core which burns at approximately one mile per minute. It is NEITHER A DETONATING FUSE NOR A SAFETY FUSE. Like safety fuse the core is very susceptible to damp. It can be ignited by any igniter already described, or any of the footy trap switches described in Military Training Pamphlet 40, Part I. NEVER ATTEMPT TO IGNITE THIS FUSE BY HAND, but always by remote control, e.g., percussion igniter and trip wire, etc. Attempts to ignite by hand will cause at least severe burns, and if there is a charge at the other end of the fuse serious accidents may result. INSTANTANEOUS FUSE IS TOO THICK TO INSERT INTO A DETONATOR UNLESS THE OUTER COVERING IS STRIPPED BACK.

Use this fuse for footy trap training ONLY (see Sec 17).

Note.—Avoid confusing with "Fuse Instantaneous Detonating" (FID) which is an obsolescent detonating fuse in a lead tube. Also avoid confusing with American service safety fuse, which also has an orange cover and which, like British safety fuse, will fit into a detonator without any stripping.

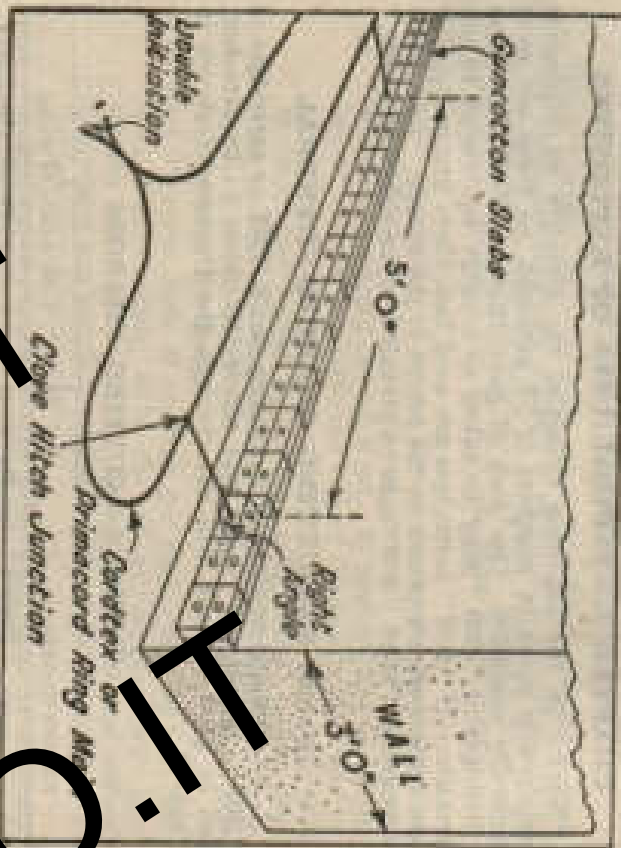


Fig. 13. Cutting charges on thick masonry wall, showing points of initiation. (Blowing omitted for clarity)

(b) Long continuous cutting charges should have points of initiation (primers like primordex, etc., as already described) every 5 ft of linear length (see Fig 13). Grenades, however, should be placed flat end to flat end, with every other grenade touched by contact. Where possible initiation should be on the surface of the charge furthest from the face of the object to be cut and at right angles to it (see Fig 13).

(c) Contact.—The importance of good contact has already been mentioned. Charges should be in contact with the surface attacked and voids underneath should be filled with clay or moist earth. Sand is not a good material for packing. The packing should only be thick enough to fill the voids. If it is thicker it will absorb some of the explosive detonation and reduce the cutting effect of the charge. Charges should be lashed or strapped firmly to hold them in position. Wrapping with wire is often the most convenient method of securing a charge.

SECTION 9.—CUTTING STEEL RAILS

For attacking rail obstacles use one 75 grenade or one slab of CE/TS-1 or C.C. placed on the rail as shown in Fig 14. These charges if placed in good contact will be sufficient to cut the heaviest rail normally used. Note the importance of packing in this case. If available 808 is available if cartridges (two extra for convenient supply) can be used and no packing is necessary.

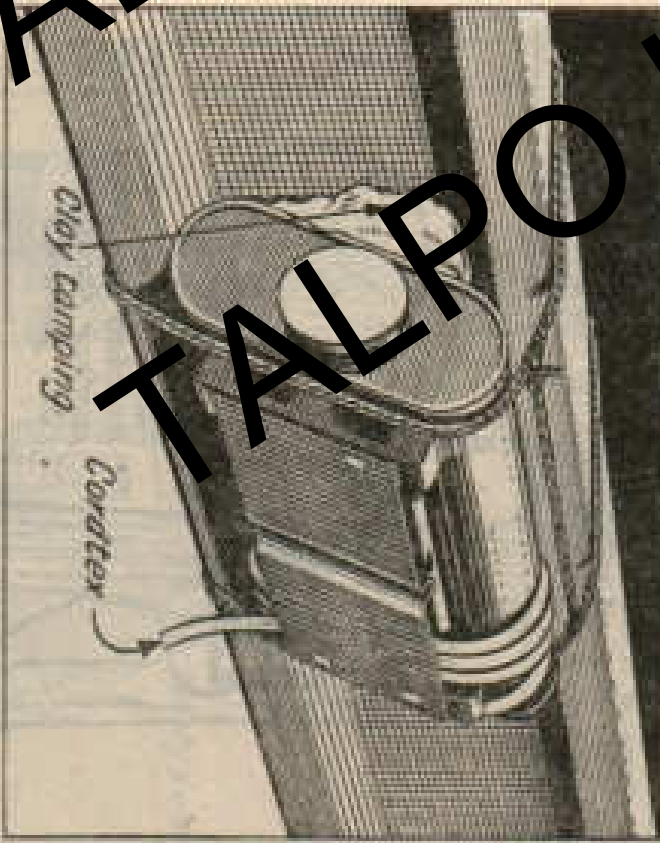


Fig. 14. No. 75 grenade fastened to cut rail. Note: If slabs are used place across rail

Section 10.—FELLING SMALL TREES ON TELEGRAPH POLES

Small trees or telegraph poles up to 12 ins diameter may be felled by blowing two 75 grenades or the equivalent placed as shown in Fig 15. If time permits the tree or pole should be notched to give better contact for the charge. If plastic "SOS" is available this will not be necessary. The tree will fall towards the charge unless it is already leaning in the opposite direction. If necessary the direction of fall can be controlled by attaching a rope to the top of the tree and pulling in the required direction, the charge being placed on the side to which the tree is required to fall.

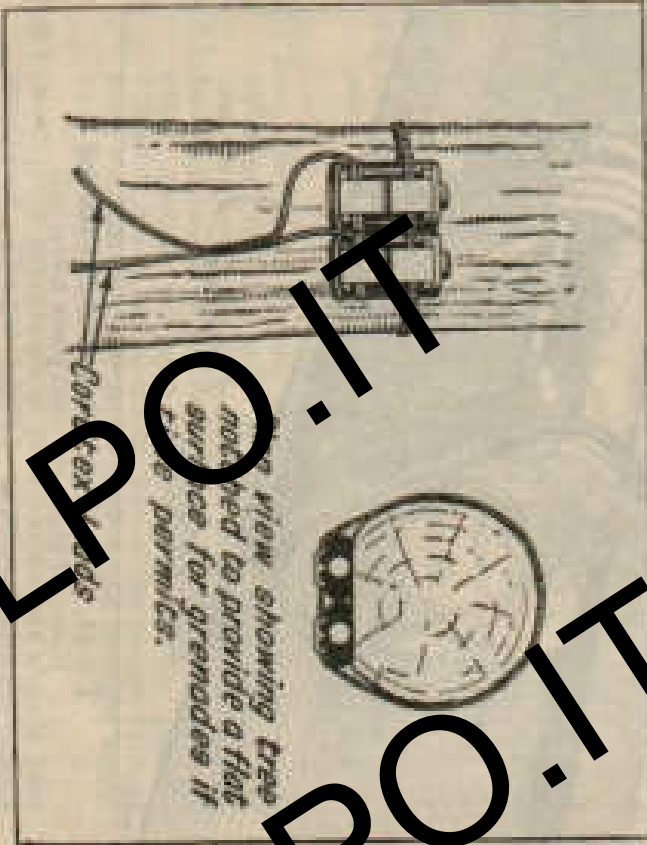


Fig 15. Tree felling using 75 grenades

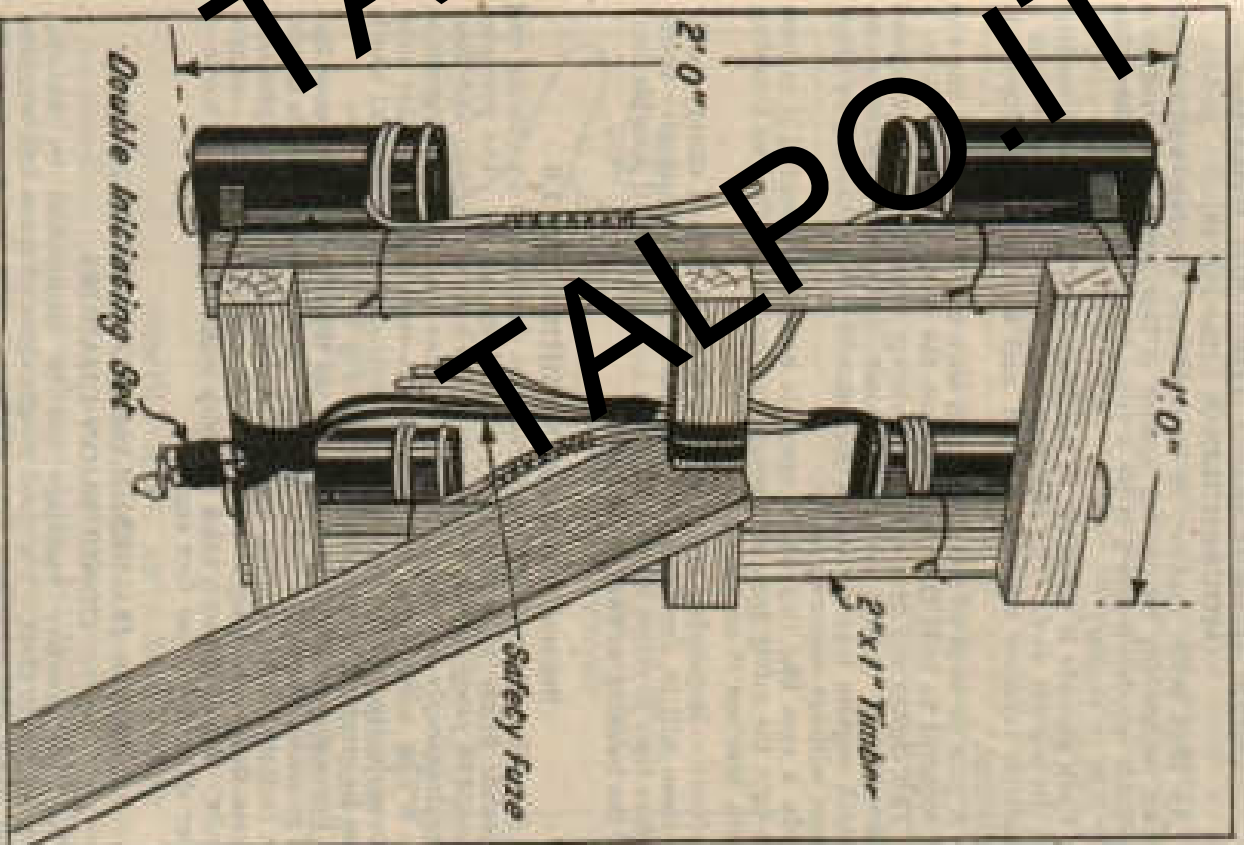


Fig 16. Pole charge for "mountaining"

Small field pieces, howitzers, anti-tank guns, etc., are best demolished with "808" packed inside the breach. If this explosive is not available insert one round of ammunition nose first into the muzzle and load another into the breach. Then fire the gun by remote control using a long cord or long lanyard. The fire should be behind cover. Methods of disabling guns, etc., when explosives are not available are given in Military Training Pamphlet No. 58 (1943).

SECTION 15.—CONSTRUCTION OF GUN PITS

Explosives may be used for loosening up hard or stony soil for the excavation of gun pits, mortar sites, etc. This method is NOT applicable to weapon sites, because the resulting cavern will be too wide and the loosening of the surrounding soil will make the pit useless as refuge from tanks. A rough guide is that each mine should burst about 2 ft with crater and loosen up soil for a depth of 2 ft and a depth of 3 ft. The grenades should be prepared for initiation as already described and buried vertically at about 3 ft centre, the crater leads being brought to the surface and attached to a ring main as already described. Before throwing the handle of the gun pit should be moved out on the ground by cutting a small channel 4 in. deep and the perimeter with a pick. The grenades have been mounted it is important that the excavated soil is put back and well rammed in the hole. Men should retire a least 50 yds and lie down. The head cover before the charge is fired. The dimensions of the various gun pits or mortar sites will be found in the appropriate weapons handling manuals.

SECTION 16.—USE OF THE BANGALORE TORPEDO

1. Description (See Figs 18 and 19) This is a prepared charge for attacking with obstacles. The torpedo now issued to infantry promotion platoons at the Torpedo Bangalore 14-in. Mk 1 (see Fig 19). It consists of a 14-in steel tube filled with HFF and is supplied in 6-ft lengths weighing 14 lb each. Each tube has a male and female end with single spring clip joint so that it can be made up into the length required. A detachable bullet-shaped nose fits on to the front of the torpedo to assist movement along the ground. The maximum length which can be conveniently pushed by hand is 100 ft.

The 2-in torpedo formerly issued weighed 25 lb per ft length. Owing to its weight it has now been replaced by the 14-in. The 2-in torpedoes may still be met in training and is illustrated in Fig 18.

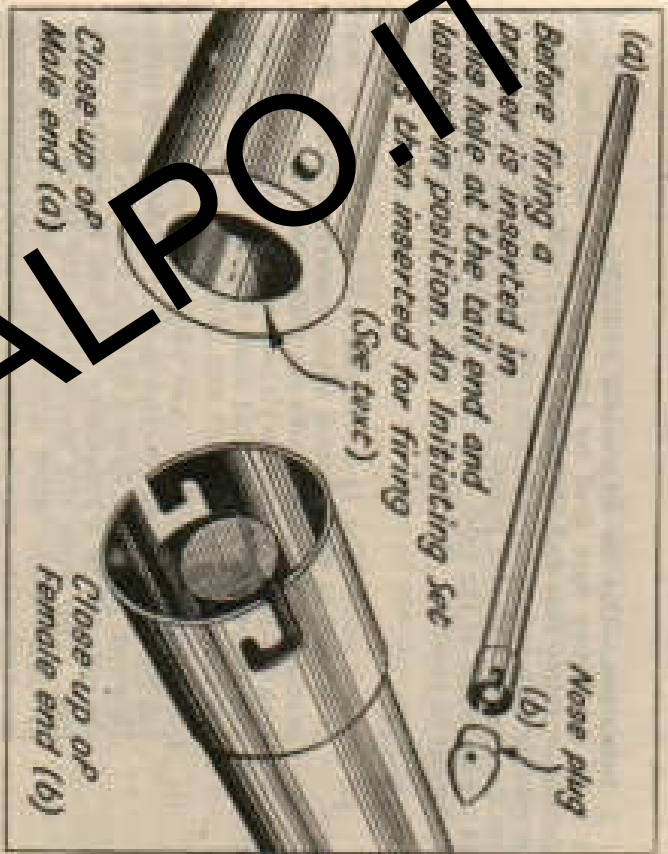


Fig. 18. 2-in. Bangalore torpedoes, Mk. 1

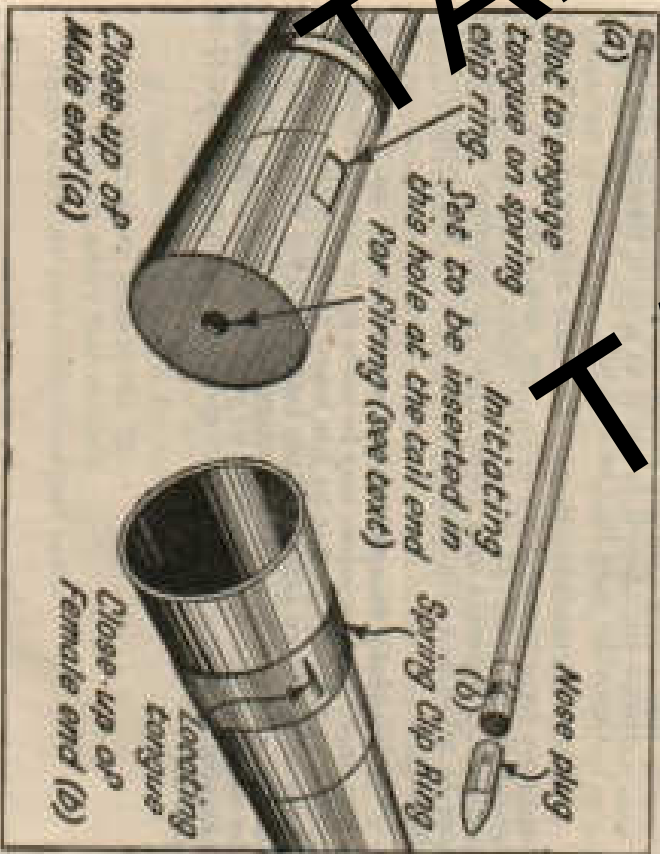


Fig. 19. 14 in. Bangalore torpedoes, Mk. 1