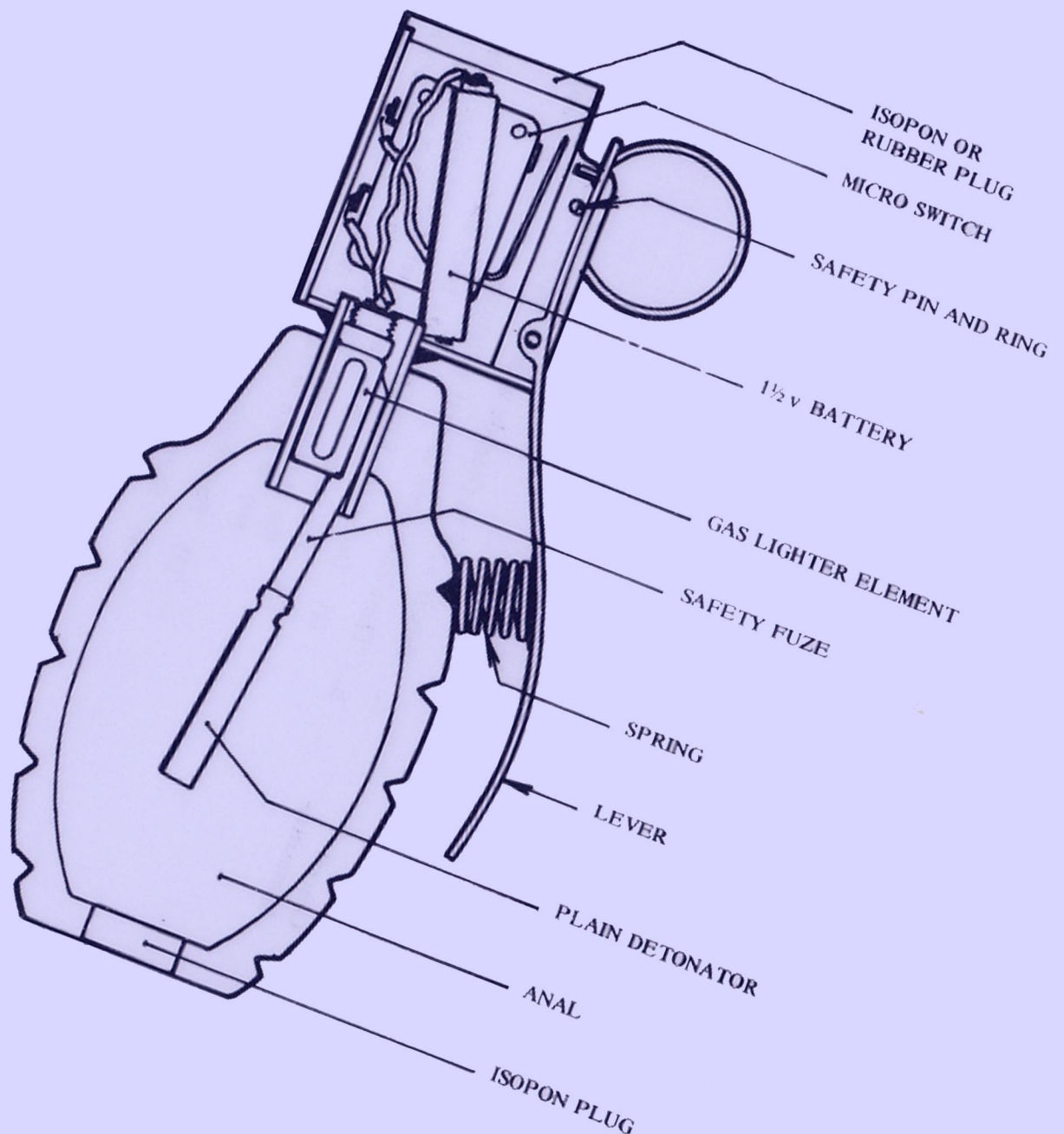


IRA

IMPROVISED

HAND GRENADE DESIGNS



This document is presented purely for academic study purposes only.

Nail Bomb (Typical)	3
Mark 7	4 – 5
Mark 8	6 – 7
Mark 10	8 – 9
Mark 11	10 – 11
Mark 12	12 – 13
Mark 13a	14 – 15
Mark 13b	16 – 17
Mark 13c	18 – 19
Mark 14	20 – 23
Mark 15 (Coffee jar bomb)	24

NAIL BOMB
(Typical)



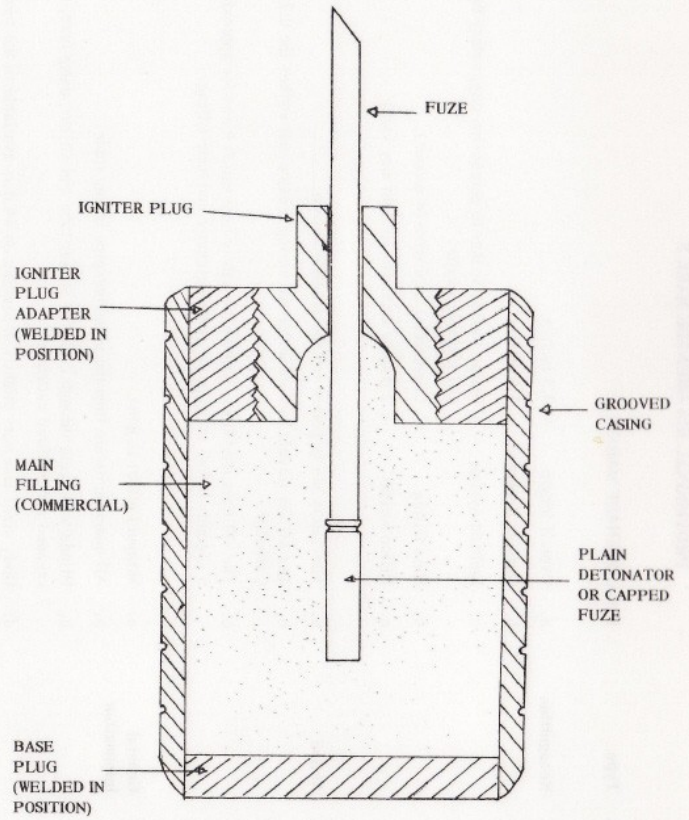
A typical nail bomb – consisting of about half a pound of explosive (normally a commercial type) around which corrugated paper is wrapped. The nails are inserted into the paper and initiation is by a plain detonator and safety fuze to which match heads are taped.

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PROVISIONAL IRA GRENADE MARK 7

1. Type PIRA GRENADE MARK 7
2. Recognition
 - a. Overall length - 4 inches without fuze
 - b. Outside diameter - 2 inches
 - c. Ignition system - Safety fuze to plain detonator
 - d. Main filling - Commercial explosive (100 g)
 - e. Filled weight - 1 pound
3. Action
 - a. The fuze is lit and grenade thrown.
 - b. Fuze burns for approximately 10 seconds before detonation occurs.
4. General Information
 - a. Fragmentation effect is fair.
 - b. Fuze and filling susceptible to damp.
 - c. Waterproofing of the filling is effected by plastic tape wrapped around the fuze in the fuze holder channel.
 - d. Fuze length is approximately 4 inches.

PLATE 1 - PROVISIONAL IRA GRENADE MARK 7

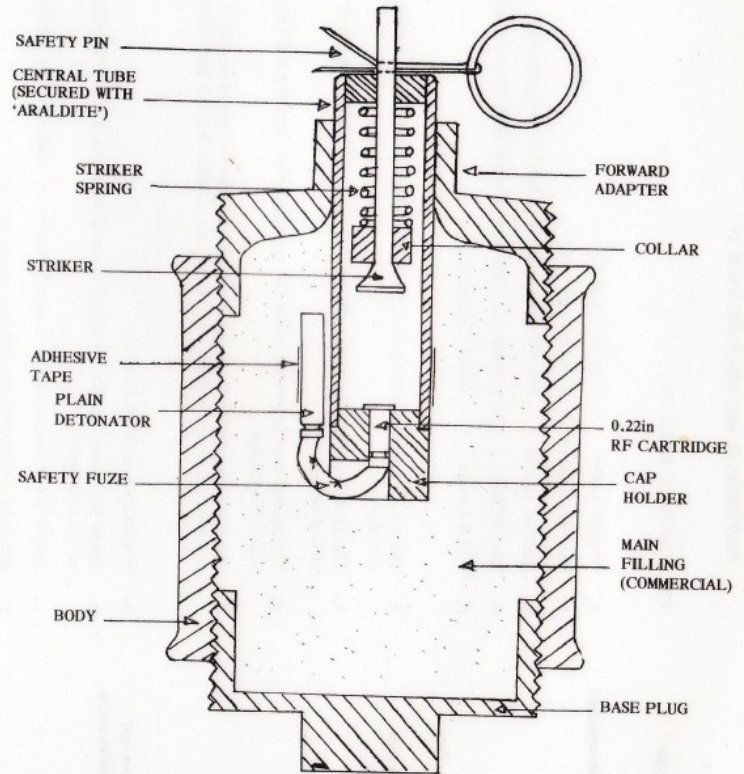


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PROVISIONAL IRA GRENADE MARK 8

1. **Type** PIRA GRENADE MARK 8
2. **Recognition**
 - a. Overall length - 4.5 inches
 - b. Outside diameter - 2.4 inches
 - c. Ignition system - Spring loaded striker to percussion cap, safety fuze and plain detonator.
 - d. Main filling - Commercial explosive (4 ounces).
 - e. Filled weight - 2 pounds maximum (weight may vary)
3. **Action**
 - a. The safety pin is pulled and the grenade thrown.
 - b. The striker travels forward under the spring tension and strikes the 0.22 RF Cartridge.
 - c. The .22 Cartridge fires, ignites the safety fuze which burns for approximately 5 seconds before igniting the plain detonator and main filling.
4. **General Information**
 - a. Shrapnel effect is good.
 - b. All components are from the plumbing/pipe fitting trade.
 - c. Blinds will occur through corroded striker tube and striker, damp fuze, over crimped and misfired cartridge.
 - d. Body sizes may vary slightly depending on what is available to the terrorist.

PLATE 2 - PROVISIONAL IRA GRENADE MARK 8

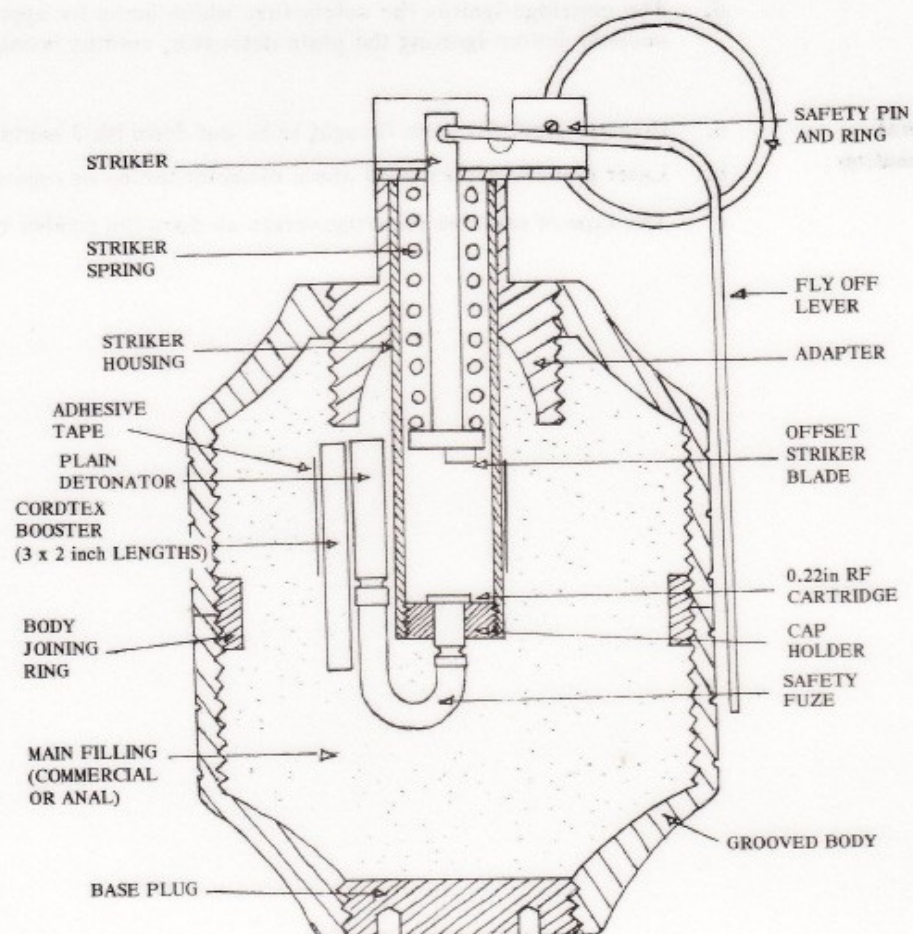
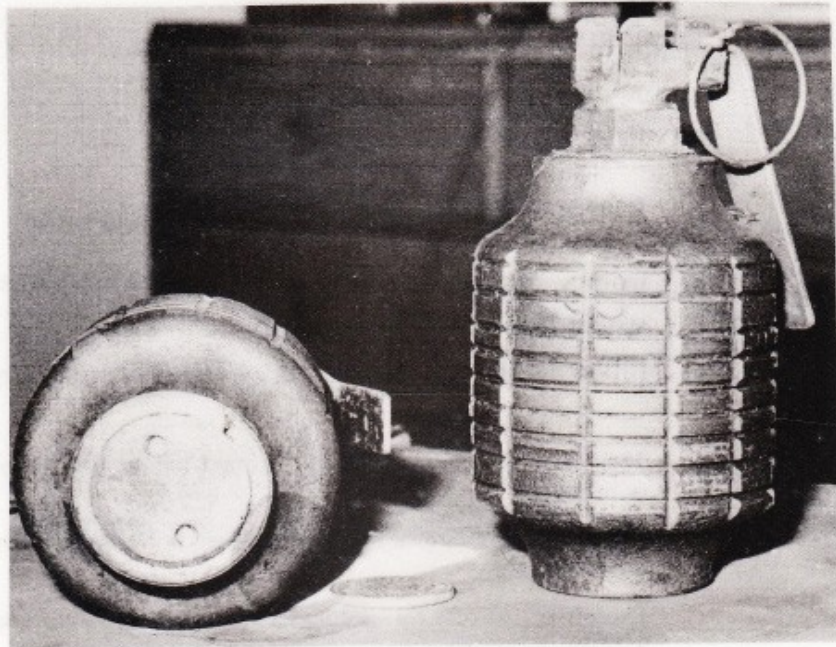


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PROVISIONAL IRA GRENADE MARK 10

1. **Type** PIRA GRENADE MARK 10
2. **Recognition**
 - a. Overall length - 5 inches (approx).
 - b. Outside diameter - 3 inches (approx).
 - c. Ignition system - Fly off lever, similar to British 36m grenade.
 - d. Main filling - Commercial explosive or ammonium nitrate/aluminium (120 g).
 - e. Filled weight - About $\frac{3}{4}$ pound.
3. **Action**
 - a. The fly-off lever is held firmly against the grenade body and the safety pin is removed.
 - b. The grenade is thrown and fly-off lever is thrown off under tension of the striker spring.
 - c. The striker travels forward under the spring tension, striking and firing the 0.22 RF cartridge.
 - d. The cartridge ignites the safety fuze which burns for approximately 5 seconds before igniting the plain detonator, cordtex booster and filling.
4. **General Information**
 - a. Fragmentation effect is good.
 - b. Three lengths of cordtex are taped to the detonator and striker housing to act as a booster.
 - c. Joints other than screw type, are effected by an 'Araldite' type adhesive.
 - d. All body components are obtained commercially.
 - e. This grenade may be found with a flat base.

PLATE 3 - PROVISIONAL IRA GRENADE MARK 10

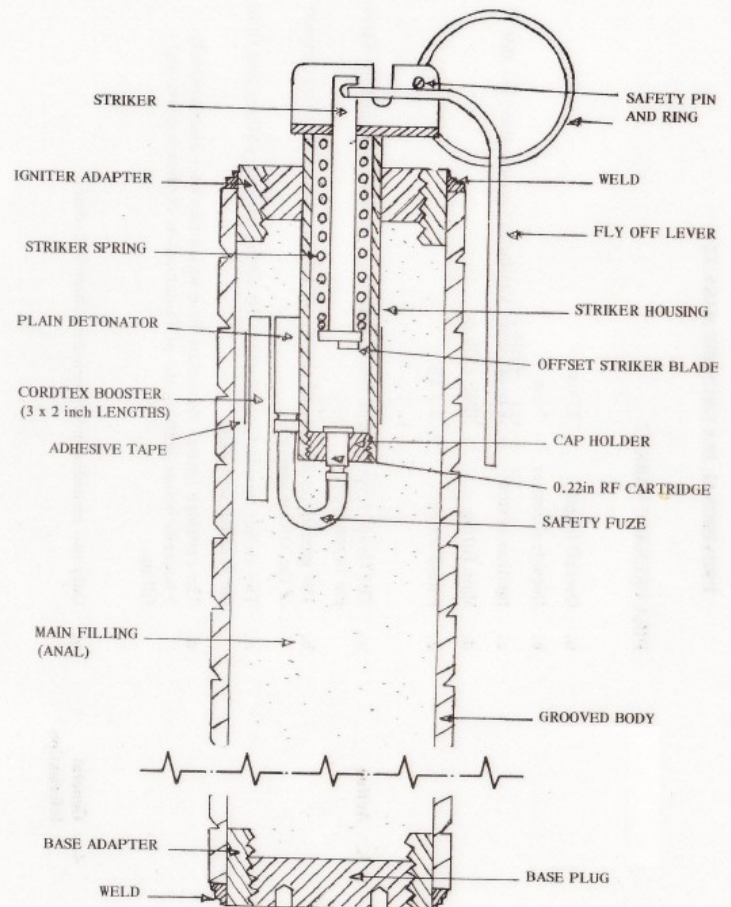
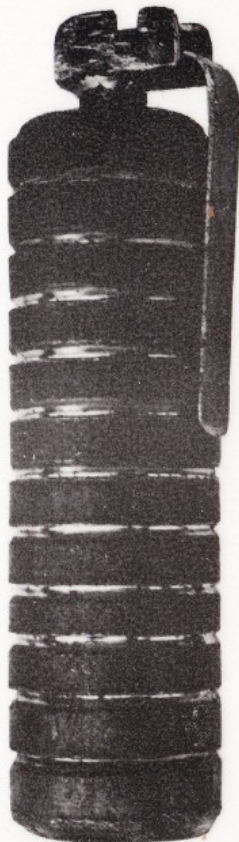


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PROVISIONAL IRA GRENADE MARK 11

1. **Type** PIRA GRENADE MARK 11
2. **Recognition**
 - a. Overall length - (1) 6½ inches
(2) 8 inches
 - b. Outside diameter - (1) 48mm) see item 4b below
(2) 60mm)
 - c. Ignition system - Fly off lever similar to Grenade Hand No 36M.
 - d. Main filling - HME (250 g).
 - e. Filled weight - 2½ pounds approximately (may vary).
3. **Action**
 - a. The fly-off lever is held firmly against the grenade body and the safety pin is removed.
 - b. The grenade is thrown and fly-off lever is thrown off under tension of the striker spring.
 - c. The striker travels forward under the spring tension, striking and firing the 0.22 RF cartridge.
 - d. The cartridge ignites the safety fuze which burns for approximately 5 seconds before igniting the plain detonator, cordtex booster and filling.
4. **General Information**
 - a. Original grenades were thought to be cut down Mk 3 mortar bomb bodies.
 - b. Later grenade bodies used 48mm diameter tubing as opposed to 60mm.
 - c. The type of machine grooving varies as does the number of grooves.

PLATE 4 – PROVISIONAL IRA GRENADE MARK 11

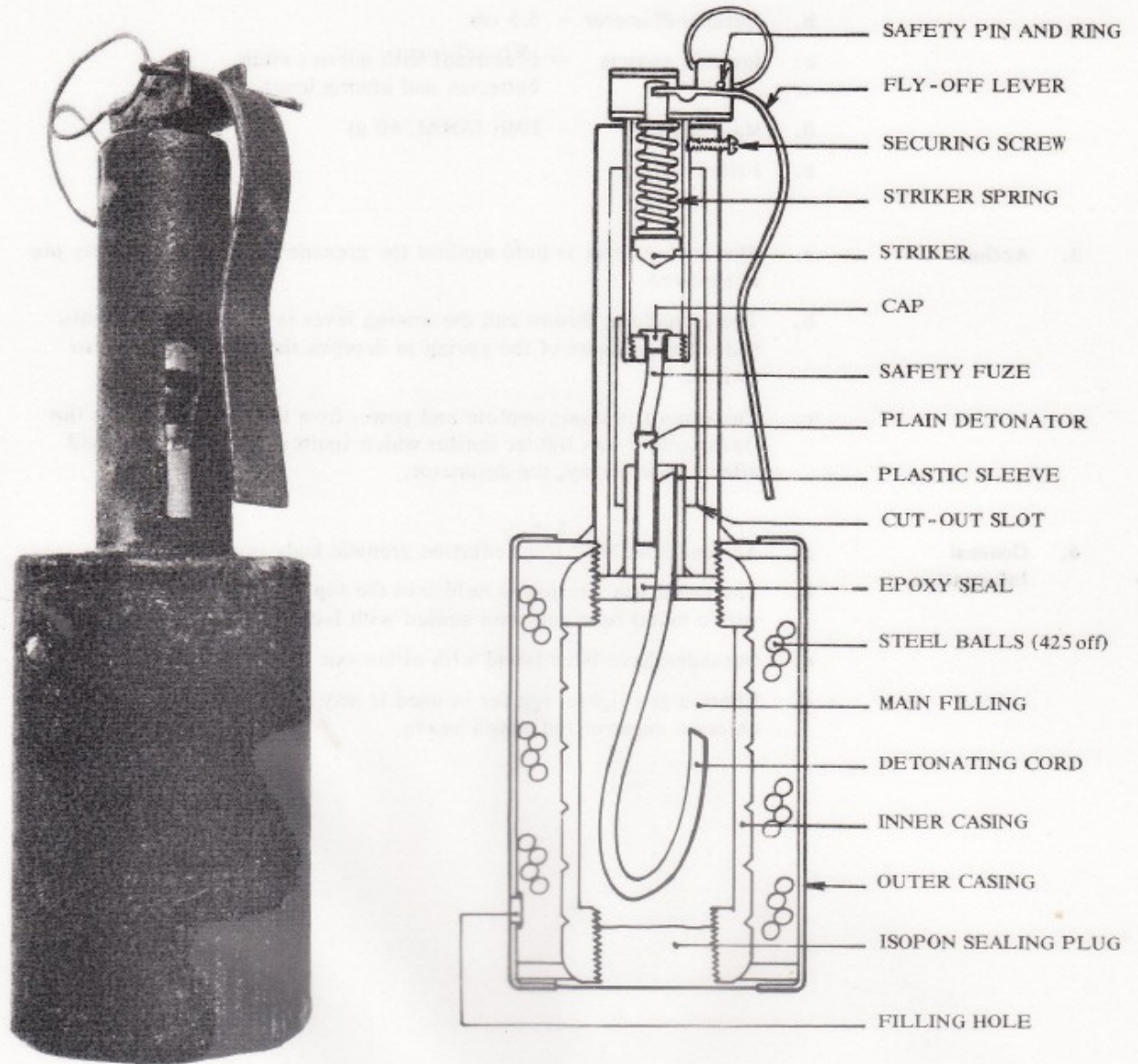


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PROVISIONAL IRA GRENADE MARK 12

1. **Type** PIRA GRENADE MARK 12
2. **Recognition**
 - a. Overall length - 25 cm
 - b. Outside diameter - 7 cm
 - c. Ignition system - Fly off lever similar to Grenade Hand No 36M
 - d. Main filling - HME (100 g)
 - e. Filled weight - 2.5 kg
3. **Action**
 - a. The fly-off lever is held firmly against the grenade body and the safety pin is removed.
 - b. The grenade is thrown and the fly-off lever is thrown off under tension of the striker spring.
 - c. The striker travels forward under the spring tension, striking and firing the 0.22 RF cartridge.
 - d. The cartridge ignites the safety fuze which burns for approximately 5 seconds before igniting the plain detonator, cordtex booster and filling.
4. **General Information**
 - a. Only two grenades have been encountered to date.

PLATE 5 - PROVISIONAL IRA GRENADE MARK 12

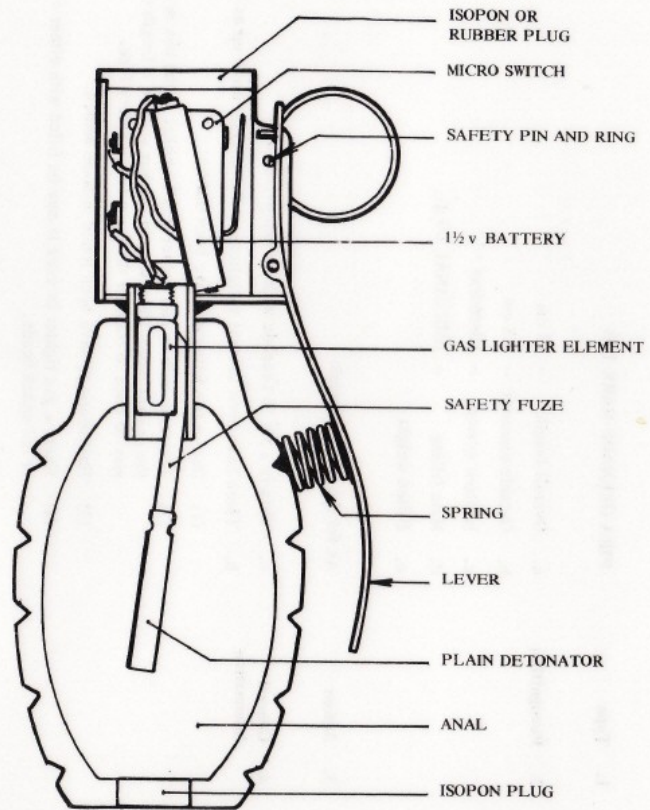


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PROVISIONAL IRA GRENADE MARK 13

1. Type PIRA GRENADE MARK 13
2. Recognition
 - a. Overall length - 13 cm
 - b. Outside diameter - 5.5 cm
 - c. Ignition system - Electrical with micro switch, batteries and arming lever
 - d. Main filling - HME (ANAL 60 g)
 - e. Filled weight
3. Action
 - a. The arming lever is held against the grenade body and the safety pin is removed.
 - b. The grenade is thrown and the arming lever is released and pivots under the pressure of the spring to depress the lever of the micro switch.
 - c. The circuit is now complete and power from the batteries heats the flash bulb or gas lighter igniter which ignites the safety fuse and after a short delay, the detonator.
4. General Information
 - a. An American Mk 2 fragmentation grenade body is used.
 - b. The metal box section is held into the top of the grenade body with a metal tube and then sealed with Isopon.
 - c. Grenades have been found with either one or two batteries.
 - d. Where a gas lighter igniter is used it may be filled with either chlorate sugar or red match heads.

PLATE 6 - PROVISIONAL IRA GRENADE MARK 13

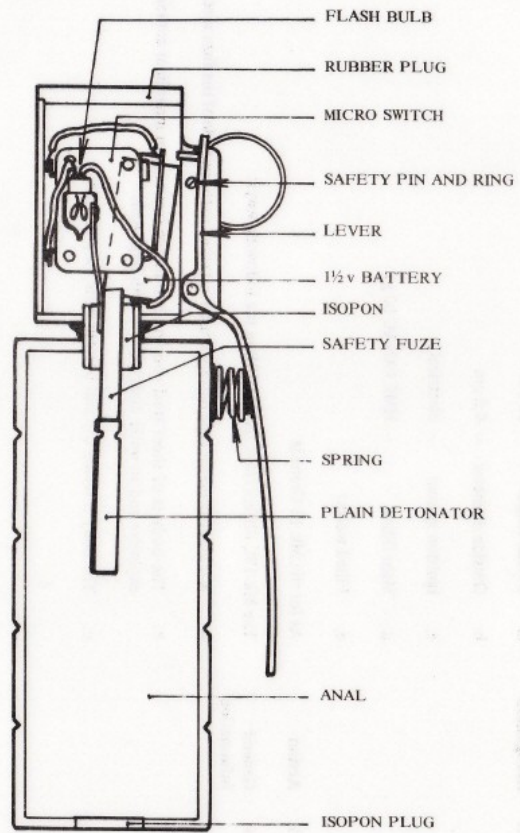


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PROVISIONAL IRA GRENADE MARK 13B

1. **Type** PIRA GRENADE MARK 13B
2. **Recognition**
 - a. Overall length - 18 cm
 - b. Outside diameter - 4.8 cm
 - c. Ignition system - electrical
 - d. Main filling - HME (ANAL 60 g)
 - e. Filled weight
3. **Action** As for the Mk 13 Grenade
4. **General Information**
 - a. This is a Mk 13 Grenade with an improvised body
 - b. There have been several variations in the internal make up as follows:
 - (1) One or two batteries have been used.
 - (2) The flash bulb or gas lighter may be either in the box section or the central tube. When it is in the box section a length of PIC may be used to transfer the flash to the safety fuse.
 - (3) Ball bearings have been found in some bodies.
 - (4) Where a gas lighter is used it may be filled with either chlorate or red match heads.

PLATE 7 - PROVISIONAL IRA GRENADE MARK 13B



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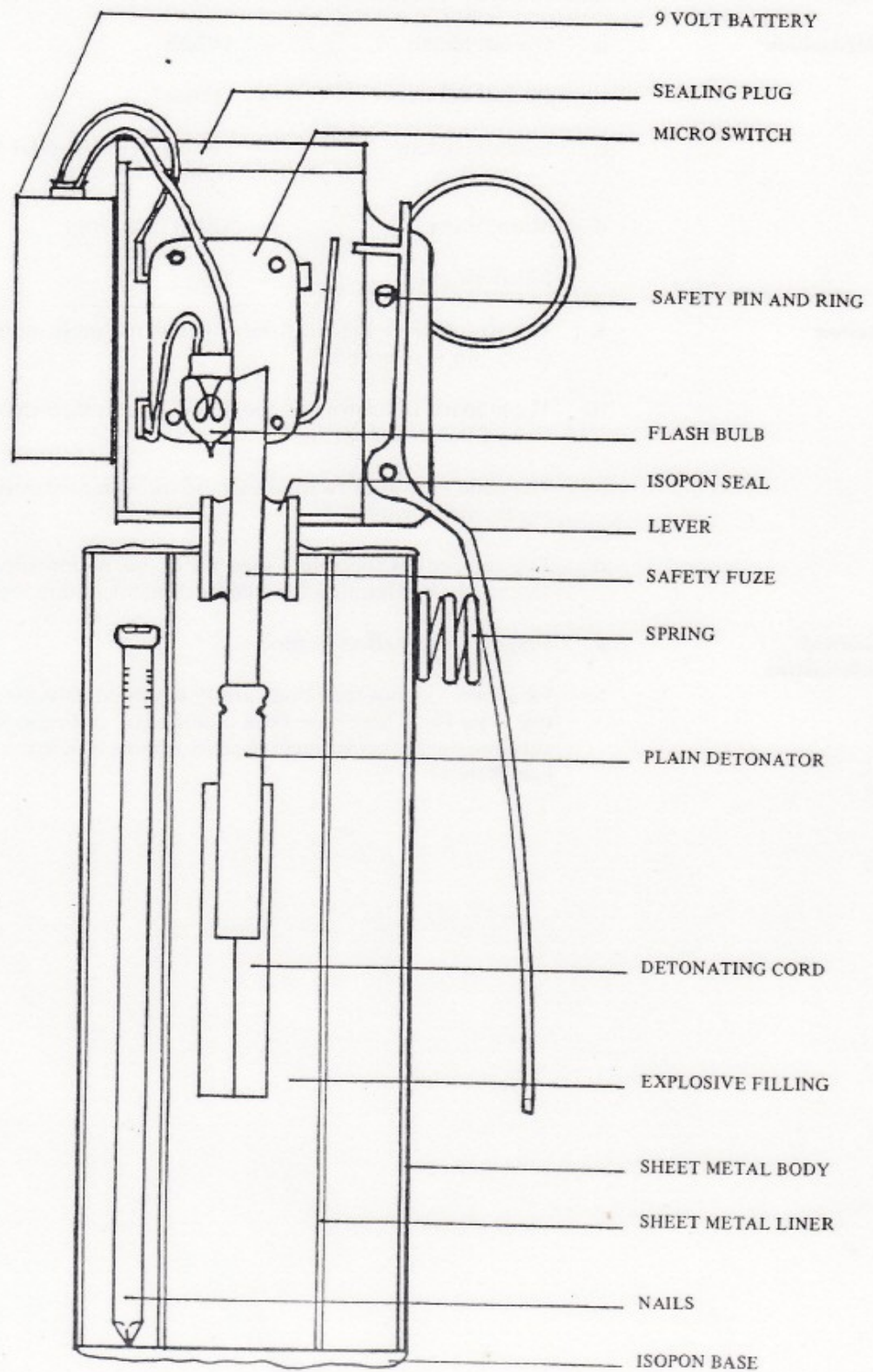
PROVISIONAL IRA GRENADE MARK 13C

1. **Type** PIRA GRENADE MARK 13C
2. **Recognition**
 - a. Overall length — 18 cm
 - b. Outside diameter — 4.8 cm
 - c. Ignition system — electrical
 - d. Main filling — HME (ANAL 60 g)
 - e. Filled weight
3. **Action** As for the Mk 13 Grenade
4. **General Information**

The Mk 13C differs from the Mk 13B in the following ways:

 - a. A 9 volt calculator type battery is used, attached to the outside of the fuze mechanism.
 - b. The body is of sheet steel construction in two sections; an inner liner containing the explosive and an outer body packed with large nails.
 - c. The body is sealed top and bottom with 'Isopon' filler.

PLATE 8 - PROVISIONAL IRA GRENADE MARK 13C



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Amdt 8/Jan/88

PROVISIONAL IRA GRENADE MARK 14

- | | |
|------------------------|--|
| 1. Type | PIRA GRENADE MARK 14 |
| 2. Recognition | <p>a. Overall length — 14.3cm</p> <p>b. Overall diameter — 5.0cm</p> <p>c. Ignition system — Fly-off lever similar to Grenade Hand No 36M</p> <p>d. Main filling — SEMTEX (120g)</p> <p>e. Filled weight — 765g</p> |
| 3. Action | <p>a. The fly-off lever is held firmly against the grenade body and the safety pin is removed.</p> <p>b. The grenade is thrown and the fly-off lever is thrown off under tension of the striker spring.</p> <p>c. The striker travels forward under the spring tension striking and firing the firing cap.</p> <p>d. The cap ignites the safety fuze which burns for approximately 3 seconds before igniting the plain detonator and main filling.</p> |
| 4. General Information | <p>a. Fragmentation effect is good.</p> <p>b. Inside the smooth steel body are 19 modified galvanised steel rings (see Plate 10). These have been modified by cutting grooves at intervals into their inner surfaces to provide more efficient fragmentation (see Plate 11).</p> |

PLATE 9 — PROVISIONAL IRA GRENADE MARK 14

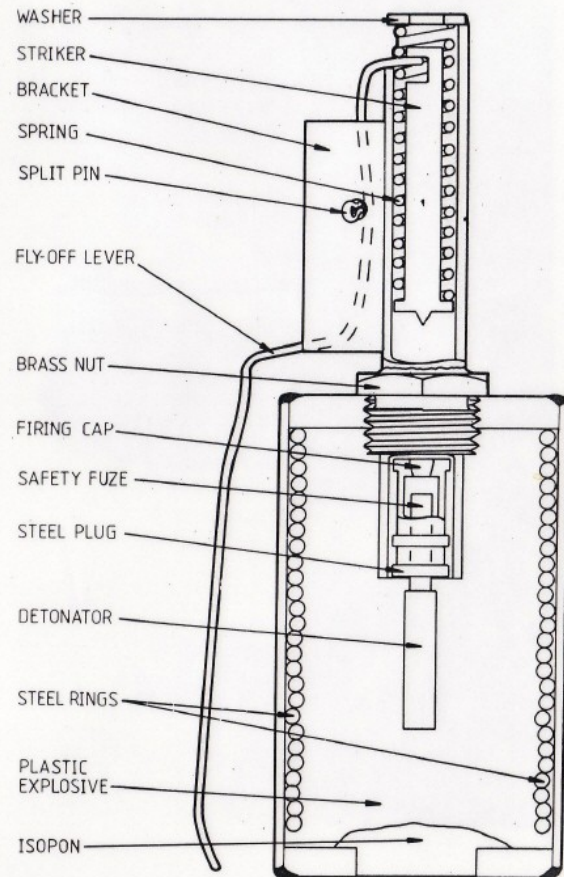
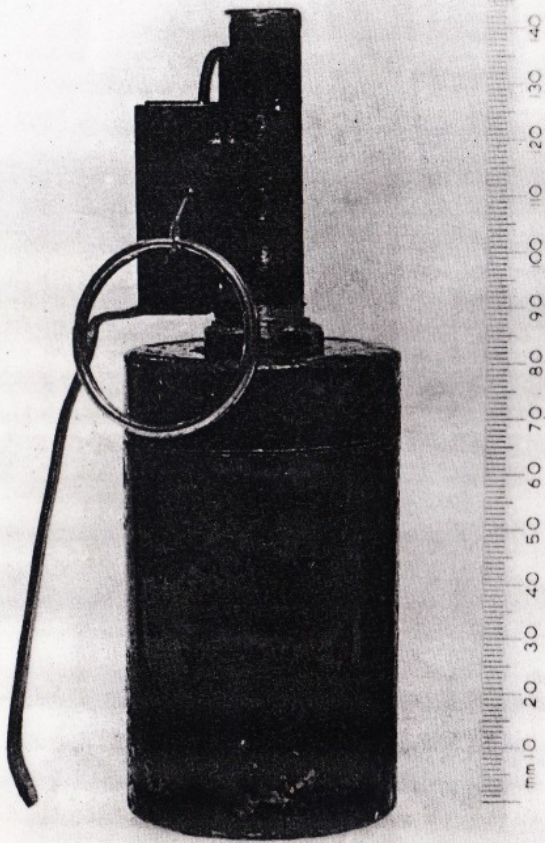


PLATE 10 — PROVISIONAL IRA GRENADE MARK 14

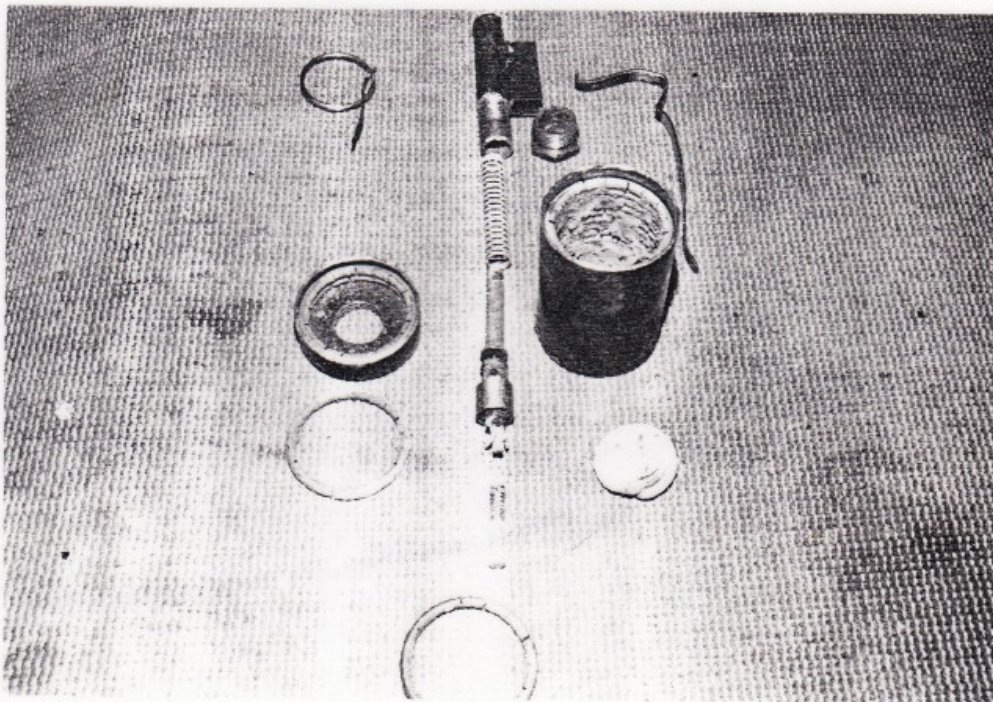
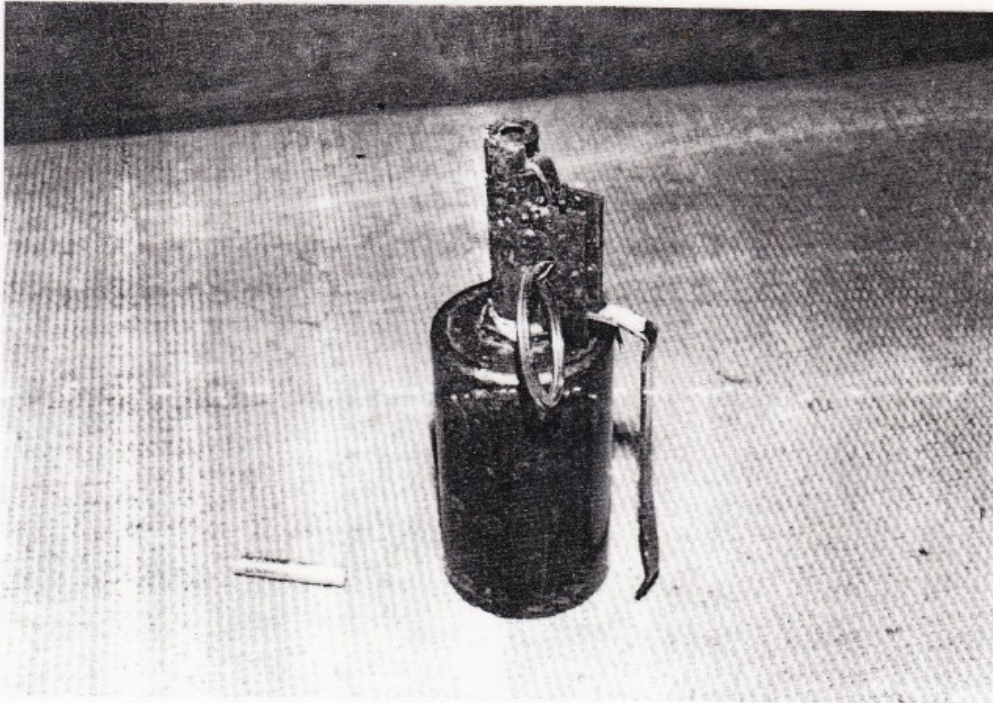
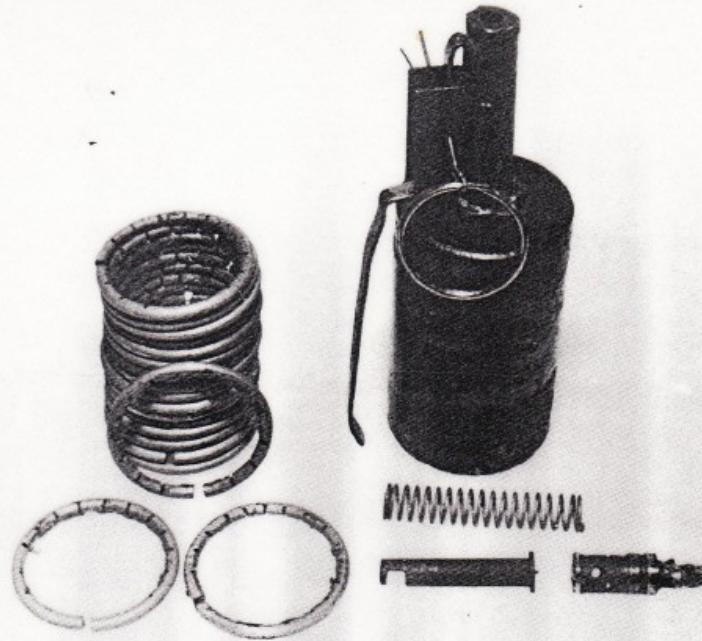
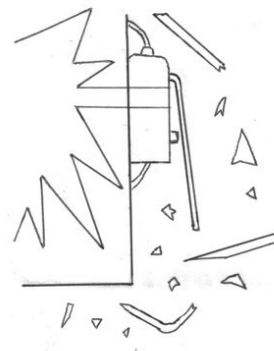
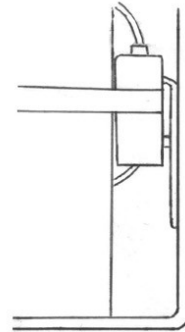


PLATE 11 — PROVISIONAL IRA GRENADE MARK 14



PROVISIONAL IRA GRENADE MARK 15 'COFFEE JAR BOMB'



A simple and highly effective design, the MK-15 uses a glass coffee jar to house its electrical firing circuit, 500g of Semtex explosive (contained within a section of pipe) and shrapnel, usually in the form of one pence coins or nails. The device usually contains an arming switch mounted on the lid.

Inside it a microswitch is installed so that its operating arm is held down in the closed position by the inner wall of the jar. When thrown, the glass jar shatters allowing the arm to be released which completes the electrical flow to the detonator.

The MK-15 and similar devices have been used in up to seventy-three attacks since 1991 and continue to remain one of the most common improvised hand grenades seized.