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# DEMOLITION BOMB

## 100 LB., MK. I

### SERVICE HANDBOOK

PREPARED IN THE OFFICE OF  
THE CHIEF OF ORDNANCE

April, 1920



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The following publication, entitled "Demolition Bomb, 100 lb., Mk. I," is published for the information and guidance of all concerned, superseding such portions of Document No. 724 as refer to this bomb.

[062.1, A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

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## DEMOLITION BOMB, 100 LB., MK. I.

### TARGETS.

The 100-pound bomb, details of which are given below, is one of the smaller demolition bombs. It is used for the destruction of houses, small railroad stations, munition trains and dumps, rail and road transport, minor fortifications, and for the temporary disorganization of rail traffic by damage to vulnerable points on the right of way. The bomb, though nearly half of its weight is high explosive, is not large enough for the successful attack of large structures.

TABLE OF CHARACTERISTICS.  
DEMOLITION BOMB, 100 LB., MK. I.

<i>Weights:</i>	Pounds.
Total weight (loaded and fused).....	100
Weight of empty casing.....	52
Weight of explosive (density 1.33).....	48
<i>Materials:</i>	
Casing.....	Steel.
Explosive—Explosive charge.....	50-50 or 80-20 amatol, T. N. T., or lyconite.
Booster charge.....	Powdered T. N. T. and tetryl.
Detonator.....	Fulminate of mercury and tetryl.
<i>Dimensions:</i>	Inches.
Over-all length (fused).....	49.5
Maximum diameter.....	7.9
Maximum width across fins.....	9.9
Side of square containing fins.....	7
Thickness—Front casing.....	9/32
Rear casing.....	1/8
Length of arming wire below loop.....	28
Length of arming wire above loop.....	21.5
<i>Fusing:</i>	
Nose.....	None.
Tail—Bomb fuse.....	Mark I or Mark III.
Detonator (integral with above).....	Inherent short delay.
Bomb racks, external:	
2 bombs horizontally (under fuselage or wings).....	Mark XVI.
2 bombs horizontally (under fuselage or wings).....	Mark XVII.
2 bombs horizontally (20.375-inch straps).....	Mark V.

NOTE.—This bomb was formerly called "High Capacity Drop Bomb, Mark I."

# DEMOLITION BOMB, 100 lb., Mk. I

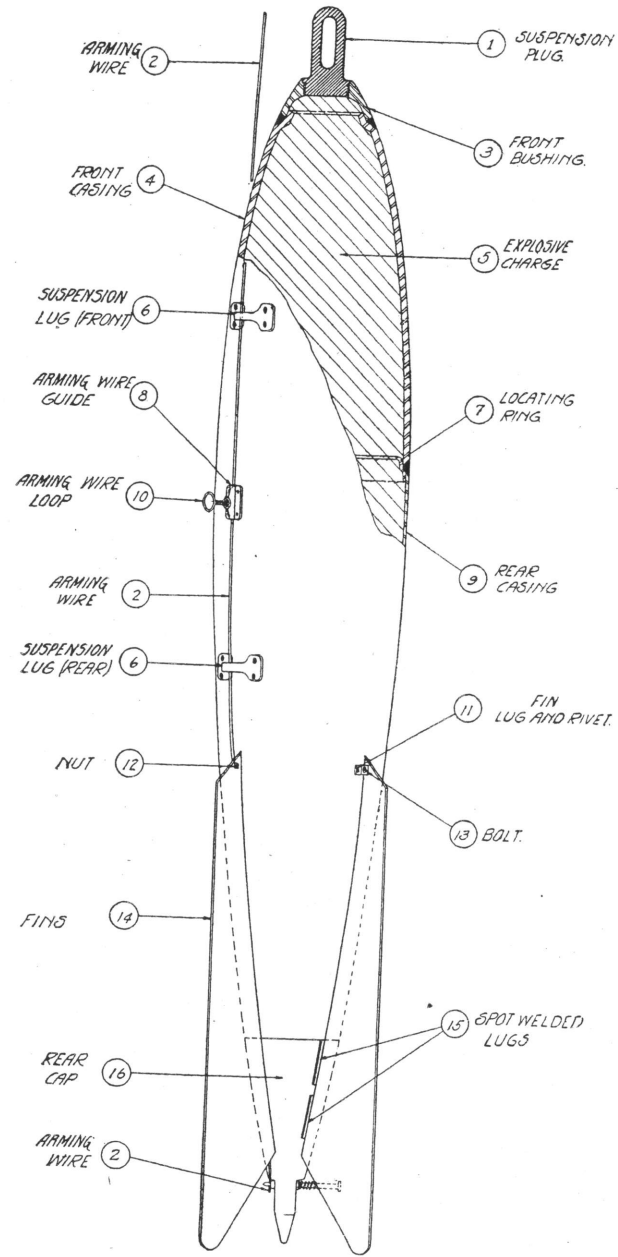


FIG. 1



# BELLY BAND, Mk. IV

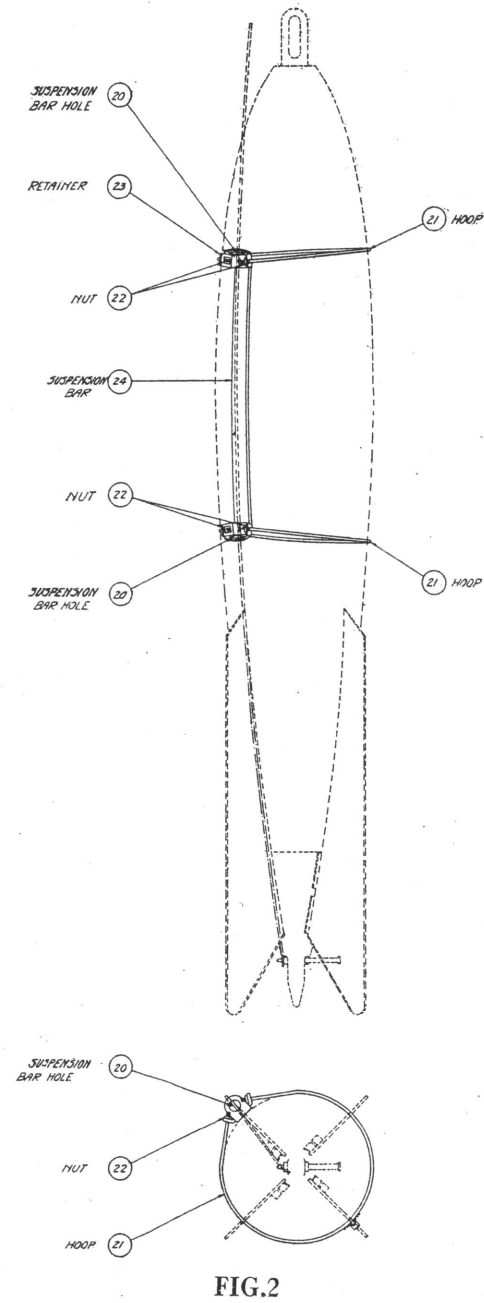


FIG. 2

### BOMB FUSE MARK I

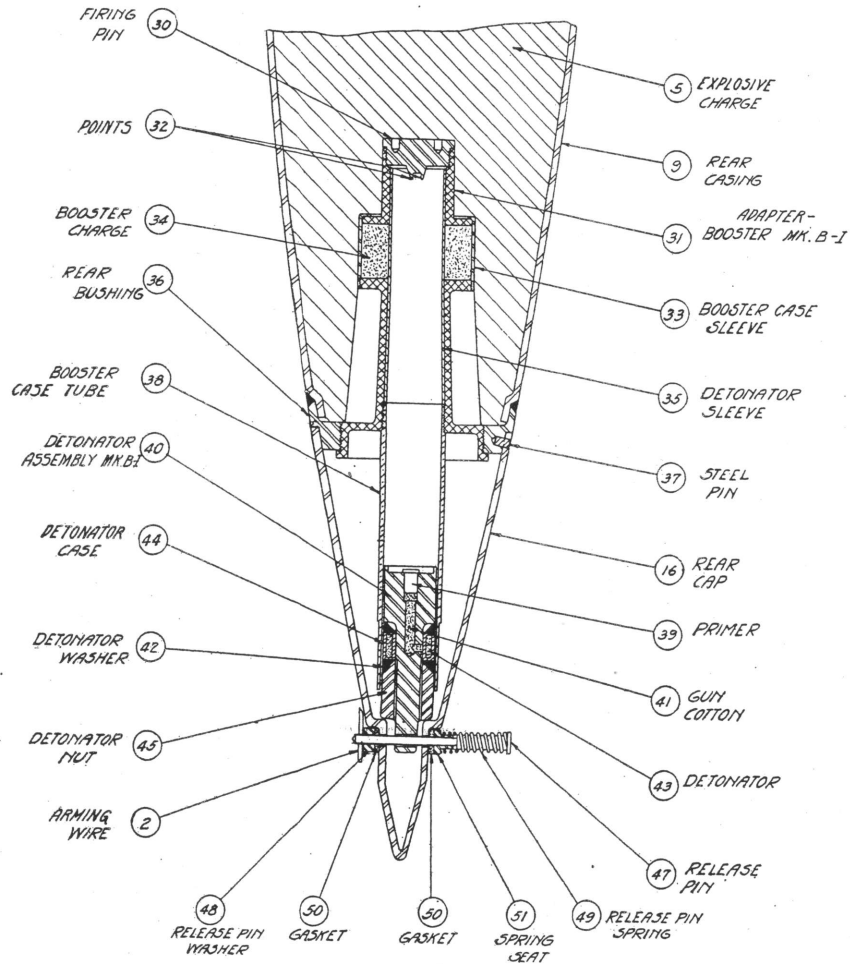


FIG. 3

### BOMB FUSE MARK III

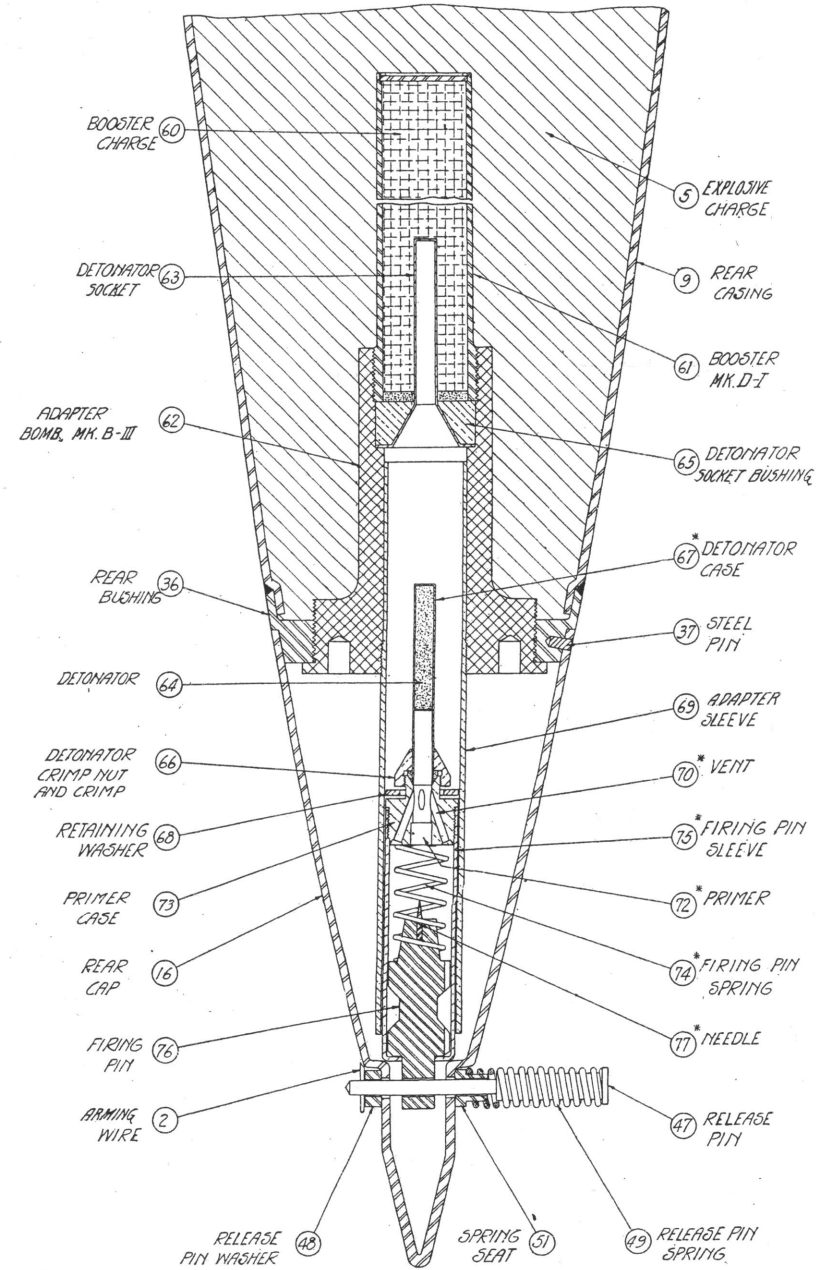


FIG. 4

NOTE.—Assembly of parts marked (\*) is Bomb Fuse, Mk. III.

## DESCRIPTION.

The 100 lb. bomb is issued with two different types of tail fuse—the bomb fuses, Marks I and III. The first 32,000 manufactured are equipped with the Mark I fuse, as shown in figure 3; in subsequent manufacture the Mark III was used exclusively. Further, the first 17,000 were not equipped with suspension lugs and must be used with belly bands, Mk. IV, as shown in figure 2.

The bomb is shown in detail in the above figures and the nomenclature of the parts indicates their functions. Together with the table of characteristics, these will serve better to describe the construction of the bomb than would a verbal description.

## OPERATION.

The bomb, when carried either from the nose or horizontally, gradually approaches a vertical position, nose down, after release. This permits the movable parts of the bomb fuse to slide forward into the position for impact (since the release pin drops off on withdrawal of the arming wire). The explosive charge is detonated by the booster charge detonation after a short delay inherent in all types of tail fuse. Retardation of the bomb itself by impact is necessary to cause a tail fuse to function.

The Mark I bomb fuse (see fig. 3) operates as follows: Upon withdrawal of the arming wire (2) the spring (49) ejects the release pin (47) and thereby liberates the detonator assembly (40). This slides down in the booster case tube (38) and seats—cushioned by trapped air—within the detonator sleeve (35) with the primer (39) resting on the points (32). Impact of the bomb causes the detonator assembly to prime itself against the points of the firing pin by momentum. The flash of the primer ignites the guncotton (41) and thereby causes the detonation of the fulminate of mercury (43) of the detonator. Since at this time the detonator is opposite the booster charge (34) the latter is detonated, causing the detonation of the explosive charge.

The Mark III bomb fuse (shown in fig. 4) operates in a slightly different manner. Upon ejection of the release pin (47) the firing-pin sleeve (75) and its assembled parts, which constitute the fuse, slide forward with the up-tilting of the bomb. On the seating of the detonator case (67) in the detonator socket (63) the washer (68) slips into the space at the forward end of the adapter sleeve (69) and prevents the rebound of the moving parts. On impact, the retardation of the bomb body causes the firing pin (76) to strike the primer (72) with its needle (77), overcoming by its momentum the

light spring (74). The flash from the primer detonates the detonator (64). Since this latter is within the booster, the booster charge is detonated, causing the detonation of the explosive charge.

## MARKING AND PACKING.

Bombs are marked in two different ways. In general, in earlier manufacture the exterior of the bomb was painted a dark olive-drab color with a black band to indicate the position of the center of gravity. Under this band is marked in black letters the manufacturer's name, the designation of the bomb, the bomb number and lot, and the initials of the inspector.

Bombs of more recent production in general are painted a dull yellow, indicating that they contain high explosive. Each bomb is stenciled or stamped just ahead of the maximum diameter with the manufacturer's initials, lot number, date, and inspector's initials. The designation of the bomb is stenciled just above the manufacturer's initials. To the rear of the maximum diameter are stenciled the loader's initials, lot number, date, and the kind of explosive.

Each bomb is packed in an individual wooden shipping box. The bomb fuse is shipped within the bomb, except that the detonator assembly or firing-pin assembly is packed in a tin container placed in a special compartment of the box.

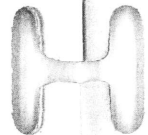
## PREPARATION FOR USE.

## STORAGE IN THE FIELD DURING ACTIVE OPERATIONS.

Bombs when received at the flying field are not to be removed from their boxes until shortly before use. The supply on hand should be piled in two or more lots, each one of which should contain its proportion of each type of bomb on hand. No bombs should be stored at less than 200 yards from a hangar, 500 yards from a village, a camp, or a billet, or 1,000 yards from a hospital.

Different sizes and types of bombs should be kept in separate piles in each lot, and lots should be separated by 50 yards or more. The boxes of bombs should be piled in pyramids, with the lowest layer at least 4 inches off the ground. Piles should be covered with tarpaulins on light timber frames to protect them from rain and sun. Temperature above 100° F. often causes exudation which renders high explosive filling very sensitive and dangerous. Good circulation of air around the boxes is important.

Bombs should never be stored underground or in substantial buildings where the confinement will tend to exaggerate the effects of an explosion.



Fuses, detonators and primers when removed from boxes or from bombs should be stored with special care against dampness, heat and shock. A small hut with good ventilation is desirable for this purpose.

Accumulation of empty boxes and the like near the bomb storage should be especially avoided. Incendiary bombs, pyrotechnics and other inflammable material should be kept completely away from stored bombs or fusing components.

Fused bombs must never be stored. When bombs are not dropped during a flight, the fusing components must be removed as soon as the bombs are taken from the airplane and must be returned to their proper storage areas.

#### BEFORE LOADING ONTO BOMB RACK.

The following instructions are to guide the preparing of bombs for loading onto the bomb racks:

- (1) Remove the rear cap and its assembled fins.
- (2) Test the release pin, and free from rust, paint, and any matter that will impede its function.
- (3) Remove the arming wire from the hole in the release pin, holding the head of the latter to prevent its ejection and loss.
- (4) Place the arming wire in the arming-wire guide, loop in position and straight ends free, except in the case of the Mark V bomb rack. With this type the arming wires are placed on the rack first and fed into the arming-wire guide as the bomb is raised.
- (5) With the bomb fuse, Mark III, remove the cotter pin retaining the firing pin just before securing the latter by the release pin into place in the rear cap. GREAT CARE must be exercised at this point to AVOID ACCIDENT.
- (6) Place the detonator assembly (for Mark I bomb fuse) or the firing-pin assembly (for Mark III bomb fuse) in position in the rear cap.
- (7) Replace the release pin, spring, spring seat, and washers so that the former holds the firing-pin assembly or the detonator assembly in position. Hold the release pin in place temporarily by a piece of wire through the hole for the arming wire.
- (8) With the bomb horizontal, replace the rear cap, GUIDING the firing-pin assembly or the detonator assembly CAREFULLY into its tube or sleeve.
- (9) Holding the release pin, replace the temporary wire by the free end of the arming wire, taking care that the latter is free from sharp bends.
- (10) Place the bomb onto the rack in accordance with the instructions laid down in the handbook referring to the type of bomb rack used.

#### UNLOADING BOMBS FROM BOMB RACK.

Where bombs are not dropped and are returned to the flying field on the airplane, they should be removed, disassembled, and the components placed in storage. In disassembling, the following instructions should be observed:

(1) Holding the head of the release pin, remove the arming wire from its hole in the pin and replace by a cotter pin or a wire. In any case, the COTTER PIN should be SPREAD or the WIRE BENT to avoid its falling out while handling.

(2) Release the bomb from the rack, supporting and catching it to prevent it from striking the ground. Care should be used to see that the CORRECT BOMB IS SUPPORTED where several bombs are released by the same handle.

(3) Standing the bomb on its nose, remove the rear cap from the bomb, taking great care that the DETONATOR RECEIVES NO SHOCK in the process.

(4) Holding the release pin, withdraw the cotter pin or wire from the hole in the former. Holding the firing-pin assembly or the detonator assembly in one hand, withdraw the release pin until the former is free; remove it and place it GENTLY on a clean board, cloth, or paper.

(5) Replace the release pin and washer and replace the cotter pin or wire in its hole.

(6) Replace the cotter pin in position to retain the firing pin of the detonator assembly (bomb fuse, Mark III, only).

(7) Remove the firing-pin assembly or detonator assembly to the detonator storage inclosure. Replace the assembly in its tin and seal the lid with tape. Place the rear cap and the bomb body again in storage.