July 12, 1949. F. SHORT 2,476,117

ANTIMINE BOMB

Filed Oct. 21, 1944

Fig - 3 -

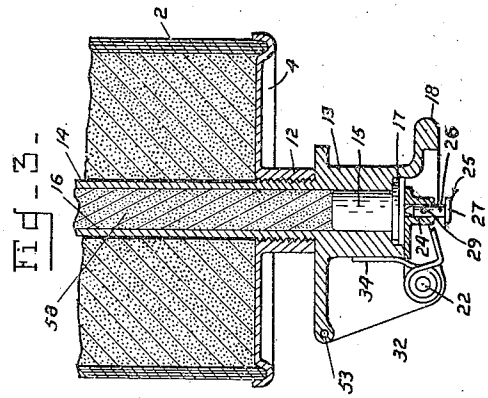


Fig - 5 -

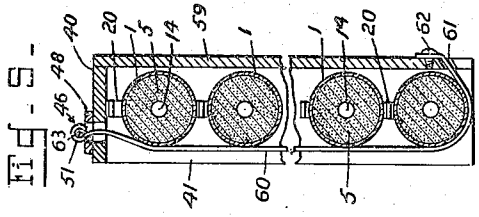


Fig - 2 -

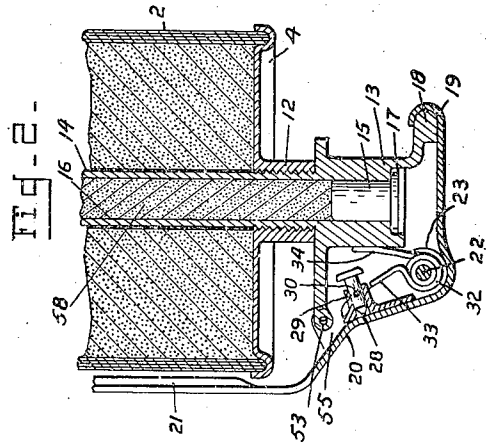


Fig - 4 -

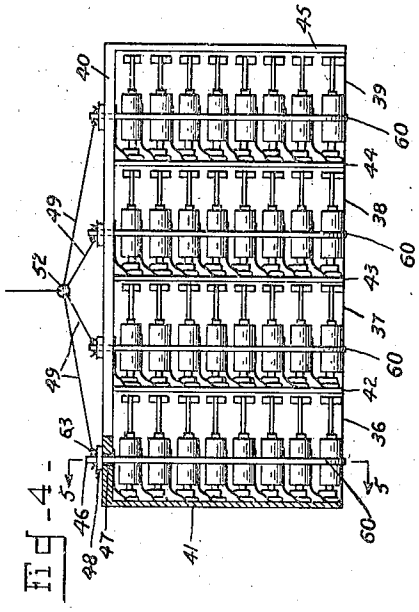
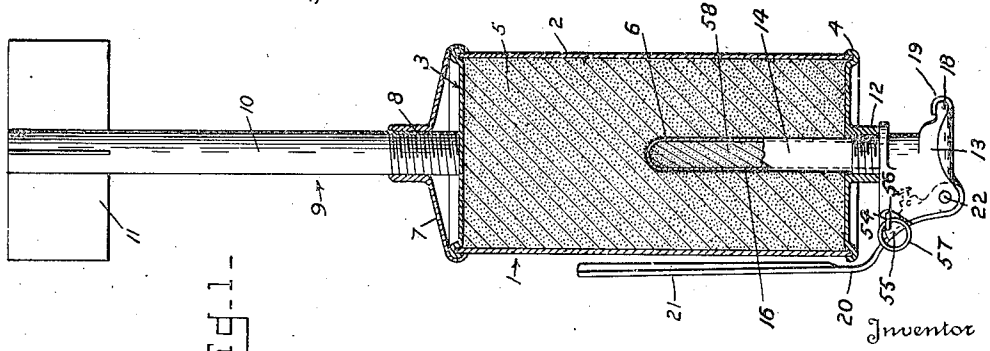


Fig - 1 -



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ANTIMINE BOMB

Frank Short, Canton Center, Conn.

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2 Claims. (Cl. 102—2)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates to methods of clearing mine fields.

A purpose of the invention is to provide a means of clearing mine fields quickly and with safety.

Another purpose is to provide a bomb adapted for use in clearing mine fields, which can be dropped from an airplane onto the mine field in sufficient quantities for the sympathetic detonation of a great number of mines at the same time.

Other purposes will become apparent from the following description.

In this invention it is proposed to clear enemy mine fields by dropping a large number of relatively small percussion operated bombs on to the mine fields, causing a large number of closely spaced blasts, whereby the mines are exploded by sympathetic detonation. A standard offensive hand grenade is of a size adaptable for this purpose, and a great many may be clustered together for dropping by airplane. Since the offensive type of hand grenade has no heavy iron casing and does not explode into fragments of any great weight, the method would cause a minimum risk to advancing friendly personnel and tank equipment.

In the drawings,

Figure 1 is a sectional view of an anti-mine bomb,

Figure 2 is sectional view of the lower portion of the bomb showing the fuse in safe position,

Figure 3 is a sectional view of the lower portion of the bomb, showing the fuse in armed position,

Figure 4 is a front elevation of a discharge rack containing a number of the bombs, and

Figure 5 is a sectional view taken along the line 5—5 of Fig. 4.

In Figure 1, a grenade body 1 cylindrical in shape, has an outer wall 2 made of pressed fibre, and pressed fibre ends 3 and 4 closely fitted over opposite ends of the outer cylindrical wall 2. The body 1 contains a main charge 5 of approximately one half pound of TNT pressed into the shape of a cylinder to fit into the body portion 1. A paper lined fuse well 6 is formed in the head end of the main charge 5 for accommodating a fuse. A tail support 7, fitted with a threaded opening 8 is attached tightly to the tail end of the body portion 1. A tail 9 having a tubular support 10 threaded at one end, and a plurality of tail fins 11 on the other end, is screwed into

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the tail support 7 as shown. At the head end of the bomb, an internally threaded fuse support 12 is attached to or formed integral with the fibre end 4. As shown in Figs. 1, 2 and 3, a fuse body 13 having a threaded cylindrical hollow projection 14 with central bore 16 is threaded into the support 12 with its projection 14 projecting into the fuse well 6. A percussion cap 15 is placed in the outer end of the central bore 16, its head end being supported in a small annular recess 17 at the outer end of central bore 16. The rest of bore 16 contains a booster charge 58. A lip 18 on the fuse body 13 is engaged by a hook 19 formed in the extremity of a safety lever 20 having an extension 21. A pin 22 secured through opposite openings in the fuse body 13, pivotally supports a carrier 23 which has at its outer extremity a transverse bore 24. A firing pin 25 having a shaft 26 and a pressure receiver 27 is slidably mounted in the bore 24 with its pointed end 28 near one end of the bore 24 so it can be made to fire the cap 15 when the carrier is in armed position. A shear pin 29 passes through a transverse bore 30 in the firing pin 25 and also through a pair of oppositely disposed holes in the walls of the bore 24 in the carrier 23. A coiled carrier spring 32 having several turns wound around the pin 22, has one end 33 bearing against the body of the carrier 23 and the other end 34 bearing against the fuse body 13, so as to urge the carrier to rotate about the pin 22 in a counterclockwise direction from unarmed or safe position shown in Fig. 2 to the armed position shown in Fig. 3.

The bomb shown differs also from the conventional hand grenade in that it has no delay fuse, and is adapted for instant detonation upon impact of the pressure receiver 27 against the ground. Thus, the fuse, as shown in Figure 1 and the enlarged cutaway view of Figure 2, is in the safe position since the carrier 23 is fully retracted and held in safe position by the safety lever 20.

A bore 53 is formed through the fuse body 13 and aligned with a pair of holes 54 formed in projections 55 of safety lever 20. A safety pin 56 having a pull ring 57 is inserted through the aligned holes 54 and bore 53, thus securing the safety lever 20 in place as shown in Fig. 1. Before the safety lever 20 can be released, the safety pin 56 must be pulled out of the aligned holes 54 and bore 53. When the safety lever extension 21 is released, the pressure of spring 32 causes the carrier 23 to press against safety lever 20, forcing the safety lever outward and the lever

20 thus drops away from the bomb and fuse body. The carrier 23 impelled by the spring 32, rotates about the pivot 22 from the position shown in Fig. 2 to the armed position shown in Fig. 3. As the bomb drops toward the ground, the effect of the tail fins 11 is to hold the bomb vertical with nose down. Upon impact with the ground or a building, the impact receiver 27 is hit first, causing the shear pin 29 to be sheared through and permitting the firing pin end 28 to hit the percussion cap 15 exploding it. The resulting blast in the fuse well 6 explodes the booster charge 58 and the main charge 5. A mine in the immediate vicinity of the explosion will be set off by sympathetic detonation.

For convenience in dropping from aircraft, a large number of these anti-mine bombs may be formed into a cluster or placed in a discharge rack. One form of rack adapted to discharge a large number of these bombs from an aeroplane at the same time, is shown in Figure 4 with sectional view along the line 5—5 of Fig. 4 shown in Figure 5. From the illustrations it will be noted that the rack comprises four vertical compartments 36, 37, 38 and 39 formed between the top member 40, the side members 41, 42, 43, 44, 45 and the back member 59 covering the entire back of the rack. The rack may be of wood or metal. With the rack lying on its back 59, a bomb is placed in the first compartment 36 with its safety lever 20 against the inner side of the top member 40. The next bomb is placed as shown, with its safety lever against the side of the first bomb, and succeeding bombs placed similarly until the compartment is filled. A strap 60 has one end 61 fastened to the back member 59 by means of a screw 62 and its other end 46 formed into a loop 51. The strap 60 may be made of leather, canvas, metal, or other suitable material. As shown, the strap 60 is placed so as to hold the bombs firmly within the rack, and its end 51 is secured through a hole 47 in the top member 40 and also through a similar hole in a washer 48 placed over the hole 47, a cotter pin 63 being then inserted through the loop 51 thus holding the strap 60 firmly in place. The hole 47 and the corresponding hole in the washer 48 should be large enough to allow the loop 51 to pass through, and the cotter pin 63 should be longer than the diameter of the said holes so it will prevent the loop 51 from being pulled through the said holes until the pin 63 is removed.

All the compartments are provided with similar holding straps and are filled with bombs in the same manner. All the cotter pins 63 are connected by pull wires 49 to a pull ring 52 by means of which a single pull will pull out all four cotter pins 63, thereby discharging the bombs from the rack as their weight pulls down the straps 60. Before the rack is fastened into the bomb bay of the airplane, all the safety pins 56 are pulled out of the individual bombs. When the pull ring 52 is pulled, discharging the bombs, the safety levers 20 fall away and the strikers 23 rotate to the armed position shown in Figure 3. The fins 11 cause the bombs to hit the mine field nose downward, and the impact shears the shear pins 29, allowing the firing pins to set off the percussion caps 15, exploding the bombs and causing nearby mines to explode by sympathetic detonation. A path may be cleared across the mine field by dropping a large number of these small bombs across the mine field.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size, arrangement and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

I claim:

1. In a bomb comprising a casing, a primer therein for initiating explosion of the bomb, a pivot means on said casing, a carrier eccentrically pivoted on said pivot means for a swinging movement into alignment with said primer, an impact actuated means slidably maintained on said carrier in a position perpendicular to the axis of said pivot means whereby when said carrier is swung toward said primer said impact actuated means will be placed into aligned proximity with said primer, detent means in said carrier for yieldingly holding said impact actuated means against relative movement on said carrier whereby said impact actuated means is held spaced from said primer when said carrier is aligned with said primer, and means associated with said carrier and said casing for moving said carrier into alignment with said primer whereby said impact actuating means will strike said primer upon impact.

2. In a bomb comprising a casing, a primer therein for initiating explosion of the bomb, a pivot means on said casing, a carrier eccentrically pivoted on said pivot means for a swinging movement into engagement with said primer, an impact actuated means slidably mounted on said carrier whereby when said carrier is swung into engagement with said primer said impact actuated means will be placed into aligned proximity with said primer, detent means in said carrier for yieldingly holding said impact actuated means against relative movement on said carrier whereby said impact actuated means is held spaced from said primer when said carrier is in engagement with said primer, and spring means on said pivot means engaging said carrier and said casing for moving said carrier into and retaining the same in engagement with said primer whereby said impact actuating means is held adjacent and in alignment with said primer preparatory to striking the same upon impact.

FRANK SHORT.

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