Jan. 18, 1949. J. ROSS 2,459,182

GRENADE MORTAR AND ADAPTER

Filed Sept. 27, 1945 2 Sheets-Sheet 1

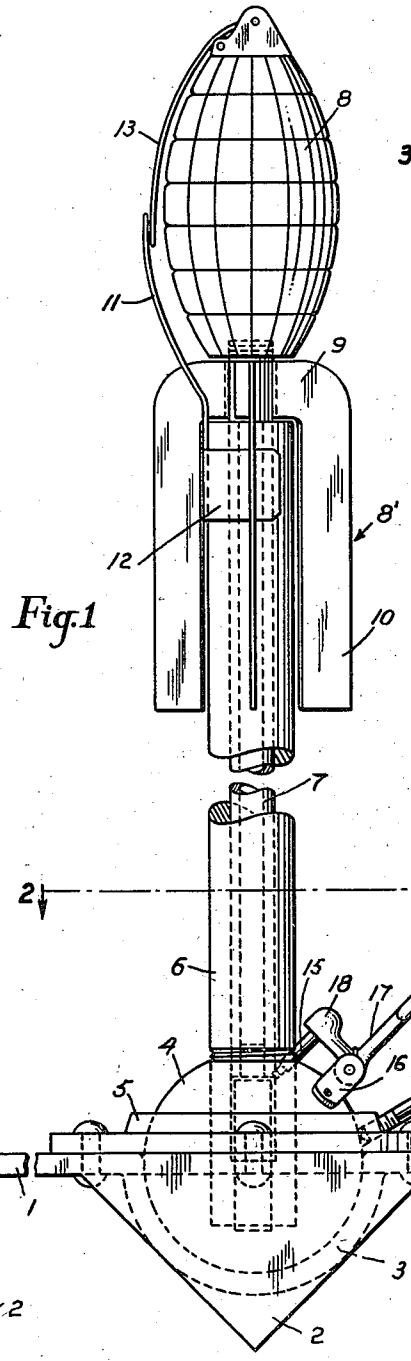


Fig.1

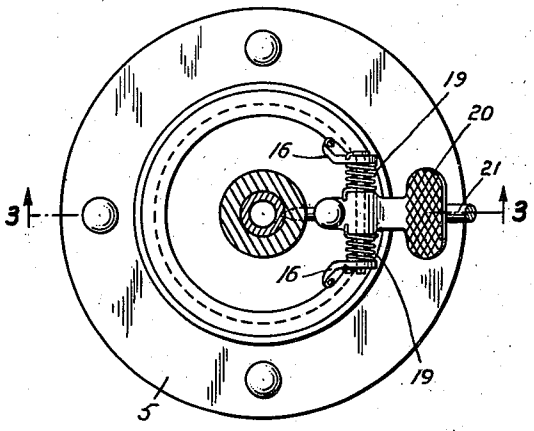


Fig.2

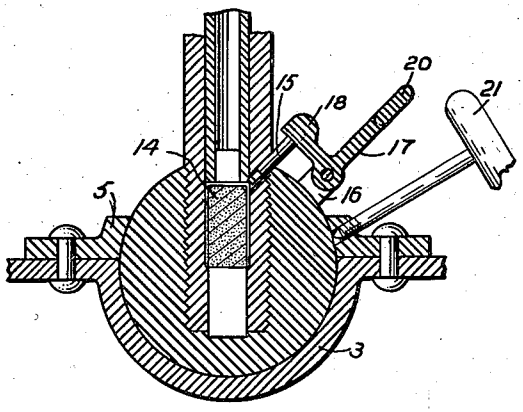


Fig.3

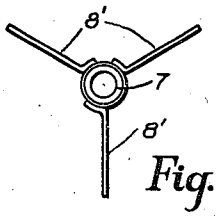


Fig.4

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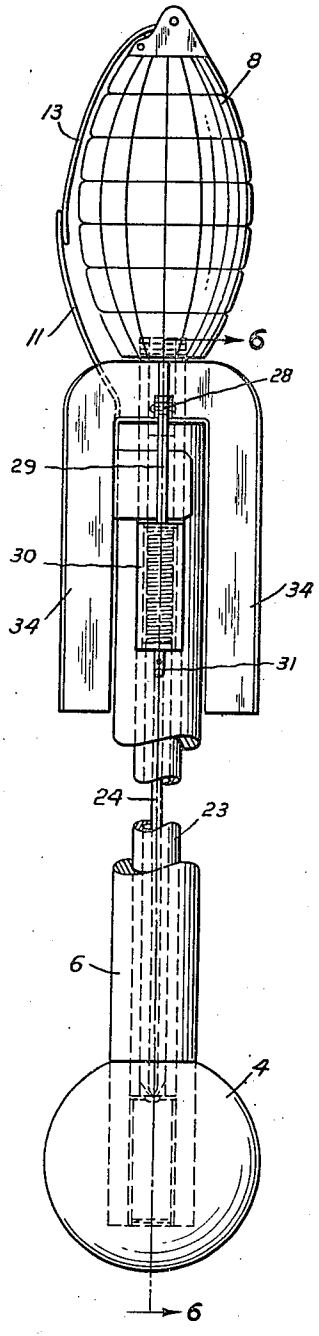
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Fig. 5



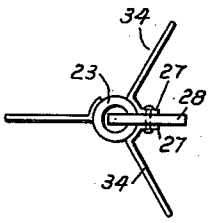


Fig. 7

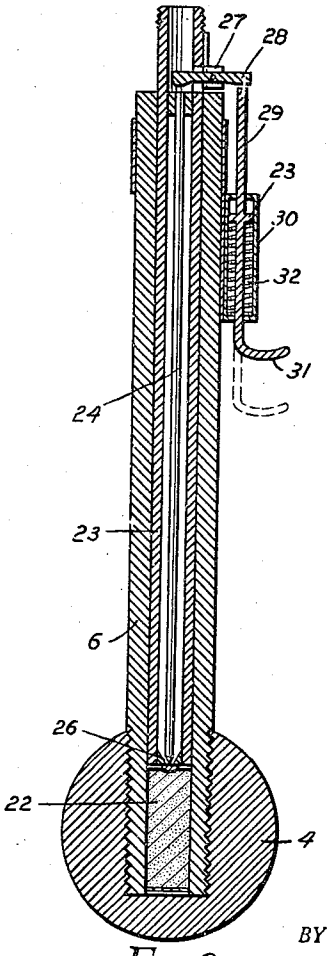


Fig. 6

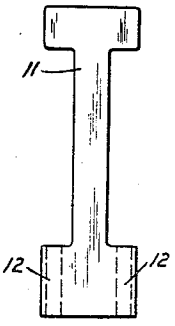


Fig. 8

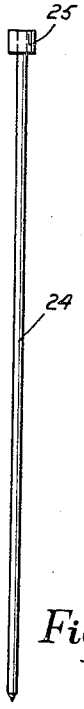


Fig. 9

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GRENADE MORTAR AND ADAPTER

Josiah Ross, Sunnyside, Long Island, N. Y.

Application September 27, 1945, Serial No. 618,997

4 Claims. (Cl. 89—1)

(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 grenade mortars and more particularly to a mortar adapted to propel a standard hand grenade equipped with a simple adapter device.

A main object of this invention is to provide a light, compact mortar for propelling a modified standard hand grenade, which can be rapidly set up and which is capable of rapid firing.

A further object of this invention is to provide a light, compact, grenade mortar of extremely simple construction and which has a 360° radius of action.

A still further object of this invention is to provide a mortar projectile adapted from a standard hand grenade and capable of being fired from an appropriate mortar by the explosion of a standard cartridge inserted in the mortar in a novel manner.

Further objects will appear from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is an elevational view of a grenade mortar employing a standard hand grenade in accordance with this invention.

Figure 2 is a cross-sectional view taken on line 2—2 of Figure 1.

Figure 3 is a detail view in cross-section taken on line 3—3 of Figure 2.

Figure 4 is a top view of a grenade adapter according to this invention used with the structure of Fig. 1.

Figure 5 is an elevational view of a modification of a grenade mortar barrel with a grenade, equipped with its adapter, in firing position in the barrel, in accordance with the present invention.

Figure 6 is a cross-sectional view taken on line 6—6 of Figure 5.

Figure 7 is a top view of a grenade adapter according to this invention used with the structure of Figure 5.

Figure 8 is a front elevational view of an arming clip retainer used on the mortar barrel in accordance with this invention.

Figure 9 is an elevational view of a firing pin used in the structure of Figure 5.

Referring to the drawings, Figure 1 discloses a mortar as contemplated by this invention with a projectile in position for firing. A substantially flat plate 1 supported above the ground by depending triangular side flanges 2 constitutes the main bottom support for the mortar. Plate 1 may be square, round, or any other desirable shape. Provided at the central portion of plate 1 is a hemispherical recess 3, preferably stamped in the plate, which provides a bearing socket for a heavy ball member 4 which is maintained in recess 3 by a ball retainer ring 5 suitably secured

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to plate 1. Ball member 4 is provided with a threaded bore which receives the externally threaded lower end of a cylindrical barrel 6.

Barrel 6 is provided with an internal smooth bore adapted to slidably receive a tubular adapter member 7 threaded at its upper end into the rear end of a standard hand grenade 8. Provided at the upper end of adapter tube 7 are a plurality of L-shaped vanes 8' having short leg portions 9 secured in a suitable manner, as by welding, to the outer upper peripheral surface of tube 7 and projecting radially thereof, and being further formed with longitudinally extending arms 10 offset from barrel 6 to provide adequate clearance for the insertion of adapter tube 7 into barrel 6. An arming clip retainer 11 provided with barrel engaging lugs 12 is mounted on the upper portion of barrel 6 with lugs 12 appropriately secured, as by welding, to the barrel. Retainer 11 is formed with a projecting arm adapted to engage the arming member 13 of grenade 8 while said grenade is in firing position. When the grenade is propelled from barrel 6, the arming member 13 is moved out of engagement with retainer 11 and is thereby armed in the well known manner.

Positioned at the bottom portion of barrel 6 is a cartridge 14 of the rim firing type with the rim thereof in upper position. Barrel 6 is formed with a slightly smaller bore at its lower end portion to provide a well means for the possible accumulation of residue from the exploded cartridges. At a position in barrel 6 opposite the rim of cartridge 14 an oblique bore is provided in the barrel wall for a slidable firing pin 15. Pivotally mounted on brackets 16 secured to ball member 4 is a hammer lever 17 provided with a hammer arm 18, biased to striking position with respect to firing pin 15 by heavy coil springs 19. A trigger arm 20 is provided on lever 17 for manual retraction of hammer lever 17 into cocked position. Cartridge 14 is fired by pulling back on trigger arm 20 and then releasing said arm, thereby allowing springs 19 to cause hammer arm 18 to strike firing pin 15. The explosion of the cartridge blows adapter tube 7, as well as the cartridge case out of barrel 6, thereby propelling grenade 8 and tube 7 toward the target.

A set screw 21 is provided in retainer ring 5 for locking ball member 4 at a desired angular position of the mortar barrel 6. Triangular legs 2 can be forced into the ground to hold plate 1 in a stationary position.

Referring to Figure 5, a modification of a grenade mortar device is disclosed wherein the same supporting structure and barrel swivelling means are employed as in the embodiment of Fig. 1, but wherein a center fire cartridge is employed to propel the projectile. In this embodiment, a center fire cartridge 22 is loaded into the bottom of barrel 6 in inverted position as shown in Fig. 6.

An adapter tube 23 having an upper threaded end for securement to the rear portion of a hand grenade, is provided, said tube carrying a vertically slidable firing pin 24 having a head portion 25 slidably fitting the bore of tube 23, and a pointed lower end adapted to be guided by a conically recessed bushing 26 into striking contact with the firing surface of cartridge 22 upon downward movement of pin 24.

Pivotally supported on lugs 27 formed adjacent the upper end of tube 23 is a striker arm 28 extending through an opening in the wall of tube 23 into overlying relationship with head 25 of firing pin 24 and having an external arm overlying the upper end of a plunger member 29. Plunger member 29 is slidably supported in a housing 30 secured to barrel 6, and has a lower extension projecting from the bottom of housing 30 and laterally bent to form a finger grip 31. A compression spring 32 within housing 30 cooperates with an integral collar 33 formed on plunger member 29 to bias member 29 to a normal position wherein the top end of member 29 is just below the externally extending end portion of striker member 28. To explode cartridge 22, finger grip 31 is pulled down to the dotted position shown in Figure 6 and then released. Plunger 29 will be thrown upwardly by compression spring 32 and delivers a forceful impact to striker member 28 which will be transmitted by member 28 to firing pin 24, driving pin 24 downwardly to explode cartridge 22.

Lugs 27 may be extensions of vane members 34, as shown in Figure 7.

If desired, cartridge 22 may be made an integral part of tube 23 or may be secured thereto in any well known manner.

Although certain specific embodiments of grenade mortars and grenades therefor have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention will occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention other than as defined by the scope of the appended claims.

What is claimed is:

1. A grenade mortar comprising a launching barrel adapted to engage a self-ejecting cartridge, a mount therefor including a support member on said mount for elevating and depressing said barrel and to permit traversing thereof, a brake element carried by said support and operatively associated with said elevating and depressing means and said traversing means, means for exploding said cartridge, and means carried on the outside of said barrel to engage the arming member of a grenade positioned in said barrel for launching whereby said grenade is held in unarmed condition until launched.

2. A grenade mortar comprising a ground-engaging mount, a spherical support member carried by said mount, said mount being constructed and arranged to provide a hemispherical bearing socket therein for said support member, a retainer ring carried by said mount mounting said support member for swiveling movement relative to said mount, a launching barrel carried by said support member responsive to said swiveling movement for elevation and depression or traversing thereof, means carried by said retainer ring to arrest said swiveling movement to lock said barrel relative to said mount, means in said barrel to engage an inverted self-ejecting explosive cartridge in operative position, spring-urged trigger means to explode said cartridge, and spring means carried on the outside of said barrel to engage the arming member of a grenade placed in said barrel for launching, to hold said grenade in unarmed condition until launched.

3. A grenade mortar comprising a ground-engaging mount, a spherical support member carried by said mount, there being a hemispherical depression in said mount providing a bearing socket for said support, a retainer ring on said mount mounting said support for swiveling movement relative to said mount, a launching barrel carried by said support member and responsive to said swiveling movement, the said barrel being constructed and arranged to engage an inverted self-ejecting explosive cartridge at the end thereof adjacent said support member and to receive a portion of a grenade at its other end, manually operable means on said retainer ring to arrest said swiveling movement and lock said barrel in a selected position relative to said mount, spring-urged firing means on said motor to explode said cartridge, and means carried on said barrel to releasably engage the arming member of a grenade received in said barrel for launching, to hold said grenade in unarmed condition until said arming member is released from its said engagement with said engaging means upon explosion of said cartridge.

4. A grenade mortar and adapter comprising, in combination, a ground-engaging mount, a supporting member carried on said mount for swiveling movement relative thereto, a barrel carried by said support member and responsive to said swiveling movement, said barrel being adapted to engage an inverted self-ejecting explosive cartridge in the end thereof adjacent said support member, means for arresting said swiveling movement to lock said barrel in a selected position relative to said mount, firing means to initiate explosion of said cartridge, spring means carried by said barrel to engage the arming member of a grenade to be launched from said barrel, an elongated tubular member constructed and arranged at one end thereof to engage a hand grenade and adapted to be slidably received in said barrel, the said tubular member being responsive to the explosive force of said cartridge to be propelled from said barrel, and a plurality of longitudinal arms carried on said tubular member adjacent the grenade-engaging end thereof, circumferentially and radially spaced relative to said tubular member, to slidably engage on the outside of said barrel.

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