Aug. 21, 1945. H. J. FANGER ET AL 2,383,053

MOUNTING DEVICE FOR PROJECTILES

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Fig. 1.

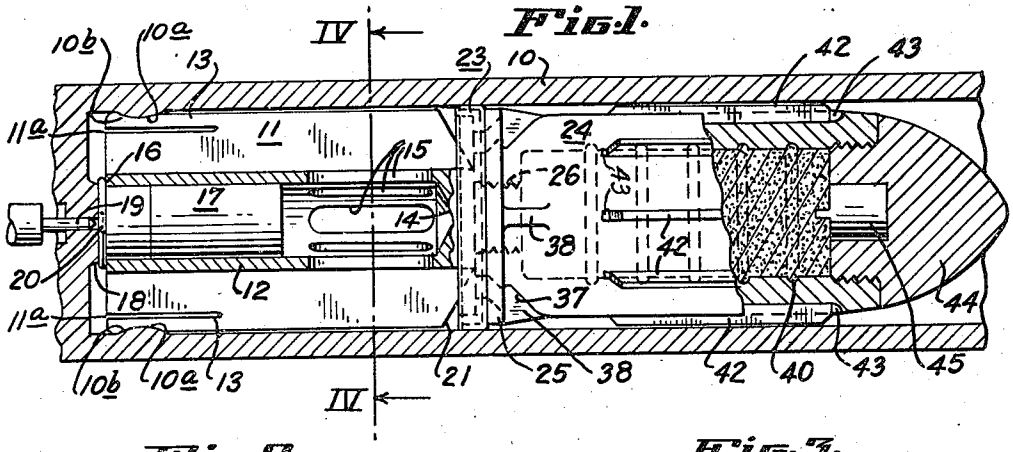

Fig. 2.

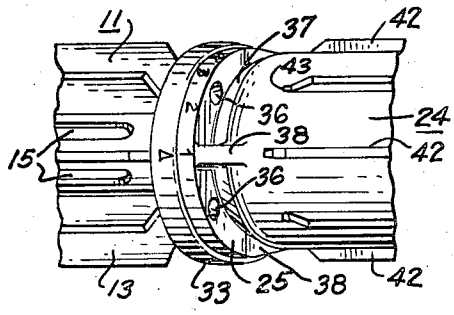

Fig. 3.

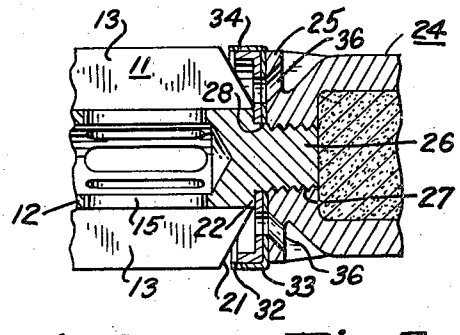

Fig. 4.

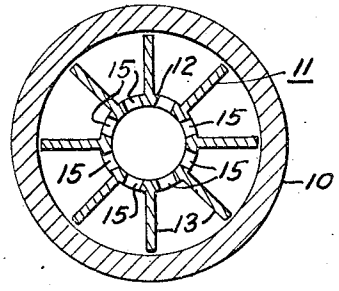

Fig. 5.

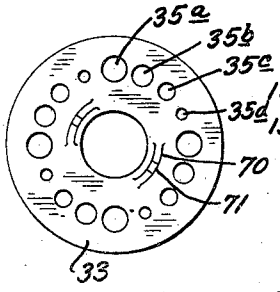

Fig. 6.

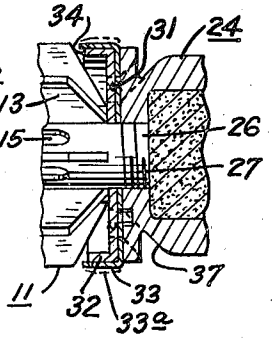

Fig. 7.

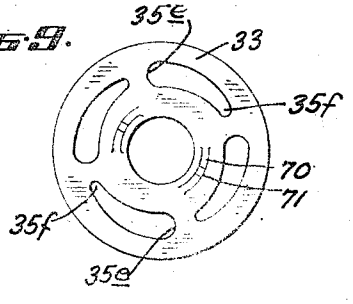

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Fig. 7.

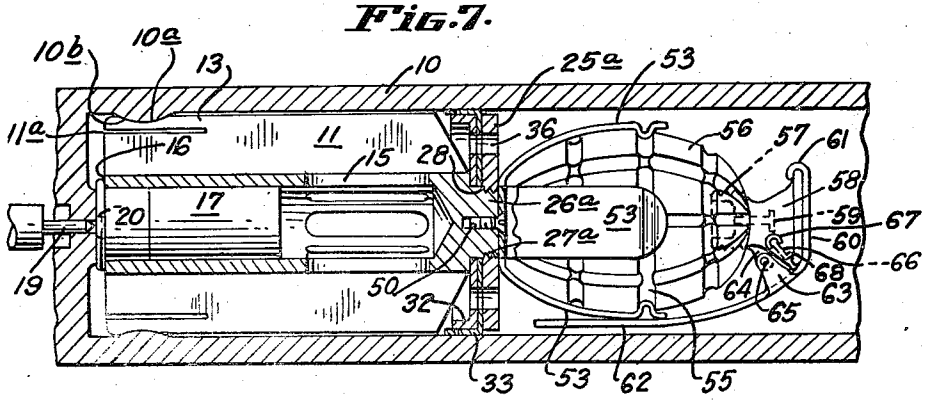


Fig. 9.

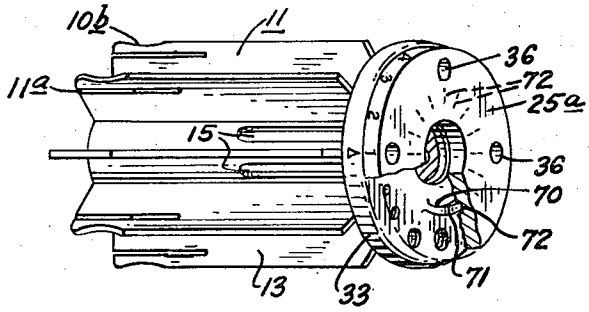
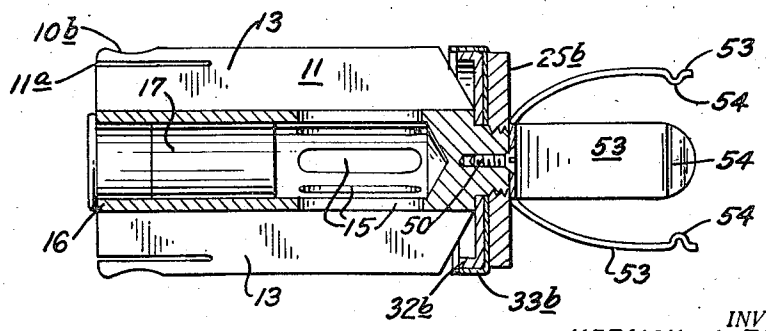


Fig. 10.



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Patented Aug. 21, 1945 2,383,053

UNITED STATES PATENT OFFICE

2,383,053

MOUNTING DEVICE FOR PROJECTILES

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Application April 18, 1942, Serial No. 439,456

7 Claims. (Cl. 102—49)

This invention relates to a projectile or bomb mounting device and more particularly relates to a mounting device for projectiles or bombs which are explosively propelled from a mortar, and in which provision is made for regulating an exhaust of explosive gases for controlling the distance range of the projectile. The device of the present invention is adapted for use either in mortars which have a manually operable trigger and firing pin at the breech thereof, or in mortars adapted for drop-firing wherein there is a fixed firing pin at the breech end of the barrel and the projectile is dropped into the discharge end of the barrel and forcibly contacts the percussion cap of an explosive charge against the fixed firing pin. However, the mode of operating with a mortar having a manually operable trigger is much to be preferred, for numerous reasons, instances of which are a more steady and certain aim, certainty of exploding the propelling charge, timing the firing, regulation of distance range, etc.

Among the objects of this invention are to provide a mounting support for a projectile especially adapted for mortar firing; to provide means to releasably hold a projectile in a downwardly inclined barrel; to provide a tight seal relative to the explosive chamber of a mortar barrel by explosive force of a propelling charge; to provide a mortar projectile which will maintain a sealing means perpendicular to the axis of the barrel. A further object is to provide for escape of a predetermined selective amount of explosive gases of a propelling charge from the explosion chamber through the discharge end of a mortar barrel. A further object is to provide means to regulate the distance range of flight of a projectile by control of volume of exhausted gases from an explosive charge. Yet another object is to provide a support for an explosive projectile whereby projectiles of varying types and varying diameters may be readily utilized in a single mortar, and fired or explosively propelled in the same manner as a bomb or shell-encased bullet. A further object is to simplify construction, increase efficiency, and generally improve upon devices of the character described.

With the foregoing and other objects in view, all of which will be more apparent as this description proceeds, certain forms in which the invention may be advantageously employed and find great utility, and exemplified in the construction and combination of parts hereinafter described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size, and details of construction of the apparatus may be resorted to within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention. To more clearly comprehend the invention, reference is directed to the views of the accompanying drawings wherein like reference characters indicate corresponding parts in the respective views, and in which:

Fig. 1 is an axially longitudinal elevation partly in section and partly broken away.

Fig. 2 is a fragmentary perspective view of a portion of the structure view of Fig. 1.

Fig. 3 is a fragmentary sectional view of a portion of structure shown in Fig. 1.

Fig. 4 is a lateral transverse section on line IV—IV of both Figs. 1 and 7.

Fig. 5 is a plan view of a valve plate.

Fig. 6 is an enlarged fragmentary sectional view of structure of valve plates.

Fig. 7 is an axially longitudinal elevation partly in section and partly broken away, of a modified form of the invention.

Fig. 8 is a perspective view of a portion of the structure shown in Fig. 7.

Fig. 9 is a plan view of a modified form of valve plate.

Fig. 10 is a longitudinal sectional view of a modified form in which the invention may be embodied.

Referring to the drawings wherein like character references indicate corresponding parts in the several views, 10 indicates generally a mortar barrel which is illustrated here to provide an environment to illustrate the utility and the advantages of the invention in combination therewith.

In the patent of Cleve F. Shaffer No. 2,378,735, dated June 19, 1945, for a Grenade, there was disclosed an adapter for receiving an explosive shell, the expanding gases of which passed through perforations of the adapter and into an expansion or explosion chamber at the breech end of the mortar barrel for projecting the grenade; in the application of Cleve F. Shaffer, Ser. No. 406,301, filed August 11, 1941, for Combination mortar, there was disclosed means for exhausting gases from the explosion chamber at the breech end of a mortar which was adapted to use the adapter of the aforesaid grenade application. The present application relates to the subject matter of the aforesaid applications and disclosures, certain modifications being incorporated herein and provision made for a selective and controlled escapement from the muzzle end of the mortar of the ex-

plosive gases generated in the combustion chamber at the breech end of a mortar barrel by an explosive propelling charge or shell.

In the present invention there is provided a structure designated herein as an adapter generally indicated 11, and comprised of an axially elongated body having an axially elongated tubular central portion 12, which conveniently is internally cylindrical, and is provided externally with axially aligned aeroguides, which are exemplified herein as radially extending elongated fins 13, in spaced relation circumferentially about the exterior of the cylindrical tubular portion 12. The tubular portion 12, more nearly adjacent its closed end 14, is provided with perforations or fenestrations 15, which are disposed in said cylindrical body 12 in the area between the radially extended fins 13. The perforations 15 may be of any suitable shape but conveniently may be elongated slots as indicated in the drawings. The opposite end 16 of the cylindrical body 12 is open and is adapted to receive an explosive shell 17, or other suitable type of explosive charge which preferably abuts a breech block 18 at the closed end of the mortar barrel, a firing pin 19 being operable at said breech block end of the mortar, preferably operated by a manually operable trigger (not shown), to penetrate and thereby explode a percussion fuse 20 in the shell or explosive charge 17.

At its opposite or closed end 14 the adapter has the end of the fins 13 tapered radially inwardly and upwardly as at 21 to a crown 22 upon which there is co-axially mounted a means for tightly sealing the explosion chamber of the barrel and for selectively controlling an escape or exhaust of explosive gases which are generated in the explosion chamber at the breech end of the mortar barrel by explosion of the shell or charge 17, said control means being generally indicated 23. The tapering 21 of the fins 13 provides an unobstructed chamber at the top of the adapter for equalizing explosive forces exerted upon a control valve and sealing plate to be hereafter described.

In Fig. 1 the control means 23 is combined with a base plate of a bomb projectile body generally indicated 24, the base member or plate being indicated 25. It will be noted that the adapter member 11 at its forward end or crown 22, is provided with an integral axially extended stub or hub 26 which is threaded at its free end as at 27, the threads preferably terminating in spaced adjacent relation to the crown 22 providing an unthreaded bearing portion 28 upon which a combination seal and valve is rotatably mounted. The valve comprises a pair of overlying, relatively thin, circumferentially skirted disc members 32 and 33, in substantially superficial contact one nesting within the skirted portion of the other, as best shown in Fig. 6. For brevity of statement, they may be referred to as coinciding plates, meaning thereby that they are substantially similar in circumference and are overlying in plan, but not necessarily that the flexible plate 33 must be of similar area with plate 32, since, if desired, its central portion may be removed. These skirted discs are rotatable in unison about an unthreaded bearing 28 and their unison movement is assured by one nesting tightly within the other and may be further assured if desired, by any suitable means, such as a swaged connecting rivet 31. One of these plates, preferably the lower or internal disc plate 32, is a reinforcing plate and is of more rigid material than the other or upper superimposed sealing plate 33, the latter being of a relatively softer and more flexible metal, such as copper, it being observed that the terminal end of the skirt of the flexible disc 33 extends slightly beyond the terminal end of the underlying skirt of the disc 32 as best shown at 34 in Fig. 6, whereby the more flexible skirt of the softer sealing plate 32 may be spread radially by the explosive force of the propelling charge and make a tight seal relative to the mortar barrel, it being obvious that the projectile body as a whole should be of slightly less diameter than the mortar barrel in order that the projectile may be slidably inserted in the muzzle end and slide to firing position at the breech. Having a relatively small sealing area also reduces friction with the barrel, prevents the barrel from heating, and decreases resistance, whereby the explosive charge is more effective to propel the projectile a greater distance. For these reasons, and also in order that explosive gases permitted to escape by manipulation of the valve plates 32, 33 in relation to base plate 25, the transverse diameter of portions of the bomb body 24 should be less than the planar diameter of the valve plates 32, 33 and base plate 25. The two valve plates 32, 33 are perforated in register with a series of perforations which are graduated in size as indicated 35*a*, *b*, *c*, *d*, in Fig. 8. There is a one series of these perforations for each of the holes or openings 36 through the base plate 25 of the projectile or bomb 24, said base plate 25 being stationary and integral with the body of the bomb 24, which is securely mounted upon the threaded stub 26. Adjacent the base plate 25 the body of the projectile bomb is provided with circumferential recessed indentations 37, which communicate with the holes or openings 36 in the base plate 25, and there may be provided webs 38 for separating the indentations 37 and also adding reinforcement to the connection of the circumferential body portion of the bomb body with the circumferential portion of the base plate 25. The main portion of the bomb body 24 may assume any elongated form of hollow shell, as shown in section in Fig. 1, the internal wall of the hollow shell being circumferentially grooved as at 40; and its external diameter is less than the diameter of the plate elements 25, 32 and 33, which comprise the control valve means generally indicated 23, the latter being substantially of the same diameter as the transverse diameter of the adapter member 11 from one longitudinal edge to an opposite longitudinal edge, the maximum diameter of the adapter 11 and valve control means 23 being substantially the same as the inner diameter of the mortar barrel, but sufficiently less to provide slidability therein. The main body 24 of the projectile being less than the internal diameter of the mortar barrel, it follows that there is a space between said main body 24 and the internal wall of the mortar barrel, thus providing a space for the by-pass of explosive gases which are exhausted under regulated control through the openings 35*a*, *b*, *c*, *d*, in the valve plates 32, 33 and through the opening 36 in the base plate 25. Means are provided on the bomb body to position the bomb co-axially with the bore of the mortar barrel without interfering with the exhaust of explosive gases as explained above. Such a means may comprise elongated fins or strips 42 extended radially from body 24 and in spaced relation circumferentially about the bomb body, the number thereof preferably being about the same as the number of fins 13 on the adapter 11, the desirable number of fins on either the adapter or the bomb body being variable according to the gauge of the projectile, the smaller pro-

jectiles not requiring as many fins as those of larger sizes. These fins 42 are affixed to the bomb body by insertion of one edge in elongated recesses 43, the latter serving the additional purpose of scoring the external wall of the bombs and thereby cooperating with the internal grooves 40 to weaken the wall of the bomb in substantial rectangular platting for more effective fragmentation when the bomb is exploded. The bomb body 24 at its forward end is threaded to receive a nose or cap 44, in which may be mounted any suitable percussion or time fuse 45 which serves to explode the powder charge indicated by stippling 46 within the hollowed bomb body.

Referring to the modification of the disclosure in Figs. 7, 8 and 10, there is an adaptation of the invention to a mounting support for a type of a projectile well known in military parlance as a hand grenade. The adapter member 11 may be substantially identical in most of its elements with the adapter disclosed in Fig. 1. However, instead of the plate 25 being an integral part of a bomb body, the plate indicated 25*a* in Figs. 7 and 8 is a separate member which overlies the valve disc plates 32, 33, the perforations or vents in the valve discs being adapted to register with the openings 36 in the plate 25*a*. The valve discs 32, 33, are rotatable upon the unthreaded portion 28 of the stub 26*a*, which has its free end in threaded engagement with plate 25*a* as at 27*a*.

The opposite or upper face of the plate 25*a* mounts means for releasably receiving and holding a small type of explosive bomb, such as here exemplified as a hand grenade, said means comprising a plurality of resilient fingers 53 preferably arranged in perpendicularly disposed pairs, which are mounted at their base upon plate 25*a* by bolt or screw 50 threaded into the stub 26*a*. The upper or free end of the fingers 53 are provided with indentations 54 which serve as resilient releasable snap-in latch means for engaging in scored grooves 55 which are normally a part of the exterior body of the well known hand grenade.

The hand grenade illustrated in this application is of the usual well known type consisting of a bomb body 56 which is hollow and filled with explosive material and has an opening 57 at one end for filling the body and for threadedly receiving a fuse cup 58 within which there is a friction time-fuse 59. Over the top of the fuse-cup 58 there is a spring lever 60, which has a terminal claw 61 at one end for engaging a rim on the fuse-cup. The lever 60 extends transversely across the top of the fuse-cup and down the side of the hand grenade body in a portion termed a lever handle 62. Intermediate its ends the lever 60 has a flange or lip 63 which overlies the plane of an ear 64 on the side wall of the fuse-cup 58, a removable jerk-pin or safety pin 65 securing the ear and lip in juxtaposition. When jerk-pin 65 is pulled out, the resilience of lever 62, 60, would normally cause the lever to spring away from the grenade body and thereby release a hammer 66 actuated by a coil spring 67, so that the point 68 of the hammer would come forcibly in contact with the ignition fuse 59, ignite the same, which in turn would explode the bomb, the fuse 59 being of the "time" type, which is set to explode the bomb a reasonable time after it could be normally thrown by a soldier. It is therefore obvious that when a soldier pulls the safety jerk-pin 65 he would hold lever 62 in his hand on the side of the bomb until he throws it, whereupon the lever 60, 62 automatically would release itself and permit the spring actuating hammer 66 to operate and thereby explode the bomb at the time set by the fuse 59. In the present invention, as exemplified in Fig. 7, the lever 60, 62 is maintained in place after removal of the safety or jerk-pin 65, by engagement with the internal wall of the mortar barrel.

Referring to the devices of both Fig. 1 and Fig. 7, since the valve plates 32, 33, are rotatable relative to the plates 25, 25*a*, and since it is intended that they may be relatively adjusted so that the perforation 35*a*, *b*, *c*, *d*, may register with the holes or openings 36 in plates 25, 25*a*, it is desirable to provide suitable means to set up a small or slight amount of resistance to such relative rotation, so as to prevent casual, unintended relative movement. Any suitable means may be so employed, and as herein exemplified, comprises an upward detent 70 in the upper disc plate 33, such detent being provided with a relatively sharp peak 71 which is adapted to engage circular ratchet teeth 72 which may be stamped or machined into the lower face of the plates 25, 25*a*. Not only does the detent ratchet provide for a resistance to relative casual movement of the said plate and valve disc, but it also provides an index means whereby the number of ratchet teeth or clicks may be counted by a soldier and thus determine the proper adjustment of the registering of the desired opening or vents 35*a*, *b*, *c*, *d*, with relation to the openings 36, even though the soldier be operating in darkness. Numerical or other types of calibrations may also be employed for such indexing purposes, if desired, as indicated at the circumferential wall of plate 25*a*, in Fig. 8.

It is not intended to limit the graduation of the valve openings 35*a*, *b*, *c*, *d*, to separate holes or vents; the same thing may be accomplished in other suitable ways, and as one illustration of an alternative, there is shown in Fig. 9 a plurality of graduated slots tapered from a larger open end 35*e* to a narrower portion 35*f*.

It will be noted that the external diameter of the flexible skirt 33 in Figs. 3, 6, and 8, and 33*b* in Fig. 10, is intended in its original condition to have substantially the same diameter as between the outer edges of opposite fins 13, so that the projectile will slide easily in the mortar barrel. But when the propelling charge 17 is exploded, the force of the explosion in the breech end of the mortar, rearwardly of said flexible plates 33, 33*b* causes the skirt to radially expand to tightly seal against the wall of the barrel, in which position it is shown in Figs. 1 and 7 and in the manner shown in the dotted lines of Fig. 6.

There may be provided in all of these devices means for releasably holding the projectile and adapter in the barrel of a mortar when the muzzle of the barrel is held in a downwardly inclined position. As exemplified herein, there is a slightly raised annular portion of the barrel wall closely adjacent the firing pin 19, which provides an annular ring 10*a*, the upraised wall of which has a gradual incline from the barrel wall. To cooperate with this ring 10*a* there is provided at the lower ends of the fins 13 narrow elongated slots 11*a* which impart a resilience to the outer edge of the fin adjacent the end whereby there is a sufficient resilience given to the edge of the fin adjacent the slot to permit that portion of the fin to ride up the gradual incline of the annular ring and pass thereby until the base of the adapter and its included shell 17 are seated at the breech block 18. To facilitate the releasable

gripping of the resilient portion of the fin on the ring 10*a*, the edge of the fin is provided with an indent 10*b* to releasably engage ring 10*a*. The resilient pressure of the slotted portions 11*a* of the adapter provide sufficient resilient hold to prevent the projectile and adapter from sliding in the barrel if the barrel is inclined downwardly.

In the operation of the devices of Figs. 1 and 7 of the present invention, the projectile bomb 24 or grenade 56 is first mounted upon the assembly of adapter 11 and exhaust control valve 23, and explosive propelling charge or cartridge 17 having been inserted in the adapter, and then the combined structure is dropped into the discharge end of the mortar barrel 10, sliding by gravity to the breech thereof, where it is subject to firing by the pin 19. In the case of the hand grenade, the jerk-pin 65 is not removed until the handle portion 62 of lever 60 is engaged within the mortar barrel and is held against release until the projectile is fired by the mortar. The gripping means 11*a* holds the projectile against dislodgement if the mortar barrel is downwardly inclined, as might be necessary by parachute troops.

The cylindrical wall 12 of the adapter is reinforced against the force of the explosion of the shell 17 by the elongated fins 13 and additionally reinforced by the fact that the fins 13 have mere slidable clearance relative to the internal diameter of the barrel and expand slightly radially when the propelling charge 17 is exploded. When the charge 17 is exploded, the expanding gases flow out through the openings 15 of the adapter, and into the combustion chamber at the breech end of the mortar barrel and thus propel the projectile. The upper valve disc 33 being of relatively soft flexible material has its skirt portion spread by the force of the explosion and thus makes a seal against the walls of the barrel. From actual experience it has been found that the force of the explosion crowds the explosive gases between the skirt portion of the valve discs 32, 33 and spreads the skirt of the softer plate 33 at the angle between the skirt and the plate of the disc as shown in dotted lines in Fig. 6 at 33*a*, thus providing a seal of substantial length against the barrel wall, and whereby the only substantial amount of escaping gases are those which are regulated and controlled in predetermined amounts by relative manipulation of the valve disc 32, 33, in relation to the openings in the plates 25, 25*a*, which operates to control the size of the valve vent and the exhaust of explosive gases from the combustion chamber of the mortar through the openings 36 and out through the discharge opening of the barrel by virtue of the spacing of the projectile from the barrel walls.

In Fig. 10, there is disclosed a modification of the invention, more particularly adapted for firing from a mortar in which escapement of explosive gases may be controlled by valve means at the breech end of the mortar barrel, such as disclosed in co-pending applications of Cleve F. Shaffer, Ser. No. 434,646, filed March 14, 1942, and Ser. No. 406,301, filed August 11, 1941. Therefore, in the modification shown in Fig. 10, it is not necessary to provide openings through sealing plates 25*b*, 32*b* and 33*b*. The means 53, 54, for releasably mounting a bomb body on the adapter 11 of Fig. 10, is similar to the corresponding element of Fig. 7. Since there is no relative rotation necessary between plates 25*b*, 33*b* and 32*b* in the device of Fig. 10, the plate 25*b* may be tightly threaded down upon the plates 33*b* and 32*b* for fixed relationship.

It is believed to be an important factor in the invention that the explosion chamber in the mortar barrel for the expansion of the explosive gases shall be maintained cylindrical, that is, rectangular in longitudinal sections, since this provides an equalized pressure within the barrel from the time of the explosion to the time that the regulating plates 32, 33 and 25, 25*a*, entirely clear the discharge end of the barrel when the projectile is fired. In order to accomplish this, the plates 32, 33, which are referred to as the skirt plates upon which the projectile is mounted, should have a diameter substantially similar to the diameter of the barrel, an allowance for slidability being made. In more simple terms, and by way of illustrative comparison, if a teardrop or torpedo-shaped projectile were employed in connection with the same adapter, without employing the plates, the force of the exploding gases would be dissipated as soon as the enlarged forward end of the teardrop or torpedo-shaped projectile cleared the discharge end of the barrel and the projectile would be deprived of the "follow through" force of the explosive gases, whereas with the present invention the explosive gases continue to exert their propulsive force until the projectile is completely cleared of the barrel. Thus, the only substantial portion of the explosive force which is dissipated is that portion which is intentionally exhausted as by the control and regulation of the valve plates 32, 33, in cooperation with the opening in the plates 25, 25*a* in the devices of Figs. 1 to 9, or by way of other controlled means mentioned in the description of the device of Fig. 10, for the purpose of mechanically controlling the flight range of the projectile.

It will be understood that various sizes and types of bomb bodies may be employed with a single size of adapter.

In the claims the terms "forwardly" and "upwardly" refer to that end of the apparatus mounting the bomb body, and, conversely, the terms "rearwardly" and "downwardly" refer to the opposite end which mounts the propelling explosive shell.

Having described the invention, what is claimed as new and patentable is:

1. A mounting device for explosively propelled projectiles, including an adapter provided with an elongated tubular body, said body having radially extended circumferentially spaced fins and being provided with perforations in its body intermediate its ends and having an opening at its rearward end for receiving an explosive charge, a plurality of relatively rotatable overlying plates at the forward end portion of the adapter body, said plates having openings therethrough adapted to register in the respective plates and relatively adjustable by rotation of the respective plates for providing a control valve for explosive gases generated by the explosive charge in said adapter when the mounting device is confined in a gun barrel, and means for mounting a projectile body at said forward end of the adapter.

2. A mounting device for explosively propelled mortar projectiles, including a perforated tubular adapter member having radially extended circumferentially spaced elongated fins and provided at its rearward end with an opening for receiving an explosive charge, means at the forward end portion of the adapter for connecting

a projectile body thereto, a control valve at the forward end of the adapter for substantially closing a mortar barrel, said control valve being intermediate the projectile connecting means and the finned adapter and comprising a plurality of relatively rotatable plates, each of which has openings therethrough selectively adapted for registering by relative axial rotation of the plates, one of said plates being of relatively softer and more flexible material and having a circumferentially rearwardly depending skirt and having within said skirt a substantially coinciding reinforcing plate of more rigid material, and another of said plates being forwardly of the softer plate and in superficial contact therewith.

3. In combination with an armament projectile, a device for mounting the projectile, including a perforated tubular adapter member having radially extended circumferentially spaced elongated fins and provided at its rearward portion with an opening for receiving an explosive charge, means at the forward portion of said adapter for holding the projectile, a disc control valve at the forward end of the adapter for substantially closing a mortar barrel intermediate the projectile body and the forward end of the finned adapter, said disc valve including a plurality of relatively rotatable overlying plates substantially in facial contacting relation, each of said plates having openings therethrough selectively adapted to register in open, closed and intermediate adjustment by relative rotation of said plates, one of said plates being rigid and forming an integral base plate for the projectile body, and another of said plates being more nearly adjacent to the explosive charge and being of relatively softer and more flexible material, said last mentioned plate having a circumferential downwardly depending skirt at its periphery.

4. A mounting device for explosively propelled projectiles, including a finned adapter having an elongated perforated tubular body and having at its rearward end an opening for receiving an explosive charge, a plurality of relatively rotatable disc plates coaxially mounted at the forward end portion of the adapter body, said plates having their disc portions in overlying sliding substantially contacting relation and each plate having openings therethrough, providing a disc control valve, said openings in the respective plates being selectively adapted, by relative rotation of the plates, for adjustment from an aligned open relationship to a closed relationship, two of said plates being of substantially rigid material and another of said plates being interposed therebetween and being of relatively softer and more flexible material and having a circumferential downwardly depending skirt at its periphery, and means for mounting a projectile body at the face of said disc valve farthest removed from the adapter.

5. In combination with an explosive projectile, a mounting device, including an adapter comprising an elongated perforated tubular body having at its rearward end an opening for receiving an explosive charge, said tubular body being provided with radially extended circumferentially spaced fins, a disc control valve at the forward end of the adapter comprising a pair of relatively rotatable overlying disc plates which have opposed faces in relatively slidable contact and each of which plates has openings therethrough, said openings of the respective plates being adapted by relative rotation of the plates for selective adjustment from an aligned opened to a closed position, one of said plates more nearly adjacent the adapter being of relatively softer and more flexible material than the other plate and having a circumferential downwardly depending skirt at its periphery, means for connecting a projectile at the face of said valve opposite the adapter, the said projectile body having portions of lesser transverse exterior diameter than the planar diameter of said disc plates, and having at other portions of its body axially longitudinal radially extended fins whereby elongated channels are provided along the projectile body forwardly of said plates, the openings in the plate adjacent the projectile body being in communication with said channels.

6. In combination with an explosive projectile having an axially longitudinally channelled exterior wall, a finned mounting device connected to the base end of the projectile body, said mounting device having means for holding an explosive propelling charge, and a disc controlled valve interposed between the projectile body and the mounting device comprising a plurality of relatively rotatable overlying disc plates in slidable facial contact, each of said plates having openings therethrough, one of said plates being integral with and forming a base plate for the projectile body and the openings therethrough having communication with said channels of the projectile body, the openings in the respective plates being selectively adapted by relative rotation of the plates for relative adjustment of the openings therethrough from a registered open to a closed position, one of said plates more nearly adjacent the mounting device being of relatively soft and flexible metal and having a circumferentially downwardly depending skirt at its periphery, and a disc plate of more rigid material snugly fitting within said downwardly depending skirt.

7. A device for mounting an explosively propelled projectile, comprising an adapter member having an elongated externally finned tubular body for receiving an explosive propelling charge at an open end portion, means mounted at the opposite end portion of the adapter for holding a projectile bomb body, the last mentioned means comprising a plurality of upstanding fingers each end of which is connected at its base end to the adapter and has an opposite end portion free, the free end of said fingers having sufficient resilience for releasably holding the bomb body; and a sealing plate interposed between the adapter member and the base of said fingers, said sealing plate having substantially the same planar diameter as the maximum diameter of the adapter and having a slightly greater planar diameter than the maximum transverse diameter across said finger-structure, said plate including a circumferentially skirted peripheral portion of a relatively soft flexible metal adapted for radial expansion responsive to explosive force of the propelling charge in the adapter; said tubular body of the adapter having openings therethrough providing communication between said tubular body and the chamber of a mortar barrel whereby explosive gases generated by the propelling charge may expand into the mortar barrel rearwardly of said sealing plate.

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