J. N. CROWE.

RIFLE GRENADE.

APPLICATION FILED JUNE 8, 1918.

1,376,320.

Patented Apr. 26, 1921.

2 SHEETS—SHEET 1.

Fig. 1

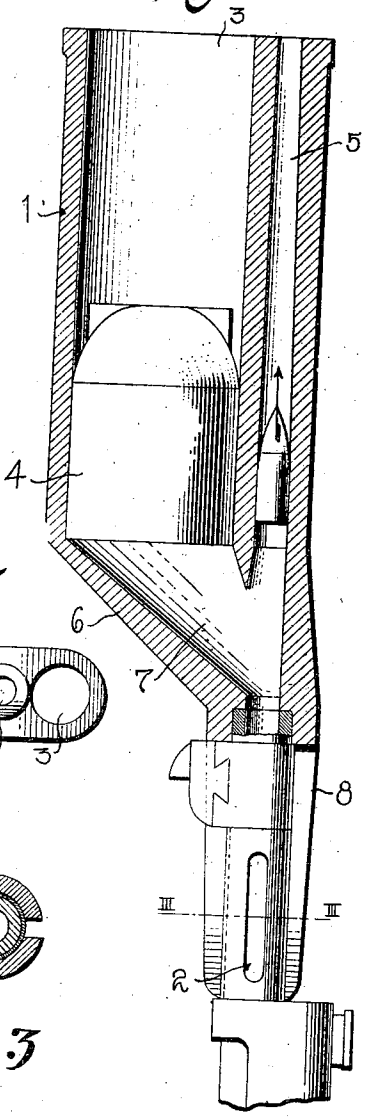


Fig. 2

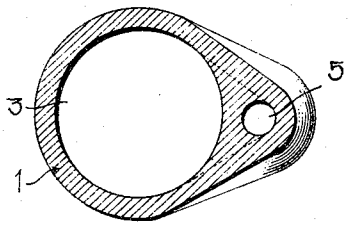


Fig. 4

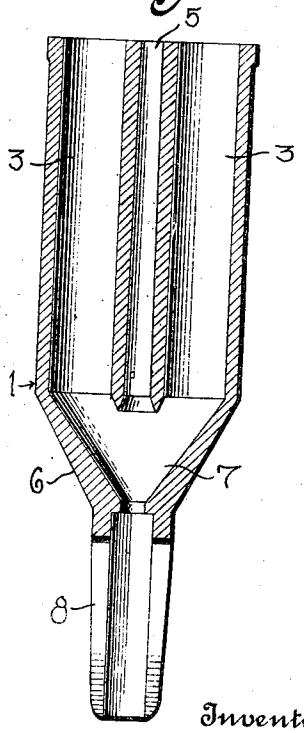
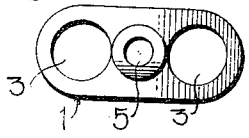


Fig. 5



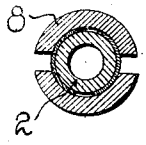


Fig. 3

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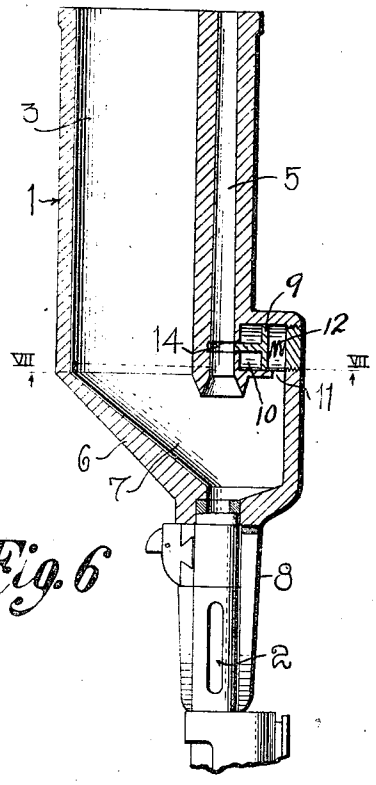
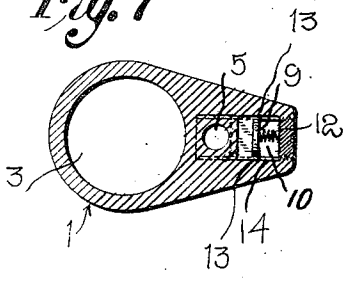


Fig. 6

Fig. 7



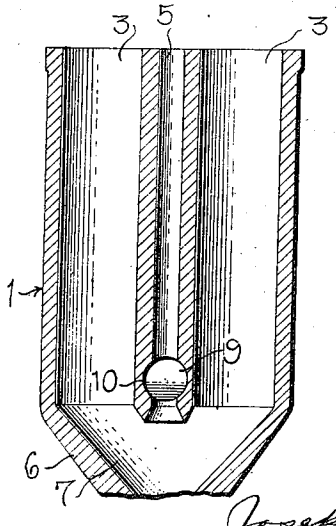


Fig. 8.

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UNITED STATES PATENT OFFICE.

JOSEPH N. CROWE, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO C. C. WILLIAMS, TRUSTEE, ACTING CHIEF OF ORDNANCE, UNITED STATES ARMY.

RIFLE-GRENADE.

1,376,320. Specification of Letters Patent. Patented Apr. 26, 1921.

Application filed June 8, 1918. Serial No. 239,020.

(FILED UNDER THE ACT OF MARCH 3, 1883, 22 STAT. L., 625.)

To all whom it may concern:

Be it known that I, JOSEPH N. CROWE, a citizen of the United States, residing at Washington, in the District of Columbia, have invented an Improvement in Rifle-Grenades, of which the following is a specification.

The invention described herein may be used by the Government, or any of its officers or employees in prosecution of work for the Government, or by any other person in the United States, without payment of any royalty thereon.

This invention generically relates to rifle grenades, more specifically it comprehends a grenade discharger fitted to the end of a rifle or similar firearm and accommodating one or more grenades, the discharger being designed to utilize the gases of explosion, for the purpose of propelling the grenade or grenades in the direction of the target.

One object of this invention is to provide a grenade discharger designed to receive one or more grenades and having a projectile bore, constituting a continuation of that in the rifle, to permit the rifle projectile while traversing the bore of the discharger to function as an obturator and enable the inclosed gases to act on the base of the grenade or grenades to effect their propulsion.

A further object of this invention is to provide a gas operated cut-off, which after a predetermined interval closes the projectile bore of the discharger to completely inclose the gases of the explosion and thus obtain their full effect on the base of the grenade or grenades.

With these and other objects in view my invention consists in certain novel details of construction, combination and arrangement of parts to be more particularly hereinafter set forth in the claims. Referring more especially to the accompanying drawings:

Figure 1 is a vertical section partly in elevation, illustrating the discharger as applied to the end of a rifle barrel;

Fig. 2 is a horizontal section taken on the line II—II of Fig. 1;

Fig. 3 is a similar view on the line III—III of Fig. 1;

Fig. 4 is a transverse vertical section partly in elevation illustrating a modified form of discharger designed to accommodate two grenades;

Fig. 5 is a plan view of the modification illustrated in Fig. 4;

Fig. 6 is a transverse vertical section partly in elevation of a further modification illustrating one form of gas operated cut-off:

Fig. 7 is a horizontal section taken on the line VII—VII of Fig. 6;

Fig. 8 is a transverse vertical section illustrating a portion of a further modification designed to accommodate a plurality of grenades and utilizing the form of gas operated valve shown in Fig. 6.

In the illustrated embodiment, Figs. 1, 2 and 3 there is shown a grenade discharger 1 detachably fitted to the forward end of the rifle 2 and comprising a cylindrical chamber 3 for the reception of the grenade 4 and an eccentrically situated bore chamber 5, the latter constituting a continuation of that in the rifle. The lower end 6 of the discharger is of a frusto-conical shape forming a gas chamber 7 below the inclosed grenade and is attached to the rifle barrel in any desired manner. For illustrative purposes the attaching means disclosed is in the form of a slotted tubular extension 8 of the frusto-conical shaped end 6, the tubular portion being designed to telescopically engage the forward end of rifle 2, the sight of which is accommodated in an obvious manner.

Owing to the possibility of the rifle projectile being slightly deflected upon leaving the end of the rifle, the dividing wall between chamber 2 and bore 5 is formed at its lower end with a pointed extension which functions as a guide and directs the projectile into the discharger bore 5.

Having described the structural features of this discharger its operation is a follows:

The discharger being properly positioned, upon firing the rifle the projectile while traversing the bore 5 functions as an obturator and checks the gases emerging from the end of the barrel, so that these gases collecting in the chamber below the grenade, in expanding, will propel the grenade out of the discharger. The length of discharger bore 5 is made at least twice the length of the grenade so that a sufficient interval may elapse to enable the full expanding effect of

the inclosed gases to be exerted on the base of the grenade.

In Figs. 4 and 5 there is shown a modified form of discharger having two grenade chambers 3 and an intermediate bore 5. By this arrangement two grenades, having approximately the weight of the single grenade shown in Fig. 1, may be simultaneously discharged.

In the further modification shown in Figs. 6 and 7, instead of having the rifle projectile act as an obturator, a gas operated cut-off valve is employed. Referring to Figs. 6 and 7 a valve 9 is positioned in a transverse bore 10, which communicates with gas chamber 7 and intersects bore 5 of the discharger at a point adjacent its lower end. Valve 9 comprises a suitable head having a centrally positioned rearwardly extending tongue which is slidable through a centrally slotted guide to a position closing passageway 5. After the rifle projectile has entered the bore 5 and passed beyond valve 9 the pressure of the inclosed gases will actuate the valve to a position closing the bore 5, and completely retain all the gases until the grenade has been propelled from the discharger. Valve 9 is prevented from turning on its axis by keys 13 sliding in suitable key-ways 14. With this form of valve construction, the projectile while traversing the lateral surface of the valve momentarily checks the action of the gases on this pressure surface so that the full effect of the gases is entirely confined to the normal operating surface of the valve.

In Fig. 8 there is shown a modified form of grenade having two grenade chambers 3 and intermediate bore 5 provided with a valve as described in connection with the modification shown in Fig. 6.

In the modifications shown in Figs. 6 to 8, inclusive, it will, of course, be understood that, in machining and assembling the structural parts, the valve member 9 should be so dimensioned that it will present a larger surface to the action of the gases in a direction tending to hold it in the closed position, rather than in the open position.

With respect to the forms shown in Figs. 1 to 4 inclusive it is to be noted, if deemed expedient, that the bore 5, may be gradually tapered toward its upper end, which will materially decrease the speed of the projectile and increase the period of obturation. Tapering the bore in this manner will also tend to counteract the action of recoil.

In conclusion it is apparent this invention possesses many advantages over the present forms of rifle grenades, to wit use of ordinary service cartridge instead of blanks now employed; ready adaptation of the discharger to any form of rifle without necessitating structural alterations of rifle; and use of regulation hand grenades which if desirable may be disposed in the grenade chamber and discharged by the rifle.

What I claim as new and desire to secure by Letters Patent is:

1. The combination, with a rifle, of a grenade-discharger carried by the barrel thereof and provided with a grenade chamber, with a passage for the rifle projectile alined with the bore of the rifle barrel, whereby the rifle-projectile while traversing said passage upon the firing of the rifle acts as an obturator and checks the gases emerging from the end of the barrel, said gases collecting in said grenade chamber to propel the grenade therefrom, and with a valve actuated by the gases of explosion to close said passage.

2. The combination, with a rifle, of a grenade-discharger carried by the barrel thereof and provided with a grenade chamber, with a passage for the rifle projectile alined with the bore of the rifle barrel, whereby the rifle projectile while traversing said passage upon the firing of the rifle acts as an obturator and checks the gases emerging from the end of the barrel, said gases collecting in said grenade chamber to propel the grenade therefrom, and with a valve actuated by the gases of explosion to close said passage and, by gravity, to open said passage.

3. The combination, with a rifle, of a grenade-discharger carried by the barrel thereof and provided with a grenade chamber, with a passage for the rifle-projectile communicating with said grenade-chamber and alined with the bore of the rifle barrel, whereby the rifle-projectile, while traversing said passage upon the firing of the rifle, acts as an obturator and checks the gases emerging from the end of the barrel, said gases collecting in said grenade chamber to propel the grenade therefrom, a valve passage inclined with reference to said projectile passage, and with a valve slidable in said valve passage and actuated by the gases of explosion to close said projectile passage.

4. The combination, with a rifle, of a grenade-discharger carried by the barrel thereof and provided with a grenade chamber, with a passage for the rifle projectile communicating with said grenade chamber and alined with the bore of the rifle barrel, whereby the rifle projectile, while traversing said passage upon the firing of the rifle, acts as an obturator and checks the gases emerging from the end of the barrel, said gases collecting in said grenade chamber to propel the grenade therefrom, a valve-passage inclined with reference to said projectile passage, and with a valve slidable in said valve passage and actuated by the gases of explosion to close said projectile passage, said valve being provided with keys for guiding the same in its movement.

JOSEPH N. CROWE.