

June 10, 1947.

H. E. JONES

2,421,752

ROCKET PROJECTILE

Filed Feb. 22, 1943

2 Sheets-Sheet 1

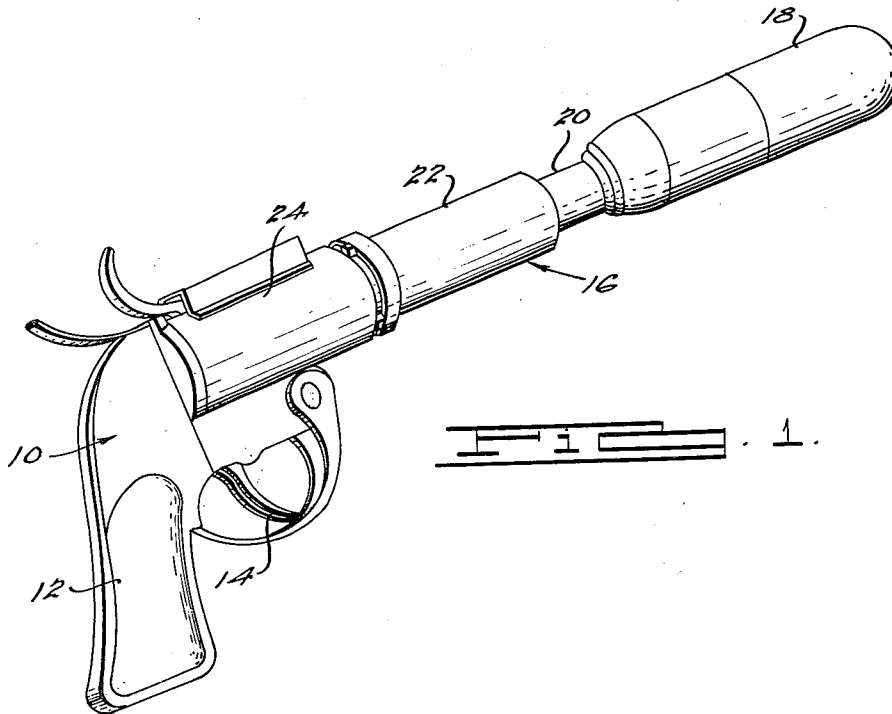


FIG. 1.

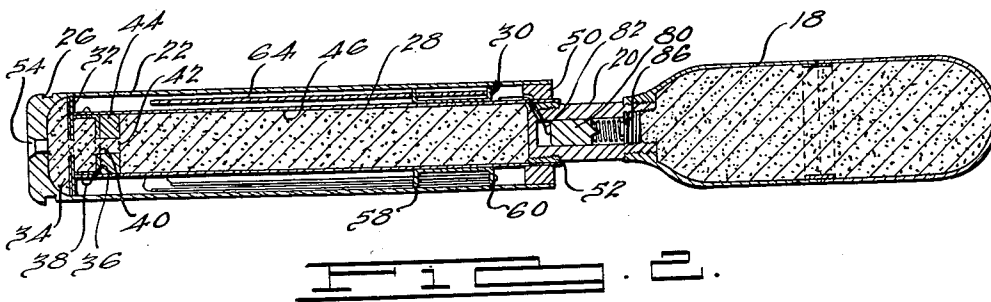


FIG. 2.

INVENTOR
Hilten E. Jones.
BY Edwin J. Balluff
ATTORNEY

June 10, 1947.

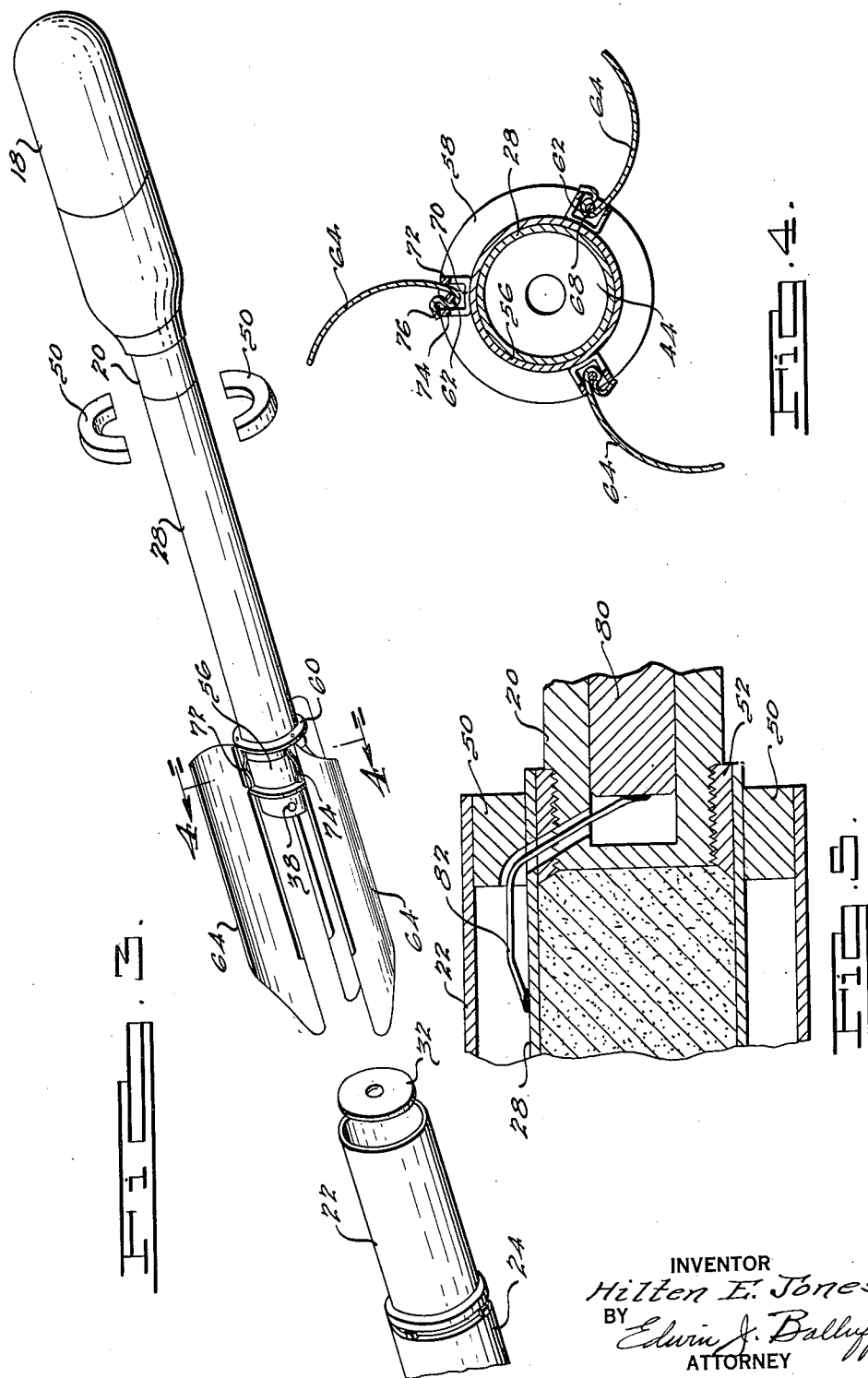
H. E. JONES

2,421,752

ROCKET PROJECTILE

Filed Feb. 22, 1943

2 Sheets-Sheet 2



INVENTOR
Hilten E. Jones.
BY
Edwin J. Balluff
ATTORNEY

UNITED STATES PATENT OFFICE

2,421,752

ROCKET PROJECTILE

Hiltner E. Jones, Detroit, Mich., assignor to Eureka Williams Corporation, a corporation of Michigan

Application February 22, 1943, Serial No. 476,719

1 Claim. (Cl. 102—38)

1

This invention relates to fixed ammunition and in particular to a rocket projectile or aerial torpedo which is adapted to be launched from a small hand gun.

The invention contemplates a rocket projectile which includes a grenade or other type of bomb which due to the construction and arrangement of the parts thereof, as will hereinafter appear, may be launched or shot from a small hand pistol and which may be projected for a considerable distance, far in excess of what it might be thrown.

A principal object of the invention is to provide a novel and improved type of rocket projectile.

Another object of the invention is to provide a new method or system of projecting grenades or bombs.

Another object of the invention is to provide a new and improved type of rocket projectile or aerial torpedo which may be launched from a small hand gun and which projectile may have a range of several thousand feet.

Other objects and advantages of the invention will be apparent from a consideration of the following specification taken in conjunction with the accompanying drawings of which there are two sheets and wherein:

Fig. 1 is a perspective view of a hand gun and a rocket projectile embodying the invention arranged therein for firing;

Fig. 2 is a longitudinal cross sectional view of the rocket projectile;

Fig. 3 is a perspective view of the projectile just after it has been launched from the gun;

Fig. 4 is a sectional view taken in a plane along the line 4—4 of Fig. 3; and

Fig. 5 is an enlarged fragmentary view of the projectile showing the safety detonator.

Referring now to Fig. 1, there is illustrated a small hand pistol 10 of a type adapted for shooting fixed ammunition such as flare shells. This pistol may be constructed in accordance with the disclosure of the pistol illustrated in an application filed by Glen R. Severance, Frederick K. Comiskey, and Hiltner E. Jones on June 16, 1942, and assigned Serial No. 447,292. Such pistol is a breech loading type of pistol and is provided with a hand grip 12 and a trigger 14 for operating the firing mechanism. The rocket projectile embodying the invention is indicated generally at 16 and includes a bomb or grenade 18 and a tubular member or connector 20 assembled in a cartridge case or shell 22 which is adapted to be muzzle-loaded in the barrel 24 of the gun 10.

As illustrated in Fig. 2, the shell 22 is provided with an annular groove 26 in the periphery there-

2

of, such groove being engaged by a latch (not shown) arranged within the barrel 24 at the breech or inner end thereof whereby the projectile is releasably held in the gun 10 for firing.

After firing the latch may be released by any suitable means provided on the gun so as to permit the removal of the case 22 from the piston. As the details of construction of the gun or pistol do not form a part of the invention, it has not been considered necessary to illustrate such details, although the details of construction of the gun may be obtained by reference to the foregoing application. The particular type of pistol illustrated is merely exemplary of the type which may be used in practicing the invention.

Referring now more particularly to Figs. 2, 3, and 4, the projectile as illustrated includes the grenade or bomb 18 which is carried by the connector 20 which in turn is secured to the forward end of a tube 28 which, as illustrated in Fig. 2, is originally assembled within the shell 22. The tube 28 is of considerably smaller diameter than the shell 22 and there is thus provided between the inside of the shell 22 and the tube 28 an annular space in which a fin assembly indicated generally at 30 is arranged in collapsed or folded position. The rear end of the tube 28 seats against a partition 32 arranged transversely of the shell 22 and spaced from the end thereof to define a chamber in which an expelling charge 34 of powder is arranged. The partition 32 is apertured at its center. A cup-shaped member 36 is seated in the end of the tube 28 with the space within the member 36 being in communication with the chamber containing the powder charge 34 and the end of the shell 22 through the aperture in the partition 32. The cup-shaped member 36 is secured in position by means of several rivets 38 which project laterally from the sides of the tube 28. The cup-shaped member 36 is provided with an aperture 40 therein which communicates through a hole 42 formed by an annular member 44 with the chamber 46 defined by the tube 28. The hole 42 in the annular member 44 and the aperture 40 in the cup-shaped member 36 define a throat or orifice through which the gases generated in the chamber 46 are discharged, as will hereinafter be further explained.

The forward end of the tube 28 is supported in spaced relation with the forward end of the shell 22 by a split washer 50. The tube 28 at its forward end internally is provided with a threaded fitting 52 to which the connector 20 is secured, the connector 20 in turn being affixed to

3

the grenade or bomb 18 in order to support the same. The fitting 52 and connector 20 close the front end of the tube 28.

The chamber 46 is filled with a charge of powder which is adapted to burn and generate gas and which gas is discharged through the orifice 40, 42. The expelling charge 34 is adapted to be exploded by the percussion cap 54 carried in the end wall of the shell 22, the percussion cap 54 in turn being set off by the firing mechanism of the gun 10 when the ammunition is properly arranged therein. The explosion of the expelling charge 34 is adapted to eject the projectile from the gun and the shell 22, the partition 32 functioning as a thrust member for imparting the force of the explosion to the end of the tube 28 and the bomb 18 carried thereby. The expelling charge 34 when exploded is adapted to hurl the projectile a small distance from the gun, for example in the neighborhood of from fifty to one hundred feet, and the recoil from the explosion is such that the gun or pistol 10 may be held in the hand and fired.

The cup-shaped member 36 in the orifice 40, 42, may be filled with powder as is the chamber 46 and, due to the aperture in the partition 32, functions as a fuse for igniting the powder in the chamber 46. As the projectile is hurled from the gun and the shell 22, and as clearly illustrated in Fig. 3, the split washer 50 falls away from the projectile and the fin assembly opens up and assumes the position as illustrated in Fig. 3.

The fin assembly comprises, as illustrated in Figs. 3 and 4, a collar 56 which is slidable axially on the tube 28, said collar being provided with radially extending flanges 58 and 60 thereon at the ends thereof. The flanges 58 and 60 form supports for a plurality of pins 62 which are arranged parallel to the axis of the tube 28 and which function as pivotal supports for fins or vanes 64. As illustrated, three such fins or vanes are provided and each of which at its forward end is provided with a hook-shaped part 68 which is curled around one of the pins 62 so as to pivot thereon. The portions 68 are located between the flanges 58 and 60 so as to prevent relative axial movement between the fins 64 and the collar 56. A leaf spring 70 is confined between the portions 68 and the collar 56, each spring 70 being provided with spaced portions 72 and 74. The portion 74 is adapted to engage the end 76 of the portion 68 in order to bias the fin 64 to the position illustrated in Fig. 4, while the portion 72 projects radially on the other side of the fin 64 and serves as a stop for limiting the movement of the fin 64 under the action of the part 74 of the spring.

When the parts of the projectile are arranged as illustrated in Fig. 2 the fins are collapsed, that is, they are folded down against the sides of the tube 28 and the collar 56 is positioned adjacent the forward end of the tube. However, after the projectile is hurled from the shell 22, the collar 56 is free to and does slide rearwardly on the tube 28 until stopped by the rivets 38, and the springs 70 move the fins or vanes 64 to the position as illustrated in Figs. 3 and 4. The tube 28 and fin assembly form a tail for the projectile. At the same time the powder in the cup-shaped member 36 is ignited by the explosion of the charge 34 and functions as a fuse to ignite the powder in the chamber 46.

The powder in the chamber 46 is a powder which generates a large volume of gas which is delivered at a very high velocity through the ori-

4

fice 40, 42 thereby impelling the projectile forwardly on the path or trajectory on which it was started by the explosion of the charge 34. As a matter of fact, the powder in the chamber 46 will begin to burn before the projectile loses any appreciable amount of the velocity imparted to it by the explosion of the charge 34, and hence the gases generated by the burning of the powder in the chamber 46 do not have to overcome the inertia of the projectile but rather merely keep it moving in the same direction in which it was started by the charge 34. During such time the fins 64 are open and will guide the projectile along the trajectory begun when the projectile was fired from the gun, which of course will depend upon the elevation of the gun at the time of firing.

The grenade or bomb 18 here illustrated is of the type which is adapted to explode when brought into contact with an object, although the invention contemplates that any type of bomb or explosive device may be used, such for example as those which are set to explode after a predetermined time interval.

In the embodiment illustrated, the connector 20 has a detonator pin 80 slidably arranged therein and normally held in the position illustrated by a wire 82, one end of which is soldered to the end of the pin 80 and the other end of which is soldered to the outside of the tube 28. A spring 84 may be arranged between the detonator pin 80 and the detonator 86. The end of the wire 82 soldered to the outside of the tube is adapted to be released by the heat generated by the burning of the powder in such chamber 46 when the powder charge in such chamber has been burned down to a point close to the point at which the wire 82 is soldered to the outside of the tube. As soon as the heat has melted the soldered connection between the wire 82 and the tube 28, the grenade 18 may be exploded by contact with any object due to the fact that the inertia of the detonator pin 80 will cause it to strike the detonator 86 and thereby explode the powder charge in the grenade 18.

The wire 82 is provided as a safety for the detonator in the event that the projectile hits the ground due to being misdirected close to the point from which it was shot. Under these circumstances the grenade 18 will not be exploded, and it may be reused by disconnecting it and the connector 20 from the tube 28. The use of the wire 82 is entirely optional and may, if desired, be entirely omitted. The powder charge in the chamber 46 may be sufficient to give the projectile a range up to two thousand feet.

While the invention has been described with some detail, it is to be understood that the description is for the purpose of illustration only and is not definitive of the limits of the inventive idea. The right is reserved to make such changes in the details of construction and arrangement of parts as will fall within the purview of the attached claim.

I claim:

Fixed ammunition comprising a case, a projectile comprising a bomb having a tail and fin assembly disposed in said case, said case being adapted to be muzzle-loaded in a hand firearm and having an explosive charge adapted to be fired by the firing mechanism of the firearm for expelling said projectile from said case, said tail of said projectile having a powder charge therein adapted to be ignited by the firing of said explosive charge and functioning after the dis-

charge of said projectile from said case to generate gas which is discharged rearwardly from said projectile in such a way as to propel said projectile as a rocket through the air along the trajectory on which it was started by the firing of said explosive charge, said fin assembly being operative for directing said projectile along said trajectory, said bomb having a firing pin operable for discharging the same, said firing pin being actuated by contact of said bomb with an object so as to explode said bomb and a safety connection between said pin and tail adapted to be released by the heat generated by the burning of said powder charge.

HILTEN E. JONES.

5

10

15

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,417,460	Driggs -----	May 23, 1922
1,879,840	Brandt -----	Sept. 27, 1932
980,215	Deubler -----	Jan. 3, 1911
1,257,126	Schneider -----	Feb. 19, 1918
2,271,280	Weinert -----	Jan. 27, 1942
2,344,957	Anzalone -----	Mar. 28, 1944
17,312	Brand -----	May 19, 1857
2,397,114	Anzalone -----	Mar. 26, 1946