W. L. SIMPSON.

POSITIVE FUSE PERCUSSION.

APPLICATION FILED MAR. 30, 1917.

1,230,933.

Patented June 26, 1917.

Fig. 1.

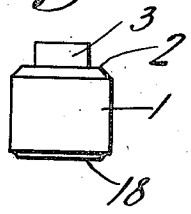


Fig. 2.

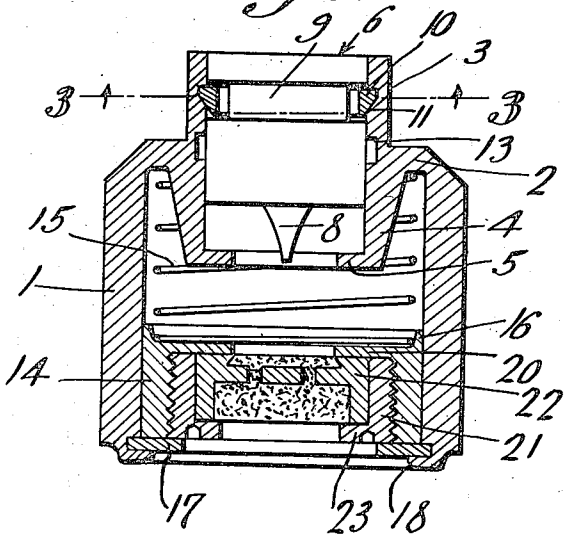
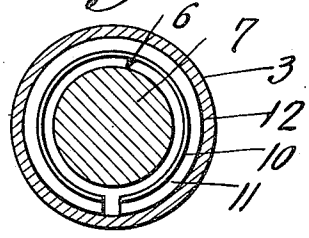


Fig. 3.



Witness

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WILLIAM L. SIMPSON, OF CRUM LYNNE, PENNSYLVANIA.

POSITIVE FUSE-PERCUSSION.

1,230,933. Specification of Letters Patent. Patented June 26, 1917.

Application filed March 30, 1917. Serial No. 158,608.

To all whom it may concern:

Be it known that I, WILLIAM L. SIMPSON, a citizen of the United States, residing at Crum Lynne, in the county of Delaware and State of Pennsylvania, have invented a new and useful Positive Fuse-Percussion, of which the following is a specification.

The present invention appertains to fuse percussions for explosive projectiles, and aims to provide a novel and improved device of that character which enables the projectile to which it is applied to be handled in safety, without danger of premature explosion, and which is set to armed position, when the shell is fired, thereby providing a positive priming of the explosive when the shell reaches its destination or strikes an object.

It is also the object of the invention to provide a positive fuse percussion device which is comparatively simple and inexpensive in construction, as well as being thoroughly practical, reliable, and efficient in use.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is an elevation of the device.

Fig. 2 is an enlarged diametrical section thereof, portions being shown in elevation.

Fig. 3 is a cross section on the line 3—3 of Fig. 2.

The device embodies a hollow cylindrical housing 1 of suitable material provided at its forward end with an inturned flange 2 from which a neck or boss 3 projects forwardly and a boss 4 projects rearwardly within the housing 1. Said bosses 3 and 4 provide a tubular member for housing the firing pin 6, the rear end of the boss 4 having an inturned annular lip 5. The firing pin 6 embodies a cylindrical body or plunger 7 slidable within the tubular member 3—4, and a point 8 projecting from the rear end of the plunger 7.

In order to retain the firing pin in safety or disarmed position during the handling of the shell to which the device is applied, whereby to prevent premature explosion, the plunger 7 is provided with an annular circumferential groove 9 in which a split resistance and detent ring 10 is fitted, said ring having a tendency to expand, and being tapered rearwardly, as at 11. The boss or neck 3 is provided with an inner annular groove 12 whose rear wall is tapered or beveled to fit the tapered portion of the ring 10. The tubular member 3—4 is provided in rear of the groove 12 with a second inner annular groove 13 having square shoulders. The firing pin is normally set forwardly so that the ring 10 springs or expands into the groove 12, thereby holding the firing pin in safety or disarmed position, with the point 8 retracted within or in front of the opening surrounded by the lip 5. When the shell is fired, the firing pin receives a severe set back, due to inertia, and the pressure of the ring 10 against the tapered wall of the groove 12 will forcibly contract said resistance and detent ring whereby it will leave the groove 12 and move along the interior surface of the tubular member 3—4 until the plunger 7 strikes and is stopped by the lip 5, in which event the ring 10 is in a position to snap or spring into the groove 13, thereby locking the firing pin in armed position, since the ring 10 cannot move forwardly out of the groove 13. When the plunger 7 seats against the lip 5, the point 8 of the firing pin is projected from said lip, to provide a positive functioning of the device, when the shell strikes the object fired at.

The fulminate primer cap is mounted movably within the housing 1, and for this purpose, a cylindrical primer casing 14 is slidable snugly within the housing 1, and is normally moved to the rear end of said housing by means of a coiled wire expansion spring 15 of suitable tension disposed within the housing, one end convolution of the spring seating against the flange 2 around the boss 4 and the other end convolution of the spring bearing against the forward portion of the casing 14 which is provided with an annular flange or lip 16 for receiving the spring and holding it centered. The rear edge of the casing 14 normally bears against a flat ring 17 having its outer edge seating against the rear edge of the housing 1, said ring 17 forming a stop for the casing 14 when the casing is moved and held rearwardly by the spring 15. The rear edge of the housing 1 is provided with an annular bendable flange 18 projecting rearwardly

therefrom, which, after the closing ring 17 is applied, is spun into position overlapping said ring for holding it in place.

In order for the casing 14 to hold the fulminate priming cap, the forward edge of the casing 14 has an inturned annular flange 20, and a hollow primer screw 21 is threaded forwardly into the casing 14 and holds the fulminate priming cap 22 of any suitable construction. The cap 22 is fitted within the hollow screw 21 and bears against the flange 20, it being held within the screw by an inturned annular flange 23 with which the screw is provided at its rear edge, the cap 22 being disposed between the flanges 20 and 23, and when the cap is set off, this will cause the explosion through the base of the fuse rearwardly to the explosive charge of the shell.

When the firing pin is in safety or disarmed position, as seen in Fig. 2, the shell or projectile can be stored or handled in perfect safety, because even though the casing 14 may be moved forwardly during the jostling or handling of the shell, the point 8 of the firing pin is retracted and cannot be engaged by the cap 22, and the firing pin cannot move to armed position unless subjected to such pressure as it would not receive during the ordinary handling of the shell, even should the shell be dropped. This provides for perfect safety, since the resistance or detent ring 10 will hold the firing pin in retracted position. The housing 1 is sufficiently substantial to withstand the side blow, should the device be applied to a frail fuse body chamber, such as when applied to an aluminum fuse body.

When the shell is fired, the firing pin will be set back, the ring 10 being contracted by the cam action against the tapered wall of the groove 12, and snapping into the groove 13 when the firing pin reaches armed position. Although the resistance of the ring 10 is sufficient to hold the firing pin ordinarily in safety or disarmed position during the handling or storage of the shell, it is not sufficient to resist the strain incident to the firing of the shell, and consequently the firing pin is set back to armed position, thereby rendering the functioning of the device positive when the shell strikes its objective, in which event the casing 14 will move forwardly within the housing 1, due to momentum, and against the tension of the spring 13, thereby bringing the fulminate primer cap 22 against the point 8 of the firing pin with considerable impact, whereby the flash of the cap will extend directly rearward to ignite the charge.

Having thus described the invention, what is claimed as new is:—

1. A fuse percussion device embodying a housing having a tubular member at its forward end, the rear end of said tubular member having an inturned flange, a primer cap carrying member movable forwardly within the housing toward said tubular member, a firing pin embodying a plunger slidable within said tubular member at a point projecting from the plunger and projectable beyond said flange when the firing pin is set back, and means for holding the plunger in forward disarmed position within the tubular member until firing and for holding the plunger in set back armed position within said tubular member.

2. A fuse percussion device embodying a housing having a tubular member at its forward end projecting within the housing and having an inturned flange at its rear end, a primer cap carrying member slidable forwardly within the housing toward said tubular member, a coiled wire expansion spring between said carrying member and the forward end of the housing and surrounding said tubular member, a firing pin within said tubular member adapted to be set back and having a point to project beyond said flange when set back, and means for holding the pin in forward disarmed position within the tubular member until firing and for holding the pin in set back armed position after firing.

3. A fuse percussion device embodying a housing, a firing pin arranged to set back to armed position within the housing, means for holding the firing pin in forward disarmed position until firing and for holding the pin in set back armed position after firing, a primer casing slidable forwardly within the housing toward the firing pin, a hollow screw threaded forwardly into said casing, and a primer cap fitting within the screw, said casing and screw having forward and rear flanges, respectively, between which the cap is disposed.

4. A fuse percussion device embodying a housing, a primer cap carrying member movable forwardly within the housing, a firing pin adapted to be set back within the housing to armed position, the rear edge of the housing having an annular flange, and a ring seating against the rear edge of the housing within said flange to limit the rearward movement of said member, said flange being spun inwardly to hold the ring in place.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM L. SIMPSON.

Witnesses:
HAROLD R. WHITE,
FRED P. BEACH.