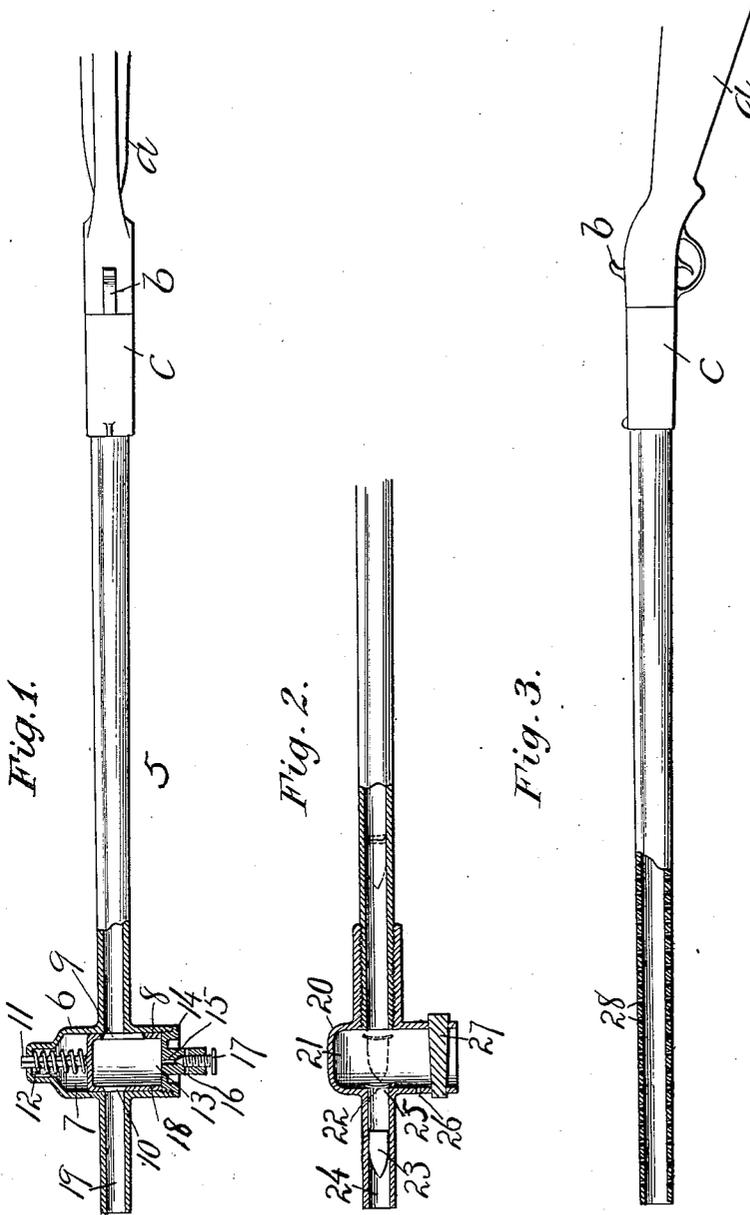


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H. P. MAXIM.
SILENT FIREARM.

APPLICATION FILED MAR. 7, 1907.



WITNESSES:

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SILENT FIREARM.

No. 880,386.

Specification of Letters Patent.

Patented Feb. 25, 1908.

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To all whom it may concern:

Be it known that I, HIRAM P. MAXIM, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented a new Silent Firearm, of which the following is a specification.

The object of my invention is to provide a firearm or like device in which the sound usually resulting from its discharge shall be eliminated or reduced to a minimum, if not practically prevented; and a further object of the invention is to provide a device of this class that shall be self-actuating; and a further object of the invention is to so control the passage or passages from the breech chamber, or that part in which the explosive charge is ignited as to stop the flow of gases therefrom; and a further object of the invention is to provide means for so controlling such gases resulting from the ignition of the material from which the propelling force is obtained that their direction and amount of flow may be thoroughly controlled.

Forms of devices in the use of which these objects may be attained are illustrated in the accompanying drawings, in which—

Figure 1 is a top or plan view of a firearm embodying my invention, with parts broken away to show construction. Fig. 2 is a view of a portion of the barrel of a firearm embodying another form of device, with parts cut away to show construction. Fig. 3 is a view in side elevation of a portion of a firearm illustrating another form of device embodying the invention and with parts cut away to show construction.

As is well-known, the sudden release or escape from confinement of gases and the like produced by the ignition of certain materials or ingredients used in explosive charges for firearms creates a detonating sound which may be heard at great distances and which also produces effects resulting in unpleasant sensations and often in injury. These sounds are objectionable for many reasons, among which are included the warning thus given of the firing of a gun and also the injurious effects and unpleasant sensations caused thereby. In order to prevent such objectionable results following the sudden escape of the gases I have provided means whereby the emission of the gases after ignition may be stopped and the direction

and amount of flow controlled or regulated as desired.

While many different forms of devices for accomplishing this result and embodying my invention may be employed, I have simply illustrated herein a few, and in the drawings the letter *a* denotes the stock of a firearm, as a rifle having the usual firing and loading mechanism including a hammer *b* and magazine *c*. The barrel 5 is provided forward of the breech chamber, or that part in which the projectile rests prior to discharge, with the means for stopping and also regulating or controlling the emission of the gases. In the form of the device shown in Fig. 1 the usual bore through the barrel opens into an enlargement 6 having a piston chamber 7 containing a piston 8. While I have shown this enlargement as extending laterally at opposite sides of the barrel, it may be of different form than herein shown and disposed in any position. The piston 8 serves as a valve of the unbalanced species having an inlet port 9 opening toward the inner end of the barrel and an outlet port 10 opening into the mouth or muzzle of the barrel. The inlet port 9 is preferably greater in size than the outlet port 10, both of these ports, however, being of a size to permit the passage of a projectile through the valve. The piston or valve 8 has a stem 11 projecting through the end wall of the chamber 7, and a spring 12 may be employed to assist in returning the valve or piston to its initial position, and by initial position is meant that position assumed prior to the discharge of the firearm. Any desired means of packing the opening through which the stem 11 extends may be employed. The valves thus constructed without any attachments thereto and slidable in a direct line offer the maximum of simplicity in construction and certainty in operation, as, being unrestricted during its movement, that is, free to follow its natural course or movement in a direct line, it meets with the least resistance to such movement except for the pressure of the spring which may be employed to return the valve to its normal position. It is directly acted upon and operated by the pressure of gases from within the bore of the barrel and is therefore extremely accurate and certain in operation.

The valve is open at one end, as at 13, and its edge may rest against any suitable stop,

as a cap 14 which closes this end of the chamber 7. A vent port 15 extends from the chamber within the piston, and lateral vent ducts or ports 16 may be employed leading from the main port 15. An escape valve 17, in the form of the usual needle valve if desired, may be employed to regulate the outflow of gas.

In the operation of the device the powder or like explosive charge having been ignited in any usual manner, the gas caused by such ignition forces the projectile along the bore of the barrel, following closely thereafter. The projectile passes through the enlarged port 9 and through the outlet port 10 from which it is ejected at the muzzle of the barrel. The gases closely following the projectile and readily entering the enlarged port 9 in the piston or valve and exerting their pressure within the latter, cause it to quickly move along the chamber 7 against the pressure of the spring and also of the air confined therein. The wall 18 thus promptly closes the passage into the muzzle 19 of the barrel, effectually stopping the flow and preventing the escape of by far the greater portion of the gases at the muzzle.

The escape valve 17 may be entirely closed and the gases thus completely confined within the firearm. They may be directed to any part of the device to perform any function that may be desired in the further operation of the firearm, or they may be allowed to directly escape, the flow during escape being regulated by the escape valve 17. As the gases are thus released from within the piston, or piston and bore of the barrel, the air which has been compressed in the chamber 7, assisted by the spring 12, will return the piston or valve to its initial position.

While I have shown the spring as a means of assisting in the movement of the valve, I do not consider it absolutely essential to the operation of the device.

The port 9 may be of any desired size and it is not essential that the opening from the bore at the rear end of the barrel into the piston or valve shall be entirely closed in the movement of the valve.

In the form of the device shown in Fig. 2 the valve is attached to the projectile. An enlargement 20 is employed in this form of the device having a chamber 21 through which the passage in the barrel extends. The valve 22 is removably secured to the projectile 23, preferably at its rear end. This valve is preferably formed of metal having certain resilient qualities and when the projectile is placed in position this valve is formed into cup-shape, as shown in dotted lines in said Fig. 2. The gases incident to the ignition of the explosive charge acting upon this cup-shaped valve press the edges out closely against the wall of the barrel, thus effectually preventing the passage of

the gases around the sides of the projectile and at the same time causing an engagement with the rifling of the barrel, insuring a turning motion to be given to the projectile. When the valve enters the chamber 21 the pressure of the gases causes it to suddenly expand. As the projectile passes through the mouth 24 at the muzzle of the barrel this valve strikes the edges of the opening 25 out of the chamber 21 and freeing itself from the projectile closes said opening against the outflow or escape of the gas. An escape outlet 26 is formed through the wall of the chamber 21 through which the gases may now slowly escape. A slide 27 or other equivalent device may be employed to close the end of the chamber, and by withdrawing this slide or otherwise opening the main entrance to the chamber 21 the valves may be readily removed.

In the form of the device shown in Fig. 3 the barrel is provided in advance of that part in which the projectile rests just prior to ignition of the explosive material with ports 28 opening through the wall of the barrel. These ports may be relatively disposed in any desired manner and of such number and size to suit the requirements depending to a great extent upon the size of the barrel and the quantity of the explosive charge. In the form shown herein two rows of ports oppositely disposed are provided. In this form of the device, as the projectile passes along the barrel it forms a valve to impede the escape of the gases which, as soon as the ports 28 are opened, escape through such ports. Such a quantity of the gases thus escaping leaves a comparatively small quantity to be emitted at the muzzle of the barrel.

It will be noted that my invention resides broadly in means for completely stopping or otherwise obstructing the flow of gases from within the firearm after discharge of the projectile, such gases being confined in a chamber which may be separately formed, or which may be constituted in the barrel proper. This obstruction may consist of the projectile itself, or of means especially contrived to effect such result, and any devices embodying the results thus set out will be considered as coming within the scope and intent of the invention.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A firearm including a barrel and firing mechanism, and a sliding valve mounted upon said firearm and arranged to directly receive the pressure of the gases of discharge to obstruct the bore in said firearm.

2. A firearm including a barrel and firing mechanism, and a sliding valve mounted upon said firearm and arranged to directly receive the pressure of the gases of the explosive to close the bore of said firearm.

3. A firearm including a barrel and firing mechanism, a piston valve operatively mounted on the firearm to slide on the arm and arranged to control the opening through the barrel, and means for admitting pressure of gas directly to said valve to operate it.
4. A firearm including a barrel having a chamber extending transversely of the bore through the barrel, firing mechanism, and a valve operatively connected and mounted to slide in said transversely arranged chamber and arranged to be directly operated by the pressure of gas to close the bore through the barrel.
5. A firearm including a barrel having a chamber transversely arranged to the bore therethrough, firing mechanism, and a piston valve directly operated and movable in said transversely arranged chamber to close the bore through the barrel.
6. A firearm including a barrel having a chamber transversely arranged to the bore therethrough, firing mechanism, a piston valve directly operated and movable in the transversely arranged chamber to close the bore through the barrel, and means for returning the valve to its normal position.
7. A firearm including a barrel having a cylindrical chamber transversely arranged to the bore therethrough, firing mechanism, and a valve fitting said transversely arranged chamber and directly operated to close the bore through the barrel.
8. A firearm including a barrel, firing mechanism, and a chambered valve operatively mounted with respect to the barrel to restrict the flow of gas therefrom.
9. A firearm including a barrel having a chamber transversely arranged to the bore therethrough, firing mechanism, and a hollow valve movable in said chamber to close the bore through the barrel.
10. A firearm including a barrel having a cylindrical chamber transversely arranged to the bore therethrough, firing mechanism, and a chambered valve fitting said chamber and directly operated to close the bore through the barrel.
11. A firearm including a barrel having a chamber transversely arranged to the bore therein, firing mechanism, and a hollow valve movable in said chamber to close the bore in the barrel.
12. A firearm including a barrel having a chamber transversely arranged to the bore therethrough, firing mechanism, and a chambered valve having openings extending into the transversely arranged chamber and adapted to register with the bore in the barrel.
13. A firearm including a barrel having a cylindrical chamber transversely arranged to the bore therethrough, firing mechanism, and a chambered piston fitting said transversely arranged chamber, said piston having a port through its wall adapted to register with the bore through the barrel.
14. A firearm including a barrel having a chamber transversely arranged to the bore therein, firing mechanism, a chambered member movable within the chamber in the barrel and having an opening through its wall, said opening being adapted to register with the bore through the barrel.
15. A firearm including a barrel having a chamber transversely arranged to the bore therein, firing mechanism, a chambered member movable within said transversely arranged chamber, said member having a port through its wall adapted to register with the bore through the barrel, and means for returning said movable member to its normal position.
16. A firearm including a barrel having a chamber closed at its end and arranged transversely to the bore therethrough, firing mechanism, a chambered member movable in said chamber and having means to permit the passage of a projectile, the chamber in said chambered member opening out at one end thereof.
17. A firearm including a barrel, firing mechanism, an enlargement upon the barrel forming a chamber, a chambered member movable in said chamber to obstruct the flow of gas from the barrel, a cap closing the chamber in said enlargement, the chamber in the movable member being open at that end facing said cap.
18. A firearm including a barrel, firing mechanism therefor, an enlargement upon said barrel having a chamber, a cap closing one end of the chamber in the enlargement, means for graduating the flow of gas from the chamber, and a chambered member movable in the chamber in the enlargement to obstruct the flow of gas from the barrel, said chamber in the movable member being open at that end facing said cap.
19. A firearm including a barrel having a chamber transversely arranged to the bore therethrough, a directly operated piston having unrestricted movement in said chamber to obstruct the bore through the barrel, and means to cause the piston to gradually return to its normal position.
20. A firearm including a barrel, firing mechanism, a directly operated member movable to obstruct the flow of gas from and operatively connected with the barrel, and means for regulating the escape of gas from the barrel.
21. A firearm including a barrel having a chamber transversely arranged to the bore therethrough, firing mechanism, a chambered valve movable in said chamber, the chamber in the valve being open at one end thereof, and said valve having an opening into the transversely arranged chamber.
22. A firearm including a barrel having a

chamber transversely arranged to the bore
therethrough, firing mechanism, and a cham-
bered valve having openings extending
through its wall and adapted to register with
5 the bore in the barrel.

23. A firearm including a barrel having a
chamber transversely arranged to the bore
therein, firing mechanism, a chambered

member having a port through its wall and
movable within the chamber in the barrel, 10
said port being adapted to register with the
bore through the barrel.

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Witnesses:

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