R. A. MOORE.

SILENCER FOR FIREARMS.

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1,021,742. Patented Mar. 26, 1912.

Fig. 1.

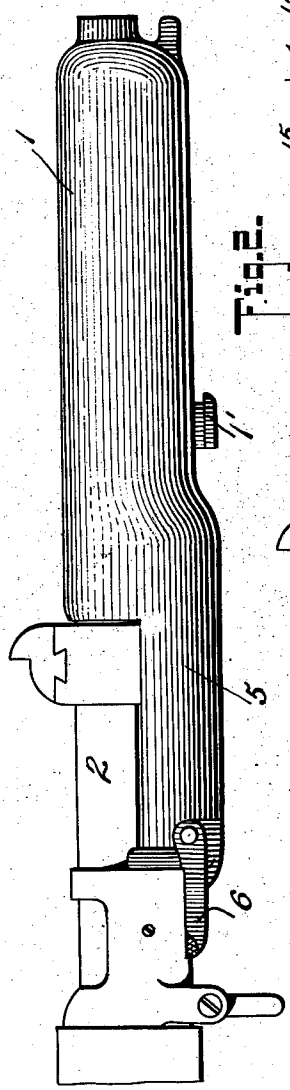


Fig. 2.

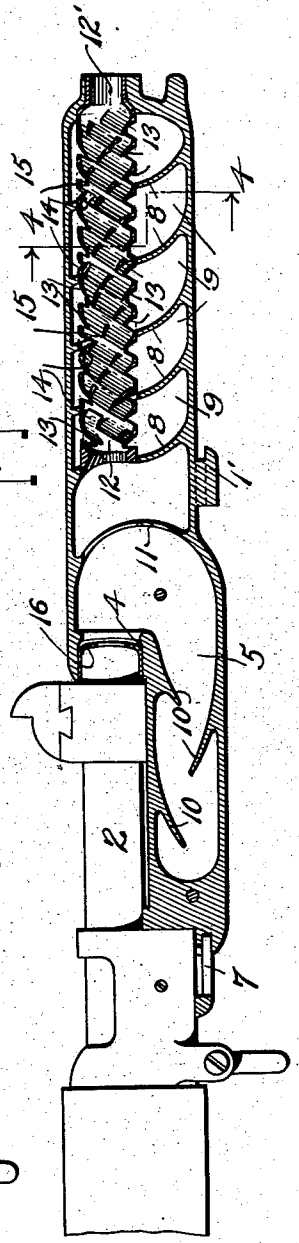


Fig. 4.

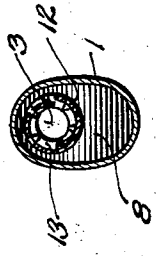
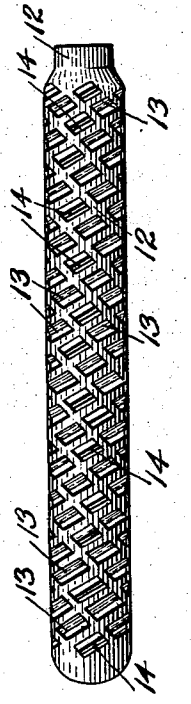


Fig. 3.



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SILENCER FOR FIREARMS.

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To all whom it may concern:

Be it known that I, ROBERT A. MOORE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Silencers for Firearms, of which the following is a specification.

Silencing means for firearms have, of course, been heretofore proposed and are of several different classes, including primarily that type of device in which the gases incident to the firing of a weapon are deflected into a closed chamber after issuing from the muzzle of the firearm, and the energy thereof retarded until dissipated to an extent affording a reduced discharge noise when they subsequently escape from said chamber.

Means of the above construction have proved only partially effective heretofore, doubtless due to the failure to sufficiently confine the gases, even temporarily to obtain the best results. Mechanical means have also been devised, whereby, after the firearm is discharged, a valve or closure operates to cut off the outflow of the gases following the projectile. Practically speaking, however, the latter type of silencing means has not proved successful, and is substantially inoperative.

The present invention aims to utilize the principle of the mechanical cutting off of the passage of the gases to the open air to the extent merely of employing a peculiar baffle which operates on said gases in such a way as to cause a certain proportion of the same to be deflected across the projectile path or opening and thus form a gaseous barrier or obstruction that acts to temporarily prevent any of the remaining gases from issuing into the atmosphere by direct movement through said projectile opening or path. The baffle means is also designed with the particular object of causing the gases subsequent to the explosion of the weapon to move toward the outlet of the silencer casing by a peculiar whirling or spiral movement in one direction, such movement, however, being partly retarded by a separate portion of the gases which are so deflected as to move in a prescribed spiral path intersecting that of those first mentioned, the energy of all of the gases being reduced materially in the movements above described.

In the operation of silencers of the classes first referred to, it has been found that the muzzle of the weapon to which the silencing device is invariably attached, becomes deteriorated in a short time by the chemical action of the gases confined in a chamber forming a continuation of the barrel of the firearm, and in which the discharge of the gases is interrupted partly or wholly. The actual deteriorating effect on the muzzle resides in the fact that small holes or depressions are eaten out by the gases, thus seriously affecting the reliability of the firearm.

Special means are provided as an essential feature of this invention, whereby the muzzle of the weapon is entirely protected from injury from the above cause, and said means in a very peculiar manner performs an additional function of forming a part of the connection between the gun and silencer, whereby slight relative expansion and contraction of these parts, as well as vibration, is allowed and compensated for.

In the accompanying drawings Figure 1 is a side elevation of a silencer embodying the invention applied to a firearm of any conventional type; Fig. 2 is a view similar to Fig. 1, the silencer being shown in longitudinal section; Fig. 3 is a plan view of the tubular baffle; and Fig. 4 is a transverse section taken about on the line 4—4 of Fig. 2.

Throughout the following detail description, and on the several figures of the drawings, similar parts are referred to by like reference characters.

A silencing device comprising the essential features of the present invention embodies a casing 1 of somewhat oval cross section and is provided with suitable means for securing the same to the muzzle of the firearm, the barrel of the latter being shown at 2. The casing 1 is provided in its upper portion with a longitudinal bore or opening 3 in alinement with and of somewhat larger diameter than the bore of the firearm, and the inner end of said opening is enlarged as shown at 4 so as to receive the muzzle of the barrel 2. Projecting downwardly and rearwardly from the inner portion of the casing 1 is a hollow extension 5 forming a trap or pocket, and carried by said extension at its end portion is a bail or similar member 6 adapted to be engaged with the bayonet stud 7 of the firearm to firmly secure the silencer in operative po-

sition upon the weapon. The casing 1 itself will be provided with a bayonet stud 1′ so that when the silencer is mounted upon the firearm a bayonet may be carried thereby in a detachable manner.

Formed within the body of the casing 1 are a plurality of approximately vertical but curved partitions 8, the bore or opening 3 aforesaid passing through said partitions near their upper ends. The lower end portions of the partitions curve forward somewhat sharply and it will be apparent that the partitions separate the casing 1 into a plurality of chambers 9. In a similar manner, the hollow portion of the extension 5 has formed upon its interior a plurality of inclined webs 10 which likewise divide the said hollow portion into a plurality of chambers communicating with one another. A partition 11 located in the casing 1 adjacent to the muzzle opening 4 is of semicircular form, curving rearwardly at its lower portion so as to deflect a portion of the gases passing from the muzzle of the firearm downwardly and backwardly into the chambers or pockets of the hollow extension 5 in which said gases are temporarily trapped.

An important feature of the invention resides in the provision in the enlarged opening 3 of the casing 1 of the tubular baffle 12, the outer end of which is contracted as shown at 12′ so as to fit snugly in an opening provided at the outer extremity of the casing 1 and the diameter of the contracted portion 12′ aforesaid being substantially the same as that of the bore of the firearm with which bore the baffle 12 is in alinement. The baffle 12 is adapted to be introduced into the casing 1 through the opening 4 at the rear end of said casing and said baffle fits snugly in the opening in the partitions 8 and casing 1. The rear end of the baffle 12 is open and said baffle is formed throughout its length with spirally arranged series of rearwardly and inwardly inclined fins or blades 13. In addition to the fins 13, the baffle 12 will be provided with one or more longitudinal rows of forwardly and inwardly inclined fins 14, the function of which will appear more fully hereinafter. It will be noted that the relative arrangement of the fins 13 and 14 is such that these parts form deflecting means adapted to cooperate with the gases entering the casing 1 subsequent to the firing of the weapon. In the formation of the fins 13 and 14 they are pressed inwardly from the sides of the baffle 12, thereby providing openings in the baffle at those intervals where the fins are located. Since the fins 13 are spaced from one another there are formed between the various spiral rows of said fins spiral spaces 15 providing paths in which a portion of the gases received in the casing are adapted to move.

The operation of the baffle 12 is peculiar in that as the gases incident to the explosion of the firearm on firing pass into the casing 1, a portion of these gases will be deflected downwardly by the partition 11 and thence rearwardly into the hollow extension 5 where said gases are trapped temporarily. Another portion of the gases aforesaid enters the rear end of the tubular baffle 12 and by engagement with the fins 13 such portion of the gases is caused to be deflected outwardly into the hollow chambers 9 formed in the casing 1, which chambers substantially surround the baffle. The spiral arrangement of the fins 13 imparts to the gases deflected thereby a spiral or whirling movement and said gases are received primarily in the lowermost portions of the chambers 9, their energy being materially reduced in this manner. However, yet another portion of the gases entering the baffle 12 on coming into contact with the fins 14 is deflected across the tubular portion of the baffle in such a manner as to offer a gaseous obstruction to the longitudinal or axial movement of any other portion of the gases with respect to the baffle. In other words, the deflection of a portion of the gases across the opening through the baffle 12 obstructs and prevents absolutely a straight longitudinal movement of any of the gases through said baffle, this being essential because the greater the confinement of the gases in the casing 1, the greater will be the reduction in the noise or sound caused by the firing of the weapon. The spiral paths 15 permit a small portion of the gases to move in a spiral manner so as to intersect those portions of the gases which are operated upon by the fins 13 and thus the latter gases are further retarded advantageously to promote the results desired to be obtained by the use of the silencing means.

As before premised, special means are provided for the protection of the muzzle of the weapon against deterioration by contact therewith of the gases confined in the silencer casing. For the above purpose the opening 4 at the rear end of the casing 1 is made sufficiently large to receive and permit very slight movement therein of a protecting member or cap 16 fitted over the muzzle of the gun and having an opening corresponding with the bore of the latter. While the cap 16 fits snugly in the opening 4, as well as snugly on the muzzle of the weapon, it permits of slight relative expansion and contraction of the parts 1 and 2 without interfering in any material way with the connection between said parts. The very slight movement which the cap 16 is permitted to have in the opening 4 also affords a flexibility in the connection between the silencing means and the firearm, advantageous in view of the peculiar vibrations set up in said

parts in actual use. The outer end of the cap 16, since it overlaps the muzzle of the gun and the point where the bore is formed, houses said muzzle in such a way as to prevent a harmful chemical action of the gases thereon whereby disadvantageous results are produced as before described, and the formation of the end of the cap 16 is such, furthermore, that the pressure of the gases in the casing 1 is always directed against the cap 16 in such a way that it is held firmly and snugly upon the muzzle of the weapon.

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

1. Silencing means for firearms comprising a casing divided into a plurality of chambers and formed with a longitudinal projectile opening intersecting said chambers, and a longitudinally removable tubular baffle arranged in said projectile opening and having means for deflecting gases received therein outwardly into the chambers aforesaid.

2. Silencing means for firearms comprising a casing provided with a projectile opening therethrough and formed with a plurality of partitions separating it into chambers intersected by said opening, a tubular baffle detachably fitted into the projectile opening aforesaid with its tubular portion in alinement with said opening, said baffle being provided with means for deflecting a portion of the gases received by said opening across the opening and for deflecting other portions of the gases outwardly into the chambers of the casing.

3. Silencing means for firearms comprising a casing provided with a projectile opening therethrough and formed with a plurality of partitions separating it into chambers intersected by said opening, a tubular baffle detachably fitted into the projectile opening aforesaid with its tubular portion in alinement with said opening, said baffle being provided with means for deflecting a portion of the gases received by said opening across the opening and for imparting to other portions of the gases intersecting spiral movements.

4. Silencing means for firearms comprising a casing having a projectile opening therein, and a loose tubular baffle fitted in said projectile opening and removable through an end of the latter, said baffle being provided with spirally arranged fins and also formed with longitudinal fins projecting inwardly from the sides thereof.

5. In combination with a firearm, silencing means comprising a casing fitted to the muzzle portion thereof, and means for protecting the muzzle from the gases incident to firing the weapon and comprising a device adapted to be forced snugly against the muzzle by the pressure of said gases.

6. In combination with a firearm, silencing means comprising a casing to confine gases incident to firing the weapon, and a cap loose in the casing and fitted on the muzzle to prevent contact of the gases with the latter.

7. In combination with a firearm, silencing means comprising a casing fitted upon the muzzle portion thereof, and means loosely mounted between the casing and the muzzle of the weapon permitting slight relative movement of said parts to accommodate for relative expansion and contraction thereof.

8. In combination with a firearm, silencing means therefor comprising a casing in which gases incident to firing the weapon may be confined, and connecting means between the casing and firearm permitting slight relative movement to compensate for differential expansion and contraction of the connected parts.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT A. MOORE.

Witnesses:
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ADOLPH B. ELVIN, Jr.