C. H. KENNEY.

SILENCER FOR FIREARMS.

APPLICATION FILED MAY 16, 1910.

1,017,003. Patented Feb. 13, 1912.

Fig. 1.

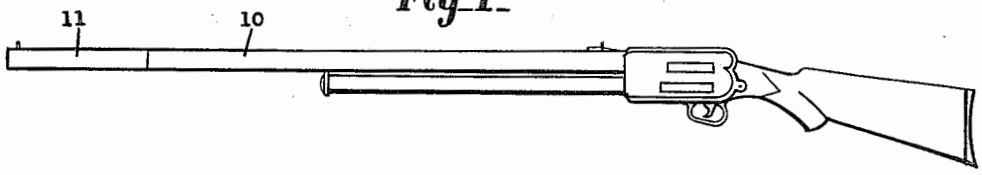


Fig. 2.

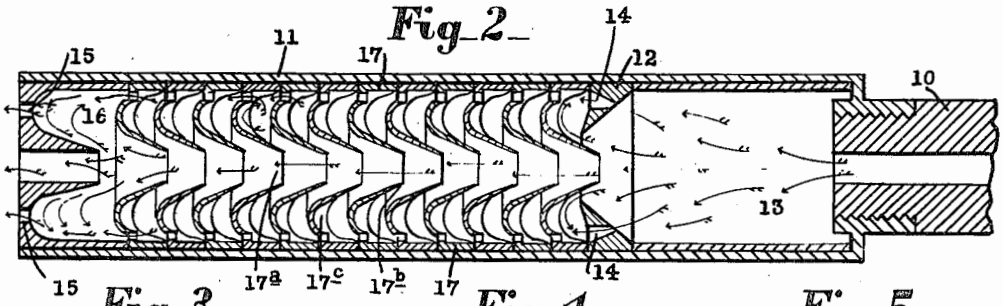


Fig. 3.

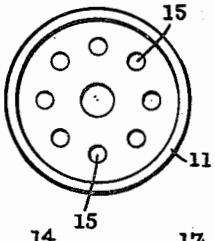


Fig. 4.

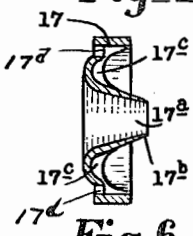


Fig. 5.

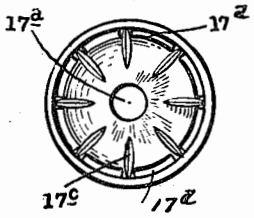


Fig. 6.

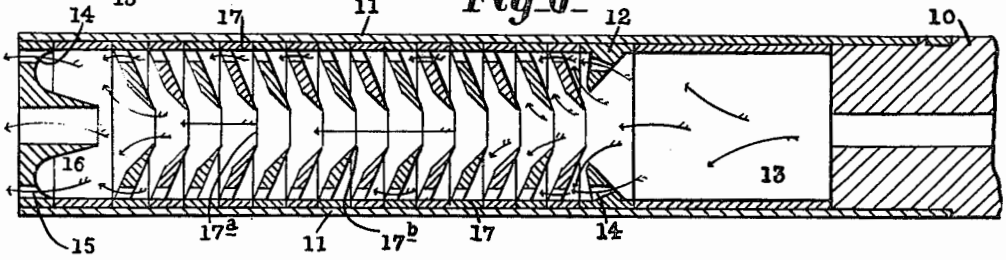


Fig. 7.

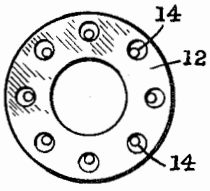


Fig. 8.

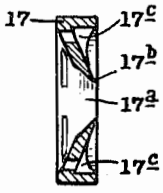
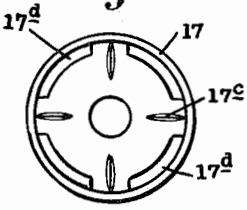


Fig. 9.



WITNESSES:

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Madeline D. Ritchie.

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Charles H. Kenney,

BY Frank H. Allen

ATTORNEY

SilencerCo - EX1039 - U.S. Patent No. 1,017,003

UNITED STATES PATENT OFFICE.

CHARLES H. KENNEY, OF NEW LONDON, CONNECTICUT.

SILENCER FOR FIREARMS.

1,017,003. Specification of Letters Patent. Patented Feb. 13, 1912.

Application filed May 16, 1910. Serial No. 561,610.

To all whom it may concern:

Be it known that I, CHARLES H. KENNEY, a citizen of the United States, residing at New London, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Silencers for Firearms, of which the following is a specification.

The immediate object of this invention is to provide simple but effective means for modifying, and practically silencing, the report following the discharge of a fire arm; having particularly in view the production of a symmetrical and reasonably cheap device that may be readily applied to the various types of arms now in common use, and which is specially adapted for use with automatic, and other rapid fire arms.

One of the important features of my invention consists of means for so controlling and directing the exhaust and discharge of the gases that a jacket of said gases, substantially concentric with the axial center of the path of the bullet, is provided around said path, thus preventing, or rather retarding, the rapid destruction of the vacuum in the atmosphere incident to the discharge of the arm. I have also provided effective means for expanding the gases, as they pass from the muzzle proper of the arm, and for separating said gases into a plurality of sections, as well as for subsequently reuniting the said gases and for discharging them, or a considerable volume of them, in the form of a concentric jacket, as I have just explained.

In order to explain the said device clearly the accompanying drawings have been provided, in which drawings—

Figure 1 is a side view of a repeating rifle or shot gun (as the case may be) embodying this present improvement and Fig. 2 is a relatively enlarged, longitudinal, central, sectional view of the muzzle end of the barrel and of this new silencer. Fig. 3 is a view of the muzzle end of the said silencer. Fig. 4 is a central, sectional, view of one of the shearing disks 17 used in the silencer of Fig. 2, and Fig. 5 is a rear face view of one of said disks. In Fig. 6 I have shown, in central, longitudinal, section, a portion of a barrel and a silencer, embodying my present invention, attached to said barrel; a modified form of shearing disk being illustrated in this figure. Fig. 7 is a rear face view of the impact plate 12. Fig. 8 is a central, sectional view of one of the shearing and baffling disks of the silencer shown in Fig. 6, and Fig. 9 is a rear face view of one of said disks.

Referring to the annexed drawings, the numeral 10 indicates the barrel of a fire arm, which barrel may be of ordinary, or any desired, construction. Secured to the muzzle end of said barrel, (in the examples of silencers here shown), is a forwardly extending, cylindrical, housing 11 in which is fixedly secured a centrally perforated, substantial, ring 12 which is located a considerable distance from the muzzle of barrel 10 and thus provides a chamber 13 in which the gases may expand to a considerable extent, and become equalized as to pressure, before they pass on to the separating chambers; the said ring 12 serving as an annular impact and resistance wall which receives the major part of the force and shock incident to the sudden checking and deflecting of the gases as the latter are discharged from the barrel 10. The said impact wall 12 is provided with a plurality of openings 14 extending therethrough and adapted to release a portion of the gases from the equalizing chamber 13 and also to direct the said gases toward the open end of the housing 11; the openings 14 being preferably of increasing area from rear to front so that a free passage and release is provided for the gases that enter the said openings from the equalizing chamber.

Within the housing 11, forward of the resistance wall 12, I provide a plurality of disks that are peculiarly cupped, and otherwise shaped, in order that they may first shear off and separate portions of the gases, and direct the same radially from the bore, and then direct the said gases forwardly and discharge them into the free atmosphere through openings 15, in the muzzle end of the silencer; said openings 15 being arranged substantially concentric with the normal bore of the arm and with the path of the bullet or, if desired, the said gases may first be discharged into an expansion chamber 16 whence they escape, in part through the central opening or bore of the silencer, but mainly through the concentric openings 15 which I have just described. The said shearing disks are formed as cups 17 whose central portion is perforated, as at 17^a, to allow the passage of a bullet; the circumferential wall defining said central open-

ing being drawn up, or otherwise produced, to provide a rearwardly projecting annular knife-edge 17^b by means of which the gases that attempt to follow the course of the bullet, are mainly directed radially into the spaces between the confronting faces of the stack of shearing disks. Each of the said disks is provided with one or more radial webs or fins 17^c and with circumferential cut-away portions 17^d; the said webs being provided to prevent the rotary movement of the gases within the otherwise unobstructed annular spaces between the adjacent shearing disks, and the openings 17^d being provided to release the gases from said spaces and to direct said gases toward the muzzle end of the silencer in the form of a jacket, or cylindrical wall, of gas surrounding the path of the bullet.

As the gases are sheared by the knife edges 17^b and are directed radially they engage and unite with the gases then passing forward through the openings 17^d and are carried forward through said openings and are finally discharged through the openings 15. During the described passage of the gases through the silencer, the said gases are gradually checked and expanded and are well spent and dissipated by the time they escape from the silencer, but I find by repeated experiments that the ring of gases thus released around the path of the bullet and around the gases following said bullet still have force enough to operate as a shield which checks and cushions the effort of the atmosphere as the latter seeks to close the vacuum resulting from the discharge of the arm.

It should be noted that in my described construction of silencer the gases are at no time blocked or trapped within the housing but are traveling constantly toward the discharge openings in the muzzle end of said silencer. Meanwhile they (the gases) are equalized as to force, obstructed, and gradually reduced as to velocity, as they pass forwardly through the silencer. By thus providing for a constant forward movement and discharge of the gases, I am able to produce a silencer that may be utilized safely with automatic, and other rapid fire arms.

Having thus described my invention I claim as new and wish to secure by Letters Patent:—

1. A silencer for fire arms comprising a ring having a tapered opening and openings leading therefrom, a plurality of disks forward of said ring each having a plurality of openings near the periphery extending in a line parallel with the bore of the arm, and an expansion chamber in front of said disks having a central bore and concentric openings.

2. A silencer for fire arms including an extension for the barrel of the arm, means within said extension having an axial tapered opening, a plurality of disks within the extension, each disk having a conical central portion with axial opening, and openings near the periphery extending in a line parallel with the bore of the arm.

3. A silencer for fire arms including an extension for the barrel of the arm, means within said extension having an axial tapered opening, a plurality of disks within the extension, each disk having a conical central portion with axial opening, openings near the periphery extending in a line parallel with the bore of the arm, an equalizing chamber at one end of said extension, and an expansion chamber at the other end.

4. In a silencer for fire arms, an extension for the barrel of the arm having an equalizing chamber adjacent the end of the arm, an expansion chamber at the other end with axial and concentric openings leading therefrom, a ring in said extension at one end of the equalizing chamber and a plurality of disks between said ring and the expansion chamber, said disks having axial openings and openings near the periphery and extending in a line parallel with the bore of the arm, said ring having openings near the periphery, of increasing area from rear to front.

5. A silencer for fire arms including an extension for the barrel of the arm, a ring within the rear end of said extension having tapered openings and openings leading therefrom, a plurality of disks within said extension forward of said ring, each disk having a plurality of openings near the periphery extending in line with the bore of the arm, and an expansion chamber in front of said disks with a central bore and concentric openings.

6. In a device of the character described, a shearing disk of cup form with central opening with rearwardly projecting annular knife edge, radial fins and cut-away portions between said fins near the circumference of the disk, said fins serving to prevent rotary movement of the gases.

CHARLES H. KENNEY.

Witnesses:
FRANK H. ALLEN,
MADELINE D. RITCHIE.