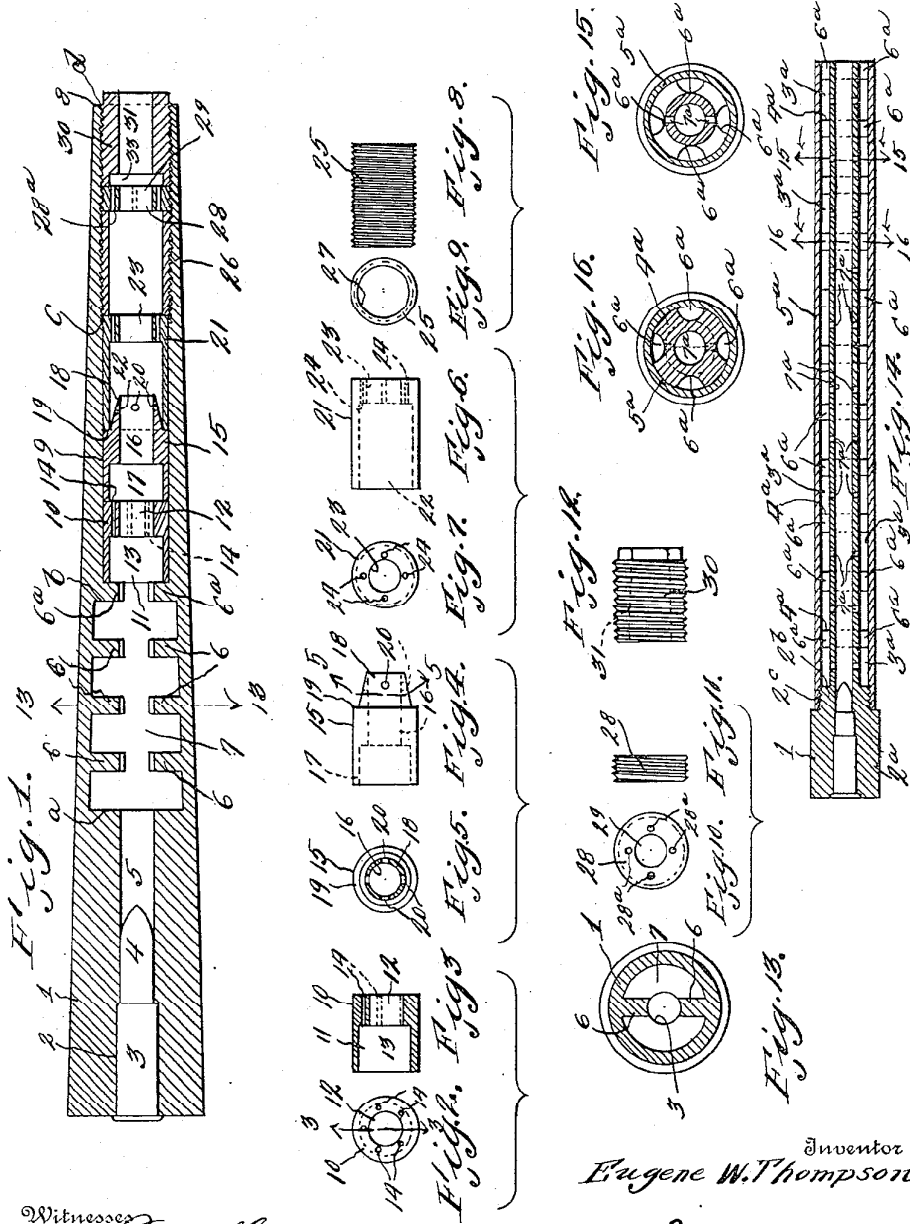


1,229,675.

Patented June 12, 1917.



Witnesses
 Philip J. Mott
 Francis J. Dowell

By

Inventor
 Eugene W. Thompson

R. Swift & Co.
 Attorneys

UNITED STATES PATENT OFFICE

EUGENE W. THOMPSON, OF NEW LONDON, CONNECTICUT.

GUN-SILENCER AND RECOIL-REDUCER.

1,229,675.

Specification of Letters Patent. Patented June 12, 1917.

Application filed March 2, 1916. Serial No. 81,767.

To all whom it may concern:

Be it known that I, EUGENE W. THOMPSON, a citizen of the United States, residing at New London, in the county of New London, State of Connecticut, have invented a new and useful Gun-Silencer and Recoil-Reducer; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the art of fire arms, such as rifled guns for artillery and coast defenses, and particularly to a structure of a device for lessening or overcoming the noise of the discharge, and at the same time reducing the recoil of the gun.

An object of the invention is to improve, simplify, and render more efficient, the structure of the silencer, set forth, shown in the drawings, and claimed in the patent to Eugene W. Thompson, No. 1,173,687, patented February 29, 1916.

Another object of the invention is the provision of a gun having the bore provided with a series of air chambers and perforations, for permitting the escape of the gases slowly through said chambers or perforations, or apertures, which chambers may either be made integral or removable, or separated, in order to permit the gases to escape in advance of the projectile, thereby lessening or overcoming the noise incident to the discharge, and at the same time, relieving the recoil, owing to the chambers terminating near or adjacent where the projectile leaves the shell.

One of the features of the invention is the provision of perforated spools, sleeves or bushings arranged in the bore of the gun axially alined from near the breech or adjacent where the projectile leaves the shell to the muzzle of the gun, there being a cap screwed into the end of the bore to hold said parts axially alined. The arrangement of these parts in the bore of the gun lessens the noise, and at the same time efficiently relieves the recoil.

In practical fields, the details of construction may necessitate alterations falling within the scope of what is claimed.

The invention comprises further features and combination of parts.

In the drawings:

Figure 1 is a sectional view through a gun

showing the same constructed in accordance with the invention.

Fig. 2 illustrates an elevation of one of the sleeves or bushings.

Fig. 3, is a sectional view on line 3—3 of Fig. 2.

Fig. 4 is a detailed view in elevation of another one of the sleeves, bushings, or spools.

Fig. 5 is a sectional view on line 5—5 of Fig. 4.

Fig. 6 is a side elevation of another sleeve.

Fig. 7 is an end elevation of Fig. 6.

Fig. 8 is a side elevation of another sleeve which is threaded.

Fig. 9 is an end elevation of Fig. 8.

Fig. 10 is an end elevation of another bushing.

Fig. 11 is a side elevation of Fig. 10.

Fig. 12 is a side elevation of the threaded cap in the end of the bore.

Fig. 13 is a sectional view on line 13—13 of Fig. 1.

Fig. 14 is a view in section of a modified form of gun barrel.

Fig. 15 is a sectional view on line 15—15 of Fig. 14.

Fig. 16 is a sectional view on line 16—16 of Fig. 14.

Referring more particularly to the drawings, 1 designates the barrel of the gun having the usual combustion chamber adjacent the breech of the barrel, said chamber being designated by the numeral 2, and designed for the reception of the shell 3, the projectile 4 of which extends into the bore 5 of the breech end of the barrel. Just slightly beyond the projectile, the barrel is bored out or reamed to form a series of radial tongues 6 and 6^a, spaced apart as shown in Fig. 1, to form chambers 7, from *a* to *b*. From the radial tongues 6^a, to the extremity of the muzzle 8 of the barrel the bore 9 is substantially cylindrical, and which bore is threaded from *c* to *d*. Arranged in the bore 9 adjacent the tongues 6^a is a sleeve or bushing 10, and the passage 11 through the bushing 10 for half its length is larger than the passage 12 through the other half of the bushing or sleeve 10. In other words the passage 12 is contracted to a size to correspond with the diameter of the bore 5, whereas the passage 11 is larger, thereby forming a chamber 13. The wall of the bushing or sleeve 10 adjacent the pas-

sage 12, is provided with a plurality of apertures, or perforations 14, to permit the escape of the gases, in advance of the projectile. Arranged adjacent the bushing or sleeve 10 is a second sleeve or bushing or spool 15, the passage or bore 16 of which corresponds in diameter, to the diameters of the passage 12 and the bore 5. The sleeve or bushing 15 is provided with a chamber or passage 17, larger in diameter than the bore or passage 16 and into which chamber 17 the gases escaping through the apertures 14 pass, in advance of the projectile, after it has left the shells. Owing to the gases being in advance of the projectile, they would precede the projectile through the passage or bore 16 substantially. The sleeve or bushing 15 has a contracted tapered end 18 and an adjoining shoulder 19, and in the wall of the reduced tapered end 18, a plurality of apertures 20 is formed, through which the gases in escaping must pass. A sleeve or bushing 21 somewhat similar to the bushing or sleeve 10 is arranged in the bore 9 in contact with the shoulder 19 of the bushing or sleeve 15. However, the chamber 22 of the bushing or sleeve 21, is substantially the same diameter as the passage or chamber 13 of the sleeve or bushing 10, but is of a greater length, and the sleeve or bushing 21 is more elongated than the sleeve or bushing 10. The passage 23 of the sleeve or bushing 21 is shorter than the passage 12 of the bushing 10, but is of a diameter corresponding to the diameter of the passage 12 and the bore 5. The wall of the bushing or sleeve 21 adjacent the passage 23 is provided with a series of perforations or apertures 24, through which the gases from the chamber 22 pass. Arranged in the bore 9, but near the muzzle end of the barrel is a cylindrical sleeve 25 having threads to engage the threads 26 near the muzzle end of the barrel. This sleeve 25 not only forms an elongated chamber 27 of a diameter equal or corresponding to the diameters of the chambers 13 and 17, but also constitutes means for assisting in holding the first mentioned sleeves or bushings in the bore of the barrel. Arranged adjacent to and contacting with the sleeve 25 is an annular band or bushing 28, which also engages the threads 26. The bushing or band 28 has a passage 29 corresponding in diameter to the passages 12, 19 and 23 and the diameter of the bore 5. The bushing or band 28 in its wall is provided with perforations or apertures, to permit the escape of the gases. Also threaded into the muzzle end of the barrel is a cap or clamping sleeve 30, which together with the band or bushing 28 and the sleeve 25, constitutes combined means for holding the first mentioned parts in place. The diameter of the elongated bore 31 of the cap or retaining sleeve 30 is of a diameter corresponding to the diameters of the passages 12, 16, 23 and 29, which act to guide the projectile axially with the barrel subsequently to it having left the bore 5, adjacent the combustion chamber 2. The gases as they leave the apertures or perforations 28^a pass into the chamber 33, between the cap or sleeve 30 and the band or bushing 28, so as to pass out through the bore 31 immediately prior to the projectile passing through the bushing or band 28. The passing of the gases through the different chambers and perforations in advance of the projectile not only silences the noise incident to the discharge, but also materially relieves the recoil. In the construction shown in Figs. 14, 15 and 16, the gun barrel is turned down or reduced from the breech end 2^a, to the extremity of the muzzle, and in turning or reducing the barrel an annular collar 2^b (which is threaded at 2^c) is formed, and also a series of annular recesses or grooves and collars 3^a and 4^a are formed, from the collar 2^b to the end of the muzzle, said collars 4^a alternating with the annular recesses. After reducing the barrel and forming the alternately arranged recesses and collars, a tubular shell or casing 5^a is fitted telescopically on the barrel and in close contact with said collars, thereby closing the annular recesses and forming the gas chambers alternating with the collars or walls 4^a. The collars 4^a are provided with semicircular grooves or recesses 6^a. The grooves or recesses 6^a of one collar are alined with the corresponding recesses or grooves of the other collars. The alined grooves or recesses 6^a are parallel to the axis or bore of the gun barrel, and are cut from the breech end to the muzzle end of the gun, and their depths correspond with the depths of circular or annular grooves, recesses or chambers 3^a. The wall of the gun barrel is provided with a series of apertures or openings 7^a, which open into the annular recesses, grooves or chambers 3^a, and by virtue of the apertures communication is attained between the bore of the gun barrel and said chambers 3^a. The inner circumference of the shell or tube at its inner end is provided with threads to engage the threads 2^c, thereby securing the tubular shell in place. The object of this improved device, especially the construction thereof shown in Figs. 14, 15 and 16, is to reduce the amount of recoil, at the same time maintaining approximately the same velocity of the projectile, that may be fired from a rifle or gun barrel not constructed with the above equipment, and to reduce the noise or sound incident to the explosion to a minimum. This improved gun or rifle barrel may be constructed from any suitable material, preferably a solid steel bar, and rifled (not shown) with a standard gage of rifling, to receive a standard or special make

of projectile. Immediately following the explosion and the starting of the projectile through the bore of the gun, the products of combustion or gases of the propelling charge immediately follow the projectile, and the excess gases or products of combustion pass through the perforations 7^a, into the grooves, or annular recesses or chambers 3^a, and thence from one to the other of said chambers through the grooves or recesses 6^a, until the gases equalize and find their way out to the muzzle end of the gun or barrel and escape to the atmosphere.

The invention having been set forth what is claimed as new and useful is:

1. In combination with a gun barrel having an elongated chamber substantially immediately beyond the bore of the breech of the barrel and provided with a cylindrical bore beyond said chamber and being of a diameter intermediate the diameters of the chamber and the bore of the breech of the barrel, a series of bushings or sleeves arranged axially in the cylindrical bore, and means threaded into the muzzle end of the barrel for retaining the sleeves or bushings in place.

2. In combination with a gun barrel having an elongated chamber substantially immediately beyond the bore of the breech of the barrel and provided with a cylindrical bore beyond said chamber and being of a diameter intermediate the diameters of the chamber and the bore of the breech of the barrel, a series of bushings or sleeves arranged axially in the cylindrical bore, and means threaded into the muzzle end of the barrel for retaining the sleeves or bushings in place, said chamber adjacent the bore of the breech of the barrel having radial tongues, having their inner ends spaced apart corresponding to the diameter of the bore of the breech.

3. In combination with a gun barrel having an elongated chamber substantially immediately beyond the bore of the breech of the barrel and provided with a cylindrical bore beyond said chamber and being of a diameter intermediate the diameters of the chamber and the bore of the breech of the barrel, a series of bushings or sleeves arranged axially in the cylindrical bore, and means threaded into the muzzle end of the barrel for retaining the sleeves or bushings in place, said bushings or sleeves having chambers of diameters larger than the diameter of the bore of the breech of the barrel, and provided with passages of diameters corresponding to the diameter of the bore of the breech of the barrel, said

passages of the sleeves or bushing being arranged alternately with the chambers of the sleeves or bushings.

4. In combination with a gun barrel having an elongated chamber substantially immediately beyond the bore of the breech of the barrel and provided with a cylindrical bore beyond said chamber and being of a diameter intermediate the diameters of the chamber and the bore of the breech of the barrel, a series of bushings or sleeves arranged axially in the cylindrical bore and means threaded into the muzzle end of the barrel for retaining the sleeves or bushings in place, said bushings or sleeves having chambers of diameters larger than the diameter of the bore of the breech of the barrel, and provided with passages of diameters corresponding to the diameter of the bore of the breech of the barrel, said passages of the sleeves or bushings being arranged alternately with the chambers of the sleeves or bushings, said sleeves or bushings in their walls having perforations, to permit the gases to escape in advance of the projectile.

5. In combination with a gun barrel an elongated chamber substantially immediately beyond the bore of the breech of the barrel and provided with a cylindrical bore beyond said chamber and being of a diameter intermediate the diameters of the chamber and the bore of the breech of the barrel, a series of bushings or sleeves arranged axially in the cylindrical bore, and means threaded into the muzzle end of the barrel for retaining the sleeves or bushings in place said chamber adjacent the bore of the breech of the barrel having radial tongues, having their inner ends spaced apart corresponding to the diameter of the bore of the breech, said bushings or sleeves having chambers of diameters larger than the diameter of the bore of the breech of the barrel, and provided with passages of diameters corresponding to the diameter of the bore of the breech of the barrel, said passages of the sleeves or bushings being arranged alternately with the chambers of the sleeves or bushings, said sleeves or bushings in their walls having perforations, to permit the gases to escape in advance of the projectile.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EUGENE W. THOMPSON.

Witnesses:

HERBERT G. STILES,
ARTHUR T. KEEFE.