A. S. BALDWIN.

GUN.

APPLICATION FILED FEB. 12, 1917.

1,327,897.

Patented Jan. 13, 1920.

Fig. 3.

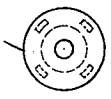


Fig. 2.

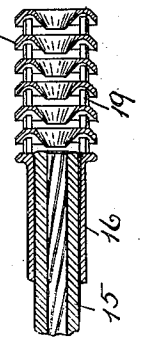
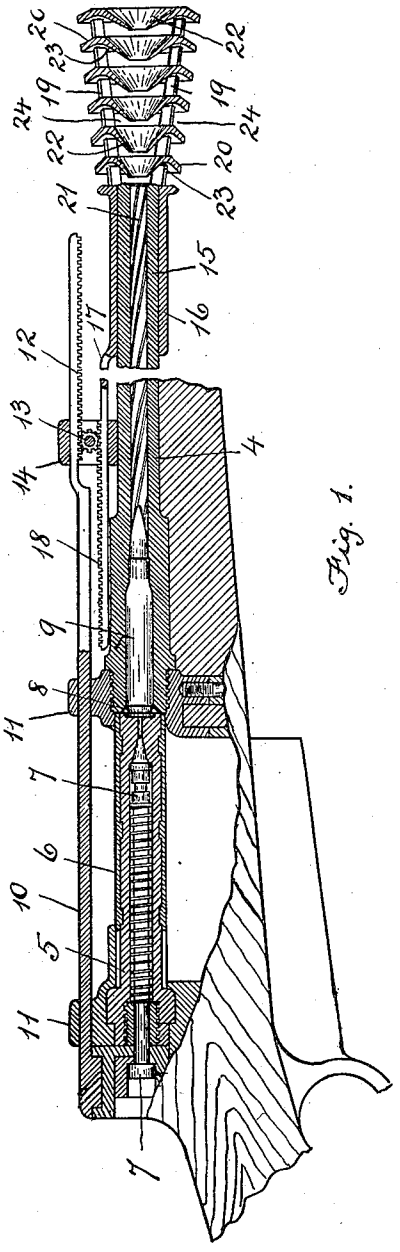


Fig. 1.



WITNESS:

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UNITED STATES PATENT OFFICE.

ARTHUR S. BALDWIN, OF BALTIMORE, MARYLAND.

GUN.

1,327,897. Specification of Letters Patent. Patented Jan. 13, 1920.

Application filed February 12, 1917. Serial No. 148,017.

To all whom it may concern:

Be it known that I, ARTHUR S. BALDWIN, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have invented certain new and useful Improvements in Guns, of which the following is a specification.

This invention relates to improvements in guns and is directed particularly to improved means for operating the breech mechanism through the force of the gases expelled at the muzzle after the shell or projectile has left the latter.

I am aware that it has heretofore been proposed to utilize the gases generated in a gun during the firing operation by directing them into chambers or cylinders in which a piston is located whereby the movement of the pistons or cylinders may act to impart motion to gun mechanisms, or to store up power for use in effecting an operation of such mechanisms.

My invention, however, differs from all prior devices within my knowledge, mainly because, I avoid all use of cylinders or inclosed pistons into which the gases are directed or retained, and by such omissions I entirely avoid the undesirable chemical actions which the gases have on the metal surfaces which tends to corrode them and cause mis-operation of the gun.

By means of my invention I permit the gases to blow directly into the atmosphere and carry all unburnt powders with them where they can have no detrimental action on the metal parts, but at the same time I direct those expelled gases against a movable abutment or abutments which latter is or are exposed to the atmosphere and are mechanically connected to the breech mechanism, so that movement of the abutments will be utilized to operate the breech mechanisms.

My inventive idea may be expressed in various mechanical forms, one of which is shown in the accompanying drawing, which however is to be regarded as illustrative only, and not in any way as defining the scope of the invention.

In the drawing,—

Figure 1, shows a longitudinal sectional elevation through a portion of a gun and the barrel thereof and also shows the improved device movably connected to the muzzle and in the path of the gases which discharge from the latter.

Fig. 2, illustrates the abutment devices at the muzzle of the gun barrel and of a form slightly different from that shown in Fig. 1, and

Fig. 3, shows a front or end elevation of the same.

It is to be understood that the particular construction of the gun parts, including the breech mechanism, is entirely immaterial to the present invention, and may be very different from that shown, and that the accompanying illustration is merely for the purpose of disclosing an embodiment of the inventive idea.

Referring to the drawing the numeral 4, designates the barrel of the gun, at the inner end of which is located the breech-bolt 5, which in the form shown, is rotatably mounted in a sleeve 6. A firing pin 7, extends longitudinally in the breech-bolt and is arranged to strike the cap-end 8, of a shell 9, to effect a detonation of the latter. In the present instance the breech devices are designed to be operated through the longitudinal movement of a rack bar 10, which latter is sustained in suitable guides 11, and has a rack 12, at its forward end. A pinion 13, is revolubly sustained in a bearing device 14, on the barrel, and the upper side of this pinion engages the said rack 12.

The muzzle-end 15, of the barrel is encircled by a sleeve 16, which latter is free to be moved longitudinally on said muzzle, and in the present instance, this sleeve 16, has a bar 17, extending rearwardly therefrom whose rear end is provided with a rack 18, that engages the under side of the said pinion 13.

The sleeve 16, has forwardly-extending supporting means projecting beyond the muzzle of the barrel, and in the present instance the supporting means consists of a plurality of arms or bars 19. By preference, these arms or bars are shown as diverging, as they extend forward, so that the distance between them will gradually increase as they extend in front of the muzzle. This however is not essential.

The arms or bars 19, sustain a series of spaced-apart abutments, which in the present instance, have the form of annular plates 20, each with a central opening or perforation, and arranged so that the openings or perforations will aline with the rifled bore 21, of the barrel. These annular abutment plates 20, have a conical central formation

22, and are also provided with an annular dished-out formation 23, between the conical center and the rim edge. The spaces 24 between the several abutment plates are entirely open to the atmosphere which has free circulation in and about each plate.

By preference, I graduate the plates 20, in that they differ in diameter so that the plate directly in front of the muzzle will be of a smaller diameter than the plates beyond it.

In the form shown in Fig. 2, however, the abutment plates are of a uniform diameter and while this may not be as effective in practice, the action of the gases will be substantially the same.

In operation, when the gun is fired, the shell or projectile will pass from the bore at the muzzle and be projected through the openings or perforations at the center of each of the series of plates. The gases, however, following the shell or projectile from the muzzle, expand, and portions thereof will strike the conical portion of the first plate and be diverted laterally against the dished-out formation 23, where its force will be directed against the rear side of the plate and tend to drive the latter forward. Other portions of the gases will pass through the central opening of one plate and will further expand and act on the rear of the next plate ahead and this action continues from plate to plate so that the impinging gases will operate to drive the plates forward and of course move the sleeve 16, and the rack-bar 17—18 therewith to rotate the pinion 13.

By increasing the diameter of the successive plates a greater surface is provided for the impact of the gradually expanding gases, and the power derived is ample to operate the rack bars and pinion, and to effect the desired movement of the breech mechanism.

It is obvious that by my invention the impact, of the gases takes place in the open atmosphere where they can readily escape and carry with them all unburnt powders so that there is no possibility of corroding or clogging movable parts that will affect the operation of the gun.

It will be understood that my invention provides mechanical connections between the impact devices and the breech mechanism whereby the motion imparted to said impact devices by the gases is mechanically transmitted to the breech mechanism.

Having described my invention what I claim and desire to secure by United States Letters Patent is,—

1. In a gun the combination with the gun-barrel, of breech mechanism, a sleeve slidable on the gun barrel; a plurality of arms, each having a rear end attached to the sleeve and projecting forwardly in front of the barrel and said arms diverging as they extend forward; a plurality of disks supported by the diverging arms one in front of the other,—said sleeve, diverging arms and disks all being movable with respect to the barrel, and means for connecting the sleeve with the breech mechanism.

2. In a gun the combination with the gun-barrel, of breech mechanism; a sleeve slidable on the gun barrel; a plurality of arms, each having a rear end attached to the sleeve and projecting forwardly in front of the barrel and said arms diverging as they extend forward; a plurality of disks of differing diameters supported by the diverging arms with the disk of the smallest diameter nearest to the sleeve and the disk of the greatest diameter at the outer ends of the diverging arms, and the sleeve, diverging arms and disks all being movable with respect to the barrel, and means for connecting the sleeve with the breech mechanism.

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

ARTHUR S. BALDWIN.

Witnesses:
THOS. J. MYER,
WM. M. TUCKER.