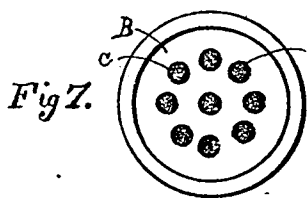
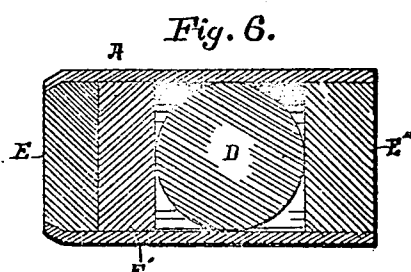
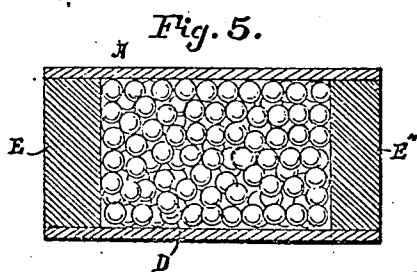
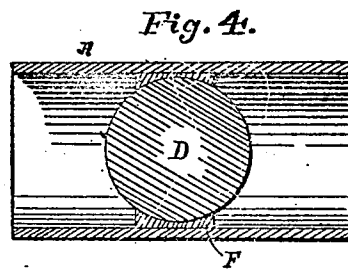
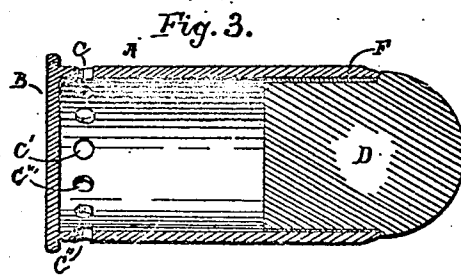
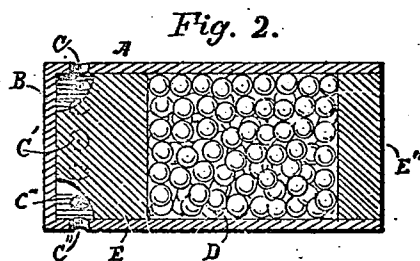
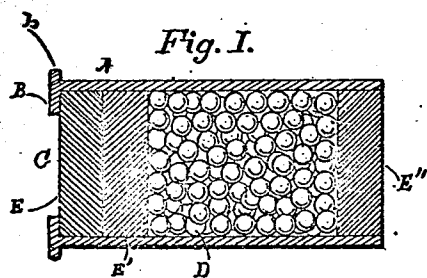


No. 838,511.

PATENTED DEC. 11, 1906.

A. T. SAUNDERS.
CARTRIDGE FOR AIR GUNS.
APPLICATION FILED FEB. 8, 1904.



WITNESSES:
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CARTRIDGE FOR AIR-GUNS.

No. 838,511.

Specification of Letters Patent.

Patented Dec. 11, 1906.

Application filed February 8, 1904. Serial No. 192,684.

To all whom it may concern:

Be it known that I, ADDISON T. SAUNDERS, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Cartridge for Air-Guns, of which the following is a specification.

My invention relates to improvements in ammunition for air-guns, the object being to provide such convenient means for introducing charges of shot and other projectiles into the barrels of air-guns and enabling the proper discharge thereof as are now afforded for guns wherein explosives are employed by the form of cartridge in common use.

To this end my invention consists of a cartridge of novel construction which differentiates it from the cartridges in use for firearms. In the latter the projecting power lies in the powder contained in the closed end of the cartridge-shell behind the projectile, the expansion of the gas generated by the combustion of this explosive upon its ignition within the closed end of the shell forcing the projectiles forward and out of the gun-barrel. It is obvious that this form of cartridge is not adapted for use in air-guns, for the reason that in such guns the expulsive force consists in compressed air, the compression being accomplished by means forming a part of the mechanism of such guns and within the same, instead of being conveyed into the gun-barrel simultaneously with the projectiles to be expelled thereby, and because no means are provided whereby if the explosive were omitted from the cartridge and it were sought to expel the projectiles therefrom by air-pressure compressed air could be brought to act upon the load from behind within the cartridge-shell. My invention provides these means.

The manner in which it is preferably carried out is illustrated in the accompanying drawings, wherein—

Figure 1 is a longitudinal section of a cartridge embodying my invention; Figs. 2, 3, 4, 5, and 6, modifications of the same, and Fig. 7 a view of the breech end of such a cartridge.

Similar letters refer to similar parts wherever used.

A is the cylindrical portion of the shell; B, the breech; C C' C'' C''', apertures in the wall of the shell; D, projectiles; E E' E'', disks of wadding; F, packing.

An essential feature of my invention resides in providing means of admitting the compressed air into the hinder part or breech of the cartridge-shell. These means consist of one or more apertures or openings in the wall of the shell. The shape, number, size, arrangement, and exact location of the openings are unimportant so long as they permit the free passage of air into the shell behind the load. Somewhat of the latitude contemplated in these respects within the purview of my invention is shown in the drawings.

In Fig. 1 is shown a cartridge with the cylindrical shell A, having a breech B with a flange b. In all respects this shell is identical with those in use for certain firearms, except that it is provided with an aperture C in the breech to admit air. The load shown in this figure is similar to that in an ordinary shot-cartridge, except that there is no explosive or fulminate included, the rear wads E E' occupying the rear portion of the shell, and the shot D being retained in the shell by these and the front wad E'', between which latter and the pair E E' it is held.

Fig. 2 has also a cylindrical shell A and a breech B. In this form there is no flange, however, and the means of admitting the air into the shell consist of an annular arrangement of apertures C C' C'' C''' in its cylindrical portion near the breech, that member being closed. The load in this figure is like that of Fig. 1, except that the rear wad E is shown as having such shape as to form within the rear end of the shell an annular space which permits the free entrance of air through the apertures and facilitates its action upon the wad.

Fig. 3 is identical in its shell portion with Fig. 2, except that it has a flange b similar to that in Fig. 1. Its load consists of a single projectile mounted in its forward end and embedded in a suitable substance F, described later, which seats it removably and which I term "packing."

Fig. 4 shows a simple cylinder without breech or flange and open at both ends. The bullet D fits within the shell A, being seated in the packing F.

Fig. 5 has a shell A, consisting of an open cylinder alike at both ends, and a load of shot D, retained in the shell by the disks of wadding E E''.

Fig. 6 shows a shell of the form of Figs. 4

and 5, except that one end has an inturned flange G, which insures the retention of the rear wad E during and after loading. This flange need be but slight, and the retention of the front wad may also be assured by a slight inturning of the lip of the shell—so slight as not to prevent the discharge of the load.

Fig. 7 is the breech of a shell with a plurality of apertures arranged therein. This breech may consist wholly or in part of wire-gauze or any suitable perforated material.

Cartridges of the form of Figs. 4 and 5 are reversible—that is, they are adapted to be inserted in the gun-barrel either end foremost and to be so discharged.

The location of the cartridge in the gun for proper firing will depend upon the construction of the latter. In that type of air-gun in which the true firing-barrel occupies only a part of the apparent length of barrel, the hinder part being occupied by the air-compressing mechanism, such as a spring, piston-rod, piston-head, &c., this position would naturally be in the rear end of the firing-barrel immediately in front of the point at which the piston-head finishes its stroke, while in the type arranged for loading darts and other projectiles into the breech the cartridge is best placed or located just within the breech of the barrel within a suitable seat, as ordinary shot-cartridges are loaded into the familiar forms of shotguns used for cartridges containing explosives.

When the perforations or apertures are in the cylindrical portion of the shell, as in Figs. 2 and 3, an annular air-space should be provided in the gun-barrel at the point where these apertures are when the cartridge is seated to allow a free passage of air about this portion. The cartridge must be so seated and fitted to the barrel that when the compressed air is brought to bear upon its rear portion there will not be any considerable escape of air outside of the shell into the barrel.

The operation of the invention is simple. The cartridge having been loaded into the gun as described and being prevented by its flange or seat from slipping forward, and the opening in the breech of the barrel through which the loading is done having been closed, the compressing and firing mechanism is operated, when the compressed air, pressing upon the rear wad, or in case of the forms shown with wads omitted, directly upon the projectile, through the aperture or plurality of apertures provided for that purpose, as described above, starts the load forward and, rushing in as fast as space is gained, forces the load forward through the barrel and out of the muzzle of the gun. It will be understood that with this provision for free entrance of air behind the charge the result, when the air is sufficiently compressed before the discharge, is practically the same as when

gas is generated by explosives in a closed-breech shell behind a charge.

When the cartridge is to be used by children or for target-practice at short range, the projectiles may be made to consist of pellets or balls of putty, cork, wax, rubber, or other suitable material.

When projectiles are used approximating in diameter the caliber or diameter of the shell, the wads or disks employed to retain the charges of smaller shot in the shell may be dispensed with. Such projectiles may fit easily within the shell and be retained there by being seated in the packing F, previously referred to, and which may consist of paraffin, a light compound of wax, or of any suitable sheeted material. In using a wax compound it should be so made as to break away from the ball on discharge of the same. It may be made to do this by the admixture of tallow or stearin and will also serve as a lubricant, lessening the friction of the ball with the shell and gun-barrel. The wads may be seated in such a compound or even be made to consist of the same.

It is of course possible to make this cartridge-shell other than perfectly cylindrical—as, for instance, polygonal—outside and even inside; but such modification would not alter the principle involved.

The shell for the herein-described cartridge may consist of any suitable material, such as the paper and metals now in use for cartridges for small-arms, and may have a flange at the breech end as such cartridges have.

I disclaim any novelty in the above-mentioned materials for the shell, as I do also in the use of a flange.

I disclaim all constructions wherein the result is a closed breech unadapted to admit of an inrush of air.

I also disclaim the disk or wads in common use in cartridges. Their function as I employ them is to retain the shot in position and in the case of the rear one to serve as a plunger to be acted upon by the compressed fluid behind it.

Wherever in this specification or the accompanying claims I use the term "load" or "charge" it is to designate the projectiles, wads, &c., used as described in my air-cartridge, and in no case includes or contemplates any fulminate or explosive, my design being to obviate the necessity for their use in so far as practicable.

In referring in the claims to means of admitting air into the shell or behind the load I of course include as such means the open rear end of the shell in those forms where a simple cylinder forms the shell, and as these open cylinder-shells are reversible it is obvious that either end opening becomes these means when that end is placed rearward in the gun. For this reason I have not designated these open ends with the letter indicating the aper-

ture for the admission of air, C, their function in the light of my description and the adjoined figures being obvious.

I disclaim the inturned flange or lip as an interlocking or interfitting member of a shell with a closed breech, claiming it only as employed in my air-cartridge as a contraction of an open breech and for the unique purpose set forth.

10 I claim—

1. A cartridge for air-guns comprising a shell open at both ends and a suitable load contained within said shell, substantially as described.
- 15 2. A cartridge for air-guns comprising a suitable load and a containing-shell therefor, said shell being adapted to admit air within it behind said load and to permit of the discharge of said load from its forward end, substantially as described.
- 20

3. A cartridge for air-guns comprising a cylindrical body open at one end, having an aperture in the other end adapted to admit air, and a suitable load contained within said body, substantially as described.

4. A cartridge for air-guns comprising a cylindrical body of suitable material open at one end, having a plurality of apertures at the other end adapted to admit air, and a suitable load contained within said body, substantially as described.

5. A shell for an air-gun cartridge comprising a cylindrical body of suitable material open at one end, the other end having a breech-piece adapted to admit air, substantially as described.

ADDISON T. SAUNDERS.

Witnesses:

G. H. SAUNDERS,
A. L. SAUNDERS.