B. T. BABBITT.

Air-Gun.

No. 209,014. Patented Oct. 15, 1878.

Fig:1

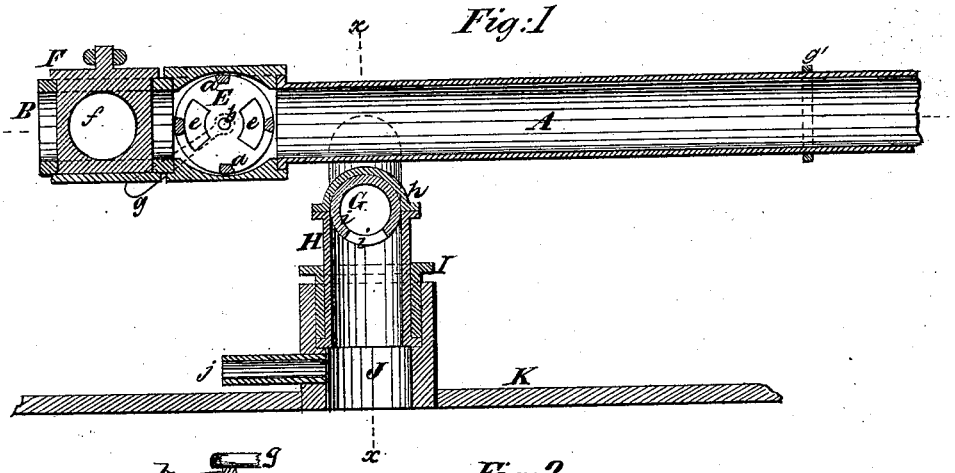


Fig:2

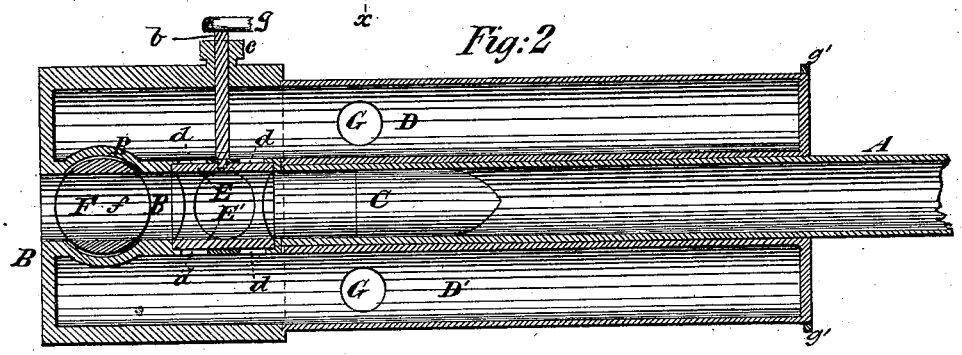
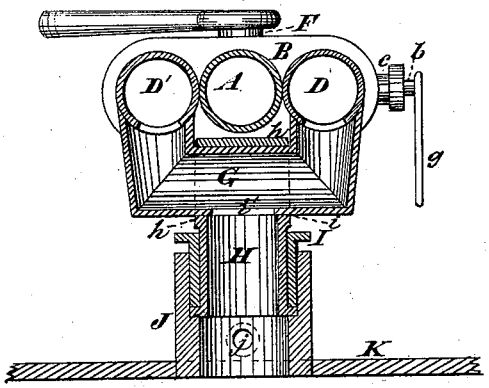


Fig:3.



Witnesses

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UNITED STATES PATENT OFFICE.

BENJAMIN T. BABBITT, OF NEW YORK, N. Y.

IMPROVEMENT IN AIR-GUNS.

Specification forming part of Letters Patent No. **209,014**, dated October 15, 1878; application filed June 29, 1878.

To all whom it may concern:

Be it known that I, BENJAMIN T. BABBITT, of the city, county, and State of New York, have invented certain new and useful Improvements in Air-Guns; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification.

This invention is more especially designed for ordnance or artillery, but is applicable to guns of any size.

It consists in a novel system of duplicate compressed-air reservoirs arranged upon and secured to opposite sides of the barrel of the gun, and in a novel system of valves employed between said reservoirs and the chamber of the barrel to admit the compressed air behind the projectile.

It further consists in a swivel of novel construction, upon which the gun and its duplicate attached compressed-air reservoirs are supported in such manner as to provide for varying the elevation of the gun and for turning it horizontally, and which also serves as a means of communication to the said reservoirs from a stationary reservoir having a fixed connection with an air-compressor.

Figure 1 is a central longitudinal vertical section of a breech-loading air-gun with my improvements. Fig. 2 is a horizontal section of the same. Fig. 3 is a transverse vertical section on the line *x x*, shown in Fig. 1.

A is the gun-barrel, firmly secured into a breech-chamber, B, which is bored centrally right through in line with the barrel, to provide for the introduction through it into the barrel of the projectile C. F is the breech, consisting of a cylindrical or conical plug, fitted to turn in a seat provided for it in the back part of the breech-chamber B by boring through the said chamber in a direction perpendicular to the bore of the barrel. The said plug has a hole, *f*, extending through it transversely to its axis for the passage of projectile C into the barrel.

D D′ are the duplicate compressed-air reservoirs attached securely to the barrel and breech-chamber, one on each side thereof.

E E′ are two disk-valves, each arranged between the breech-chamber B and one of the two compressed-air reservoirs D D′, and in front of the breech F, for admitting air from both of the said reservoirs at the same time into the breech-chamber B in front of the breech. These valves are fitted to seats provided for them in the sides of the interior of the breech-chamber, and are connected together by means of wings or braces *a a* in such manner that both may be turned together for the purpose of opening and closing the communication between the two reservoirs and the breech-chamber by means of a spindle, *b*, which passes through one of the breech-chambers and through a stuffing-box, *c*, on the outer side of said chamber, and which is furnished with a handle, *g*, outside of said stuffing-box, as shown in Figs. 2 and 3. The valves both have similar ports *e e*, as shown in Fig. 1, which correspond with ports *d d* in their respective seats, so that both are opened by turning them to bring them over ports opposite to the ports in their seats, and closed by turning them to bring their ports opposite to solid or closed portions of the seats. The said valves are balanced against the pressure of the air in the reservoirs, the pressure on each being counterbalanced by the pressure on the other.

The two reservoirs may be rigidly secured to the barrel of the gun and to the breech-chamber in any suitable manner. They are represented as secured at their front ends to the barrel by a band, *g′*, and as secured to the breech-chamber by being partly made in the same casting or piece therewith.

The swivel upon which the gun works and through which compressed air is supplied to the reservoirs D D′ consists of a double-elbowed pipe, G, connecting the two reservoirs at their bottoms, as shown in Fig. 3, and an upright pipe, H, at the upper end of which is a journal-box, *h*, for the reception of a journal, *i*, on the central portion of the said pipe G, and the lower end of which turns in a stuffing-box, I, provided in a hollow standard, J, upon which the gun and its attached reservoirs and swivel are supported. This hollow standard may be open at the bottom, as shown in Figs. 1 and 3, to receive at all times compressed air from a large reservoir arranged below the base

or foundation K, upon which the standard is supported. This base may be the deck of a vessel.

Instead of being open at the bottom, the hollow standard may have a closed bottom, and may receive compressed air from an air reservoir or compressor through a pipe, *j*, on one side. The journal *i*, turning in the box *h* on the upright pipe H, provides for the adjustment of the elevation of the gun; and the upright pipe, turning in the stuffing-box I of the hollow standard, provides for the horizontal movement of the gun to any extent. The compressed air, coming through the hollow standard J, passes through the upright pipe H into its journal-box *h*, and thence through an opening, *i'*, in the journal *i* of the elbowed pipe G, and thence to the duplicate reservoirs D D', so that the said reservoirs can be kept supplied with compressed air in every position of the gun.

To operate the gun, the valves E E' are closed and the compressed-air reservoirs D D' are charged to the requisite pressure either by their communication with the reservoir below or by air forced into them through the pipe *j* by the compressor.

The valves are kept closed during the introduction of the projectile into the barrel, and until the projectile is to be discharged.

To provide for inserting the projectile, the breech F is turned to bring its opening *f* opposite the barrel, and the projectile is inserted through the breech and pushed through the breech-chamber beyond the valves E E' into the barrel, after which the breech is turned to a closed position.

To discharge the projectile, the valves E E' are opened, and the compressed air rushes into the breech-chamber from the duplicate reservoirs through both valves into the breech-chamber and behind the projectile, which is then discharged from the barrel by the pressure of the air behind it.

The same system of duplicate reservoirs and balanced valves and the same swivel may be used on a muzzle-loading gun.

In order to increase the velocity, I propose to produce a vacuum in the barrel in front of the projectile by putting an air-tight cap of india-rubber or other suitable material on the muzzle of the barrel and exhausting all the air from the barrel in front of the projectile by means of an air-pump. The projectile will therefore meet with no atmospheric resistance in its passage through the barrel, and when it reaches the cap it will pass through it or tear it off.

What I claim as my invention is—

1. The combination, with the barrel A and chamber B, of the attached duplicate compressed-air reservoirs D D' on opposite sides thereof, and the connected and simultaneously-operated balanced valves E E', between the said reservoirs and the said chamber, substantially as herein described.

2. The combination, with the gun and its attached duplicate compressed-air reservoirs D D' and the stationary air-receiving standard J, of the air-conducting swivel composed of the journaled double-elbow pipe G, the upright pipe H, with its attached journal-box *i*, and the stuffing-box I, substantially as and for the purpose herein set forth.

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Witnesses:

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