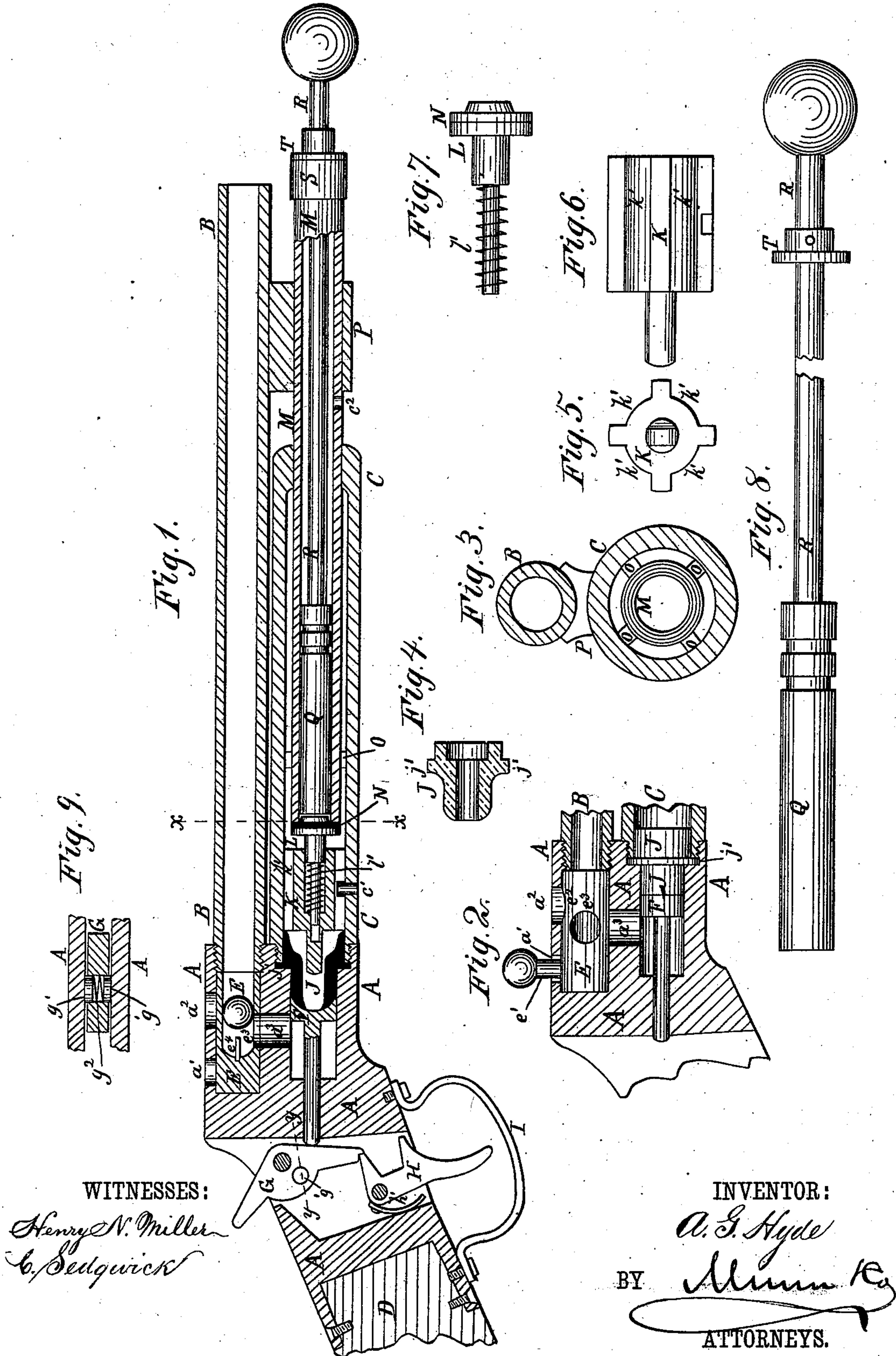


A. G. HYDE.
Air-Gun.

No. 227,789.

Patented May 18, 1880.



WITNESSES:

Henry N. Miller
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UNITED STATES PATENT OFFICE.

ALBERT G. HYDE, OF NEW YORK, N. Y.

AIR-GUN.

SPECIFICATION forming part of Letters Patent No. 227,789, dated May 18, 1880.

Application filed September 8, 1879.

To all whom it may concern:

Be it known that I, ALBERT G. HYDE, of New York, in the county and State of New York, have invented a new and useful Improvement in Air-Guns, of which the following is a specification.

Figure 1 is a longitudinal section of my improved gun. Fig. 2 is a detail section of the breech, showing the loading device, the releasing-valve, and the packing. Fig. 3 is a cross-section taken through the line xx , Fig. 1. Fig. 4 is a detail section of the packing. Fig. 5 is an end view of the guide-block for the injection-valve. Fig. 6 is a side view of the same. Fig. 7 is a side view of the injection-valve. Fig. 8 is a side view of the piston and its rod. Fig. 9 is a detail section taken through the line yy , Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish air-guns which shall be so constructed that the air can be compressed to a high tension and its entire volume released at each shot, and which can be readily put together and taken apart, and will not be liable to leak or get out of order.

A is the breech, to the forward end of which are attached the barrel B and the air-chamber C, and to its rear end is attached the stock D. In a cavity of the breech A is placed a tube, E, the forward end of which fits against the rear end of the barrel B. The rear end of the tube E is closed, and has a pin, e' , attached to it, so as to project through a cross-slot, a' , in the upper side of the breech A.

The slot a' is made of such a length that the tube E may be turned one-quarter of a revolution. In the side of the tube E, at a little distance from its rear end, is formed a hole, e^2 , for the ball to be dropped through, and which corresponds with a hole, a^2 , in the upper side of the breech A. In the side of the tube E, in the rear of the hole e^2 , and at right angles therewith, is formed a hole, e^3 , to admit air, which hole corresponds with a hole, a^3 , in the middle part of the breech A, leading to the air-chamber.

With this construction, when the holes $a^2 e^2$ are in line with each other to admit the ball, the holes $a^3 e^3$ are closed, and when the holes

$a^3 e^3$ are in line with each other to admit air, the holes $a^2 e^2$ are closed. e^4 is a stop-pin attached to the rear end of the tube E, and which projects into its cavity so far as to prevent the ball from entering the hole e^3 .

In the lower cavity of the breech A is placed a valve, F, called by me a "releasing-valve," which, when pushed forward, prevents the compressed air from entering the hole a^3 , and when pushed back allows the compressed air to enter the said hole a^3 .

The valve F is pushed and held forward by the cock G, which is pivoted in a slot in the middle part of the breech A, in such a position that the stem of the valve F may rest against the lower arm of the cock G at a little distance from its pivot. In the end of the lower arm of the cock G is formed a notch to receive the end of the upper arm of the trigger H.

The trigger H is pivoted to the breech A, and its lower arm projects and is protected by a guard, I, in the usual way. The trigger H is held forward, so that its upper arm may be in position to engage with the lower arm of the cock G, when the gun is cocked, by a spring, h' , connected with its rear side.

In a hole in the cock G are placed two short pins, g' , which are pressed apart and against the walls of the breech A by a spiral spring, g^2 , interposed between them, as shown in Fig. 9, so that they may serve as a brake to prevent the upper arm of the said cock G from being thrown against the breech A with too great force by the rearward movement of the releasing-valve F when the gun is discharged.

The forward side or face of the releasing-valve F is concaved to fit upon the rounded rear end of the tubular packing J, so that the pressure of the compressed air may press the said packing J outward and make the joint around the said valve air-tight. Upon the packing J, at a little distance from its forward end, is formed a ring-flange, j' , which enters the joint between the inner end of the air-chamber C and its seat and keeps the said packing in position. The forward end of the packing J may be beveled or flared upon its inner side, so that the compressed air may enter its cavity more readily. Within the inner part of the air-chamber C is placed a block, K,

which has wide longitudinal grooves k' formed in its sides to allow the air to pass it freely.

The block K has a notch formed in one of its sides to receive a stop-pin, c' , attached to the air-chamber C, to hold the said block K in place. Upon the rear end of the block K is formed a stem, which may be grasped with a pair of pliers for convenience in inserting and removing the block K. The block K has a hole formed in its forward end to receive and serve as a guide to the stem of the valve L, called by me an "injection-valve," and which is held forward by a spiral spring, l' , placed upon the stem of the said valve L.

The valve L, when pushed forward, rests against a seat formed upon the inner end of the pump-barrel M, and is provided with a leather washer, N, to come between it and its seat. The valve-seat and the face of the valve L have concentric ring-beads formed upon them to be pressed into the leather washer, and thus make a closer joint.

The pump-barrel M is made smaller than the cavity of the chamber C, to form a space for the air. The inner part of the pump-barrel M is supported in a central position within the chamber C by studs or a notched ring, O. The outer end of the chamber C is soldered, screwed, or otherwise secured to the pump-barrel M to make the connection air-tight. The outer part of the pump-barrel M passes through a keeper, P, attached to the gun-barrel B.

The pump-piston Q is made in the form of

a solid cylinder, closely fitting the bore of the pump-barrel M, and is attached to the piston-rod R. The piston-rod R passes through a guide-cap, S, attached to the end of the pump-barrel M, and has a stop-collar, T, attached to it to prevent the piston Q from being pushed in too far.

With this construction, as the piston Q is worked, the air forced in by the piston Q, and which enters through holes c^2 in the side of the pump-barrel C, forces the valve L open, and is compressed into the air-chamber surrounding the pump-barrel C and the guide-block K. As the piston Q is drawn outward the valve L closes and prevents the compressed air from escaping. When a sufficient quantity of air has been compressed the gun is discharged by pulling the trigger H, which allows the compressed air to push back the valve F, enter the gun-barrel B, and force out the ball.

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

In an air-gun, the combination of the breech having hole a^3 in the middle, and the cross-slot a' and hole a^2 on the top thereof, the tube E, having in the side corresponding holes e^2 e^3 , the slide-valve F, having packing J, and the air-chamber C, arranged as shown and described.

ALBERT G. HYDE.

Witnesses:

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C. SEDGWICK.