A. C. CAREY.

SPRING AIR-PISTOL.

No. 178,509. Patented June 13, 1876.

Fig. 1.

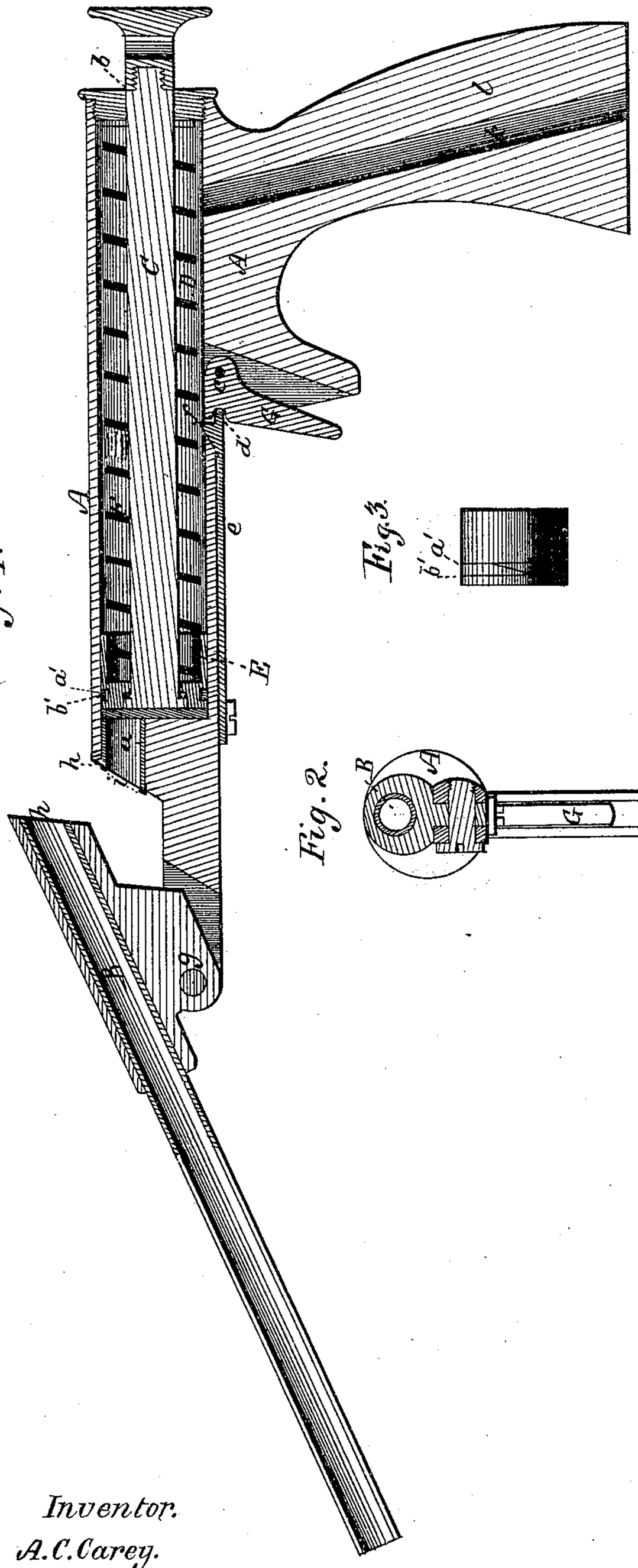

Fig. 3.

Fig. 2.

Witnesses.
F. Hunnewell.
W. E. Boardman.

Inventor.
A. C. Carey.
F. Curtis. Atty.

UNITED STATES PATENT OFFICE.

AUGUSTUS C. CAREY, OF MALDEN, ASSIGNOR TO ALBERT A. POPE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SPRING AIR-PISTOLS.

Specification forming part of Letters Patent No. **178,509**, dated June 13, 1876; application filed February 16, 1876.

To all whom it may concern:

Be it known that I, AUGUSTUS C. CAREY, of Malden, Middlesex county, Massachusetts, have invented certain Improvements in Air-Pistols, of which the following is a specification:

This pistol is a breech-loading one. The barrel is hinged to the front end of the air-magazine, and its rear end tips up in loading. The bore of the barrel is in alignment with and constitutes a prolongation, on a reduced scale, of the interior of the air or plunger chamber, which latter is traversed by a spring-impelled plunger. The plunger is pulled backward in loading, and in its forward flight expels before it, through the barrel, the dart, which is placed in the rear end of the barrel, since the bore of the barrel is the only outlet for the air expelled from the chamber by the impulse of the plunger.

My improvements in this pistol embrace, first, a joint of peculiar character between the rear end of the barrel and the forward end of the air-magazine. Second, the combination of the air-magazine, barrel, and spring-impelled plunger with their necessary adjuncts, under such a general arrangement that the barrel is in alignment with the air-magazine, and constitutes a prolongation of its bore. The plunger traverses the air-magazine, also, in axial alignment with the bore of the barrel, and is drawn backward in loading, and in its forward flight expels air from the magazine through the barrel. Third, in the form of the compound trigger, whereby the latter is adapted to the movement of the plunger, which, in its forward flight, takes a direction opposite to that in which the trigger is pulled. My improvements also embrace minor details, to be hereinafter explained.

The drawings accompanying this specification represent, in Figure 1, a longitudinal section of a pistol embodying my improvements, the barrel being closed, and the plunger in its idle position. Fig. 2 is a transverse section, showing the barrel opened to receive a projectile, and the plunger retracted or "cocked." Fig. 3 is a view of the plunger.

In these drawings, A represents the frame or stock of the pistol, the same consisting of a straight cylinder pierced at either end by an axial hole, *a* or *b*, the former serving to open communication with the bore of the barrel, which is shown at B, and the latter receiving the plunger-rod C, which extends rearward from the air-magazine D, which latter is the interior of the cylinder A. The plunger for expelling the air from the magazine D is shown at E as fitting closely within such magazine, and impelled forward by a powerful spring, F, which is coiled about the plunger-rod C, and exerts its power between such plunger and the rear end of the magazine, the said rod C filling the core of the spring, in order to preserve the latter in a straight line, and avoiding the wear which otherwise would ensue to the interior walls of the magazine. The rear end of the rod C is provided with an eye or knob, or other means of securing a strong hold upon it, while the forward end of such rod is attached rigidly to the plunger, or passes through it, and is formed with a head to bear upon the front end of said plunger, and in either event serves to retract the latter. G in the drawings represents the trigger proper, which is pivoted to the lower side of the stock A, as shown at *c*, the forward and upper extremity of such trigger resting upon the rear or tail end *d* of a spring-latch, *e*, which is secured to the under side of the stock A, and in advance of the trigger G, and is formed at its rear end with a vertical stop or stud, *f*, to intercept the forward flight of the plunger.

The barrel B is hinged at its rear under part to the adjacent part of the stock A by a pivot, *g*, and the joint *h*, between the adjacent ends of said barrel and stock A, is disposed obliquely to a vertical line projected through the axis of the two, in order to obtain a lap-joint, by which to thoroughly guard against escape of air, while an elastic packing, *i*, is interposed between the abutting ends of the barrel and stock, the more effectually to insure such result.

The operation of this pistol is as follows, assuming as a starting-point the position of parts shown in Fig. 1 of the accompanying drawings: The barrel is first turned upon its pivot, and its rear end raised, which exposes its bore. A projectile is then inserted in the

bore of the barrel, and the latter returned to place. The plunger is now retracted by pulling upon the rod C until such plunger passes in rear of the stud *f* of the latch *e*, when the said stud, by the inherent elasticity of such latch, rises in front of and intercepts the plunger, and maintains it in this position, and against the stress of the spring F, until released by a pull upon the trigger. The trigger is now pulled, which lowers the stud *f*, and allows the spring F to impel the plunger forward and expel, through the barrel, the air which is contained in the magazine D, in advance of such plunger, while, as a consequence, the dart or other projectile in the barrel will be expelled with great force, since, as before stated, the barrel is the only means of exit of such air.

The pulling back of the plunger may be effected prior to inserting the projectile within the barrel; but, for some reasons, I prefer that it shall be subsequent to such loading, and I would here state that if the rod C passes loosely through the plunger, such rod is to be pushed forward within the machine, or returned to its normal position, before the trigger is pulled; otherwise it is left protruding from the rear end of the air-magazine.

The lap-joint, before described, between the barrel and stock enables me to compensate for any slight deficiencies in the accuracy of the joint, and, in connection with the elastic packing, enables me to guard with ease and certainty against leakage or escape of air.

In order to guard against any approach to a vacuum, and a consequent drag in rear of the piston, I create a passage, *k*, in the handle *l* of the pistol, by which air can enter the rear end of the magazine D.

To provide a plunger which shall exclude escape of air between itself and the walls of the air-magazine without undue friction, I create in the periphery of the plunger a concentric channel, *a'*, and within this channel I place a ribbon-spring, *b'*, whose inherent elasticity causes it to expand with a gentle pressure and fill the bore of the air-chamber, the ends of the ribbon *b'* being preferably scarfed and lapped, as shown at *c'*, to prevent escape of air past the joint.

I claim—

The method herein described of hinging the barrel to the stock, by means of the sloping lap-joint and the elastic or semi-elastic packing, substantially as and for purposes stated.

AUGUSTUS C. CAREY.

Witnesses:

F. CURTIS,

W. E. BOARDMAN.