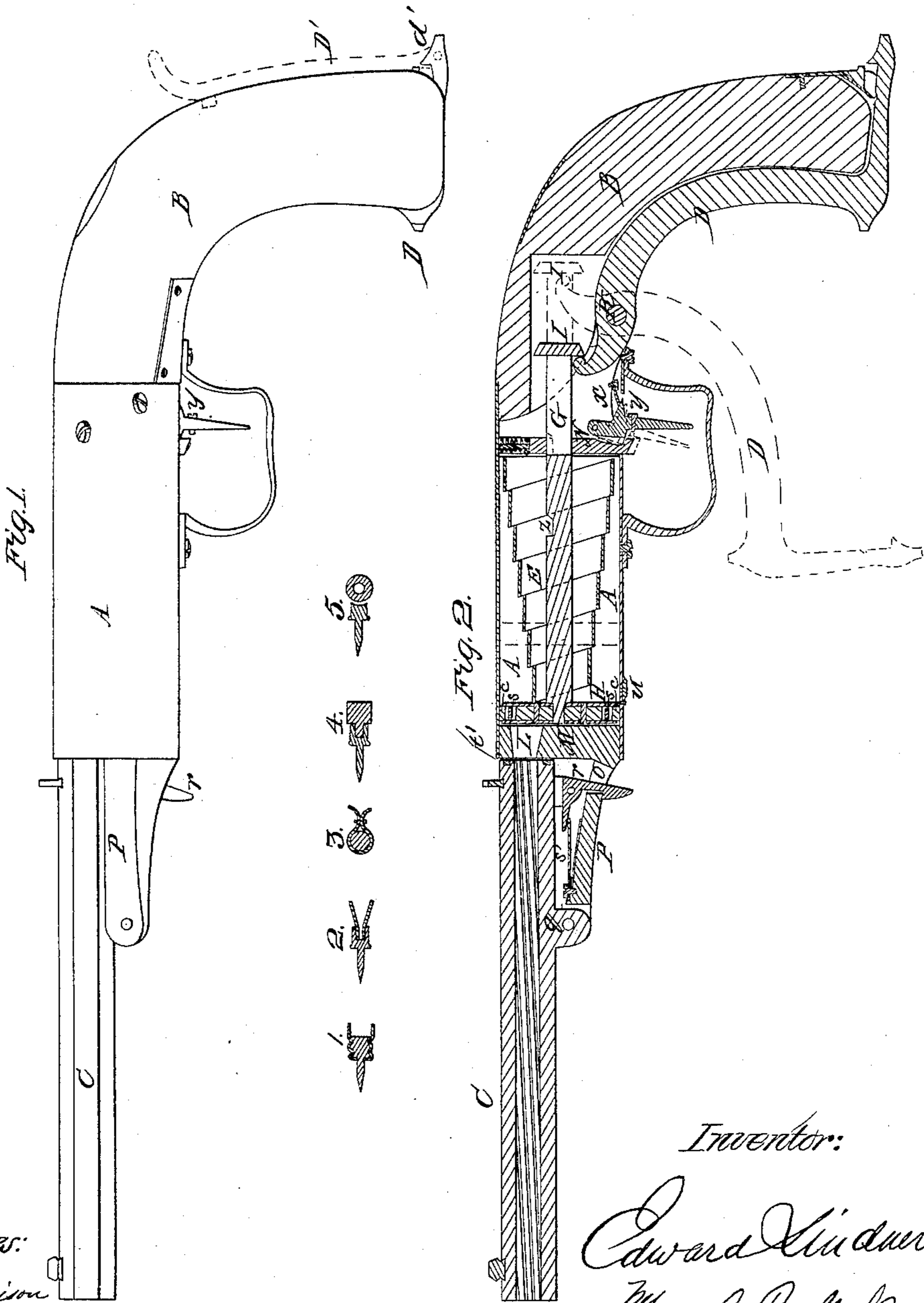


E. Lindner,

Air Gun,

No 37,173,

Patented Dec. 16, 1862.



Witnesses:
Wm. Harrison
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UNITED STATES PATENT OFFICE.

EDWARD LINDNER, OF NEW YORK, N. Y.

IMPROVEMENT IN AIR-GUNS.

Specification forming part of Letters Patent No. 37,173, dated December 16, 1862.

To all whom it may concern:

Be it known that I, EDWARD LINDNER, of New York, in the county and State of New York, have invented new and useful Improvements in Air Guns or Pistols; and I hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents an elevation; Fig. 2, a longitudinal section through the axis of my improved air-gun; and Fig. 3, sectional views of projectiles that are or may be used in connection with the pistol or gun referred to.

My invention consists in the formation of a lever constructed conformably in shape with the handle or stock of the gun or pistol, and in so arranging and combining with it a piston and spring as to compress the latter by direct action on the piston-rod, substantially as hereinafter shown and described; secondly, in the combination, with a cylinder in which the air is compressed as described, of a piston with an automatically-expanding packing, as hereinafter shown and set forth; thirdly, in the formation of an annular recess at the joint of the barrel with the breech, in combination with a projecting india-rubber ring, whereby an air-tight joint is effected at the joint, substantially as hereinafter described; fourthly, in providing the cylinder containing the air-compressing piston with an aperture and slide-valve, or any other equivalent means of adjusting the size of the said aperture to regulate the vent or the force of compression, as hereinafter described; fifthly, in the construction of projectiles with an elastic and expanding back or bottom, whereby in air pistols or guns, rifled barrels may be used to insure accuracy of aim, as hereinafter described.

To enable others skilled in the art to make and use my invention, I shall now proceed to describe its construction and operation, confining myself especially to air-pistols, it being understood that rifles and other varieties of air-guns are constructed and operated in a similar manner, differing only in form according to the special use they are intended for.

The pistol represented in the accompanying drawings is composed of three principal parts, viz: of the mechanism for compressing air, that is to actuate the ball or projectile, of the barrel, and of the stock or handle.

A is a plain cylinder containing a conical volute spring, E, bearing at its base upon the bottom of the cylinder, by which it is secured by means of springs or otherwise to the handle or stock of the pistol.

Through the center of and correspondingly to the axis of the spring passes a rod, G, that is provided at the one end and toward the apex of the spring with a piston, H, fitting closely into the cylinder by means of an internal metallic spring, *s*, bearing against an outer leather ring, *e*. The other end of the rod G is furnished with a head or projecting stud, I, against which bears the lever D that is pivoted into the stock, and plays upon the pin K when operated, as hereinafter described.

The lever D is shaped in conformity with the handle or stock of the pistol, so that when brought home it is flush with the surface of the handle. To increase its power it may be extended by a jointed extension-piece, D', Fig. 1, which, upon being turned on the hinge *d'*, forms a continuation of the lever itself. The front end of the cylinder A is hermetically closed by a metallic wall, M, provided with a conical aperture, L, in line with and in continuation of the bore of the barrel.

In the rear of the spring E is arranged a transverse spring, slide, or catch perforated in the center for the passage of the piston-rod G, and recessed on the top to contain within it a helical spring wound around a central pin, the tendency of which is to depress the catch or slide, so as to cause it to bear upon and fall into the notch or notches *z* of the piston-rod to maintain it in that position until released by the action of the trigger. The slide N is formed on its lower portion in the shape of a hook, in which a corresponding projection on the trigger is permitted to fall in by the action of a spring, *x*, in rear of the trigger. A set-screw, *y*, on the trigger regulates the hold on the slide by diminishing or increasing the surfaces of contact. The notch or notches on the piston-rod are beveled in the rear, so that when the slide is released from its hold by the trigger it is pushed upward, and thus allows free action to the spring upon the piston.

To the closing-piece M is cast or otherwise secured a bracket, P, to which is hinged on the transverse pin *q* the barrel C. The latter is armed with a catch, *r*, working in the slot

o in the bracket *P*, with which it is caused to connect and firmly hold the barrel in its place by means of the spring *s'* actuating the catch.

To release the barrel from its hold against the breech, it is merely necessary to push the projecting piece or hook of the catch *r* back, when the rear of the barrel will be thrown up for the reception of a projectile.

It is important in breech-loading air-pistols to form a tight joint between the breech-piece and the barrel. This I effect by grooving the face of the barrel contiguous to the breech-face, and by inserting in said groove an india-rubber ring that slightly projects from the face of the barrel.

It is evident that by closing the breech the india-rubber ring will be compressed, and thereby cause a hermetic joint.

The power required for forcing the projectile out of the barrel should vary according to the distance of the object aimed at. To effect this I provide the cylinder with a vent-hole and adjustable slide-valve, *u*, which is opened more or less according to the amount of air that it is desirable to let escape.

Air-pistols as heretofore constructed were exclusively smooth-bored, as no means had been invented for imparting rotary motion to the projectile when acted upon by compressed air; and projectiles as heretofore constructed consisted in sharp-pointed bolts or pins, with a barbed or hair tail spreading and filling the section of the bore when blown out of the barrel.

The manner in which I construct the projectiles enables me to use rifled barrels. They are either sharp-pointed bolts or pins, balls, or cylindrical conical projectiles of otherwise ordinary construction. To the rear I attach an india-rubber band, projecting behind the mass of the projectile, as shown in 1, Fig. 3, forming a cavity which, on being filled with compressed air, will force the band into the grooves of the barrel and give the necessary rotation to the projectile. A similar construction, and differing only from the former in its mode of attaching the india-rubber flange, is shown in No. 2, Fig. 3. In this figure the flange is secured to the ball by its being fastened into a central recess formed in the bolt.

No. 3, Fig. 3, is a common ball, around which is tied a cloth or an india-rubber envelope, leaving a flare-mouthed tail ready for inflation by compressed air, and operating as those previously described.

No. 4, Fig. 3, is a bolt fastened onto a cork bottom, which is easily compressed and forced into the groove.

No. 5, Fig. 3, is a projectile for rifled air-pistols, in two parts, consisting of the bolt and a little india-rubber ball fitting the bore, the latter propelling the former and imparting to it a rotary motion.

The operation of this air-pistol will be readily understood from the detailed description of the parts and their respective purposes; but for a clear understanding I shall now proceed to give the mode of using it.

The lever *D* is brought to the position indicated in red lines in the drawings, whereby the piston is forced back in its cylinder until the spring-slide *N* falls in with the notch *z* and the trigger with the hook in the slide, all as shown in red lines. The piston being thus held in the position last indicated, the lever is brought home, and the projectile being then introduced into the barrel, the pistol may be considered as cocked and ready to be discharged.

In conclusion I would observe that I do not confine myself to the precise construction and arrangement of the parts, as herein above described, as changes and modifications may be effected without changing the principle of my invention. Thus, instead of a metallic spring, an air-spring may be used—that is, an india-rubber or any other air-tight bag filled with air may be employed to back the piston and to act upon it in the manner and for the purposes described.

Having thus described my invention, I shall state my claims as follows:

1. The formation of a lever constructed conformably in shape with the handle or stock of the gun or pistol, and so arranging and combining with it a piston and spring as to compress the latter by direct action on the piston-rod, substantially as herein shown and described.
2. The combination, with a cylinder in which the air is compressed, as described, of a piston with an automatically-expanding packing, as herein shown and set forth.
3. The formation of an annular recess at the joint of the barrel with the breech, in combination with a projecting india-rubber ring, whereby an air-tight joint is effected, substantially as herein described.
4. Providing the cylinder containing the air-compressing piston with an aperture and slide-valve, or any other equivalent means of adjusting the size of the said aperture, to regulate the size of the vent, or the force of compression, as herein described.
5. The construction of projectiles with an elastic and expanding back or bottom, whereby in air pistols or guns rifled barrels may be used to insure accuracy of aim, as herein described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

EDWARD LINDNER.

Witnesses:

A. POLLAK,
EDM. F. BROWN.