

1,062,855.

E. S. ROE.
AIR GUN.
APPLICATION FILED OCT. 28, 1912.

Patented May 27, 1913.

2 SHEETS—SHEET 1.

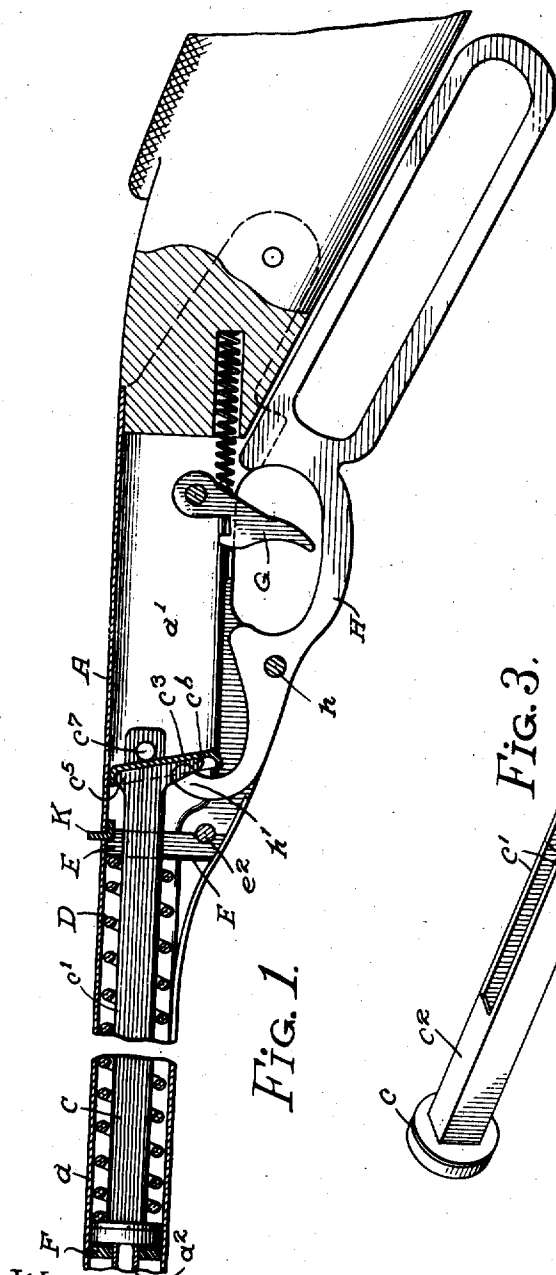


FIG. 1.

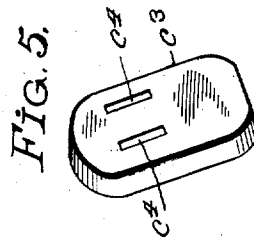


FIG. 5.

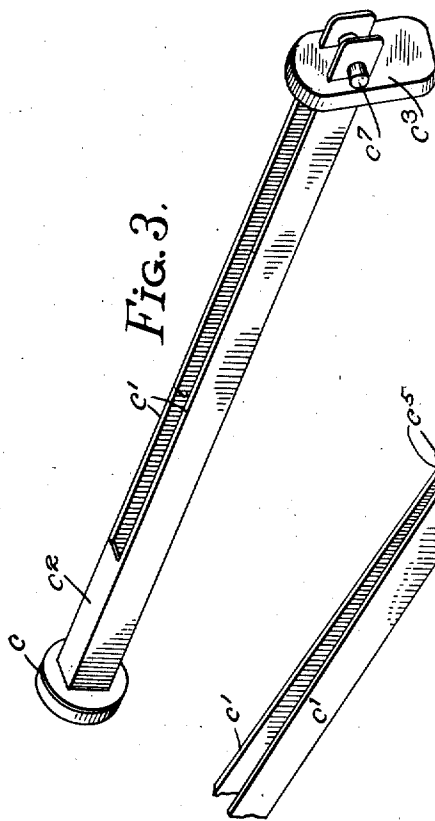


FIG. 3.

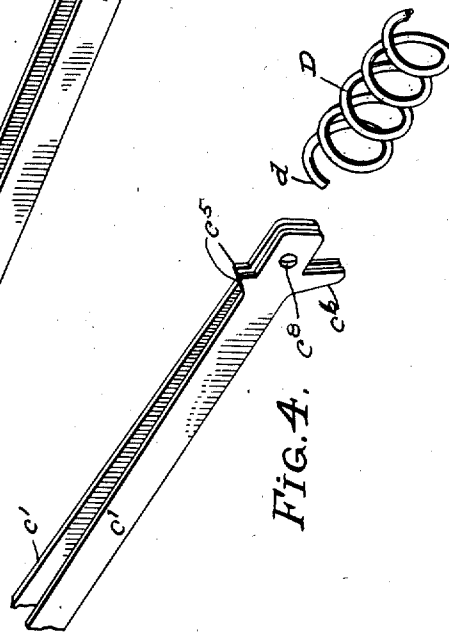


FIG. 4.

WITNESSES:
L. B. Graham
Milton Lenoir

INVENTOR:
By E. S. Roe
J. M. Roberts
His Atty.

AIR GUN.

Patented May 27, 1913.

2 SHEETS—SHEET 2.

INVENTOR;
By *E. S. Roe*
J. M. Roberts
his Attor

UNITED STATES PATENT OFFICE.

ERNEST S. ROE, OF PLYMOUTH, MICHIGAN, ASSIGNOR TO MARKHAM RIFLE COMPANY,
OF PLYMOUTH, MICHIGAN, A CORPORATION OF MICHIGAN.

AIR-GUN.

1,062,855.

Specification of Letters Patent.

Patented May 27, 1913.

Application filed October 28, 1912. Serial No. 728,024.

To all whom it may concern:

Be it known that I, ERNEST S. ROE, a citizen of the United States, residing at Plymouth, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Air-Guns, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in spring-actuated air guns, and it consists in the matters hereinafter described and then pointed out in the appended claims.

In the drawings which illustrate practical exemplifications of the various features of my invention in one of various forms of guns in which they may be embodied, Figure 1 is a longitudinal sectional view of a spring-actuated air gun showing my improvements, with the spring expanded and the other parts in their relative positions; Fig. 2 is a similar view with the spring compressed by the operation of the lever; Fig. 3 is a detail perspective view of the plunger; Fig. 4 is a similar view of the spring and parts of the plunger to illustrate the construction whereby these parts are assembled; Fig. 5 is a detail view of the inclined plunger-plate; Fig. 6 is a side view of the spring and parts of the plunger showing the method of threading the former upon the latter; Fig. 7 is a detail perspective view of the breech-block or rear abutment for the spring; Fig. 8 is a similar view of the sight; Fig. 9 is a top plan view of that portion of the barrel upon which the sight is mounted, and Fig. 10 is a detail sectional view of the same portion of the barrel and of the sight showing the method of assembling these parts.

In the drawings the reference letter A indicates the barrel of the gun, B the stock, C the plunger, D the spring, E the rear abutment or breech-block, F the forward abutment, G the trigger, H the lever for compressing the spring, and K the sight.

The barrel A is of any suitable construction and form provided with the usual forward cylindrical section *a* and rear polygonal section *a'* of increasing diameter and having the usual lower slot, and is attached to the stock in any suitable manner. The forward section of the barrel is provided with a front spring-abutment F and with a false-barrel *a''* of lesser diameter than the outer barrel and suitably mounted therein,

and the rearward section is provided with the spring-trigger G and spring-compressing lever H pivoted between its sides and working in the usual slot formed between their depending portions.

The plunger is provided with a piston or head *c* of any suitable construction adapted to fit the reduced forward portion *a* of the barrel, and with a rearwardly extended shank or piston-rod comprising the parallel side members or arms *c'* and the bent cross-member *c''*, which latter is bent to U-shape and extends from the head toward the rear a portion of the length of the side members. The shank is provided at its rear with an inclined end plate *c'''* which is slotted as at *c''''* to receive the free ends of the sides and which bears against inclined shoulders *c'''''* and *c''''''* formed on the sides near their free ends, being held in place by a pin *c'''''''* passing through holes *c''''''''* in the sides. This plate fits the rear portion of the barrel to form a guide for the rear end of the plunger in its movements. The side members of the plunger are in the form of flexible spring-arms and when the end plate is removed their free ends may be pressed together as shown at the left hand of Fig. 4 so that the spring D may be threaded over their opposite shoulders to assemble it in place upon the plunger. When the free ends of the side plates are brought together, the end *d* of the spring is placed in position in the rear of the upper shoulders *c'''''*, and then the spring is turned or rotated about the arms so that its forward end passes down and in front of the lower shoulders whereby it is threaded into engagement with the shoulders as shown in Fig. 6 and continued rotation of the spring causes its coils to pass the shoulders until it is fully threaded over them in position between them and the piston or head. After the spring is positioned on the arms the free ends of the latter spring apart to their normal separated position and the plate *c'''* is assembled in place upon them. The rear abutment or breech-block E is then positioned between the arms of the shank and between the plate *c'''* and the rear end of the spring with its shoulders *e* and notches *e'* facing the plate, and the entire organization of plunger and breech-block may then be inserted in place in the barrel by passing it into the polygonal end thereof with the piston entering the cylindrical portion until the

breech-block comes to position at approximately the line of division between these sections of the barrel as shown in Figs. 1 and 2. The breech-block is secured in place by a cross-pin e^2 passing through the barrel and against which the notches fit, and by the sight K.

In the organization shown the sight K comprises a vertical plate or body having a lower horizontal wing h of slightly less width than the plate; the body of the sight passes into the slot and seats upon the shoulders of the abutment E with the wing bearing upon the inner surface of the barrel, and the reaction of the spring between the piston or head and the rear abutment holds the latter in place upon the pin and sight and holds the sight in position on the barrel. The curved cross-sectional shape of the abutment E which is made of sheet metal presents a concave face or seat toward the rear or stock of the gun so that any convenient tool, such as the curved inner end of the spring-compressing lever which may be utilized for this purpose, may be passed into the barrel to press upon the abutment and move it forwardly against the tension of the spring sufficiently to allow the sight and pin e^2 to be inserted and positioned. By mounting the abutment in place between the spring and plate before the plunger and its spring are inserted in the barrel the abutment provides an extended bearing against which any such convenient tool may be readily engaged to produce this tension of the spring and to push the abutment into its place in the reduced portion of the barrel and hold it there while its retaining devices are being positioned, thereby obviating the previous defect that the assembler was compelled to feel about and crowd the tool between the end of the spring and end of the plunger and to compress the spring to separate them and insert the abutment between them after the parts were hidden in the barrel. This can be accomplished as the abutment does not extend through the barrel to form the sight but is of a length equal to the inside height of the barrel while occupying its normal position upright between the spring and plate. The breech-block provides a guide for the plunger and also prevents the sides of the shanks from bending inwardly toward each other or losing their form.

The lever H is pivoted at h with its forward hooked end h' in position to engage the forward face of the inclined plunger plate e^3 . The rearward inclination of this plate makes the lever work more easily in the last half of its stroke when the spring is nearly compressed and so offering greater resistance than it would if the plate were vertical. The forward flange on the lower end of the plate forms a hook with which

the trigger G engages when the spring is put under compression by the swing of the lever, as shown in Fig. 2, and when the trigger is pulled against the force of its spring g' , the plunger is shot forward by the spring D. The construction disclosed provides a very light plunger and an organization in which the plunger-spring may be easily assembled and disassembled on the shank while the entire plunger organization may be assembled outside the gun and then be readily placed in position as a unitary device. The opposite shoulders of the shank may be of any form adapted to cooperate with the spring when the latter is rotated in engagement therewith, but I prefer to make them inclined as this formation provides also for the inclination of the associated plate e^3 . Other and various changes in form may be made without departing from my invention, and while I have illustrated the features of my invention in a gun in which the spring is compressed by a lever it is to be understood that they may be embodied in other forms or types of guns.

I claim:—

1. In a gun, the combination of a spring, a plunger comprising a head and a shank, the latter formed by a pair of flexible arms having shoulders at their free ends to engage the spring for assembling and disassembling it and the shank, and a plate on the arms against the shoulders.

2. In a gun, the combination of a spring, a plunger comprising a head and a shank inwardly-extending therefrom and composed of a pair of flexible arms adapted to be compressed at their free ends, and opposite inclined shoulders on the free ends of the arms for engagement with the spring, and a plate on the arms against the shoulders.

3. In a gun, the combination of a plunger comprising a head and a shank inwardly-extending therefrom and composed of a pair of opposite flexible arms, shoulders on the free ends of the arms, a rearwardly inclined plate on the arms at the shoulders, and spring on the shank between the plate and head.

4. In a gun, the combination of a plunger comprising a head and a shank inwardly-extending therefrom and composed of a pair of opposite arms adapted to receive a pin in their free ends, shoulders on the free ends of the arms, an inclined plate having slots to receive the ends of the arms and held between the pin and shoulders, and a spring on the shank between the plate and head.

5. In a gun, the combination of a barrel, a plunger having a shank formed by a pair of opposite arms, a spring on the shank, a shouldered abutment between the arms of the shank, a sight-piece passing through the barrel and engaging the shouldered end of

the abutment, a pin engaging the other end of the abutment, and means to retract the plunger to put the spring under compression against the abutment.

5 6. In a gun, a unitary structure comprising a plunger having a shank formed by a pair of opposite arms, a spring on the shank, an inclined plate attached to the ends of the arms and having a trigger-engaging flange, 10 and an abutment for the spring between the arms and forming a guide therefor and located between the plate and the rear end of the spring and being of a length equal to the height of the barrel and projecting 15 below the line of the spring.

7. In a gun, the combination of a barrel having a rear section whose diameter decreases toward its forward end, a plunger having a shank formed by a pair of opposite 20 arms, a spring on the shank, a plate attached to the ends of the arms, and an abutment between the arms and located between the plate and the rear end of the spring, the abutment projecting below the line of the 25 spring and having a rearwardly facing seat

to receive a tool to push the abutment to place in the barrel, and means to lock the abutment in position.

8. In a gun, a plunger having a shank, a spring on the shank, a rearwardly inclined 30 plate mounted on the shank and having a forwardly bent flange at its bottom, an abutment forming a guide for the shank, a pivoted lever having a curved inner end for engagement with said plate, and a trigger 35 to engage the flange of the plate.

9. In a gun, a plunger retracting mechanism comprising a pivotal lever having an upwardly and rearwardly curved inner end, a plunger shank having a rearwardly inclined bearing at the rear end thereof for 40 engagement with said lever end and having a trigger-engaging flange.

In testimony whereof I affix my signature in presence of two witnesses.

ERNEST S. ROE.

Witnesses:

S. O. HUDD,

EVERED V. JOLLIFFE.

Correction in Letters Patent No. 1,062,855.

It is hereby certified that the name of the assignee in Letters Patent No. 1,062,855, granted May 27, 1913, upon the application of Ernest S. Roe, of Plymouth, Michigan, for an improvement in "Air-Guns," was erroneously written and printed "Markham Rifle Company," whereas said name should have been written and printed *Markham Air Rifle Company*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of June, A. D., 1913.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.

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