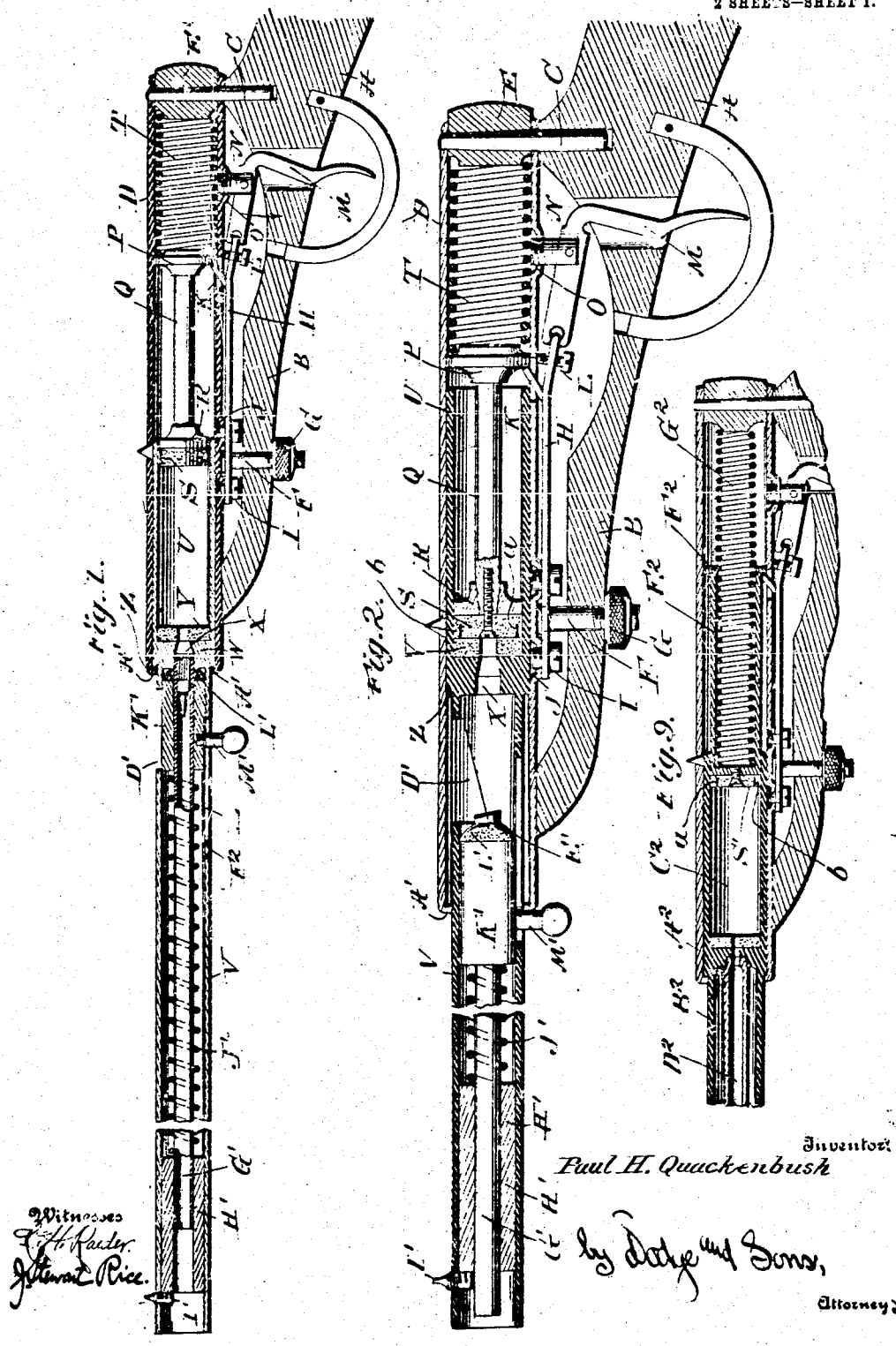
No. 841,815. PATENTED JAN. 22, 1907.

P. H. QUACKENBUSH.

AIR GUN.

APPLICATION FILED SEPT. 27, 1906.

2 SHEETS—SHEET 1.



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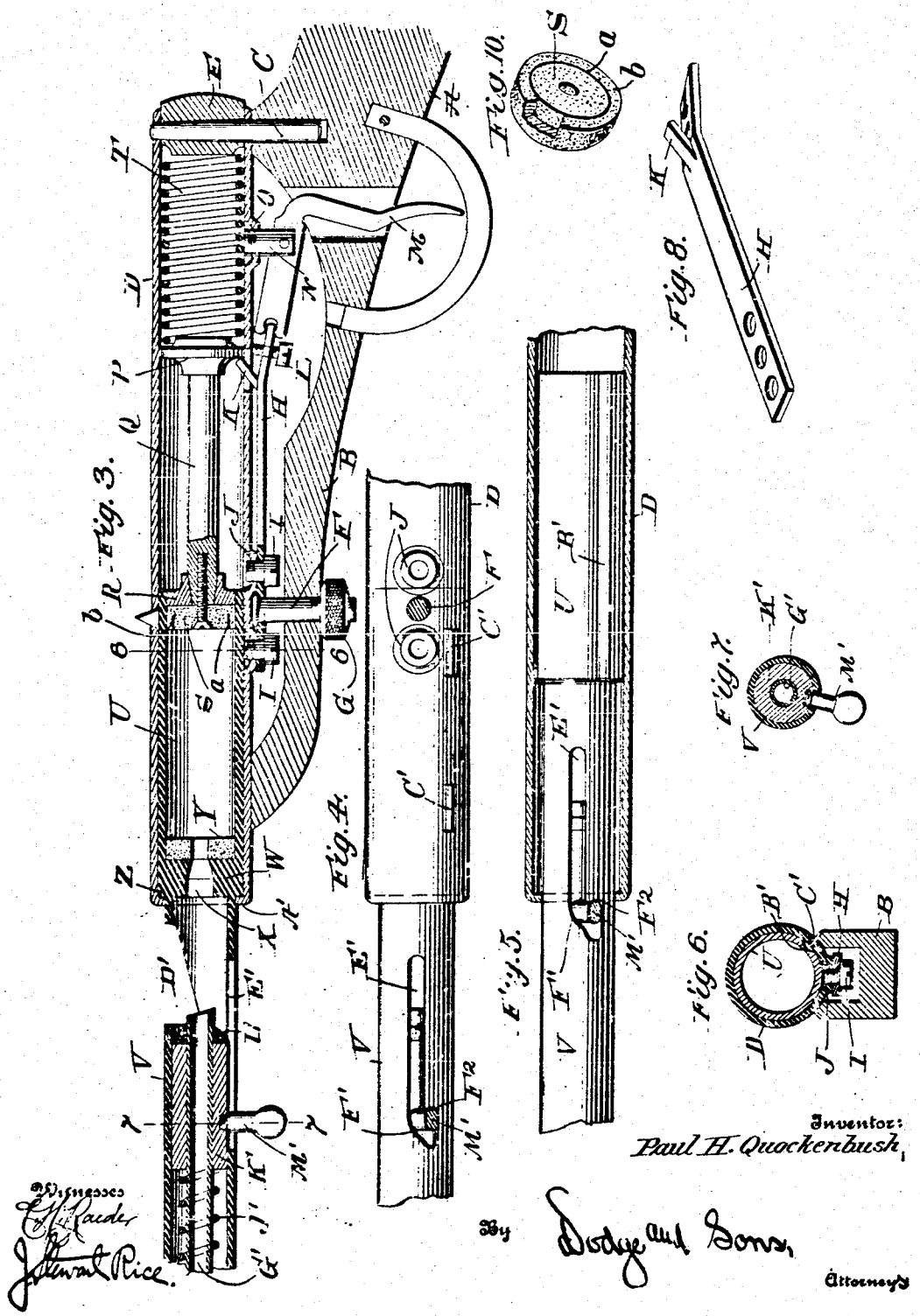
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

PAUL H. QUACKENBUSH, OF HERKIMER, NEW YORK, ASSIGNOR TO HENRY M. QUACKENBUSH, OF HERKIMER, NEW YORK.

AIR-GUN.

No. 841,815. Specification of Letters Patent. Patented Jan. 22, 1907.

Application filed September 27, 1906. Serial No. 336,503.

To all whom it may concern:

Be it known that I, PAUL H. QUACKENBUSH, a citizen of the United States, residing at Herkimer, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Air-Guns, of which the following is a specification.

My present invention pertains to air-guns, the construction and advantages of which will be hereinafter set forth, reference being had to the annexed drawings, wherein—

Figure 1 is a longitudinal vertical sectional view of the gun, the parts being in position for firing; Fig. 2, a similar view on an enlarged scale, the parts being shown in the position which they occupy when the gun is cocked and before the cylinder and false barrel are drawn forward; Fig. 3, a like view, the piston being shown as moved rearwardly with its impelling-spring under compression and the true barrel moved forwardly in position to receive the charge; Fig. 4, a bottom plan view of a portion of the frame or housing and the false barrel; Fig. 5, a similar view, the housing being shown in section and the false barrel with the compression-cylinder being moved inwardly; Fig. 6, a transverse sectional view on the line 6 6 of Fig. 3; Fig. 7, a like view on the line 7 7 of Fig. 3; Fig. 8, a perspective view of the combined spring and sear; Fig. 9, a sectional view of a slightly-modified form of construction; and Fig. 10, a perspective view, partly broken away, of the improved packing member or washer.

The object of the invention is to provide a simple and effective gun that is easy of manipulation and in which the working parts are durable and so inclosed as to be thoroughly protected.

With this and other objects, which will appear more fully from the specification, in view I will now describe the invention in detail, reference being first had to Figs. 1 to 8, inclusive.

A denotes the stock of the gun, and B the fore-stock, here shown as formed of a single piece. At the approximate point of junction of the fore-stock and stock proper there is provided an opening into which extends the lower end of a pin or post C, the upper end of which is slightly tapered and makes a driving fit with the openings formed in the rear end of the cylindrical frame or housing D and in an abutment and filling-block E, mounted in the rear end of said housing.

The forward end of the housing is secured to the fore-stock by a threaded stem F and a thumb-nut G, mounted upon the outer end thereof. The inner end of the stem is riveted to the forward end of the trigger-spring H, said spring in turn being secured to the housing by screws I, which pass into threaded openings tapped in downwardly-projecting bosses J, formed in the housing.

The stock and fore-stock are, as shown in Fig. 6, so formed as to provide a seat or bearing-surface for the housing. Thus when the post F is passed through the housing and the nut G turned to the full extent the housing will be drawn firmly to position and held against displacement.

A sear K is struck up from the spring H, the rear end of the spring being bent downwardly, slitted longitudinally, and provided with a threaded opening, through which is passed an adjusting-screw L, the sear passing through an opening formed in the housing, while the screw bears against the housing and limits the upward movement of the sear.

A trigger M, having the general form of an elbow-lever, is pivoted to a post or stud N, secured in a boss O, formed in the housing, the forward end of the trigger being slotted or notched and engaging the rear or free end of the combined spring and sear. Normally the spring holds the sear elevated in position to engage the forward face of the plunger P. Said plunger is of such diameter as to make a neat fit with the bore of the frame or housing and is mounted on the rear end of a stem or rod Q, which carries at its forward end the piston, comprising in its preferred form a solid head R and a packing washer or member S.

A piston-actuating spring T is mounted within the housing between the block E and the rear face of the plunger P. Within the forward portion of the housing is slidably mounted a cylindrical member or compression-chamber U, which is formed integral with the false or outer barrel V. The forward end of the chamber is defined by a relatively heavy wall or partition W, provided with a central opening X. An apertured yielding washer Y is fitted in the forward end of the cylinder and receives the impact of the

piston or the yielding washer S, carried thereby, when the arm is discharged.

As will be noted upon reference to the drawings, the false barrel is slightly smaller in diameter than the compression-cylinder, whereby a shoulder Z is formed, while the forward end of the housing is inturned or provided with an inwardly-extending flange A′, which coacts with the shoulder and serves to prevent forward longitudinal separation of said parts.

To prevent rotation of the cylinder within the housing, and consequently to maintain the false barrel in its correct position, the outer face of the cylinder is provided with a longitudinally-disposed groove or channel B′, Figs. 5 and 6, into which project two lugs C′, Fig. 4, formed by a slight displacement of the metal of the housing. This arrangement insures the breech-opening D′ (which is formed by cutting away the false barrel adjacent to the forward end of the cylinder) being held in its proper position.

The false barrel, preferably on its under side, is formed with a longitudinally-disposed slot E′, which at its forward end is deflected, forming a cam-surface F′ and a locking-shoulder F^2.

G′ denotes the true barrel, the forward end of which is supported in a block H′, mounted in the outer portion of the false barrel and held against outward movement by the inwardly-projecting end of the forward sight I′, which is screwed into and through the false barrel. The block is maintained against inward movement by a coiled spring J′, one end of which bears against the block, while the opposite end bears against the forward face of the breech-block K′, which is secured to the true barrel adjacent to its rear end. A washer L′, of suitable yielding material, the outer face of which is preferably convex, is mounted on the rear portion of the true barrel, the adjacent end of said barrel, which is slightly beveled, projecting beyond the same, so that said projecting end may enter the forward enlarged portion of the opening X when the breech is closed, the washer at such time making a tight joint between the true barrel and the cylinder.

Normally spring J′ serves to hold the parts in the position just noted; but in order to automatically lock the breech-block in its open position, so that the gun may be loaded, the block is provided with a laterally-extending handle or knob M′, which projects through the slot E′.

As the user forces the false barrel rearwardly the true barrel moves with it until the handle strikes the forward end of the housing, when further rearward movement of the handle and true barrel are prevented. As the rearward rectilinear movement of the false barrel is continued for the purpose of forcing the piston and plunger back and putting the spring T under compression, (see Fig. 2,) handle M′ remains stationary until the cam-face F′ strikes the same and moves it laterally, causing it to pass behind the locking-shoulder F^2, the spring J′ meanwhile being placed under a greater degree of compression than when in its normal position.

After the combined false barrel and compression-cylinder have been moved rearwardly to their full extent and sear K passes up in front of plunger P the false barrel and cylinder are moved forwardly until shoulder Z bears against the flange A′ of the housing. The parts will then be in the positions shown in Fig. 3 with the breech-block locked open, so that a dart, slug, or other charge may be readily inserted into the true barrel. After the charge has been introduced the breech is closed by merely turning the handle or knob M′ from behind the locking-shoulder F^2, when the breech-block will be forced back by spring J′ and a tight union effected and maintained between the true barrel and the cylinder.

Any retrograde movement of the cylinder and its attached parts into the housing when the gun is in condition for loading or firing is prevented by the conjoint action of spring T and sear K. Spring T serves to force the plunger forward and sear K acts to restrain such movement; but inasmuch as the sear bears at one side only of the plunger said plunger has a tendency to tip while thus restrained, which tendency is transmitted through rod Q to the piston, thereby causing the piston to bear with sufficient force against one side of the cylinder to prevent its inward movement, even though the arm be held in a vertical position.

In Fig. 9 a slightly-modified form of construction is shown, in which A^2 denotes the housing, B^2 the false barrel, and C^2 the cylinder formed as a rearward extension of the false barrel and located within the housing.

D^2 indicates the true barrel, which in this instance may be fixed to the false barrel so that the two do not have a relative movement.

The piston E^2 in this form is shown as cylindrical and as provided at its rear end with a flange F^2, adapted to be engaged by the sear when the spring G^2 is placed under compression by the inward or rearward movement of the barrels and cylinder. This form of piston may be employed with the arm constructed as heretofore described.

The arm shown in Fig. 9 is of course a muzzle-loader, the two barrels being relatively fixed. It is likewise obvious that a magazine-loading arrangement may be used in conjuction with this form of arm, it not being deemed essential to illustrate the same, as such magazine arrangements are well known.

The form of arm illustrated in Figs. 1 to

S may be readily converted into a muzzle-loader by screwing out the handle M', the two barrels then becoming relatively fixed and moving rearwardly and forwardly together.

As will be noted upon reference to the drawings, both in the main and modified forms the washer or member S' is provided with an annular cut *a* at a slight distance from its perpihery, thereby leaving or forming a flexible lip or annular section *b*, which when the piston advances under the action of the spring conforms nicely to the inner surface of the cylinder and prevents loss of air. This construction is cheaper and more advantageous than the usual cup-shaped packing commonly employed.

From the foregoing description it will be noted that the gun is simple in its operation and the movable parts are thoroughly protected. The arm may be easily assembled and taken apart, as will be readily understood by those skilled in the art from a mere inspection of the drawings. Furthermore, the construction of the arm is such that there is no danger of the user's fingers being caught should the gun be accidentally discharged immediately after it is cocked and before the barrel is drawn forward. In many makes of breakdown guns this danger exists, and it also exists to a greater or less extent in other forms.

The arm is equally adapted to slugs, darts, or shot, and any size projectile may be used by merely inserting the desired bore of tubing into the breech-block, or, in other words, substituting one true barrel for another.

Having thus described my invention, what I claim is—

1. In an air-gun, the combination of a housing; a false barrel; a compression-cylinder connected to the false barrel and slidably mounted within and wholly inclosed by the housing; a piston working in the cylinder; an impelling-spring for the piston inclosed within the rear portion of the housing; and a true barrel communicating with the compression-cylinder.

2. In an air-gun, the combination of a barrel; a compression-cylinder forming a rearward extension of the barrel; a housing wholly inclosing the cylinder and serving to limit the forward movement of the cylinder therein; a piston; and a spring for the piston, said spring being adapted and arranged to be placed under compression by a rearward movement of the false barrel and cylinder.

3. In an air-gun, the combination of a barrel; a compression-cylinder forming a rearward extension thereof; a piston working in the cylinder, a spring serving normally to force the piston forwardly; a sear for holding the piston against the action of its impelling-spring; and a housing wholly inclosing the cylinder and its attendant parts and serving to limit the forward movement of the cylinder.

4. In an air-gun, the combination of a barrel; a cylinder forming a rearward extension thereof; a piston working in the cylinder; a spring-pressed plunger connected to the piston; a housing wholly inclosing the cylinder, plunger and spring; and a sear for engaging the plunger.

5. In an air-gun, the combination of a barrel; a cylinder formed as a rearward extension thereof; a piston working in said cylinder; a spring-pressed plunger connected by a stem to said piston; a spring located in rear of the plunger; and a housing wholly inclosing the cylinder, plunger and spring.

6. In an air-gun, the combination of a cylindrical housing provided at its forward end with an annular inwardly-projecting flange; a barrel; a cylinder forming a rearward extension of the barrel and movable to and fro in the housing, said cylinder likewise having a shoulder which coacts with the flange to prevent withdrawal of the cylinder from the housing; a piston working in the cylinder; and a spring for impelling the piston.

7. In an air-gun, the combination of a false barrel; a compression-cylinder connected to the rear end of the false barrel and movable therewith; a piston working in the cylinder; a housing wholly inclosing the cylinder and piston; a spring mounted within and inclosed by the housing, one end of the spring bearing against the piston while the opposite end thereof bears against the rear portion of the housing; and a true barrel communicating with the forward end of the cylinder.

8. In an air-gun, the combination of a stock; a housing; a block mounted in the rear end of the housing; a pin secured in the housing and block and having its lower end seated in an opening formed in the stock; a combined trigger-spring and sear; means for securing the forward end of the spring to the housing; a stem secured to said spring and extending through an opening formed in the fore-stock; a nut mounted on said stem; an air-compression mechanism mounted in the housing; and a barrel in communication with the compression mechanism.

9. In an air-gun, the combination of a housing; a false barrel; a compression-cylinder forming a rearward extension of said barrel and slidably mounted in the housing; a piston; a spring for actuating said piston; a true barrel slidably mounted in said false barrel but normally movable therewith; and means for arresting the movement of the true barrel and locking it in such arrested position as the false barrel is moved to the full extent of its rearward movement in the act of placing the spring under compression.

10. In an air-gun, the combination of a false barrel; a true barrel slidably mounted therein; a spring serving normally to press

said true barrel rearwardly; and a lock serving to hold the true barrel forwardly with the spring under compression.

11. In an air-gun, the combination of a false barrel provided with a breech-opening; a true barrel slidably mounted therein; a spring acting to move said true barrel rearwardly; and a lock serving to hold the true barrel forwardly against the action of the spring, with the inner end of the true barrel in line with the breech-opening, whereby the charge may be readily introduced into said inner end of the true barrel through the breech-opening.

12. In an air-gun, the combination of a false barrel provided with a breech-opening; a true barrel slidably and rotatably mounted therein; a spring serving normally to move the true barrel rearwardly and thereby to close the breech-opening; and means to rotate and lock the true barrel when its inner end is in line with the breech-opening, whereby a charge may be readily introduced into said true barrel through said breech-opening.

13. In an air-gun, the combination of a housing; a false barrel having a breech-opening; a compression-cylinder formed as a rearward extension of said barrel and slidably mounted in the housing; means for securing a rectilinear movement of said cylinder within the housing; a piston; an impelling-spring therefor arranged to be placed under compression by and upon a rearward movement of the cylinder; a true barrel slidably mounted in the false barrel; a spring acting to force said true barrel rearwardly; and a handle secured to the true barrel and projecting through a slot formed in the false barrel, said slot having a cam-face and a locking-shoulder, the slot being located adjacent to the inner or rear end of the false barrel, whereby when the false barrel and cylinder are moved inwardly to compress the piston-spring, the endwise movement of the true barrel will be arrested and it will be locked with its inner end in line with the forward end of the breech-opening.

14. In an air-gun, the combination of a housing; a false barrel formed with a breech-opening; a cylinder formed as an extension of the false barrel and slidably mounted in the housing; lugs extending inwardly from the housing into a way or channel formed in the side of the cylinder; a piston; a spring for actuating the piston and adapted to be placed under compression by the inward movement of the cylinder; a true barrel provided with a breech-block; a spring acting to move the block beneath the breech-opening and to bring the true barrel into operative relation with the cylinder; and a handle extending outwardly from the breech-block through a slot formed in the false barrel adjacent to its inner end, said slot having a cam-face and a locking-shoulder.

15. In an air-gun, the combination of a false barrel provided with a breech-opening and with an aperture in its end wall; a true barrel slidably mounted within the false barrel; a breech-block carried by the true barrel adjacent to its inner end; a washer also carried by the true barrel and bearing at one side against the breech-block; and a spring serving to move the true barrel rearwardly and thereby to project the rear end of the true barrel into the aperture aforesaid, to close the breech-opening, and to effect a tight joint between the washer and the end wall of the false barrel.

16. In an air-gun, the combination of a false barrel provided with a breech-opening; a true barrel mounted therein; a breech-block secured to the inner end of the true barrel, said block being of such a diameter as to properly position the true barrel; a bearing-block mounted within the forward end of the false barrel and serving as a support for the forward end of the true barrel; a spring encircling the true barrel and bearing at its opposite ends against the blocks aforesaid; and a sight extending through the false barrel, the inner end of the sight standing in front of the bearing-block and serving thereby to hold said block in place.

17. In an air-gun, the combination of a barrel; a compression-cylinder; a piston working in the cylinder; and a packing member secured to the forward end of the piston, said packing member having an annular cut or incision in its forward face, whereby a peripheral lip is formed, while the main body of the washer is kept intact.

18. In an air-gun, the combination of a barrel; a compression-cylinder; a piston; and a packing-washer of flexible material secured to the forward face of the piston, said washer having an annular cut or incision made in its forward face adjacent to its periphery.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PAUL H. QUACKENBUSH.

Witnesses:

H. M. QUACKENBUSH.

CHAS. H. BURRILL.