

D. F. POLLEY.  
AIR GUN.

APPLICATION FILED JULY 25, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 2

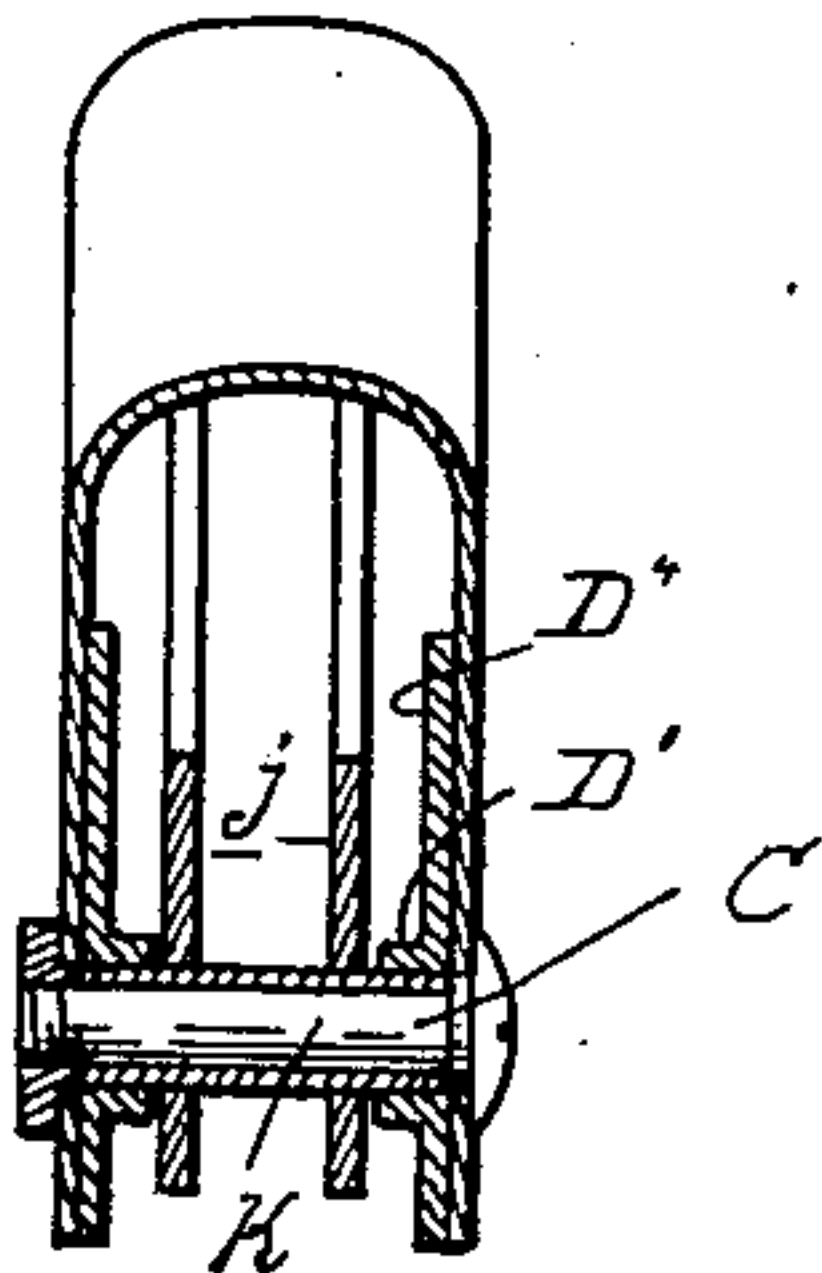


Fig. 1.

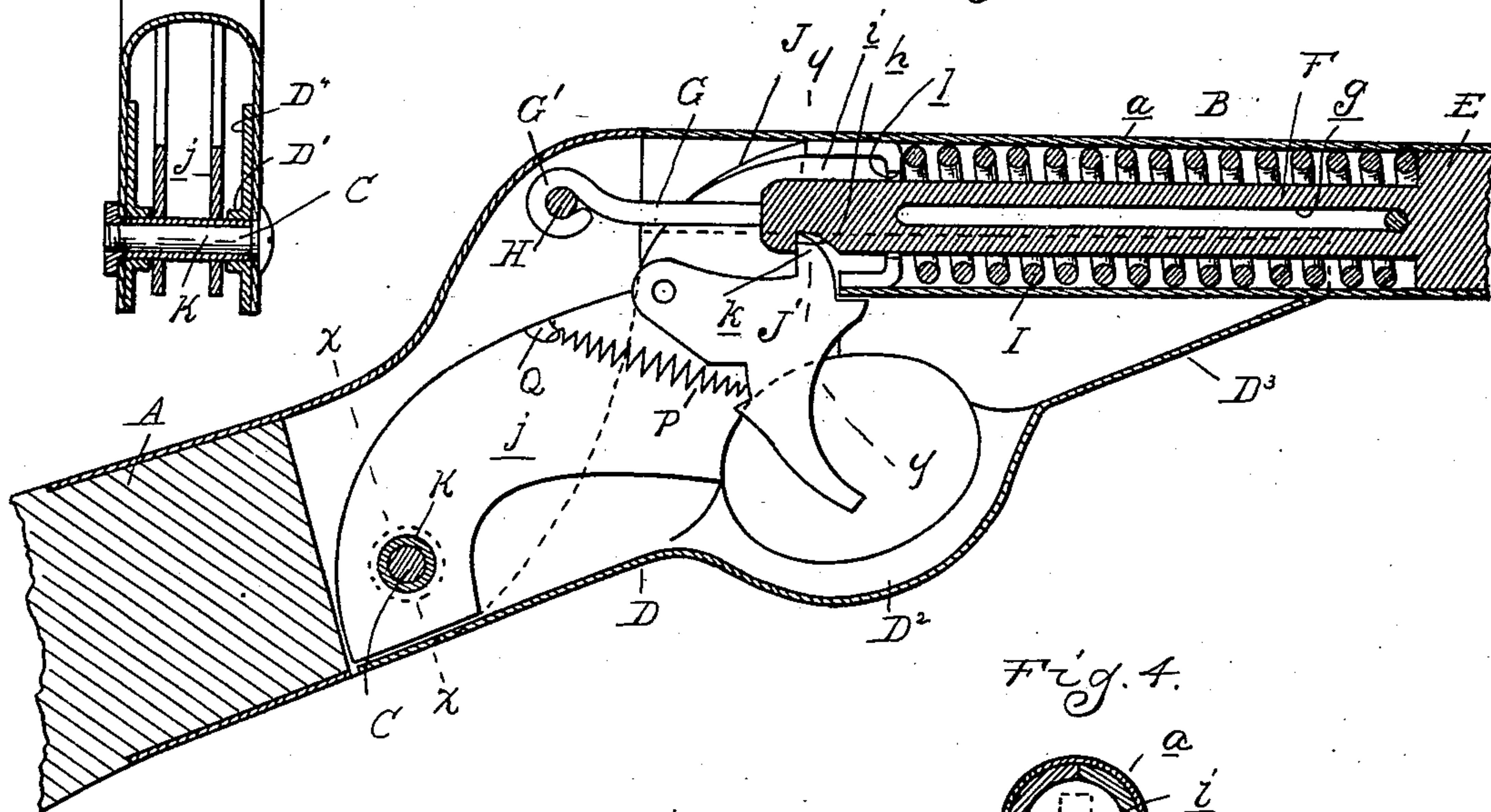


Fig. 4.

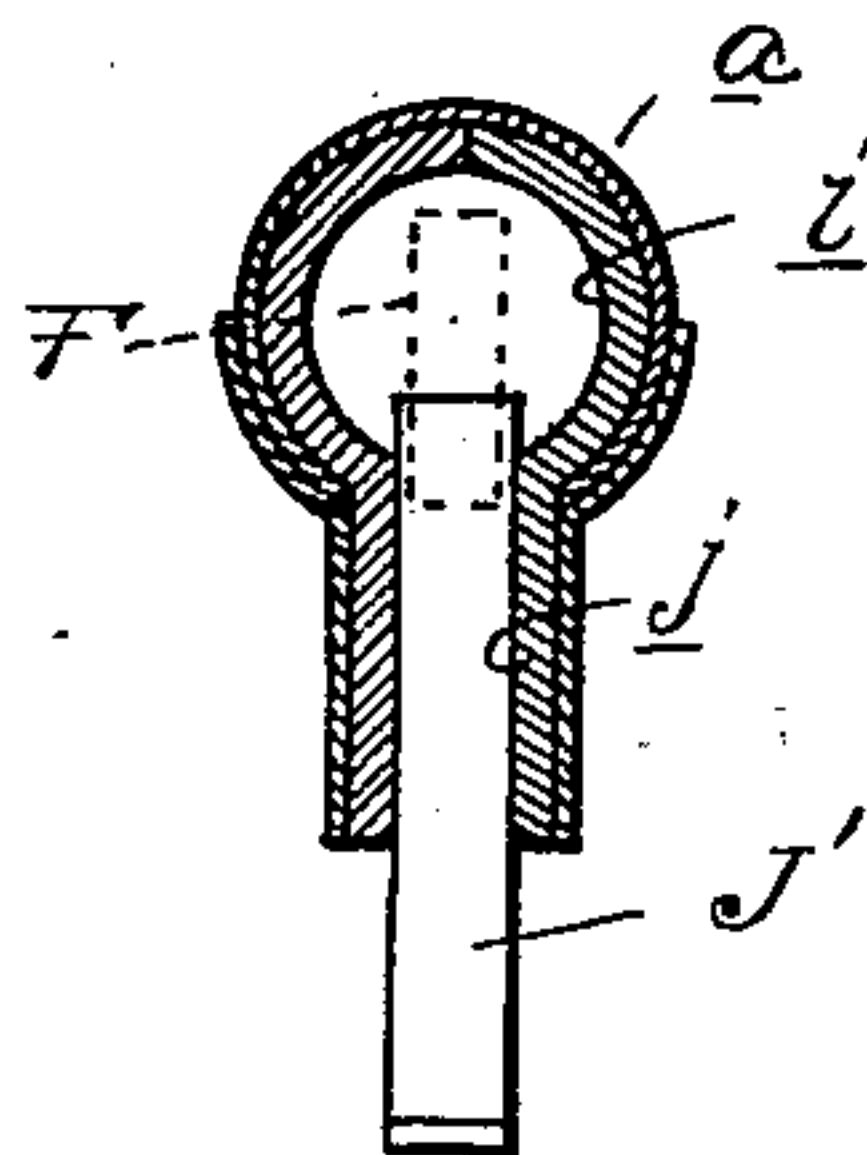


Fig. 3.

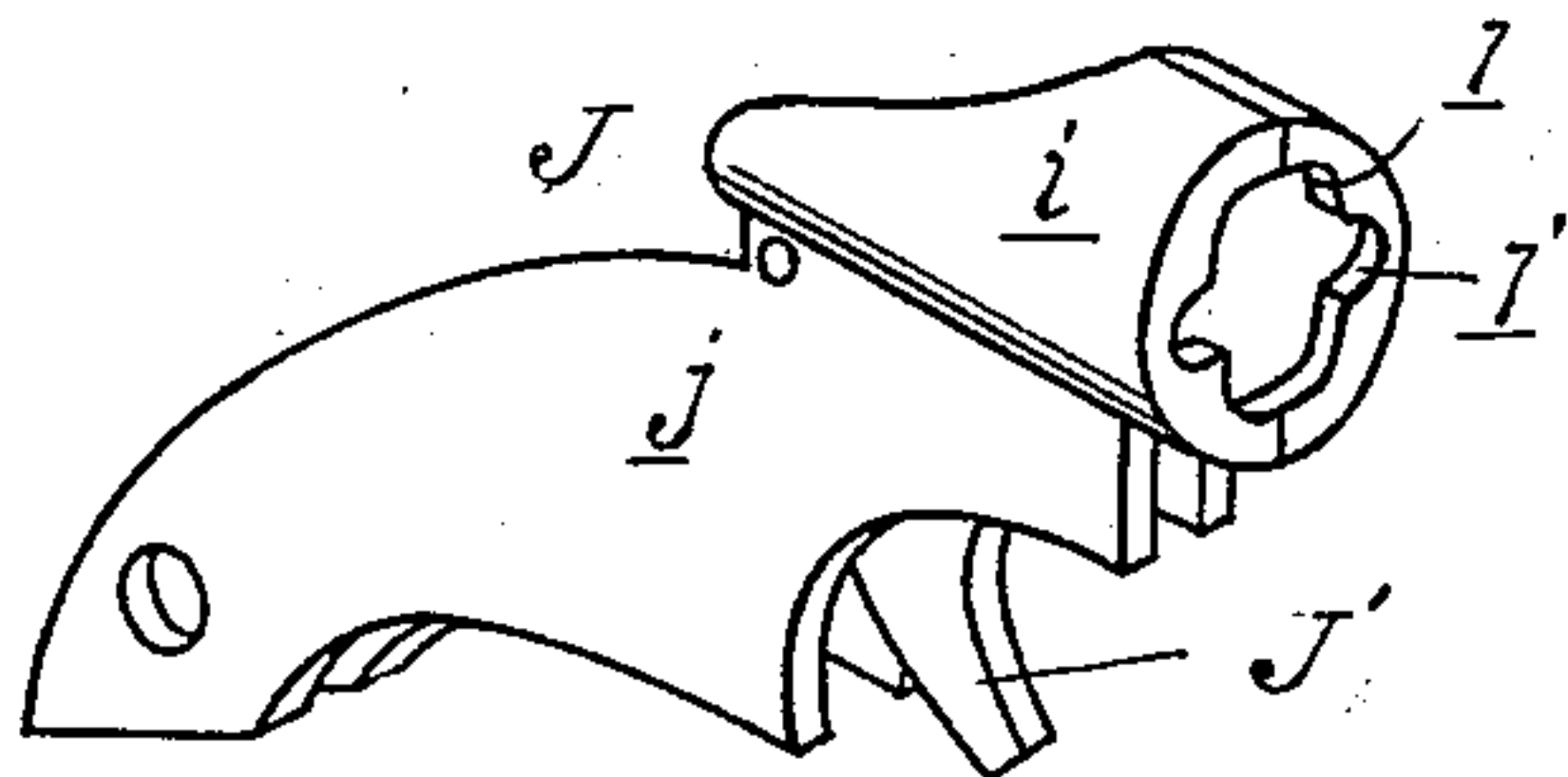
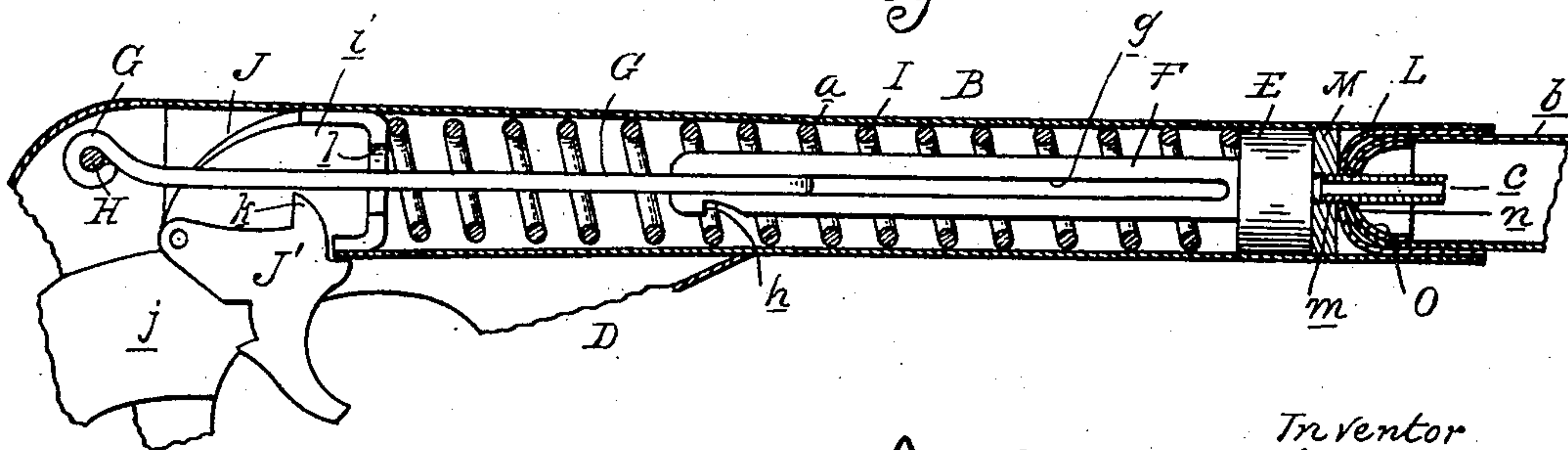


Fig. 6.



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No. 742,734.

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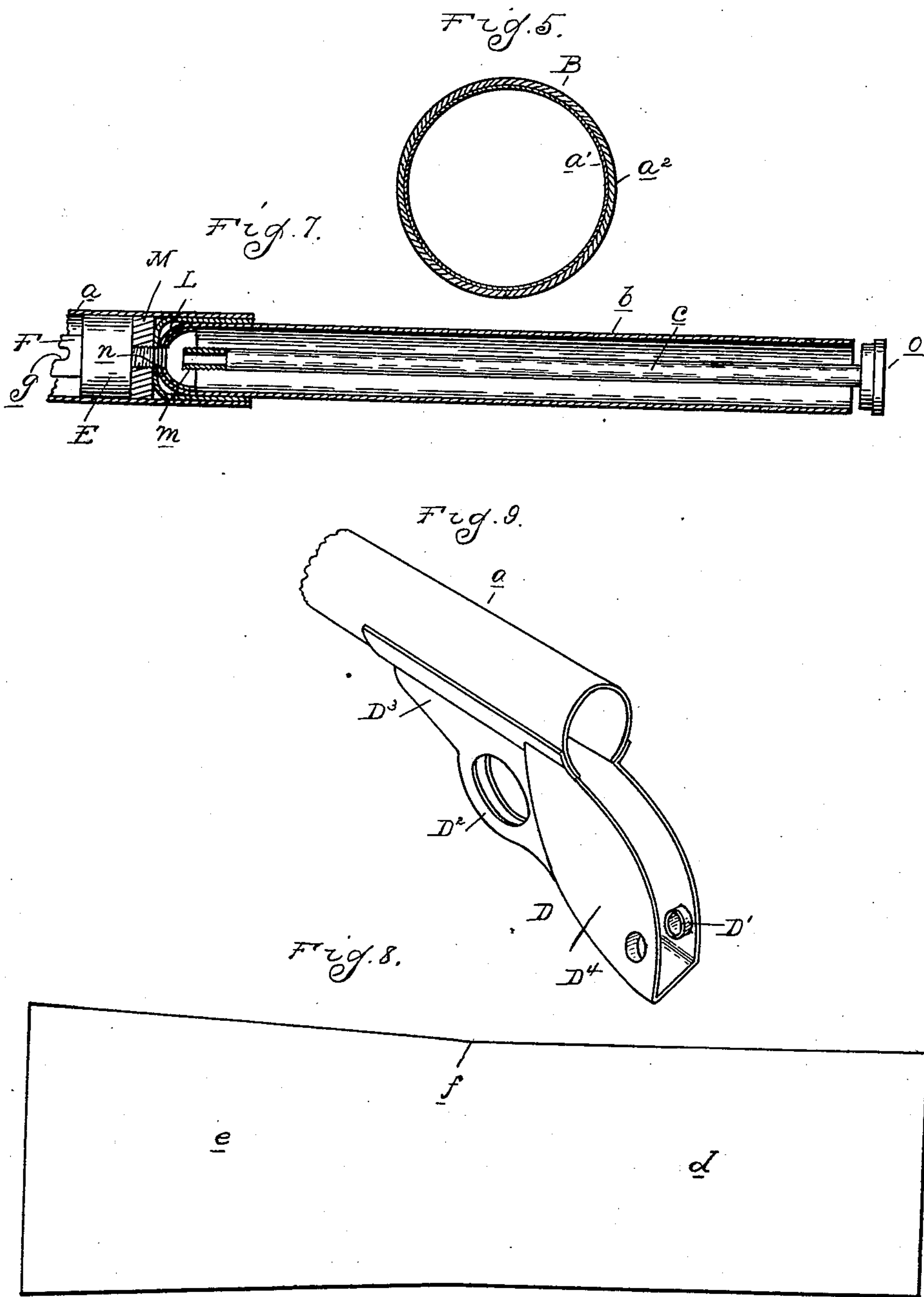
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2 SHEETS—SHEET 2.



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## UNITED STATES PATENT OFFICE.

DAVID FRANK POLLEY, OF PLYMOUTH, MICHIGAN.

## AIR-GUN.

SPECIFICATION forming part of Letters Patent No. 742,734, dated October 27, 1903.

Application filed July 25, 1902. Serial No. 117,034. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID FRANK POLLEY, 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 drawings.

The invention relates to improvements in air-guns; and it consists in certain features of construction, with particular reference to the following points: first, the construction of the air-compressing piston and its actuating mechanism; second, the construction of abutment for the spring; third, means for attaching the trigger; fourth, the construction of the barrel forming the compression-chamber and spring-housing; fifth, the construction of the detachable shooting-barrel and means for securing the same in position.

The invention further consists in the peculiar construction, arrangement, and combination of parts, as hereinafter described and claimed.

In the drawings, Figure 1 is a longitudinal section through a portion of the gun, showing the spring under compression. Fig. 2 is a cross-section on line *x x*, Fig. 1; and Fig. 3 is a perspective view of the combined spring-abutment and trigger-support. Fig. 4 is a section on line *y y*, Fig. 1. Fig. 5 is a cross-section through the spring-barrel. Fig. 6 is a longitudinal section similar to Fig. 1, but showing the spring expanded. Fig. 7 is a longitudinal section of that portion of the barrel not shown in Fig. 6. Fig. 8 is a plan of the blank from which the spring-barrel is formed. Fig. 9 is a perspective view of the trigger-guard and a portion of the barrel.

It is the object of the invention to both reduce the cost of manufacture and to obtain a stronger construction of parts, so as to increase the life of the gun.

It is also an object to obtain a more compact arrangement of parts and a construction which permits of readily assembling the parts.

One advantage of the construction is that the length of the false barrel forming the compression-cylinder and the spring-housing can be considerably diminished. This is accomplished by providing the piston with a

shank which is of lesser length than the spring when the latter is expanded, but of slightly greater length than the compressed spring. The trigger may thus be arranged directly in rear of the spring instead of being placed some distance therefrom, as would be necessary if the piston were the full length of the expanded spring. It also permits of shortening the barrel by an amount equal to the difference between the length of the compressed and expanded spring.

As shown in the drawings, A is the stock-section of the gun, which is preferably of the breakdown type, and B is the barrel-section. These sections are hinged to each other by means of a pivot C, which passes through a downward and rearward extension or shank D of the barrel-section, the latter forming the housing for the trigger mechanism. The barrel comprises the section *a*, which forms the compression-cylinder and spring-housing, and the forward extension *b*, which constitutes a false barrel and contains the true barrel *c*. The barrel *a* is preferably formed from sheet metal. As it forms the compression-cylinder, that portion must be of uniform diameter and must also be air-tight. It is usual in forming barrels of this kind to bend a sheet-metal blank around a suitable mandrel, so that the opposite edges thereof will abut, and then to form the joint by a strip of sheet metal overlapping the edges thereof. The defect of this construction is that it is difficult to make the barrel a true cylinder, and, moreover, as it is reinforced at one point and not all the way around it is easily bent out of shape. I have overcome these defects by forming the barrel of two sections of sheet metal, which extend completely around and have abutting edges. The inner section *a'* is preferably made of sheet metal of a comparatively thin gage and is first formed around the mandrel, after which the outer section *a''*, made of heavier metal, is bent around so that the seam thereof will be out of registration, preferably at a point diametrically opposite the seam of the inner section, as shown in Fig. 5. To make the barrel air-tight, it is then simply necessary to sweat some solder into the seam of the outer section, which will close the joint and attach the two sections together. Another defect in the ordinary construction of



barrel is that if the barrel is a cylinder of uniform diameter throughout its length it is difficult to enter the piston therein. On the other hand, if the barrel tapers the piston will not form a tight joint at all points in its travel. I have therefore devised a construction in which the portion of the barrel forming the compression-chamber is of uniform diameter, while the rearward extension, which forms the spring-housing, is of slightly-flaring form. This may be conveniently made from a blank such as shown in Fig. 8, in which the portion *d* is of uniform width, while the portion *e* inclines from the point *f* to the opposite end of the blank. This blank when formed up on a suitable mandrel will give the required enlargement at the rear end of the barrel which will permit of easily entering the piston.

The piston E may be of any suitable construction adapted to fit the cylindrical portion of the barrel. The shank or piston-rod is, however, as before stated, of lesser length than the spring when expanded. As shown, the shank F is formed integral with the piston E and has the central longitudinal slot *g* extending for the greater part of its length. At its rear end the shank is notched to form a trigger detent or shoulder *h*.

G is a link for drawing upon the shank F to retract the piston and compress the spring. This link is preferably formed of a wire loop which passes through the slot *g* and at its rear end is provided with eyes G' for engaging with the pin H, passing through the stock portion of the gun. The arrangement of the link is the usual one, with the exception that it normally extends within the spring I, while its point of attachment to the stock is but slightly in rear of said spring. Any suitable spring I may be employed.

The spring-abutment J forms one of the features of the present invention and is preferably constructed as follows: *i* is a plate, preferably a stamping of sheet metal, which has a portion thereof formed to fit within the barrel *a* and constitutes the abutment for the spring. As shown, two of these stampings are employed arranged upon opposite sides of the barrel and each provided with a downwardly-extending shank *j*. Between these shanks the trigger J' is pivotally secured, and the hook or detent *k* thereof extends upward into the path of the shank F of the piston. The plates *i* are so formed at their ends as to constitute a guide for the shank F and for the link G, as shown at *l* and *l'*, Fig. 3.

The abutment J is secured from lateral displacement by reason of the engagement of the rounded portion *i* of the barrel, and to prevent it from moving longitudinally it may be secured by a single screw or pin. I preferably use the construction shown in which the shanks *j* extend downward and rearward for a sufficient distance to engage with the pivot-pin C, which forms a hinge connection between this stock and the barrel. To hold

the abutment in position when the pivot-pin is removed, a sleeve K may be placed around the pin to form the direct bearing for the shank *j*, and this sleeve in turn may engage with bearings D', formed on the downward extension D of the barrel. With this construction the barrel and stock may at any time be separated by removing the pin C without disengaging the abutment J from the barrel. At the same time the pin C imparts sufficient strength to the sleeve to hold the abutment in position.

L is the forward abutment, against which the piston strikes. This is preferably formed by a cup-shaped fitting engaging with the forward end of the section *a* of the barrel. The section *b* or false barrel is preferably of lesser diameter than the barrel *a* and is adapted to fit within the fitting L, while its rear end is preferably turned in to form a reinforcement for the abutment. The true barrel *c* has a detachable engagement with the false barrel *b* and is secured in position by having its inner end threaded, as at *m*, to engage a correspondingly-threaded aperture *n* in the abutment L. At the opposite end of the barrel *c* is a head *o*, which forms a cap for the end of the false barrel *b* and also a means of turning the barrel *c* to engage or disengage it. The barrel *c* is of sufficient length so that when in engagement it will project inward slightly beyond the abutment L. This is for the purpose of securing in position a washer M, which is formed of leather or other suitable material and receives the direct impact of the piston. The washer is thus prevented from being displaced when the piston is retracted. To assist in engaging the true barrel with the threaded aperture *m*, a tapering guide is preferably arranged at the inner end of the barrel *b*, and this may be formed by a conical washer O. Thus the abutment L is reinforced both by the turned end of the barrel *b* and by the conical washer O, while all of these parts are threaded to engage with the threaded end *m* of the barrel.

The parts being constructed as shown and described, in use the spring is compressed in the usual manner by breaking down the gun, which causes the link G to draw upon the shank F. As the link is guided at *l* in the abutment J it will draw the shank F so as to engage with a bearing *l* and after passing through the same will engage the shoulder *h* with the hook *k* of the trigger. For effecting this engagement a spring P is arranged to bear upon the trigger and is anchored to the lug Q on the shank *j*. After this engagement is effected the stock may be turned back, which will cause the link G to travel forward in the slot *g* into the position shown in Fig. 1. The gun is thus loaded, and whenever the trigger is turned to disengage the hook *k* from the shoulder *h* the shank F will be released and the spring I will cause the forward movement of the piston.

As shown in Figs. 1 and 9, the downward



and rearward extending shank D of the barrel is preferably formed with a trigger-guard D<sup>2</sup> integral therewith. The whole may be conveniently formed from a sheet-metal blank having a pair of apertures therein upon opposite sides of the center and leaving a strip in between, from which the guard D<sup>2</sup> is formed. In forming up the blank this central portion is expanded to form the downward curve shown and also to press it into a U-shaped cross-section. The forward portion D<sup>3</sup> is preferably contracted in width to just receive the thickness of the trigger, together with the plates forming the shank of the abutment. The rearward portion D<sup>4</sup> is of greater width, so as to fit within the stock, as shown in Fig. 2.

The construction just described forms a strong connection between the barrel and stock and one which may be readily and cheaply formed. By reason of the peculiar construction of the combined spring-abutment and trigger-fulcrum a barrel-shank of this description may be used, and at the same time the trigger can be easily secured in position, as the abutment and trigger may be inserted in the rear end of the shank. When in position, the shank of the abutment is locked by the sleeve K in the manner before described, while the forward end, fitting snugly between the sides of the contracted portion D<sup>3</sup>, will be held from lateral movement. The rounded portion i, fitting within the barrel, will also hold the abutment from downward movement.

What I claim as my invention is—

1. In an air-gun, the combination with the barrel, the piston therein and its actuating-spring, of a shank for said piston within said spring and of lesser length than said spring when expanded but of greater length than when compressed, a trigger for engaging said shank directly in rear of the stationary abutment for said spring, said trigger being pivotally secured to a downwardly-extended portion of the abutment, and a link normally extending within said spring and having a lost-motion engagement with said shank.

2. In an air-gun, the combination with the barrel, the piston therein and its actuating-spring, of a shank for said piston within said spring and of lesser length than said spring when expanded but of greater length than when compressed, a link extending within said spring and having a lost-motion connection with said shank and an abutment for said spring having guides therein for said link and shank, and a trigger pivotally secured to the abutment.

3. In an air-gun, the combination with the barrel, the piston therein and its actuating-spring, of a shank for said piston within said spring and of lesser length than said spring when expanded but of greater length than when compressed, said shank being provided with a longitudinal slot therein, a link slidably engaging said slot and extending in rear

of said spring, an abutment for the spring and a trigger pivotally secured to the abutment and adapted to engage with the rear end of said shank in the compressed position of said spring.

4. In an air-gun, the combination with the barrel, the piston therein, its actuating-spring, and the stock, having a hollow connection between said barrel and the stock, of a trigger, and a member within said barrel and hollow connection forming an abutment for said spring, to which said abutment the trigger is pivotally secured.

5. In an air-gun, the combination with the barrel, the piston therein, its actuating-spring, and the stock, having a hollow connection between said barrel and the stock, of a trigger and a member detachably secured within said hollow connection and barrel to which said trigger is pivotally secured and forming an abutment for said spring.

6. In an air-gun, the combination of a barrel, a piston therein, an actuating-spring for the piston, a stock, said barrel having a hollow downward and rearward extension, a pivot for connecting said stock and hollow extension, and a spring-abutment within said barrel, said abutment being anchored by the said pivot.

7. In an air-gun, the combination with the barrel having a rearward downward extension, the piston therein, and its actuating-spring, the stock, and a pivot for connecting said extension to said stock, of a spring-abutment within said barrel having a shank extending down in line with said pivot and a sleeve upon said pivot passing through an aperture in said shank and engaging bearings on said downward and rearward extension of the barrel.

8. In an air-gun, a barrel forming the spring-housing and an air-compression cylinder, the portion of said barrel forming the cylinder being of uniform diameter and the spring-housing having a slightly-tapering bore continuous and uninterrupted throughout its length.

9. In an air-gun, a barrel forming the spring-housing and an air-compression cylinder, said barrel comprising a parallel portion forming the compression-cylinder, and an extension slightly tapering upon its interior, forming the spring-housing, said extension being continuous and uninterrupted.

10. In an air-gun, the combination with a barrel forming the air-compression cylinder, an abutment for the piston within said barrel having a threaded aperture therein and a shooting-barrel having its end correspondingly threaded to engage said apertures whereby an air-tight connection is formed.

11. In an air-gun, the combination with a barrel forming the air-compression cylinder, of an abutment for the piston within said barrel having a screw-threaded aperture therein, a shooting-barrel correspondingly threaded to engage said aperture and adapted to pro-



ject inward beyond said abutment and a cushion-washer engaging the projecting threaded portion of said barrel and secured thereby in position whereby an air-tight connection is  
5 formed.

12. In an air-gun, the combination with a barrel forming the air-compression cylinder, of an abutment within said cylinder having a threaded aperture therein, a washer adjacent said abutment, a false barrel extending forward from said abutment, a shooting-barrel within said false barrel having its inner end threaded to detachably engage said washer and aperture in said abutment and a  
10 head at the outer end of said true barrel forming a cap for said false barrel and a means for securing said barrel in or out of engagement with its threaded stock.

13. In an air-gun, the combination with the  
20 air-compression cylinder, of an abutment for the piston therein formed of a cup-shaped fitting, a false barrel fitting within and secured to said cup-shaped fitting and having its inner end turned to form a reinforcement for  
25 said abutment.

14. In an air-gun, the combination with the air-compression cylinder, of an abutment for the piston therein, formed of a cup-shaped fitting, a false barrel fitting within and secured  
30 to said cup-shaped fitting and having its end turned in to reinforce said abutment, and a shooting-barrel within said false barrel having a threaded inner end engaging a correspondingly-threaded aperture in said abut-  
35 ment and end of false barrel.

15. In an air-gun, the combination with a barrel forming an air-compression cylinder, of an abutment for the piston within said barrel, a false barrel extending forward from  
40 said abutment, a shooting-barrel extending within said false barrel and having a threaded inner end for detachably engaging a correspondingly-threaded aperture in said abutment, and a tapering guide within said false  
45 barrel for directing said shooting-barrel into engagement with said aperture.

16. In an air-gun, the combination with a barrel forming an air-compressing cylinder, of a cup-shaped fitting within said barrel  
50 forming an abutment for the piston, a false barrel within said cup-shaped fitting having its end turned in to form a reinforcement therefor, a conical fitting within said false barrel adjacent to said turned end, and a  
55 shooting-barrel having a threaded inner end adapted to engage with a correspondingly-threaded aperture in said abutment end of false barrel and conical fitting, and the latter forming a guide for directing the end of  
60 said shooting-barrel into engagement with said aperture.

17. In an air-gun, the combination with the barrel, of a downward and rearward extending shank therefor having an integral trigger-  
65 guard and formed from a sheet-metal blank.

18. In an air-gun, the combination with the barrel, of a downward and rearward extending shank therefor formed of a sheet-metal blank having a pair of apertures therein and a portion between expanded to form a downwardly-curved trigger-guard; and a trigger  
70 inserted from the rear and extending into the space inclosed by said guard.

19. In an air-gun, the combination of a barrel having a hollow extension, a piston in the  
75 barrel, an actuating-spring for the piston, a stock, a pivot for connecting said extension and stock, and an abutment for the spring, said abutment having extended arms engaging the pivot, whereby the abutment is se-  
80 cured in place.

20. In an air-gun, the combination of a barrel, a piston in the barrel, a spring for the piston, a stock, a pivot for connecting the  
85 barrel with the stock, and an abutment for the spring secured in place by the pivot.

21. In an air-gun, the combination with a barrel, a piston in the barrel, a spring for the piston, a stock, a pivot for connecting the  
90 barrel with the stock, an abutment for the spring secured in place by the pivot, and a trigger pivoted to the abutment.

22. In an air-gun, the combination with a barrel, a piston therein, an actuating-spring for the piston, an abutment for the spring, a  
95 shank for said piston, and a trigger for engaging said shank, pivotally secured to said abutment.

23. In an air-gun, the combination with a barrel, a piston therein, an actuating-spring  
100 for the piston, an abutment for the spring, a shank for said piston, and a trigger for engaging said shank, pivotally secured to an outwardly-extended portion of the abutment.

24. In an air-gun, the combination with a  
105 barrel, of a piston therein, an actuating-spring for the piston, a shank for the piston, a link extending within said spring and having a lost-motion connection with said shank, an abutment for said spring having guides  
110 therein for said link and shank, and a trigger pivoted to the abutment.

25. In an air-gun, the combination with a barrel, a piston therein, an actuating-spring, a shank for said piston within the spring and  
115 of a lesser length than said spring when expanded but of a greater length when compressed, said shank having a cut-out portion upon its under surface, a trigger for engaging said cut-out portion of the shank directly  
120 in the rear of a stationary abutment for the spring, and a link normally extending within said spring and having a lost-motion engagement with said shank.

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

DAVID FRANK POLLEY.

Witnesses:

M. B. O'DOHERTY,  
H. C. SMITH.