

(No Model.)

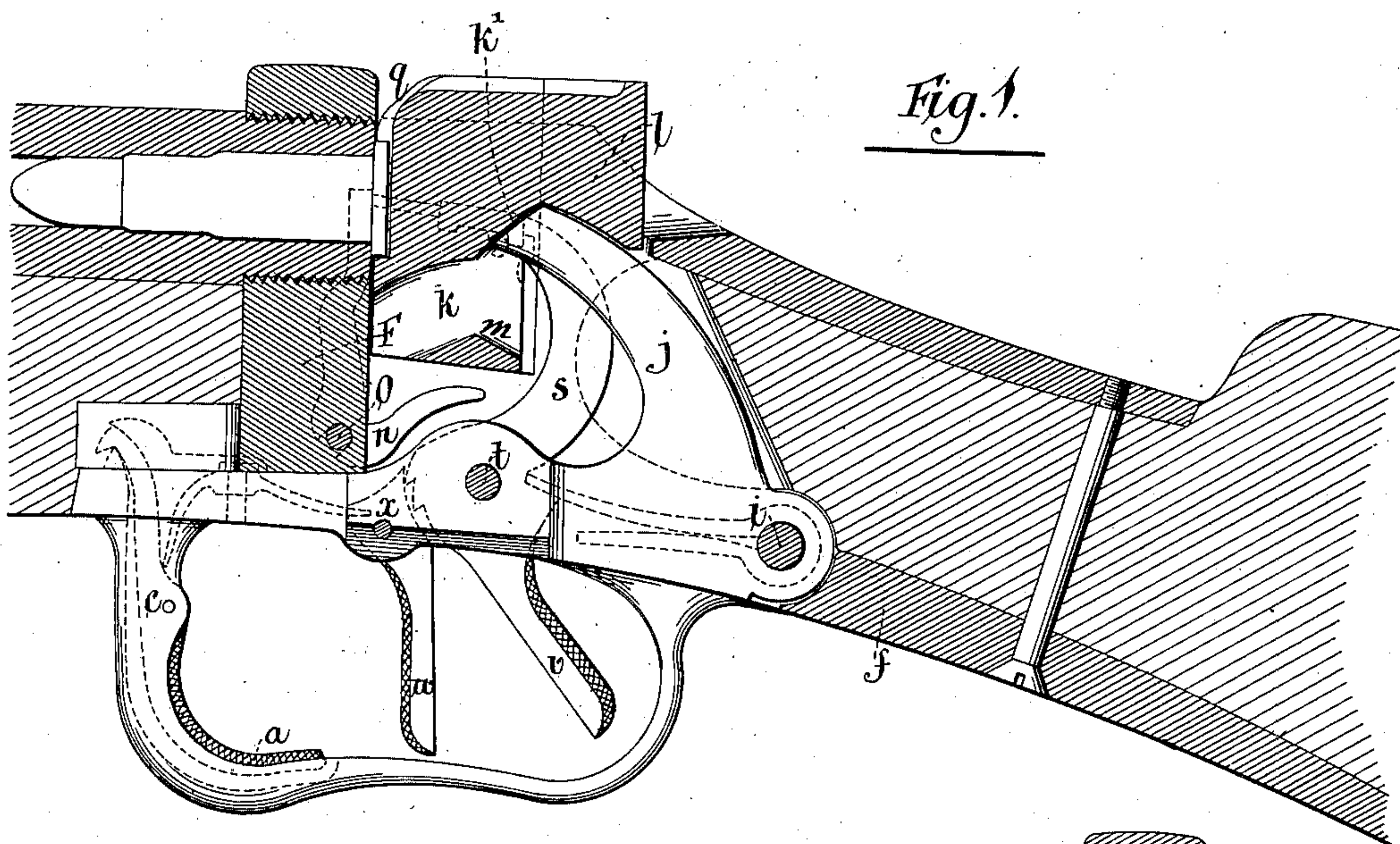
4 Sheets—Sheet 1.

C. A. J. A. HEEREN.

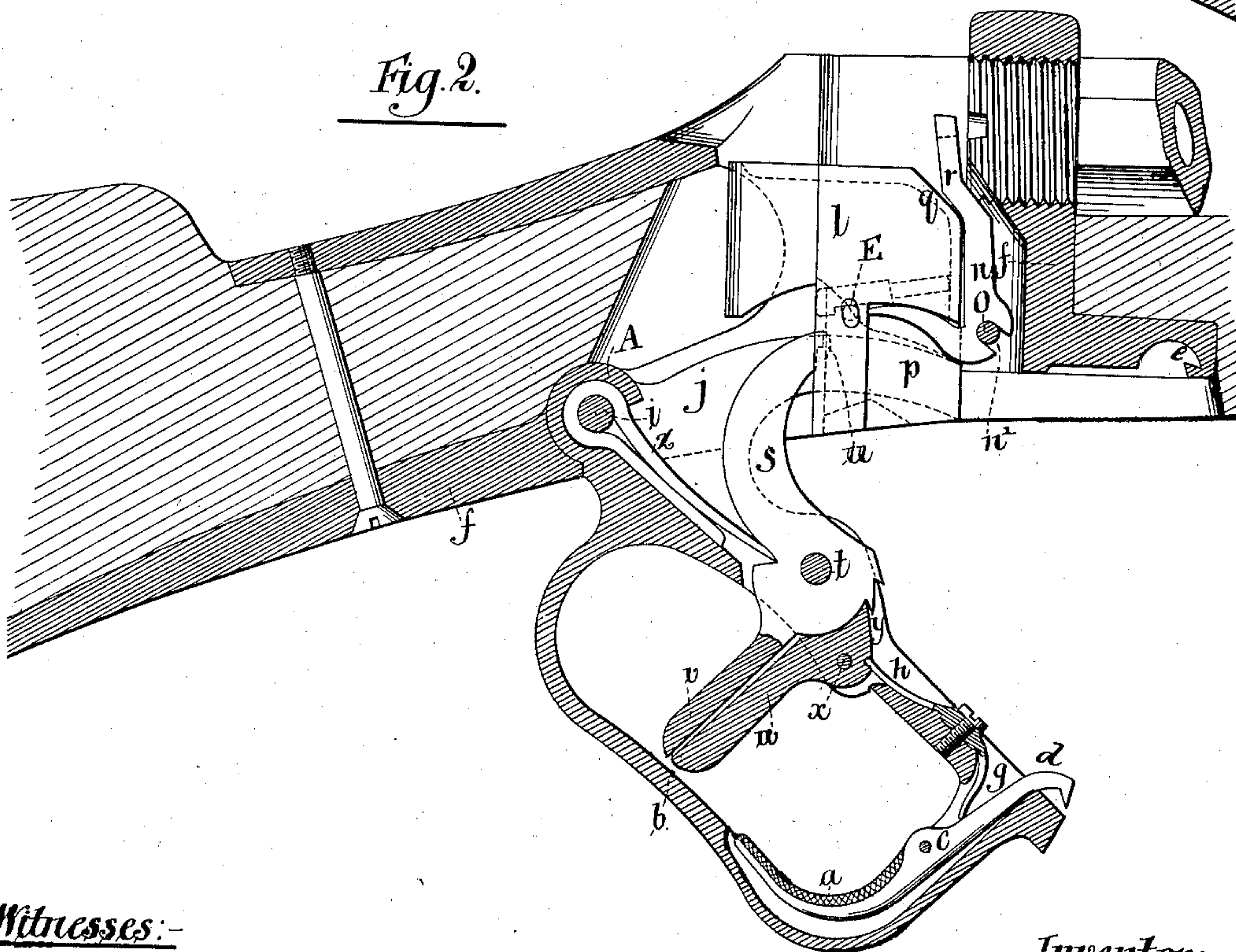
Breech Loading Fire Arm.

**No. 239,496.**

**Patented March 29, 1881.**



*Fig. 1.*



*Fig. 2.*

Witnesses:-

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r  
Fred R. Hayner

*Inventor:-*

Exhibit.  
C. A. J. A. Heeren  
by his Attorneys  
Browne & Brown

(No Model.)

4 Sheets—Sheet 2.

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Breech Loading Fire Arm.  
No. 239,496.  
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Fig. 3.

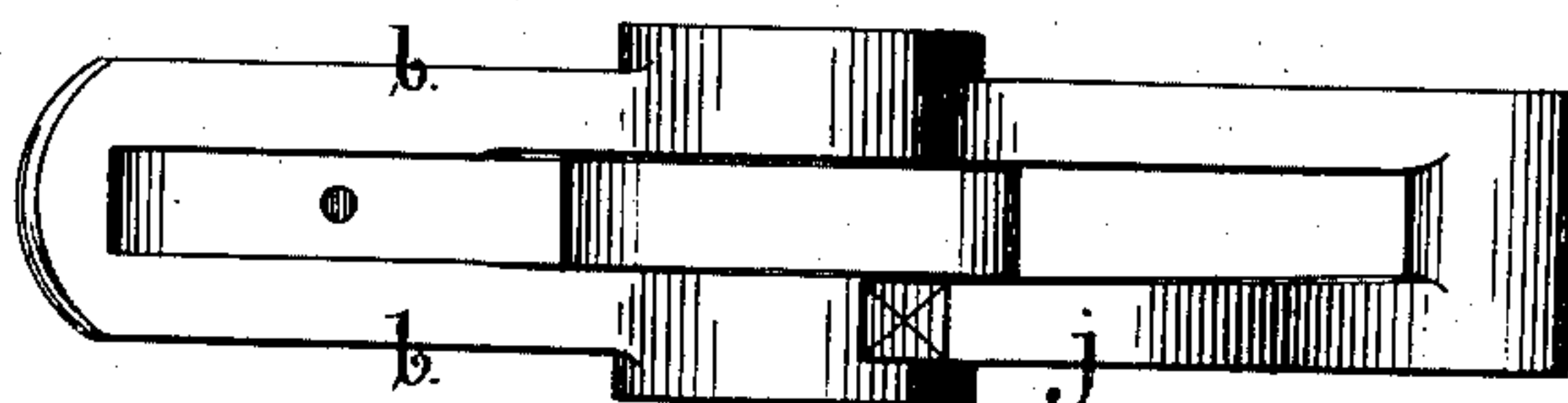


Fig. 4.

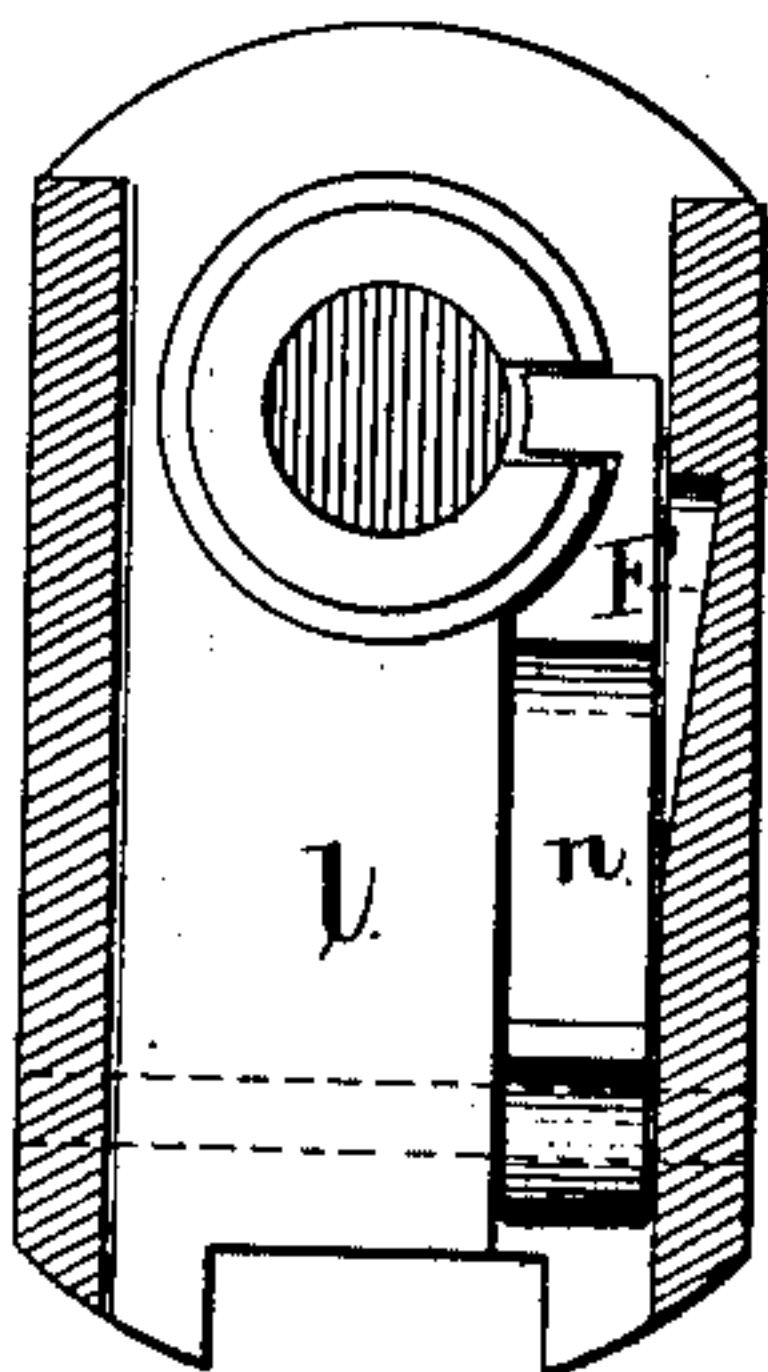


Fig. 5.

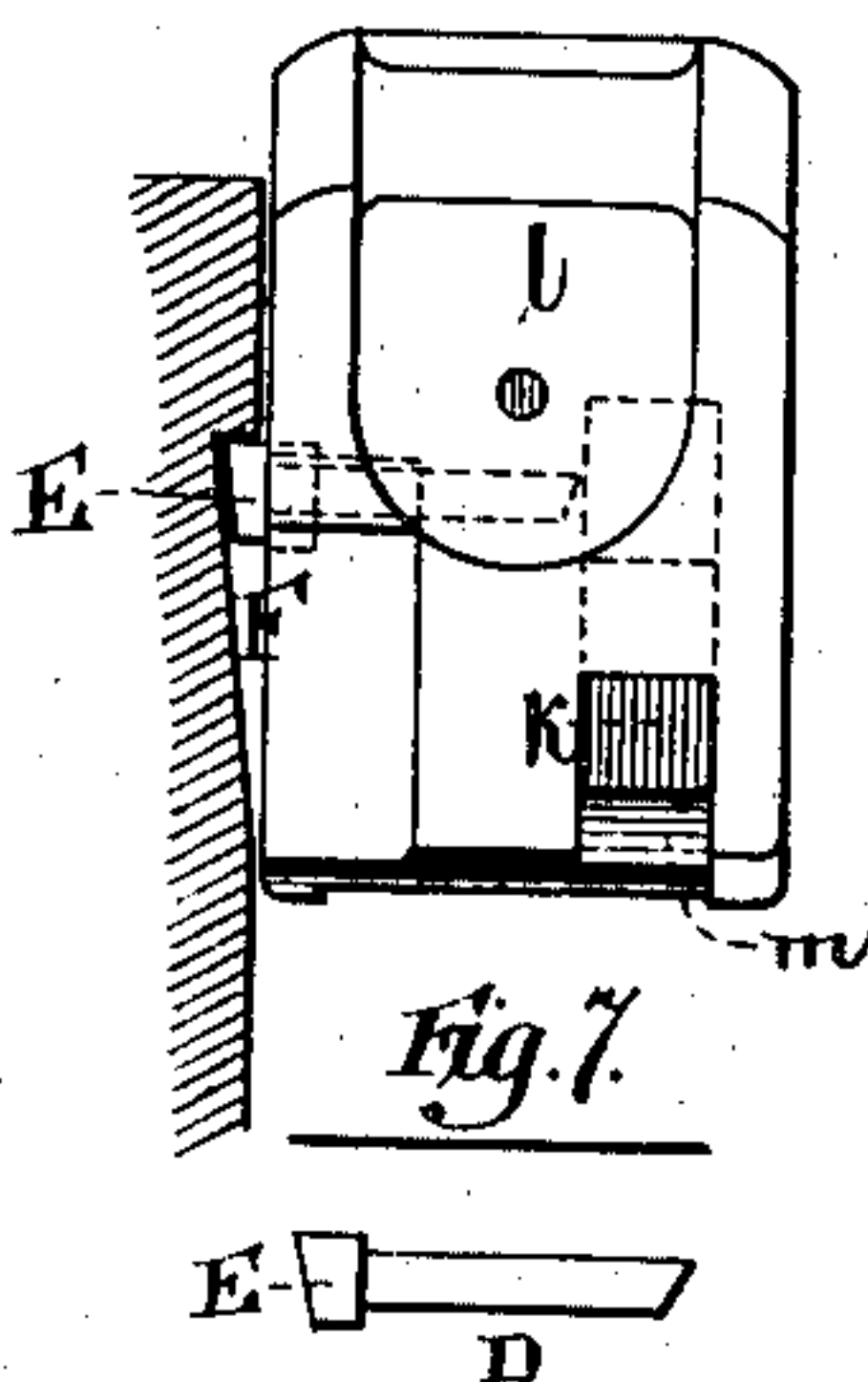
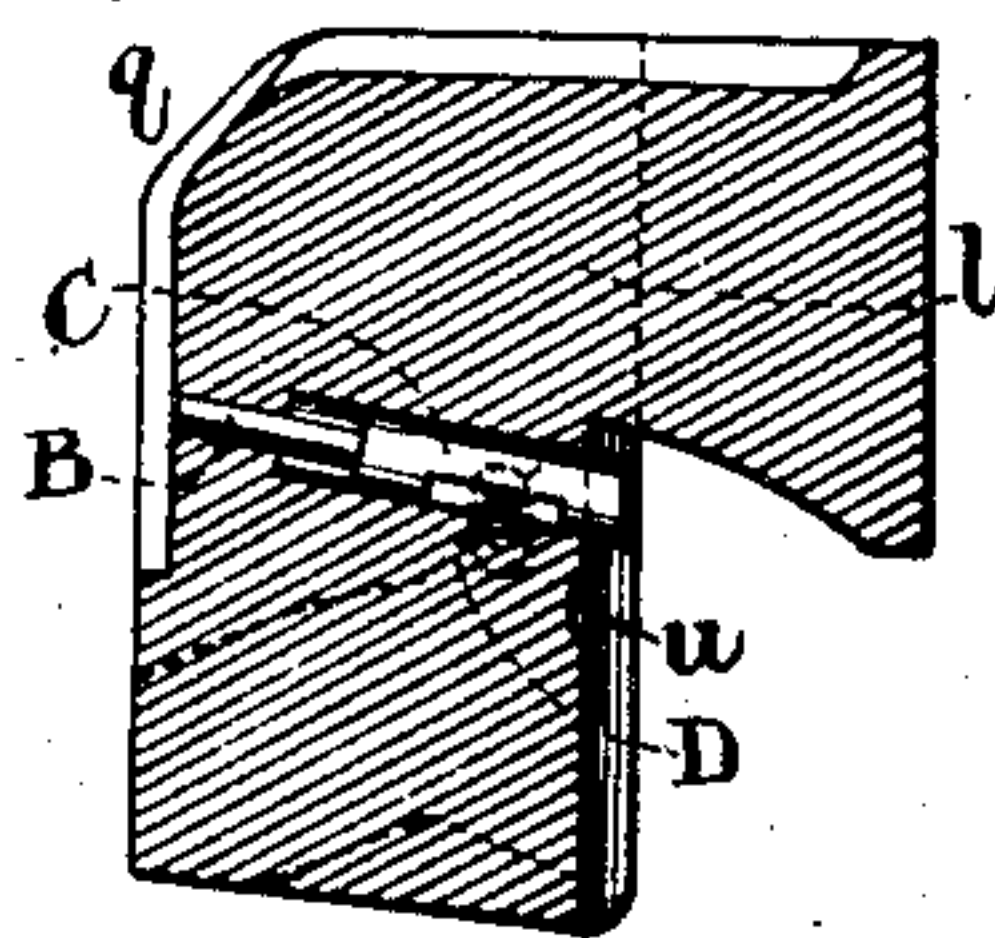


Fig. 6.



Witnesses:-

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Brown & Brown



(No Model.)

4 Sheets—Sheet 3

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Fig. 8.

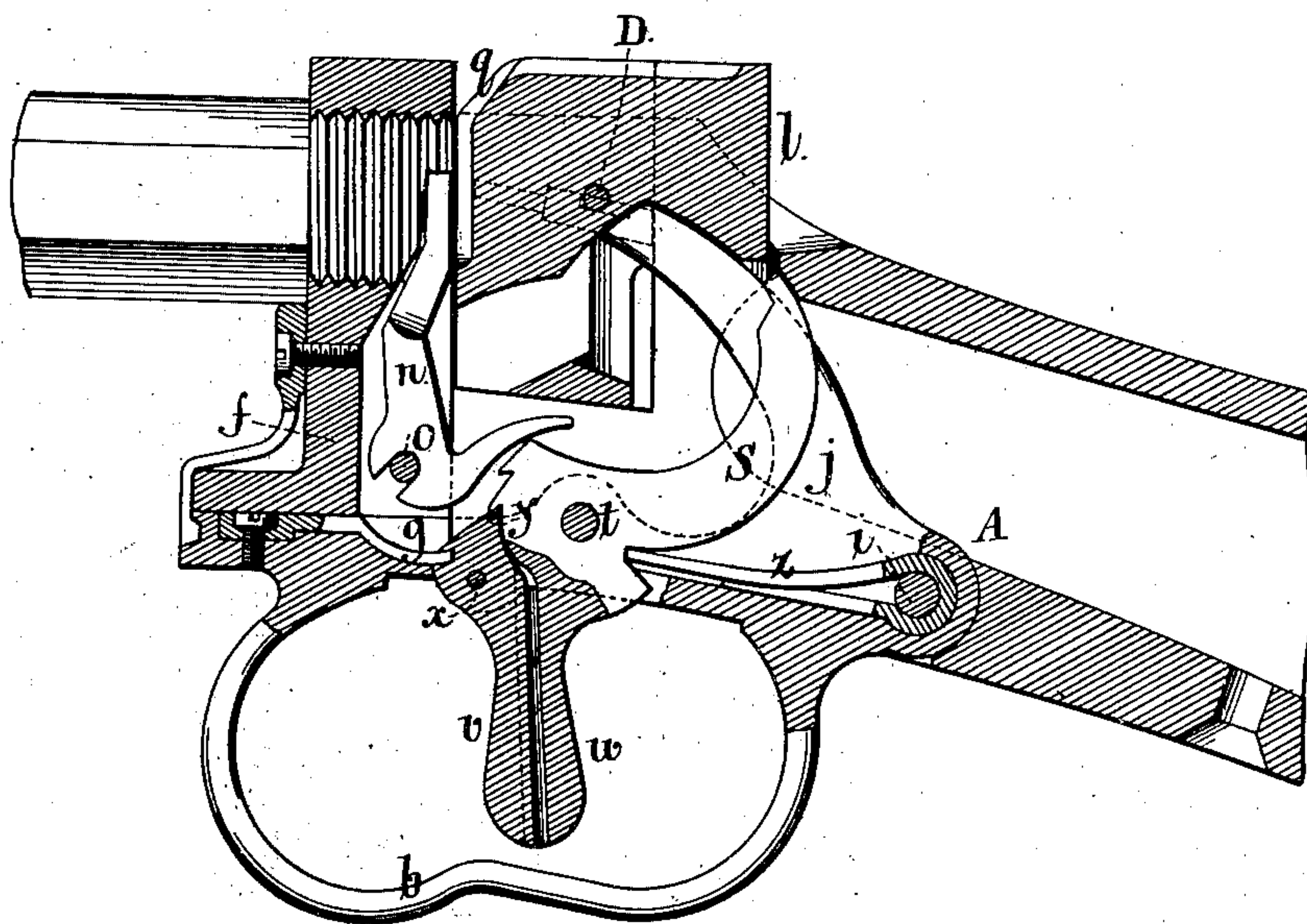


Fig. 9.

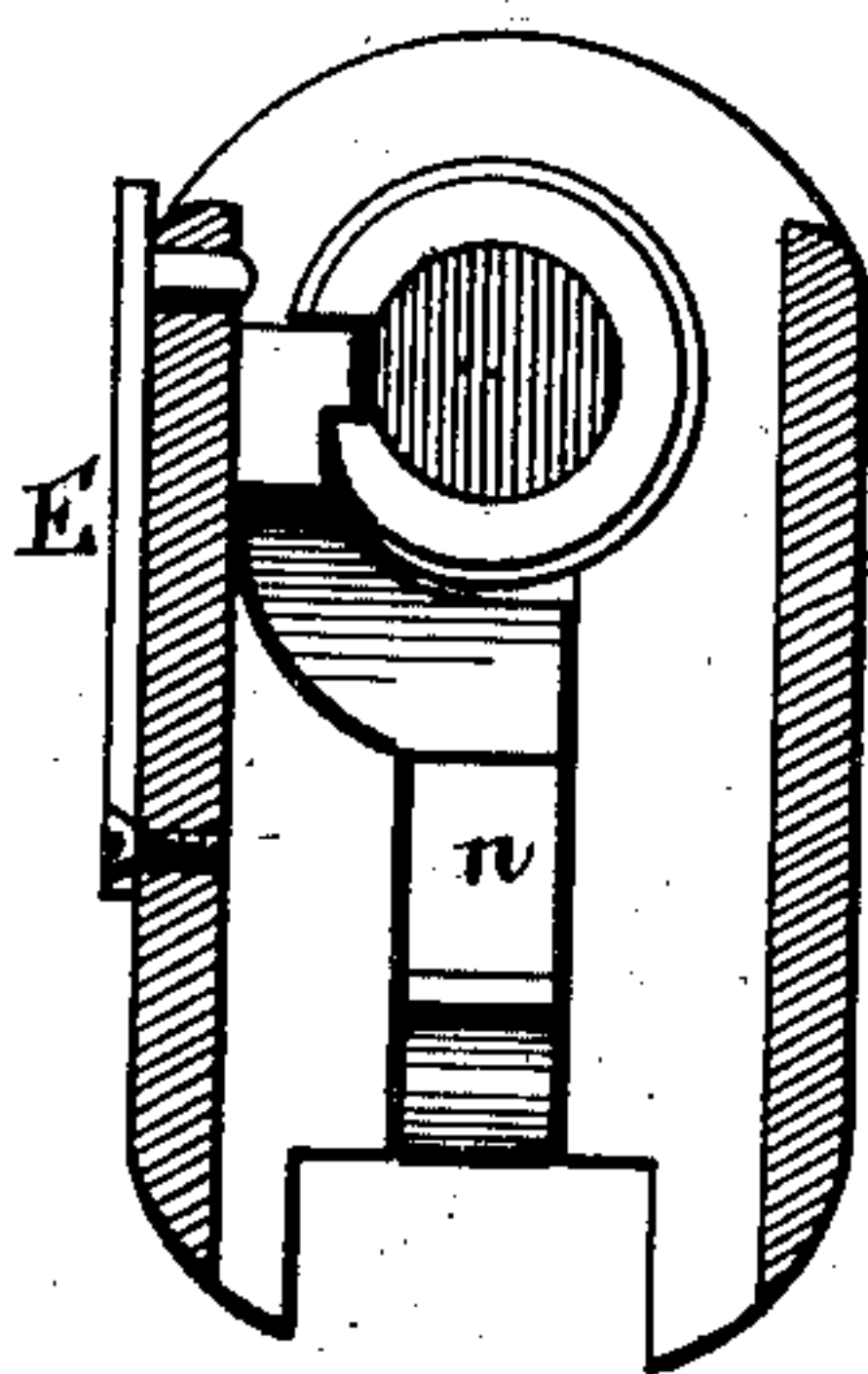
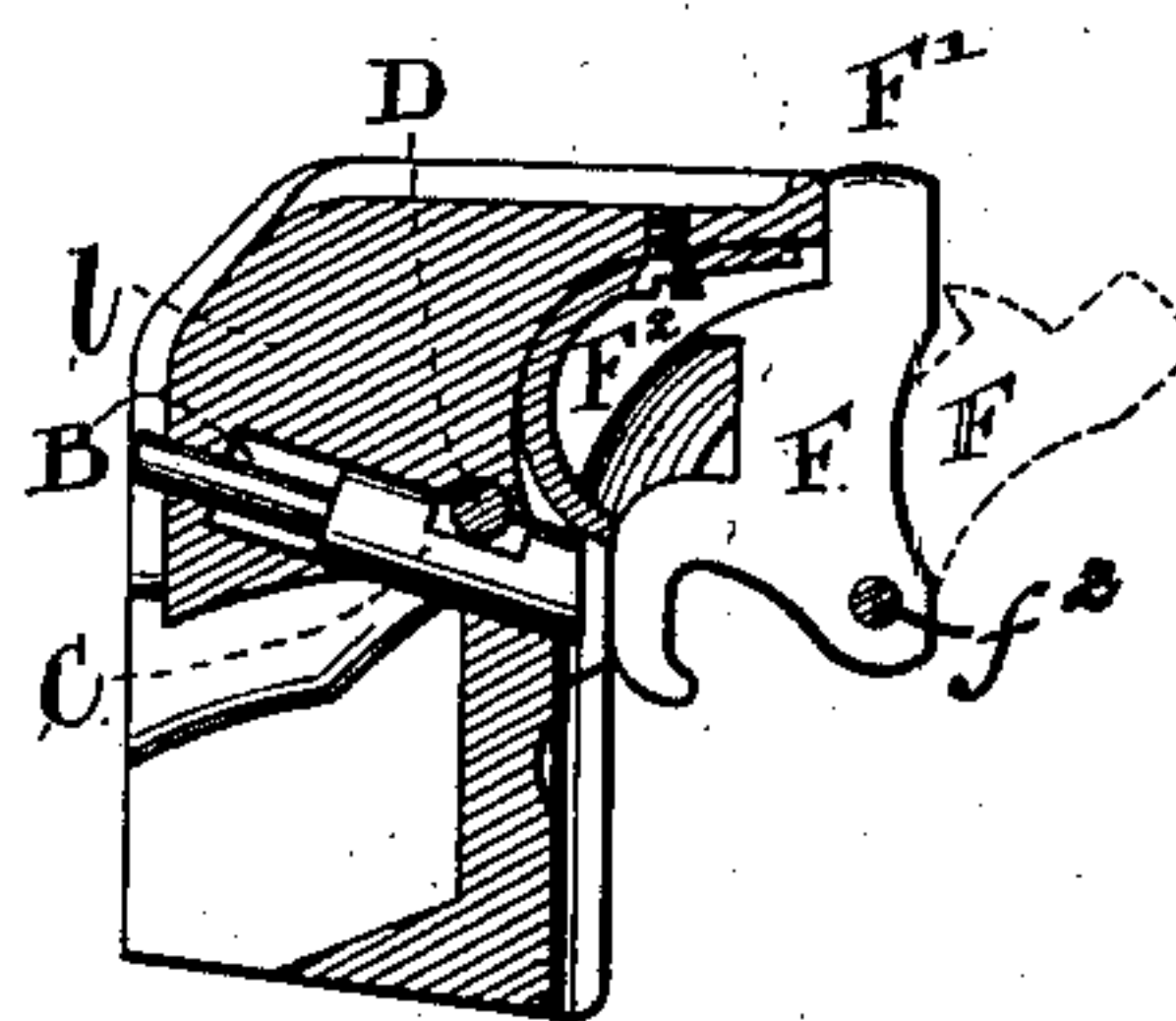


Fig. 10.



Witnesses:-

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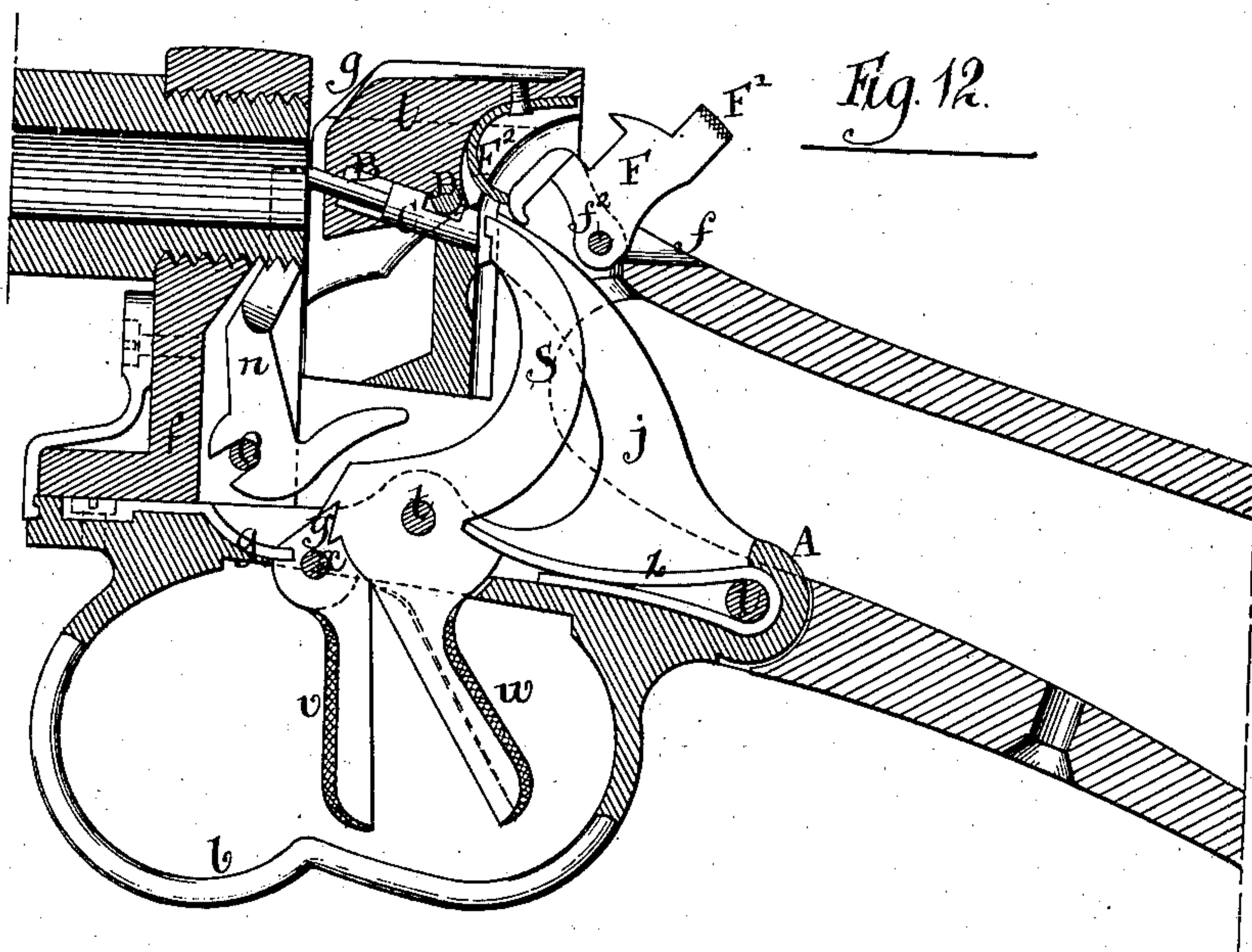
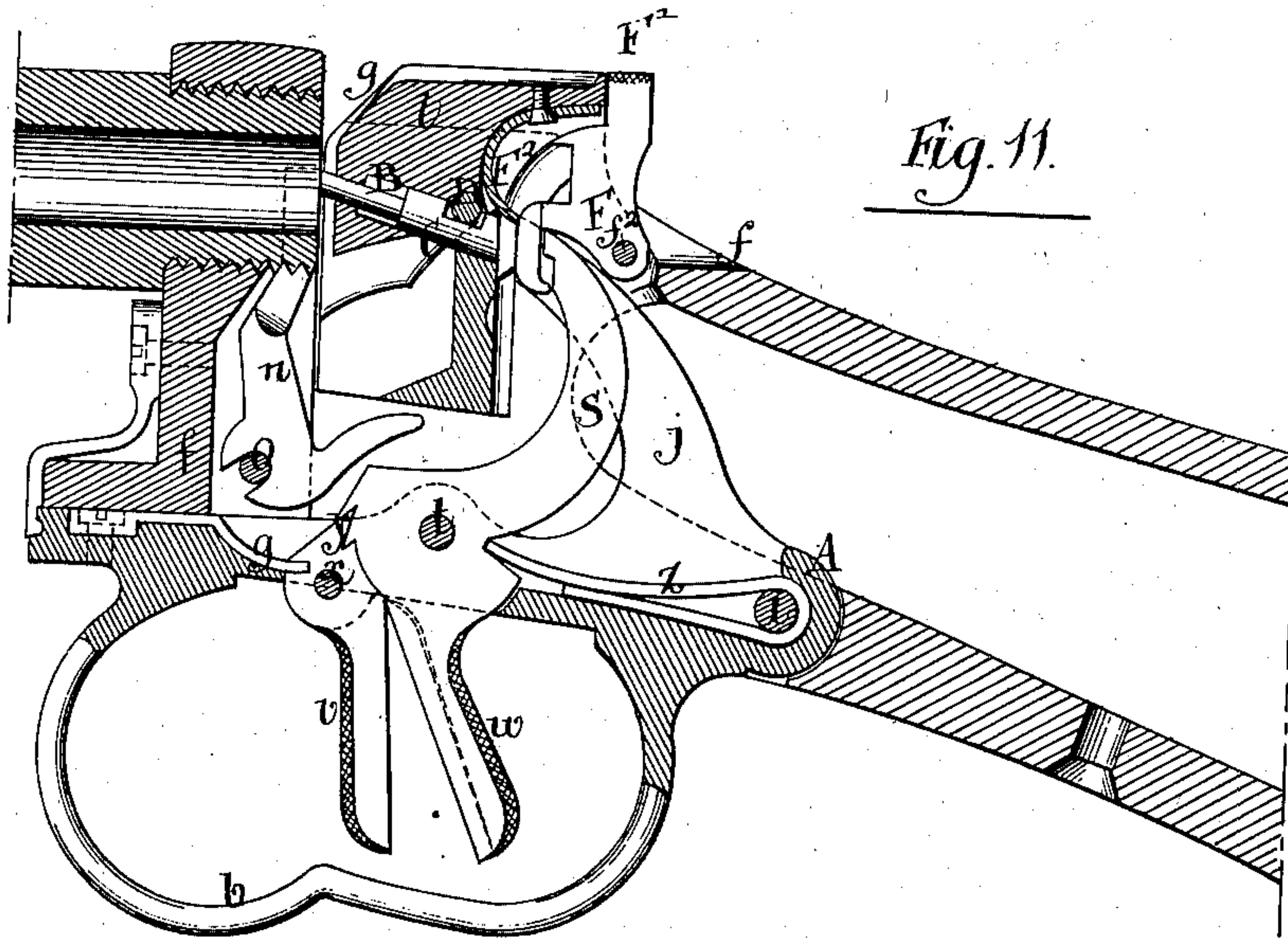
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(No Model.)

4 Sheets—Sheet 4.

C. A. J. A. HEEREN.  
Breech Loading Fire Arm.  
No. 239,496.  
Patented March 29, 1881.



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# UNITED STATES PATENT OFFICE.

CHRISTIANO A. J. A. HEEREN, OF PARIS, FRANCE.

## BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 239,496, dated March 29, 1881.

Application filed July 30, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTIANO ARTURO JUAN ANTONIO HEEREN, a resident of Paris, France, have invented certain new and useful  
5 Improvements on Breech-Loading Fire-Arms, of which the following is a specification, reference being had to the accompanying drawings.

My invention, which relates to breech-loading  
10 ing fire-arms in which the breech-block has a vertically-sliding movement in a mortise in the receiver, is characterized by the following advantages, viz: first, security against all accident to the person, owing to the nature of  
15 the movement of the breech-block; second, solidity of the arm in general, and of each piece of which it is composed; third, dispensing altogether with spiral springs; fourth, great simplicity of all the parts of the mechanism; fifth,  
20 great facility for putting together and taking to pieces, which makes it easy to clean the arm; sixth, the arrangement of an interior cock or hammer furnished with an exterior comb or tail to cock and uncock at will; seventh, obviating  
25 the inconveniences and dangers which exist in fire-arms heretofore constructed with external cocks, and also in fire-arms with interior hammers, in which it cannot be easily recognized whether the arm is cocked or not, and which  
30 are therefore dangerous; eighth, great facility for loading the arm, which permits very great rapidity of firing, owing to the simplicity of the mechanism for opening and closing the chamber; ninth, diminution of the length of the arm  
35 without reduction of the length of the barrel, owing to the position and mode of displacing the breech-block. All these qualities are obtained by the general combination of the mechanism, and by the new and special construction  
40 and arrangement given to the parts.

In the accompanying drawings, Sheets I and II represent an arm especially adapted for arms of war, as infantry rifles or carbines, and Sheet  
45 III represents a sporting-gun. The two types are constructed and operated exactly in the same manner, except in some details modified in view of the purpose for which the arm is particularly intended.

50 Similar letters of reference indicate like parts in the several sheets and figures of the drawings.

I will first describe the military arm represented on Sheets I and II, in which Figures 1 and 2 are vertical sections of the breech system in different planes, and taken looking in opposite directions. Fig. 3 is a plan of the breech-  
55 operating and trigger-guard lever. Figs. 4 and 5 are transverse sections. Fig. 6 is a central section of the sliding breech-block. Fig. 7 is a longitudinal view of the pin which stops the  
60 breech-block.

I will follow in this description the order of the operations necessary for once loading and firing, supposing the arm to have been previously loaded and fired.

65 The operator commences by opening the breech. To this effect he presses forward and downward upon a small lever-like catch, *a*, arranged in a cavity provided in the forward part of the interior of the piece *b*, which may  
70 be called the "guard-lever," constituting the trigger-guard and breech-operating lever, and to which the said catch *a* is pivoted at *c*. This lever *a* terminates in a hook, *d*, which penetrates into a notch, *e*, provided for the purpose in the breech-receiver *f*, and which is  
75 maintained engaged in the said notch by the tail *g* of the trigger-spring *h*. In this manner the closing of the chamber is assured. The disengagement of the hook *d* having been thus  
80 effected by the push exercised upon the lever *a*, the operator pulls the guard-lever *b* downward, causing it at the same time to move toward him about the pin *i*, by which it is pivoted to the breech-receiver. This pin is screwed  
85 into the breech-receiver, and it is only necessary to unscrew and withdraw it in order to enable the breech-block and lock to be completely removed. The guard-lever *b* has made  
90 in the same piece with it a curved arm, *j*, on the left-hand side thereof. This arm engages in an opening, *k*, Fig. 1, in the breech-block *l*, which is fitted to slide up and down in the breech-receiver *f*. When the guard-lever *b* is raised and the lever *a* hooked, as shown in  
95 Fig. 1, and consequently the breech-block is in its highest position, the curved arm *j* is against the upper part of the opening *k*, and maintains the block in that position. The front surface, *k'*, of the upper part of the said  
100 opening is in the form of an arc of a cylinder generated from the center of the pin *i*, and the



end of the arm *j* is of corresponding form, and, consequently, until the arm has escaped from the said part of the opening it continues to support the block and prevent its descent while the guard-lever and the arm move downward. After the arm has escaped below this arc-formed surface the arm *j* comes in contact with a shoulder, *m*, furnished in the breech-block at the bottom of the opening *k*, and the block commences to descend and uncover the opening of the chamber, as shown in Fig. 2. At the moment when the block has descended sufficiently to open the chamber it acts upon the tail of the extractor *n*, the head of which swings backward, throwing out the shell. The hub of the extractor has in it a notch, *n'*, which enables it to be slipped over astride of a fixed pin, *o*, in the breech-block, upon which it swings. This diminishes the number of pieces and facilitates the taking them apart. Owing to the oblique direction of this notch, *n'*, the position of the fixed pin *o*, and the form of the front face of the breech-block, the extractor, having been placed over the fixed pin *o* before the insertion of the breech-block into the receiver, is secured by the insertion of the breech-block, and cannot get out of place or be removed without entirely removing the breech-block from the receiver.

Fig. 4 gives a view of the extractor, showing that it is constructed to take the cartridge-shell on the side. The extractor is placed at the right of the block, in which there is provided a cavity, *p*, (see Fig. 2,) for the reception of its tail, said cavity being so arranged relatively to the opening *k* in the block that the top of the said cavity will not commence to operate on the extractor until the chamber is fully open.

During the descending movement of the guard-lever to open the chamber, and a little before the said lever has reached the end of its descent, the hammer *s* has been automatically cocked. The hammer is fitted to work on a pin, *t*, fixed across the middle of the guard-lever, the position of the said pin being such relatively to the pivot *i*, on which the said lever swings, that the hammer is involved in the descent of the said lever, commencing to descend as soon as the lever descends, and therefore it descends a certain distance relatively to the block, which, as has been hereinbefore described, does not immediately descend, and hence it (the hammer) does not remain opposite the firing-pin B, which works through the breech, but its point comes opposite a little oval notch, *u*, Figs. 2 and 6, provided in the rear surface of the block, and its head, resting maintained in the said notch, cannot describe a circle corresponding or concentric with those described by the different points in the guard-lever, but is forced to turn on its pin *t*, until it is cocked, as shown in Fig. 2. The comb or tail *v* of the hammer, which is inverted—that is to say, placed on its lower part—is thus brought opposite to the trigger *w*, which is pivoted by a pin, *x*, to the guard

lever, and whose head *y*, under the action of the trigger-spring *h*, engages successively in the two notches of the tumbler of the hammer in a manner to hold it cocked.

The inverted position of the comb or tail *v*, and its arrangement in the guard-lever behind the trigger, are of great importance, inasmuch as it shows whether or not the gun is cocked—that is to say, it presents all the advantages of the old-fashioned fire-arms with external hammer, and also obviates the dangers of arms of that kind, the comb or tail being completely protected within the guard-lever.

In bringing the dog to the position of cocking, the mainspring *z* is brought under its highest tension. This spring is composed of two branches with an eye, through which passes the pin *i* of the fulcrum of the guard-lever *b*. This eye is received, as shown at A in Fig. 2, in a cavity countersunk around the pin-hole of the guard-lever, and the spring is thereby held in place.

To facilitate the introduction of the cartridges into the chamber, the upper face of the breech-block *l* is hollowed and rounded, so that in case the cartridge should not be inserted all the way into the chamber it will be forced in by the block, which presents on the upper part of its face an inclined plane, *q*. When the block is pushed upward this inclined plane presses the cartridge forward into the chamber. The chamber is closed by raising the guard-lever. As the curved arm *j* is brought by this movement against the upper surface of the cavity *k* it pushes up the block until the latter reaches its highest position, after which the continued movement of the said arm causes its extremity, which, as before described, is of the form of an arc described from the center of the pin *i*, to pass under the curved portion *k'* of the cavity *k* in the block, which is of corresponding form, and as soon as this occurs the block is held securely in place and the chamber is completely closed, and even though the cartridge should explode there is no danger to the operator; but this explosion is not possible until the upward movement of the guard-lever is completed, for until then the hammer, even though it should be let off, would not have arrived in a position to strike the firing-pin B. In completing the ascending movement of the guard-lever the extremity of its arm *j*, without further changing the ascending movement of the block, slides upon the curved part *k'*, and the hammer, which remains cocked, comes to its position opposite the firing-pin. It is not, therefore, until all the parts are in place, and the guard-lever is secured to the breech-receiver, that the hammer, in striking, could fire the cartridge.

The firing-pin B works through the center of the breech-block *l*, and is furnished with a head, C, in the lower part of which is an elongated notch, through which passes transversely a pin, D, of which the head E serves as a stop to the breech-block during its upward move-



ment, as I will hereinafter describe. This pin D limits the movement of the firing-pin. The firing-pin should be slightly beveled at its front end, in order that, as while the breech-block is being moved upward after loading it meets the edge of the cartridge-shell, it may be pushed back without any shock to the cartridge.

The head E of the pin D is elongated vertically, as shown in Figs. 2, 5, and 7, to prevent it from turning, the hole provided in the breech-block for said pin being countersunk to conform to the said head, and the said head, which has its outer face in the form of an inclined plane, as shown in Figs. 5 and 7, is thick enough to always remain in the hole. This is necessary, in order that the said pin, which is loose and free to move longitudinally, may at a suitable moment enter an inclined groove, F, provided for it in the side of the interior of the breech-receiver, and may always present the base of its inclined plane upward. The bottom of the groove F is so inclined that its greatest depth is in its upper part, where it terminates abruptly. It will be understood, therefore, that if the head of the pin D is forced to enter the said groove it will serve as a stop to the breech-block. In order to effect this the point of the said pin is beveled, and during the upward movement of the breech-block it is encountered by the curved arm *j* of the guard-lever, which moves it endwise and makes its head enter the groove F. The inclination of the bottom of the latter causes the head of the pin to move out of the groove during the descent of the breech-block.

The firing is effected by pulling the trigger in the ordinary way. At the moment the hammer falls its tail is thrown back to the position shown in Fig. 1, and it serves for the manipulation of the hammer from the exterior of the gun to cock or uncock or half-cock it.

In Sheet III, which represents the sporting-gun, Fig. 8 is a longitudinal vertical section of the breech system. Fig. 9 is a transverse section of the breech-receiver, showing also the extractor and the breech-block stop. Fig. 10 is a central vertical section of the breech-block, showing a safety device to prevent firing. Figs. 11 and 12 are longitudinal vertical sections of the breech system, illustrative of the operation of said safety device.

It will be seen that in this sheet similar letters of reference to those used in Sheets I and II are used to designate the same parts of the gun.

The construction of this sporting-gun is substantially similar to that of the military arm already described, very slight modifications only being made, as I will now briefly describe.

The guard-lever, not requiring to be so solidly fastened, has simply provided in its forward part a notch, with which engages the hooked and beveled head of a spring secured on the front of the breech-receiver, the elasticity of the said spring permitting the opening and insuring the closing of the breech,

Instead of the single curved arm *j* of the military arm, the guard-lever is furnished with two similar curved arms operating in the same manner, and acting one on each side of the breech-block. The hammer works between these arms.

The extractor, as shown in Fig. 9, instead of being arranged in a recess in the side of the breech-block, is arranged in a mortise in the middle of the said block, but bent in such manner as to take hold of the cartridge at the side, but otherwise works in the same manner as that of the military arm, as hereinbefore described.

The movement of the firing-pin is limited by a pin which passes through the breech-block, like the pin D of the military arm, but the same pin does not serve to stop the ascent of the breech-block, that being effected by the head of a spring, E, secured to the side of the breech-receiver, the upper part of the breech-block stopping against the said head, as shown in Fig. 9.

I have shown in Figs. 10, 11, and 12 a modification of the breech-block, in which it carries a safety-piece, F, in the form of an elbow-lever pivoted into the upper part of the breech-block by a pin, *f*<sup>2</sup>. This safety-piece is furnished with an external comb, F', in order to raise and lower it at will. When this piece is lowered, as shown in bold outline in Fig. 10, one of its arms comes behind the firing-pin, and consequently if the hammer falls it strikes the piece F, and not the firing-pin. This device is important for sporting-guns, for it permits the arm to remain indefinitely cocked without any danger. This safety-piece sets itself automatically every time the gun is reloaded, for in opening the chamber by the descent of the breech-block the back of the said safety-piece, which presents an inclined plane, presses upon the back of the mortise in the breech-receiver and is placed in its position of safety. (Shown in bold outline.) When it is desired to fire, it is only necessary to draw back the comb F by the thumb, and this raises the safety-piece above and uncovers the firing-pin. This maneuver is effected very rapidly, an internal spring, F<sup>2</sup>, holding the lever E either raised or lowered, as required. The action of this safety-piece is very fully illustrated in Figs. 11 and 12. Fig. 11 shows the said piece in its normal position, in which it will prevent the hammer from striking the firing-pin C. Fig. 12 shows the said piece raised and the hammer as having struck the safety-pin.

What I claim as my invention is—

1. The combination of the vertically-sliding breech-block *l*, having the opening *k k'*, the guard-lever *b*, furnished with an arm or arms, *j*, working in said opening to operate the said block, the hammer and trigger, pivoted to said lever forward of the pivot upon which the said lever *b* and its breech-operating arm or arms *j* work, the whole arranged substantially as herein described, whereby the hammer-nose, working on the back of the breech-block to



4 cock the hammer by the movement of the guard-lever, is caused to remain below the firing-pin until the breech-block has arrived in the position to completely close the barrel, substantially as herein described.

5 2. The combination of the breech-block *l*, the firing-pin *B C*, the loose retaining-pin *D*, having inclined ends, the breech-receiver, constructed with an inclined groove, *F*, and the  
10 guard-lever, constructed with an arm, *j*, for operating the breech-block, whereby the said retaining-pin is made to serve as a stop to the

breech-block, all substantially as herein described.

3. The combination, with the breech-receiver, 15 the vertical sliding breech-block, and the firing-pin working in the latter, of the pivoted elbow-shaped guard-piece *F*, and its spring *F*<sup>2</sup>, attached to the breech-block and operating in combination with the breech-receiver and firing-pin, all substantially as herein set forth.

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