

F. S. DANGERFIELD.

Improvement in Breech-Loading Fire-Arms.

No. 130,984.

Patented Sep. 3, 1872.

Fig. 1.

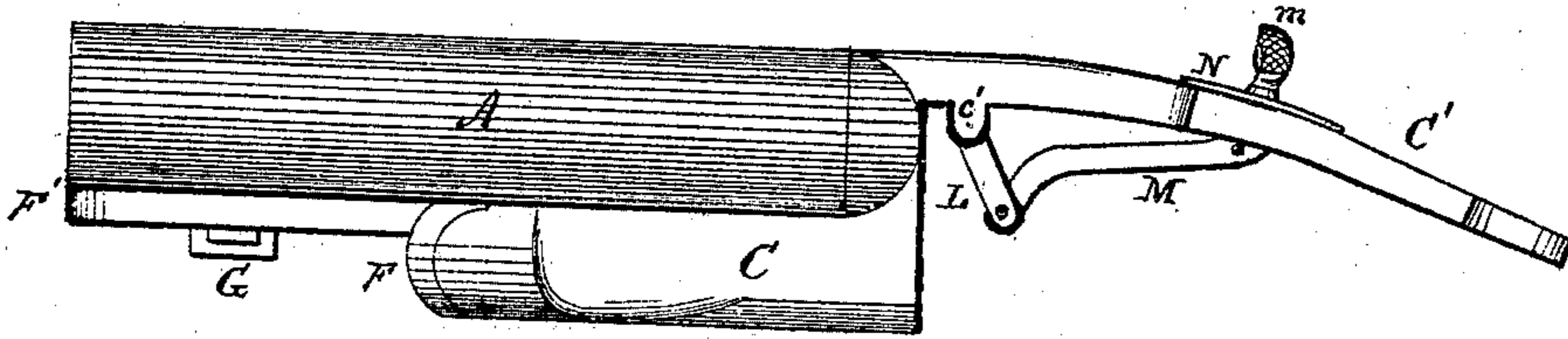


Fig. 2.

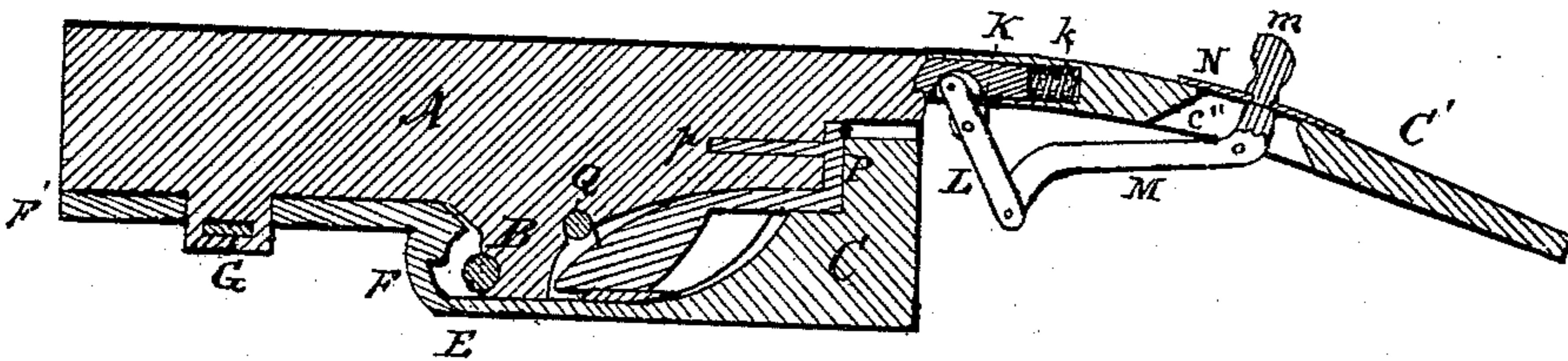


Fig. 3.

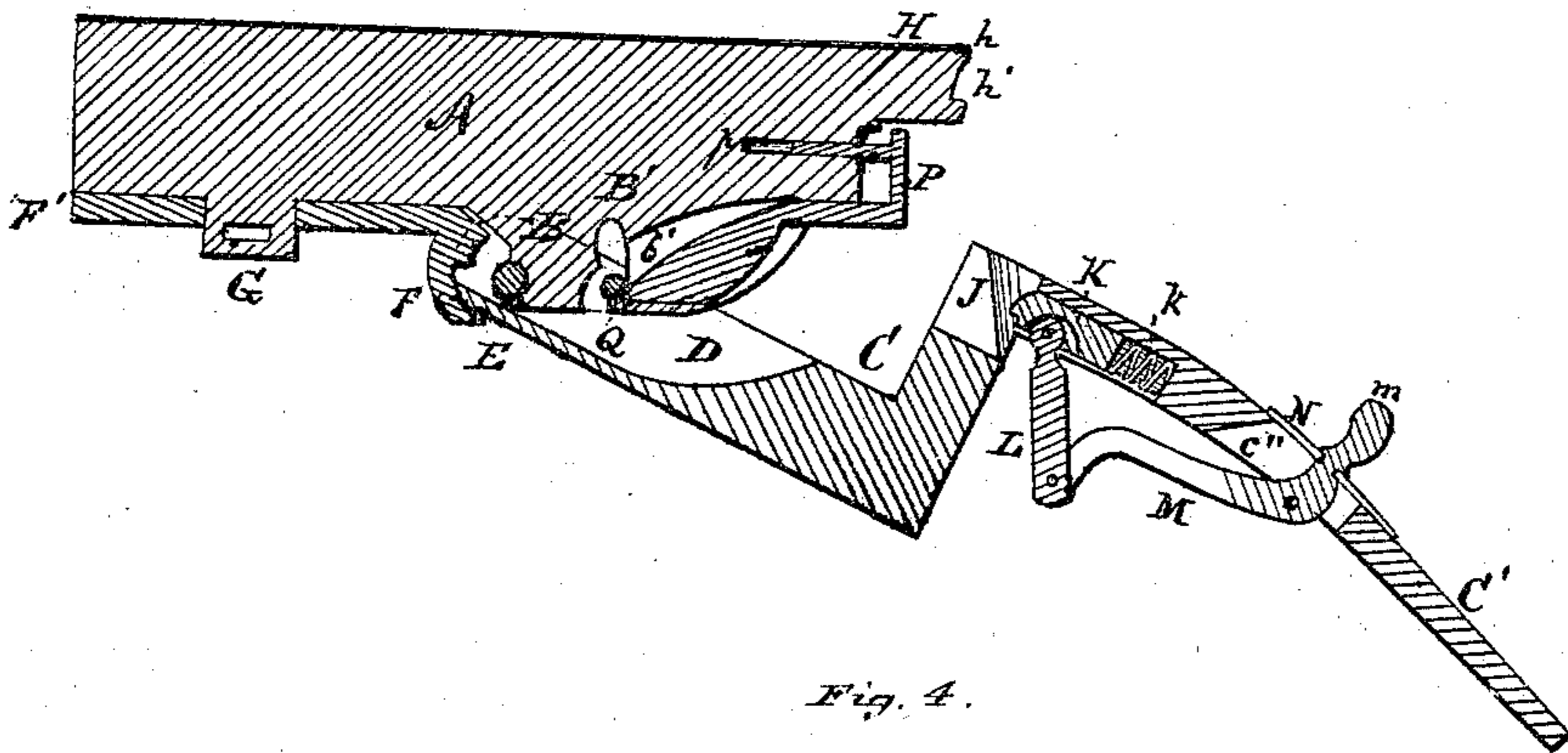
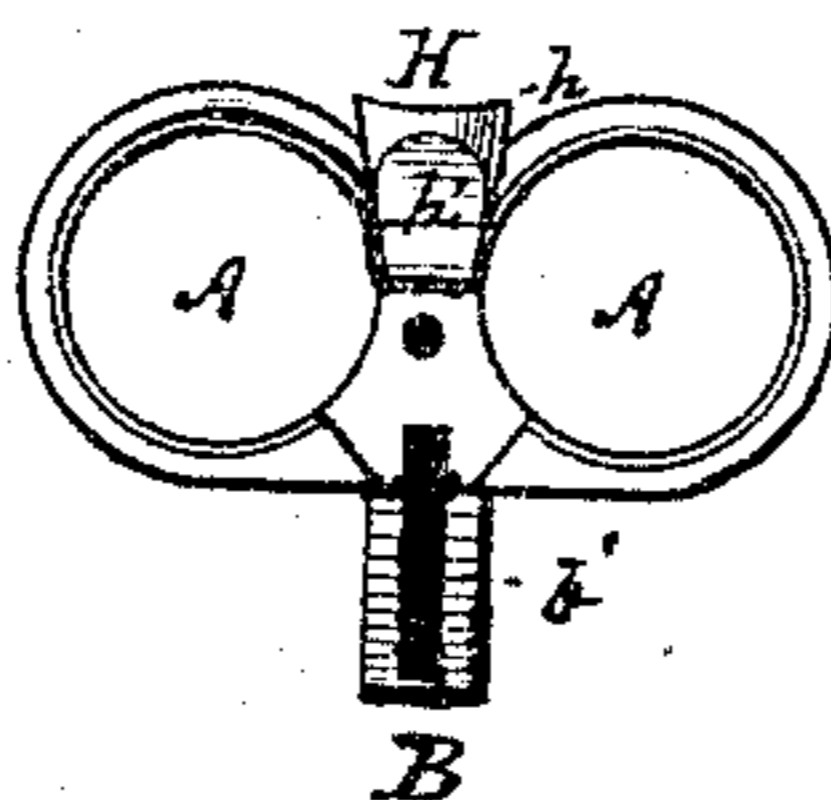


Fig. 4.



Witnesses.

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Fig. 5.

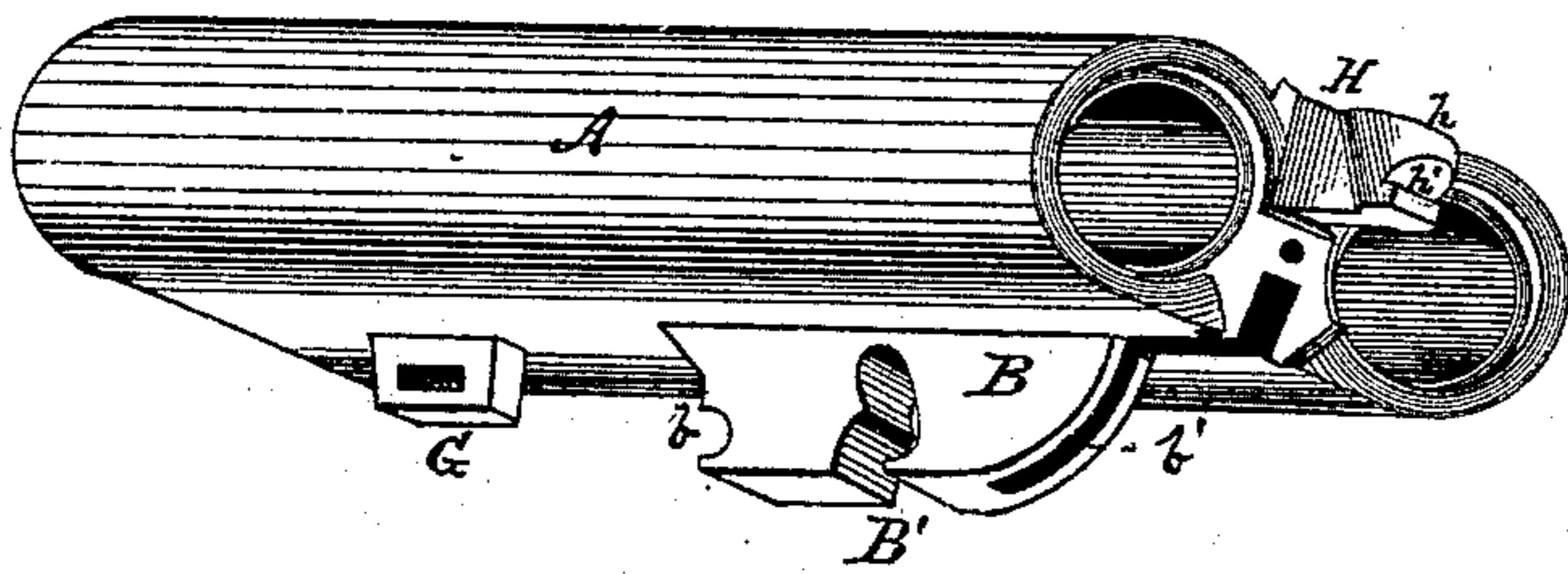


Fig. 6.

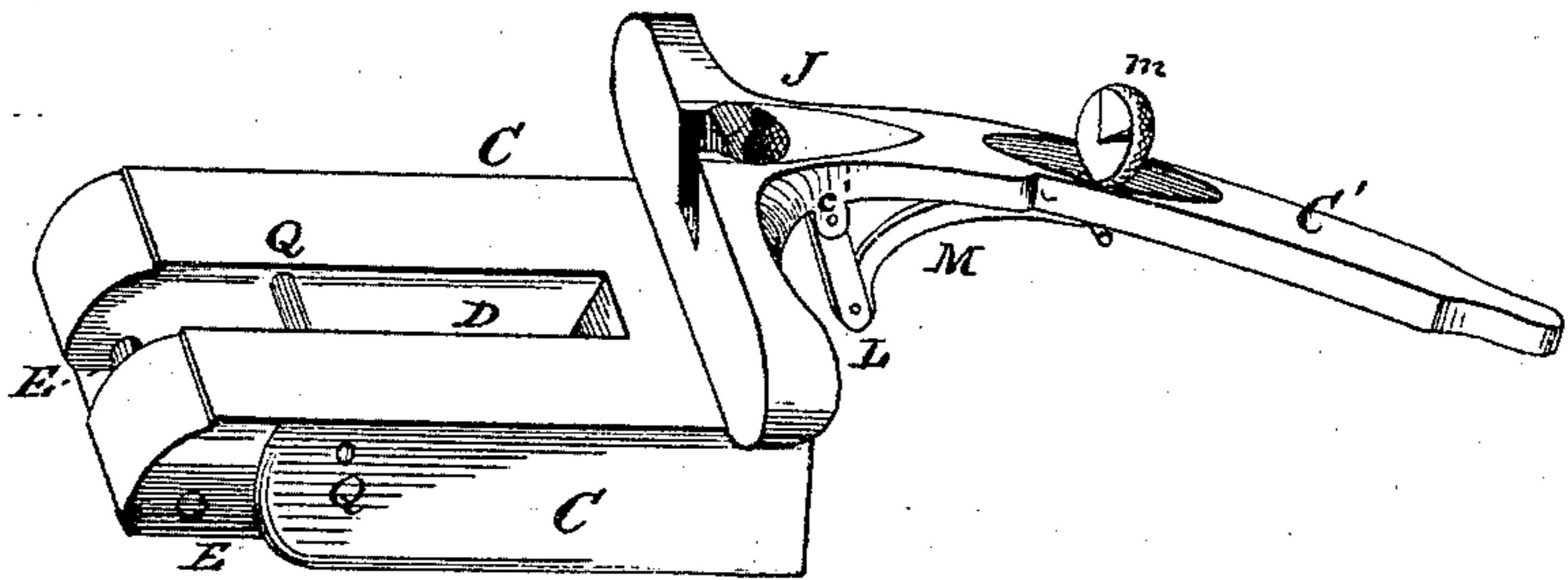


Fig. 7.

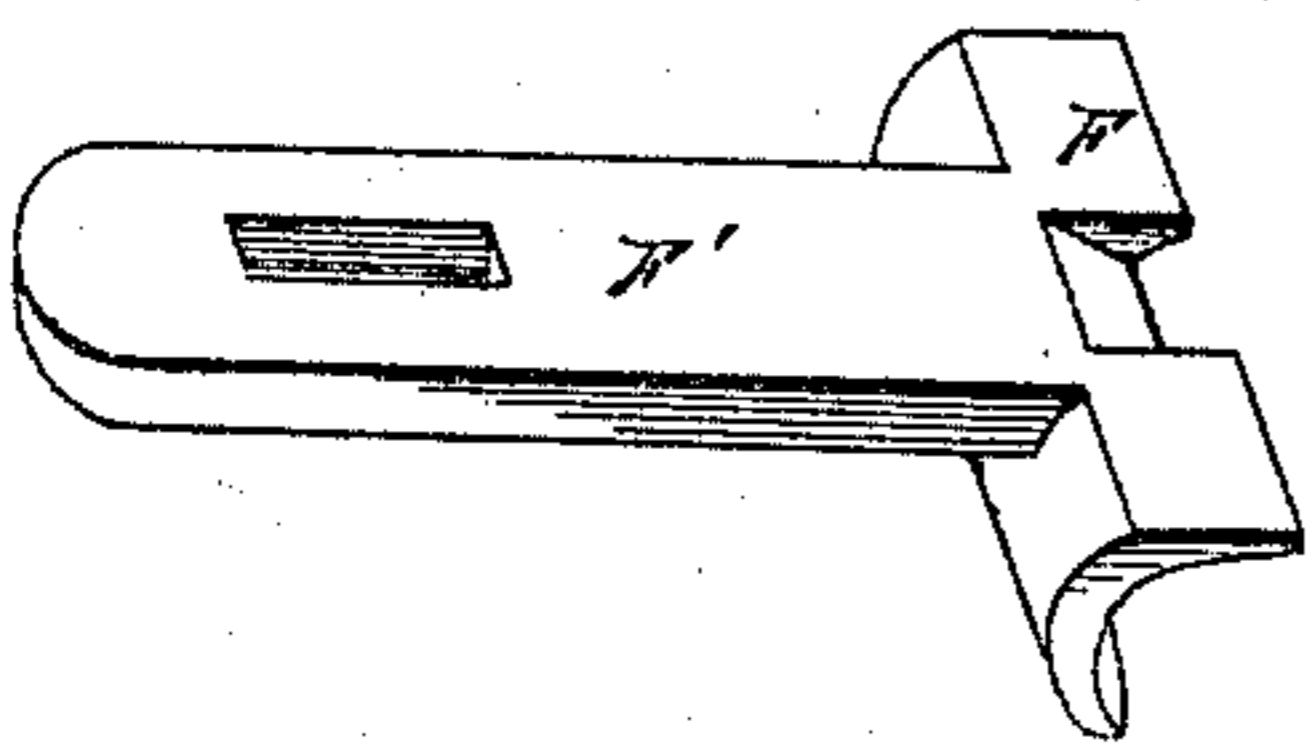


Fig. 8.

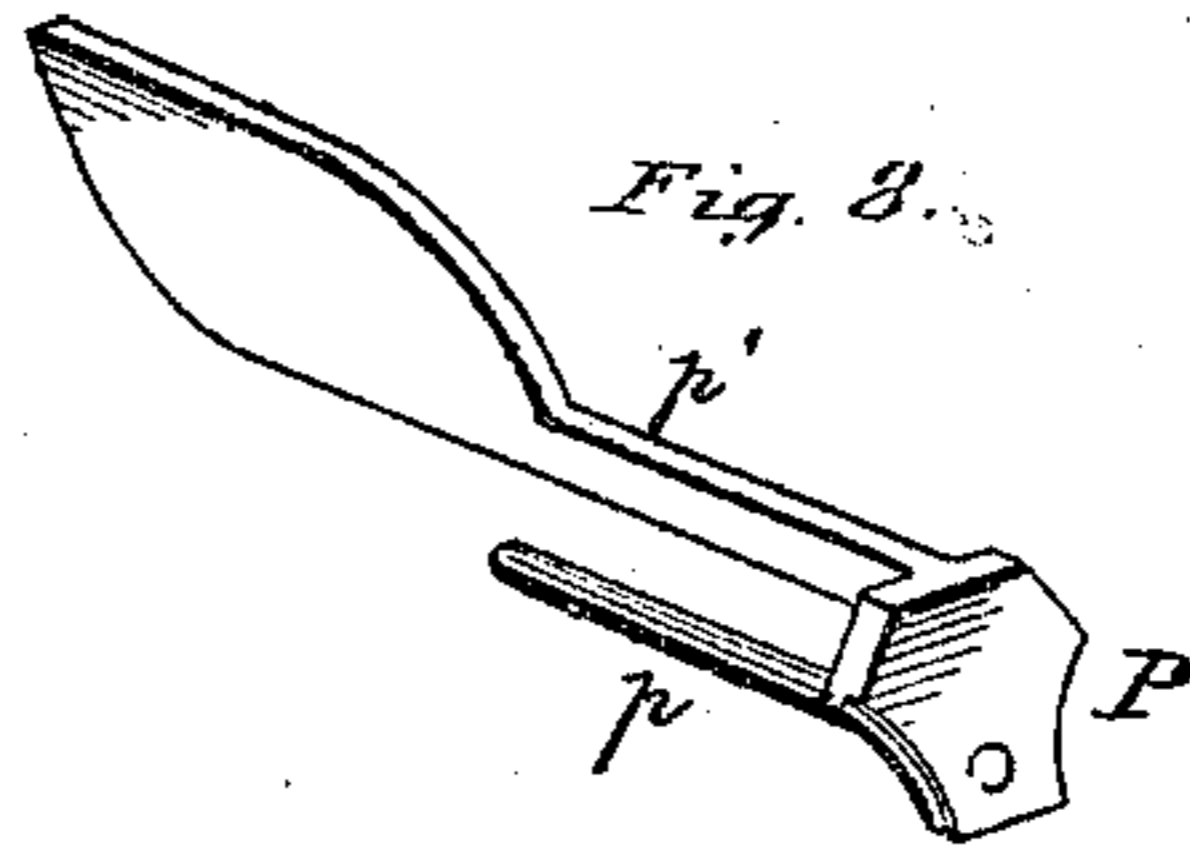


Fig. 9.

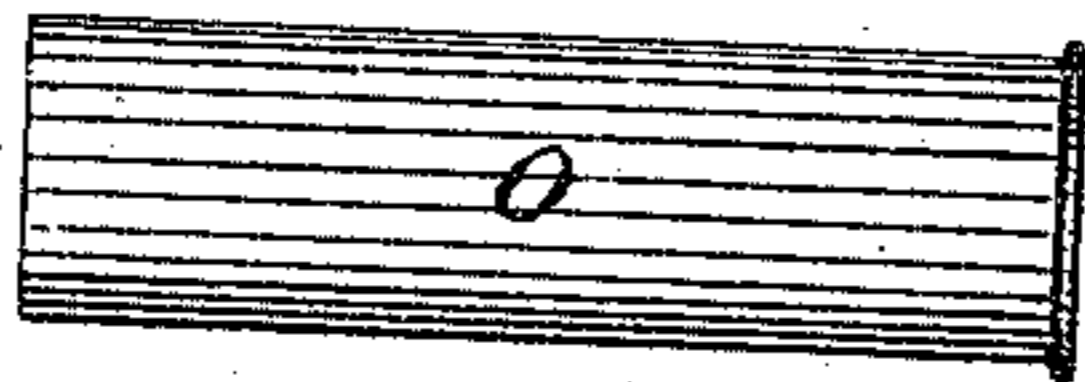
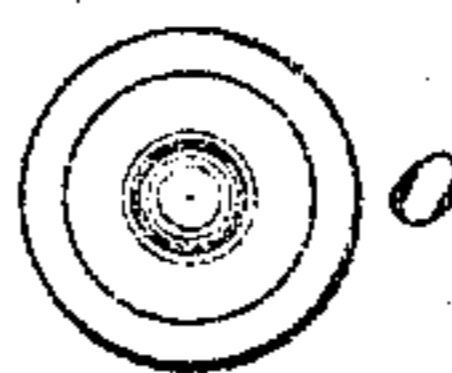


Fig. 10.



Witnesses,

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# UNITED STATES PATENT OFFICE.

FRANCIS S. DANGERFIELD, OF AUBURN, NEW YORK, ASSIGNOR TO HIMSELF  
AND DANIEL M. LEFEVER, OF SAME PLACE.

## IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 130,984, dated September 3, 1872.

*To all whom it may concern:*

Be it known that I, FRANCIS S. DANGERFIELD, of Auburn, in the county of Cayuga and in the State of New York, have invented certain new and useful Improvements in Fire-Arms; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a side elevation of that portion of a "break-down" gun to which my improvements are applied. Fig. 2 is a central longitudinal section of the same on a vertical line. Fig. 3 is a like view of said device with the barrels unlocked and the breech tilted downward. Fig. 4 is an elevation of the rear end of the barrels detached from the breech. Fig. 5 is a perspective view of said barrels. Fig. 6 is a like view of the breech-piece. Fig. 7 is a perspective view of the hinge-piece. Fig. 8 is a like view of the retractor; and Figs. 9 and 10 are, respectively, a side and an end elevation of the cartridge-shell commonly used.

Letters of like name and kind refer to like parts in each of the figures.

My invention is an improvement in those portions of the gun which relate especially to its breech-loading properties; and it consists, principally, in an improved construction of the lock-bolt and its operating mechanism, by means of which the barrels are secured in or released from position, substantially as and for the purpose hereinafter specified. It consists, further, in the construction of the retractor and of its operating mechanism, substantially as and for the purpose hereinafter shown. It consists, finally, in the peculiar construction of the recoil-lug and its combination with the hinge and stop-pins, the hinge-piece and the retractor, substantially as and for the purpose hereinafter set forth.

In the annexed drawing, A represents the barrels, provided upon their lower side, at their transverse center and near their rear end, with a lug, B, which has parallel vertical sides and at its lower edge extends downward and forward in a curve, as shown. The breech-piece C corresponds in size and shape at its front and upper side with the rear end and lower side of the barrels, and is provided with a groove, D, which conforms to and receives the lug B when said barrels are in position

within said breech-piece. Extending transversely across the groove D, near its forward end and lower side, is a pin, E, which conforms to and fits within a semicircular notch or bearing, *b*, formed within the forward end of the lug B, and forms, in part, an axial bearing upon which the barrels turn. The front end of the breech-piece is curved forward and downward upon a circle of which the pin E is the center, and upon or over said curved end is fitted a corresponding hinge-piece, F, which is held in place by means of a slotted arm, F', that extends horizontally forward and embraces a slotted lug, G, which lug projects vertically downward from the barrels A, through said arm, to a sufficient distance to permit a pin or wedge to be driven transversely through beneath the latter. As thus constructed it will be seen that the pin E and notch *b* form the rear bearing; and the hinge-piece F and the curved end of the breech-piece the front bearing, upon which the parts turn whenever the barrels are tilted or returned to place. From the rear end and transverse center of the barrels extends horizontally rearward a lug, H, provided with a head, *h*, formed horizontally upon the line of a circle, which lug fits into a corresponding recess, I, provided in the contiguous portion of the breech-piece, and strengthens, laterally, the connection between said parts. In order that the enlarged part or head *h* may fit closely within its recess, the forward side of said head is formed upon a line having substantially a right angle to a line passing from said lug to the pivotal bearing of the barrels. Another and more important office is performed by the lug H, which, being provided at its rear end with an angular notch, *h'*, receives and engages with the corresponding end of a bolt, K, that works longitudinally and in a line with the barrels in a suitable recess formed within the tang C' of the breech-piece. A spring, *k*, placed in rear of the bolt K, holds the latter in engagement with the notch *h'* except when said bolt is purposely withdrawn, which result is obtained by means of the following described devices: A lever, L, pivoted within suitable lugs *c'*, attached to and extending downward from the tang C', has its upper end contained within a corresponding recess formed in the lower side of the bolt K. To the lower end of the lever L is pivoted one end of a second lever

or bar, M, which from thence extends upward and rearward through a slot,  $c''$ , formed in and through the tang C'. The upper outer end of the lever M is provided with a head,  $m$ , which has a sufficient width to bear upon each side of the slot  $c''$  and prevent the withdrawal inward of said lever, while the outward motion of the latter is prevented by means of a pin,  $m'$ , that passes transversely through the same immediately below said tang. As thus arranged, the upper end of the lever M may be moved forward within its slot so as to correspondingly move the lever L and withdraw the bolt K from engagement with the locking-lug and permit the rear end of the barrels to be raised from the breech-piece. Upon releasing the thumb-piece or head  $m$  the spring  $k$ , operating through the bolt, throws the same outward and returns said thumb-piece to position. In order that dirt may be prevented from entering the slot  $c''$  a sliding cover, N, is secured upon the lower side of the thumb-piece  $m$  and extends forward and rearward to a sufficient distance to cause it to cover said slot when moved forward with said thumb-piece.

The ammunition intended to be used with this gun is of the kind in which metallic cases O are employed; and in order that said cases may be withdrawn automatically as the barrels are tilted a retractor, P, having the form shown in Fig. 8, is fitted into a corresponding recess formed in the rear end of the barrels immediately beneath the lug H, and extends laterally outward to the bore of each barrel. A pin,  $p$ , extending forward from near the upper side of the retractor into a corresponding opening formed within the barrels, serves as a guide for, and by means of which the lateral and vertical position of said retractor is insured as it is moved forward or back. From the lower side of the retractor an arm,  $p'$ , extends forward for about one-half an inch, and then extends downward and forward in reverse curves so as to produce the enlargement shown in Figs. 2, 3, and 8. The sides of the arm  $p'$  being parallel, said arm is contained within a slot,  $b'$ , which extends longitudinally forward through the recoil-lug B to and into a slot, B', that extends transversely through said lug about one-fourth of an inch in rear of its forward end. From its upper end to a point near its lower end the rear side of the slot B' is formed upon the line of a circle of which the axial bearing E is the center, while at the lower end of said slot said rear side extends sharply inward in a short curve. A pin, Q, passing horizontally through the groove D of the breech-piece and through the slot B', fills the upper end of the latter when the barrels are locked in place, and when the latter are tilted said pin engages with the curved projection at the lower end and rear side of said slot and acts as a stop to prevent further outward movement of said barrels. As the forward and downward sloping end of the retractor-arm  $p'$  passes into the transverse slot

it will be seen that as the barrels are tilted the pin Q will press upon said arm and force the same and the retractor rearward, while, by returning said barrels to position, the rear end of said retractor will bear against the vertical face of the breech-piece and be returned once more to place, both of said operations being automatically produced by throwing up and replacing the rear ends of said barrels. In order to permit the barrels to be detached from the breech-piece the forward side of the slot B', at and immediately above its lower end, is cut away so as to permit the pin Q to pass forward and then downward.

The advantages obtained by this construction of parts are as follows: First, the means employed for operating the locking-bolt enable the operator to release and throw up the barrels with one hand, while the other hand is left free to remove the empty shells and replace them with others containing charges. Second, the retractor is simple in construction, certain in operation, and can be readily removed or replaced when it requires cleaning. Third, the recoil-lug is durable and efficient, and, by means of the transverse slot and its pin, has largely-increased strength to enable it to withstand the necessary strain. Fourth, the transverse slot and pin form an efficient stop for the outward movement of the barrels, while at the same time offering no obstacle to the ready separation of the breech and barrels whenever the hinge-piece is removed. Fifth, as a whole the parts are few in number, simple in construction, not liable to derangement, and are connected together or separated by the removal of one wedge or pin.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The means employed for operating the locking-bolt K, consisting of the pivoted lever L, the bar M, and the thumb-piece  $m$ , said parts being combined with each other and with the tang C', substantially as and for the purpose shown.

2. The retractor P, provided with the guide-pin  $p$  and arm  $p'$ , in combination with the slotted recoil-lug B, the transverse slot B', and the pin Q, substantially as and for the purpose shown.

3. In combination with the recoil-lug B, the breech-piece C, and the pin E, the transverse slot B' and the pin Q, substantially as and for the purpose shown and described.

4. In combination with the recoil-lug B, the breech-piece C, the pin E, and the hinge-piece F, the transverse slot B' and pin Q, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of June, 1872.

FRANCIS S. DANGERFIELD.

Witnesses:

A. E. WARRINER,  
DANIEL M. LEFEVER.