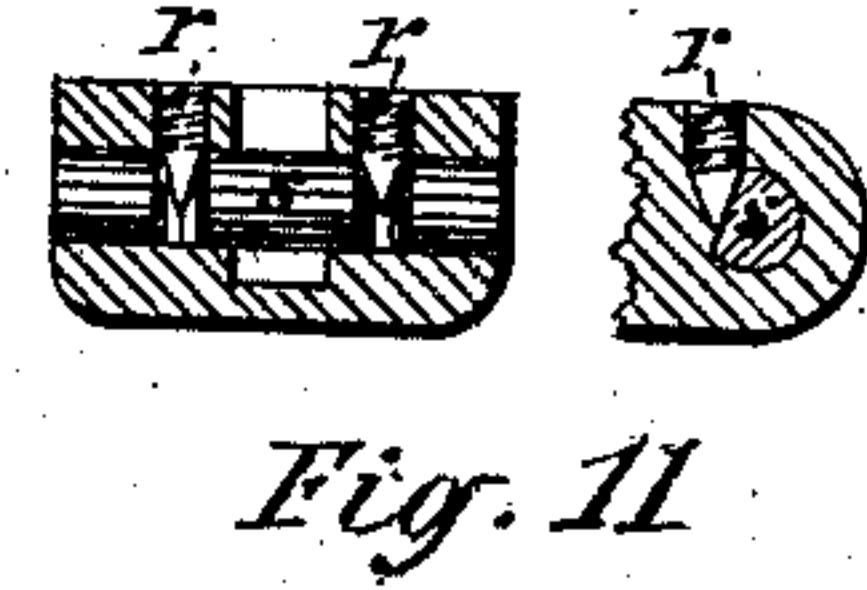
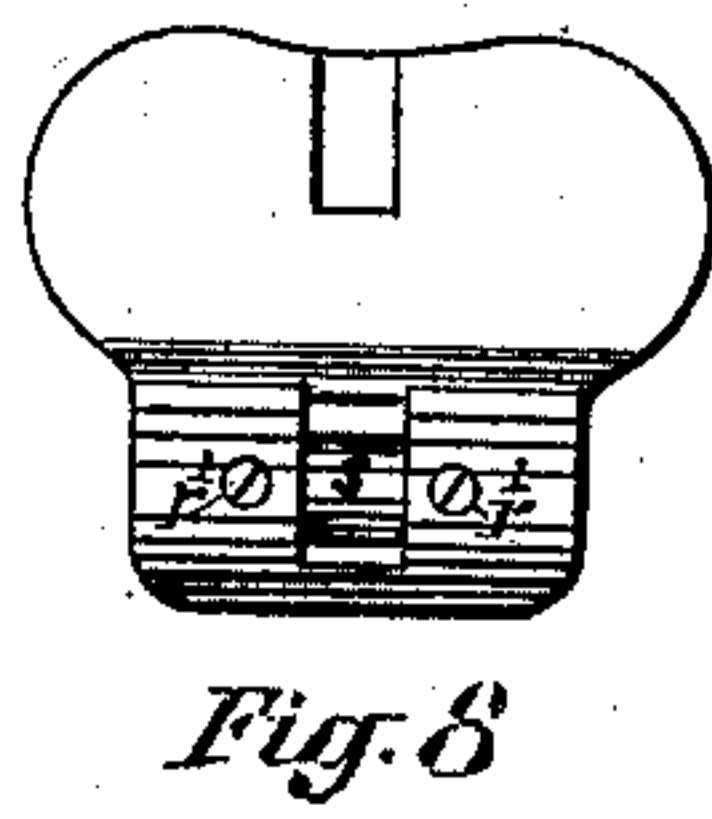
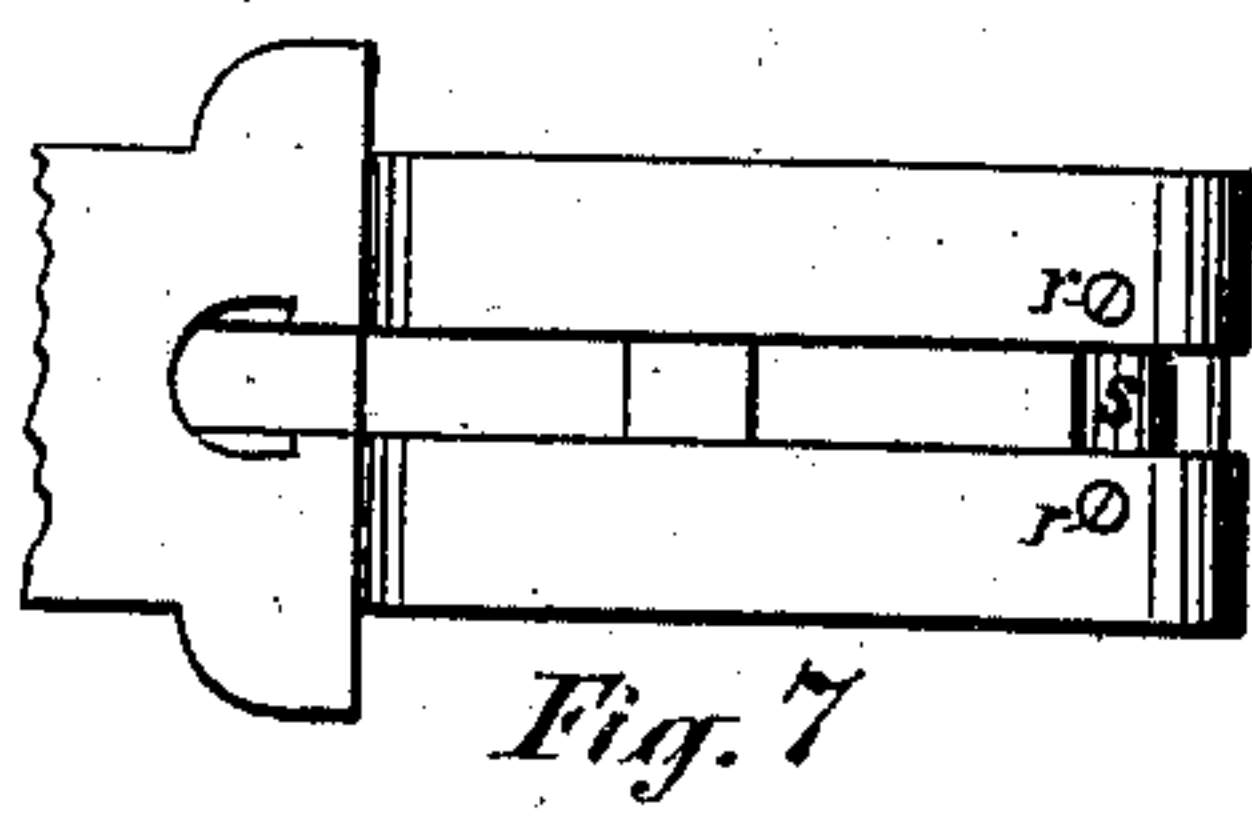
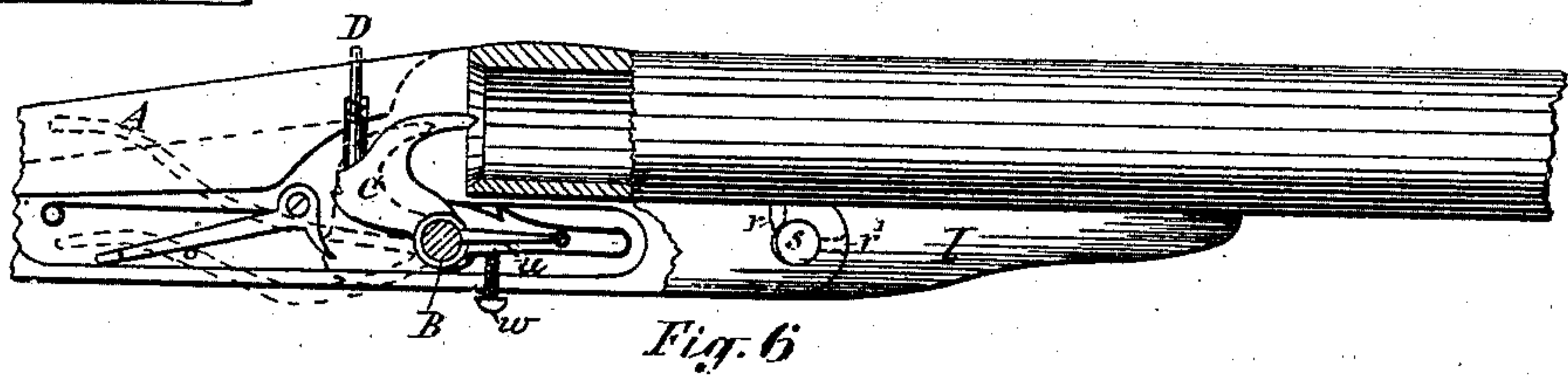
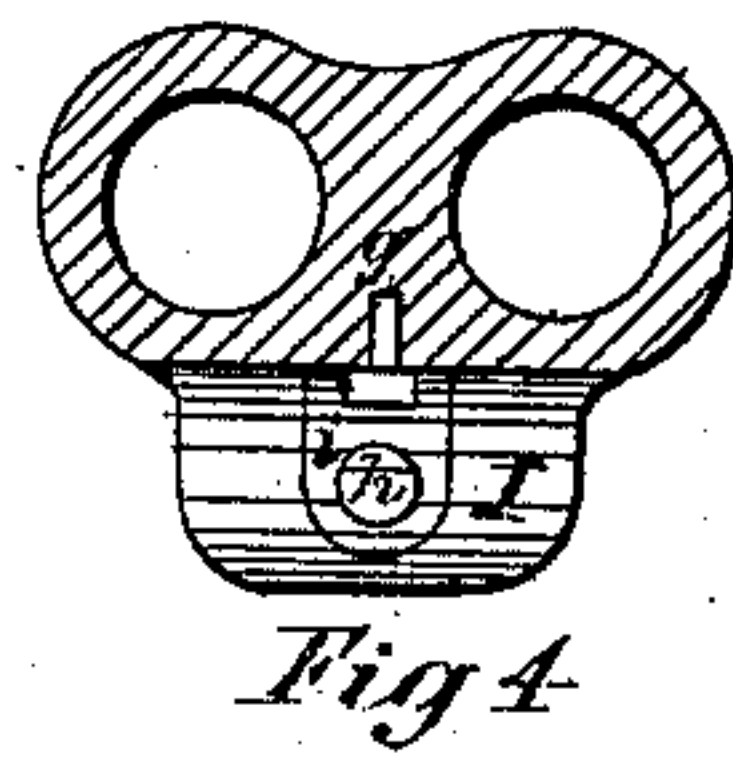
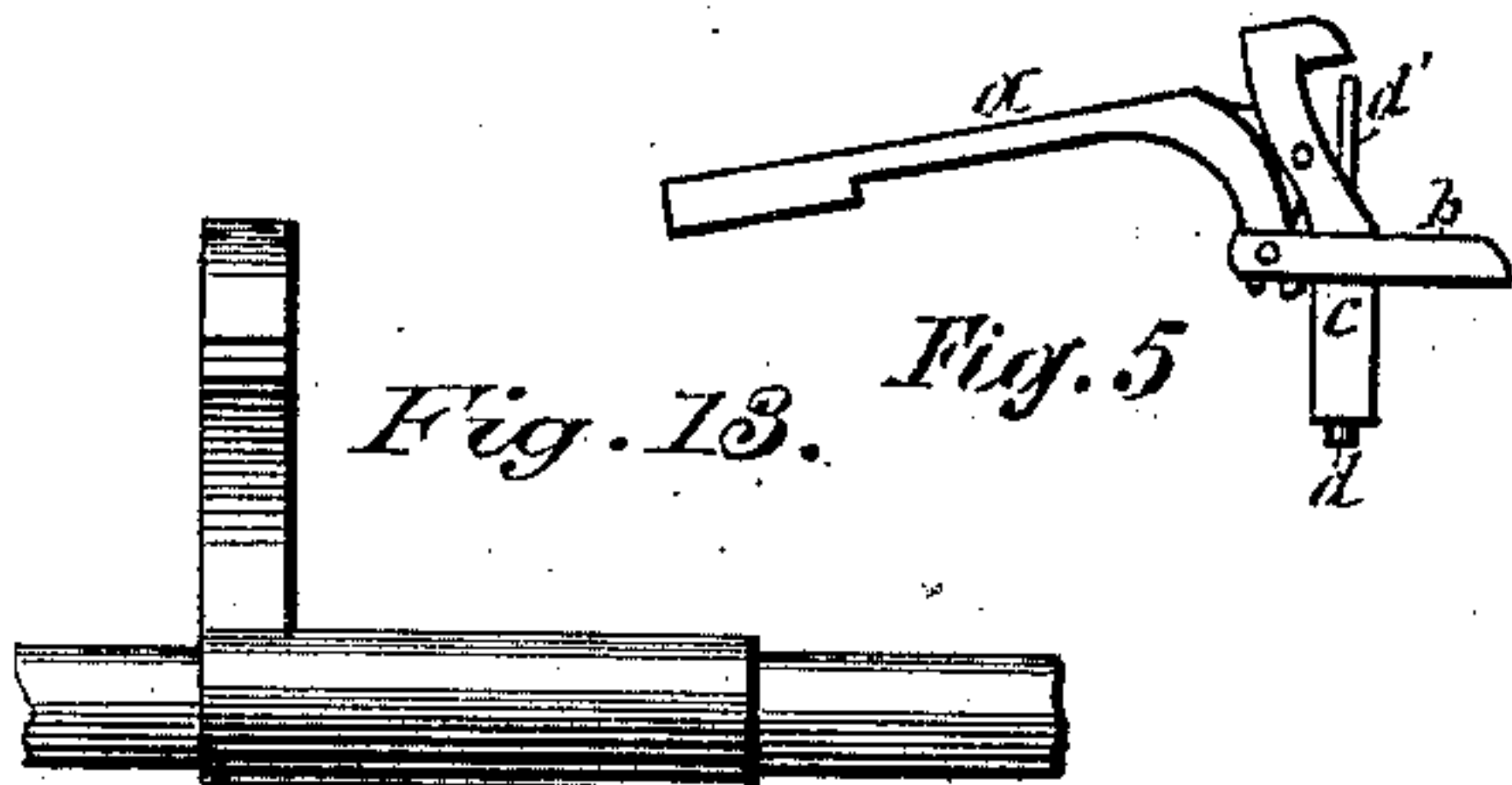
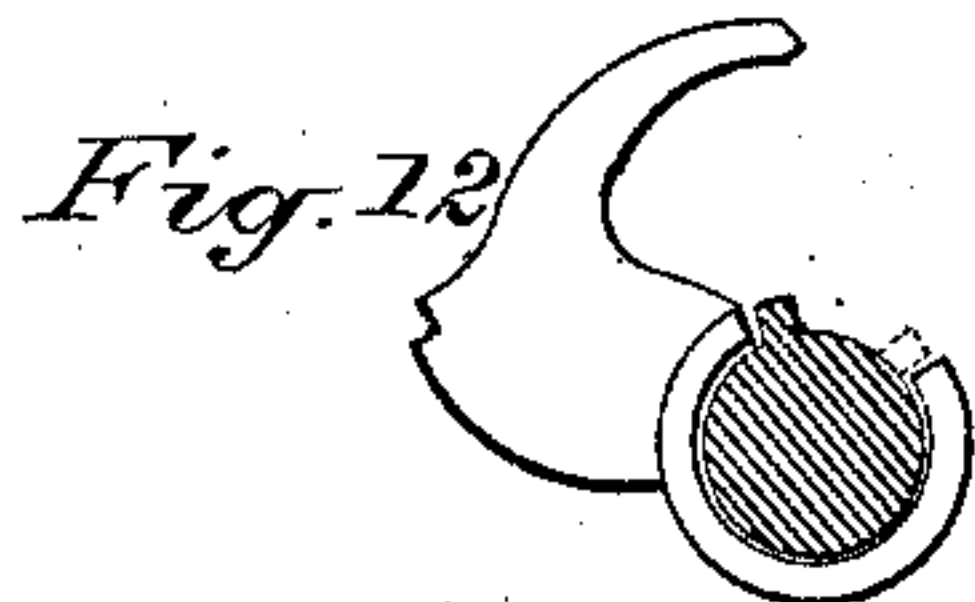
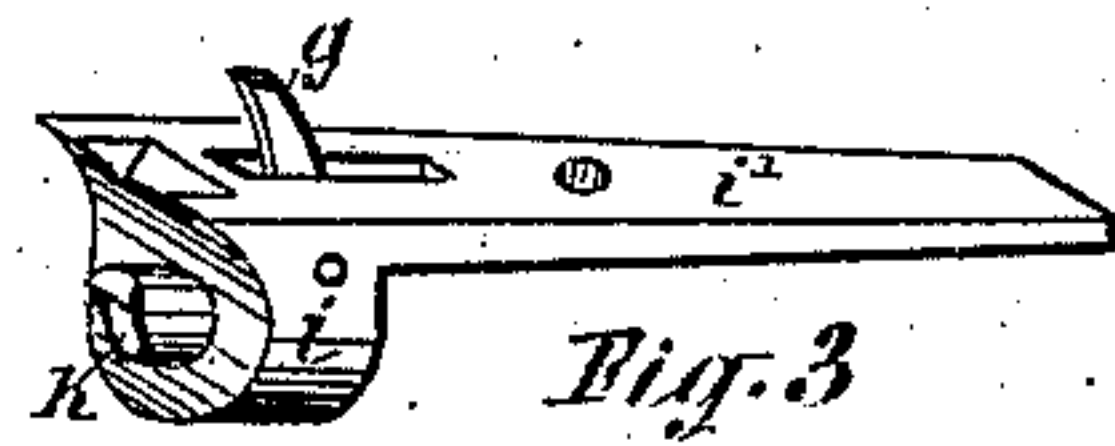
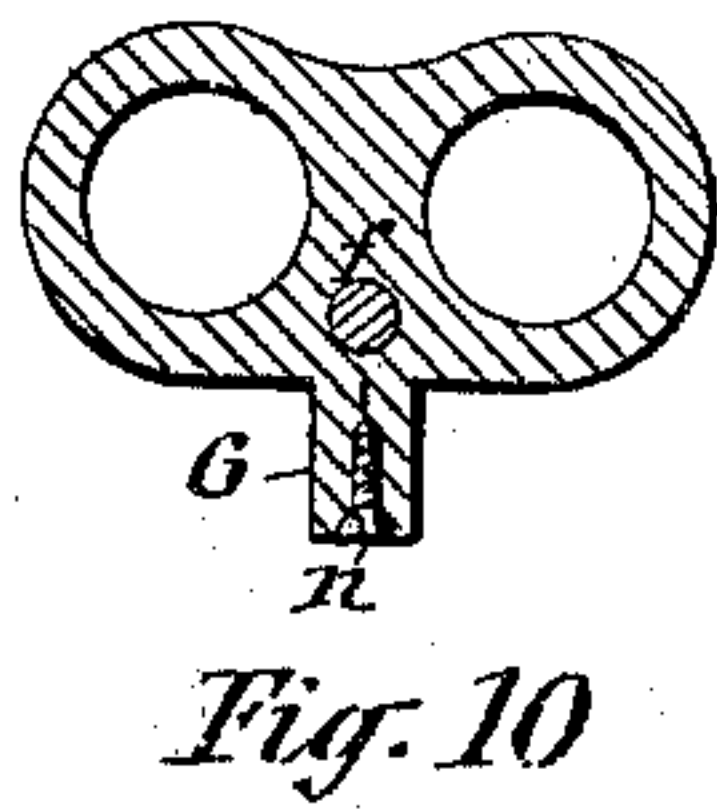
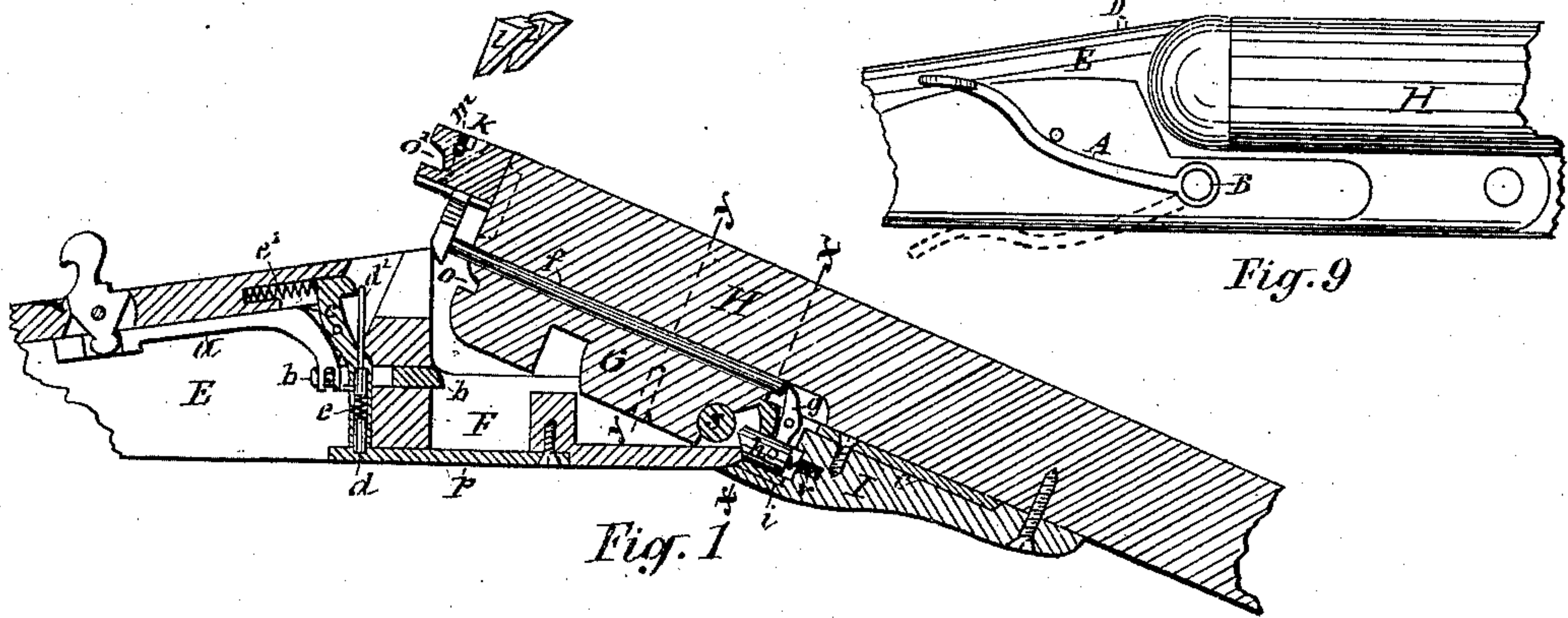


D. M. LEFEVER.  
Breech Loading Fire Arm.

No. 229,429.

Patented June 29, 1880.



WITNESSES:  
E. Laass  
C. Bendixen

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# UNITED STATES PATENT OFFICE.

DANIEL M. LEFEVER, OF SYRACUSE, NEW YORK.

## BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 229,429, dated June 29, 1880.

Application filed July 21, 1879.

*To all whom it may concern:*

Be it known that I, DANIEL M. LEFEVER, of the city of Syracuse, in the State of New York, have invented new and useful Improvements in Fire-Arms, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of fire-arms termed "breech-loading," and in which the barrels are jointed to the breech, so as to tilt upward on a hinge-pin.

The invention is fully illustrated in the accompanying drawings, wherein Figure 1 is a longitudinal section of a gun provided with my improvements; Fig. 2, a view of the extractor detached; Fig. 3, the tip-strap detached, showing ejector devices; Fig. 4, a section on line *x x*, Fig. 1; Fig. 5, the locking-bolt and action detached; Fig. 6, a side elevation, partly in section, to illustrate the lock mechanism. Fig. 6½ is a detached view of the hammer, illustrating its connection with the lever by which it is raised to a cocked position; Fig. 7, a plan view of the breech-extension; Fig. 8, an end view of the breech block and extension; Fig. 9, a side view, showing the device for cocking the concealed hammer; Fig. 10, a transverse section on line *y y*, Fig. 1; Fig. 11, a detail view of the device for bracing the breech-extension; and Figs. 12 and 13 represent, respectively, side and front elevations of the hammer mounted on its shaft or spindle.

Similar letters of reference indicate corresponding parts.

35 E represents the breech-block, provided with the usual extension *F*, to the extremity of which is hinged a lug, *G*, fixed to the under side of the barrels *H*.

40 To render guns of this class durable and maintain them in perfect working order, it is essential to guard against loose joints and lost motion, and for the attainment of this end various devices have been employed.

45 The greatest wear being upon the hinge-pin *s* and the parts connected therewith, I compensate for such wear by elongating the eye in the breech-extension, through which the hinge-pin passes, and supporting the said pin by tapered set-screws *r*, inserted through the top of the breech-extension and bearing against the rear side of the pin, and set-screws *r'*, in-

serted through the end of the breech-extension and operating against the front side of said pin. By proper manipulation of the said screws the pin *s* is adjusted in its proper relative position, as may be required by the wear of the parts. By providing the rear side of the hinge-pin *s* with a recess and arranging the set-screw *r* to enter the same the pin is made to serve as a cross-tie to prevent the breech-extension from spreading.

A considerable wear has also been experienced at the top hook-fastening, *k*, at the rear end of the barrels, which wear caused an opening of the joints both at the said hook and end of barrels, and not only deprived the former of its hold, but also formed at the latter an exit for the gases resultant from discharge of the gun and an inlet for the dust. To obviate these defects I insert between the shoulders of the hook-fastening *k* and those of the breech-block a wedge-shaped block, *l*, (shown isometric and detached in Fig. 1 of the drawings,) which block has a central slot and is placed astride the neck of the fastening *k*, the remaining central top portion of the block being fitted into a recess in the top of said neck. By means of a set-screw, *m*, inserted vertically between the central part of the block *l* and the adjacent side of the afore-said recess, the block is secured and adjusted in its position, its downward movement tending to compensate for the wear.

Having made the needed provisions against end wear, I further guard against deterioration of the operation of the gun by compensating for the wear on the sides of the lug *G*. This I accomplish by splitting the same longitudinally through the center and inserting in the slit a set-screw, *n*, having a tapered head fitted into a tapered countersink. By forcing the said screw into the slit the parts are spread apart and the lug distended the proper distance to take up the wear.

My invention next pertains to the locking of the barrels to the breech when in operative position. This I accomplish by the following instrumentalities:

Horizontally through the recoil-plate is arranged to slide a bolt, *b*, engaging at its forward end a notch, *o*, in the end of the lug *G*. The rear end of the bolt is slotted, and onto a



pin passing transversely through the bolt is connected or hooked the so-called connecting-bar or draw-bar *a*, operated in the usual manner. To the front of the connecting-bar, and above the slide-bolt *b*, is pivoted a vertical arm, *c*, provided at its upper end with a forward-projecting shoulder or hook adapted to engage a notch, *o'*, in the extension *k* of the end of the barrels. The lower portion of the arm *c* passes through the slot in the slide-bolt *b*, and is provided with a central cavity, in which is fitted a movable step, *d*, resting in a socket or depression in a plate, *p*, secured to the under side of the breech-block.

A piston or plunger, *d'*, is supported in the upper end of the cavity of the arm *c* by means of a spiral spring, *e*, interposed between the step *d* and piston *d'*. The latter is provided with an upward-projecting stem or rod, which terminates in front of the hook on the upper extremity of the arm *c*, and thereby retains the same in a retracted position. A spiral spring, *e'*, acting against the rear of the arm, imparts a forward pressure to same.

In throwing the barrels back upon the breech-block, the projection *k* first strikes the end of the stem of the piston *d'*, and in depressing the same it releases the hook-end of the arm *c* and allows the same to enter the notch *o'* simultaneously with the locking of the bolt *b* with notch *o*. A rearward draft of the connecting-bar *a* throws both the bolt *b* and arm *c* out of their respective engagement, and allows the barrels to be tilted on the hinge-pin whenever access to the rear end of the barrels is desired.

It will be observed that the device is constructed and arranged with a view to a ready detachment for repairs or renewal of its constituent parts.

By removing the plate *p* the step *d*, spring *e*, and piston *d'* are easy of access for withdrawal or insertion, and by removing one of the connecting-pins of the connecting-bar the whole device can be detached.

*f* represents the so-called extractor, consisting of a rod extending longitudinally through the upper portion of the lug *G* in close proximity to the barrels, and having at its rear end a cross-bar, by means of which it engages the rim of the primed end of the shell. The forward end of the extractor-rod terminates at or near the end of the breech-extension, at which point an opening is provided on the under side to expose the extractor-rod.

In a mortise in the fore piece *I* is fitted what I term the "tip-strap," consisting of a socket, *i*, on the end of a plate, *i'*, which is fastened to the fore piece. The end of the socket is flush with the end of the fore piece, which abuts against the breech-extension, and in the socket is a plunger, *h*, backed by a spiral spring, *v*, which exerts an outward pressure on the plunger.

A lever, *g*, is fulcrumed in an opening in the upper part of the tip-strap, and has one arm connected with the plunger *h* and the other arm bearing against the end of the extractor-rod. In tilting the barrels on the hinge-pin

the pressure of the hinge against the plunger *h* forces the latter inward and causes the lever *g* to push the extractor rearward and carry with it the shell out of the barrel.

My invention, finally, has reference to the construction and arrangement of the hammer and the lock mechanism actuating the same, the object being to conceal the hammer, so as to avoid obstructions to the sight of the gun. This I accomplish by a hammer, *O*, fixed to the end of a sleeve journaled in the breech-stock below the barrels and near the end thereof.

The hammer has a cam-shaped rearward extension, and its forward end is brought in line with the center of the barrel. At the back of the rearward extension it is provided with a locking shoulder or notch, which is engaged by the sear pivoted back of the hammer and forced into engagement by a spring bearing upon the sear back of its fulcrum. The hammer receives its power of percussion from the mainspring bearing upon a forward shoulder on the pivoted end of the hammer.

By means of a set-screw, *w*, inserted from the under side of the stock and bearing against the end of the mainspring, which engages the hammer, the action of the spring can be arrested at any desired point of the descent of the hammer, and thus allow the hammer to rebound from the barrels.

All of the described devices are located in a cavity in the breech-block and covered by the face-plate secured to the outside thereof.

The hammer is cocked by means of a rearwardly-extended lever, *A*, on the exterior of the breech-block, which lever has a stem or spindle, *B*, passing through the face-plate and into the sleeve connected to the hammer.

In a double-barreled gun both hammers are provided with a sleeve projecting into the breech-block, and the spindle *B* is of sufficient length to enter both sleeves.

The spindle is provided on its side with a lug or feather, which enters a groove in the interior of the sleeve. The said groove is of sufficient width to allow sufficient play to the feather of the spindle for the lever to be carried back to its original position after cocking the hammer.

A spring, *u*, connected to the inner side of the face-plate and engaging a notch in the spindle *B*, imparts the backward movement to the lever.

When it is desired to cock only one of the hammers the other hammer is allowed to return to its original position with the reverse movement of the lever by pressing on the trigger of the said hammer, and thus preventing the engagement with the latter of its respective sear. Hence by means of the single lever *A* either or both of the hammers can be cocked by a single operation.

To indicate the position of the concealed hammer, a stem or pin, *D*, passes vertically through the top of the breech-block and rests with its lower extremity on the cam-shaped



rearward projection of the hammer, the top of which has an eccentric curvature, which, in cocking the hammer, forces the indicating-pin D upward and causes the same to protrude at the top of the breech-block, as shown by dotted lines in Fig. 6 of the drawings. So soon as the hammer is released the rod D is forced back onto the more depressed rear part of the hammer by a spiral spring interposed between the shoulder of the enlarged lower end of the rod and the end of the passage of same.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the tilting barrels of a breech-loading gun, the breech-extension F, having an elongated pivotal hole, and the hinge-pin *s*, supported therein by set-screws bearing against opposite sides of the pin, substantially as described and shown.

2. The combination and arrangement of the breech-extension F, having an elongated pivotal hole, and the pin *s*, supported therein by the tapered set-screw *r*, inserted vertically through the top of the breech-extension, and bearing with its tapered portion against the rear side of the pin, and the set-screw *r'*, inserted horizontally through the end of the breech-extension and acting diametrically against the front side of the pin, substantially as described and shown.

3. The combination of the hinge-pin *s*, supported in an elongated eye in the breech-extension F by set-screws bearing against one side of the pin, and tapered set-screws inserted vertically through the breech-extension, and bearing with their tapered ends against depressions in the opposite side of the pin, substantially as and for the purpose set forth.

4. The combination of the wedge-shaped block *l*, having a central slot, the hook-fastening *k*, provided with a recess on top of its neck, and the set-screw *m*, substantially in the manner described and shown.

5. In combination with the breech-extension F, provided on top with a longitudinal channel, the lug G, attached to the barrels and split longitudinally, and the distending-screw *n*, inserted in the slit of the lug, substantially in the manner and for the purpose specified.

6. The combination of the slide-bolt *b*, slotted at the rear end, the connecting-bar *a*, con-

nected with said end, and the arm *c*, pivoted to the connecting-bar above, passing through the slot in the bolt *b*, and having its lower extremity stepped in a plate attached to the breech-block, and provided at its upper end with a forward-projecting shoulder or hook, substantially in the manner and for the purpose set forth and described.

7. The combination of the connecting-bar *a*, the arm *c*, pivoted thereto, and provided at its upper end with a forward-projecting hook or shoulder, and having in a central cavity in its lower portion the step *d*, spring *e*, and piston *d'*, the latter having an upward-projecting stem terminating in front of the top hook of the arm *c*, and the spring *e'*, arranged at the rear of said hook, substantially as described and shown.

8. In combination with the extractor *f* and the breech-extension F, the latter of which is provided on top with a channel extending to the forward extremity thereof, the tip-strap, provided with the plunger *h* in line with the channel in the breech-extension, and having the outer end of the plunger beveled and the inner end connected with the pivoted lever *g*, substantially as described and shown.

9. In combination with the extractor *f* and fore piece I, the plunger *h*, lever *g*, and spring *v*, as and for the purpose specified and shown.

10. The combination of the hammer C, having integral with it an inward-projecting sleeve pivoted to the breech-block, and provided in the interior of said sleeve with a groove, and the lever A, having the spindle B extended into the aforesaid sleeve, and having a lug or feather entering the groove of the sleeve, substantially in the manner specified.

11. In combination with the lever A, having the spindle B, provided with a lug or feather entering a groove of greater width in the sleeve of the hammer, the spring *u*, engaging a notch in the spindle, substantially as described, for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of May, A. D. 1879.

D. M. LEFEVER.

Witnesses:

E. LAASS,

C. BENDIXEN.