

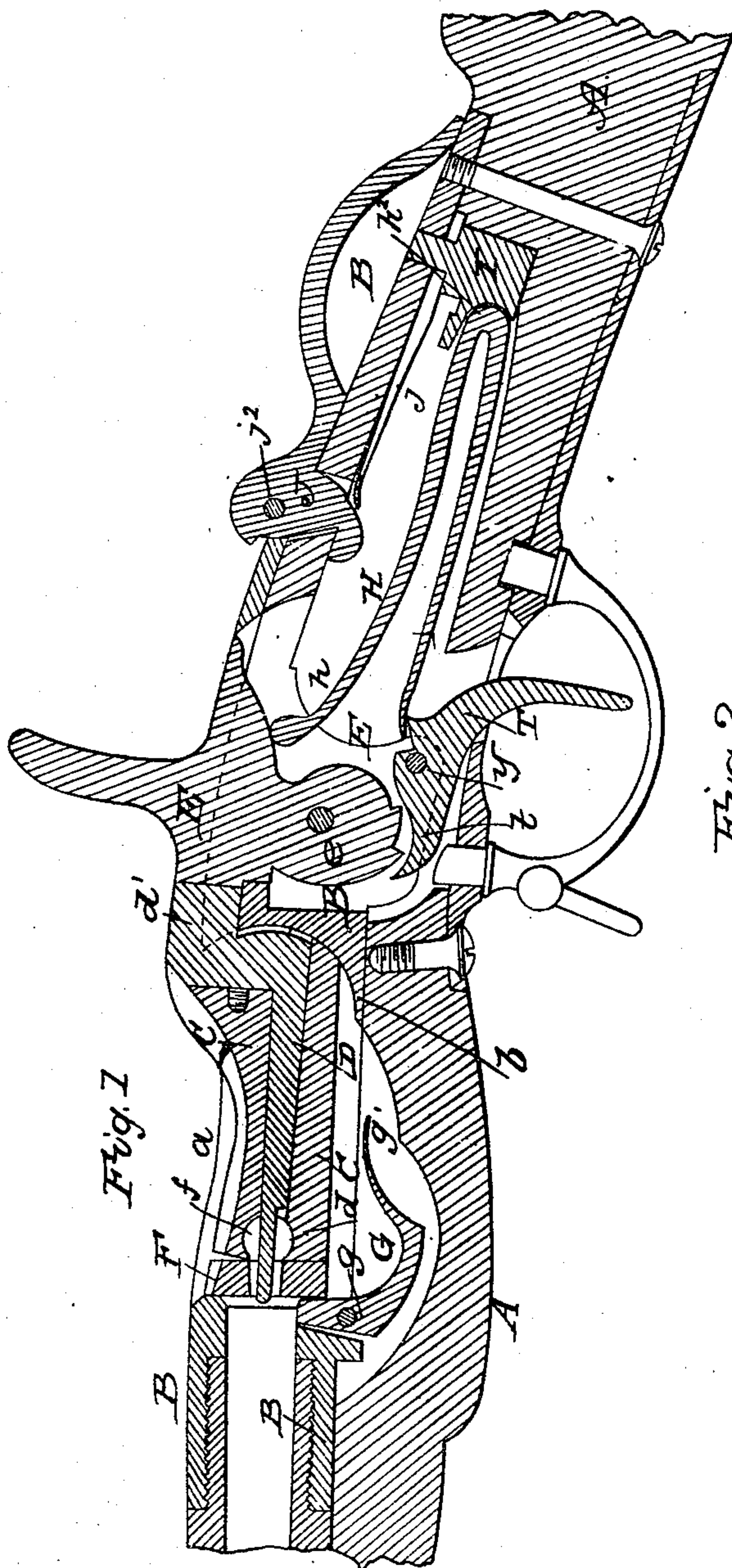
B. S. ROBERTS.

3 Sheets—Sheet 1.

Breech Loading Fire Arm.

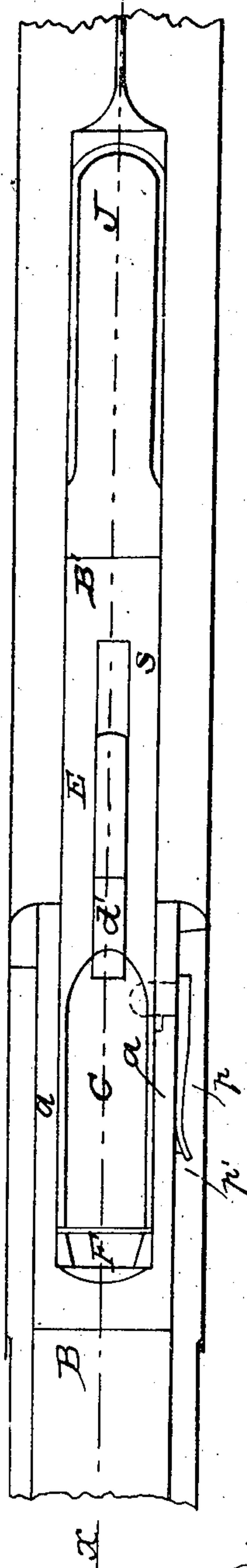
No. 90,024.

Patented May 11, 1869.



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Fig. 2.



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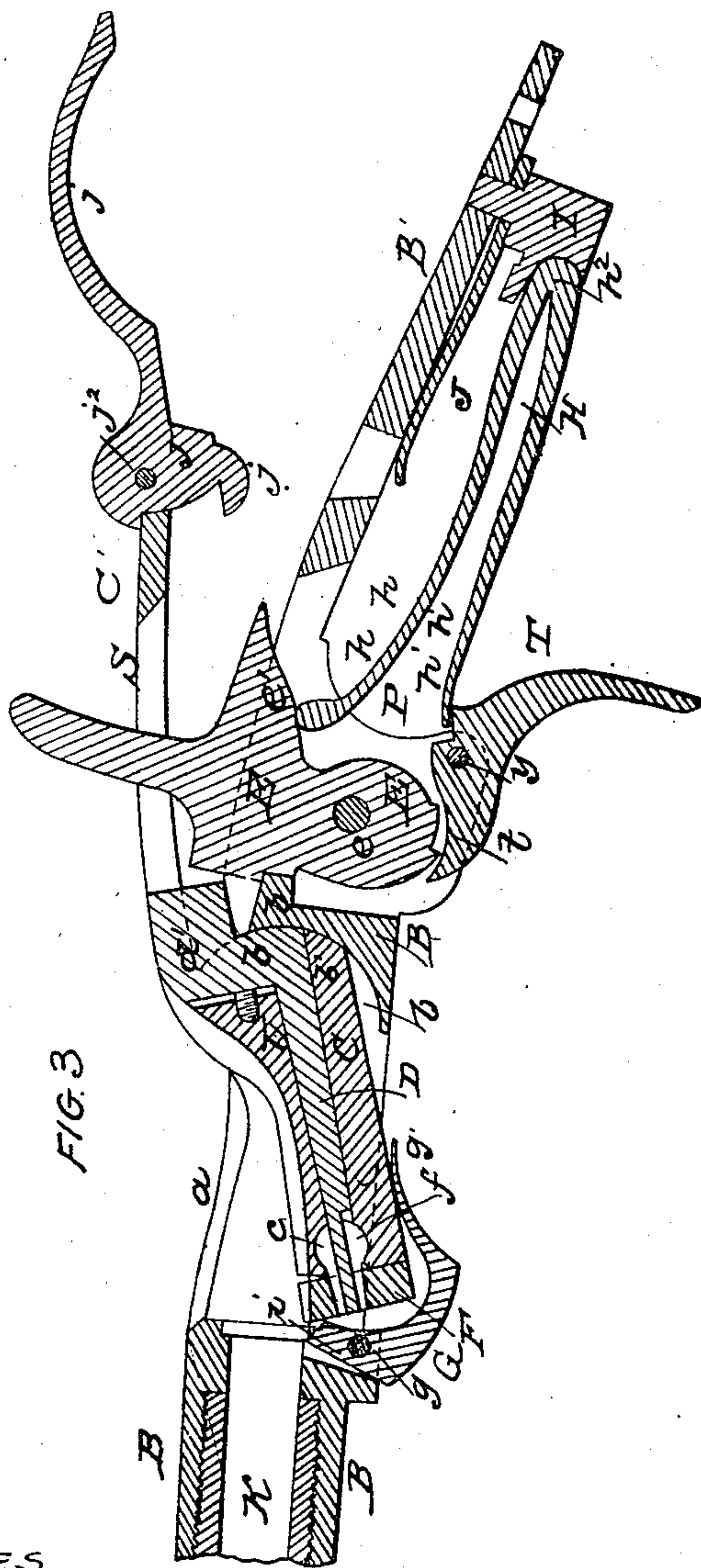
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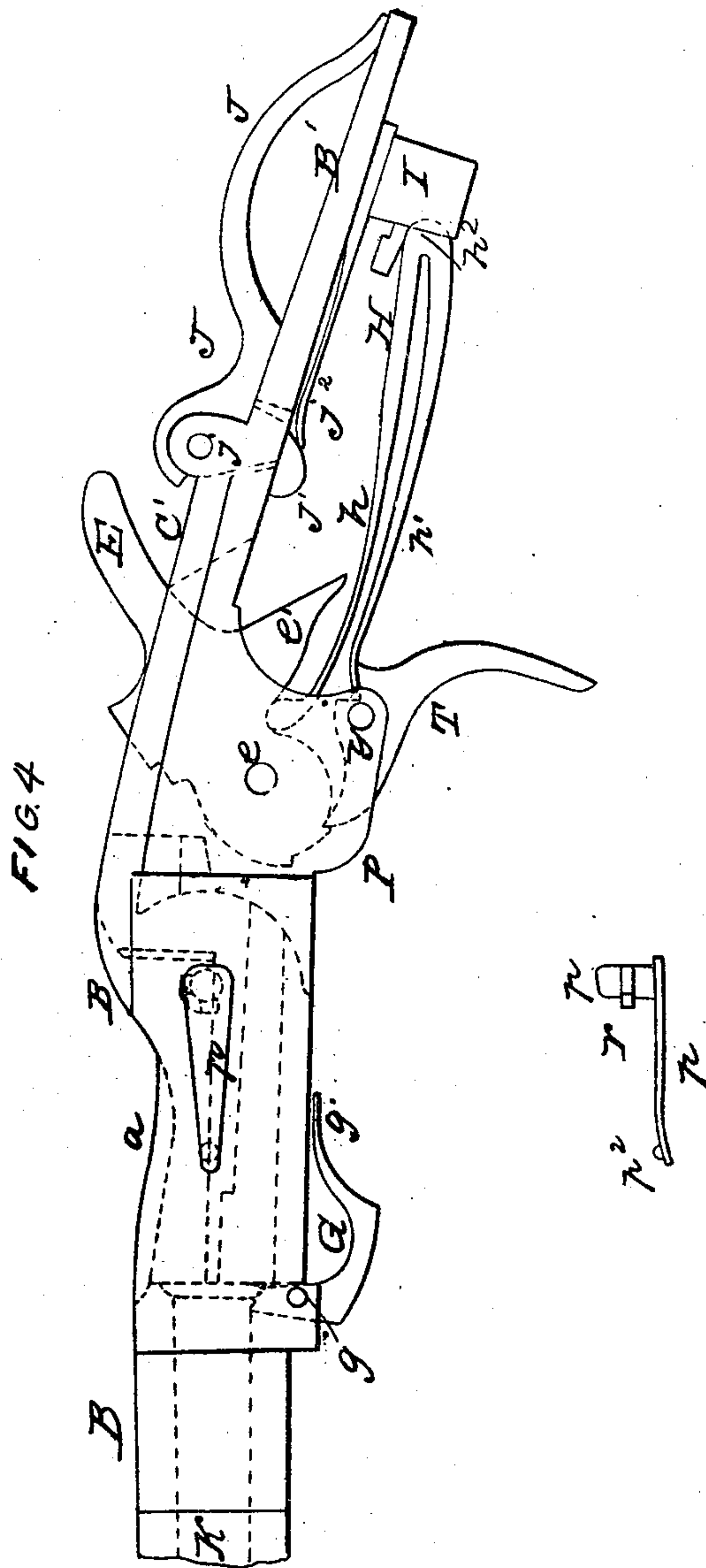
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UNITED STATES PATENT OFFICE.

BENJAMIN S. ROBERTS, OF UNITED STATES ARMY.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 90,024, dated May 11, 1869.

To all whom it may concern:

Be it known that I, BENJAMIN S. ROBERTS, of the United States Army, have invented certain new and useful Improvements in Breech-Loading Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, Sheet 1, is a section taken longitudinally through the center of the arm in the plane indicated by line *x* in Fig. 2, showing the several parts in position for firing the arm. Fig. 2, Sheet 1, is a top view of the arm with the parts in the same position as in Fig. 1. Fig. 3, Sheet 2, is a section taken longitudinally through the center of the arm, showing the parts in position for inserting a cartridge. Fig. 4, Sheet 3, is a view of one side of the arm with the stock removed. Fig. 5, Sheet 3, is a view of the self-retaining pivot-pin or plug projected from Fig. 4.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements on the breech-loading fire-arm for which Letters-Patent were granted to me on the 11th day of June, A. D. 1867, wherein a vertically-swinging breech-block working on a curved recoil-abutment is employed, in conjunction with a swiveling recoil-plate, a cartridge-shell extractor, and a lever-catch for fastening the breech-plug in place ready for firing the piece.

My present object is to improve said fire-arm, and to secure greater simplicity, safety, and solidity by arranging the hammer, the trigger, and the spring centrally in the plane of the axis of the barrel, and constructing these parts in such manner that these three pieces alone constitute the whole of the lock, as will be hereinafter explained; also, by having the hammer pass centrally through a slot made through the breech-plug arm, and applying a catch to the rear end of said arm, so that in the act of full-cocking the hammer the breech-plug will be brought in position for firing, and held positively in this position; also, by applying the spring which operates upon the rear lever-catch to the frame of the piece beneath the tang in such manner as to press against the rounded nose of the said

catch when the breech-block is in position for firing, thereby holding the catch positively in place, but allowing it to be readily released by raising the rear end of its lever, as will be hereinafter explained; also, by forming a concave seat or abutment in the frame at the rear termini of the side cheeks containing the breech-plug, and so curving the rear end of the breech-plug to correspond with such concave seat that the center of such curves shall be in the horizontal plane of the axis of the barrel, and shall also be the axis about which the breech-plug oscillates, thereby preventing the force of recoil from having any tendency to throw the breech-plug out of its place, but allowing the breech-plug to be readily removed from the piece by withdrawing the pivot-pin, as will be hereinafter explained; also, by the use of a self-holding pin, about which the breech-plug oscillates, which is so constructed that it renders unnecessary the use of a screw-pin; also, by adapting a spring extracting device, which operates in harmony with the opening movement of the breech-plug to eject the cartridge-shells; to serve, also, as a means for raising the forward end of said plug, and holding a cartridge in its chamber after its insertion, and before the plug is brought home by the act of cocking, as will be hereinafter explained; also, by constructing on that end a centrally-arranged cartridge-extractor, which operates directly upon the rims or flanges of the cartridge-shells for extracting these shells, so as to afford a firm support for said rims, which will resist any tendency that there might be to burst these shells at these points by the force of the gases or by the extraction of the shells, as will be hereinafter explained; also, by combining a centrally-arranged firing-pin with a swinging breech block and swiveling recoil-plate in such manner that the latter will be held in place by said pin when the breech-block is removed from the piece, all as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the wooden stock of the piece, which is suitably adapted for receiving and having firmly secured to it the frame B. A' is a

swelled portion of this stock, which is located immediately below the shell-extractor G, and affords a chamber for this extractor to play in, and also a means for firmly grasping the stock forward of the trigger-guard when the piece is brought up to the shoulder for firing.

B is the frame, consisting of a re-enforce formed on its forward end, into which the rear end of the barrel is secured, by screwing or otherwise; two parallel cheeks, *a a*, between which the breech-plug C is supported laterally; a solid recoil-shield or abutment at the termini of the cheeks; two cheeks, P, between which the hammer and trigger are held, and a tang, B.

In the schedule annexed to my Letters Patent No. 65,607, I described a convex abutment formed at the termination of the side cheeks of the frame, with a concave seat formed in the rear end of the swinging breech-piece to receive said abutment. I now form a concave seat, *b*, in the abutment, and a curved bearing, *b'*, of corresponding curve, on the rear end of the breech-plug, and I connect the plug C to the frame B by a pivot key-pin, *p*¹, whose axis intersects transversely the longitudinal axis of the barrel, and whose axis is the center from which the said curves are produced, and about which the breech-plug swings.

The pivot key-pin *p*¹ is a short cylindrical pin, which passes transversely through one of the cheeks *a*, and partially through the breech-plug, and is confined in place partly by a tenon, *r*, fitting into a groove or recess made in the said cheek-piece, and partly by a spring-finger, *p*, having a stud, *p*², on its free end, that springs into a depression made in the outer face of the cheek. This forms a self-retaining pivot-pin, which is better than a screw for the purpose intended. The pin or key is inserted into its place while the spring-finger is held perpendicular to the axis of the piece; then, by turning the pin one-quarter around, the tenon *r* will be received by its recess and the stud *p*² will enter its depression.

The breech-plug C is grooved out on top to form a guide for the cartridges while inserting them into their chamber when this plug is in the position shown in Fig. 3, and this plug has a rear extension, C', formed on it, which is slotted at S, and which has pivoted to its rear end a lever-catch, J J'. The extension C' forms a lever or handle for moving the breech-block, and it is so curved as to lie closely upon the tang B' when the breech-plug is closed, as shown in Fig. 1.

The front end of the breech-plug has a recoil-plate, F, connected to it by a joint, *f*, as fully described in my Letters Patent No. 65,607.

By having the rear convex end of the breech-plug fitted into a concave seat the curve of which is concentric to the axis of the pivot key-pin *p*¹, and by arranging this key-pin so as to intersect transversely the longitudinal axis of the barrel K, I accomplish two very important objects, to wit: the force of re-

coil will not have a tendency to throw the breech-plug either up or down, and by raising the arm C far enough after the key-pin *p*¹ is removed the breech-plug will leave its place and may be removed.

The key-pin *p*¹ is used for keeping the breech-plug in place while swinging the plug C, and it does not receive the shock of the discharge, for the shock is resisted entirely by the rear concave abutment *b*.

D is the firing-pin, which is constructed with a reduced forward end, *d*, and with its rear end *d'* turned upwardly and backwardly, so as to be struck squarely by the hammer E, as shown in Fig. 1. The striking portion *d* of the pin D is arranged so that its axis coincides with the axis of the barrel, and so as to have a limited longitudinal play. The spring V will move this pin D back after it is struck by and relieved from the hammer. Its reduced end *d* passes through a hole made through the rocking recoil-plate F, which will prevent this plate F from casually dropping out of place while removing this breech-plug from the piece, and by a shoulder formed in the breech-block and upon the firing-pin this pin is prevented from penetrating a cartridge-shell when struck by the hammer.

The hole through the recoil-plate F, through which the firing-pin passes, should be made oblong to allow this plate to receive a free rocking movement while moving the breech-block.

G is the cartridge-extractor, which is arranged in a recess made into the rear end of the re-enforce, directly below the axis of the same. This extractor G is pivoted at *g*, and its upper end is grooved at *i*, so as to form, when in the position shown in Fig. 1, a continuity of the groove for receiving the rim or flange of a cartridge-shell, and thus afford a firm support for the said flange at a point where it would be liable to give way by the force of the gases if such support were not provided. The rear edge of this extractor is made concave, so as to allow the recoil-plate F to descend freely, and the rear end, *g'*, of this extractor, which extends below the pivot *g*, is reduced and extended back beneath the breech-plug, so as to form a spring, which will serve to throw up the front end of the breech-plug after the insertion of a cartridge into its chamber far enough to prevent such cartridge from dropping out of place before the breech-plug is brought home by the act of cocking the hammer.

Directly in rear of the solid concave abutment *b*, and between the cheek-pieces P, is the hammer F, which is arranged so as to vibrate about pivot *e* in the vertical plane of the breech-block C and barrel K. This hammer is constructed with a notched or toothed segment, E', below its pivot *e*, against which teeth the forward tapered end *t* of the trigger T will catch, for holding the latter at half-cock or full-cock.

I employ a simple bifurcated spring, H, for acting upon both the hammer and the trigger.

as shown in the drawings. This spring consists of two elastic arms, h h^1 , terminating at their connected ends in a rounded portion, adapted to fit and be held in place by a concave seat, h^2 , formed in a block, I.

The spring-arm h acts upwardly against the tail-piece e' of the hammer, and the spring h^1 acts downwardly upon the rear arm of the trigger T, so as to press its rear portion against the segment portion E of the hammer.

It will be seen, by reference to Figs. 1 and 3, that by pinching the free ends of the spring H together, and moving this spring forward out of its seat h^2 , it can be detached from the piece. A similar manipulation will restore the spring to its proper position again.

The block I, which is secured to the tang B', not only affords a seat for the rear end of the double spring H, but it also serves to hold a spring, j , in place, which acts upon catch J, as shown in Fig. 1, to prevent this catch from casual detachment from the tang B', through which it hooks.

The catch J is constructed on the forward end of a curved lever, J', and pivoted at j^2 to the rear end of the lever C', and serves to hold the latter down in place, as shown in Fig. 1, when the breech-plug is in its place.

By raising the lever J' the catch will be clear of the tang B', and will allow the breech-plug to be adjusted, as shown in Fig. 3, for the withdrawal of a shell and the insertion of a cartridge.

In my Patent No. 65,607, a lever-catch similar to the one shown in the accompanying drawings was used; but the spring which acted upon said catch was applied to a lever corresponding to the one lettered C'.

I now apply the spring beneath the tang B', and secure it in place by means of the block I.

The upper portion or thumb-piece of the hammer E passes through an oblong slot, s , made centrally through the breech-lever extension C', which slot is of such length, with reference to the movement of the hammer, that in the act of full-cocking this hammer it

will press against the rear termination of the slot, and positively force the lever C' down in place, and cause the nose j^1 of the lever-catch to hold this lever and its breech-plug in place for safely firing the piece. The piece cannot, therefore, be fired until the breech-plug is locked or held in place by the lever-catch.

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

1. Arranging the hammer, the trigger, and spring H centrally in the plane of the axis of the piece, in combination with a double main-spring, acting directly on both the cock and trigger, to operate substantially as described.

2. So arranging the hammer centrally in relation to the slot s of the breech-plug lever C' that the act of cocking the hammer will positively adjust the breech-plug in position for firing, substantially as described.

3. The lever-catch J J'; applied to the lever C', in combination with a spring, j , which is applied beneath the tang B' of the frame B, substantially as described.

4. The concavity b at the rear of the cheeks a , receiving the rear end of a swinging breech-plug, C, which is pivoted between said cheeks, and which carries on its forward end a self-adjusting recoil-plate, F, substantially as described.

5. A swinging breech-plug, in combination with a recoil-plate, F, on its forward end, and a centrally-arranged firing-pin, substantially as described.

6. A centrally-arranged extractor, G, in combination with a spring, g' , formed on its opposite end, substantially as and for the purposes described.

7. The cam key-pin r , about which the breech-plug swings, when made with a spring-arm, p , and stud p^2 on the end thereof, in the manner and for the purpose specified.

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