

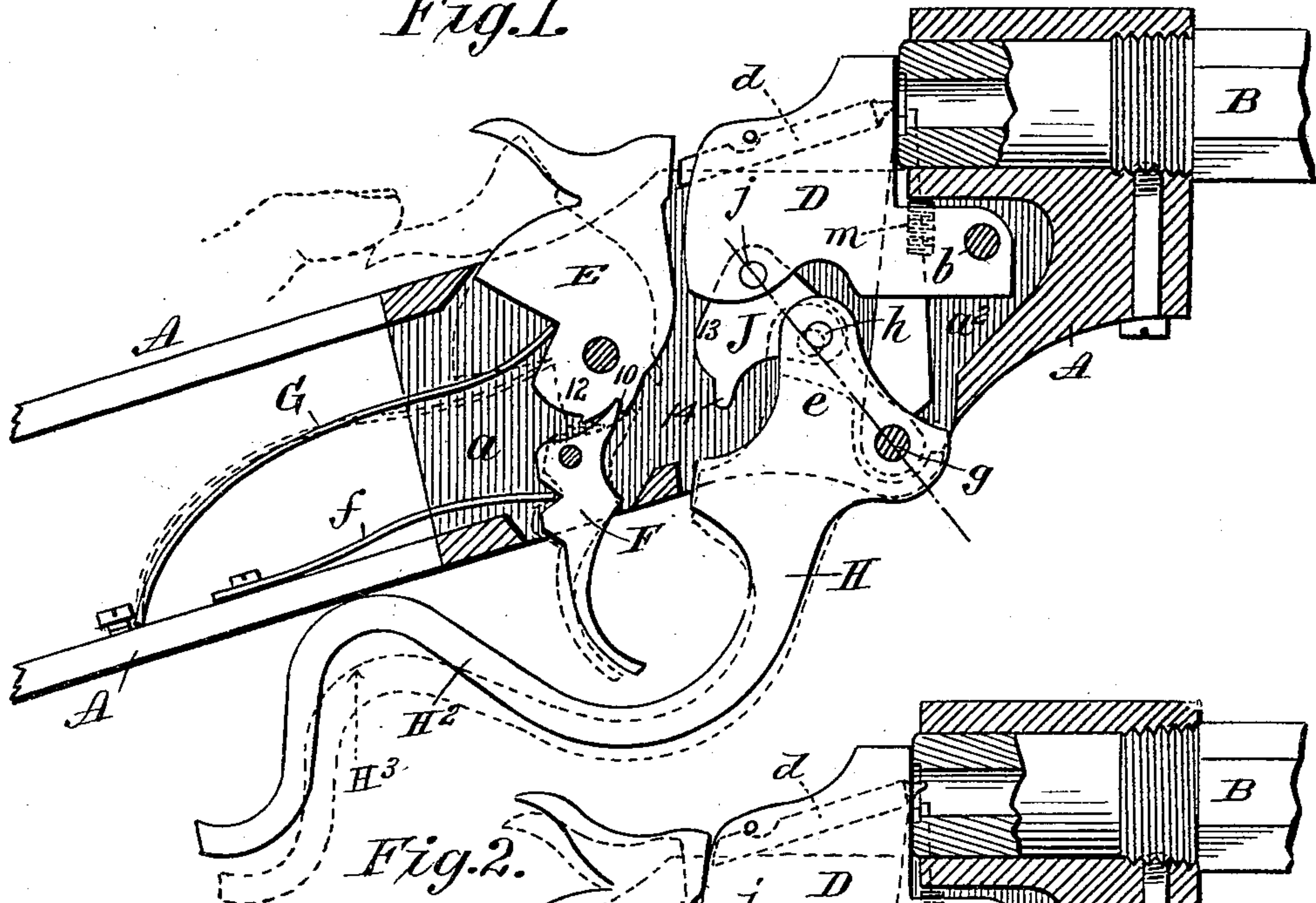
(No Model.)

E. H. ELDER.  
BREECH LOADING FIREARM.

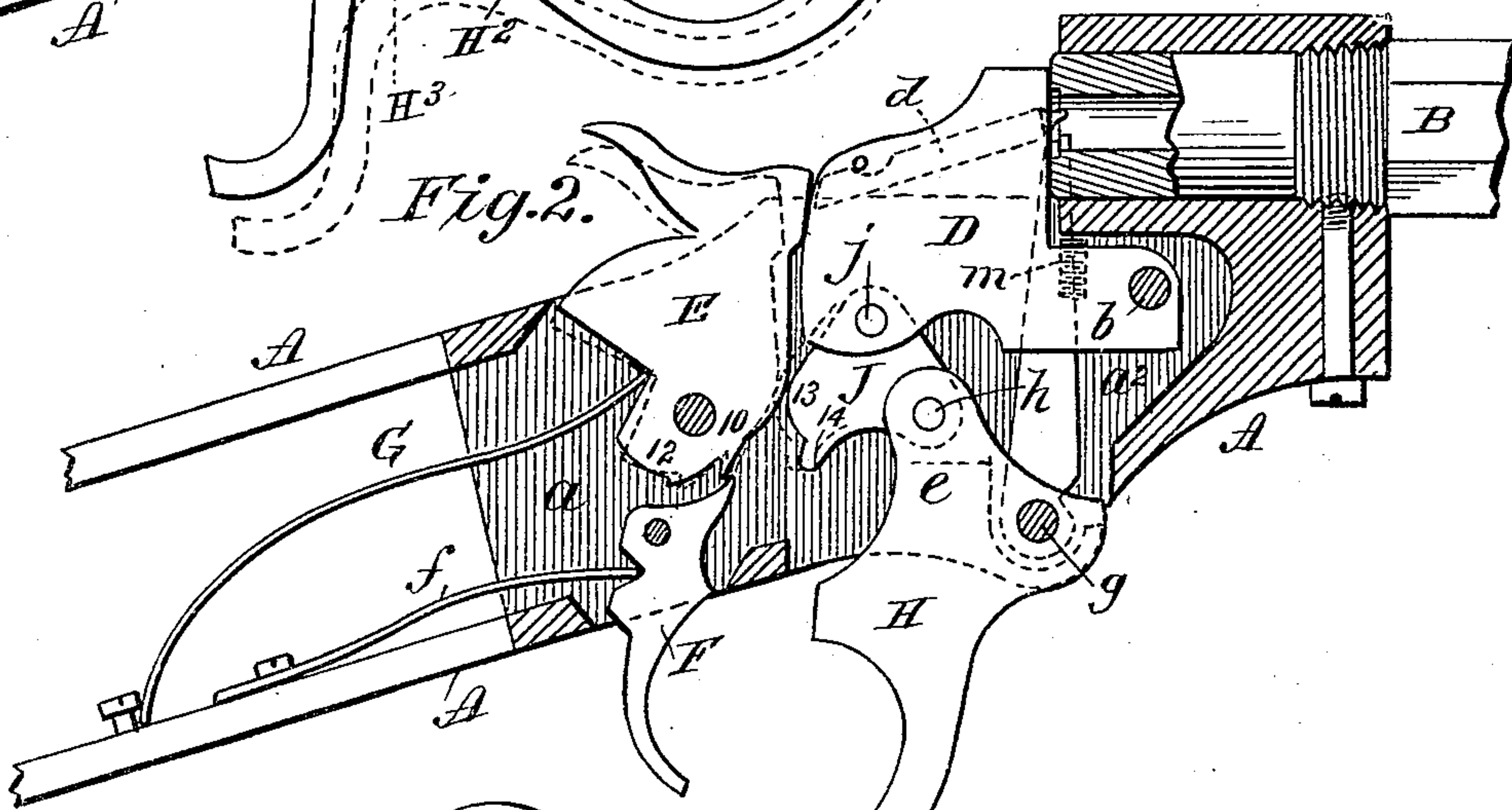
No. 518,448.

Patented Apr. 17, 1894.

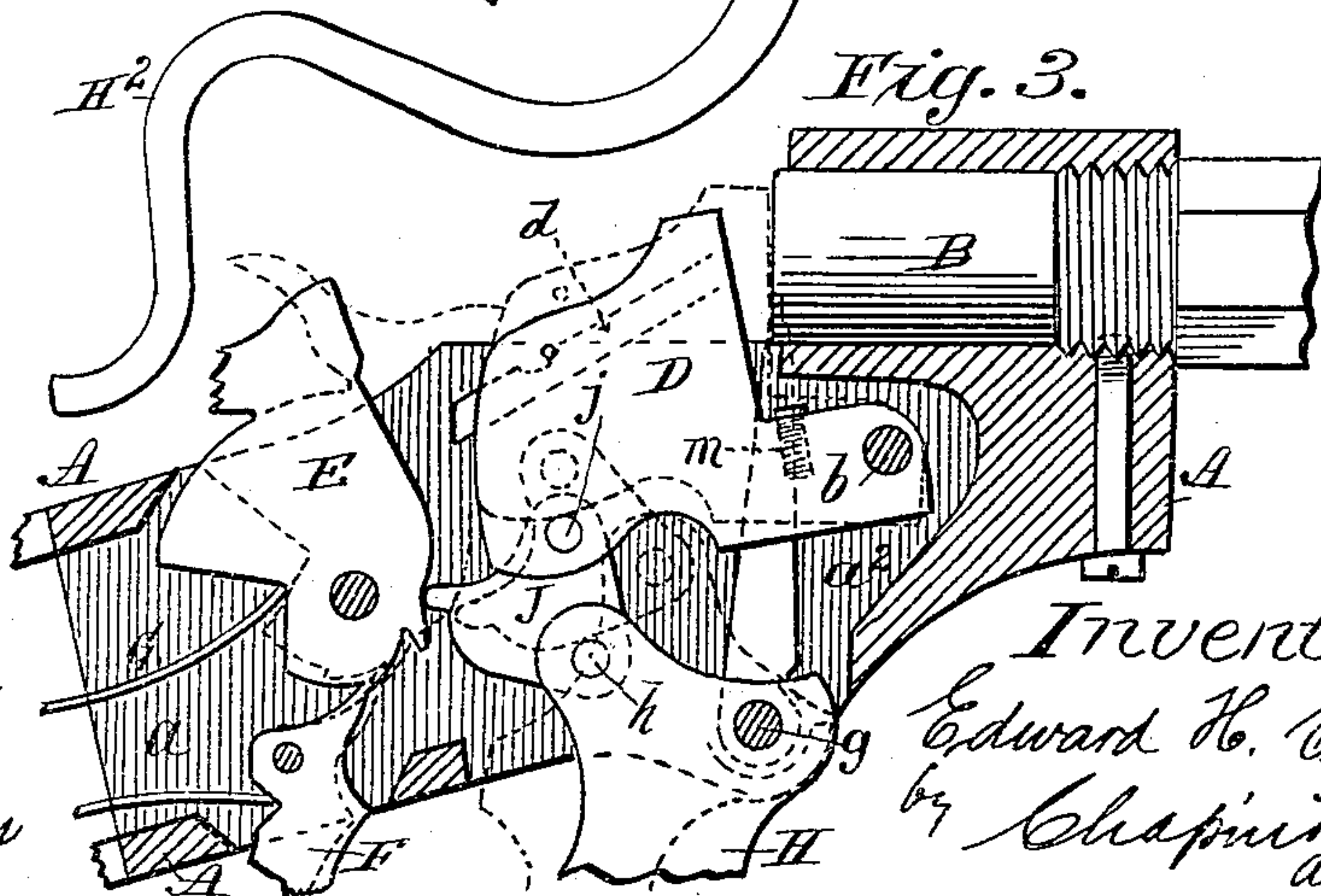
*Fig. I.*



*Fig. 2.*



*Fig. 3.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## BREECH-LOADING FIREARM.

SPECIFICATION forming part of Letters Patent No. 518,448, dated April 17, 1894.

Application filed January 6, 1894. Serial No. 495,913. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD H. ELDER, a citizen of the United States of America, residing at Chicopee, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Breech-Loading Firearms, of which the following is a specification.

This invention more particularly relates to the mechanism for operating the breech block, and for cocking or half cocking the gun during the movement of the breech block, and to the mechanism for regulating the "snap" action of the operating lever.

In the accompanying drawings, Figure 1 is sectional elevation, longitudinally through the portion of the gun comprising the breech and lock mechanism showing the gun as having the breech closed and the lock as in the position to which the parts thereof may be automatically brought, the hammer being shown at half-cock, the position of full cock, to which it may be set by hand, being indicated in dotted lines. Fig. 2 is a view similar to Fig. 1 showing the gun as just having been fired with the operating lever but partially swung down, the dotted line indications showing the half-cocking action upon the next slight further swinging of the operating lever. Fig. 3 is a substantially similar view of the same parts,—the link, connecting the actuating lever and breech-block, and which also effects the cocking, being here shown as reversed from the position seen in the preceding figures, whereby the movement of the lever to open the breech will effect a full cocking of the hammer, instead of a setting at half-cock, as in the arrangement shown in said preceding figures.

In the drawings, A represents the frame constructed substantially as known in the class of fire-arms to which this invention pertains, it receiving the breech-end of the barrel and has the chamber or mortise, *a*, as common, for the accommodation of the lock mechanism and breech-block, D, which latter is shown as having the forward angular extension, *b*, pivoted in a portion of the chamber or mortise, *a*, seen at *a*<sup>2</sup>, which extends under the breech.

The hammer, E, is pivotally mounted in a common manner to strike the firing pin *d*

playing through the breech-block, the hammer having the two notches, 10 and 12, with which the trigger, F, may engage for holding the hammer at half, or full-cock, as plain.

G is the main-spring, and *f*, is the trigger-spring.

H is the actuating lever, which, by the pivot, *g*, is hung to the under part of the frame within the recess, *a*, thereof, this lever having the handle-extension, H<sup>2</sup>, which is suitably curved, as usual, to constitute the trigger-guard, and to form by its tail, or extremity, a convenient part to be grasped for swinging the lever. The lever has, above the pivot, *g*, a nose, or extension, *e*, to which at *h*, is pivoted the lower part of a link, J, which at its upper part, as seen at *j*, is pivoted to the breech-block, D, directly, so that the swinging movement of the latter will positively swing the breech-block down to open, or upwardly, returning, to close the breech. This link, J, has, at its rear edge, the prominent or "full" formation, seen at 13. The link part, J, as seen, is in approximately the form of an equilateral triangle with rounded corners. On noting the position seen in Fig. 2,—in the full lines,—wherein the hammer is against the closed breech-block and noting that the lever, H, is only partially down-swung, it will be seen that the prominent part, 13, of link, J, is in abutment against the forwardly rounded edge portion of the hammer so that the further movement of the lever, H, will cause next a slightly further rearward movement of the link, as indicated by the dotted lines whereupon the hammer will be set at half-cock, and then, as the lever continues its swinging movement to open the breech, the link, J, will have a changed direction of movement, moving forwardly away from the hammer. Now, if the gun shall be cocked by hand, and is fired (after the lever and breech, of course, have been returned to their normal positions) the operation of the lever again to open the breech will, of course, again set the hammer at half-cock.

The link, J, has at its rear lower portion, below the prominent edge, 13, another extension, 14, in the form of a more decided nose. Now, by removing the pivots, *h* and *j*, and overturning the link-piece, J, end for end, so that the perforation which had been traversed



by the pivot, *h*, at the lever, is now traversed by the pivot, *j*, at the breech-block and vice versa, the said more prominent protuberance comes into a coacting relation with the hammer, (the other portion, 13, being now removed from such coacting relation)—see Fig. 3—and now the movements imparted to the link piece, *J*, as the lever is down-swung will cause through the portion, 14, the full-cocking of the hammer, as may be preferred by some sportsmen. Therefore, without the interchange of any part,—but merely the reversal of the pivotal engagements of one of the parts, the gun may be automatically set at half-cock, or at full-cock, as purposed, in consequence of the operation of the movable breech-block by the actuating lever.

In the drawings, the breech-block is shown as provided with a screw, *m*, which is set in a socket, suitably tapped therefor, in the upper edge of the angular breech-extension, *b*. This screw is to be so adjusted that it will contact with the socketed framing of the arm just as the impact edge of the breech-block comes to firm bearing against the rear end of the barrel, see Fig. 1. Now it will be seen that the breech-block and its operating lever are so formed and arranged relatively to the framing or immovable part of the arm, that as the lever swings back toward, and for the purpose of, resuming its normal position, just before contacting with the frame, it brings the breech-block to its firm rest at the breech of the arm. And the pivots, *j*, *h*, and *g*, are in a common line. This common and imaginary line, and which may be termed the line of dead centers, is shown by the broken line in Fig. 1: it was just stated that the pivots, *j*, *h*, and *g*, come to this common line just before the lever, reaches the limit of its return swing, which position of the rear portion of the lever is approximately indicated by the dotted line at *H*<sup>3</sup>, in Fig. 1; and when these pivots are in line there is an impediment to the swinging movement of the lever, to overcome which to bring the lever to its position of rest and to bring the intermediate pivot, *h*, forward of the dead center line,—at which position it is seen in Fig. 1,—quite a little increased force is necessary. This imparts to the lever the desirable capabilities of snap, or detent device for holding the lever closely up under the frame, and all without the necessity of any extraneous or specially provided devices. Now as the pivots may possibly become worn, as well as the perforations within which they are set so that this snap action will be thereby impaired, by adjusting the screw, *m*, outwardly such wear may be compensated for, and the bind of the pivots, when in line,—requiring the additional force to crowd the intermediate one beyond such line—may still be established. That is to say, the breech block may

be stopped in closing, in such position that the pivot *j* will not rise as high as it would otherwise do. The link and the lever then form a toggle, and as the pivotal centers *j*, *g*, are fixed when the breech is thus held, the toggle will bind between these centers with greater or less friction according to the position of the pivot *j*. When the pivot, *h*, has swung past the straight line connecting the centers *j*, *g*, it can only be swung back, (to open the breech) by overcoming this friction. Of course the screw, instead of being set within a socket in the breech-block might as well be set within a socket in the adjacent framing, or immovable part of the arm, next to the breech-block.

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

1. In a breech loading gun, the combination of the pivoted breech block, pivoted lever, and link pivoted to both breech block and lever, the pivot connecting the lever to the link, resting, when the breech block is closed, slightly in advance of a straight line between the pivots which connect the lever to the frame and the link to the breech block, substantially as described.

2. In a breech loading gun, the combination with the pivoted breech block, pivoted lever, and link pivoted to the block and lever, of a movable abutment by which the breech block may be stopped in its closing position, whereby the friction of the link and lever in closing or opening the breech may be regulated, substantially as described.

3. In a breech loading gun, the combination with the pivoted breech piece, pivoted lever, and a link pivoted to both said parts (said pivots being nearly in line when the breech is closed) of a set screw adjustable with relation to the breech-block and acting as an abutment to determine its closed position, whereby the relative position of the pivots and consequent strain in starting the breech open may be regulated, all substantially as described.

4. In a breech loading gun, the pivoted breech, pivoted lever, and reversible link connecting said breech and lever, said link having a plurality of cam projections of unequal length, (one or the other of which cams may be made operative by the reversal of said links as desired) and the hammer having some part in the path of movement of one of said cam projections, whereby the hammer may be swung back by the link movement, all combined substantially as described.

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Witnesses:

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