(No Model.) 3 Sheets—Sheet 1.

J. M. & M. S. BROWNING.

BREECH LOADING FIRE ARM.

No. 359,917. Patented Mar. 22, 1887.

Fig. 1

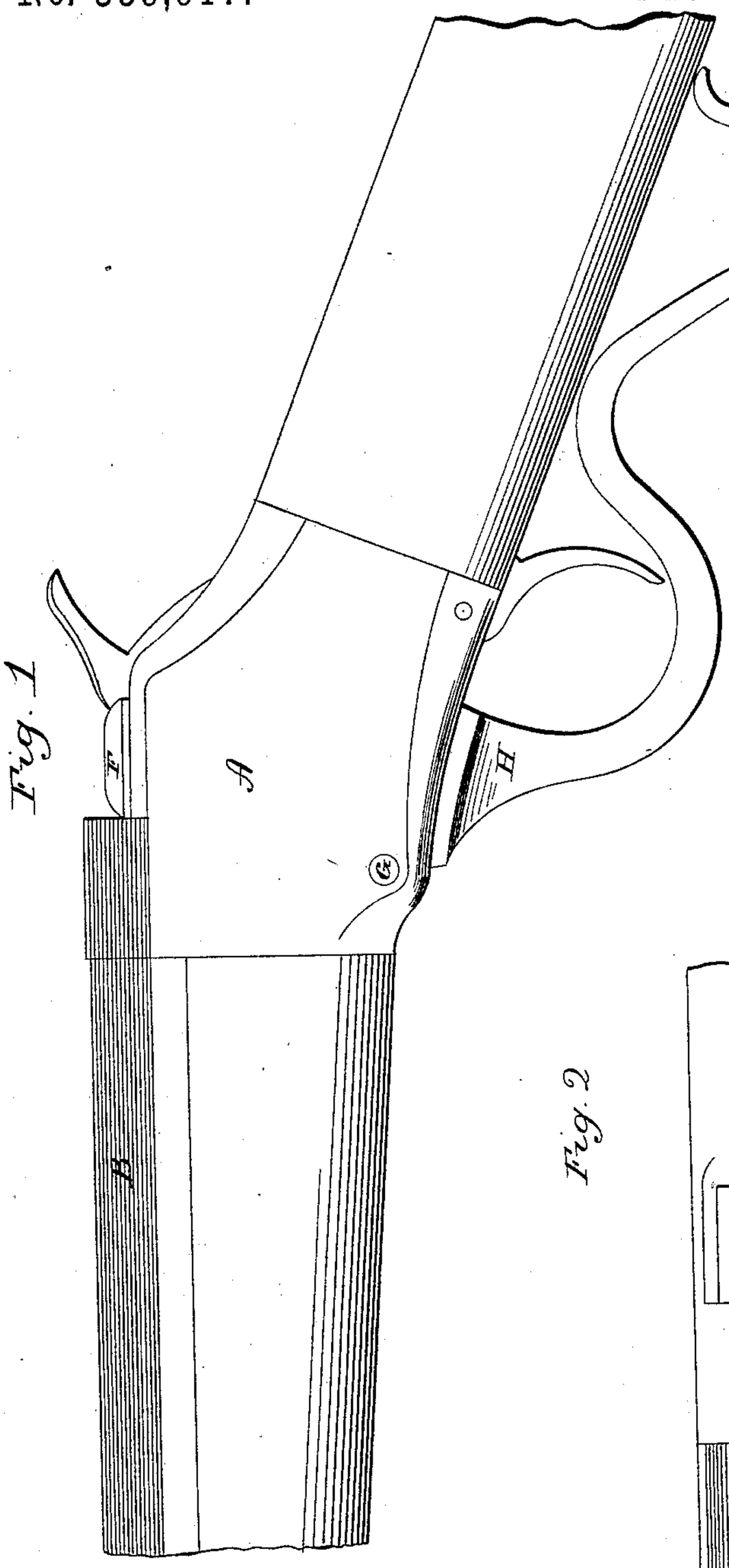
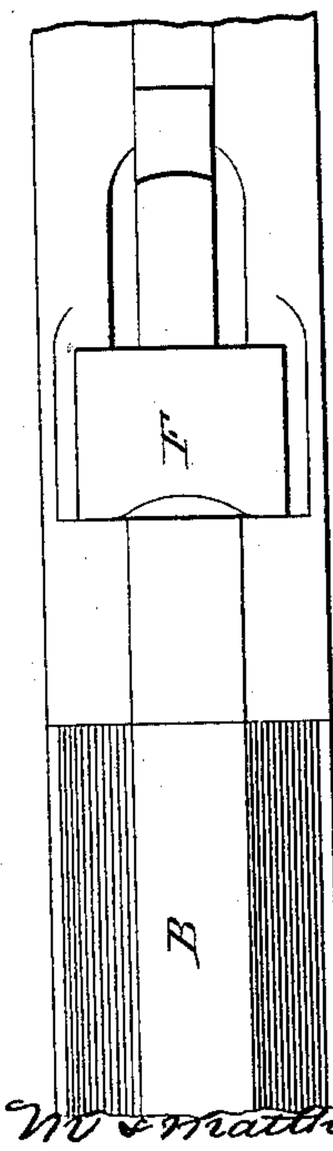


Fig. 2



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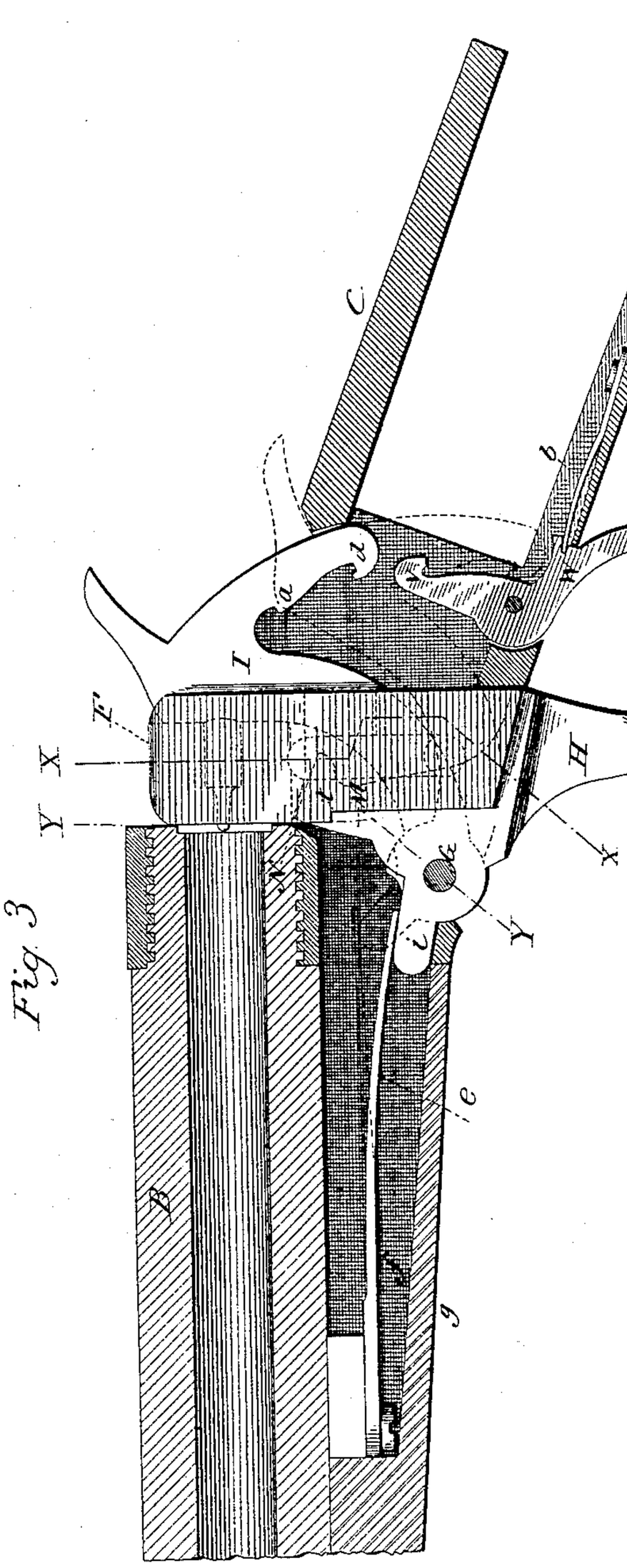

Fig. 3

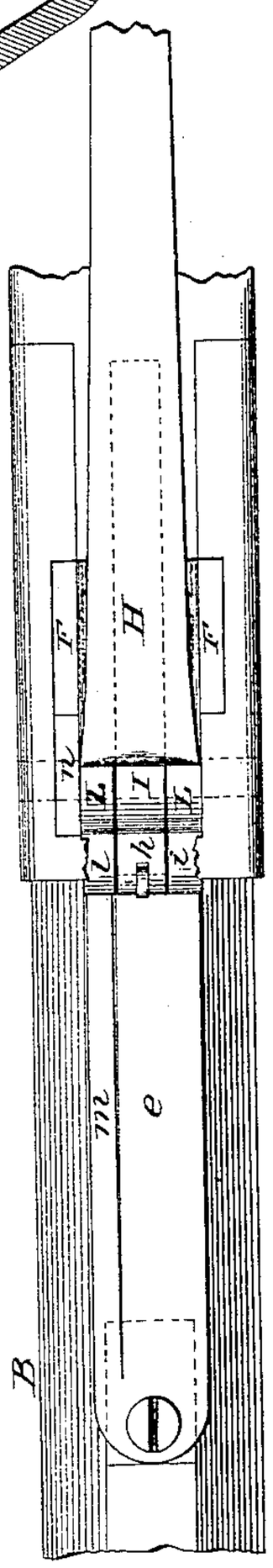

Fig. 4

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BREECH LOADING FIRE ARM.

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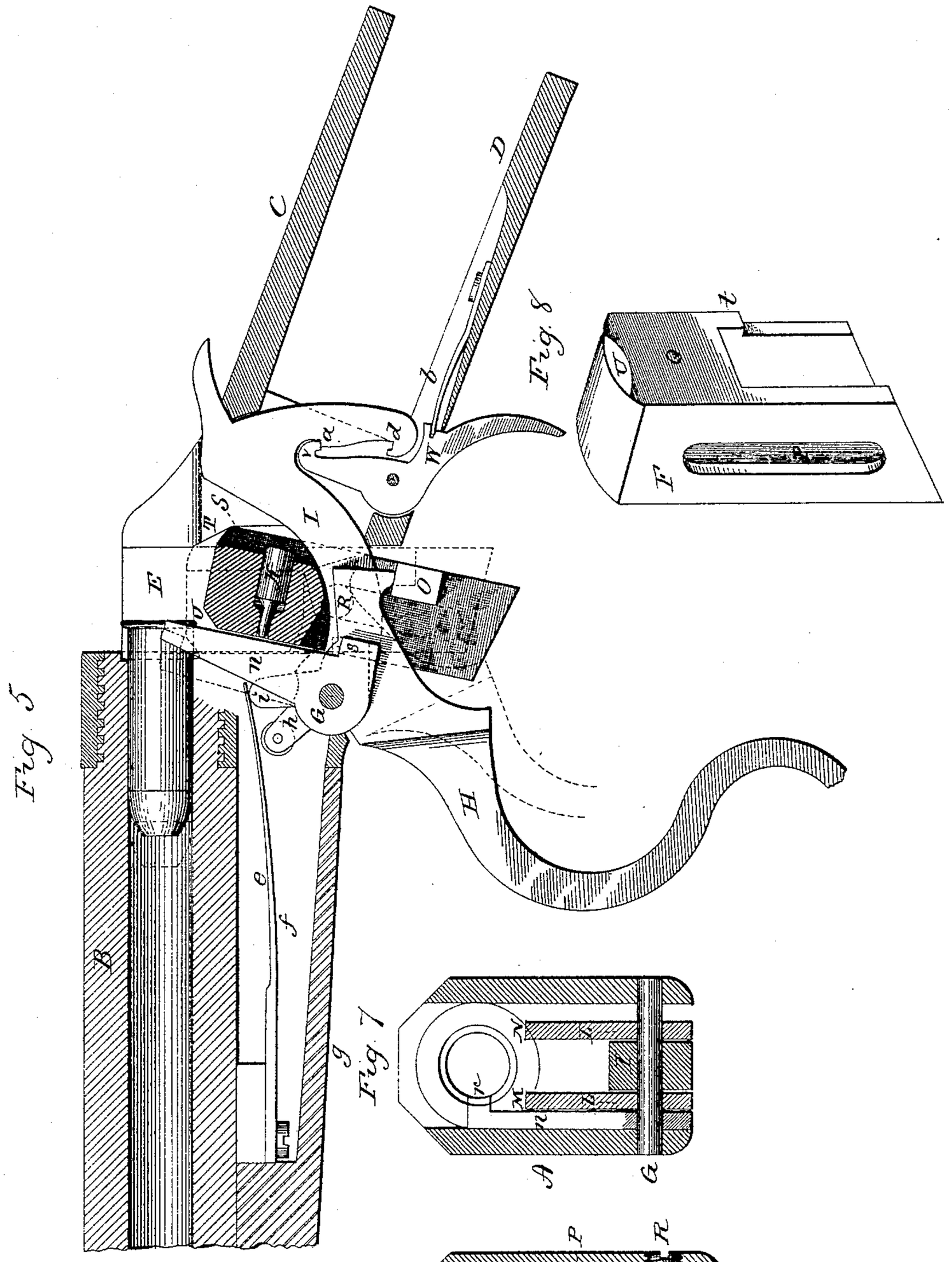

Fig 5

Fig. 8

Fig 7

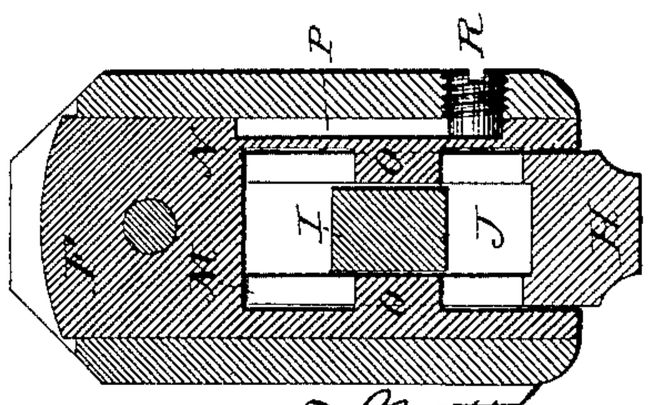

Fig. 6.

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UNITED STATES PATENT OFFICE.

JOHN M. BROWNING AND MATTHEW S. BROWNING, OF OGDEN CITY, UTAH TERRITORY, ASSIGNORS TO THE WINCHESTER REPEATING ARMS COMPANY, OF NEW HAVEN, CONNECTICUT.

BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 359,917, dated March 22, 1887.

Application filed September 6, 1886. Serial No. 212,823. (No model.)

To all whom it may concern:

Be it known that we, JOHN M. BROWNING and MATTHEW S. BROWNING, of Ogden City, in the county of Weber, Territory of Utah, have invented a new Improvement in Breech-Loading Fire-Arms; and we do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the arm, the forward portion of the barrel and the rear portion of the stock broken away; Fig. 2, a top view of the same; Fig. 3, a longitudinal section through the receiver and barrel, showing side view of the mechanism of the arm in the closed position; Fig. 4, an under side view looking up, the fore end removed; Fig. 5, a longitudinal central section through the receiver and through the breech-piece, showing the parts in the open position; Fig. 6, a vertical section on line *x x* of Fig. 3, looking forward; Fig. 7, a section on line *y y* of Fig. 3, looking forward; Fig. 8, a perspective view of the breech-block detached, looking from the right.

This invention relates to an improvement in that class of breech-loading fire-arms in which the breech-block is arranged in a vertical recess in the receiver at the rear of the barrel, and so as to move downward in opening and upward in closing, actuated by a lever beneath the barrel, the object of the invention being to bring the entire mechanism of the arm into a compact form and simple in construction.

A represents the receiver, to the forward end of which the barrel B is secured, and from the rear end a tang, C, extends from the upper side, and a corresponding tang, D, below, by which the receiver is secured to the stock. In the receiver at the rear of the barrel is a vertical recess, E, in which the breech-block F is arranged to slide up and down. When in its up position, as seen in Fig. 3, it fills the space in rear of the barrel and closes the rear end to resist recoil; but when thrown down, as in Fig. 5, the cartridge-chamber in the barrel is open to the rear for the insertion of the cartridge, substantially as in arms of this character.

On a pivot, G, in the receiver, forward of the breech-block, the lever H is hung, said lever extending downward and rearward to form a trigger-guard, as well as a handle for the convenient manipulation of the lever. Upon the same pivot, G, the hammer I is hung, it extending backward through an opening, J, in the breech-piece, as seen in Figs. 5 and 6, and so that when the breech-piece is closed the nose of the hammer may strike the firing-pin K, arranged in the breech-piece, and which at that time is in line with the primer of the cartridge, as indicated in Fig. 3.

The hub of the lever H is divided, as seen in Fig. 4, and between the two parts L L of the hub of the lever (see Fig. 4) the hammer I stands, and as also seen in Fig. 7. From each of the parts L L of the hub of the lever H an arm, M, extends upward when the lever H is in its closed position, and so as to bear against the top of the opening N in the breech-piece, as seen in Fig. 3, and so as to act as a brace to hold the breech-piece in its up or closed position. As the lever is turned downward to open the breech-piece, the arm M passes rearward and downward from the bearing against the top of the opening or shoulder N, and, working through the opening in the breech-piece, the arm K strikes the shoulders O below in the opening in the breech-block, and then under the continued downward or opening movement of the lever H the arms so in contact with the shoulders O in the breech-piece force the breech-piece to its down or open position, as seen in Fig. 5.

In one side of the breech-piece is a vertical groove, P, (see Fig. 6,) indicated in broken lines, Fig. 5, and which works upon a stud, R, fixed in the side of the receiver, this stud permitting the free up-and-down movement of the breech-piece; but as the breech-piece approaches its extreme opening movement it comes to a bearing upon the stud R, as indicated in Fig. 5, and then, as the shoulder O is in rear of the stud R, the action of the arm bearing upon the shoulder O is to turn the breech-block rearward upon the stud as its pivot; and that the breech-block may be so turned to the rear, the receiver is constructed with a recess, S, upon the rear side of the breech-piece opening below the line of the barrel, so that as the

breech-piece approaches its open position the arm of the lever, acting upon the shoulder O, will turn it rearward into the recess and away from the front surface of the breech-block opening, and so that it stands in an inclined position from the rear end of the barrel, as seen in Fig. 5.

The upper end of the recess S is inclined, as at T, and so that as the lever H is returned to close the breech-block the first part of the movement will bring the upper rear side of the breech-piece against the inclined surface T, which will act as a cam upon the breech-piece, tending to throw it forward as it rises into the position seen in broken lines, Fig. 5, and bring it into line with the opening in the breech-piece above. This backward and forward movement of the breech-piece is designed to prevent conflict between the breech-piece and the rear end of the cartridge in its closing movement should the cartridge not be completely inserted. The rear movement of the breech-piece takes its front face to the rear of the plane in which the cartridge stands when in the barrel. If, therefore, the cartridge should not be fully entered—say as seen in Fig. 5—the breech-block, as it commences its rise and moves forward, will strike the rear end of the cartridge and force it to its home position in the barrel and out of the path of the rising breech-piece, as indicated in broken lines, Fig. 5. To insure this action of the breech-piece, the upper forward edge of the breech-piece is inclined downward and forward, as at U, so that that inclined surface will first strike the cartridge-head and act as a cam thereon in connection with the forward movement of the breech-piece. The breech-piece rises under the action of the arms M coming against the upper surface, N, of the opening in the breech-piece, and the rise is continued until the lever is brought to its extreme closed position, with the arms M standing as a brace to hold the breech-block closed. As the breech-piece descends, the upper side of the opening through which the hammer extends strikes upon the forward surface of the hammer in rear of the pivot and forces the breech-block backward and downward with it to its extreme cocked position, where it is caught by the nose V of the trigger W engaging a corresponding shoulder, *a*, on the hammer under the action of the trigger-spring *b*. The shoulder *a* is formed on a rear extension from the hammer, and this extension is also provided with a half-cock notch, *d*. The mainspring *e* is fixed to the under side of the barrel, and is covered by the fore end, *g*, the said fore end being constructed with a recess, *f*, to form the spring-chamber, as seen in Fig. 3. The free end of the mainspring works upon an arm, *h*, which extends forward from the hub of the hammer beneath the spring, and so that as the hammer is thrown backward this arm *h* raises the mainspring, as seen in Fig. 5, and so that when free the reaction of the mainspring is imparted to the hammer to give to it the necessary force to impart its blow.

From one of the parts L of the hub of the lever an arm, *i*, corresponding to the arm *h* of the hammer, extends forward and lies beneath the mainspring, substantially as does the arm *h* of the hammer. From the other part L of the hub a like arm, *l*, extends forward beneath a second spring, *m*, corresponding to and made a part of the mainspring, so that the two lie in the same plane, as seen in Fig. 4, the two springs *m* and *e* being made from a single piece, with a slit to separate them from the rear end to a point through the forward end, but yet maintaining their union at the forward end, so that they are practically in one single piece, but yet so that either part *m* or *e* may act independent of the other.

In the opening movement of the lever the two arms *i* and *l* act together and alike—the one, *i*, upon the mainspring and the other, *l*, upon its spring *m*—and both will be raised, as seen in Fig. 3. This movement takes the power of the mainspring from the hammer and leaves it free to fall backward under the downward movement of the breech-piece. As the arms *i l* reach their extreme open position, as seen in Fig. 5, the point of bearing of the springs *em* comes slightly rearward of the pivot on which the lever is hung; hence in that position the tendency of the springs is to hold the lever and the breech-piece in their open position; but so soon as the lever H has turned toward its closed position so far as to bring the bearing-points between the springs and the arms *i l* forward of the pivot G, then the tendency of the springs is to assist the closing movement of the lever and breech-piece, and when fully closed, as seen in Fig. 3, to hold the lever and breech-piece in the closed position.

In the opening movement of the lever both the springs *e* and *m* are raised, as before described, the arm *h* of the hammer following such opening movement, as seen in Fig. 5, until the hammer is brought to the cocked position and there held by the trigger. If, now, the lever H be returned to close the breech-block, the mainspring *e* will rest upon the arm *h* of the hammer and the arm *i* of the lever H will pass on free from the spring *e;* but the spring *m* will act upon the other arm, *l*, and to the extent of its force produce the result in the closing movement before described.

To eject the cartridge we hang an ejector-lever, *n*, upon the same pivot, G, upon which the hammer and lever H are hung. This lever extends up in the side of the receiver, its nose *r* turned inward (see Fig. 7) into a position forward of the front face of the flange of the cartridge when fully seated in the barrel. This lever has a movement from the position seen in broken lines, Fig. 5, to the open position in that figure, which movement is sufficient to start and eject the cartridge. To impart this movement to the ejector-lever *n* it is con-

structed with an arm, *s*, at its hub, extending rearward, and which stands in the path of a shoulder, *t*, on the breech-piece. (See Fig. 8.) This construction of the ejector is one common and well known in connection with arms of this character. The quick movement of the breech-piece during the last part of its extreme opening movement and under the action of the mainspring gives a correspondingly quick throw to the ejector, sufficient to eject the cartridge-shell from the arm, and as usual in this class of ejectors.

We have shown and described two arms, M, as extending up from the hub of the actuating-lever, one each side of the hammer, and we prefer to employ the two, as being stronger than a single one; yet one may be omitted.

The hammer commences its rear movement by the action of the breech-piece in its descent, and such rear movement of the hammer commences immediately as the breech-piece begins its descent, the breech-block acting like a cam upon the hammer; hence it follows that the hammer can only reach the firing-pin when the breech-piece is fully closed, for until so fully closed it stands in the path of the hammer. The hanging of the hammer forward of the breech-block and extending it through the breech-block therefore constitutes a material element of safety in the use of the arm.

By the construction which we have illustrated and described the mechanism of the arm is brought into a very small space and the weight of the arm correspondingly reduced. The power of the mainspring being removed from the hammer by the action of the lever H reduces to a very considerable extent the power required in the opening movement of the breech-piece. The arm is therefore easily operated, and is not only simple and cheap in construction, but effective and secure in operation.

We claim—

1. In a breech-loading fire-arm, the combination of a vertically-reciprocating breech-block, a lever hung upon a pivot in the receiver, forward of the breech-block, one arm of said lever extending from the hub of the lever and forming the trigger-guard and handle, the second arm extending from the hub into a recess in the breech-block, the top of said recess in the breech-block forming a shoulder, against which the said second arm may bear when the breech-block is closed, and so as to support the breech-block in its closed position, the breech-block also constructed with a shoulder below the said bearing-shoulder, against which said second arm may strike in the opening movement of the lever to impart the downward movement to the breech-block, the said breech-block constructed with a vertical groove in one side, and the receiver provided with a corresponding stud, and over which said stud the said groove in the breech-block will work in the descent of the breech-block, the receiver constructed with a recess in the rear face of the opening in the receiver through which the breech-block works, the said recess being below the line of the barrel, and the said recess permitting a rearward tipping movement of the breech-block at its extreme open position, substantially as and for the purpose described.

2. In a breech-loading fire-arm, the combination of a vertically-reciprocating breech-block, a lever hung upon a pivot forward of said breech-block, one arm of the said lever forming the trigger-guard and handle by which the lever is worked, the other arm extending from the hub into an opening in the breech-block, and adapted to bear against the top of said opening in the closing movement of the breech-block and to serve as a brace against the top of said opening when the breech-piece is in its closed position, the said breech-block also constructed with a shoulder below the top of said opening, against which said second arm of the lever will strike in the opening movement to impart the descent to the breech-block, a hammer hung upon the same pivot as the lever, forward of the breech-block, and extending rearward through an opening in the breech-block, with a mainspring forward of the pivot upon which the hammer is hung and arranged to bear upon the hammer forward of the pivot, and the trigger hung in rear of said breech-block, adapted to engage said hammer in its cocked position, substantially as described.

3. In a breech-loading fire arm, the combination of a vertically-reciprocating breech-block, a lever hung upon a pivot forward of said breech-block, one arm of said lever forming the trigger-guard and handle by which the said lever is operated, the hub of said lever divided, a hammer hung upon the same pivot as the lever and between the two parts of the hub, the said hammer extending rearward through an opening in the breech-block, a trigger adapted to engage said hammer in its cocked position, a second arm extending from the hub of said lever into said opening in the breech-block, adapted to work therein to impart the up-and-down movement to the breech-block as the said lever is turned upon its pivot, the said second arm arranged to bear upon the top of the opening in the breech-block as a brace when in its closed position, the said two parts of the hub of the lever constructed each with an arm extending forward, and the hammer also constructed with a like arm extending forward, a mainspring arranged to bear upon one of the said forward arms of the lever and upon the forward arm of the hammer, and a second spring acting independent of the mainspring and arranged to bear upon the other arm forward of the lever, substantially as described.

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