(No Model.) 3 Sheets—Sheet 1.

J. M. BROWNING.

MAGAZINE FIREARM.

No. 499,005. Patented June 6, 1893.

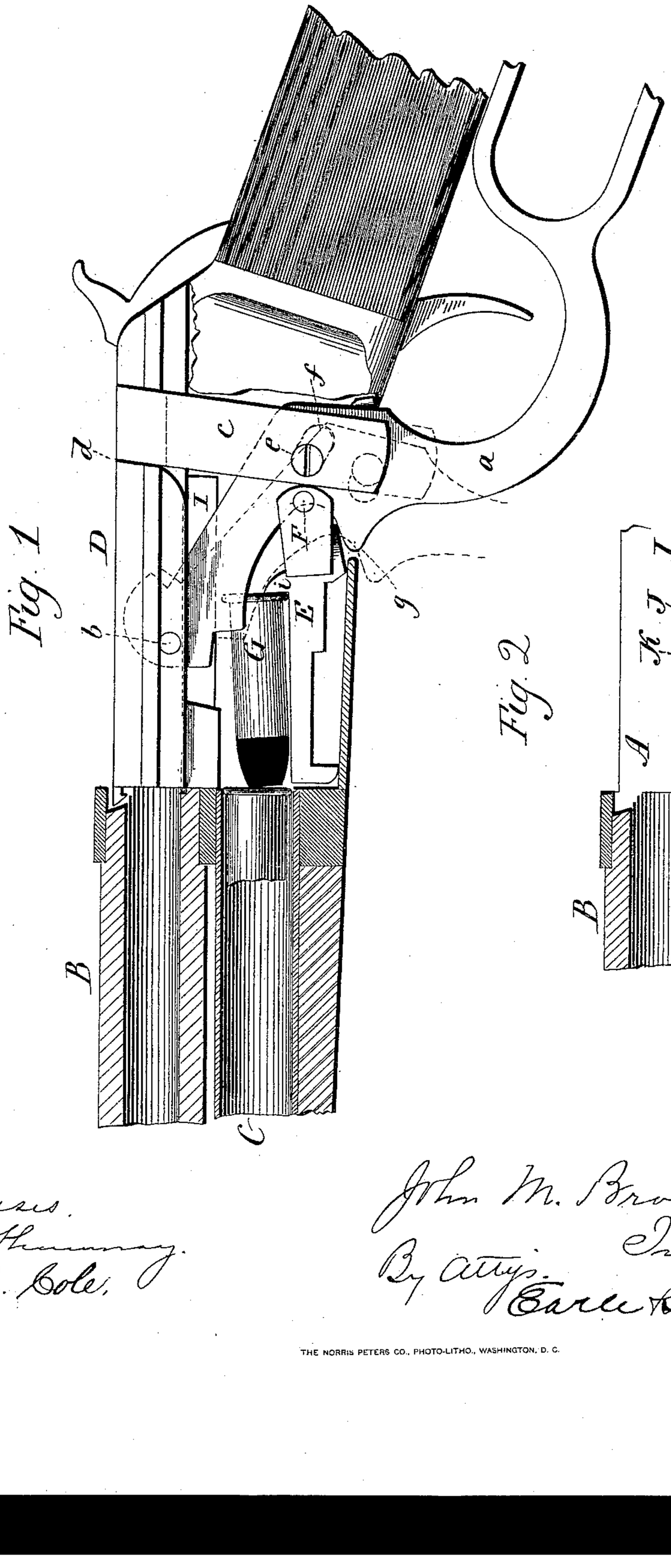

Fig. 1

Fig. 2

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(No Model.) 3 Sheets—Sheet 2.

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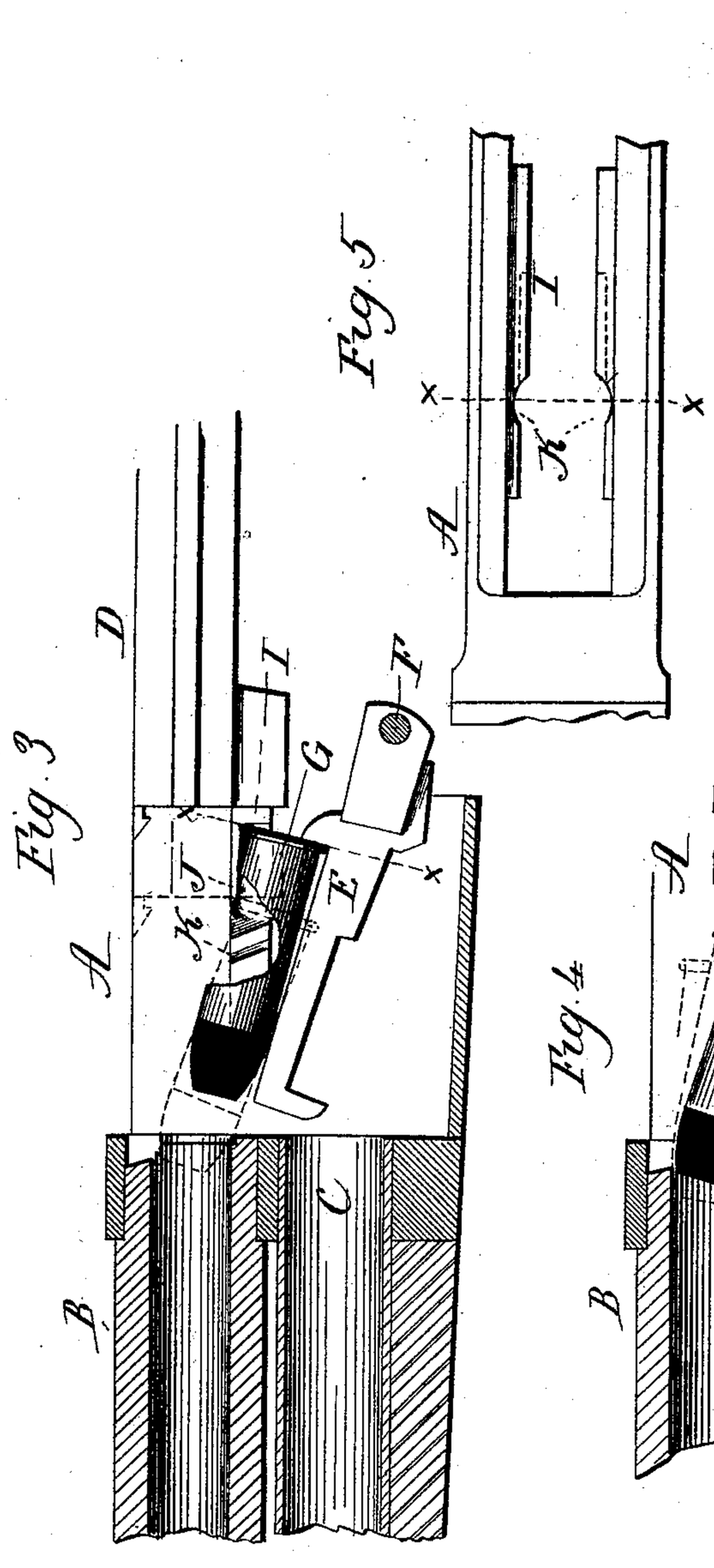

Witnesses.
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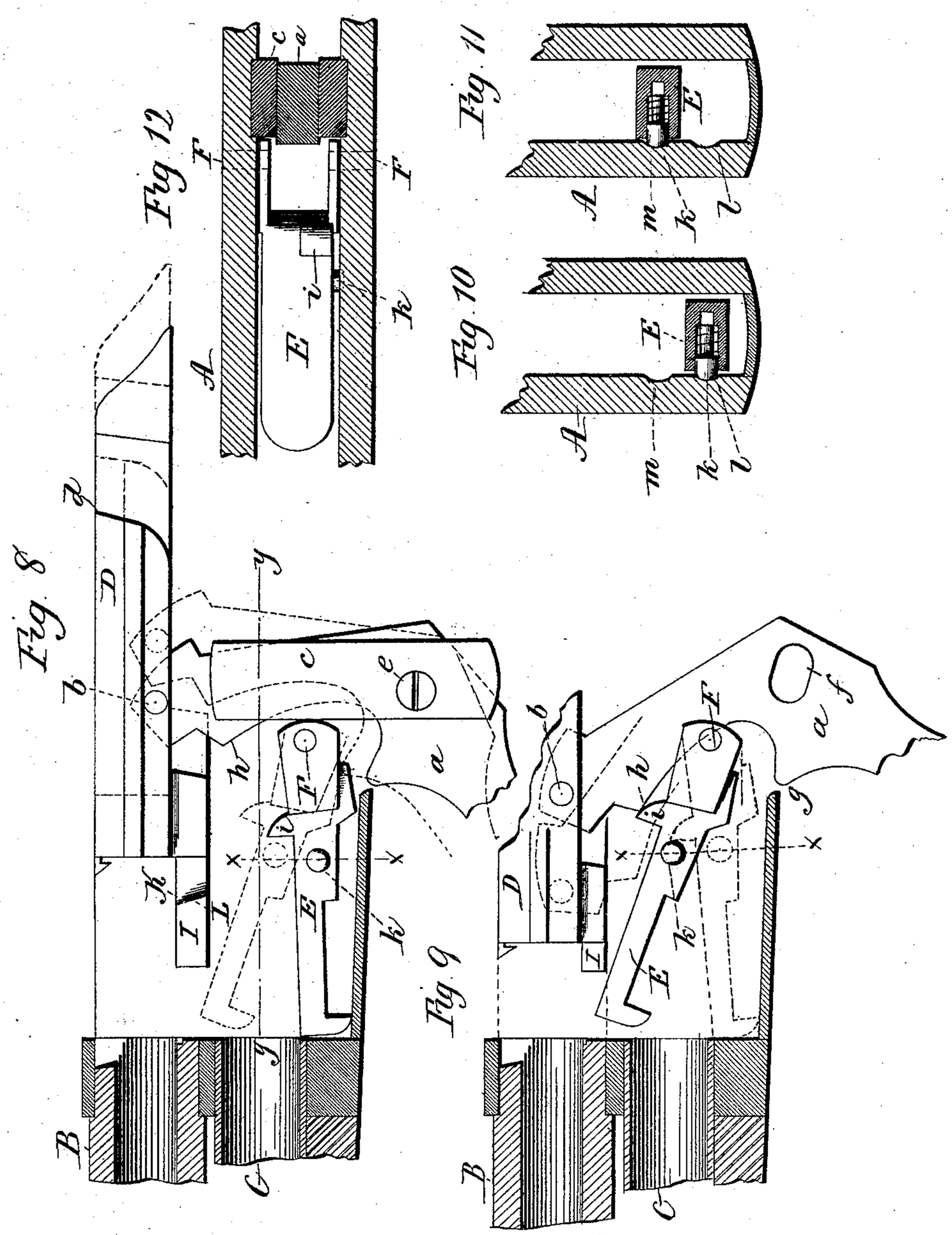

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UNITED STATES PATENT OFFICE.

JOHN M. BROWNING, OF OGDEN, UTAH TERRITORY, ASSIGNOR TO THE WINCHESTER REPEATING ARMS COMPANY, OF NEW HAVEN, CONNECTICUT.

MAGAZINE-FIREARM.

SPECIFICATION forming part of Letters Patent No. 499,005, dated June 6, 1893.

Application filed September 19, 1892. Serial No. 446,245. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. BROWNING, of Ogden, in the county of Weber and Territory of Utah, have invented a new Improvement in Magazine-Firearms; and I 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 longitudinal section of a magazine-fire-arm embodying this invention, with the parts in closed or normal position; Fig. 2, a longitudinal section of the receiver, barrel and magazine, with the magazine removed to show face view of one of the ribs; Fig. 3, the same as Fig. 1, showing the parts in the position of the breech open; Fig. 4, the same as in Fig. 3, showing the position of the cartridge as it advances into the barrel, under the action of the advancing breech-piece; Fig. 5, a top view of the receiver, the magazine removed to show top view of the ribs; Fig. 6, a transverse section, cutting on line *x*—*x* of Fig. 3; Fig. 7, a transverse section, cutting on line *x*—*x*, of Fig. 5; Fig. 8, the same as Fig. 1, representing the parts as approaching the rear or opening movement to illustrate the operation of the lever to raise the carrier; Fig. 9, the same as Fig. 8, showing the parts as they approach the closed position to illustrate the operation of the lever to depress the carrier; Fig. 10, a transverse section cutting on line *x*—*x* of Fig. 8; Fig. 11, a transverse section cutting on line *x*—*x* of Fig. 9; Fig. 12, a longitudinal section cutting on line *y*—*y* of Fig. 8, looking down.

This invention relates to that class of magazine fire-arms, in which the magazine is arranged beneath the barrel, the barrel and the magazine both opening toward the rear into the receiver, and in which the breech-piece is arranged to move longitudinally backward and forward, and with a carrier hung below the breech-piece, and so as to swing on its pivot up and down, its free end toward the magazine, and so that a cartridge passes from the magazine onto the carrier, to be raised by the carrier when the breech-piece is opened, so as to bring the point of the cartridge at the rear of the barrel, and present the head of the cartridge forward of the front face of the open breech-piece, in order that in the closing movement of the breech-piece, the breech-piece will force the cartridge from the carrier forward into the barrel. Parts of the invention relate particularly to arms of this class in which the longitudinally reciprocating breech-piece is operated by means of a lever, which is hinged by its upper end to the breech-piece, and extends downward through the receiver to form a handle by which the lever may be turned, combined with a vertically moving bolt, which locks the breech-piece in the closed position; but in connection with the said lever, so that in the first part of the downward or opening movement of the lever, the said bolt is withdrawn from engagement with the breech-piece, and the pivot of engagement between the lever and bolt then serves as a fulcrum upon which the lever will turn to throw the breech-piece to its open position, and so that in the return of the lever the breech-piece will be first thrown to its closed position, and then in the last part of the closing movement of the lever the bolt will be brought into engagement with the breech-piece so as to support it against recoil. This particular arrangement of bolt, lever and breech-piece, is shown and described in Letters Patent No. 306,577, granted to J. M. Browning and M. S. Browning, October 14, 1884. In arms of this class having the carrier hung at the rear and so as to swing upward at its forward end, the carrier necessarily presents the cartridge in an inclined position to the line of the barrel; that is, while the point of the cartridge is in line with the barrel, the head-end will be down considerably below the line of the barrel; hence, it is necessary that the rear end of the cartridge shall rise as it advances into the barrel, in order to bring it into direct axial line with the barrel.

The object of the first part of the invention is a simple adaptation of the lever to operate as a cam upon the carrier to impart to the carrier the up and down swinging movement.

The object of the second part of the inven-

tion is to raise the rear end of the cartridge rapidly, so that immediately after the point of the cartridge is inserted into the barrel, the rear end will be raised into a line substantially with the barrel, and forward of the front face of the breech-piece, and the invention consists in the construction as hereinafter described and particularly recited in the claims.

A, represents the receiver, to the forward end of which the barrel B, is attached, in the usual manner, and opens into the receiver at the rear. Below the barrel B, the magazine C, is arranged, also in the usual manner, it opening into the receiver at the rear. The magazine is adapted to be charged with a series of cartridges, in the usual manner, so that the rear ends of the cartridges will be presented toward the receiver, and so that they will be successively forced rearward as for transfer to the barrel.

D, represents the breech-piece, which is adapted to receive a longitudinal reciprocating movement to open and close the rear end of the barrel. As here represented the breech-piece is operated by means of a lever *a*, which extends through the under side of the receiver, and terminates in a suitable handle form, by which the lever may be swung in a vertical plane. The lever extends into the receiver, and is hinged by a pivot *b*, directly to the breech-piece.

c, represents the vertically sliding bolt for locking the breech-piece; in the closed position this bolt stands in rear of a shoulder *d* in the breech-piece, the same as in the patent before referred to, and as in that patent a pair of such bolts may be employed if desired. The lever is connected to the bolt by means of a stud *e*, in the bolt, which extends into a slot *f*, in the lever, and so that when the parts are in the closed position, as seen in Fig. 1, the stud of the bolt stands at the rear of the slot *f*. In the first part of the opening movement of the lever, the lever turns upon the pivot *b*, in the breech-piece as a fulcrum, and the slot *f*, of the lever operates upon the stud *e*, of the bolt as a cam, and so as to draw that bolt down out of engagement with the breech-piece, as seen in broken lines Fig. 1, and after the bolt is so drawn down, then the stud *e*, in the slot *f*, operates as the fulcrum for the movement of the lever, so that the upper end of the lever will be thrown rearward, and correspondingly move the breech-piece to the open position seen in Fig. 8. Then when the lever is returned, the breech-piece will be forced to the closed position, and then in the completion of the closing movement of the lever, the bolt will be thrown into the position of locking the breech-piece. The arrangement and operation of the lever, breech-piece and bolt, are the same as that shown in the patent before referred to.

In the receiver below the breech-piece, the carrier E, is hung, upon a pivot F, and so as to swing up and down as from the position in Fig. 8 to that seen in Fig. 9. Normally the carrier stands in the down position, its forward end toward the magazine, and its upper surface in line with the magazine, so that the rearmost cartridge of the magazine may pass onto the carrier, as represented in Fig. 1, G, representing the cartridge so standing on the carrier. The upward movement is imparted to the carrier by means of a cam *g*, projecting from the forward side of the lever, and which, at the proper time, is adapted to strike the under side of the carrier forward of the pivot upon which the carrier is hung. In the forward swinging movement of the lever, and during the last part of such forward movement and as the breech-piece approaches its extreme rear position, the cam *g*, strikes the corresponding point on the carrier forward of its pivot, and so that in the completion of the forward swinging movement of the lever the cam *g*, will cause the carrier to rise, as represented in broken lines Fig. 8, thus giving to the carrier a positive upward movement. Then as the lever returns, the cam *g*, passes away from the under side of the carrier, leaving the carrier in the raised position, and until the breech-piece approaches its closed position, as seen in Fig. 9, at which time a bearing point *h* on the lever above the projection *g*, will strike a corresponding point *i*, on the carrier, as seen in Fig. 9, and force the carrier to the down position, while the final movement of the breech-piece is being completed, and before the last part of the closing movement of the lever commences to operate to throw the bolt into engagement with the breech-piece, and as represented in broken lines Fig. 9. The carrier is provided with a spring-bolt *k*, projecting laterally from one side, and which is adapted to engage a corresponding notch *l*, in the inside of the receiver when the breech-piece is in the down position, and as seen in Fig. 10, or to escape therefrom when the carrier is raised and engage a similar notch *m* above when the carrier is in the up position as seen in Fig. 11; this latch serves to hold the carrier in the two positions after the lever shall have moved out of engagement therewith. When the carrier is in the raised position as seen in Fig. 3, the cartridge G, stands in an inclined position with relation to the axis of the barrel, or so as to present the forward end of the cartridge substantially in rear of the open end of the barrel, while the rear end of the cartridge will have been raised so far as to stand with its upper portion forward of the face of the breech-piece, or some part of the breech-piece, in order that as the breech-piece is advanced while the carrier and cartridge are in this position, the advancing breech-piece will impart a forward movement to the cartridge, as from the position seen in Fig. 3, to that seen in broken lines in the same figure. In this position it will be observed that the point of the cartridge has entered the barrel, but yet the rear end of the car-

tridge is far below the axial line of the barrel; consequently as the cartridge is advanced it must rise to get into line with the barrel, and in absence of other provision to the contrary, this rise of the rear of the cartridge will depend upon the movement of the forward end of the cartridge in the cartridge chamber in the barrel. To produce the rising of the rear end of the cartridge to bring it into line with the barrel, without thus depending upon the movement of the cartridge in the cartridge chamber, the receiver is constructed with a longitudinal rib I, on each side, which stands above the cartridge when the receiver is in the down position, the distance between the faces of the two ribs being greater than that of the diameter of the cartridge, as seen in Fig. 7. These ribs are in position so that as the cartridge is raised by the carrier to the position seen in Fig. 3, the head will strike the under side or over-hanging portion J, of the ribs, and thus be prevented from throwing upward under the momentum which will be given to the cartridge by the rising of the carrier; but this position of the cartridge brings it forward of a portion of the open breech-piece, so that when the breech-piece is moved forward, it will strike the head of the cartridge as seen in Fig. 3, and then as the breech-piece advances, it will move the cartridge forward beneath the over-hanging portions J, of the ribs, to the position seen in broken lines, Fig. 3. At this point, there is an opening K, upward through the ribs, of a width equal to, or somewhat greater than the diameter of the head of the cartridge. The forward sides of these openings or recesses, K, in the ribs, are inclined upward and forward as seen at L, Fig. 2, and so that as the cartridge is carried so far forward as to bring its head into the recesses K, the cartridge will have passed beyond the control of the overhanging portions J, of the ribs, and so that it may rise through the openings K, and as the breech-piece continues its forward movement, the flange of the cartridge strikes the inclined forward surfaces of the recesses K, in the ribs, and which incline operates as a cam upon the advancing cartridge, to cause the rear end of the advancing cartridge to rise rapidly, as indicated in Fig. 4. Forward of the recesses K, in the ribs, the space between the ribs is such as to permit the body of the cartridge to pass freely up between them, but is less than the diameter of the head of the cartridge, and so that after the head of the cartridge has passed by the inclines L, the head will be supported on the upper side of the ribs, and in substantially axial line with the barrel, as represented in the upper position, Fig. 4.

By the employment of the recesses K, having the inclined forward surfaces L, over which the cartridges rise, the rear end of the cartridge is brought up to this axial position by a very slight longitudinal movement of the cartridge, much more rapidly than could be produced where the entrance of the cartridge into the barrel itself is depended upon to produce this rise of the rear end of the cartridge, and very much of the friction which is occasioned by the advance movement of the cartridge under the action of the advancing breech-piece, where dependence is had solely upon the engagement of the cartridge with the barrels to raise the rear end of the cartridge, is avoided, and consequently less liability of the blocking of the cartridge under rapid firing.

While the arrangement of the lever and its construction with the cam upon its forward side to strike the under side of the carrier forward of its pivot, and so as to raise the carrier in the opening movement of the lever, are specially applicable to the particular arm shown and described, it will be clear to those skilled in the construction and use of fire-arms, and without illustration, that the locking of the breech-piece by means of the vertically movable bolt, is not essential to such construction and operation of the lever, as other breech locking devices may be employed.

While the devices shown and described for raising the rear end of the cartridge as it advances toward the barrel, are specially applicable to the mechanism described for operating the breech-piece and carrier, it will be evident to those skilled in the art that the same cartridge elevating devices may be employed in connection with a vertically swinging carrier, with other breech and carrier operating mechanism. This part of the invention is therefore not to be understood as limited to any particular mechanism for operating the breech-piece or carrier.

I am aware that overhanging ribs in the carrier, to prevent the cartridge from being thrown upward under the momentum imparted to it by the raising of the carrier, are very old, and I do not claim broadly such ribs, but

What I do claim as my invention is—

1. In a magazine fire-arm in which the magazine is arranged below the barrel, and both the barrel and magazine open into the receiver at the rear, the combination therewith of a carrier hung upon a pivot at the rear, and so as to swing in a vertical plane, a lever hinged by one end to the breech-piece and extending downward and rearward through the receiver to form a handle below, said lever being adapted in such swinging movement to impart longitudinal movement to the breech-piece, the lever constructed with a cam upon its forward side adapted to engage the carrier forward of its pivot during the last part of the forward or opening movement of the lever, substantially as described.

2. In a magazine fire-arm in which the magazine is arranged below the barrel and both the barrel and magazine open into the receiver at the rear, the combination therewith of a carrier hung in the receiver upon a pivot at the rear and so as to swing in a vertical plane, a

longitudinally reciprocating breech-piece, a lever hinged by one end to the breech piece and extending downward and rearward through the receiver to form a handle below, a vertically movable bolt arranged in the receiver, and adapted to engage the breech-piece in its closed position, the said lever hinged to the said bolt by a slot connection so that the first part of the opening movement of the lever will withdraw the bolt from its engaged position, the lever constructed with a cam upon its forward side adapted to engage the carrier forward of its pivot during the last part of the forward or opening movement of the lever, substantially as described.

3. In a magazine fire-arm in which the magazine is arranged below the barrel, and both the barrel and magazine open into the receiver at the rear; the combination therewith of a carrier hung in the receiver upon a pivot at the rear, and so as to swing in a vertical plane, a longitudinal reciprocating breech-piece, a lever hinged by one end to the breech-piece and extending downward and rearward through the receiver to form a handle below, a vertically movable bolt arranged in the receiver, and adapted to engage the breech-piece in its closed position, the said lever hinged to the said bolt by a slot connection so that the first part of the opening movement of the lever will withdraw the bolt from its engaged position, the lever constructed with a cam upon its forward side adapted to engage the carrier forward of its pivot during the last part of the forward or opening movement of the lever, and the lever constructed with a bearing on its forward surface forward of said cam, and adapted to bear upon a corresponding point on the upper side of the carrier forward of the pivot on which the carrier is hung, substantially as and for the purpose described.

4. In a magazine fire-arm, having the magazine arranged below the barrel, and both the barrel and the magazine opening into the receiver at the rear, with a longitudinally reciprocating breech-piece and a carrier pivoted at the rear to swing in a vertical plane, the combination therewith of ribs longitudinally arranged in the sides of the receiver, in a position above the cartridge on the carrier, the said ribs distant from each other less than the diameter of the cartridge-head, and the ribs constructed with recesses K, through which the heads of the cartridges may rise, the forward ends of said recesses constructed to form upward and forward inclines L, substantially as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN M. BROWNING.

Witnesses:
JOS. W. WILCOX,
JOHN E. RAMSDEN.