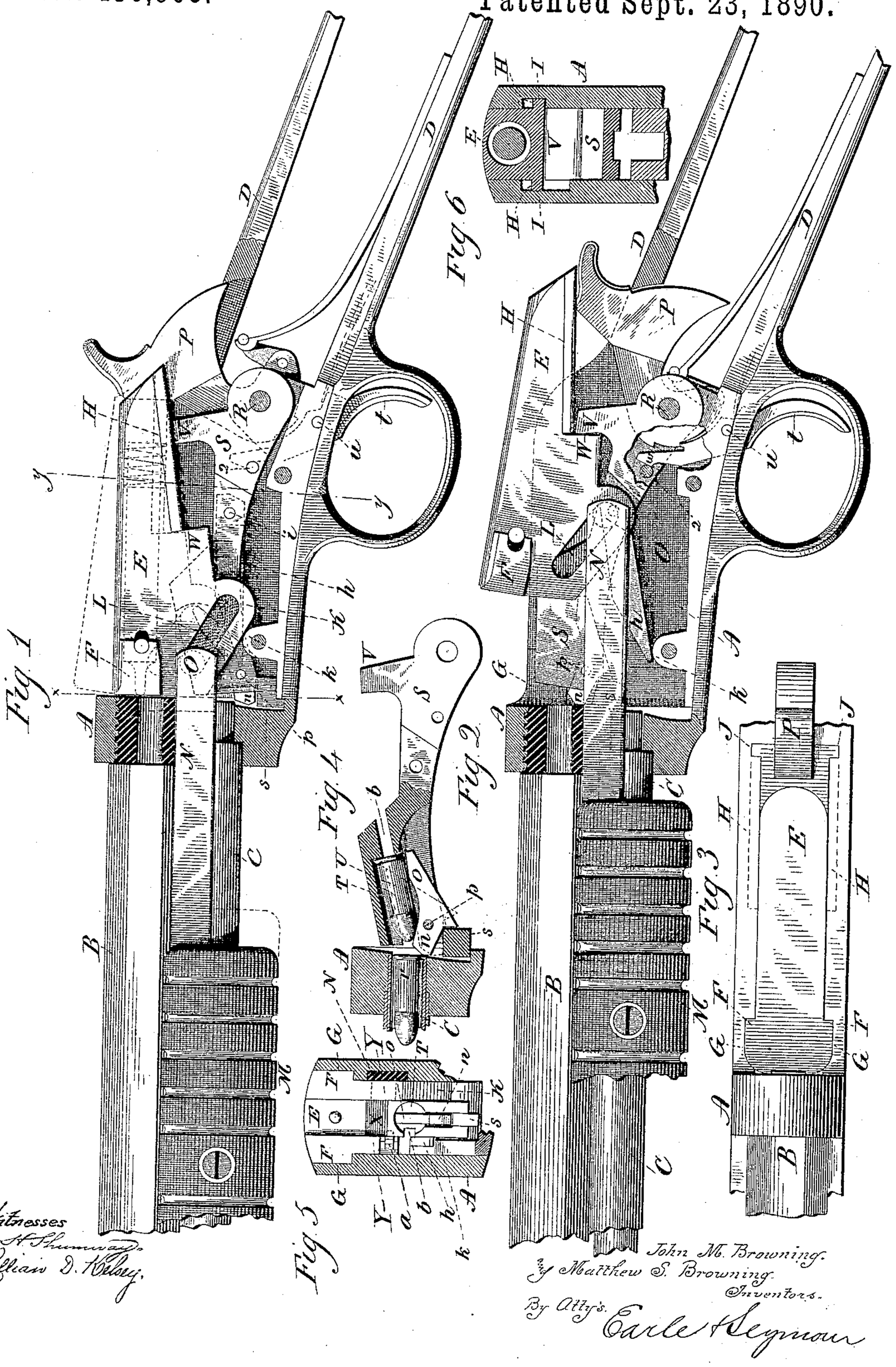
(No Model.)

2 Sheets—Sheet 1.

J. M. & M. S. BROWNING.

BREECH LOADING GUN.

No. 436,965. Patented Sept. 23, 1890.



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Inventors.
By Atty's. Earle & Seymour

(No Model.)

2 Sheets—Sheet 2.

J. M. & M. S. BROWNING.

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Fig. 13

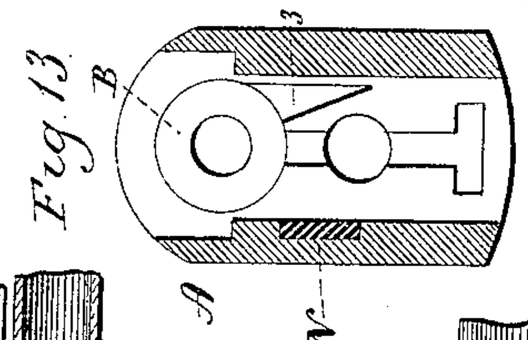


Fig. 12

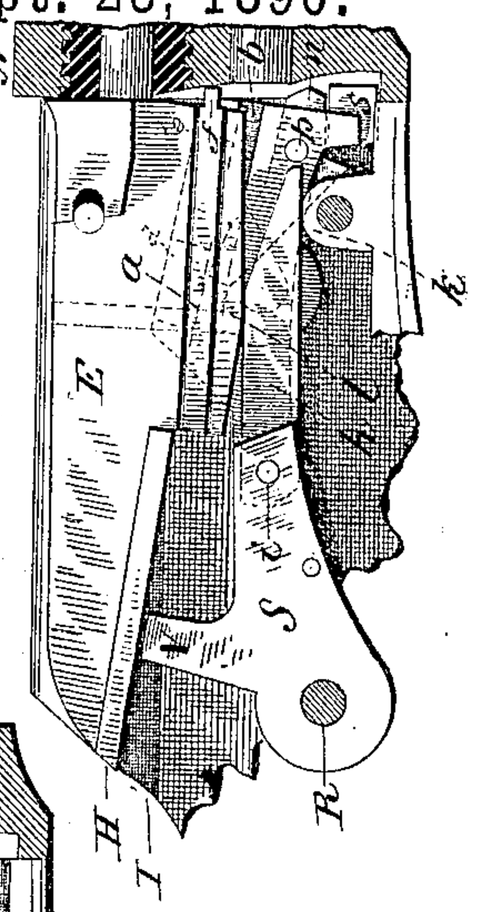


Fig. 7

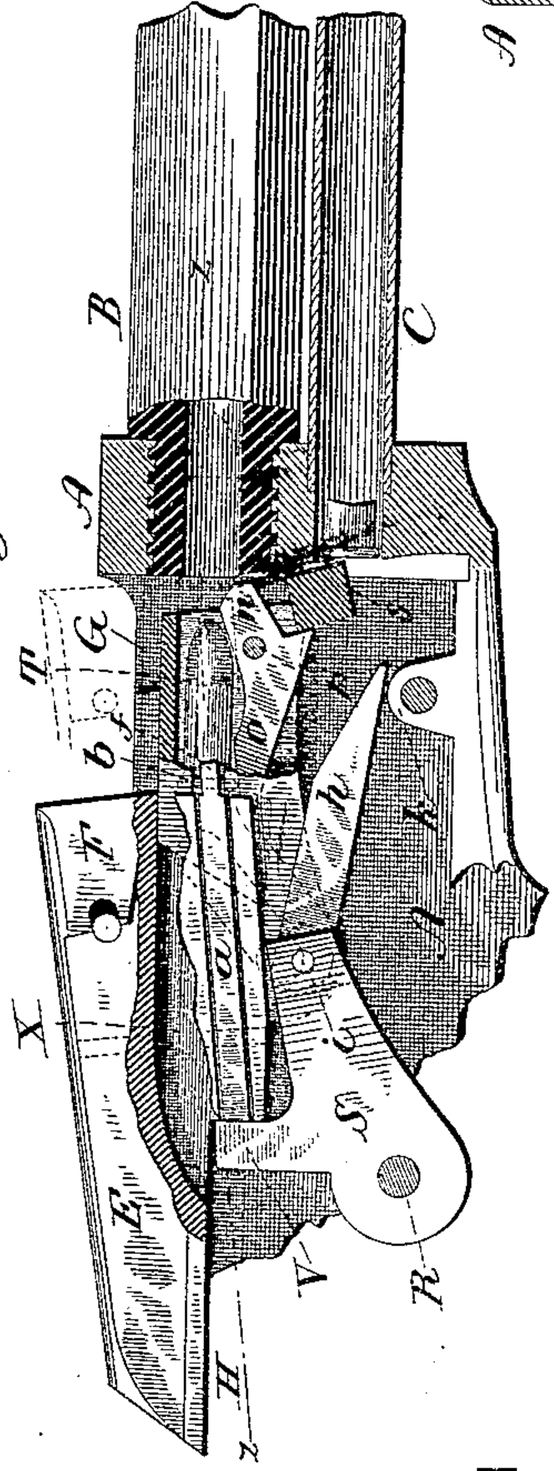


Fig. 8

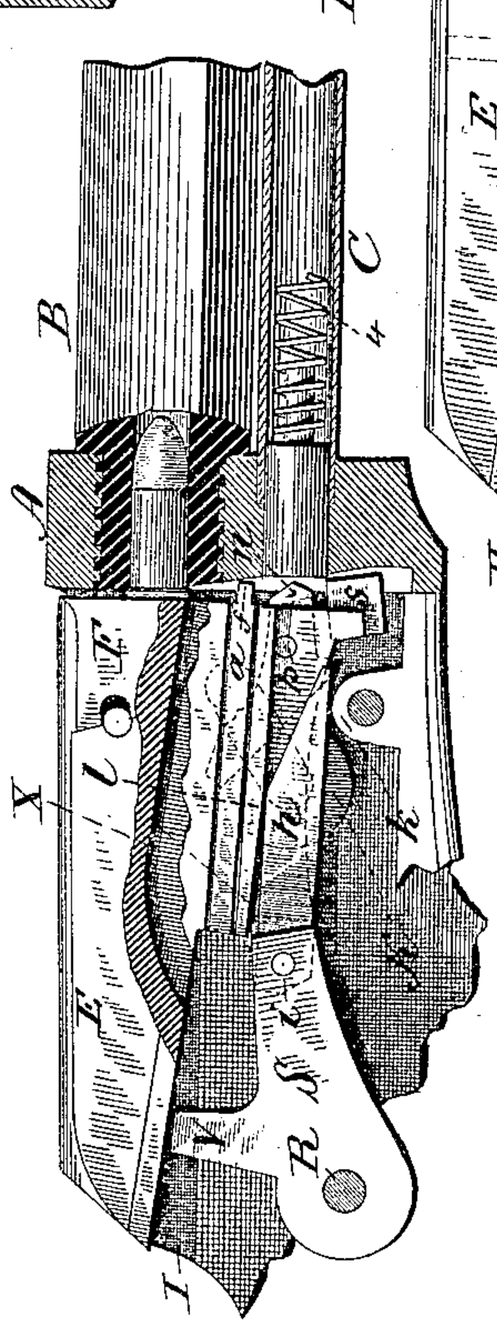


Fig. 11

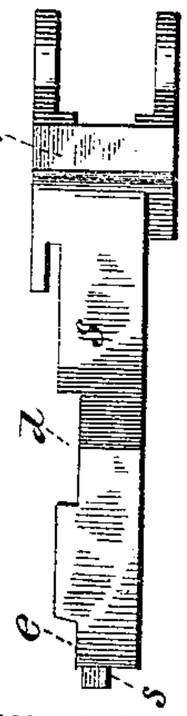


Fig. 10

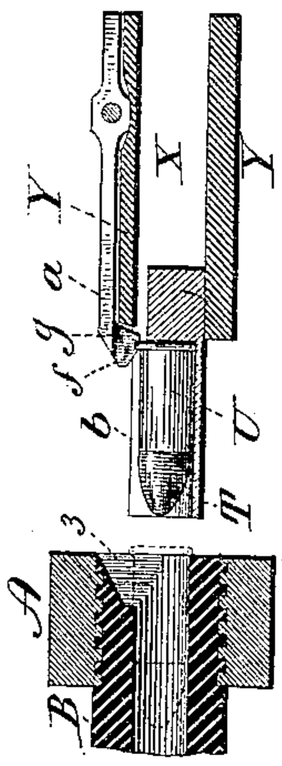
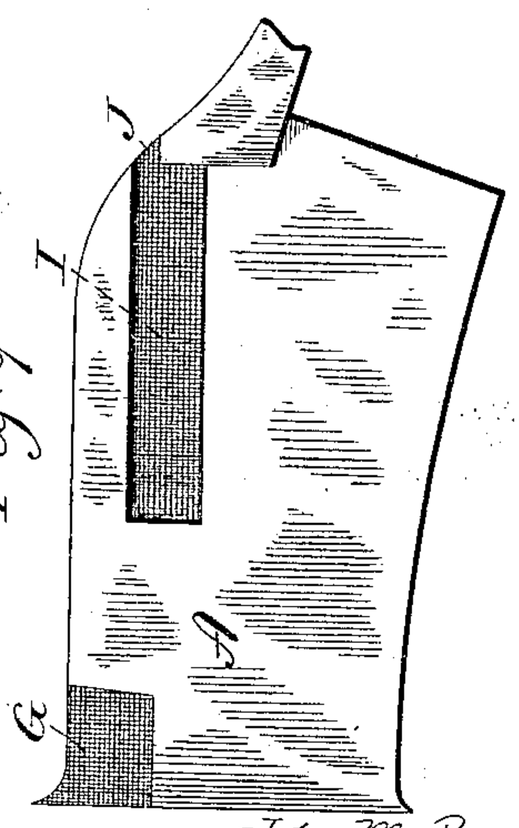


Fig. 9



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Inventors.
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UNITED STATES PATENT OFFICE.

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

BREECH-LOADING GUN.

SPECIFICATION forming part of Letters Patent No. 436,965, dated September 23, 1890.

Application filed January 20, 1890. Serial No. 337,440. (No model.)

To all whom it may concern:

Be it known that we, JOHN M. BROWNING and MATTHEW S. BROWNING, of Ogden, in the county of Weber and Territory of Utah, have invented a new Improvement in Magazine 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 longitudinal section of the receiver, showing side view of the mechanism of the arm, the parts in the normal position; Fig. 2, the same as Fig. 1, showing the parts as with the breech-piece in its rear position and the carrier raised; Fig. 3, a top view of the receiver portion of the arm, illustrating the interlocking of the breech-piece with the receiver; Fig. 4, a detached view showing longitudinal section of the carrier in its down position; Fig. 5, a transverse section on line *x x* of Fig. 1, looking rearward; Fig. 6, a transverse section on line *y y* of Fig. 1, looking to the rear; Fig. 7, a sectional side view looking from the side opposite that of Fig. 1, showing the parts in the extreme open position; Fig. 8, the same as Fig. 7, showing the breech-piece as approaching its extreme closed position; Fig. 9, an inside view of the receiver, showing the groove in which the breech-piece works; Fig. 10, a horizontal longitudinal section cutting on line *z z* of Fig. 7; Fig. 11, a top view of the carrier detached, representing the recesses through which the forward end of the extractor-hook may work; Fig. 12, the same view as Fig. 8, showing the parts in the extreme down or closed position; Fig. 13, a transverse section on line *x x* of Fig. 1, looking forward.

This invention relates to an improvement in that class of magazine fire-arms in which the magazine is arranged below the barrel, the magazine opening into a recess in the receiver at the rear, the breech-piece and operative mechanism being arranged in the receiver in rear of the barrel and magazine, the present invention being an improvement upon the fire-arm for which Letters Patent No. 385,238 were granted to us June 26, 1888, the object of the invention being to construct the carrier with a longitudinal chamber opening from its forward end, into which chamber a cartridge may pass from the magazine when the carrier is in the down position and then as the carrier is raised be presented into line with the barrel and so that the cartridge may be transferred from the said chamber, the said chamber substantially inclosing the cartridge, the invention being particularly adapted to the smaller caliber of arms and with which it is desired to produce rapid firing. The invention also improves the arm in other details of construction; and it 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 and open at the rear into the receiver. C is the magazine, arranged below the barrel and parallel therewith and opening at the rear into the receiver, as usual in this class of arms. The receiver is provided with the usual tangs D, by which it may be secured to the stock.

E represents the breech-piece, which normally stands in the receiver in longitudinal line with the barrel and so as to close the rear end of the barrel; but the breech-piece is adapted for a limited amount of up-and-down movement at its forward end independent of its longitudinal movement. On each side of the breech-piece at its forward end projecting lugs F are formed, which are adapted to set into corresponding recesses G in the sides of the receiver when the breech-piece is in the closed position and as seen in Fig. 3, and thus, engaging the receiver, the breech-piece is supported against recoil. Because of thus interlocking the breech-piece with the receiver it is necessary to raise the breech-piece at its forward end to take the lugs F F from their respective recesses before the rear movement of the breech-piece commences. On each side of the breech-piece is a rib H, (see Figs. 1 and 6,) which work in corresponding grooves I in the respective sides of the receiver. (See Figs. 6 and 9.) The ribs H in-

cline upward from their forward end toward the rear when the breech-piece is in the closed position, and the inclination is such that when the breech-siece is raised, as indicated in broken lines, Fig. 1, the ribs H come into substantially a direct longitudinal line with the barrel.

The grooves I in the receiver are deeper than the depth of the ribs, as seen in Fig. 9, so that there is considerable vertical play for the ribs H of the breech-piece; but at the rear end of the groove I and at its upper edge the opening to the rear through the rear end of the receiver is in depth substantially the same as that of the ribs H and as at J, Fig. 9. The rear end of the breech-piece when in its closed position substantially closes the opening into the receiver at the rear, and the rear end of the ribs H rest in the contracted portion J of the grooves, these contracted portions J serving, in connection with the ribs H, as a pivot upon which the breech-piece may receive an up-and-down swinging movement as from the position seen in Fig. 1 to that in broken lines, same figure.

From the breech-piece at its forward end is a downward projection K, in which is a cam slot or groove L. This groove inclines downward and rearward, as seen in Fig. 1.

M represents the handle, which is arranged to slide backward and forward beneath the barrel in the usual manner for this class of operating-handles. From the handle a bar N extends through the forward end of the receiver and carries a transversely-projecting stud O, which works in the cam-groove L of the breech-piece, so that when the handle is in the forward position, as seen in Fig. 1, the stud O stands in the forward or highest end of the groove L. Consequently when the handle moves to the rear its first action is through the stud O in the groove L, which action serves to raise the breech-piece, as indicated in broken lines, Fig. 1, until the locking lugs or projections F have been raised clear from their respective recesses G in the receiver. In this rise of the forward end of the breech-piece it turns upon the ribs H, resting in the narrower portions J of the slots, as upon a pivot. When the stud O has reached the lower and rear end of the groove L, as represented in broken lines, Fig. 1, the lugs F are above the upper edge of the receiver and clear from their locking-recesses, and the ribs H are brought up against the upper side of the grooves I in the receiver. Now the continued rear movement of the handle will cause the breech-piece to slide to the rear, guided by its ribs against the upper side of the grooves I, and through the contracted portion J of the grooves until the breech-piece reaches the extreme open position, as indicated in Fig. 2. During the rear movement of the breech-piece the lugs ride upon the upper surface of the sides of the receiver, as indicated in Fig. 2, so that the said projections or lugs resting upon the upper edge of the receiver and the ribs H against the upper side of the grooves I the breech-piece is supported against either up or down vertical movement. As the handle is returned or drawn forward, the breech-piece correspondingly moves forward until it reaches its extreme forward position, and so that the lugs F may escape from the upper edge of the receiver at the recesses G. Then the stud O of the handle-bar returns through the groove L and draws the breech-piece to its fully-closed position, where it is held against recoil by the lugs F in the recesses G.

P represents the hammer, which is hung upon a pivot R in the usual manner and so that it may strike the rear end of the firing-pin, which is arranged in the breech-piece in the usual manner, and as indicated in broken lines, Fig. 1. The rear end of the breech-piece is recessed to permit the hammer to reach the firing-pin. As the breech-piece is moved rearward, it forces the hammer to the rear, as seen in Fig. 2, so that it will be caught by the trigger upon the full-cock notch and held ready for firing in the usual manner for the hammer of this class of fire-arms.

S represents the carrier, which is hung at the rear upon a pivot, preferably the same pivot R upon which the hammer is hung. The carrier extends forward, and so that when in its down position, as seen in Figs. 1 and 4, its forward end stands in rear of the mouth of the magazine and the top of the carrier above the top of the mouth of the magazine. In the forward end of the carrier is a longitudinal chamber T, open at its forward end and of a size and shape to contain a cartridge, as U, Fig. 4. This chamber entirely incloses the cartridge except at the forward or open end.

The magazine is provided with the usual spring, the tendency of which is to force the column of cartridges rearward, and so that the rear cartridge, as U, may pass into the chamber in the carrier. Near the hub of the carrier is an upwardly-projecting finger V, the upper end of which stands at the rear and in the path of a corresponding shoulder W on the breech-piece, so that as the breech-piece approaches its extreme rear position it will, because of such engagement with the finger V, raise the carrier to its up position, as seen in Fig. 2.

It is necessary that the chamber containing the cartridge shall be in substantially direct axial line with the barrel when in the up position, as seen in Fig. 7, to facilitate the transfer of the cartridge from the carrier to the barrel, and as the chamber in the carrier is closed upon its upper side, so that the carrier must remain in its up position until the cartridge in the chamber has been forced so far forward and into the barrel as to escape the forward end of the carrier, and as the forward movement of the cartridge must be produced by the forward movement of the breech-piece, it is therefore necessary that

the carrier shall remain up and in line with the barrel while the breech-piece is advancing to its forward position that the device provided in connection with the breech-piece, as hereinafter described, may transfer the cartridge from the chamber in the carrier to the barrel. To this end the forward or chambered portion of the carrier is made thinner than the breech-piece, and the breech-piece is constructed with a longitudinal groove X upon its under side, corresponding to the width of the carrier. The sides of the groove X in the carrier form two cheeks Y Y, as seen in Figs. 5 and 10, between which the chambered portion of the carrier stands when in the down position, so that when the carrier is raised, as seen in Fig. 2, the breech-piece, then being open, the groove in the breech-piece permits it to move forward over the carrier to nearly its extreme forward position, while the carrier remains in the up position, as indicated in broken lines, Fig. 7, so that the forward movement of the breech-piece may be utilized to force the cartridge from the chamber in the carrier into the barrel.

To transfer the cartridge from the chamber in the carrier to the barrel, the breech-piece has combined with it a spring-hook *a*. This hook is arranged in a groove in the outside of one of the cheeks Y of the breech-piece, the diagonal slot L being formed in the other cheek of the breech-piece. This hook is hung in the breech-piece so as to move backward and forward with it. The forward end of this hook projects laterally inward through the groove, as seen in Fig. 10, and on that side of the carrier is a longitudinal slot *b*, opening into the cartridge-chamber, and in which slot the inwardly-projecting end of the hook *a* may work; but the forward end of the carrier is recessed, as at *e*, Fig. 11, so as to permit the hook to move up and down with the breech-piece independent of the carrier, and so that when the breech-piece is raised preparatory to its rear movement, as before described, the hook will pass up above the top of the carrier, and then with it the breech-piece will move rearward over the top of the carrier. Then as the breech-piece approaches its extreme rear position and raises the carrier, as before described, the recess *d* in the side of the carrier permits the carrier to pass up to a position to bring the hook into line with the slot *b* inside the carrier. The slots or recesses *d e* extend from the top of the carrier down into the said slot *b*. The spring-hook *a* is the usual cartridge-extracting hook; but in addition to the shoulder *f*, to engage on the forward side of the cartridge-head for the purpose of extracting it, it is constructed with an inwardly-projecting shoulder *g*, preferably of somewhat greater extent than the shoulder *f*, and which shoulder *g* is adapted to engage the rear side of the head of the cartridge, as seen in Fig. 10, when the carrier is in the raised position. Now as the breech-piece is moved forward, the end of the hook works longitudinally through the slot *b* in the carrier, and the shoulder *g* bears against the rear side of the head of the cartridge and forces the cartridge forward with the breech-piece and until the end of the hook may pass into the recess *e* at the front end of the carrier. At this point the hook is free from the carrier, so that the carrier may be thrown to its down position. The hook also serves to retain the carrier in its up position until the cartridge shall have properly entered the barrel. The carrier is returned by the descent of the breech-piece, the breech-piece bearing upon the upper forward portion of the carrier, and this contact of the breech-piece with the carrier may be sufficient to throw the carrier to its extreme down position; but as the up-and-down movement of the carrier under the construction shown is somewhat greater than the up-and-down movement of the breech-piece this contact between the breech-piece and carrier may not throw the carrier to its extreme down position, and as it is desirable that the carrier shall reach its extreme down position at the time that the breech-piece reaches its extreme closed position, in order to the proper delivery of a cartridge from the magazine into the carrier, we provide means to give to the carrier an accelerated movement as it approaches its down position, and so as not only to insure the carrier reaching its extreme down position, but to securely hold it in that position until the movement of the breech-piece may release it. This accelerated movement is produced by a lever *h*, arranged at one side of the carrier and hinged by its rear end to the carrier, as at *i*, its forward end adapted to rest upon a stationary shoulder *k* in the side of the receiver, and this lever *h* stands in the path of the lower edge *l* of one cheek Y of the breech-piece. (See Fig. 7.) When the breech-piece has been advanced, as seen in Fig. 8, and as its depression commences, the top of the groove X in the breech-piece strikes the top of the carrier and forces it downward with the breech-piece, as seen in Fig. 8, until the edge *l* of that side of the breech-piece strikes the top of the lever *h*, as seen in Fig. 8. At this time the breech-piece has nearly reached its down position, but the carrier is a considerable distance above its down position. The breech-piece strikes the lever *h* at a point between its hinge *i* and the stationary shoulder *k*. Consequently the breech-piece operates upon the lever as a lever of the second order. The movement of the carrier being with the hinged end *i* of the lever, the carrier descends proportionately faster than the breech-piece, this accelerated movement of the carrier bringing it to its extreme down position when the breech-piece has reached its extreme down position, as seen in Fig. 12, and the breech-piece bearing upon the said lever *h* holds the carrier in that extreme down position to receive a cartridge from the magazine.

The descent of the breech-piece takes the extracting-hook out of range of the head of the cartridge which has been thus forced into the barrel; but as the breech-piece rises, as indicated in broken lines in Fig. 1, the extractor-hook rises with it and passes up forward of the front face of the cartridge-head, so that when the breech-piece has reached its up position the extractor has engaged the cartridge-head, so that upon the rear movement of the breech-piece the cartridge or exploded shell will be withdrawn from the barrel above the top of the carrier, and then as the carrier rises the shell will be thrown upward, outward, and ejected from the arm.

In the forward end of the receiver a recess 3 is formed in the plane of the extractor-hook, as seen in Fig. 13, in which the projecting end of the hook may work in the up-and-down movement of the breech-piece described.

To stop the column of cartridges in the magazine as the rearmost cartridge passes into the carrier and so as to prevent a possible clogging between the carrier and the magazine, a check consisting of a two-armed lever *n o* is hung upon a fulcrum *p* in a vertical groove in the carrier opening from the chamber T downward, as seen in Figs. 4 and 5. The forward arm or nose *n* of this check is beveled upward and backward, and when the carrier is in its down position, as seen in Fig. 4, this nose *n* stands immediately at the rear of the column of cartridges, so that the cartridge *r* in the magazine at the rear may strike this beveled nose. The power of the spring of the magazine upon the column of cartridges forces them rearward. The rearmost cartridge, bearing against the beveled nose *n* of the check, operates upon it as a cam, turns the nose downward, as seen in broken lines, Fig. 4, and correspondingly throws the other arm or tail *o* of the check up into the cartridge-chamber, as also seen in Fig. 4. This permits the cartridge to freely enter the chamber T in the carrier; but in so doing its head end strikes the tail *o* and so as to turn the tail downward, again raising the nose *n*, as seen in Fig. 4, U representing the cartridge so inserted in the carrier, so that the nose will strike the head of the next cartridge *r* in the column and prevent its further rear movement toward the carrier. When the carrier is in the up position for the delivery of the cartridge to the barrel, the cartridge, passing forward out of the magazine, readily depresses the nose *n*, which brings the check again to its normal position and allows the free escape of the cartridge into the barrel. As soon therefore as a cartridge has entered the carrier from the magazine, the check is brought into operation against the next cartridge in the magazine to stop the column; but as the check moves with the carrier it of course passes up and away from the mouth of the magazine when the carrier ascends. To still support the column of cartridges and prevent the rear movement of the column until the carrier shall again descend, a stop *s* is formed on the forward end of the carrier below the check, as seen in Fig. 4, and which, when the carrier is in the up position, will bear against the rearmost cartridge in the magazine and prevent the rear movement of the column. By beveling the nose of the check, so that the head of the cartridge passing into the carrier acts thereon as a cam to turn the check, the magazine-spring is thereby utilized as the force or power which automatically opens the passage from the magazine into the chamber in the carrier and the magazine-spring operates upon the tail of the check through the cartridge, which it forces into the chamber in the carrier to raise the nose of the check to stop the next cartridge in the column, and thereby avoiding the employment of an independent spring, as required for such checks in previous constructions.

As the arm is designed for extreme rapid firing, it is desirable to prevent the accidental discharge of the hammer until all the parts of the arm are in proper position for firing. The trigger *t* is hung upon a fulcrum *u* in the usual manner, and is constructed with a shoulder to engage the hammer, as seen in Fig. 2, and at its upper end is an extension *w*. On the carrier is a pin or shoulder 2, which moves with the carrier, so that when the carrier is in the up position this shoulder 2 comes forward of and so as to bear against the projection *w* of the trigger, the trigger then being engaged with the hammer and so that under these conditions the shoulder 2 resists the pull of the trigger; but as the carrier is brought to its down position the shoulder 2 passes from the projection *w*, as seen in Fig. 1, so as to leave the trigger free to be pulled, as indicated in broken lines, Fig. 1. Thus the pull of the trigger until all the parts are in proper position for firing is positively prevented.

We have represented the projection of the breech-piece to work through the slot in the carrier for the transfer of the cartridge to the barrel as a part of the extracting-hook; but it will be understood that this inward projection may be a stationary part of the breech-piece independent of the extractor. A sufficient illustration of this modification is to suppose the projection *g*, Fig. 10, to be a stationary part of the breech-piece and independent of the extractor.

From the foregoing it will be understood that we do not in this application claim, broadly, anything shown or described in our before-mentioned patent; but

What we do claim is—

1. In a magazine fire-arm in which the breech-piece is arranged to slide backward and forward longitudinally and adapted to swing up and down at its forward end, as upon a pivot at the rear, the combination there-

with of a carrier hung at the rear below the breech-piece and so as to swing in a vertical plane, the carrier constructed with a chamber opening from its forward end toward the magazine and barrel, the said chamber adapted to receive a cartridge from the magazine and the chambered portion of the carrier narrower than the width of the breech-piece, the breech-piece constructed with a longitudinal groove upon its under side corresponding to the said chambered portion of the carrier, the said groove in the breech-piece forming cheeks upon opposite sides of the carrier, the chambered portion of the carrier constructed with a longitudinal slot, and the breech-piece provided with a projection through said slot into said chamber, adapted under the forward movement of the breech-piece to transfer a cartridge from the said chamber into the barrel, substantially as described.

2. In a magazine fire-arm in which the breech-piece is arranged to slide backward and forward longitudinally and adapted to swing up and down at its forward end, as upon a pivot at the rear, the combination therewith of a carrier hung at the rear below the breech-piece and so as to swing in a vertical plane, the carrier constructed with a chamber opening from its forward end toward the magazine and barrel, the said chamber adapted to receive a cartridge from the magazine and the chambered portion of the carrier narrower than the width of the breech-piece, the breech-piece constructed with a longitudinal groove upon its under side and corresponding to the said chambered portion of the carrier, one of the sides of the breech-piece extending down as a cheek upon one side of said chambered portion of the carrier and said chambered portion of the carrier constructed with a longitudinal slot in that side, and a spring extractor-hook arranged in that cheek of the breech-piece, its forward end adapted to extend into and work through said longitudinal slot in the carrier and constructed with a shoulder upon its inner end in rear of the nose of the extractor, said shoulder adapted to engage the rear end of a cartridge in the chamber of the carrier, substantially as and for the purpose described.

3. In a magazine fire-arm in which the magazine is arranged below the barrel and in which the breech-piece is adapted to move backward and forward to open and close the rear end of the barrel, the magazine being provided with a spring to operate upon the column of cartridges to force them rearward, the combination therewith of a carrier arranged to move up and down in a vertical plane, the said carrier constructed with a longitudinal chamber opening from its forward end and adapted to receive a cartridge from the magazine when the carrier is in the down position, and a two-armed check hung in the said carrier and so as to swing in a plane parallel with the chamber, the end of the forward arm of the said check beveled upward and backward, the other arm forming a tail which may extend into the rear portion of the said chamber, substantially as described, whereby under the action of the magazine-spring the rearmost cartridge in the magazine as it passes into the carrier imparts a swinging movement to the said check to bring its nose at the rear of the next cartridge in the magazine and so as to serve as a stop for the column of cartridges, substantially as described.

4. In a magazine fire-arm in which the breech-piece is arranged to slide backward and forward longitudinally and adapted to swing up and down at its forward end as upon a pivot at the rear, the combination therewith of a carrier hung at the rear below the breech-piece and so as to swing in a vertical plane, the carrier constructed with a chamber opening from its forward end toward the magazine and barrel, the said chamber adapted to receive a cartridge from the magazine, a lever *h*, hung by its rear end to the carrier and extending forward, adapted to bear upon a stationary shoulder *k* in the receiver, and the breech-piece constructed with a bearing-surface adapted to engage said shoulder *k* between its pivot and said stationary shoulder *k* as the breech-piece approaches its extreme down position, substantially as and for the purpose described.

5. In a magazine fire-arm in which the magazine is arranged below the barrel and opening into the receiver at the rear, the combination therewith of a breech-piece adapted to open and close the rear end of the barrel, a carrier hung at the rear and so as to swing in a vertical plane, a hammer, and a trigger adapted to engage said hammer in the cocked position, the carrier constructed with a shoulder 2 and the trigger constructed with a corresponding projection *w* in the path of the said shoulder 2 of the carrier, and with which said shoulder 2 is adapted to engage as the carrier rises, but escape therefrom as the carrier descends, substantially as and for the purpose described.

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