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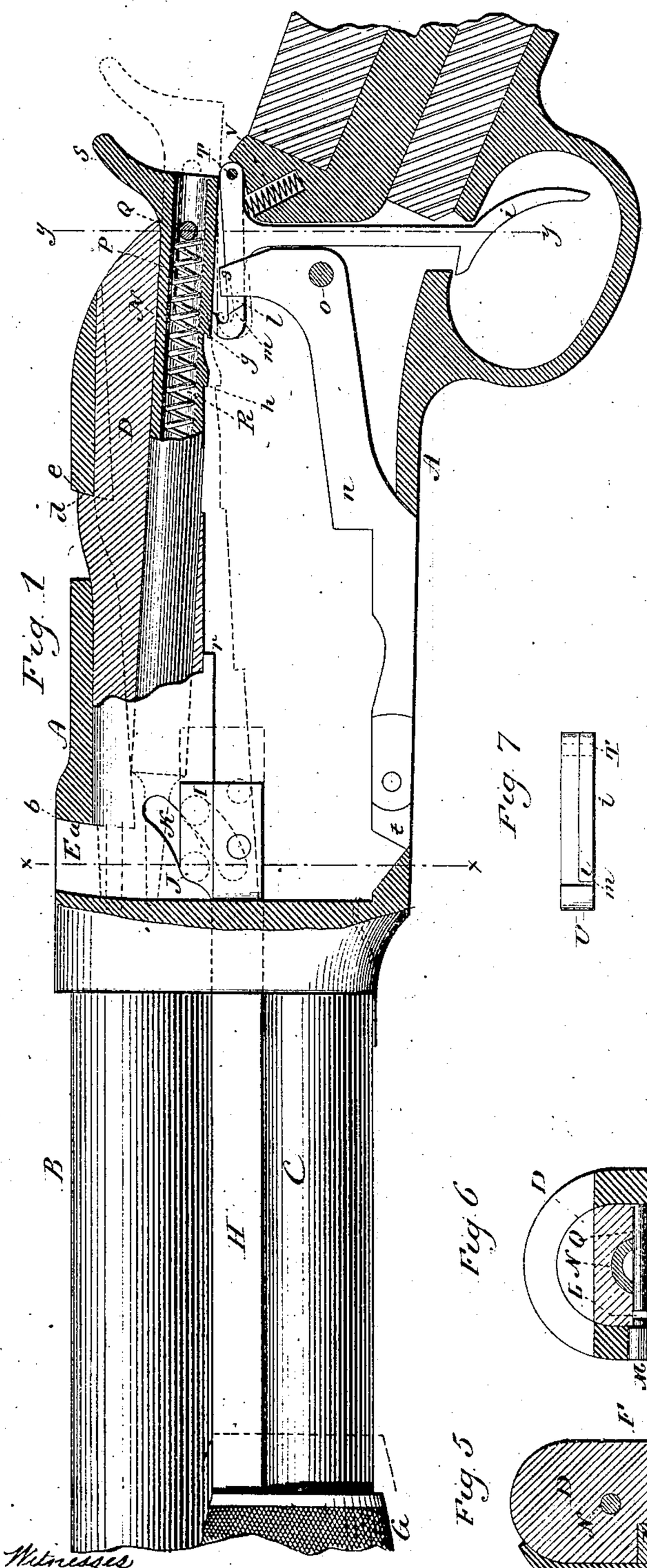
MAGAZINE FIRE ARM.

No. 409,600. Patented Aug. 20, 1889.



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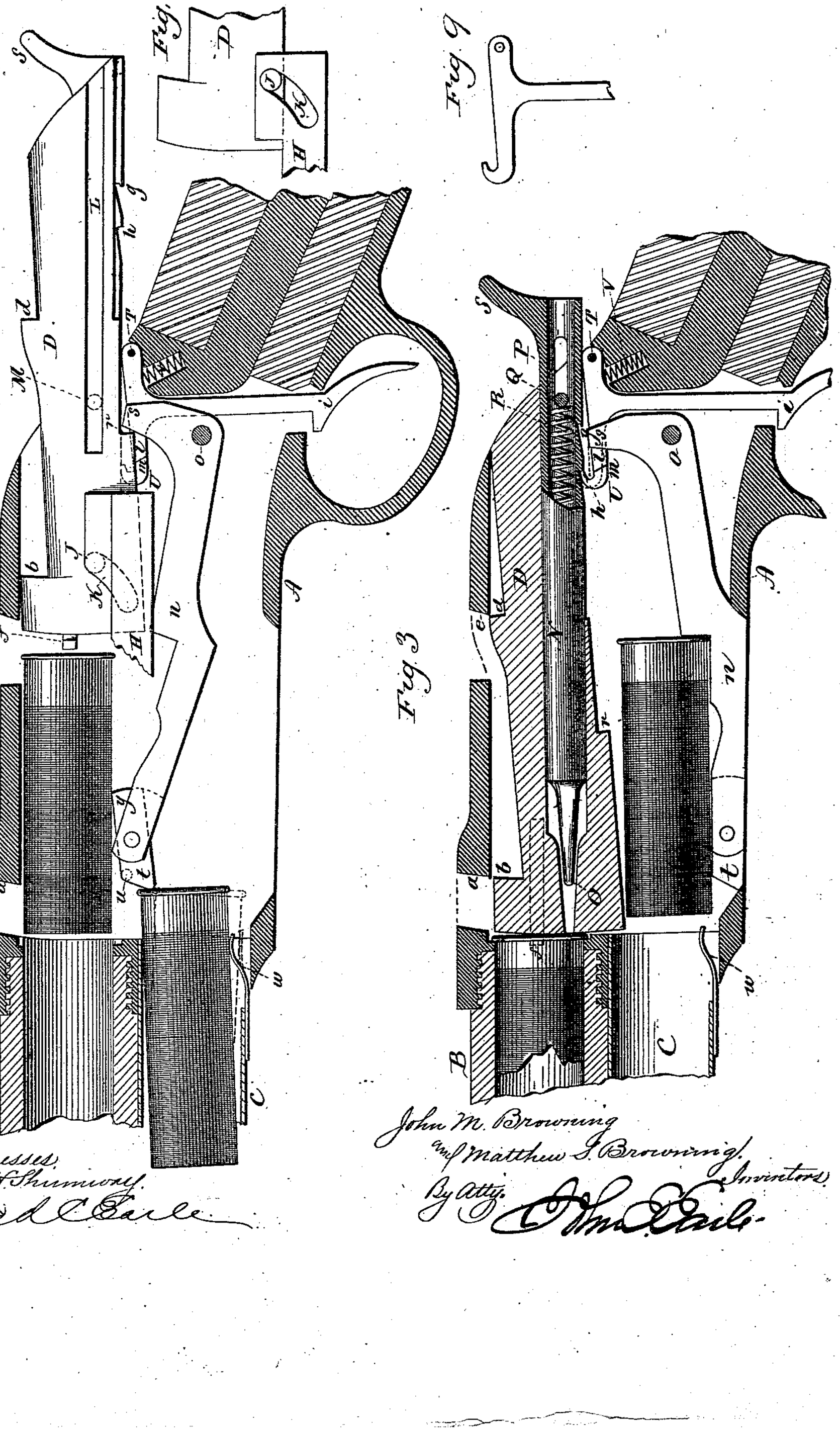

UNITED STATES PATENT OFFICE.

JOHN M. BROWNING AND MATTHEW S. BROWNING, OF OGDEN, UTAH TERRITORY.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 409,600, dated August 20, 1889.

Application filed May 21, 1888. Renewed January 8, 1889. Serial No. 295,807. (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 the 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 sectional side view showing the parts in the closed or normal position; Fig. 2, a top view of the same; Fig. 3, a longitudinal section illustrating the breech-piece as in the unlocked position; Fig. 4, a longitudinal section showing the parts in the extreme open position; Fig. 5, a section on line *x x* of Fig. 1, looking forward; Fig. 6, a transverse section on line *y y;* Fig. 7, a top view of the sear and trigger; Figs. 8 and 9, modifications.

This invention relates to an improvement in that class of fire-arms in which the breech-piece is in the form of a bolt and adapted to move longitudinally backward and forward substantially in line with the barrel, parts of the invention being applicable alike to single-loaders and magazine-arms.

The object of the invention is, principally, to produce a positive locking-resistance for the breech-piece against recoil by the engagement of the breech-piece itself with the receiver, thereby avoiding the employment of hinged dogs or braces—as in many of this class of arms—the result of which is that the mechanism is very greatly simplified and the cost of construction correspondingly reduced; and the invention consists in a breech-piece arranged to move longitudinally backward and forward in opening and closing the rear end of the barrel, the breech-piece constructed with one or more upwardly-projecting shoulders adapted to engage corresponding shoulders in the frame when the breech-piece is in its closed position, and the breech-piece adapted to receive a downward movement sufficient to disengage the breech-piece from the receiver before the breech-piece commences its rear movement, and in other details of 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 opening into the receiver at the rear. Below the barrel is the usual magazine C, also opening into the receiver at the rear, in the usual manner.

D represents the breech-piece, which is arranged longitudinally in the receiver, so as to extend through the rear of the receiver, so that the breech-piece may receive a longitudinal backward and forward movement. At the forward end the breech-piece is constructed with an upward projection E, so as to form a shoulder *a* upon the rear side of the projection. The receiver extends over the breech-piece, so as to form a shoulder *b* in rear of the shoulder *a* on the breech-piece when the breech-piece is in the closed position, as seen in Figs. 1 and 2. The receiver is open on the right-hand side of the breech-piece, the extension of the receiver over the breech-piece, as seen in Fig. 2, partially covering the breech-piece, but so as to leave an opening F on the right-hand side, as seen in Figs. 2 and 5. About midway of the breech-piece, on its upper side, a second shoulder *d* is formed, and the rear end of the opening of the receiver forms a corresponding shoulder *e*, as seen in Figs. 1 and 2, with which the shoulder *d* on the breech-piece is adapted to engage when the breech-piece is in the closed position, as seen in Fig. 1.

The breech-piece is operated by means of a handle G, arranged beneath the barrel and forward of the receiver, and from which handle a bar H extends rearward into the receiver, the rear end of the bar having a block I made fast to it, which block carries an inwardly-projecting stud J, which works in a corresponding groove K in the side of the breech-piece, as seen in Figs. 1 and 5. The groove K inclines rearward and upward, so as to make a cam-shaped groove with relation to the breech-piece in which the groove is formed. As the bar H moves rearward it operates in the inclined-shaped groove K in the breech-piece, and correspondingly forces the breech-piece downward, as indicated in

broken lines, Fig. 1, and as also seen in Fig. 3. This downward movement of the breech-piece must occur before its rearward movement commences, and as the downward movement is completed the stud J comes to a bearing at the rear end of the groove K, as seen in broken lines, Fig. 1. The downward movement of the breech-piece thus imparted takes the projections or locking-shoulders *a* and *d* below their corresponding shoulders *b* and *e* in the receiver, as seen in Figs. 1 and 3, which leaves the breech-piece free to move rearward. After the breech-piece has been thus dropped a continued rear movement of the bar H will correspondingly force the breech-piece rearward. To guide the breech-piece in its rearward movement, a groove L is formed longitudinally on the left-hand side of the breech-piece. (See Figs. 1 and 6.) This groove is substantially parallel with the under side of the breech-piece, and into it a stationary stud M in the side of the receiver extends, so that as the breech-piece moves rearward the stud serves as a guide for such rear movement, and also supports the breech-piece rearwardly. When the breech-piece is dropped, this groove comes into line substantially parallel with the axis of the barrel, and so that the breech-piece may be thrown to its extreme rear movement, or open, as represented in Fig. 4. Then, as the breech-piece is returned the groove L works over the stud M, as before, until the breech-piece reaches its extreme forward position. Then the stud J of the bar H reacts through the groove K, and imparts to the breech-piece an upward movement to bring the locking-shoulders of the breech-piece into engagement with the corresponding locking-shoulder of the receiver. In this upward movement of the breech-piece it turns upon the stud M as a pivot.

The forward end of the breech-piece is provided with a spring extractor-hook *f* upon the side of the opening in the receiver, which extractor is of the usual form, and the breech-piece is also provided with a stationary stud upon the opposite side, (not shown,) and such as is commonly employed in connection with the spring-extractor.

A recess is formed in the receiver forward to permit the up-and-down movement of the extractor and its stud, (not necessary to be shown,) so as to allow the vertical play necessary in the up-and-down movement of the breech-piece, but so that the cartridge is engaged by the extractor, in the usual manner, that the exploded shell, or cartridge if it be not exploded, may be withdrawn from the barrel in the rear or opening movement of the breech-piece, and as the breech-piece approaches its extreme rear position a stationary ejector-stud in the receiver, (indicated in broken lines, Fig. 2,) on the side of the receiver opposite the opening, meets the head of the cartridge-shell, so as to stop the rear movement of the shell on that side, while the extractor-hook is engaged with the opposite side, and because of such stopping by the stud the continued rear movement of the breech-piece and extractor-hook imparts a lateral swinging movement of the shell to the right sufficient to eject the shell from the receiver. This is a common expedient for ejecting the shell through the side of the receiver in this class of arms.

Longitudinally through the breech-piece the hammer N is arranged. The hammer is of tubular shape, terminating at its forward end in a striking-point O, as seen in Fig. 3, so that the hammer may slide longitudinally in the breech-piece, and through a corresponding slot P in the hammer a pin Q is inserted, which remains stationary while the slot permits the requisite amount of movement to the hammer. Forward of this pin Q in the hammer a spiral spring R is arranged, which bears forward against the closed end of the hammer and rearward against the pin Q, and so that as the hammer is drawn rearward the spring will be compressed, and then the reaction of the spring will impart the striking movement to the hammer. The hammer is provided with a thumb-piece S, by which it may be drawn rearward.

In the receiver beneath the hammer, and upon a pivot T, the sear U is hung, supported by a spring V below it, so as to bear its nose upward toward the hammer, and the hammer is constructed with the usual half and full cock notches *g h*, so that as the hammer is drawn to the full-cock position, as seen in Fig. 3, the sear will engage the hammer and hold it in that position. The rear movement of the breech-piece under the action of the handle takes the notches of the hammer to the rear of the nose of the sear, as seen in Fig. 4, and then as the breech-piece is moved forward, and when the full-cock notch *h* reaches the nose of the sear, it engages therewith, as seen in Fig. 3, so that the hammer will be held in the full-cock notch, while the breech-piece continues its forward movement and is brought to the locked position. Thus, under the closing movement of the breech-piece, the hammer is left at full-cock.

A trigger is arranged by which the sear may be disengaged from the hammer, so as to permit the hammer to fly forward and impart its blow. Under the best arrangement the trigger *i* is hung upon the same pivot T as the sear, but at one side of the sear, as seen in Fig. 7, so as to swing in a plane parallel with the sear. The forward end *l* of the trigger is arranged to engage a corresponding shoulder *m* on the sear, as seen in Fig. 1, this shoulder being inclined upward and forward, so that a pull upon the trigger brings the shoulders *l m* into engagement, as seen in Fig. 1, so that a continued pull of the trigger will draw the sear downward and out of engagement with the hammer, as indicated in Fig. 1; but as the trigger stands in the pulled position, as seen in Fig. 1, the

sear is free for a further downward movement, as indicated in broken lines, Fig. 1, and will receive such downward movement as the breech-piece drops, as also indicated in broken lines, Fig. 1. Therefore, if the trigger be held in the pulled position, as seen in Fig. 1, and the breech-piece be then opened under the dropping movement of the breech-piece, the sear will be pressed downward, as indicated in broken lines, Fig. 1. Then, as the opening movement of the breech-piece continues the sear will still be held downward until in the return of the breech-piece the full-cock notch of the hammer comes to the nose of the sear; then the sear will rise and engage that full-cock notch, as seen in Fig. 3. Now, if the trigger be held in its rearward position, as seen in Fig. 3, and the breech-piece be raised to the locked position, such rise of the breech-piece will take the full-cock notch *h* above and out of engagement with the sear, as indicated in broken lines, Fig. 3, there leaving the hammer free to fly forward; but if the trigger be left free the engagement of the sear and hammer will continue while the breech-piece is being brought to the locked position, and then the pull upon the trigger will discharge the hammer. Under this arrangement, and for rapid firing, the trigger is held in the pulled position, as seen in Figs. 1 and 3. Then the opening and closing movement of the breech-piece engages the hammer with the sear, as before described, and the final locking of the breech-piece will discharge the hammer, so that the movement of the handle which operates the breech-piece produces the discharge of the hammer, as the locking of the breech-piece is completed, but such release of the hammer cannot occur until the breech-piece is substantially locked. Because of this arrangement the trigger-finger has nothing to do except to hold the trigger in the pulled position, the discharge of the hammer being produced under the locking movement of the breech-piece. If, however, such rapid firing is not desirable, the trigger may be left free and the hammer held at cock until such time as discharge is desirable.

A carrier *n* is hung in the receiver beneath the breech-piece upon a pivot *o*, so as to swing in a vertical plane, and is of substantially the usual construction.

The breech-piece is constructed with a shoulder *r*, which is adapted to engage a corresponding upward projection *s* from the carrier as the breech-piece approaches its extreme open position, and so that a cartridge having passed onto the carrier from the magazine, as indicated in Fig. 3, the carrier will be raised as the breech-piece approaches its extreme rear movement, as seen in Fig. 4, and correspondingly raise the cartridge to a position forward of the front face of the breech-piece. As the cartridge rises it strikes the overhanging portion of the receiver, so that it is thereby brought into a direct line between the breech-piece and barrel, as seen in Fig. 4, and so that as the breech-piece next moves forward it will force the cartridge into the barrel in the usual manner for this class of arms.

The magazine is charged when the breech-piece is in the open position. The forward end of the carrier is provided with a hinged dog *t*, hung therein so as to swing in a vertical plane, as from the position Fig. 3 to that in Fig. 4, it being forced so to do by the stud or shoulder *u* in the side of the receiver, against which the forward end of the dog strikes as the carrier reaches its extreme up position and so that the nose of the dog is turned down below the upper side of the mouth of the magazine. The dog then stands in a position to resist the rear movement of the column of cartridges in the magazine, to prevent their escape after the carrier has risen. As the carrier descends the dog is returned, as seen in Fig. 3, and so as to leave the rearmost cartridge in the magazine free to pass on to the carrier.

At the lower side of the magazine a spring *w* is arranged, the tendency of which is to hold the cartridge up against the upper side of the mouth of the magazine, as seen in Fig. 4. This spring is for the purpose of charging the magazine, and it yields for the passage of a cartridge into the magazine until the cartridge-head can escape the nose of the dog *t*, as indicated in broken lines, Fig. 4. Then the cartridge, being free, is forced upward by the spring and the dog holds that cartridge and the column in advance of it until the next cartridge is inserted, and so on until the magazine is fully charged. The dog also serves to aid in raising the rear end of the cartridge. Its tail *y* extends in rear of its pivot and consequently rises as the nose of the dog is turned downward, and this rising of the tail of the dog tends to force up the rear end of the cartridge, as seen in Fig. 4.

We have represented the groove K as formed in the breech-piece and the stud J on the bar H; but this order may be reversed and the groove formed as substantially a part of the slide, and the stud on the breech-piece, as indicated in Fig. 8, and accomplish the same result in substantially the same way.

In case it is not desirable that the sear should have the independent movement which we have described, whereby the most rapid firing may be produced, the sear and trigger may be made integral, as represented in Fig. 9.

It will be understood that the common longitudinal firing-pin and hammer may be arranged as a well-known substitute for the longitudinal hammer in the breech-piece. This substitution is too well known to require illustration or particular description.

We claim—

1. In a fire-arm having the barrel open into the receiver at the rear, the combination therewith of a longitudinally-reciprocating

breech-piece constructed with one or more upwardly-projecting shoulders and the receiver with one or more corresponding shoulders, with which said shoulder on the breech-piece will engage when the breech-piece is in the fully-closed position, the said breech-piece also hung at its rear end, whereby a vertical swinging movement may be imparted to said breech-piece, a handle beneath the barrel forward of the receiver, with a bar extending therefrom into the receiver, the rear end of the bar within the receiver, and the breech-piece constructed the one with a cam-shaped groove and the other with corresponding stud, substantially as described, and whereby under the first part of the rear movement of said handle and bar the forward end of the said breech-piece will be dropped, and then under the last part of the forward movement of said bar the forward end of the breech-piece will be raised to respectively engage and disengage the shoulder of the breech-piece and receiver.

2. In a fire-arm having a barrel open into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece constructed with one or more upwardly-projecting shoulders, and the receiver with one or more corresponding shoulders, with which the said shoulder on the breech-piece will engage when the breech-piece is in the fully-closed position, the said breech-piece also hung at its rear end, whereby a vertical swinging movement may be imparted to said breech-piece, a handle beneath the barrel forward of the receiver, with a bar extending therefrom into the receiver, the rear end of the bar within the receiver, and the breech-piece constructed the one with a cam-shaped groove and the other with a corresponding stud, a hammer extending longitudinally through the breech-piece provided with one or more engaging-notches, a sear hung in the receiver below the hammer and so as to swing in a vertical plane, the nose of the said sear adapted to engage a corresponding notch on the hammer as the breech-piece approaches its closed position, and a trigger, substantially as described.

3. In a fire-arm having the barrel open into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece constructed with one or more upwardly-projecting shoulders, and the receiver with one or more corresponding shoulders, with which said shoulder on the breech-piece will engage when the breech-piece is in the fully-closed position, the said breech-piece also hung at its rear end, whereby a vertical swinging movement may be imparted to said breech-piece, a handle beneath the barrel forward of the receiver, with a bar extending therefrom into the receiver, the rear end of the bar within the receiver, and the breech-piece constructed the one with a cam-shaped groove and the other with corresponding stud, a hammer extending longitudinally through the breech-piece provided with one or more engaging-notches, a sear U, hung in the receiver and so as to swing in a vertical plane, and adapted to engage a corresponding notch on the hammer as the breech-piece is moved forward, a trigger hung to swing in a plane parallel with the sear, the said trigger and sear constructed with corresponding shoulders *l m*, adapted to engage each other but leave the sear free for downward movement independent of the trigger, substantially as and for the purpose described.

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