(No Model.) 2 Sheets—Sheet 1.

E. WHITNEY & W. C. SCHARF.

MAGAZINE FIRE ARM.

No. 354,757. Patented Dec. 21, 1886.

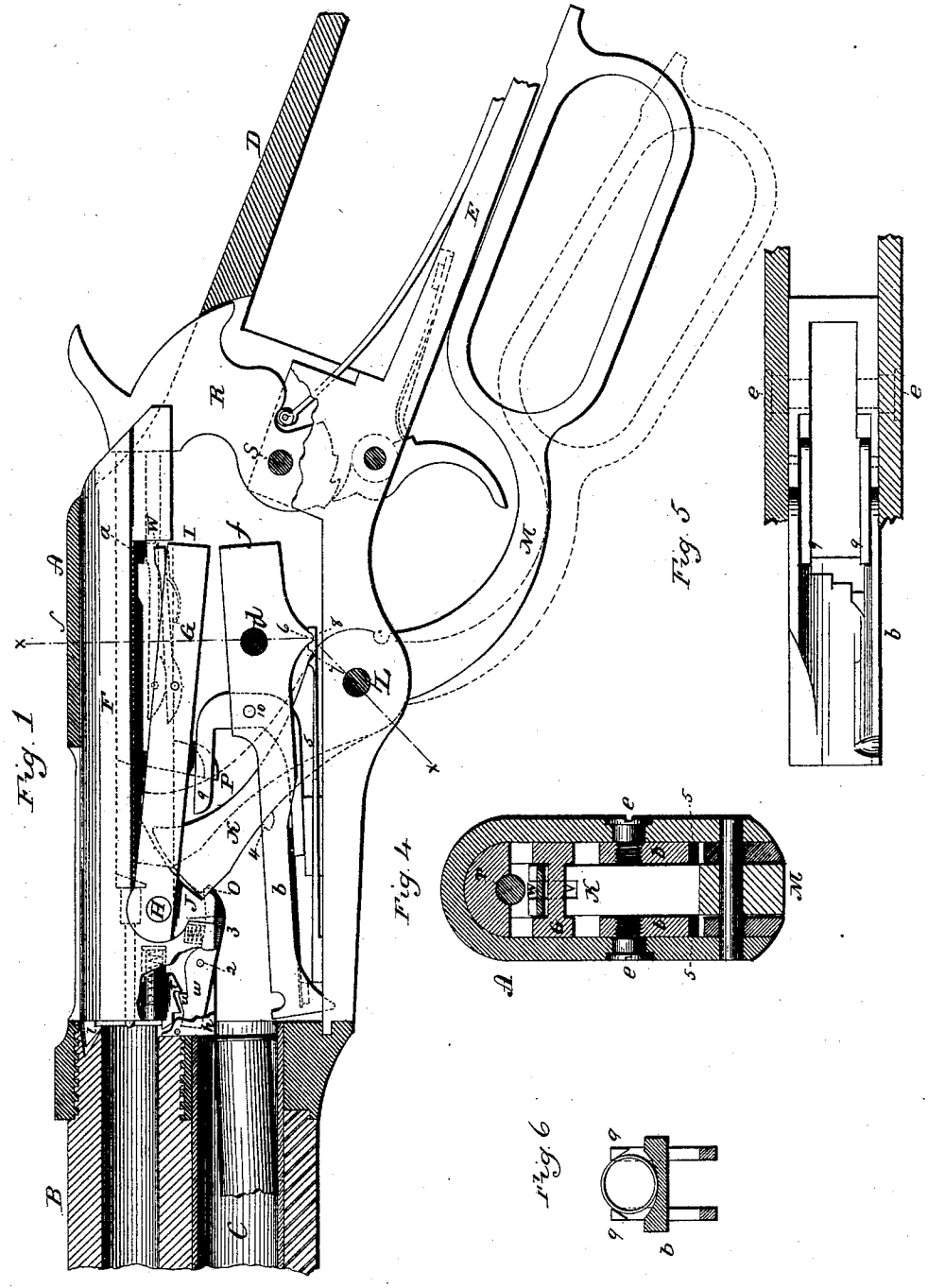

Fig. 1

Fig. 5

Fig. 4

Fig. 6

Witnesses.
J. F. Shumway
Fred C. Earle

Eli Whitney by Wm. C. Scharf By Atty. Inventors.
Wm. C. Earle.

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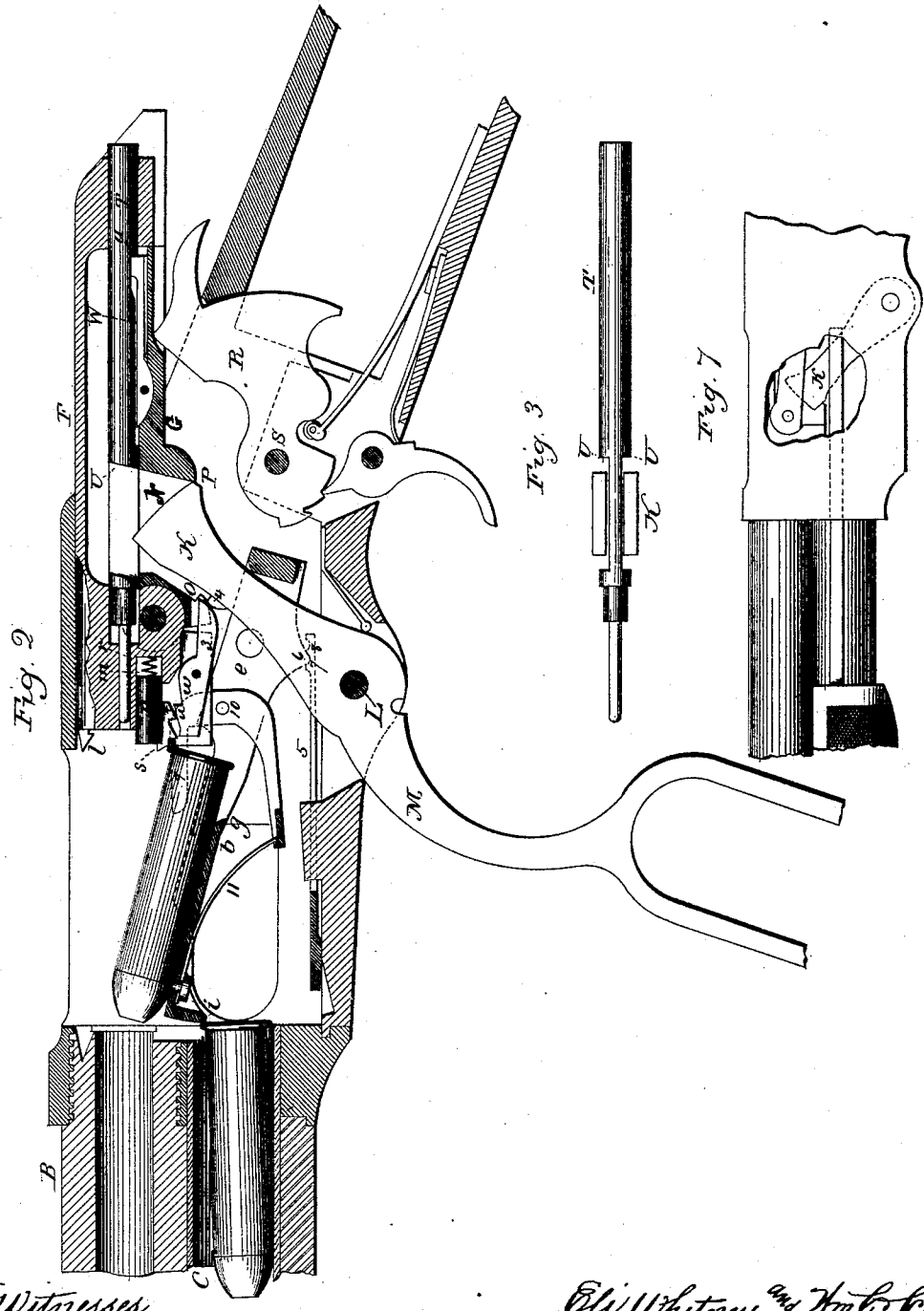

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UNITED STATES PATENT OFFICE.

ELI WHITNEY AND WILLIAM C. SCHARF, OF NEW HAVEN, CONNECTICUT; SAID SCHARF ASSIGNOR TO SAID WHITNEY.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 354,757, dated December 21, 1886.

Application filed August 23, 1886. Serial No. 211,607. (No model.)

To all whom it may concern:

Be it known that we, ELI WHITNEY and WILLIAM C. SCHARF, of New Haven, in the county of New Haven and State of Connecticut, 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 sectional side view showing the parts in the closed or normal condition; Fig. 2, a sectional side view showing the parts in the position of the breech open; Fig. 3, a longitudinal section through the firing-pin, looking downward; Fig. 4, a vertical section on line *x x;* Fig. 5, a horizontal section showing a top view of the carrier; Fig. 6, a vertical section through the carrier, looking rearward; Fig. 7, a modification illustrating the lever K as operated by a handle forward of the receiver beneath the barrel.

This invention relates to an improvement in that class of magazine fire-arms in which the magazine is arranged beneath the barrel, and both the magazine and barrel open into the receiver at the rear, and having a breech-piece arranged in axial line with the barrel, and so as to move backward and forward in opening and closing the barrel, and in which a carrier is hung in the receiver in rear of the magazine, so as to swing upward and downward on its pivot to transfer a cartridge from the magazine to a position forward of the breech-piece, and so that in the closing movement of the breech-piece the cartridge will be forced from the carrier into the barrel.

A represents the receiver, to the forward end of which the barrel B is arranged, and beneath the barrel the magazine C, both opening into a recess in the receiver at the rear, and the receiver provided with tangs D E at its rear end, by which it may be attached to the stock, all in the usual manner.

F is the breech-piece, arranged in the receiver in axial line with the barrel, and so as to receive a reciprocating movement backward in opening, as from the position in Fig. 1 to that seen in Fig. 2, and return to close the barrel.

G is a brace hung to the breech-piece near its forward end upon a pivot, H, and so as to be moved with the breech-piece in its backward and forward movement. The brace extends nearly to the rear end of the breech-piece, and its pivot being horizontal and at right angles to the axis of the breech-piece, is adapted to receive an up and down swinging movement, as indicated by broken lines in Fig. 1. When the brace is in its down position its rear end abuts against a shoulder, I, in the receiver, and so as to support the breech-piece against recoil. The brace is also constructed with a downwardly-projecting arm, J, from its hub.

K is a lever hung in the bottom of the receiver upon a pivot, L, and, as represented in Figs. 1 and 2, the lever is constructed with an extension, M, therefrom to form the trigger-guard and handle—a common and well-known device. The brace G is constructed with a vertical opening, N, (see Fig. 2,) in which the upper end of the lever works. When the breech-piece is fully closed, the lever K bears downward against the shoulder O on the arm J of the brace G, and so as to force the rear end of the brace downward against the abutment I; but when the lever K rises from the shoulder O, then the brace is free to rise. In its ascent the lever K strikes a downward projection, P, on the brace, said projection being forward of the pivot upon which the lever is hung, and so that the lever, continuing its rising or rear movement, as indicated in broken lines, Fig. 1, will strike the said projection P and cause the brace G to be raised above the abutment I, as seen in broken lines, Fig. 1, the breech-piece being recessed sufficient to receive the brace; and when the brace is so raised the breech-piece is free, and the further rear movement of the lever will force the breech-piece and its brace rearward to its extreme open position, as seen in Fig. 2; then as the lever K is returned it strikes the forward end of the recess N and forces the breech-piece forward to its closed position, at which time the rear end of the brace has reached the forward face of the abutment I, and then the

further continued movement of the lever K brings it to bear upon the shoulder O of the arm J, and so as to turn the brace to its down or locking position, as seen in Fig. 1.

R is the hammer, hung in the usual manner upon a pivot, S, and provided with the usual mainspring and trigger. When the breech-piece is closed the nose of the hammer stands at the rear end of the breech-piece, and so that as the breech-piece is moved rearward it will turn the hammer to the full-cock position, as seen in Fig. 2, and when the hammer arrives at that position the breech-piece may continue its rear movement and pass over the nose of the hammer.

The firing-pin T is arranged longitudinally and centrally through the breech-piece, and so as to stand in the path of the upper end of the lever K. The firing-pin is reduced or flattened to form a shoulder or shoulders, U, which stand in rear of the upper end of the lever K. The upper end of the lever K is constructed with a vertical recess, V, (see Fig. 4,) so that it may span the contracted portion of the firing-pin; then as the lever K rises, as seen in broken lines, Fig. 1, its upper rear side strikes the shoulder U on the firing-pin at about the same time that the lever strikes the projection P on the brace, and so that in the continued movement of the lever to raise the brace the firing-pin will be retracted, as seen in Fig. 2; and that the firing-pin may be held in that retracted position, so that it cannot be forced forward until the breech-piece shall be locked, a spring-latch, W, is hung in the upper side of the brace, which, when the brace is in the down position, as seen in Fig. 1, stands free from the firing-pin; but as the brace rises the spring-latch comes to a bearing upon the under side of the firing-pin, and so soon as the firing-pin has been retracted the latch swings upward against a shoulder, *a*, in the firing-pin, and so as to interlock with the firing-pin and prevent the possible forward movement of the firing-pin until the brace is again thrown downward. As the breech-piece reaches its extreme forward position the firing-pin is still held by the latch W until, in the completion of the forward movement of the lever K, the brace is thrown downward into the locking position, then the latch escapes and leaves the firing-pin free; so that until the breech-piece is securely locked the firing-pin cannot be advanced to impart the blow of the hammer, if by accident the hammer should strike the firing-pin.

The carrier *b* is hung at its rear end upon a pivot, *d*, and extends forward toward the magazine. The carrier is constructed with a vertical opening, *e*, through which the lever K works. This opening extends to the rear of the pivot upon which the carrier is hung, and in rear of the pivot of the carrier a bearing, *f*, is formed, against which the rear side of the lever K may strike, and so that as the lever approaches the extreme opening position of the breech-piece it will strike the said bearing *f* and raise the carrier, as seen in Fig. 2. The pivot of the carrier is in each side of the receiver, as seen in Fig. 5, so that the lever is permitted to operate upon the carrier both at the rear and forward of the pivot. As the lever K is returned it strikes the forward end, *g*, of the opening in the carrier, and bearing thereon forces the carrier to its down position, as seen in Fig. 1. When the carrier is in its down position, the rear cartridge in the magazine is forced onto the carrier in the usual manner, and is raised by the carrier, as seen in Fig. 2, its rear end then standing forward of a downward projection, *h*, on the forward end of the breech-piece, and so that as the breech-piece advances it will force the cartridge forward up the incline of the carrier and into the barrel, as seen in Fig. 1, in the usual manner for this class of arms. At the same time the downward projection *h* from the breech-piece comes against the rear end of the next cartridge in the magazine, and holds the column forward to prevent the passage of the cartridge onto the carrier until the breech-piece commences its return. The forward end of the carrier has a downward extension, *i*, which supports the column of cartridges while the carrier is moving upward, as seen in Fig. 2, to prevent the last cartridge in the magazine from passing beneath the carrier. This is a common device.

The breech-piece is provided with the usual spring extracting-hook, 1, adapted to engage the flange of the cartridge in the usual manner.

In a recess, *m*, in the face of the breech-piece a longitudinally-sliding ejector, *n*, is introduced, having a spring, *r*, behind it, adapted to force it forward, as seen in Fig. 2, but yet so as to permit the ejector to be forced inward to come flush with the front face of the breech-piece. This ejector stands below the firing-pin, and has on its front face a shoulder, *s*, upon which the flange of the cartridge may rest, held thereon by the extractor above. This shoulder *s* stands beneath the flange of the cartridge when the breech-piece is closed, as seen in Fig. 1, and when the breech-piece is in such closed position a notch, *t*, is engaged by a corresponding nose, *u*, of a latch, *w*, hung upon a pivot, 2, in the downward extension of the breech-piece. The tail 3 of the latch extends rearward from the pivot and in the path of a shoulder, 4, on the forward side of the lever K, and so that when the breech-piece is brought to its forward position the ejector will be thrown inward and caused to engage the spring-latch *w*, as seen in Fig. 1, where it will stand until such time as the latch shall be tripped.

As the breech-piece approaches its extreme opening movement, under the action of the lever K, the shoulder 4 on the lever strikes the tail 3 of the latch *w* and raises the tail, so as to take the nose of the latch out of engagement with the ejector and leave the ejector free to be forced forward, as seen in Fig. 2. This forward movement of the ejector, under the

action of its spring, forces the lower side of the cartridge forward, the upper edge of the flange being held, so as to turn the front end of the cartridge outward and give to it an ejecting movement sufficient to throw the shell from the arm.

A sliding ejector of this character, broadly considered, is a common device. Our invention, so far as the ejector is concerned, resides in the devices by which the ejector is operated.

To hold the carrier in its up and down positions until such times as the lever shall come to its proper bearings to impart the up or down movement to the carrier, a spring, 5, in the bottom of the receiver bears against a downward projection, 6, beneath the pivot of the carrier. This downward projection rides upon the upper surface of the spring, and at the point where it bears two notches, 7 8, are formed, corresponding to the downward projection 6, and so that when the carrier is down it will rest in the rear notch, 8, of the spring; but as it is forced upward it will ride from that notch forward and into the forward notch, 7, as it approaches its extreme upward position. These notches serve to hold the carrier in either position.

The carrier is provided with fingers 9, hung therein upon a pivot, 10, and actuated by a spring, 11, to hold the cartridge upon the carrier, as seen in Fig. 6, to prevent its being thrown therefrom as the carrier rises. As seen in Fig. 2, these fingers are the same as found in Patent No. 204,863, and constitute no part of our present invention, and do not require particular description.

We have represented the lever K as provided with an extension, M, by which it will be operated beneath; but it will be understood that the lever K is adapted for operation by any of the known devices other than such an extension, M—as, for illustration, by means of a handle sliding longitudinally beneath the barrel, through an extension therefrom, into connection with the lever, as seen in Fig. 7. We therefore do not wish to be understood as limiting the invention to any particular device for operating the lever K.

We have illustrated the entire invention as applied to a magazine-arm; but it will be understood that the breech-piece and its operative mechanism may be employed to advantage in single loaders.

The spring-latch *w*, with the corresponding shoulder, *a*, in the firing-pin, may be employed in fire-arms in which a similar brace, G, is hinged to the breech-piece, but in which the opening and closing movement is otherwise imparted than as herein described, the locking-brace G, hinged to the breech-piece, broadly considered, being a well-known device.

The receiver is provided with an opening (indicated in Fig. 2) at the right-hand side, through which the magazine may be charged in the usual manner for charging such arms, not necessary to be particularly described.

We claim—

1. In a fire-arm in which the barrel opens into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece, F, a lever, K, hung in the receiver below the breech-piece, and arranged to swing backward and forward in a longitudinal plane, a brace, G, hinged to the breech-piece near its forward end and extending rearward, the receiver constructed with an abutment, I, against which the rear end of said brace is adapted to bear, the said brace having a vertical opening through it near the hinged end, and through which the upper end of the said lever K may work, the said brace constructed with a bearing, P, in rear of said lever, with a shoulder, O, forward of the lever, below the pivot on which the brace is hung, substantially as described.

2. In a fire-arm in which the barrel opens into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece, F, a lever, K, hung in the receiver below the breech-piece, and arranged to swing backward and forward in a longitudinal plane, a brace, G, hinged to the breech-piece near its forward end, and extending rearward, the receiver constructed with an abutment, I, against which the rear end of said brace is adapted to bear, the said brace having a vertical opening through it near the hinged end, and through which the upper end of the said lever K may work, the said brace constructed with a bearing, P, in rear of said lever, and with a shoulder, O, forward of the lever, below the pivot on which the brace is hung, with a firing-pin which extends longitudinally through the breech-piece, and in the path of the upper end of said lever K, the firing-pin constructed with a shoulder, U, against which said lever K is arranged to bear, substantially as described.

3. In a fire-arm in which the barrel opens into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece, F, a firing-pin longitudinally through said breech-piece, a brace, G, hinged to said breech-piece near its forward end and extending rearward, the receiver constructed with an abutment, I, against which the rear end of said brace may bear, the said brace arranged to swing in a vertical plane, a spring-latch, W, in the top of the brace and extending rearward, the firing-pin, which extends longitudinally through the breech-piece, and is constructed with a corresponding shoulder, *a*, with which the said latch may engage in the opening movement of the breech-piece, substantially as and for the purpose described.

4. In a fire-arm in which the barrel opens into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece, a lever hung below the breech-piece, extending upward and so as to swing in a longitudinal plane, the said lever arranged to impart said reciprocating movement to the breech-piece, an extractor-hook upon the upper forward end of the breech-piece, a spring-

sliding ejector, *n*, in the breech-piece below the firing-pin, a latch, *w*, hung in the breech-piece below said ejector, its nose arranged to engage a corresponding shoulder on said ejector, its tail extending rearward, the said lever constructed with a shoulder, 4, arranged to engage the tail of the said latch, substantially as and for the purpose described.

5. In a magazine fire-arm in which the magazine is arranged beneath the barrel, both the barrel and magazine opening into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece, a brace hung to the breech-piece near its forward end and extending rearward, the receiver constructed with an abutment, I, against which the rear end of said brace may bear, a lever, K, hung in the receiver below the breech-piece, and arranged to work through an opening in the said brace in rear of its pivot, said brace constructed with a shoulder, O, forward of said lever, and with a bearing, P, in rear of said lever, a carrier, *b*, hung upon pivots in the receiver, the said carrier having a vertical opening through it in which the said lever K may swing backward and forward, the said carrier constructed with a bearing, *f*, in rear of its pivot, with a bearing, *g*, forward of its pivot, and against both of which the said brace may operate, substantially as described.

6. In a magazine fire-arm substantially such as described, a longitudinally-reciprocating breech-piece, a lever, K, hung below the breech-piece and extending upward, adapted to impart reciprocating movement to said breech-piece, a carrier, *b*, hung in the receiver below the breech-piece, and arranged to swing up and down in the receiver, the carrier constructed with a vertical opening through which the lever K extends and is arranged to work, the said carrier constructed with a bearing, *f*, in rear of said lever, and with a bearing, *g*, forward of said lever, said carrier also constructed with a downward projection, 6, below its pivot, with a spring, 5, arranged in the bottom of the receiver, and constructed with notches 7 8, adapted to engage the said projection 6 on the carrier, substantially as and for the purpose described.

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