

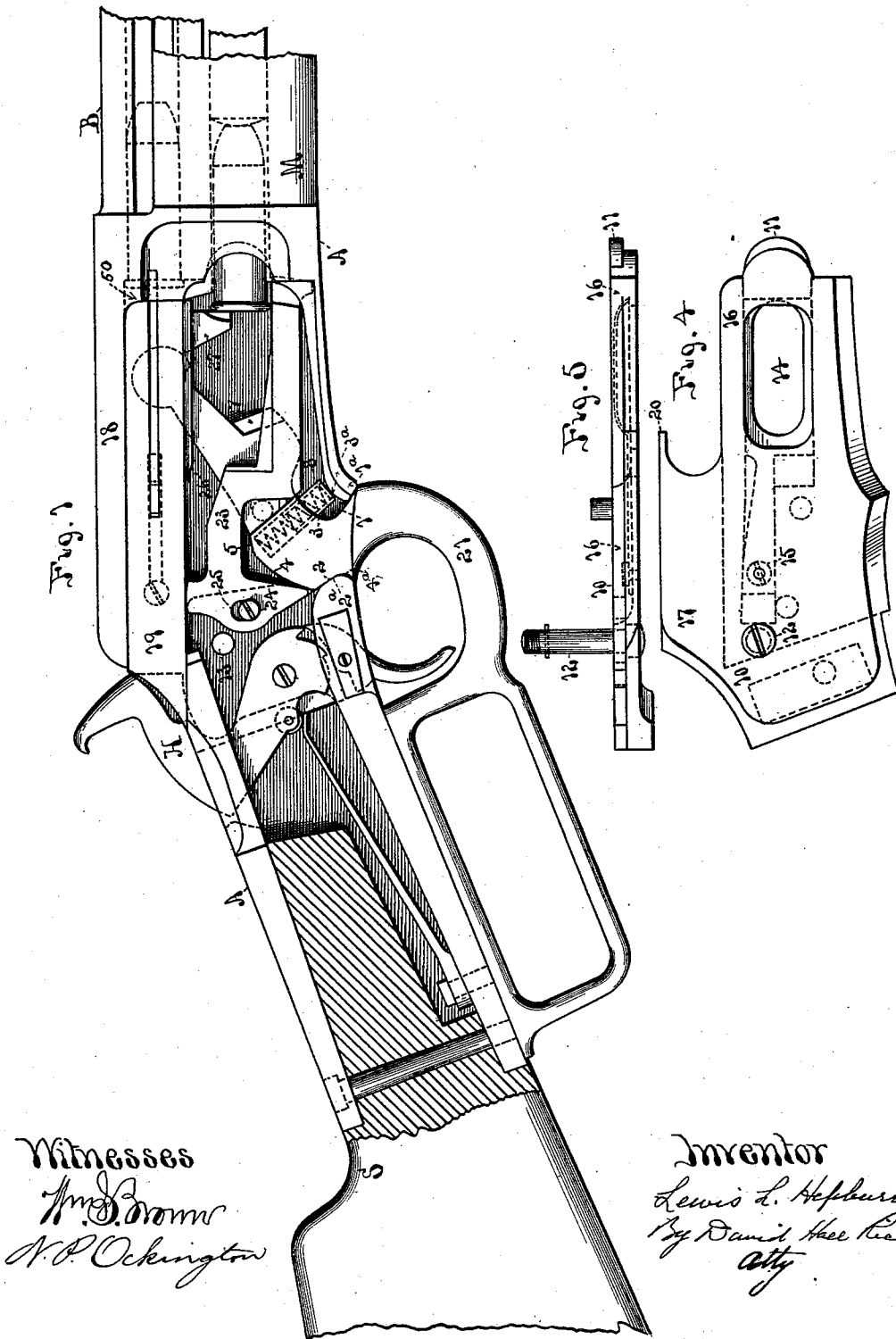
(No Model.)

3 Sheets—Sheet 1.

L. L. HEPBURN.
MAGAZINE FIRE ARM.

No. 463,832.

Patented Nov. 24, 1891.



Witnesses
W. D. Brown
A. P. Ockington

Inventor
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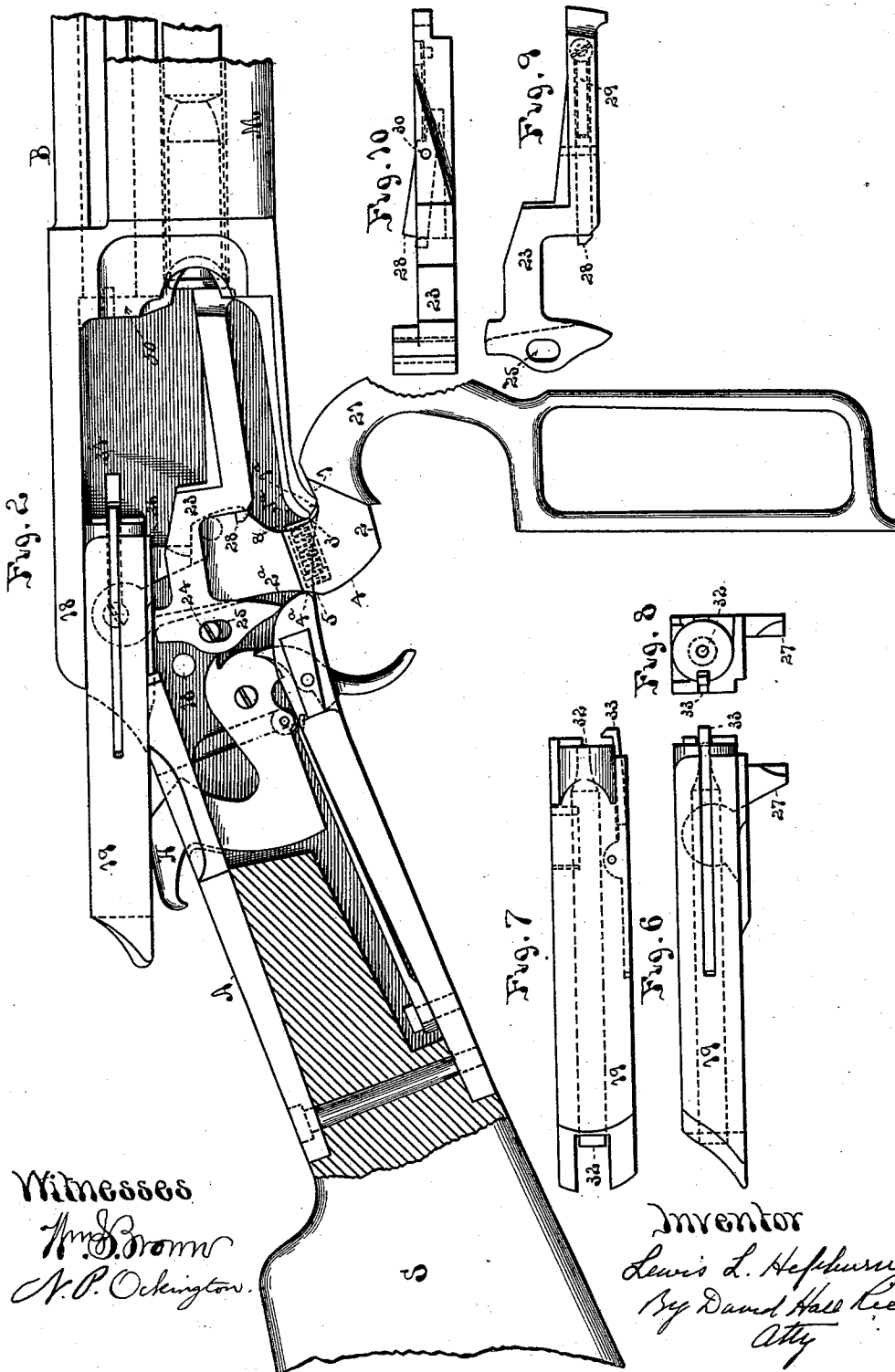
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3 Sheets—Sheet 2

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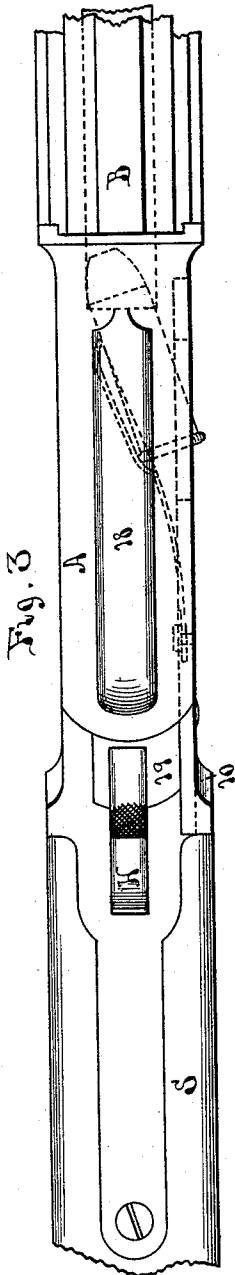


Fig. 16

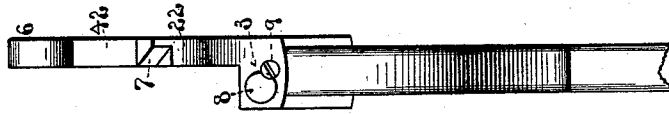


Fig. 11

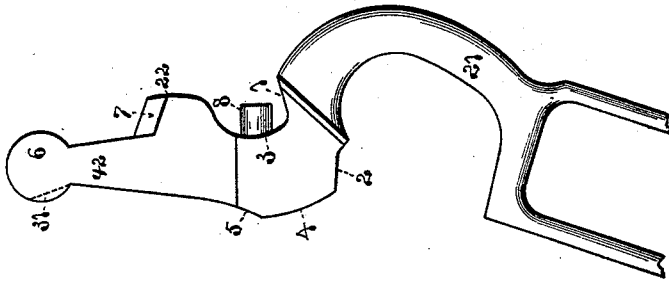


Fig. 13 Fig. 14



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UNITED STATES PATENT OFFICE.

LEWIS L. HEPBURN, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE
MARLIN FIRE-ARMS COMPANY, OF SAME PLACE.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 463,832, dated November 24, 1891.

Application filed June 26, 1891. Serial No. 397,570. (No model.)

To all whom it may concern:

Be it known that I, LEWIS L. HEPBURN, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Magazine Fire-Arms, of which the following is a specification.

My invention relates to breech-loading and magazine guns; and it consists in certain new and useful constructions and combinations of the various parts of the same, substantially as hereinafter described and claimed.

In the drawings, Figure 1 is a side view of a portion of a magazine-gun, partly in section, with the side plate removed to exhibit the breech and carrier mechanism, and it shows the same with the breech closed in position for firing. Fig. 2 is a similar view to Fig. 1 with the breech open to eject the shell of the spent cartridge and introduce a fresh one from the magazine. Fig. 3 is a top plan view of Figs. 1 and 2 with the side plate attached, showing in dotted lines the method of introducing the cartridge through the gate in the same to charge the magazine. Fig. 4 is a face view of the side plate removed from the frame of the gun. Fig. 5 is an edge view of the same. Fig. 6 is a side view of the breech-bolt, with its firing-pin, extractor, and other parts connected thereto. Fig. 7 is a top plan view of the same. Fig. 8 is a front end view of the same. Fig. 9 is a side view of the carrier which conveys the cartridge from the magazine to the barrel. Fig. 10 is a top plan view of the same. Fig. 11 is a side view of the breech-bolt lever detached from the gun. Fig. 12 is a lower edge view of the same. Figs. 13 and 14 are respectively side and end views of the spring-plunger which holds the breech-bolt lever locked, as herein described.

A is the frame of the gun, into the front end of which is secured the barrel B, and below the opening into the frame is attached the magazine. At its rear end the frame is bolted to the stock S, as shown in Figs. 1 and 2. This frame is made of a single piece of metal, which has milled out in it from one side the large chamber which contains the breech mechanism. This chamber is closed when the breech mechanism is in place by the side plate 10,

which is securely held in place by the tongue 11 at one end entering into an undercut part of the frame and at the other end by the screw 12, which fits and engages with the screw-hole 13 in the frame. The side plate is provided with an opening for the introduction of cartridges into the magazine, which opening is closed by the spring-gate 14, which is held to the side plate by the screw 15 and springs laterally inward when the cartridge is introduced, as shown in dotted lines in Fig. 2. This side plate also has formed on its inner face and the upper edge of its forward end the raceway 16, on which the lower side of the breech-bolt slides. The rear upper portion of this side plate at 17 projects upward outside of the raceway 16 until it touches the overhanging portion 18 of the frame. The breech-bolt 19 is thus secured on its two sides between the side plate 10 and the opposite face of the chamber in the frame, on its lower side by the raceway 16, and on its upper side by the overhanging portion of the frame 18, and between the faces of these parts it slides longitudinally to and fro to open and close the breech of the gun. It projects beyond the frame at its rear end when closed and comes in contact with the hammer H, so as to set the latter at full-cock by its backward movement. The forward end of the upward extension 17 of the side plate 10 is arranged at the proper distance from the breech of the barrel, and is so formed with the lip 20 that when the ball-cartridge is being transferred upward by the carrier from the magazine to the barrel, by reason of the breech-bolt being advanced partly over the opening, the flange at the rear end of the cartridge will not allow it to drop out sidewise through the opening left above that part of the raceway 16, and the point end of the cartridge cannot so drop out of the opening because the point of its ball traverses upward in a groove, as shown by dotted lines at 50, Figs. 1 and 2, in the frame between the magazine and the barrel; but when the shell or cartridge is extracted, being drawn back farther by the breech-bolt, the extractor throws its front end sidewise through the opening in front of lip 20 with a rotary motion, which

carries the flange of the shell so far forward that it passes out through the opening clear of the lip.

The lever 21, which moves the breech-bolt to and fro, is provided at its upper end with a circular head 6, which has a corresponding circular cavity milled out to fit it in the body of the breech-bolt from one side, and also an extension of said cavity downward to the lower side of the breech-bolt, so as to allow the head 6 and the neck 42 of the lever to turn back and forth in the breech-bolt in order to move the latter to and fro, the head 6 constituting in this operation the pivot on which the lever turns. Since this lever must be thrust inward and outward through an aperture in the lower part of the frame in the general direction of its length, and since it is used to lock the breech-bolt in place when the breech is closed, and since it is desirable that it should fill the opening in the frame through which it is thrust inward and outward, it is made of a peculiar formation, which I will now describe.

The opening through which the lever enters the chamber in the frame has a rigid abutment formed with the faces 1^a and 3^a in its frontside and has a rigid abutment formed with the faces 2^a and 4^a on its rear side. These abutments with their faces so formed correspond substantially with the requirements of the curved faces 1, 2, 3, and 4 of the lever 21, which are essential to enable it to operate in opening and closing and locking the breech-bolt. The face or edge 1 is struck from the center of the head 6 of the lever 21, and the opposite face or edge 2 of the lever is struck from the same center. These faces or edges serve to guide the movements of the lever against the abutment-faces 1^a and 2^a in locking and unlocking the breech-bolt. The face or edge 2 and the abutment-face 2^a especially form a firm brace to lock the breech-bolt when it is closed, as shown in Fig. 1. The curved faces or edges 3 and 4 of lever 21 are so formed that as the lever is thrown forward they will pass closely between the abutment-faces 3^a and 4^a and allow the lever to be thrust outward by the backward movement of the breech-bolt, in which the head 6 of the lever turns as the breech-bolt moves backward. In this part of the operation the abutment-face 3^a forms the fulcrum on which the face 3 of the lever takes its bearing to draw the breech-bolt backward. Meantime, as before described, the curved face 4 is passing outward by the abutment-face 4^a.

Above and adjacent to the face 4 of the lever is the edge or face 5, which is so formed that it comes against the abutment-face 4^a when the breech-bolt is thrown clear back, as shown in Fig. 2, and forms in this position the fulcrum-bearing for drawing the breech-bolt forward to close the breech without unduly crowding the lever upward against the breech-bolt during this part of the movement.

This face also acts with the spring-plunger 8 to keep the lever 21 in this extreme position until drawn backward by hand. The plunger 8 is mounted in the body of the lever 21 in a cavity, which it slides in and out of, projecting from the curved face 3, and it consists of a tube closed at its outer end and having a spring within it bearing against its head at one end and the bottom of the lever-cavity at the other, as shown by dotted lines in Figs. 1 and 2 and by full lines in Figs. 11 and 12. It is held in place by the screw 9, the head of which laps over into a groove formed longitudinally in one side of the plunger for part of its length toward its open end, and when the shoulder at the end of this groove comes in contact with the head of screw 9 it prevents the plunger from being pressed farther outward by its spiral spring. This plunger serves to hold the lever 21 in its locked position (shown in Fig. 1) and to prevent it from being accidentally unlocked. It also forms an elastic medium or bearing to ease the contact of the solid face of the lever against the abutments 1^a and 3^a of the frame, enabling the lever to move around upon them more freely. The lever 21 is also provided with a groove or notch 7 at the upper end of the curved face 22. This curved face and groove or notch operate the cartridge-carrier 23 in the following manner: The cartridge-carrier is hung upon the pin 24, which passes through an elongated slot 25 in the T-shaped head of the carrier, and when the breech-bolt is locked, as shown in Fig. 1, the face 4 of the lever 21 bears against the lower projection of the carrier-head, and the breech-bolt bears against the upper projection of the head, which is made slightly rounding. As the breech-bolt moves backward in unclosing the breech, the incline 26 on its lower side comes in contact with this upper projecting rounded part of the carrier-head and forces it downward on the pin 24 until the lower projection of the carrier-head engages with the abutment 2^a of the frame, thus raising the point of the carrier slightly and stopping off the next cartridge in the magazine to the one which has entered upon the carrier, so that it will not prematurely pass out of the magazine. By this arrangement of parts the carrier is held positively in its first position with the front end lowered to receive the cartridge upon it when the breech-bolt begins to move backward, and is also held positively in its second position (shown in Fig. 2) to stop off the succeeding cartridge when it has received the first one. The cartridge is easily and steadily delivered from the magazine to the carrier by its head bearing against the projection 27 from the breech-bolt.

The carrier has set on its inside face the spring-latch 28, which is pressed against by the spring 29 to project its nose beyond the face of the carrier. The latch turns upon the pivot 30, and the recess in the carrier will

receive it entirely within itself when the latch is pressed down. A set-screw holds the spring 29 in place, as shown in dotted lines. When the lever 21 is being thrown back from the position shown in Fig. 1, its face next to the carrier presses upon the latch 28 and keeps it entirely within its cavity in the carrier; but when the lever is thrown clear back it goes entirely past the latch 28, and the latter springs out in front of the curved face 22 of the lever. The latter is so inclined that when the operator commences to pull the lever backward to close the breech it will bear against the latch and raise the carrier so that its front end comes in line with the bore of the barrel and so that the cartridge held on the carrier is lifted up into the path of the breech-bolt. At this point the latch springs into the notch or slot 7, which holds the carrier in this position during the further forward movement of the breech-bolt, until it has engaged with the cartridge and entered it into the barrel of the gun. When the latch, by the inclined shape of the notch 7, has been pressed into its cavity in the carrier, and as the lever returns to the position shown in Fig. 1 in locking the breech, it again comes in contact with the T-head of the carrier and throws the forward end of it down ready to receive the next cartridge. The rounded head 6 of the lever 21 has one side partly cut away, as shown at 31, Fig. 11, and this cut-away part is so arranged as to allow the firing-pin 32, which passes through the breech-block longitudinally, to move forward to strike the cartridge when the latter is driven home in the barrel and the breech is entirely closed. When the breech-bolt is thrown back, however, the rounded portion of the head 6 turns into the path of the firing-pin and prevents its moving forward to strike the cartridge. This is accomplished by having the seat for the lever-head 6 so cut into the breech-bolt 19 as to cross the longitudinal hole in the breech-bolt through which the firing-pin slides to and fro. At this point in the length of the firing-pin a slot is cut out of its corresponding side, as shown in dotted lines in Fig. 7, of just the diameter of the circular seat of the lever-head 6 in the breech-bolt, and so as to lock the firing-pin back in the breech-bolt by the circular head when both are in place; but when the lever-head 6 turns in sending home the breech-bolt, so as to bring its cut-away part 31 into the slot in the firing-pin, the latter can move forward, so as to reach and strike the cartridge. The head 6 thus serves to hold the firing-pin in the breech-bolt, as well as to lock it in safety position when the latter is not closed.

The breech-bolt is provided with the spring-extractor hook 33 for engaging with and withdrawing the empty shell from the barrel, and in the frame is seated a spring-ejector 34, which strikes the shell on its farther side and throws it out sidewise through the aperture

in and over the side plate 10 of the frame when the breech-bolt has withdrawn it.

What I claim as new and of my invention is—

1. The combination of the lever 21, formed with the rounded head 6 and connecting-neck 42, with the breech-bolt 19, formed with the corresponding circular cavity counter-sunk into the same sidewise and adapted to receive the head and allow the latter to turn therein while it hinges the lever and breech-bolt together, substantially as described.

2. The combination of the lever 21, formed with the rounded head 6 at its end and having the part 31 of the same cut away, the breech-bolt 19, formed with the corresponding circular cavity countersunk into its side, and with the longitudinal firing-pin passage partly intersecting the same, and the firing-pin 32, provided with the corresponding slot in its side, arranged to allow it to move forward only when the lever is turned to its locking position and to retain the pin in the breech-bolt, substantially as described.

3. The combination of the frame A, arranged to allow the breech-bolt 19 to move to and fro in the upper part thereof and provided with the barrel and magazine extending forwardly therefrom, having their rear ends connected by an intervening groove in the frame, the reciprocating breech-bolt arranged to slide to and fro in the frame, the carrier arranged to elevate the cartridge from the magazine to the line of the barrel, with the ball end traversing said groove, and the side plate 10, having one portion of it carried up past the breech-bolt at such a distance from the forward side of the opening in the frame that the ball-cartridge cannot pass through the opening left between them, but that the cartridge may be thrown out sidewise when extracted, substantially as described.

4. The combination, in a breech-loading fire-arm, of the frame open on one side and having the barrel extending forwardly therefrom, the breech-bolt arranged to slide longitudinally to and fro in the upper part of the frame to close and open the breech, the lever 21, taking its bearing in the lower part of the frame and extending downward beyond the same and having its upper end engaging with the breech-bolt to move the same to and fro, and the removable side plate 10, provided with a race or guideway 16 for the under side of the breech-bolt and having a portion of it extending upward past the side of the latter, so as to bear against and inclose the same, and also so as to leave an opening above its forward end and above said raceway for ejecting the empty shell, substantially as described.

5. The combination of the barrel, the frame A, attached thereto, the reciprocating breech-bolt sliding to and fro on guideways in the frame and provided with the circular cavity countersunk laterally into one side thereof

and open for part of its diameter on its lower edge to receive the head and neck of the lever, and the lever 21, provided with the rounded head 6 on its upper end, arranged to be held by and pivot or turn in the circular cavity of the breech-bolt and to move longitudinally outward and inward through a slot in the lower side of the frame as it moves the breech-bolt to and fro, substantially as described.

6. The combination of the barrel, the frame A, connected thereto and provided with an opening in its lower edge having abutments 1^a and 2^a on opposite sides thereof, the reciprocating breech-bolt sliding to and fro on guideways in the frame, and the lever 21, pivoted at its upper end in the breech-bolt and provided with the corresponding parallel surfaces 1 and 2, arranged to bear upon the abutments 1^a and 2^a to lock the breech-bolt against the latter and to allow the lever to slide downward and outward between them to unlock and withdraw the breech-bolt, substantially as described.

7. The combination of the barrel, the frame A, connected thereto and provided with an opening in its lower edge, having abutments 1^a and 2^a on opposite sides thereof, the reciprocating breech-bolt sliding to and fro on guideways in the frame, the lever 21, pivoted at its upper end in the breech-bolt and provided with the corresponding parallel surfaces 1 and 2, arranged to bear upon the abutments 1^a and 2^a to lock the breech-bolt against the latter and to allow the lever to slide downward and outward between them to unlock and withdraw the breech-bolt, and the spring-plunger 8, arranged to hold the lever in its locking position, substantially as described.

8. The combination of the barrel, the frame A, connected thereto and provided with an opening in its lower edge, having abutments 1^a, 2^a, 3^a, and 4^a on opposite sides thereof, as shown, the reciprocating breech-bolt sliding to and fro on guideways in the frame, and the lever 21, pivoted at its upper end in the breech-bolt and provided with corresponding surfaces 1 2 3 4, arranged to bear upon the abutments 1^a 2^a 3^a 4^a to lock the breech-bolt when closed and to unlock and withdraw the same by guiding the lever through said frame-opening thereby, substantially as described.

9. The combination of the barrel, the frame A, connected thereto and provided with an opening in its lower edge, having abutments 1^a 2^a 3^a 4^a on opposite sides thereof, as shown, the reciprocating breech-bolt sliding to and fro on guideways in the frame, the lever 21, pivoted at its upper end in the breech-bolt and provided with corresponding surfaces 1 2 3 4, arranged to bear upon the abutments 1^a, 2^a, 3^a, and 4^a to lock the breech-bolt when closed and to unlock and withdraw the same by guiding the lever through said frame-opening thereby, and the spring-plunger 8, arranged to hold the lever in its locked position, substantially as described.

10. The combination of the barrel, the frame attached thereto and provided with the abutment 2^a and an opening through its lower side below the same, the reciprocating breech-bolt sliding to and fro in guideways in the frame, the lever 21, pivoted at its upper end in the breech-bolt and provided with the shoulder 2, arranged to lock it against the shoulder 2^a, and the spring-plunger 8, mounted in the lever, arranged to bear upon the frame and hold the latter in its locked position, substantially as described.

11. The combination of the barrel, the frame attached thereto, provided with an opening through its lower side, the reciprocating breech-bolt sliding to and fro in guideways in the frame, and the lever 21, pivoted at its upper end in the breech-bolt and moving in and out through the said frame-opening to reciprocate the bolt, and provided on its rear side with the surface 5, arranged to bear against the side of the frame-opening as a fulcrum to move the breech-bolt forward and so inclined or pitched to the longitudinal axis of the lever as to not press upwardly on the same and the breech-bolt, substantially as described.

12. The combination of the barrel, the magazine located on a plane below it, the frame A, connected therewith, the pivoted carrier arranged to transfer the cartridge from the magazine to the barrel, provided underneath its pivot with a downwardly-projecting shoulder, the reciprocating breech-bolt sliding to and fro on ways in the frame, and the lever 21, pivoted at its upper end in the breech-bolt and provided with the surface 4, arranged to come in contact with said carrier-shoulder when the lever is in its locking position and to lock the carrier in position to receive a cartridge from the magazine, substantially as described.

13. The combination of the barrel, the magazine located on a plane below it, the frame A, connected therewith, the pivoted carrier arranged to transfer the cartridge from the magazine to the barrel, provided with the latch 28, the reciprocating breech-bolt sliding to and fro on ways in the frame, and the lever 21, pivoted at its upper end in the breech-bolt and provided with the surface 22 upon its forward edge and with the notch 7, arranged to engage with said latch and elevate the carrier on the forward and closing movement of the bolt, substantially as described.

14. The combination of the barrel, the magazine located on a plane below it, the frame A, connected therewith, the carrier hung on the pivot 24 by the elongated slot 25 and provided with a T-shaped head projecting upward toward the lower side of the breech-bolt and downward toward the frame-abutment 2^a, and the breech-bolt arranged to move to and fro in the frame, provided with the cam projection 26 on its lower side, adapted to come in contact with one end of the head of the carrier as the breech-bolt moves backward and

to force the opposite end thereof down upon the abutment 2^a, so as to lift the front end of the carrier and arrest the cartridge in the magazine succeeding the one entering upon the carrier, substantially as described.

15. The combination of the barrel, the magazine located on a plane below it, the frame A, connected therewith, the carrier hung on the pivot 24 by the elongated slot 25 and provided with a T-shaped head projecting upward toward the lower side of the breech-bolt and downward toward the frame-abutment 2^a, the breech-bolt arranged to move to and fro in the frame provided with the cam projection

26 on its lower side, adapted to come in contact with one end of the head of the carrier as the breech-bolt moves backward and to force the opposite end thereof down upon the abutment 2^a, so as to lift the front end of the carrier and arrest the cartridge in the magazine succeeding the one entering upon the carrier, and the lever 21, adapted to engage with the breech-bolt and move the same to and fro, substantially as described.

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Witnesses:

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