

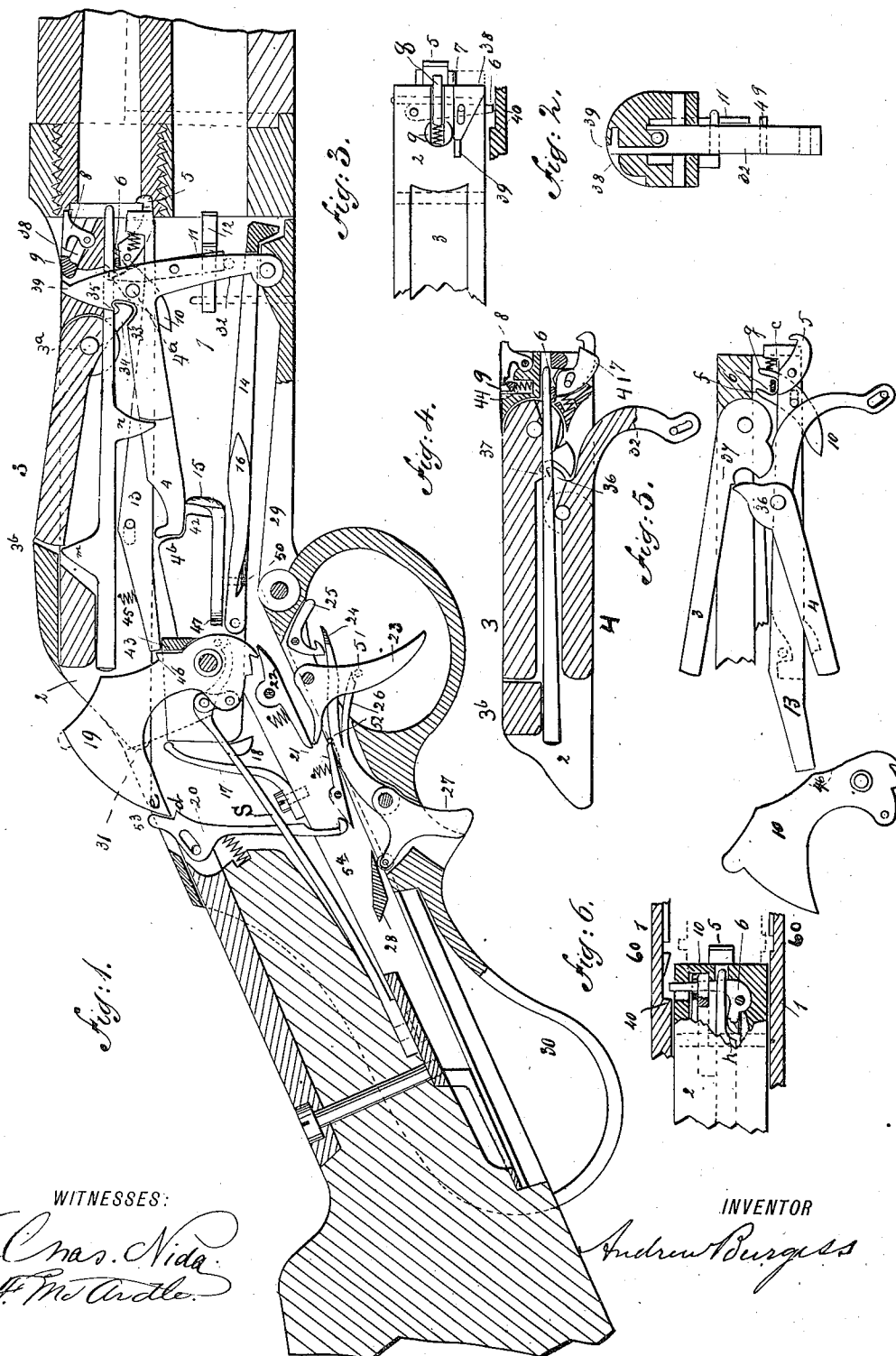
(No Model.)

3 Sheets—Sheet 1.

A. BURGESS.
MAGAZINE FIREARM.

No. 478,220.

Patented July 5, 1892.



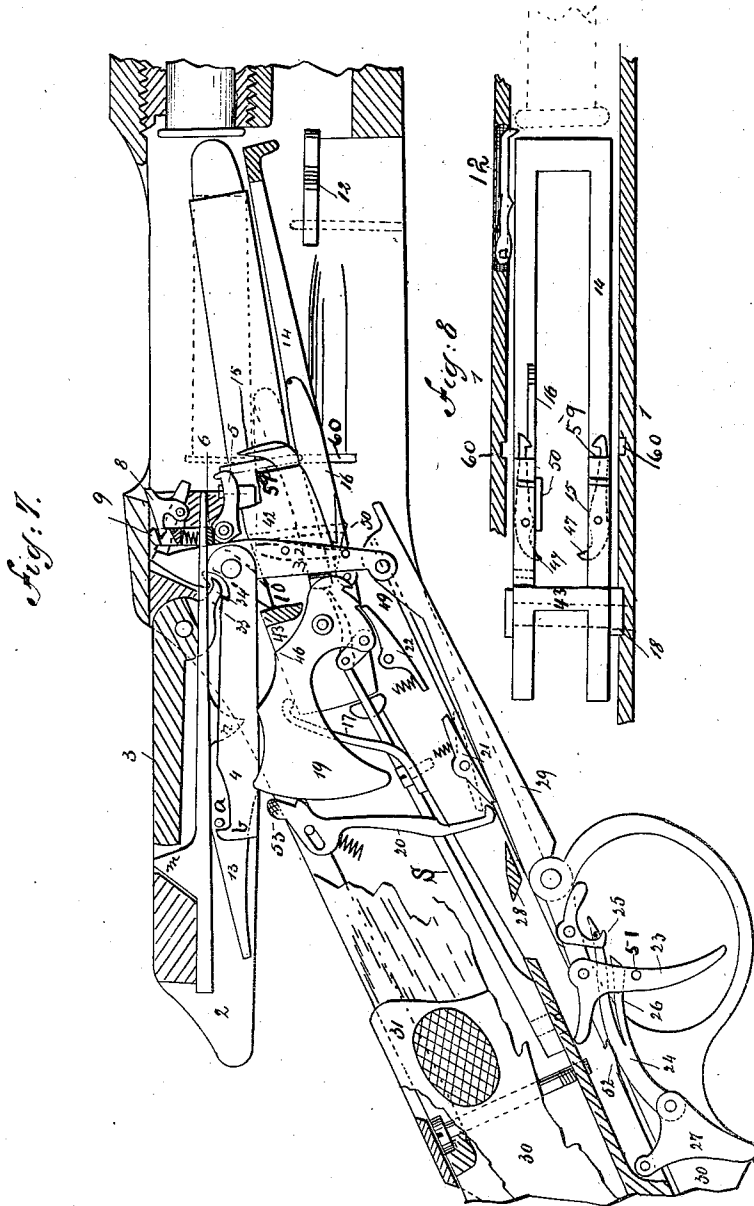
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3 Sheets—Sheet 2.

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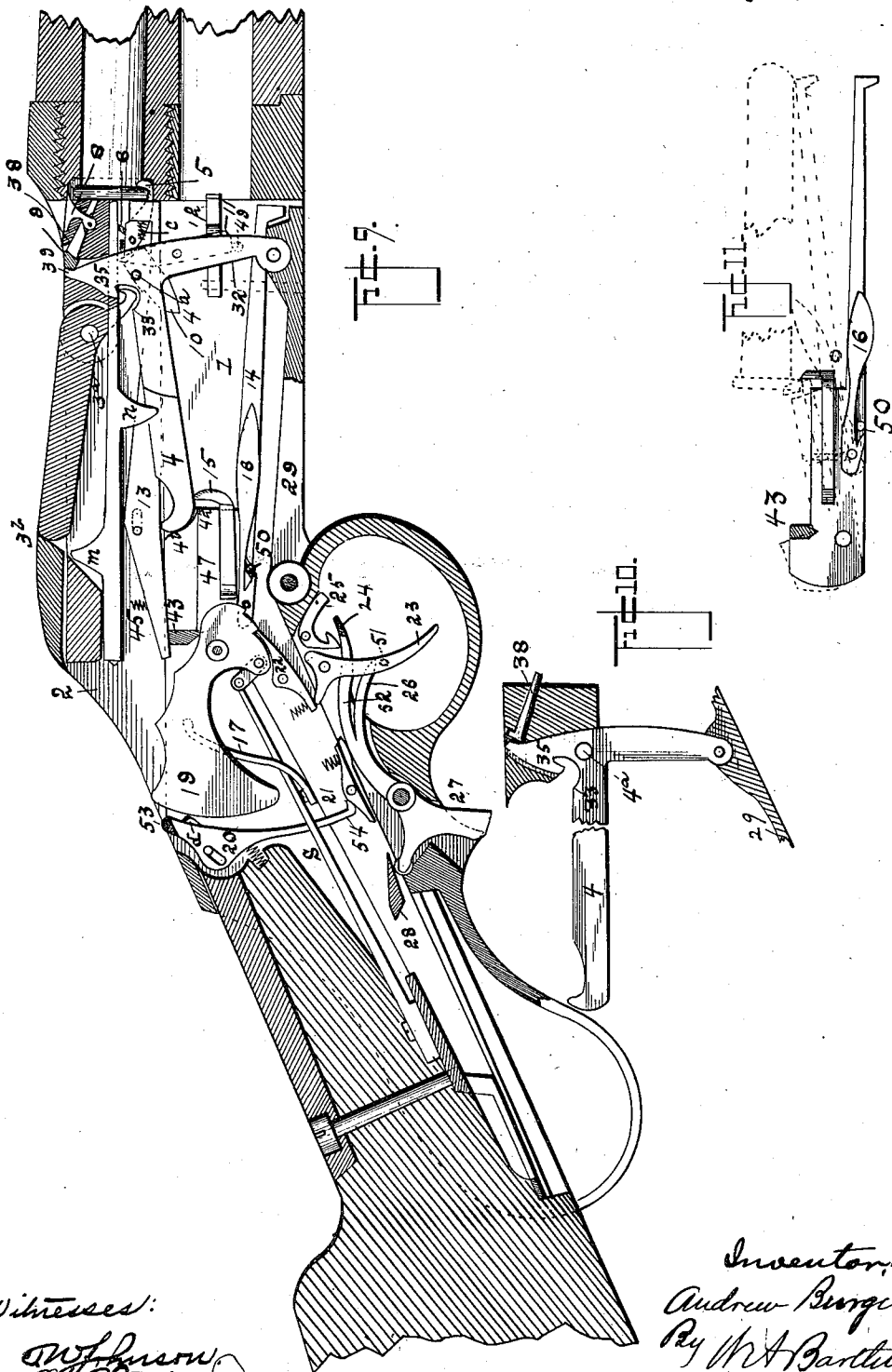
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MAGAZINE FIREARM.

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UNITED STATES PATENT OFFICE.

ANDREW BURGESS, OF OWEGO, NEW YORK.

MAGAZINE-FIREARM.

SPECIFICATION forming part of Letters Patent No. 478,220, dated July 5, 1892.

Application filed October 21, 1886. Serial No. 216,874. (No model.)

To all whom it may concern:

Be it known that I, ANDREW BURGESS, a citizen of the United States, residing at Owego, in the county of Tioga and State of New York, have invented certain new and useful Improvements in Magazine-Firearms, of which the following, in connection with the accompanying drawings, is a specification.

My invention relates to magazine-firearms; and its object is to combine great strength with easy and certain means of operation; also, by the arrangement of twin locking-braces to strengthen the breech; also, to secure automatic cocking and unlocking of the breech; also, to improve the means of moving and controlling the cartridges, and generally to improve arms of this species.

In the drawings, Figure 1 represents a longitudinal vertical section of this gun with the breech closed and hammer down, the gun being without ammunition of any kind. Fig. 2 is a vertical cross-section through the forward part of the bolt, showing the relation of the connecting-lever and starting-piece. Fig. 3 is the top plan of front portion of bolt and connected parts. Fig. 4 is a longitudinal vertical section of bolt, showing a modification of the locking-braces, the retaining-stud, ejector, and other details. Fig. 5 is a section showing the braces of Fig. 4 in locking position, the arrangement of the recoil cocking-piece and its relation to the hammer and extractor, and carrier-operating dog. Fig. 6 is a partial plan and horizontal section of the front portion of the bolt, showing the lever for operating the carrier-stud and extractor arranged to be operated by the firing-pin. Fig. 7 is a similar view to Fig. 1, but showing the gun in its open position. Fig. 8 is a top plan view of carrier, showing part of frame in section and the magazine-stop in said frame. Fig. 9 is a longitudinal section of the breech mechanism, showing the hammer cocked and handle unlocked, as after firing. Fig. 10 is a sectional detail of bolt-starting lever and connections. Fig. 11 is a central longitudinal section of carrier and attachments.

Similar figures and letters of reference indicate corresponding parts.

The numeral 1 indicates the frame of the gun, which is connected to the stock and barrel in usual manner. The bolt 2 reciprocates

lengthwise in the part of the frame known as the "receiver," as usual in bolt-guns. The bolt has a comparatively solid front, save where it is cut away for the reception of the ejector, extractor, firing-pin, &c. The body of the bolt is mortised through from top to bottom and contains two locking-braces 3 and 4, which fold into the mortise in the bolt to unlock, but incline outwardly against abutments 3^a and 4^b in the frame of the gun to lock the bolt. The brace 3 is pivoted in the mortise in the bolt, as by a cross-pin 3^a, and the lower brace 4 is separately pivoted, as by a cross-pin 4^a. It is manifest that the manner of pivoting or hinging the braces is not material, although it is advisable that the recoil of the bolt be taken up on the end of the braces instead of on the pin or pintle, as is usual in this class of firearms. The locking-brace 4 (shown in Fig. 1) has an arm or lever 32, integral or rigid therewith, and this lever is connected to a handle 30 (which handle reciprocates on the small of the stock) by means of a link 29, which link is pivoted to the lever and handle.

As will be seen in Fig. 1, a backward movement of handle 30 will draw on link 29. This will rock the lever 32 and swing the brace 4 up away from abutment 4^b and turn it into the mortise in the bolt. The same movement of lever 4 carries the shoulder 33 on said brace 4 against the projection 34 on brace 3 and causes said brace 3 to turn into the mortise in the bolt. The bolt now being unlocked, a continued backward movement of handle 30 will carry the bolt back by means of the same connections 29 and 32. The reverse movement of handle 30 moves link 29 forward, turns lever 32 on its fulcrum, and swings brace 4 against its abutment and also causes the extension 35 of lever 32 to engage the upper part of projection 34 and rock the upper brace on its pivot to locking position.

It is evident that any one of several constructions may be adopted for causing the locking-braces to fold into the mortise in the bolt or to extend out therefrom.

In Figs. 4 and 5 I show a modified construction in which the projections 36 and 37 on the respective braces cause the braces to move together. I have devised still other constructions which I consider equivalent. It will be observed that the engagement of the

hooks or projections on the two braces acts against any tendency of the braces to unlock under the shock of recoil.

A reciprocating piece 38 is attached by a slot and pin to the forward end of the bolt in position to be engaged and forced forward by the top 39 of the lever 32, so that said piece 38 may be forced against the rear end of the barrel, (or a shoulder in the frame,) and thereby serve as a fulcrum by which the lever 32 will start back the bolt.

The extractor 5 and ejector 7 are hung in the bottom of the bolt, the extractor being turned to grasp the cartridge by the cross-lever 6, which is hung horizontally in the forward part of the bolt in the path of movement of the firing-pin and recoil or cocking-piece 13. When said lever 6 is operated rearward by the cocking-piece 13, (or the firing-pin,) the bottom of said lever, wedging against an upward projection of the extractor behind its pivot, turns up its hooked forward end and holds it there to engage and extract the shell; but when the breech is opened in the last part of the rearward movement of the bolt the projecting end of lever 6, Figs. 3 and 6, is stopped by abutment 40 in the frame to turn lever 6 forward, and thereby lower or free the hooked end of the extractor by bearing down on its projection above and forward of its pivot, or the forward projection of the extractor may be omitted, when the turning forward of lever 6 will simply free the extractor. The ejector 7 is hung on the same pivot with the extractor, but is slotted so that it can be retired somewhat into the bolt, so as not to obstruct the rising cartridge. The ejector is pressed forward and down by spring 41, Fig. 4, and when the carrier rises its top strikes the ejector rearward by sudden impulse of the carrier-spring or momentum of being thrown up the breech mechanism to strike the shell and expel it sidewise upward and out of the frame.

The carrier-stud 10, Figs. 1, 5, and 6, is hung vertically in the forward part of the bolt and has its lower end inclined rearward. Said stud has the fork or arms *f* and *g* above its pivot to straddle the lever 6, so that when said lever is turned forward stud 10 is thereby closed up even with the bottom of the bolt, (by lever 6, bearing on arm *g*;) but when the firing-pin is forced forward its incline *h*, Fig. 6, bears against the short arm *i* of lever 6 to turn its long arm back into the bolt. This causes the projection *f* of the stud 10 to turn the lower part of said stud downward into position to raise the carrier, when the stud is carried back by the bolt by the stud 10 engaging shoulder 43 of said carrier. By this device the breech may be opened and closed when stud 10 is turned in without operating the carrier; but when the hammer falls or the gun fires the stud 10 is thereby turned into operative relation with the carrier.

The retaining-stud 8 is hung at the top of the face of the bolt to project forward and retain the cartridge which is being extracted

or hold it down in contact with the extractor. Said stud 8 is turned forward to project over the face of the bolt by a spring, as the spring-pin 9, which bears up against an eccentric undercut at the rear of the stud, and also enters a more abrupt notch when the stud is in its extreme forward position, so as to there resist the cartridge-flange most strongly; but when started back it resists but slightly to allow the easier ejection of the shell. The spring-pin 9 is also depressed by the top of the frame when the bolt reaches its rearward position, as seen in Fig. 7, to allow the stud 8 to be turned back easily to the position shown in same figure and permit the shell to be thrown sidewise upward out of the frame by the ejector, as before described. The vertically-moving carrier is hung on the same pivot with the hammer and operated upward by the stud 10, (carried by the bolt,) which engages the abutment 43 on the carrier above its pivot when the breech is opened, as in Fig. 7, and spring 17 throws the carrier up quickly to strike up the ejector, as described, and expel the shell, which action turns back stud 8.

To control the cartridge when rising and prevent it from flying out of position, I provide grooves 59, nearly or quite vertical on each side in the carrier in the proper path of movement of the cartridge-head when said cartridge is being raised by the carrier. In rising the cartridge-flanges enter said grooves 59, the walls of which prevent the heavy point of the cartridge from rising too far by grasping the flange, and thereby guiding the flange and holding the cartridge from turning its point above its feeding position.

In Figs. 1, 7, and 8 are seen levers 15, hung by vertical pivots in the rear part of the carrier. The forward ends of said levers are hooked or grooved to grasp the cartridge-flange, and these forward ends are free to open and allow the cartridge-head to enter between the hooks, as in Fig. 8; but when the breech opens to raise the carrier the down projection 32 of brace 4, which travels in a vertical slot in the carrier, reaches the short rear arms of lever 15, which protrude into the vertical slot of the carrier and, engaging their inward projecting cams 47, presses the short arms of the levers outward to turn in their long forward arms, whose hooks then grasp the cartridge-flange, as shown in Fig. 7, and, rising with the carrier, hold the cartridge to its position on the carrier.

In a shotgun or where the cartridge is very large and to avoid great widening of the frame I use a construction similar to that shown as a modification in Figs. 6 and 8, where the frame instead of the carrier has vertical grooves to guide up the flange of the cartridge.

A lever 16, Figs. 1, 7, and 8, is hung in the carrier on a horizontal pivot, so that its forward end may be vibrated vertically upward to raise the rear of the cartridge. This is ef-

fectured after the carrier rises by the first part of the closing movement of the bolt, when the arm 32 carries its projection 49 under the incline 50 on the lever 16 to raise the forward part of said lever and cartridge-head to the position shown in broken lines in Fig. 11 to align it with the barrel and raise its flange out of the retaining-grooves.

The reciprocating rod or cocking-piece 13 is arranged in a groove or slot in the bolt. Its forward end, which may constitute a false face to the breech-piece or only a projection forward of the resisting-face of the bolt, is projected forward by a spring *c*, Fig. 5, and retained there by a shoulder *b* on brace 4, which engages a projection *a* thereon, as shown in Fig. 7. Thus the head of the cartridge is driven by the piece 13 forward of the position in which it is to be firmly resisted by the breech. When the brace 4 turns to its locking position, it permits the rear end of pin 13 to drop, (or a spring, as 45, may assist the movement,) so that the rear end of piece 13 shall obtain position in front of an abutment 46 of the hammer in the firing position of said hammer. When the hammer falls, (impelled by spring *S*,) it presses forward on the firing-pin, whose inclined projections *m* and *n* cam the braces 3 and 4 outward to hold the bolt in its locked position. When the discharge occurs, the face of piece 13 is thereby forced violently backward against or even with the resisting face of the breech-piece, and its rear end, driving back on the projection 46 of the hammer, throws said hammer to full or half cock and compresses the spring *S*, so that the force usually required for cocking the hammer by the opening breech will be partly or entirely done away with. (This function is described in my application, Serial No. 168,819, of June 15, 1885, in which a limited recoil of the breech-piece is made to cock the hammer, and of which this device is a modification.) I now show the adoption of this "limited recoil" to other operations—viz., unlocking operating-handle, turning extractor, releasing the cartridge from magazine, and turning the breech into operative relation to the carrier. The sliding guard-handle 30 is locked by the dog 21, which is pivoted in the frame to spring into a notch in the handle when the breech is closed. By equivalent construction the dog 21 may be arranged in the handle and the notch in the frame. A foil-lever 24 is hung in the handle to extend forward of the trigger in position to be readily engaged by the finger that pulls the trigger to press it up against the locking-dog to turn said dog out of its notch in the handle. I also hang a hook-catch 25 with friction-bearing, on the handle, so that it may be turned to catch the forward end of the lever 24 when said lever is pressed up to foil its locking-notch and prevent the dog 21 from engaging therein, so that the handle may slide back and forth freely without locking when desired; or by turning the foil-catch back it allows the foil to fall clear of the lock-

ing-notch, so that the dog may spring in and lock the handle, and the handle can be unlocked and moved at will without reference to the action of the breech mechanism.

In very rapid firing automatic unlocking of the operating-handle is desirable, and I produce it by the discharge. Where the gun in recoiling takes a quick rearward movement, the inertia of the handle resists this movement and serves to withdraw the point of the dog 21 so far out of its notch 52 as to allow its easy disengagement therefrom. The discharge also imparts movement to the recoil-piece 13, and through that (by means of the lock mechanism or other connection) to the locking device to break connection of the handle with the frame.

The dog 21, Fig. 1, is shown pivoted in the frame with its forward end turned into a dove-tail or inwardly-inclined notch of the sliding handle, and a spring 26 on the foil-piece 24 extends forward in line of movement of projection or stud 51 on the trigger, so that when the trigger is pulled hard back the said stud 51 compasses the spring 26 to press the foil-piece upward against the locking-dog, but will not normally unlock it, for the reason that the point of said dog enters the incut notch 52; but the instant the recoil of the gun in firing takes place the recoil releases the dog from its notch, as before explained, and the force of spring 26 bears the point of the locking-dog upward to release the handle. It is obvious that moving the handle slightly forward by the hand will permit the spring to turn the dog and unlock it in a similar manner, so that this device is useful to operate the gun when not loaded or when it fails to fire; but when the gun is fired the recoil of or rebound of the hammer, (when produced by said recoil or by any other known means,) acting on the rod 20, located at the rear of the hammer, forces said rod against the free end of the locking-dog to turn its nose out of its notch, as shown in full lines in Fig. 7; and thereby unlock the sliding handle. The rod 20 has a projection 53 above the frame, by which it may be pressed by hand or by the projecting thumb-piece of the hammer below the point necessary for unlocking the dog, and its lower end thus being forced to the rearward of the dog allows said dog to spring back to its locking position, when (the rod 20 being released) the lower hooked end of said rod 20 will spring forward to hold the dog in its locking position, as shown by broken lines in Fig. 7.

I show in Fig. 1 the cocking-piece 13 in position to rebound the hammer and the unlocking-piece 20, with its projection *d*, in the path of the rearward movement of the projection *e* of the hammer. It will be seen that the hammer acts as a lever in this connection to unlock the handle and thereby the breech of the gun, and that any other form of lever or connection may be made to impart power from the recoil-piece 13, and said recoil-piece

may operate any other kind of hammer in an equivalent manner. A lever 27 is hung in the sliding handle to rearward of the guard-loop to start the breech (after having been unlocked) when pulled to turn it against its inclined fulcrum 28 in the frame. The handle 30 is a sleeve or partial sleeve on the small of the stock. The top of this sleeve of the handle 30 is provided with an extension 31 at its top forward end to project over the rear of the sides of the bolt (see Figs. 1 and 7) to cover the frame, so that said bolt may be shortened at its rear end, as shown. Thus it will protrude less to rearward when the breech is opened, and, when closed the ears of the handle reach to or over the end of bolt to close over and cover the opening into the frame caused by the shortening of the bolt aforesaid.

The lever 11, Figs. 1 and 2, is hung to the side of vertical arm 32, with its upper arm in position, as shown in Fig. 1, to be engaged by the lever 6, when said lever is moved rearward by the cocking-piece 13 or the firing-pin, as already described, to turn the lower arm of lever 11 forward, so that said lower arm will then be thrown against a projecting cam on the cartridge-stop 12. This stop is arranged at the mouth of the magazine, and the lever 11 acts to retire the cartridge-stop in the manner that a cartridge will only be released (by said stop and lever) when the gun is fired or the firing-pin driven forward. One alone of the levers 15 may be used, and said lever may be turned inward by a spring or any movable part of the breech mechanism by mere mechanical change in construction. In the construction of this arm shown and described the frame is open at the bottom, and a sliding guard is connected to the breech mechanism to operate it by the hinged slide-piece 29, which covers the opening in the bottom of the frame when the breech is closed, as in Fig. 1, and leaves it uncovered when moved back to open the breech, as shown in Fig. 2. It will be seen that the delivery end of the magazine is rendered accessible by the arrangement when the breech is open, so that the cartridge may be thrust into the magazine to charge it through the opening in the bottom of the frame, and the stop 12 will serve to hold said cartridge in the magazine.

I claim—

1. In a breech-loading gun, a frame provided with two abutments on different sides of the bolt-receiver, a bolt moving between said abutments, two locking-braces hung in said bolt to swing outward and lock against said abutments, and an operating-handle connected to said braces by which the braces and bolt may be moved, in combination, substantially as described.

2. In a breech-loading gun, the frame having abutments at opposite sides of the bolt, a reciprocating bolt provided with a plurality of braces hung therein to swing outward against said abutments, one of said braces

having a bearing against the other, and a handle connected to said braces, the parts in combination, substantially as described.

3. In the frame of a breech-loading firearm, a reciprocating bolt, a movable piece to serve as a fulcrum arranged in said bolt to be projected forward of its face against an abutment in the frame, in combination with an operating-handle therefor and a lever arranged in connection therewith, substantially as described, to start back the bolt.

4. In a breech-loading gun, the reciprocating bolt, an extractor therein, and a lever pivoted to and moving with the bolt and in position to engage said extractor, said lever bearing on parts of the gun to operate automatically to turn the extractor during the bolt movement, substantially as described.

5. In the frame of a magazine-firearm with an opening at its top, a reciprocating bolt and an ejector arranged at the bottom of the face of the bolt with movement upward from the bottom of the face of the bolt, in combination with a carrier which, rising from below the bolt by impulse of its spring or the breech mechanism, strikes the ejector to throw it violently upward against the flange of the cartridge to expel the shell sidewise upward through the opening in the top of the frame.

6. In a magazine-gun, a reciprocating bolt, a carrier-operating stud hung in the bolt in position to swing downward therefrom, a carrier hung below the bolt, having a shoulder projecting up into the path of movement of said stud when the stud is swung downward, and means for moving said stud into or out of engaging position, in combination, substantially as described.

7. In a breech-loading gun, a reciprocating bolt having an extractor therein, a cross-lever in said bolt, and a recoil-piece having engagement with said lever to press it against the extractor when the gun is fired, in combination, substantially as described.

8. In a magazine-firearm, a reciprocating bolt, a magazine, a carrier whose forward end moves upward from the mouth of the magazine, vertical side grooves situated in the frame, a cartridge-length to rearward of the magazine-mouth to receive, and their walls to guide the flange and control the cartridge when the carrier rises, all in combination, substantially as described.

9. In a firearm, a breech-piece locking in the frame to resist the discharge, a relatively-movable piece projecting forward from the face of said breech-piece to bear against the cartridge and press it home in the chamber, and a hammer having an abutment in the line of movement of this movable piece, whereby the backward movement of the cartridge on firing throws back the movable piece and hammer, but is itself stopped by the locked breech-piece, all in combination, substantially as described.

10. In a breech-loading firearm, a longitudinally-reciprocating breech-bolt and a sliding

sleeve on the small of the stock connected to said bolt, said sleeve having a forward extension 31, which moves close to the bolt and closes the opening in the frame when the breech is closed, in combination, substantially as described.

11. In a magazine-firearm, a vibrating carrier which raises the cartridge-point higher than its rear, in combination with a lever pivoted at the rear of the carrier, so as to rise therewith, and a projection on the reciprocating breech mechanism to engage the said lever in the first part of the breech-closing movement, and thereby raise the rear of the cartridge above the floor of the carrier, substantially as specified.

12. In a breech-loading firearm, mechanism to open and close the breech, a sliding handle connected to said breech mechanism, and a locking-dog to lock the sliding handle on the gun in position to hold the breech closed, in combination with a finger-piece connecting with the locking-dog by which the handle may be unlocked, and a catch to be turned at will to confine the finger-piece, and thereby hold the locking-dog out of locking position, substantially as set forth.

13. In a breech-loading firearm, mechanism to open and close the breech, a sliding handle connected to said breech mechanism to operate it, a locking-dog to lock the sliding handle on the gun in position to hold the breech closed, and a spring connection between the locking-dog and trigger, in combination with a trigger which compresses said spring when pulled back to press the locking-dog and unlock the sliding handle.

14. In a breech-loading gun, the reciprocating breech and shifting handle connected thereto, a dog engaging said handle, and a rod movable into position to engage and unlock said dog, in combination, substantially as described.

15. In a magazine-gun, the cartridge-stop at the mouth of the magazine, the movable breech-piece and a lever connected thereto in position to engage said cartridge-stop, and automatic means operated by the firing of the gun to trip said lever and stop, in combination, substantially as described.

16. In a magazine-gun, a frame having an opening at the bottom wide enough to receive a cartridge, a magazine under the barrel in front of the opening, a sliding handle, and a forward extension connected to the handle and to the breech-piece, said extension forming a cover to close the opening in the frame and magazine when the breech is closed, but

which is retired in its movement of opening the breech to expose the orifice of the magazine, all in combination, substantially as described.

17. In a magazine-gun, a frame having an opening at the bottom wide enough to receive a cartridge, a magazine under the barrel in front of the opening and having a cartridge-stop, a sliding handle traversing the small of the stock, and a link pivoted to said handle and connected to the breech mechanism to operate the same, said link serving as a cover to close the opening in the frame when the breech is closed, all in combination, substantially as described.

18. In a magazine-firearm, a recoil-piece connected to the breech-piece, said piece having a limited recoil independent of the breech-piece, adjunctive locking devices, substantially as described, by which the breech-operating handle is held locked, and connections from the recoil-piece to said handle-lock by which the same is unlocked on the firing of the gun, in combination, substantially as described.

19. In a breech-loading gun, the reciprocating bolt and sliding handle connected thereto, the locking-dog engaging said handle, a rod movable to position to trip said dog, and the hammer operating on said rod when moved to cocked position, in combination, substantially as described.

20. In a breech-loading gun, the reciprocating breech-piece and sliding handle connected thereto, a locking-dog engaging the handle, and automatic mechanism operated by the recoil to unlock said handle, substantially as described.

21. In a breech-loading gun, a reciprocating bolt, an extractor carried thereby, a cross-lever in the bolt, and a firing-pin having a projection to engage said cross-lever and hold the extractor when the gun is fired, substantially as described.

22. In a magazine-firearm, a reciprocating bolt and a carrier-operating stud hung in the bolt to swing downward, in combination with a carrier hung below the bolt, with a shoulder below the line of movement of said stud when in its operative position, and a firing-pin arranged to strike said stud down into position to engage and raise the carrier.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW BURGESS.

Witnesses:

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C. M. BROOKS.