No. 710,094.

Patented Sept. 30, 1902.

J. M. BROWNING.

MAGAZINE GUN.

(Application filed Jan. 11, 1902.)

(No Model.)

2 Sheets—Sheet 1.

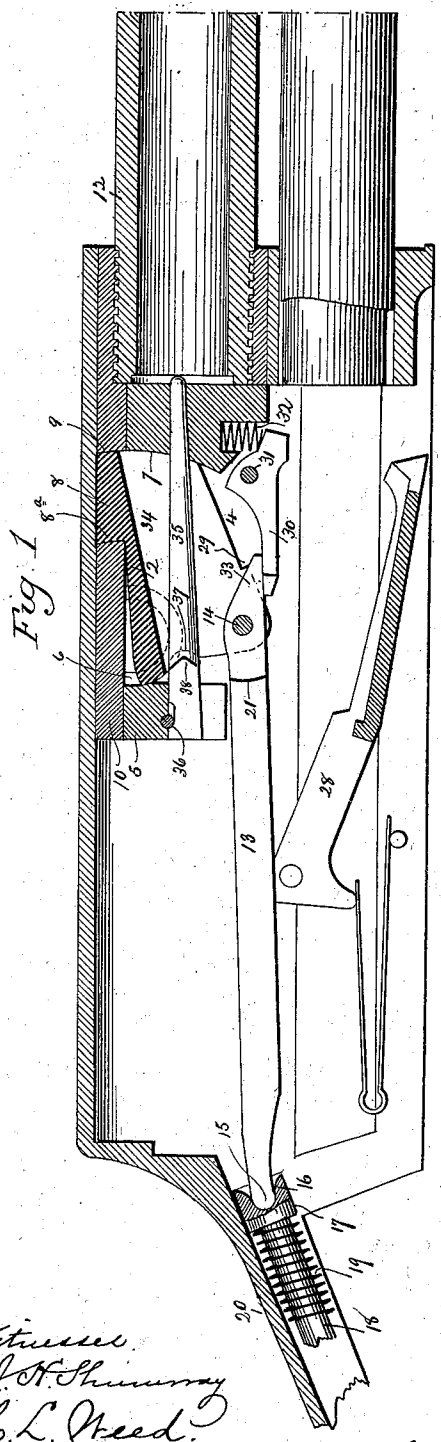


Fig. 1

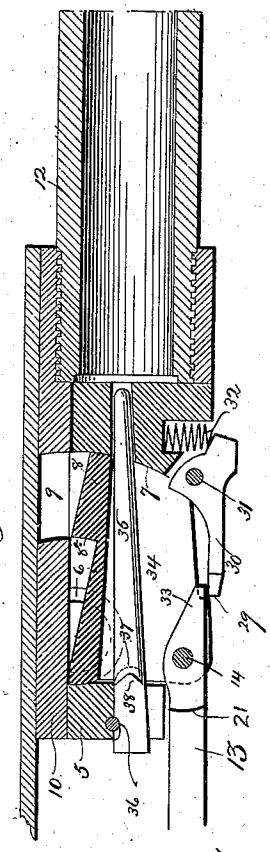


Fig. 2

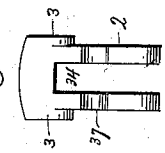
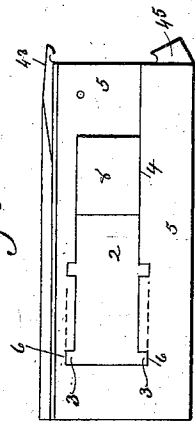


Fig. 7



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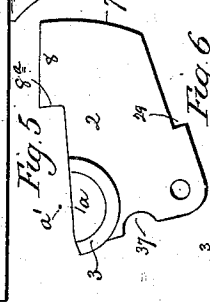

Fig. 5

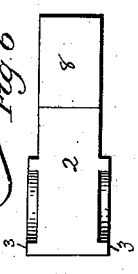

Fig. 6

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No. 710,094. Patented Sept. 30, 1902.

J. M. BROWNING.

MAGAZINE GUN.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 1

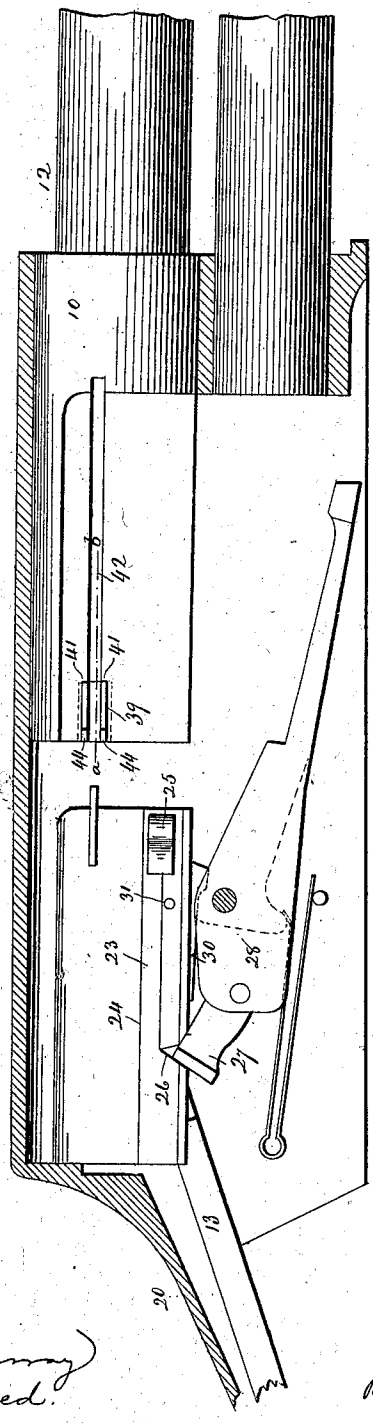


Fig. 8

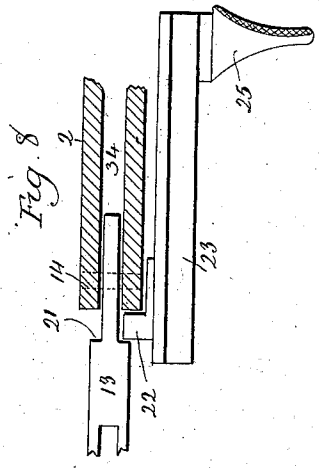


Fig. 11

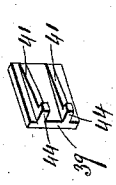


Fig. 10

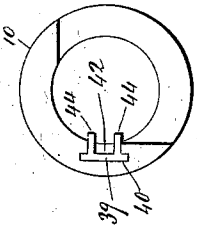
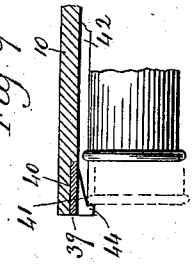


Fig. 9



Witnesses.
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Inventor.
By Atty. Seymour & Earle

UNITED STATES PATENT OFFICE.

JOHN M. BROWNING, OF OGDEN, UTAH.

MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 710,094, dated September 30, 1902.

Application filed January 11, 1902. Serial No. 89,295. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. BROWNING, of Ogden, in the county of Weber and State of Utah, have invented a new and useful Improvement in Magazine-Guns; and I do hereby declare the following, when taken in connection with the accompanying drawings and the characters 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 view in broken vertical longitudinal section of a gun constructed in accordance with my invention, showing it closed and locked; Fig. 2, a similar view showing the gun closed and unlocked; Fig. 3, a detached plan view of the breech-bolt, showing its locking-block, handle, and extractor; Fig. 4, a view of the gun in broken longitudinal section, showing its breech-closure at the limit of its rearward excursion, its pivoted carrier in its depressed or cartridge-receiving position, and the locking-dog mounted in the rear end of the said carrier in engagement with the breech-closure; Fig. 5, a detached view in side elevation of the locking-block; Fig. 6, a detached plan view thereof; Fig. 7, a detached view thereof in rear elevation; Fig. 8, a broken plan view of the operating-slide, showing its connection with the forward end of the operating-link and the locking-block, which is shown in section; Fig. 9, a broken horizontal section of the barrel extension, showing the ejection-cam and a cartridge; Fig. 10, a view in rear elevation of the barrel extension; Fig. 11, a perspective view of the ejection-cam.

My invention relates to an improvement in that class of automatic small-arms in which the recoil is utilized for reloading and recocking and may be said to be an improvement upon the arms shown and described in United States Patent No. 659,507, granted to me October 9, 1900, and United States Patent No. 689,283, granted to me December 17, 1901.

The object of my present invention is to improve such an arm in respect of its bolt locking and ejecting features, whereby it is simplified and made more effective.

With these ends in view my invention consists in the combination, with a breech-bolt or breech-closure, of a locking-block carried thereby and swinging from its rear end and means for operating the said block.

My invention further consists in the combination, with a breech-bolt or breech-closure, of a locking-block mounted therein and one or more segmental ribs on which the said block swings instead of upon a true pivot.

My invention further consists in the combination, with the breech-bolt or breech-closure, of an extractor carried thereby and an ejection-cam which lifts the spent shell out of engagement with the extractor just prior to the ejection of the shell.

My invention further consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In carrying out my invention as herein shown I employ a locking-block 2, provided on the opposite faces of its rear upper corner with two corresponding segmental ribs 3, upon which the block swings instead of upon a true pivot. The said block is located in a large slot or chamber 4, formed to receive it in the breech-closure 5, which is in this case of the "bolt" type, inasmuch as it is confined to movement back and forth in a straight line. The said segmental ribs 3 take into corresponding segmental grooves 6, formed in the rear ends of the side walls of the chamber 4 aforesaid. If desired, however, the positions of the said ribs and grooves may be reversed. The said ribs 3 are struck from or about the point *a* on Fig. 5, and therefore from a point outside of the locking-block 2, the front face 7 of which is struck from the same point. What I wish to call particular attention to in this connection is that by having the block swung upon segmental ribs instead of upon a true pivot the center from which the block swings may be located outside of the block itself. The said block is provided at its forward end with a heavy rectangular locking-lug 8, adapted to enter a corresponding locking-opening 9, formed in the extension 10 of the barrel 12 in position to have the said lug entered into it when the gun is closed or, in other words, when the breech-bolt 4 is at the limit of its forward excursion. To render the action of the lug 8 quick and easy in entering and leaving the locking-opening 9, the inner or rear wall of the lug is cut,

as at 8^a, on a circle struck from a point a' on Fig. 5, which shows that the point a' is a little distance above the point a before mentioned.

For the operation of the locking-block 2 I employ, as herein shown, a long operating-link 13, the forward end of which is connected with the rear lower corner of the said block by means of a pivot 14 and the rear end of which is formed with a nose 15, entering a socket 16, formed in the head 17 of a plunger 18, which is set into the forward end of a coiled operating-spring 19, which is located partly in the tang 20 of the arm and partly in the butt-stock thereof. Near its forward end the said link 13 is formed with a shoulder 21, which is engaged by a lug 22, projecting inward from the rear end of an operating-slide 23, located in a deep groove 24, formed in the right-hand side of the breech-bolt 5, the said slide being furnished at its forward end with an outwardly-projecting handle or finger-piece 25. This operating-slide is used for manually opening the gun for loading the first cartridge into the gun-barrel as well as for manually unloading the gun. On its under face it is formed with a locking-shoulder 26, which is engaged by a locking-dog 27, mounted in the extreme rear end of the pivoted carrier 28.

When the bolt 5 reaches the limit of its rearward excursion with the barrel 12 and the barrel extension 10, the said locking-dog 27 springs up in front of the shoulder 26 of the operating-slide 23. Now when the spiral barrel-spring, which is not shown, but which corresponds to the barrel-spring of my Patent No. 689,283, reacts to restore the barrel 12 to its normal position it operates through the said barrel, barrel extension, and locking-block to pull the breech-bolt forward. This forward draft upon the breech-bolt effects the swinging of the locking-block 2 downward into its unlocked position, whereby its locking-lug 8 is cleared from the locking-opening 9 of the barrel extension, because the pivot 14 of the locking-block 2 is prevented from moving forward for the reason that the same passes through the operating-link 13, which is connected with the operating-slide 23 through the engagement of the lug 22 of that slide with the rear edge of the locking-block 2. When the locking-block has been swung downward into its unlocked position, its rear edge is engaged by the rear wall of the slot 4, formed in the breech-bolt for the reception of the said block, whereby the forward movement of the bolt is arrested. The locking-block is now in position for the entrance into a locking-notch 29, formed in its lower edge, of the rear end of locking-lever 30, mounted upon a pin 31 and operated by a short spiral spring 32, pressing downwardly upon its forward end. The barrel and barrel extension continuing in their forward movement open the space required between the rear end of the barrel and the forward end of the breech-bolt for the feeding upward of a cartridge by the pivoted carrier 28 into position in front of the breech-bolt for the same to force it forward into the gun-barrel when the bolt is released through the agency of the carrier in the same manner as provided for in either of my prior patents herein referred to. The said locking-lever 30 maintains the locking-block 2 in its unlocked position during the greater part of the forward excursion of the bolt and at least until after the locking-lug 8 of the locking-block has been entered into the rear end of the barrel extension 10, after which the rear end of the said locking-lever is depressed and forced out of the locking-notch 29 of the locking-block 2 by means of a nose 33, formed at the extreme forward end of the operating-link 13. The action of the said nose upon the said lever is a gradual one and caused by the gradual assumption of a horizontal position by the said link as it moves forward with the barrel, barrel extension, and bolt, its rear end being depressed somewhat below its forward end when its forward movement begins.

To manually open the gun, the handle 25 of the operating-slide is used for drawing the slide rearward against the tension of the spring 19, the lug 22 at the rear end of the slide being engaged with the shoulder 21 of the link 13, and the link 13 being pivotally connected with the locking-block the same is swung downward into its unlocked position, whereby the breech-bolt is freed for being drawn back into its fully-open position, in which it is held by the engagement of the locking-dog 27 with the shoulder 26 of the slide, this connection being maintained until the carrier is released for breaking the connection between the locking-dog and the slide. The said locking-block is formed with a large centrally-arranged clearance-slot 34 for the clearance of the firing-pin 35, which is mounted at its rear and forward ends in the bolt 5, in which its reciprocating movement is limited by a stop-pin 36. The said firing-pin is retracted by the engagement of the walls of the notch 37, formed in the rear end of the locking-block, with retracting-shoulders 38, formed near the rear end of the pin.

For facilitating ejection of the cartridges I employ an ejection-cam 39, which is located in a suitable recess 40, entering the rear edge of the left-hand wall of the barrel extension 10, as shown in Fig. 10. This ejection-cam comprises two inclines 41 41, which are separated from each other by the width of the guideway 42, formed in the inner face of the said wall of the barrel extension for the left-hand extractor-hook 43 to travel in. Each of the said inclines terminate at its rear end in an ejecting-shoulder 44.

When the gun is fired, the spent shell is thrown back with the barrel, barrel extension, and breech-bolt, the extractors 43 and 45 of which are engaged with it. Now when the barrel extension, and hence the barrel,

are unlocked from the breech-bolt they are moved forward by the spiral barrel-spring (not shown) and "stripped off," so to speak, from the shell, which remains with the breech-bolt. However, just before the barrel extension reaches the limit of its forward movement the inclines 41 41 of the ejection-cam ride under the head of the shell and lift the same from left to right out of engagement with the beak of the hook of the left-hand extractor 43. The shell having thus been disengaged from the extractor, the shoulders 44 at the rear ends of the said inclines strike the shell with sufficient force to eject it from the gun. The employment of the described ejection-cam for lifting the shell out of engagement with the hook of the extractor enables me to construct the said hook so as to positively engage the rim of the shell, whereas in prior constructions it has been necessary to make the gripping edge of the hook somewhat beveled or oblique, and therefore less positive in its action on the heads of the shells. It will be understood, of course, that the ejection-cam will operate to lift the cartridge away from the left-hand extractor-hook in case the gun is opened manually for unloading it or removing a misfire; but in the latter case the cartridge will be drawn back out of the gun-barrel and engage with the ejection-cam instead of having the gun-barrel "stripped over it," so to speak, as occurs when the gun is automatically operated.

In view of the modifications suggested and of others which may obviously be made I would have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such variations therefrom as fairly fall within the spirit and scope of my invention.

I am aware that it is old to provide a breech-loading firearm with a swinging breech-closure turning upon segmental ribs instead of upon a true pivot, the ribs being struck from a center located above the breech-closure. Such a construction is shown in United States Patent No. 160,748, granted March 16, 1875, to Edwin Burt.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a gun, the combination with a barrel having a barrel extension, of a reciprocating breech-closure formed with an upwardly-opening vertical slot, a locking-block located in the said slot and adapted at its forward end to extend upward through the slot to engage with the said barrel extension, one or more segmental ribs on which the locking-block swings instead of upon a true pivot, and means connected with the lower portion of the block for swinging it into its locking and retired positions.

2. In a gun, the combination with a barrel having a barrel extension, of a reciprocating breech-closure, a locking-block mounted therein and adapted to engage at its forward end with the upper portion of the barrel extension to lock the breech-closure in its closed position, two segmental ribs upon which the locking-block swings from its rear end instead of upon a true pivot, an operating-link connected directly with the rear end of the lower portion of the said locking-block, an operating-spring coacting with the said link, and means coacting with the lower portion of the said block for locking the same in its retired position.

3. In a gun, the combination with a barrel having a barrel extension, of a breech-closure, an extractor carried thereby, and an ejection-cam mounted in the barrel extension and acting to lift the spent shell out of engagement with the extractor.

4. In a gun, the combination with a barrel having a barrel extension, of a breech-closure, an extractor carried thereby, and an ejection-cam mounted in the said extension and formed with two inclines separated from each other sufficiently to permit the extractor to pass between them, and operating to lift the spent shell out of engagement with the extractor, and also formed with one or more ejecting-shoulders.

5. In a gun, the combination with the breech-closure thereof, of a locking-block mounted in the said breech-closure so as to swing from its rear end as upon a center located above the upper edge of the block.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN M. BROWNING.

Witnesses:
FREDERIC C. EARLE,
C. L. WEED.