

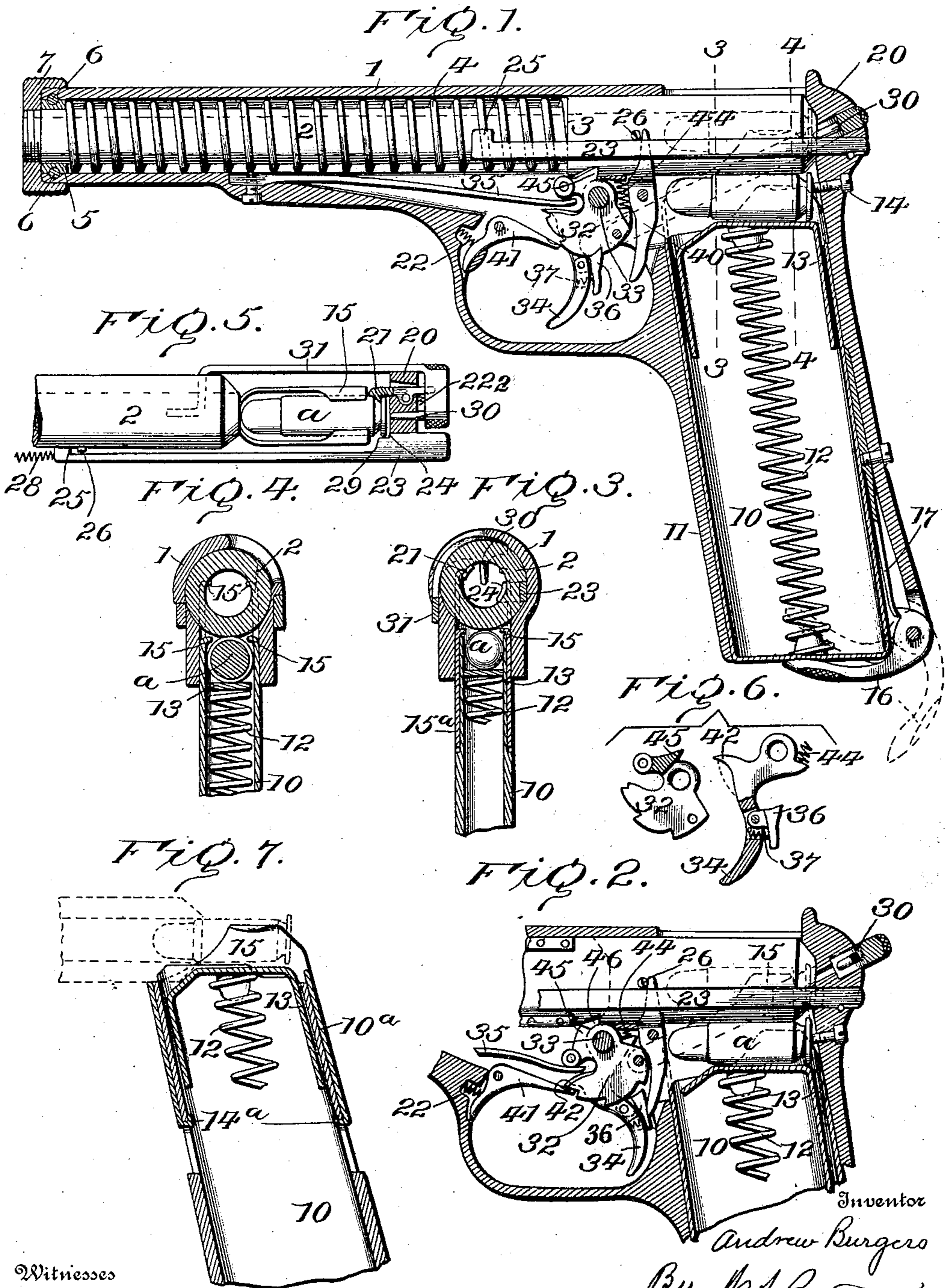
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A. BURGESS.
AUTOMATIC GUN.

(Application filed Oct. 13, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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AUTOMATIC GUN.

SPECIFICATION forming part of Letters Patent No. 687,448, dated November 26, 1901.

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To all whom it may concern:

Be it known that I, ANDREW BURGESS, residing at Owego, in the county of Tioga and State of New York, have invented certain new and useful Improvements in Automatic Guns, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to magazine-fire-arms of the automatic class.

The object of the invention is to produce a magazine gun or pistol which shall be loaded and the shell ejected by a barrel movement depending on the position of the trigger under control of the operator; also, to produce a shell-ejecting mechanism very prompt and powerful in action, so that the shells are thrown out of the way of the infedding cartridge; also, to place the cartridge-feed quite fully under control of the barrel movement, and also to improve the constructions and combinations of various parts of the mechanism of guns of this class.

Figure 1 is a vertical longitudinal section of a pistol embodying the structures of my present invention. Fig. 2 is a broken section of the same with some parts in different position. Fig. 3 is a broken cross-section on line 3 3 looking toward the breech. Fig. 4 is a broken cross-section on line 4 4 looking toward the muzzle. Fig. 5 is a detail plan or diagram of a part of the barrel, striker, ejector, and a cartridge in position for loading and showing part of magazine in dotted lines. Fig. 6 shows tumbler, trigger, and dog, partly in section and part in elevation, detached. Fig. 7 is a vertical section of the upper portion of a magazine modification.

The frame 1 is of any suitable construction to support the working parts and is preferably of metal. The barrel 2 is housed in a generally-cylindrical bore in the frame and has a shoulder 3, against which a coiled spring 4 bears to hold or press the barrel back. The front end of the spring 4 rests against a ring 5, at least as thick as the shoulder 3, which ring is preferably held in place by pins 6 6, which pass through the frame from side to side. The barrel 2 slides through the ring 5 as it reciprocates. A muzzle-piece 7 is screwed or otherwise attached to the barrel in front of the ring 5 and

closes over the casing, as shown. By grasping the muzzle-piece 7 the barrel can be drawn forward, compressing the spring 4 between the shoulder 3 and ring 5. By removing the pins 6 the barrel, ring 5, and spring 4 can be drawn forward out of the frame.

The cartridges are contained in a magazine 10, which magazine in a pistol is inside the stock or handle 11. The magazine shown is what is known as a "box-magazine," in which the cartridges lie side by side, being lifted by a spring 12 and follower 13, as is common; but in addition to the follower which lifts the cartridges the magazine has an uplift and has retaining-wings, so that the top cartridge is held by the wings of the magazine in position for the barrel to move back and inclose the cartridge and at the same time depress the magazine.

The magazine 10 has wings or spring-jaws 15 projecting from its upper portion, which wings or spring-jaws embrace the rear portion of the top cartridge under normal conditions. The front ends of these wings are inclined, as indicated, and the rear end of the barrel is conical or wedge-shaped. Now assuming the barrel to be drawn forward, as by a pull on the muzzle-piece 7, and the upper part of the magazine lifted by its spring so that the top cartridge is directly behind the barrel, the release of the barrel permits the strong spring 4 to force back the barrel, the cartridge then entering into the barrel and the barrel by its wedging action on the ends of the wings 15 spreading the wings to release the top cartridge and at the same time forcing down the top of the magazine with its wings expanded, so that the next cartridge comes within the wings and is in position to be lifted for a repetition of the movement. The upward movement of the magazine is stopped by an abutment-screw 14 in the form shown in Fig. 1. In the telescopic magazine shown in Fig. 7 the hooks 14^a serve the same purpose—to limit the rise of the wings 15.

The magazine 10, which is within a recess in the stock or frame, is supported by a lever 16, hung in the frame 1 and pressed up by a spring 17. (See dotted lines, Fig. 1.) The lever 16 may be turned back for the insertion of the magazine, and when turned forward

under the magazine tends to lift the same the diameter of the cartridge; but the dominating power of the spring 4 is so great that the magazine is depressed by the backward movement of the barrel, as explained.

As a modification the wings 15 may be on a telescopic extension 10^a of the magazine. In such case the magazine-spring 12 will raise the follower 13 and the cartridges thereon, and as the wings 15 will prevent the escape of the top cartridge this cartridge will be lifted, and the section 10^a with it, so far as the telescopic movement permits, the magazine-spring 12 in such case acting to lift both the cartridges and the wings 15, which hold the top cartridge in line with the barrel.

In any construction the object of the magazine is to present the top cartridge in the magazine in position to be inclosed by the barrel in its backward movement, and it is not very material what the position of the other cartridges may be at the instant the barrel closes on this top cartridge. So whether the entire magazine be lifted by the spring 17 and lever 16 to the position the magazine would occupy above the dotted position of the lever 16 in Fig. 1 when the barrel is forward or whether only the telescopic top portion of the magazine rises, as indicated in Fig. 7, that part which carries the wings will be retired downwardly by the backward movement of the barrel when it closes over the cartridge. If the wings are on a telescopic section of the magazine and the magazine is itself held up by the lever 16, then the whole magazine will retire downward or only the telescopic section, according to the preponderance of power of the two springs 12 or 17, and when the follower-spring 12 has become extended, so as to have small lifting power, the spring 17 will reinforce it to the extent of lifting the entire magazine an amount equal to the diameter of a cartridge, thus relieving the follower-spring 12 to that extent.

Both the magazine-lifting spring-actuated lever 16 and the telescopic extension 10^a may be used in the same construction, so that the resilience of both springs is available to lift the magazine-wings. The lever 16 is a convenient means for holding the magazine in the frame.

The cartridge when inclosed in the barrel, as in Fig. 1, (the magazine being depressed,) and resting against the recoil-shield 20 can be fired by mechanism to be described. When fired, the barrel is held back only by its own inertia and by the pressure of springs 4 and 35. These are overcome by the gas-pressure or by the friction of the bullet in the barrel, and the barrel is carried forward until the spring 4, by its compression against the ring 5, acts as a stop to prevent the further forward movement. The cartridge-shell α is held back against the recoil-shield 20 by the extractor-hook 21. This hook 21, as shown in Fig. 5, is pressed over the cartridge-flange by

a light spring 222; but a spring-hook would answer the same purpose.

The hook engagement of the extractor with the cartridge prevents the shell from moving forward. A sliding ejector 23 in the side of the frame opposite the extractor has a shoulder 24 in rear of the cartridge-flange. A hook 25 at the front of this ejector is engaged by a projection 26 on the barrel when the barrel has moved well forward. The projection 26 is shown as a screw and is removable. The barrel moving forward smartly causes this projection to strike a quick blow on the ejector. This moves the ejector suddenly forward and throws the shell sidewise out of the hook 21 in a manner common, except that the ejector moves instead of the extractor. When the barrel moves back under the impulse of its spring 4, it incloses the next-succeeding cartridge, which meantime has risen with the wings 15. The ejector 23 can be returned backward by a spring 28, so as not to obstruct the rise of the succeeding cartridge. The backward movement of the barrel will bring its rear end into engagement with the shoulder 29 on the ejector and so push back the ejector should the spring 28 have failed to do so.

The magazine 10 may be removed from the frame when the lever 16 is turned down and can then be loaded from the end having the wings 15, which answer as detents to prevent the escape of the cartridges, or the cartridges may be pressed into the magazine from the top when the barrel is drawn forward, the wings 15 yielding to permit such feed.

The firing mechanism preferably employed has special relation to the automatic movement. The firing-pin 30 is connected to a bar 31, which extends forward and is pivotally connected to a tumbler 32. The tumbler 32 is pivoted on the pin 33 and has notches with which the trigger and sear engage.

The tumbler 32 will always be rocked from the position of Fig. 1 to about the position of Fig. 2 when the barrel is drawn forward for the purpose of loading the gun, (unless, of course, the tumbler be already so rocked.) This is done by the engagement of the notch 46 in the barrel with the hook 45 on the tumbler. The sear 41 will normally then engage the tumbler and hold it cocked. To reach the safety position of Fig. 1, the tumbler must have been released and let down in much the same manner that the hammer of a self-cocking pistol is often lowered. The normal position of the tumbler is the cocked position; but if the tumbler be let down to the position of Fig. 1 for safety a pull on the trigger will rock the tumbler and compress the mainspring and if continued will fire the gun, as will be explained.

The trigger 34 is pivoted on the same pin 33 that supports the tumbler, and preferably the trigger lies between two connected leaves, which form the tumbler, although this is not essential. The mainspring 35 rocks the tum-

bler on the pin 33, and this draws on the bar 31 and pin 30 when the tumbler is left under the influence of the mainspring.

The trigger 34 carries a pawl or dog 36, which extends flush with the sides of the tumbler and is pressed by the spring 37 so that its nose has engagement with the cocking-notch of the tumbler, as shown in Fig. 1. A backward pull on the trigger when the parts are in the position of Fig. 1 carries the lower end of the dog 36 against the lower end of the foil 40, at the same time rocking the tumbler and compressing the mainspring. The foil 40 is pivoted in the frame. When the barrel is back in loaded position, the projection 26 on the barrel comes in front of the upper arm of said foil and prevents the foil from rocking on its pivot. When the trigger is pulled and the foil thus held rigid, the dog or pawl 36 is tripped by the engagement of its rear lower surface with the lower arm of the foil. The nose of the dog is thus released from the tumbler. Simultaneously the sear 41 is released from the tumbler by the engagement of the trigger with such sear, as will be explained. Then the mainspring will rock the tumbler, drawing on the bar 31 and firing-pin 30, to fire the cartridge. If the barrel be not in its rearmost position, no pull on the trigger can release the tumbler, because the foil not being held rigidly by the pin 26 will rock freely, and therefore will not afford sufficient resistance to the dog 36 to trip said dog and release it from the tumbler; but if the trigger be held back after firing the sudden return of the barrel causes the projection 26 to strike the foil, and thus rock the dog and so repeat the firing.

The sear 41 engages notches in the tumbler 32 to hold the tumbler at half or full cock, but is pressed out of engagement with the full-cock notch of the tumbler by the nose 42 of the trigger engaging said sear when the trigger has about reached the limit of its pull. The nose 42 of the trigger, as illustrated, extends far enough downward to make this contact or to prevent the sear 41 from engaging the full-cock notch of the tumbler when the trigger is pulled to its extreme position. The pull of the trigger will release the sear, and this will permit the tumbler to rock and operate the firing-pin if the dog 36 has been released from the tumbler, but not otherwise. The sear 41 is pressed against the tumbler by the sear-spring 22.

A trigger-spring 44 serves to rock the trigger forward into position for a second pull; but when the trigger has been pulled to release the sear (a little beyond the position of Fig. 2) the tumbler will rock and draw forward on the firing-pin through the bar 31. The lower end of the bar 31 at the extreme forward movement of said bar strikes the rear side of the trigger with a blow sufficient to throw the trigger and the finger pulling the trigger forward unless the trigger be held quite firmly. This forward impulse enables

the user of the gun to release his pressure on the trigger quickly enough to avoid a second shot, if he desires to do so. Otherwise by holding the trigger to the rear the sear 41 is kept out of engagement with the tumbler 32. The dog 36 engages its notch in the tumbler when the barrel is forward by the action of the spring 37; but when the projection 26 on the barrel strikes the upper end of the foil 40 on the backward movement of the barrel the foil 40 trips the dog and so releases the tumbler. When the tumbler swings on the pin 33 under the influence of the mainspring 35, the hook 45 of the tumbler swings into the notch 46 of the barrel. If the barrel be not back into safe firing position, this cannot take place; but when the hook 45 does swing into the notch the next forward movement of the barrel will rock the tumbler to "cocked" position, and the firing can then continue, under control of the trigger, as long as there are cartridges in the magazine. Thus, as in other automatic guns, the firing of the first cartridge furnishes power to load, cock the arm, and eject the shells, the trigger acting merely as a trip to control the instant of firing; but if by reason of defective ammunition or otherwise the barrel remains forward an unusual time still the firing mechanism cannot have been released or the gun "uncocked" by the trigger action during such interval.

While I have shown the mechanism as applied to a pistol, it is applicable to other guns. The invention is not confined to the precise mechanism illustrated, but is believed to be as broad as the claims herein.

What I claim is—

1. In a gun as described, the barrel carried in a cylindrical recess in the casing, a muzzle-piece secured to the front end of the barrel and closing over the casing, a ring secured to the casing by a transverse pin and surrounding the barrel, and a spring interposed between a shoulder on the barrel and said ring, whereby the removal of the pin enables the ring, barrel, and spring to be drawn forward out of the casing, substantially as described.

2. In a gun as described, a box-magazine extending upward into proximity with the rear part of the barrel and provided at its upper portion with wings or spring-jaws inclined at their front, and means for lifting a cartridge from below into said jaws and means for lifting the magazine and jaws, and a longitudinally-reciprocating barrel which in its rearward movement engages the incline of said wings and depresses the wings and magazine while inclosing the top cartridge of the magazine.

3. In a gun as described, a box-magazine carrying spring-jaws, means to raise said jaws and a cartridge therein, said jaws being inclined at the front, and a reciprocating barrel inclined at the rear, to engage and release the jaws while inclosing the cartridge.

4. In a gun as described, a box-magazine in proximity to the rear end of the barrel,

spring-jaws or wings connected to said magazine to embrace the first cartridge, a spring bearing the jaws forward toward the loading position, and a reciprocating barrel acting on said jaws to move them with the section of the magazine to which they are attached, from their advanced position, all combined substantially as described.

5. A gun having a longitudinally-reciprocating barrel, provided with an incline, a magazine under the rear end of said barrel a telescopic extension of said magazine having inclined spring-jaws at its upper end, and a spring for lifting said extension and jaws, and for lifting the cartridges into the jaws, whereby the barrel movement by the barrel-incline engaging said jaws depresses the jaw portion of the magazine, all combined.

6. In a gun as described, a box-magazine, means for lifting a cartridge therein, spring-jaws connected to the mouth of the magazine, a spring-follower adapted to lift said jaws, and a spring bearing on the magazine to lift the same, combined with a reciprocating barrel which acts on said jaws to depress the same, substantially as described.

7. In a magazine-gun, the combination with the stock having a recess therein, of a spring-pressed piece pivoted in the frame and bearing on the bottom of the magazine to press the same upward in the frame, and movable around the pivot to permit removal and insertion of the magazine.

8. In a gun, the combination of a reciprocating barrel, an extractor-hook fixed against longitudinal movement with relation to the frame, a sliding ejector having a shoulder behind the cartridge, a projection on the barrel engaging said bar to throw out the shell, and a spring pressing the ejector-bar lengthwise of the frame to return said ejector-bar, all substantially as described.

9. In an automatic gun having a reciprocating barrel and means for feeding cartridges, a pivoted tumbler having engagement with the barrel when in rear position to be rocked as the barrel moves forward, a firing pin and bar pivotally connected to said tumbler, and means for holding the tumbler cocked, all combined.

10. In an automatic gun, the combination of a tumbler and firing mechanism connected thereto, a trigger and a dog carried thereby

in position to engage said tumbler, and an interposed foil engaged by the barrel to act on the dog and make the pull of the trigger effective only when the barrel is in closed position, substantially as described.

11. In an automatic gun, the combination of a reciprocating barrel, a pivoted tumbler engaged thereby to be cocked by the forward movement of the barrel, a sear engaging the tumbler to hold the same cocked, and a trigger engaging the sear to release the same from the tumbler, said trigger having a dog in position to engage the tumbler so that the sear and dog must be released from the tumbler for firing, all substantially as described.

12. In an automatic gun, a reciprocating barrel and means for feeding cartridges thereto, a pivoted tumbler having engagement with the barrel to be rocked by the forward movement thereof, a firing pin and bar connected to the tumbler, a trigger carrying a spring-dog to engage a notch in the tumbler, an interposed foil acting on said dog when sustained by the barrel, and a sear engaging the tumbler in position to be released by the trigger, all combined substantially as described.

13. In an automatic gun, the combination of the reciprocating barrel, the pivoted tumbler having hook engagement with the barrel as described, the trigger hung on the tumbler-pivot and carrying a spring-dog in position to engage a notch in the tumbler, and a pivoted foil, engaged by a projection on the barrel and rigidly held in position for engagement by the dog when so held, but yielding under other conditions, substantially as described.

14. In a gun as described, the reciprocating barrel, a pivoted tumbler and mainspring, firing pin and bar connected to said tumbler, and a trigger having a dog to engage the tumbler, said trigger in the line of the blow of the firing-pin bar, so as to be thrown forward thereby unless held with sufficient force to resist such blow, all combined substantially as described.

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

ANDREW BURGESS.

Witnesses:

CHAS. E. RIORDON,
CHAS. K. DAVIES.