No. 676,094. Patented June 11, 1901.

R. W. LINVILLE & E. E. ENDICOTT.

MAGAZINE FIREARM.

(Application filed Apr. 19, 1900.)

(No Model.) 2 Sheets—Sheet 1.

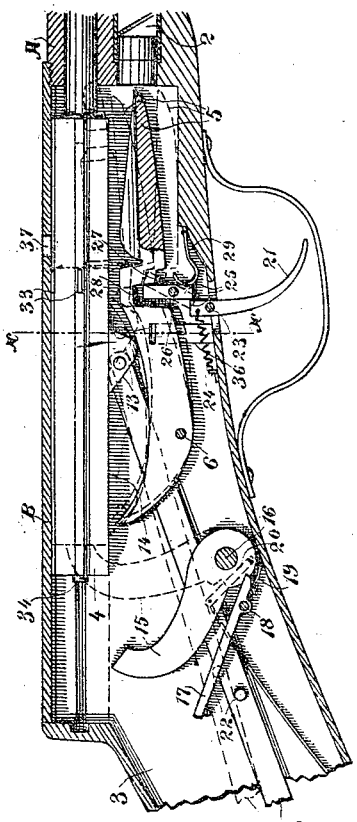


Fig. 1.

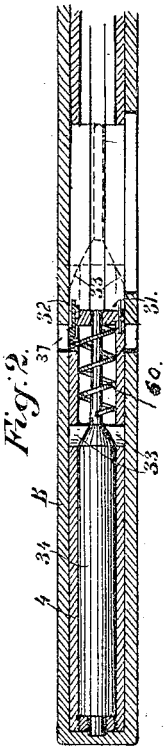


Fig. 2.

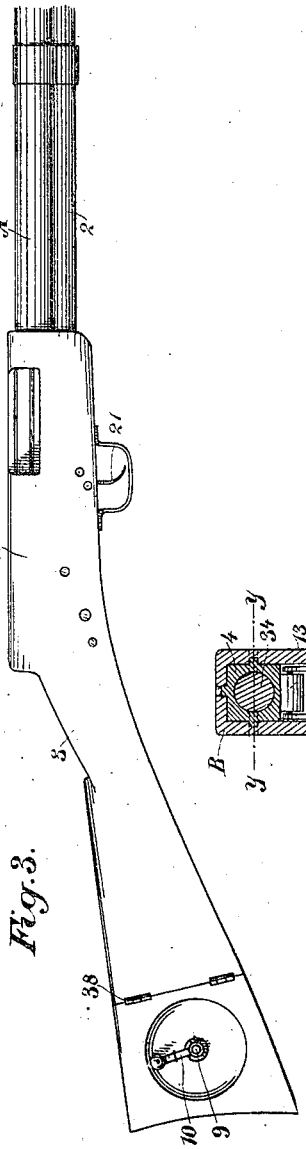


Fig. 3.

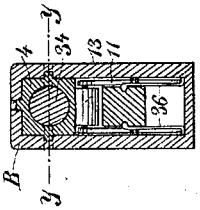
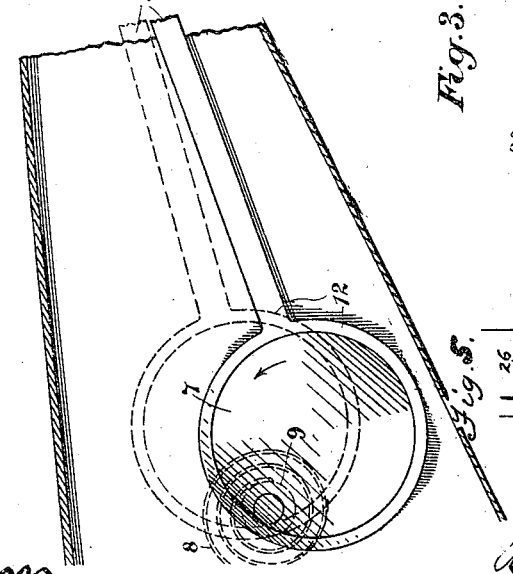


Fig. 4.



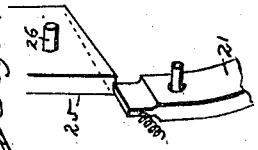


Fig. 5.

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Fig. 6.

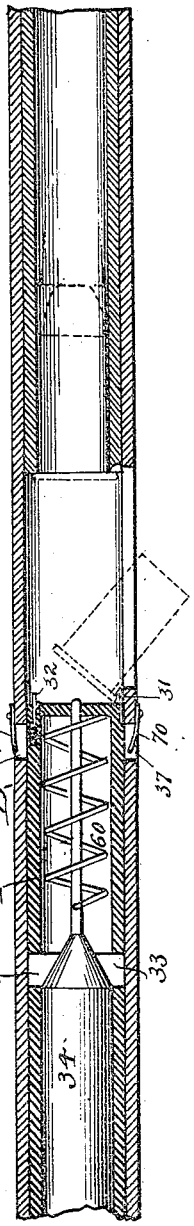
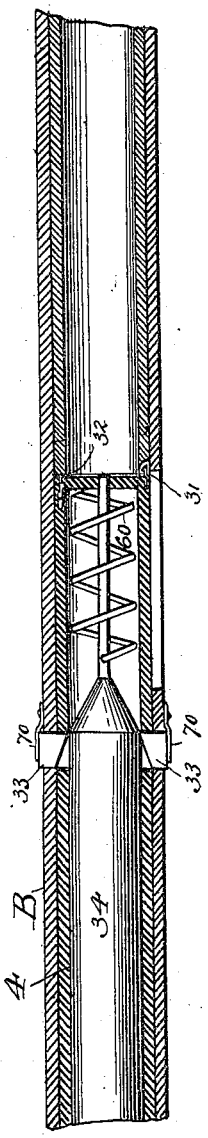


Fig. 7.



WITNESSES

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ROBERT W. LINVILLE, OF GWINMINE, AND EDWIN E. ENDICOTT, OF JACKSON, CALIFORNIA.

MAGAZINE-FIREARM

SPECIFICATION forming part of Letters Patent No. 676,094, dated June 11, 1901.

Application filed April 19, 1900. Serial No. 13,411. (No model.)

To all whom it may concern:

Be it known that we, ROBERT W. LINVILLE, residing at Gwinmine, county of Calaveras, and EDWIN E. ENDICOTT, residing at Jackson, county of Amador, State of California, citizens of the United States, have invented an Improvement in Guns; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to an improvement in magazine-guns.

It consists in the combination, with a magazine, of a carrier by which the cartridges are transferred from the magazine to the line of the barrel, and a longitudinally-slidable breech-bolt by which the cartridges are transferred to the barrel of a mechanism, and connections whereby the parts are automatically actuated and the gun loaded and fired continuously until the cartridges are exhausted.

It also comprises mechanism by which the discharge may be interrupted and the gun fired singly and successively by independent movements; and our invention further comprises details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a longitudinal section through the rear part of the gun. Fig. 2 is a horizontal section of the same on line *y y* of Fig. 4. Fig. 3 is an exterior view. Fig. 4 is a lateral section on line *x x* of Fig. 1. Fig. 5 is a detail showing the adjacent ends of the trigger 2 and latch 25. Fig. 6 is an enlarged sectional view of a portion of the breech-bolt and frame and the firing-pin and showing the breech-bolt withdrawn. Fig. 7 is a similar view showing the breech-bolt advanced and locked by the bolts 33. Fig. 8 is a detail showing a portion of the firing-pin, the bolts 33, and a portion of the spring 60.

A is the barrel of the gun, having the magazine 2 located below it and extending to any desired length less than that of the barrel and adapted to contain such number of cartridges as its length will accommodate.

3 is the stock of the gun, which is hollowed out to contain the actuating mechanism and connections between this mechanism and the breech-bolt and cartridge-carrier.

The breech-bolt 4 is slidable longitudinally in the line of the barrel. When withdrawn to the extent of its movement rearwardly, there is a sufficient space in front of it to allow a cartridge to be raised from the line of the magazine up to the line of the barrel.

The cartridges in the magazine are pressed backwardly by a spring-actuated follower located in the front end of the magazine.

The carrier 5 is fulcrumed as shown at 6 and is depressed when the breech-bolt is in its forward position to allow a cartridge from the magazine to pass above the front end of the carrier. When the breech-bolt is retracted, the carrier is tilted about its fulcrum-point to raise the front end and bring the cartridge into line with the barrel, so that the next forward movement of the breech-bolt will advance the cartridge into the chamber at the rear of the barrel. In its upward movement the front end of the carrier acts as a stop to prevent any more cartridges from being delivered from the magazine until the carrier has again been depressed to receive them. The actuating mechanism consists of a crank or eccentric wheel 7, located in the rear of the stock and turnable therein. This eccentric-wheel has an interior spring-case, within which is contained a coiled spring 8, one end of which is attached to the shaft 9 and the other so connected with the eccentric that when released its tension acts to revolve the eccentric or crank-disk. The spring is wound up at intervals by means of a crank 10, fixed upon the end of the crank-shaft 9 upon the outside of the gun. This crank may be jointed and foldable, so that when not in use it lies closely against the side of the stock, and the stock may, if desired, be chambered so that the crank will be approximately flush with the outside of the stock. When it is to be used to wind up the spring 8, it is unfolded and extended, having a knob upon the outer end by which it can be turned and the spring wound up. When thus wound, it is retained and prevented from moving by the latch mechanisms connected with the trigger and forward parts of the mechanism, as will be hereinafter described.

11 is a connecting-rod which is actuated from the eccentric 7 either by an eccentric-strap 12, which surrounds and is moved by

the revolution of the eccentric, or if a cranked disk be substituted for the eccentric the connecting-rod 11 will be suitably connected therewith by an intermediate pivoted rod connecting with a crank-pin upon the disk, the object in either case being to convert the revolving motion of the shaft 9 into a reciprocating motion, which is transmitted to actuate the breech-bolt, carrier, and firing mechanism of the gun.

As here shown, the breech-bolt 4 has a lug 13 projecting from the lower surface, and the rear end of the cartridge-carrier 5 is curved upwardly, as shown at 14, so that when the breech-bolt arrives at nearly the rear end of its travel the lug engages the rear end of the carrier, and thus tilts the front end upwardly with its cartridge, as previously described. When the breech-bolt moves forwardly, the carrier is caused to fall by contact of the lug with the anterior part of the curve. A spring 36 prevents the carrier falling while the bolt is advancing. The rearward movement of the breech-bolt 4 is communicated to draw back the hammer 15 by contact with the upper end of the hammer, which is fulcrumed, as at 16. When the hammer is thus drawn back, it is engaged by the sear 17, which is pivoted, as shown, at 18, and a spring 19, pressing upon the lower end of the sear, causes it to catch with the notch 20 of the hammer, and thus retain it in its rearward position.

The mainspring of the gun may be connected in any suitable or desired manner, so as to provide the necessary pressure to cause the hammer to fall when released.

Under the conditions hereinafter described if no stop arrangement is provided for the unwinding of the spring 8 there will be a continuous reciprocation of the parts connected with the crank-disk or eccentric by the rod 11, and cartridges will be continuously placed in the barrel of the gun and the gun will be discharged in like manner until all the cartridges are exhausted by simply placing the finger upon the trigger 21 and holding it back to prevent the carrier from being locked.

The sear 17 is moved about its fulcrum-point and disengaged from the hammer by a pin 22, carried by the reciprocating connecting-rod 11, so that at each forward movement of the rod and when the breech-bolt has closed the rear of the gun-barrel this pin striking the sear will disengage it from the hammer and allow the hammer to fall. In Fig. 1 the dotted lines show the position of the parts at the instant of firing. The crank-pin, the center of the eccentric 7, and the rod 11 are all in one line, which position is stronger to resist the reaction caused by the explosion than if the center of the eccentric and the rod 11 were to one side of the crank-pin. In such latter case no advantage would be gained from the resistance of the crank-pin, which has the most strength and is important for that object. The trigger 21 is pivoted, as shown at 23, and the upper end is normally held back by a spring 24. In front of the upper end of the trigger is a latch 25, which is pivoted or fulcrumed, as shown at 26. The upper end of this latch engages with notches 27 and 28, formed in the lower part of the carrier 5, as follows: When the trigger is in its normal condition and acted upon by the spring 24, the upper end is pulled backward, and a spring 29, which presses against the lower part of the latch 25, forces the upper end forwardly and causes it to engage with the notch 27. This notch acts as a lock and prevents the carrier from being depressed when the lug 13 comes in contact with it, and thus retains the parts in an inoperative condition, because the thrust of the connecting-rod 11 against the breech-bolt and lug 13 being arrested by contact with the locked carrier 5 will prevent any further rotation of the eccentric or crank mechanism, and will therefore prevent reciprocation of the breech-bolt. Therefore when the gun is locked in this position, the cartridge being in the gun, it is ready for firing. By pulling the trigger 21 the upper end will move forwardly and will tilt the latch 25 until its upper end is disengaged from the depression 27 and is brought into line with the deeper notch or depression 28. When in this line, the continued pressure upon the lug 13 will force the forward end of the carrier down and out of its way to advance freely for firing. The releasing of the hammer and the exploding of the cartridge in the gun takes place after the latch 25 has been disengaged from the notch 27, and immediately after this action the latch 25 will be brought into line with the deeper notch 28, and this will allow the carrier 5 to be depressed by the pressure of the connecting-rod 11 upon the lug 13, and it will then be in position to receive another cartridge, and will lift it up into line with the barrel as the rod 11 is moved in the opposite direction by the action of the spring 8. At the instant when the latch 25 has been brought into line with the notch 28 the lower end will have tilted far enough to be disengaged from the trigger 21, and this will allow the spring 29 to act and force the latch 25 back to the position where it will engage the notch 27 of the carrier, and will thus stop the action after another cartridge has been placed in the barrel of the gun.

As shown in Fig. 5, the trigger-latch is formed with a taper toward the front end, and the trigger is mounted loosely upon its pivot-pin. This provides sufficient side movement to enable the trigger to tilt, so as to return along one side of the trigger-latch 25.

If the gun is to be loaded and fired continuously, the trigger is only pulled enough to bring the latch 25 into line with the deep notch 28, but not far enough to pass the lower end of the latch and release it. The latch being thus held in this position, the pin 22 on the rod 11 will strike the sear 17 at each revolu-

tion of the crank or eccentric and will disengage from and allow the hammer to fall. The other movements of reciprocating the breech-bolt and tilting the carrier are carried on continuously until the cartridges have been exhausted from the magazine.

The front end of the breech-bolt is provided with an extractor 31, which engages the groove or flange of the shell, and upon the opposite side is a slidable bolt 32, which is pressed forward when the breech-bolt is retracted and after the shell is clear of the gun-barrel by striking a stop, or by other suitable means, so as to give the cartridge a turn about the hook 31, which holds the opposite edge, and thus eject it.

In the construction adopted for this gun it is desirable to have the top of the breech-bolt and moving parts covered and inclosed by a casing or frame B, and we have designed to leave a side open opposite the chamber, so that the cartridge-shell can be ejected to one side of the gun; but whatever the direction in which the cartridge is to be ejected the hook 31 and the ejector 32 will be so disposed with relation to the opening as to throw the shell in that direction. In order to lock the breech-bolt at the instant when it has been forced forward and the cartridge seated in its chamber in readiness for firing, we have shown transversely-slidable latching-bolts 33 in the breech-bolt. These latches are spring-pressed, Figs. 6 and 7, and are caused to engage with corresponding notches 37 in the casing when the hammer falls and strikes the firing-pin 34. In Fig. 8 we show a third bolt or latch *d*, corresponding with the bolts or latches 33, said bolt or latch *d* being substantially at right angles with bolts or latches 33 and adapted to engage an opening 37 in the top of the frame B. When the breech-bolt is retracted, the latching-bolts 33 are resting against the conical part of the firing-pin 34 and against the wall of the frame B, as shown in Fig. 6. When the breech-bolt 4 is moved forward at the proper time, the bolts 33 will arrive opposite the openings 37, and are then pushed into these openings by the pressure caused by the inclined form of the cone-shaped end of the firing-pin, as shown in Fig. 7. While the pressure of the firing-pin against the bolts 33 may be the same while they are within the frame B, it will be manifest that they could not be pushed outwardly until they arrive opposite the openings 37, and when they are pushed into said openings they lock the breech-bolt to the frame, as shown in Fig. 7. When retracting the breech-bolt, the bolts 33 are withdrawn from the slots 37 by the action of springs 70, thus freeing the frame from the breech-bolt, and the said bolts 33 are then drawn back along the inside wall of the frame with the breech-bolt, as shown in Figs. 2 and 6. When in the position shown in Fig. 7, the firing-pin has been forced forward by the action of the hammer and against the tension of the spring 60, having first pushed the bolts 33 into the openings 37, thus freeing the pin and allowing it to move forward. Immediately after the explosion the spring 60 forces the pin back again, presenting the conical portion of said pin to the bolts 33, and this allows the bolts 33 to be again retracted by the springs 70 from the slots 37, so that the outer ends of the bolts are flush with the outside of the breech-bolt, allowing the latter to be withdrawn again, as shown in Figs. 2 and 6. The firing-pin is of two diameters, with a cone-shaped connecting-shoulder, and this shoulder being forced between the inner ends of the latches when the hammer strikes the firing-pin forces the latches outward into engagement with the notches or stops in the casing. When the breech-bolt is retracted, the latches 33 rest on the cone-shaped part of the firing-pin, their outer ends sliding against the inside walls of the casing B. When the breech-bolt is moved forward to its farthest limit, the latches having been carried along will be brought into line with the openings 37 in the casing, so that when the pin is struck the latches will be forced into this opening by the advance of the cone upon which they rest simultaneously with its movement to explode the cartridge. After the firing the cone is forced back by the spring and allows the latches to drop down upon it and out of the openings 37, ready to be withdrawn again with the breech-bolt, this movement of the latches being facilitated by some well-known form of light spring connection—such, for instance, as shown in Fig. 7. One portion of the right side of the butt may be hinged to the other, as at 38, to gain easy access to the interior mechanism.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a gun, the combination with a longitudinally-slidable breech-bolt having a trip or lug, a spring-actuated eccentric or crank journaled in the stock of the gun, connections between the eccentric or crank and the breech-bolt whereby the latter is reciprocated, a cartridge-carrier substantially parallel with the breech-bolt and having a portion disposed in the path of movement of said trip or lug, means engaging said carrier and causing it to stop and lock the breech-bolt after a cartridge has been inserted into the barrel, and means for releasing the carrier and allowing the breech-bolt to be retracted.

2. In a gun and in combination with the longitudinally-slidable breech-bolt thereof, a spring-pressed eccentric or crank-disk connections between it and the breech-bolt whereby the latter is reciprocated, and mechanism including a pivoted cartridge-carrier disposed in the path of movement of the breech-bolt, and having a notch, and a latch engaging said notch for stopping and locking the breech-bolt after a cartridge has been inserted into the barrel.

3. In a gun, a longitudinally-slidable breech-

bolt and eccentric or crank-disk, a spring by which it is rotated, connection between the eccentric and the breech-bolt whereby the latter is reciprocated, a magazine and a fulcrumed tilting carrier having a notch, and a latch engaging said notch to hold the carrier in a raised position said carrier actuated by the reciprocation of the breech-bolt whereby cartridges are successively raised from the magazine into line with the bolt.

4. In a gun, and in combination with the longitudinally-slidable breech-bolt thereof, a spring-actuated eccentric or crank-disk, connections between it and the breech-bolt whereby the latter is reciprocated, a carrier fulcrumed beneath the breech-bolt so that its front end is tilted and brought successively into line with the magazine, and with the lower part of the breech-bolt, a lug on the breech-bolt adapted to engage the rear end of the carrier and raise the front end at each rearward movement of the breech-bolt, means for holding the front end of the carrier in a raised position and thereby locking the breech-bolt, and means for releasing the carrier from its elevated position.

5. In a gun and in combination with the barrel, a longitudinally-reciprocating breech-bolt, a revoluble eccentric or crank-shaft and connections between it and the breech-bolt, and a carrier by which cartridges are successively raised from the magazine to the line of the barrel in front of the breech-bolt, of a spring-pressed hammer, a pivoted spring-pressed sear adapted to engage and retain the hammer in its retracted position, and a pin carried by the eccentric or connecting-rod which disengages the sear from the hammer after the breech-bolt is closed and locked.

6. In a gun, a longitudinally-reciprocating breech-bolt, a revoluble eccentric or crank-disk with connections whereby it reciprocates the breech-bolt, a hammer, a pivoted tilting carrier located beneath the breech-bolt having an upturned rear end, and a lug upon the breech-bolt which engages said end upon the rearward movement of the breech-bolt and raises the front end to place a cartridge in line with the barrel, means for holding the carrier elevated and thereby stopping and locking the breech-bolt, and means for releasing said carrier from its elevated position.

7. In a gun, a longitudinally-reciprocating breech-bolt with a revoluble spring-pressed eccentric or crank-disk and connections whereby a bolt is reciprocated therefrom, a fulcrumed vertically-tilting carrier actuated by contact of the moving breech-bolt, said carrier having notches on its under side, and a pivoted spring-pressed latch adapted to engage with and hold the carrier in its raised position and means to disengage the latch from the carrier.

8. In a gun, a longitudinally-slidable breech-bolt, a revoluble spring-actuated eccentric or crank-disk and connections whereby the breech-bolt is reciprocated therefrom, a fulcrumed carrier located beneath the breech-bolt and in rear of the superposed barrel and magazine, a lug upon the breech-bolt by which the carrier is tilted upon the rearward movement of the breech-bolt and the cartridge raised into line with the barrel, a spring-pressed latch engaging a notch on the carrier and retaining said carrier in its raised position, a connection between said latch and the trigger whereby the latch is disengaged from the holding-notch, and a deeper notch connecting with the first-named notch and adapted to receive the latch, permit the discharge of the gun and allow the carrier to again be brought into line with the magazine.

9. In a gun, a barrel, a magazine located beneath and parallel therewith, a longitudinally-reciprocating breech-bolt and connection between said bolt, and a spring-actuated revoluble eccentric or crank-disk whereby the bolt is reciprocated, a pivoted tilting carrier located beneath the breech-bolt, its front end adapted to be brought alternately into line with the magazine and with the barrel, after the withdrawal of the breech-bolt, a latch mechanism engaging the carrier after the breech-bolt has been retracted, and a stop upon the breech-bolt engaging the carrier whereby the bolt is arrested by the carrier and further reciprocation prevented.

10. The combination of a breech-bolt and means for reciprocating the same, a longitudinally-extending tilting carrier located beneath the breech-bolt, a lug on the breech-bolt engaging the carrier to tilt it, a latch or tumbler adapted to engage the carrier said carrier having a notch engaged by said latch or tumbler whereby it is maintained in position after being tilted and the breech-bolt is also prevented from complete forward reciprocation, a trigger connection with the latch or tumbler whereby the latter is disengaged by the pulling of the trigger to allow the parts to resume their movements.

11. In a gun, the parallel superposed barrel and magazine, a longitudinally-reciprocating breech-bolt, a spring-actuated revoluble eccentric or crank-disk, with connections whereby the breech-bolt is reciprocated therefrom, a hammer which is withdrawn by the rearward movement of the breech-bolt, a pivoted sear by which it is engaged and retained, a fulcrumed carrier located beneath the breech-bolt and contact-lug upon the bolt whereby the carrier is tilted to raise the cartridge after the bolt has been withdrawn, a latch or tumbler engaging the carrier to lock it in its raised position whereby it also acts as a stop to prevent further movement of the breech-bolt, a trigger connection with said tumbler whereby it is disengaged to allow the carrier to be depressed and the breech-bolt to move forward and be locked, and a pin carried by the eccentric connecting-rod and acting to disengage the sear and release the hammer after the breech-bolt has been locked.

12. In a gun, a longitudinally-reciprocating

breech-bolt, a revoluble spring-actuated eccentric or crank-disk, connections between it and the breech-bolt, mechanism for independently locking the breech-bolt after it has been closed against the rear of the barrel, said mechanism consisting of transversely-slidable blocks and apertures in the breech-casing with which said blocks engage.

13. In a gun, a longitudinally-reciprocating breech-bolt, a revoluble spring-actuated eccentric or crank-disk, connections between it and the breech-bolt, mechanism for locking the breech-bolt after it has been closed against the rear of the barrel, said mechanism consisting of transversely-slidable blocks and apertures in the breech-bolt casing with which said blocks engage, and devices for disengaging the locking-lugs to allow the breech-bolt to be retracted.

14. In a gun, a longitudinally-reciprocating breech-bolt, a revoluble spring-actuated eccentric with connections between it and the breech-bolt, mechanism to lock the breech-bolt in its forward position, consisting of transversely-slidable blocks carried by the bolt, a firing-pin having a cone-shaped shoulder slidable between the blocks to force them into engagement with notches in the casing when the hammer falls upon the firing-pin, and springs acting to retract the parts after the fall of the hammer.

In witness whereof we have hereunto set our hands.

ROBERT W. LINVILLE.
EDWIN E. ENDICOTT.

Witnesses:
GILBERT GABBERT,
HENRY SCOTT.