

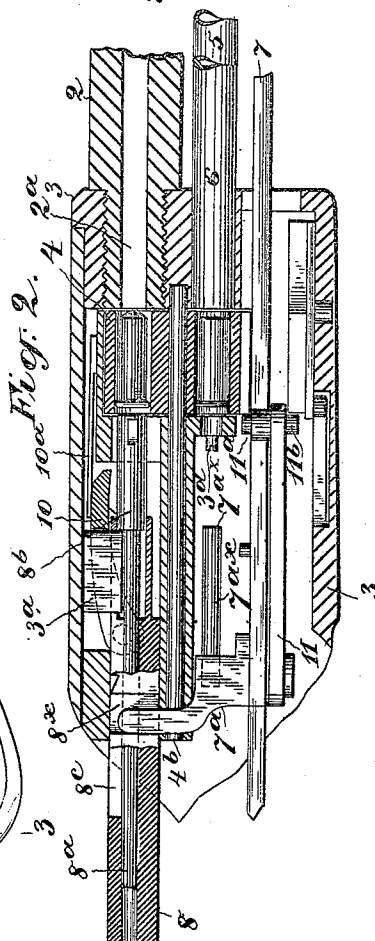
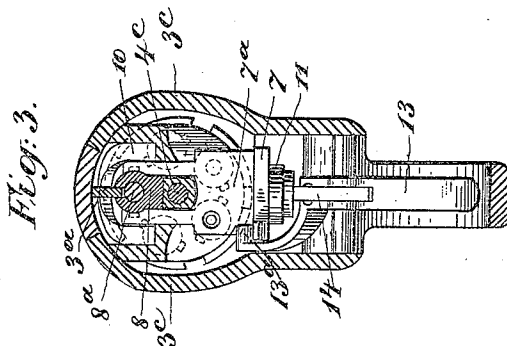
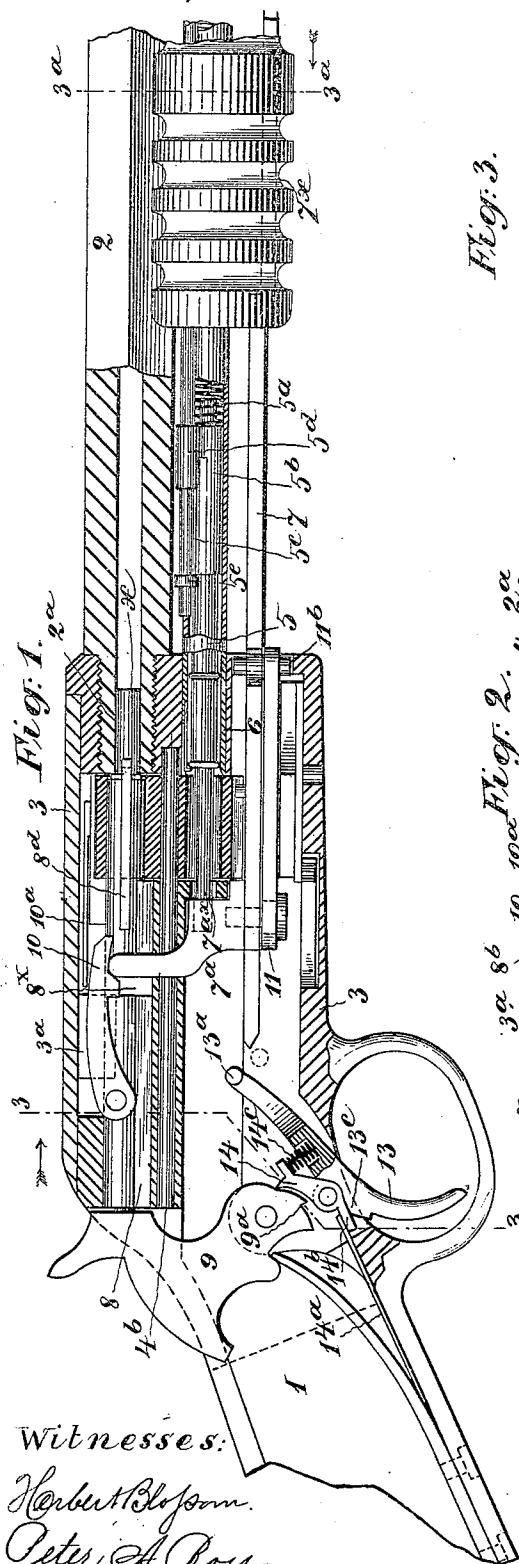
(No Model.)

2 Sheets—Sheet 1.

J. L. McCULLOUGH.
MAGAZINE GUN.

No. 509,548.

Patented Nov. 28, 1893.



Witnesses:

Herbert Bloom.
Peter A. Ross.

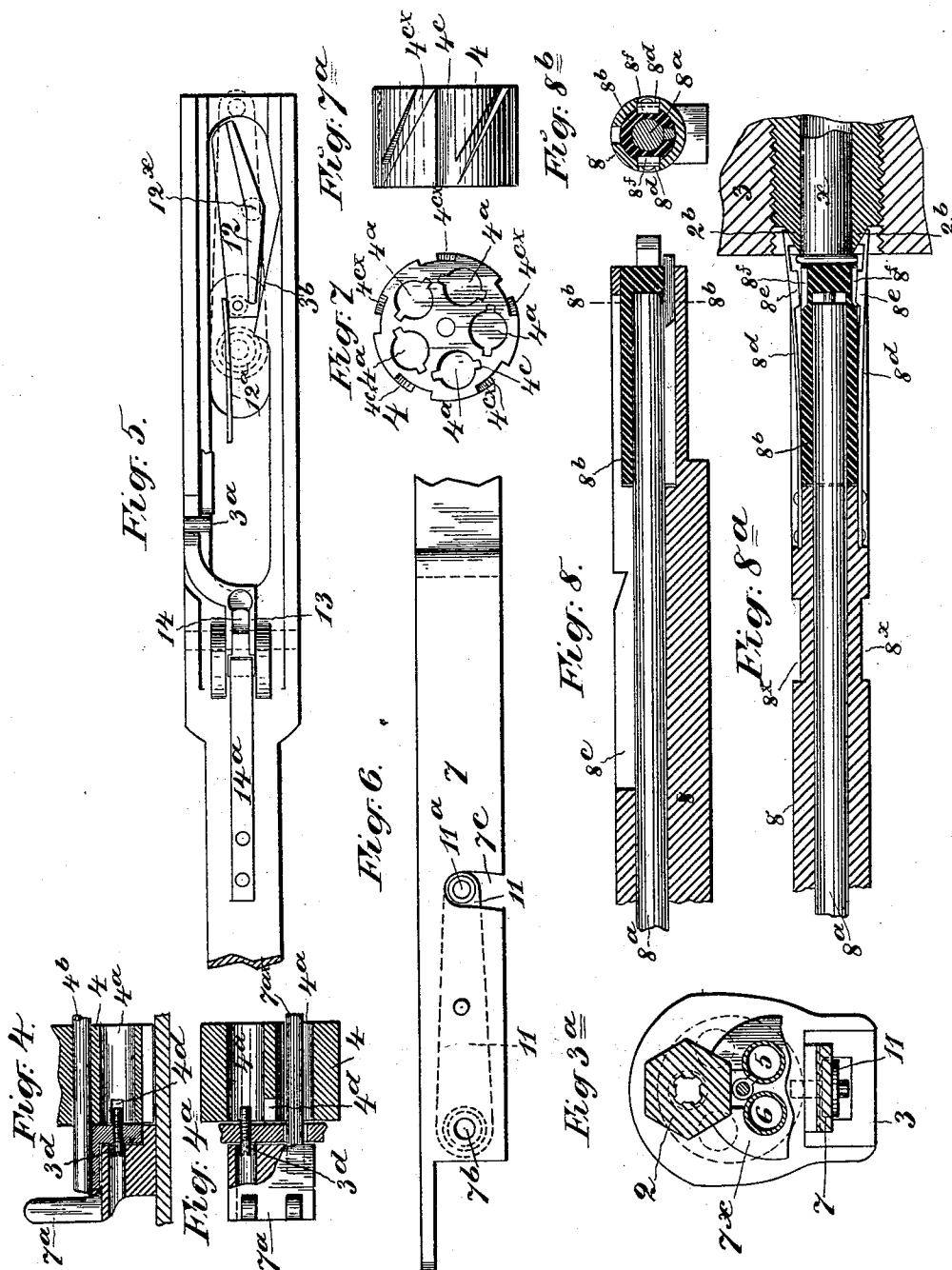
Inventor:

John L. McCullough.
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John L. McCullough
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UNITED STATES PATENT OFFICE.

JOHN L. McCULLOUGH, OF BROOKLYN, NEW YORK.

MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 509,548, dated November 28, 1893.

Application filed December 12, 1892. Serial No. 454,926. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. McCULLOUGH, a citizen of the United States, and a resident of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Magazine-Firearms, of which the following is a specification.

My invention relates to improvements in magazine fire-arms employing fixed ammunition, or which may employ fixed ammunition, and one of the objects of the invention is to provide the gun with what may be called a shell magazine and means for automatically feeding the discarded empty shells from the chambered carrier into this magazine, one by one, as the chamber in the carrier is brought into register with the receiving end of said magazine.

The invention will be fully set forth hereinafter and its novel features carefully defined in the claims.

In the accompanying drawings—Figure 1 is a sectional elevation of a portion of a gun embodying my invention. This view shows only the parts of the gun at and adjacent to loading and firing mechanisms. This view represents the several operative mechanisms in the positions they occupy immediately after firing. Fig. 2 is a similar sectional view of the operative parts of the gun, showing the positions of these parts when the gun is cocked but before the cartridge is forced into the barrel by the breech bolt. Figs. 3 and 3^a are transverse sections substantially along the respective lines 3, 3 and 3^a 3^a in Fig. 1. Figs. 4 and 4^a are fragmentary sectional views illustrating the device whereby the gun is adapted for using cartridges of different lengths. Fig. 5 is a plan view of the lower part of the frame, illustrating the means for rotating the chambered carrier or cylinder. Fig. 6 is a plan view of a portion of the operating slide, detached. Figs. 7 and 7^a are, respectively, an end and a side elevation of the chambered cylinder or carrier. Figs. 8 and 8^a are, respectively, a vertical longitudinal section, and a horizontal longitudinal section, of the breech bolt, on a larger scale than the principal figures; and Fig. 8^b is a transverse section at line 8^b 8^b Fig. 8.

1, is the gun stock, 2 the barrel, and 3 the

metal frame between and connecting the stock and barrel. The latter is represented as screwed, at the breech, into the front end of the frame 3. In a recess in the frame is rotatively mounted a cylindrical carrier, 4, having an odd number (by preference) of chambers, 4^a. As herein shown the carrier has five chambers, and the object in employing an odd number is that when one chamber is at the index point, or aligned axially with the bore in the barrel there will be two chambers at the bottom of the carrier side by side, and in the same horizontal plane. The purpose of this will be hereinafter explained. The carrier is mounted on a removable pin, 4^b.

For simplicity and convenience in describing the construction and operation of my gun, I have called the point at which the chamber in the carrier 4 stands when aligned with the bore in the barrel, the "index point," this being the term employed technically in the trade.

Mounted under the barrel and lying side by side are the cartridge magazine, 5, and the shell magazine, or receiver, 6, both tubular and aligned with the respective lowermost chambers in the cylindrical carrier 4. The cartridge magazine 5 will have a spring (5^a in Fig. 1), such as is usually employed in magazines of this class, to force the cartridges, one by one, into the chambers of the rotating carrier, but the magazine 6, which receives the rejected cartridge shells from the carrier 4, will be merely a plain tube.

Mounted in guides below the magazines, is the operating slide, 7, provided with a grip 7^a. By drawing back this slide the breech bolt, 8, is drawn back and the cartridge shell (8^a in Figs. 1 and 8^a) drawn from the cartridge chamber, 2^a, in the barrel back into the indexed chamber of the carrier 4; the hammer, 9, is forced back to full cock, and the cylindrical carrier rotated to bring the next chamber in the carrier to the index point. When the operating slide is pushed forward, a cartridge is forced from the indexed carrier chamber into the barrel, and a rejected shell forced from the carrier into the shell magazine 6.

Mounted rigidly on the slide 7, is a fork, 7^a, the upright branches of which embrace the breech bolt 8 and loosely engage recesses, 8^a,

in the sides thereof. This fork (seen in plan in Fig. 4^a) imparts the necessary endwise motion to said bolt, which has slide-bearings in the frame 3 in line with the bore in the barrel. To enable the breech bolt to resist the recoil, a pawl, 10, is provided, adapted to engage or take behind a shoulder on the bolt when the latter is driven forward to its full extent; and the loose engagement of the branches of fork 7^a with the wider recesses in the bolt, permit the fork to move back far enough to take under and raise said pawl out of engagement before the fork moves back the bolt. The pawl 10 is pressed down by a spring 10^a on the frame. When the bolt 8 is drawn back, it presses back the hammer 9, and sets it at full cock, as in other guns of this class.

The breech bolt contains the firing pin, 8^a, arranged in much the same manner as in other guns of this class, it being loose in the hollow or bore of the bolt and having a slight endwise movement. As herein shown the tip of the firing pin is adapted for rim-fire cartridges. In the front end of the breech bolt is fitted a hollow slide, 8^b, which occupies an enlargement of the bore in the bolt and embraces the forward end of the firing pin, as clearly shown in Figs. 8 and 8^a. In the upper face of the breech bolt is a longitudinal slot 8^c in which plays, as the bolt moves to and fro, a pendent lug 3^a on the upper part of the frame 3. The purpose of this construction will be explained. On opposite sides of the breech bolt, at its forward end, are secured spring extractors, 8^d, seen clearly in Fig. 8^a. These have beveled, latch-shaped heads, with shoulders to engage the flanged rim on the cartridge shell and draw it out of the chamber in the barrel when the breech bolt moves back. Each extractor has on its inner face a shouldered projection, 8^e, back of the head, and shouldered recesses 8^f are formed in the sides of the slide 8^b to receive these projections on the respective extractors when the latter are closed in against said slide. When the breech bolt 8 is driven forward in loading, the front end of the slide 8^b drives the cartridge into the bore of the barrel, and the free ends or heads of the extractors 8^d are spread apart by inclines, 2^b, on the barrel. This position of the parts is clearly shown in Fig. 8^a. When the breech bolt is drawn back by the fork 7^a, the heads of the extractors 8^d close on the cartridge shell in the barrel, engage the flange thereon and draw the shell back into the chamber in the rotary carrier 4. At the moment the said shell is out of the barrel and housed in the carrier, the slide 8^b, (which moves back with the breech bolt) encounters the stationary pendent lug 3^a, and the further backward movement of the slide is arrested. The extractors, 8^d, however, continue to move back, and the shouldered projections 8^e, on the inner faces thereof encounter the shoulders formed by the recesses in the sides of the slide; these shoulders being beveled slightly, the effect is to spread the extractors to an ex-

tent sufficient to free their heads from engagement with the flanged rim on the cartridge shell and thus permit the extractors to move back far enough to clear the rotary carrier leaving the shell therein. There will be sufficient play of the parts to allow of this disengagement being effected without binding or friction.

When the operating slide 7 has been moved far enough back to effect the withdrawal of the extractors from the rotary carrier, as above described, the further and continued backward movement of said slide effects the rotation of the carrier 4 to an extent sufficient to bring the next chamber therein to the index point. This movement may be effected by any known means, but the mechanism herein shown for effecting it will now be described with especial reference to Figs. 5, 6, 7 and 7^a.

In the periphery of the cylindrical carrier 4, and extending longitudinally thereof, are five straight grooves, 4^e, and five oblique grooves, 4^{ex}, connecting the opposite ends of the adjacent straight grooves in such a manner as to form a zig-zag about the cylinder. Pivoted at 7^b on the lower face of the operating slide 7, is an arm, 11, which extends forward and carries at its free end a stud 11^a, which extends up through a lateral slot, 7^c, in the operating slide and is adapted to engage the grooves in the lower face of the carrier 4, when the slide is moved to and fro; and another stud, 11^b, which projects downward from the arm. These two studs are really formed by one pin fixed in the arm 11. It will be obvious that if a stud were simply fixed in the operating slide 7, it would not properly actuate the carrier by engagement of the grooves therein, because after the stud 11^a has passed forward along a straight groove 4^e in the carrier, it must be shifted laterally to the extent of its diameter in order to enable it to properly engage the oblique groove 4^{ex} and rotate the carrier on its next backward movement. To so shift the stud 11^a, an automatic spring switch device, best seen in Fig. 5, is employed. This device comprises an angular switch-plate, 12, pivotally mounted in a recess in the lower part of the frame 3, at 12^x. This plate is held in the position seen in Fig. 5 by a spring, 12^a. The position of the pendent stud 11^b, when the operating slide 7, is at the end of its forward movement, is indicated by dotted lines in Fig. 5. When the slide 7 is drawn back, the stud 11^b is deflected laterally by the oblique forward end of the switch plate 12, the arm 11 swinging about its pivot, until the apex at 12^x is reached. At this point the upper stud, 11^a, enters the open front end of the oblique slot in the carrier 4, and in the further movement of the operating slide, the lower stud, 11^b, moves along the oblique wall, 3^b, in the frame, displacing the switch plate sufficiently to permit it to pass. The purpose of the oblique wall 3^b is in part, to hold the arm 11 from swinging laterally while the carrier

is being rotated, and in part to compensate for the lateral swing of said arm at the first part of the movement and to bring it again into line with the axis of the operating slide, so that when the latter is next moved forward the stud 11^a may properly enter and follow a straight groove in the carrier 4. As the stud 11^b moves forward it displaces the outer end of the switch plate, which is again moved back to the position seen in Fig. 5, by its spring, as soon as the stud passes it. As the boss of the stud 11^a is at the bottom of the slot 7^c when the arm 11 is aligned with the operating slide 7, it will be understood that the arm 11 cannot swing in that direction and the stud 11^b must displace the switch plate on its return movement to the front, as stated above. When the operating slide moves forward, a plunger, 7^{ax}, on the fork 7^a, enters one of the lower chambers in the rotary carrier 4, from the rear, and pushes the discarded shell left therein from said chamber into the adjacent end of the shell magazine 6 which is always in alignment with said plunger. Each shell, as it enters the rear end of the magazine 6, pushes the shells in front of it forward. The cylindrical carrier rotates between parts of the frame 3 in such a manner that the ends of the chambers therein are closed except at the points where access is required. For example, the plunger 7^{ax} passes through an aperture in an inclosing part of the frame before reaching the chamber containing the shell.

In the cartridge magazine, 5, a part of which is seen in section in Fig. 1, is a follower, 5^b, interposed between the spring 5^a and the cartridges. This follower moves back toward the rear end of the magazine as the cartridges pass out, one by one, to the carrier 4; and after the last cartridge has been thus delivered the end of the follower enters the chamber in the carrier and locks the latter against rotation, thus making it necessary to refill the magazine before the gun can be again fired. This construction is mainly designed as a warning to the user that the magazine is empty, and it may be omitted, if desired.

When it is desired to refill the magazine, the follower 5^b is drawn outward, (and the spring 5^a thereby compressed,) by means of a rod, 5^c, which plays through a laterally projecting lug, 5^d, on the follower and has on its rear end a button or collar, 5^e. By drawing on the rod, this button engages the lug on the follower and draws the latter back. The neck connecting the follower with the lug plays along a slot in the magazine 5.

In order to lock the trigger, 13, and prevent it from being pulled until the operating slide shall have been pushed forward to the full extent, the trigger is prolonged upwardly and has on its inner end a laterally projecting stud, 13^a, the lower face of which is a very little below the upper face of the operating slide 7, as seen in Fig. 1. When the slide is drawn back, its rear end wipes under the

stud 13^a, and thus prevents the trigger from being operated until the slide 7 is pushed forward again. On the other hand, in order to prevent the operating slide, 7, from being drawn back while the hammer 9 is at full cock, another device is employed which will now be described. Pivoted in a recess in the trigger, is a pawl, 14, the head of which bears on the heel of the hammer 9, and is held up to the hammer by a spring 14^a, fixed on the frame and bearing at its free end on a heel 14^b, back of the pivot of the pawl. Another, weaker spring, 14^c, is interposed between the head of the pawl and the trigger 13. Now, when the operating slide is moved back and takes under the stud 13^a, which it does at the beginning of the movement of the slide, and the hammer 9 is then cocked by the continued movement of the said slide, the head of pawl 14 will be forced back by reason of the fact that the notch, 9^a, in the hammer, occupied by the pawl at full cock, is farther radially from the pivotal axis of the hammer than the point 9^b, where the pawl bears on the hammer normally, and as the trigger cannot yield, the light spring 14^c will be compressed and the heel of the pawl 14 will stand free from the shoulder at 13^c, on the trigger, whereon it bears normally. The hammer being now at full cock and the spring 14^c under tension, if the operating slide be pushed forward to the full extent, the rear end of the slide 7 will pass out from under the stud 13^a on the trigger, and the spring 14^c will instantly depress the inner end of the trigger until the stud 13^a stands directly behind the beveled end of the slide, as indicated by the dotted circle in Fig. 1, and thus offer an obstacle to the drawing back of the slide. Of course the extent of this movement of the trigger by the spring 14^c is limited by the contact of the tail of the pawl 14 with the shoulder 13^c on the trigger.

It is customary to provide cartridges of the same caliber but of two or more different lengths, the longer containing the heavier charges of powder, and it is desirable to provide a magazine gun which is adapted to use cartridges of different lengths. This is effected in the gun described herein in the manner following. The cylindrical carrier 4 is made of such length that it will receive and house in its chambers the longest cartridge to be used, and a means is provided for adapting it to the shorter cartridges. This latter device is clearly illustrated in Figs. 4 and 4^a. In the frame 3, is set a screw 3^a, which is aligned with the cartridge magazine 5. This screw 3^a is adapted to enter the chamber in the carrier 4 which is in alignment with the magazine and serves as a stop to limit the extent to which the shorter cartridge can enter the same. As the cartridges in the magazine follow each other closely, it is essential that the front end of the cartridge in the chamber shall coincide with the front end of the carrier or the latter will not rotate. Of

course the screw 3^d is only essential when cartridges shorter than the carrier are being used. The carrier 4 has a circumferential groove 4^d, in its rear end to provide a way for the end of the screw 3^d and allow the cylinder to rotate.

The mechanism in the frame 3 will be housed in or inclosed by side plates, 3^c, secured to the frame in the usual manner.

10 In Fig. 1 the breech bolt 8 is represented in elevation, and in Fig. 2 it is represented in longitudinal section. In these views the carrier 4 is arranged to rotate to the right with respect of a person aiming the gun, and the cartridge magazine 5 will stand, therefore, directly behind the shell magazine 6; but in Fig. 1 the latter is broken away to expose a part of the magazine 5, which is also broken away in part to show its interior.

20 The muzzle portion of the gun has not been illustrated as it has no novel features.

Having thus described my invention, I claim—

1. A magazine gun having an intermittently rotating chambered carrier for carrying the cartridges from the magazine to the index point, a magazine to receive the empty shells arranged in front of the carrier, and means for discharging the empty shells from the carrier into said shell magazine or receiver, as set forth.

2. A magazine gun having an intermittently rotating chambered carrier for carrying the cartridges from the magazine to the index point, and means for simultaneously driving a cartridge from the carrier into the chamber in the barrel and for driving an empty shell from said carrier into a shell magazine, as set forth.

40 3. In a magazine gun, the combination with the barrel, a cartridge magazine, and a shell magazine or receiver, of a rotatable carrier having chambers adapted to be brought into alignment, simultaneously, one with the bore in the barrel and two others into alignment, respectively, with said magazines, an operating slide, means, actuated by the slide in its forward movement for driving a cartridge from said carrier into the chamber in the barrel and for driving an empty shell from the carrier into the shell magazine, and means actuated by the slide in its backward movement for first drawing the empty shell from the barrel into the carrier and then rotating said carrier, as set forth.

50 4. In a magazine gun, the combination with the barrel, the chambered carrier mounted to rotate with its axis parallel with that of the barrel, a tubular cartridge magazine arranged parallel with and below the barrel, the bore in the barrel and the said magazine being adapted for alignment with chambers in the carrier, as set forth, a breech bolt adapted to pass through the indexed chamber of the carrier and drive the cartridge therefrom into the chamber in the barrel, a plunger driving the empty shell from a chamber in the

carrier, and means for imparting a longitudinal reciprocating movement to said breech bolt and plunger, as set forth.

70 5. In a magazine gun, the combination with the frame, and a chambered carrier therein to convey the cartridge from the magazine to the index point, of the breech bolt, mounted in sliding bearings in the frame and slotted longitudinally to receive a pendent lug on the latter, said breech bolt being provided with expanding spring extractors, a firing pin, and a slide adapted to expand or spread the extractors when arrested by the said lug during the withdrawal of the breech bolt, substantially as and for the purpose set forth.

80 6. In a magazine gun, the combination with the barrel, having opposite external inclined surfaces 2^b at the breech, of a breech bolt 8, provided with two spring extractors 8^d, said extractors having their heads projecting beyond the end of the bolt and adapted to ride up on said inclined surfaces, substantially as set forth.

90 7. In a magazine gun, the combination with the barrel, the frame, the two tubular magazines 5 and 6, arranged side by side below the barrel, the rotatively mounted, chambered carrier, in the frame back of the barrel and magazines, and the breech bolt, 8, back of said carrier and mounted in the frame in line with the bore in the barrel, of the operating slide, and the fork, 7^a, carried by said slide and engaging recesses in the breech bolt, said slide being provided with a plunger, 7^{ax}, aligned with the magazine 6, substantially as set forth.

105 8. In a magazine gun, the combination with the frame, the barrel, the magazine, and a chambered carrier for carrying the cartridges from the magazine to the index point, of an adjustable stop at the back of said carrier and in line with the magazine to limit the extent to which a cartridge from the magazine may enter the chamber in the carrier, whereby cartridges of different lengths may be employed.

115 9. The combination with the frame, and the rotatively mounted chambered carrier 4, in the frame, said carrier having in its periphery longitudinal straight grooves 4^c, and oblique connecting grooves, 4^{ex}, of the operating slide 7, an arm 11, pivotally mounted on said slide and provided with an upper stud 11^a, adapted to engage the grooves in the carrier, and a lower stud 11^b, adapted to engage a switch plate on the frame below, of the said switch plate, 12, set in a recess in the frame adjacent to an oblique wall 3^b, thereon, and a spring which holds the rear end of the switch plate up to said wall, substantially as set forth.

130 10. The combination with the operating slide, of the trigger 13 provided with a stud 13^a to take over the slide when the latter is drawn back, the pawl 14, pivoted on the trigger and having a heel 14^b, the spring 14^a, bearing on the head of the pawl, the lighter

spring 14^c, arranged between the head of the
pawl and the trigger, and the hammer 9, hav-
ing a cocking notch 9^a which is farther dis-
tant, radially, from the pivotal axis of the
5 hammer than the point 9^b, where the pawl
rests normally thereon, substantially as set
forth.

In witness whereof I have hereunto signed
my name in the presence of two subscribing
witnesses.

JOHN L. McCULLOUGH.

Witnesses:

HENRY CONNETT,
PETER A. ROSS.