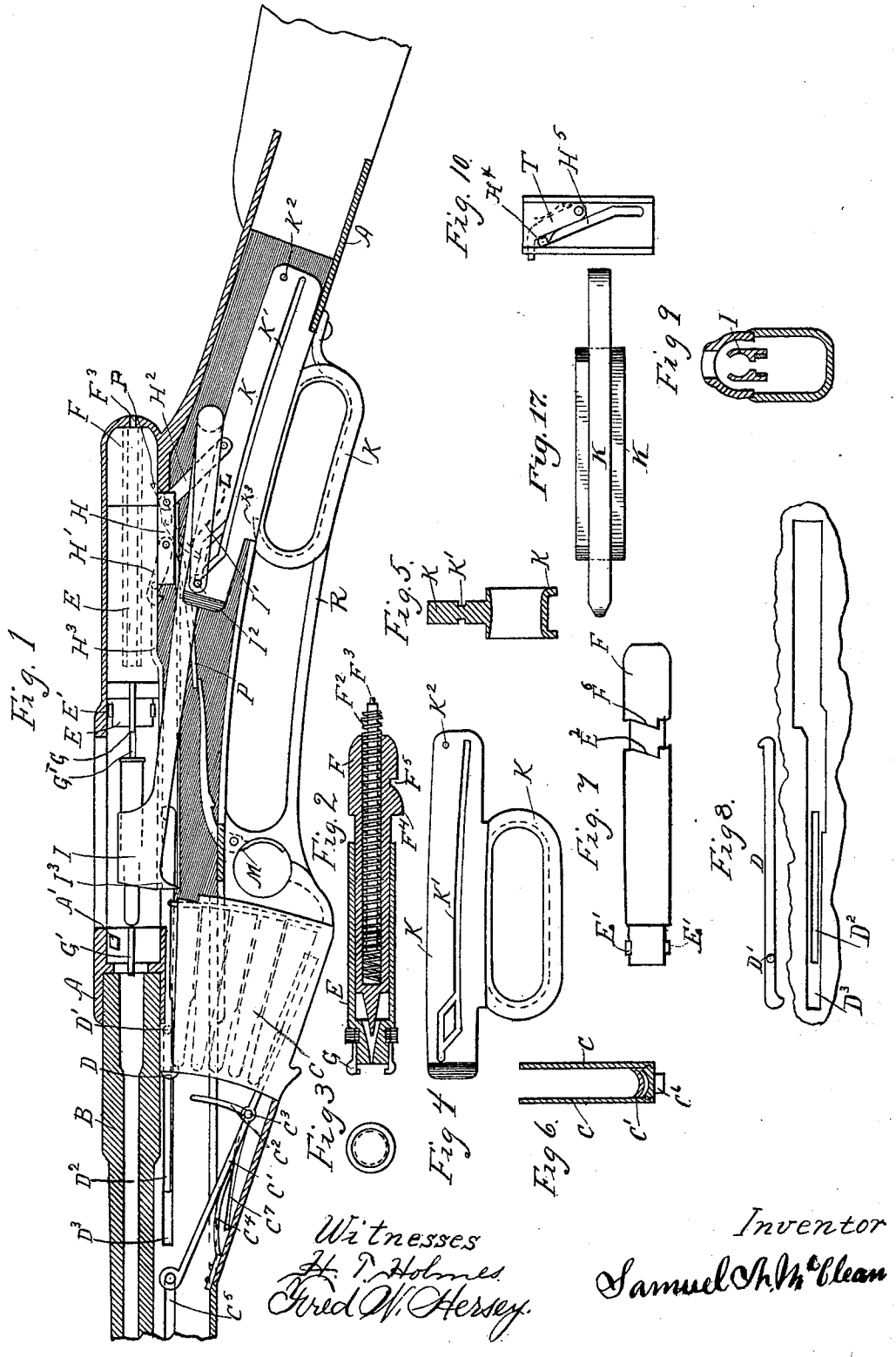
(No Model.) 2 Sheets—Sheet 1.

S. N. McCLEAN.

MAGAZINE BOLT GUN.

No. 601,842. Patented Apr. 5, 1898.



Witnesses
H. T. Holmes
Fred W. Hersey.

Inventor
Samuel N. McClean

(No Model.) 2 Sheets—Sheet 2.

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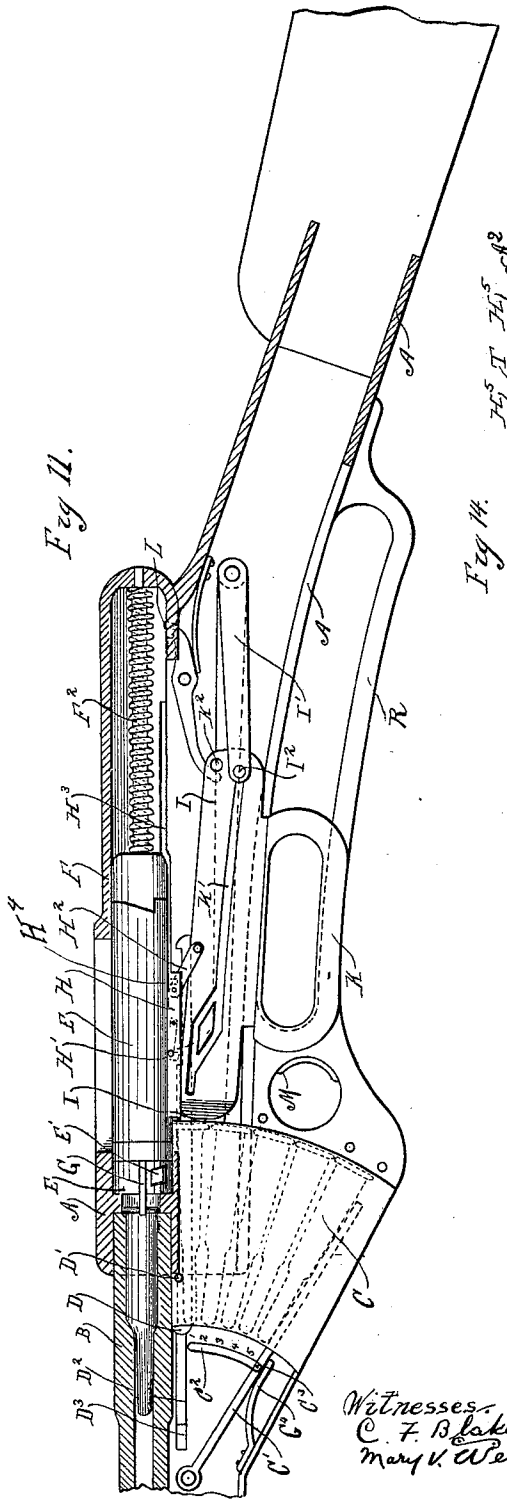

Fig 11.

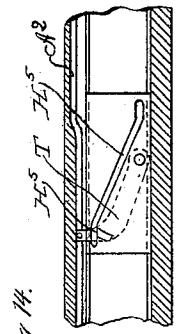

Fig 14.

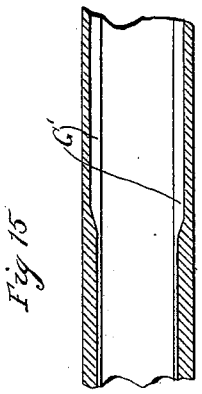

Fig 15

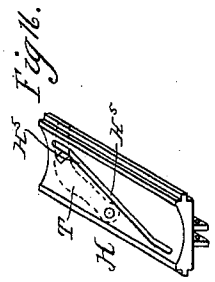

Fig 16.

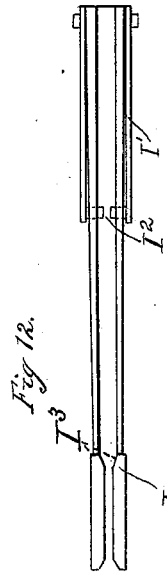

Fig 12.

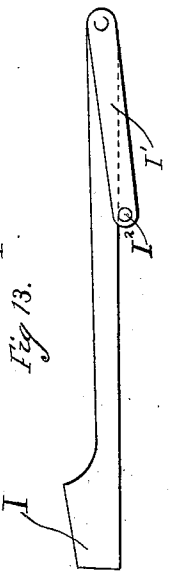

Fig 13.

Witnesses,
C. F. Blake
Mary V. Weller.

Inventor.
S. N. McClean

UNITED STATES PATENT OFFICE.

SAMUEL N. McCLEAN, OF WASHINGTON, IOWA.

MAGAZINE BOLT-GUN.

SPECIFICATION forming part of Letters Patent No. 601,842, dated April 5, 1898.

Application filed June 20, 1895. Serial No. 553,493. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL N. McCLEAN, a citizen of the United States, residing at Washington, in the county of Washington and State of Iowa, have invented certain new and useful Improvements in Breech-Loading Firearms, of which the following is a specification.

My object is to improve and simplify the construction of breech-loading and magazine firearms, to provide cam-guides which shall control both the action and combination of the parts, to provide a barrel-feeding mechanism, to provide a safety firing mechanism, and to provide certain novel details of construction and combinations hereinafter more fully set forth.

My invention when regarded in the entirety of its parts may be briefly described as follows: a cartridge-magazine carrying its cartridges in file, a reciprocating slide engaging the foremost cartridge in the magazine and connected to a reciprocating handle to draw the cartridges from the magazine into the receiver, a reciprocating breech-bolt, a connecting medium between said bolt and a reciprocating handle, the said medium partially encircling the bolt and having a cam-guide to actuate, reciprocate, and lock the bolt, a breech-bolt having a reciprocating and rotating movement, a firing-pin carried by said bolt, the rotating movement of the bolt bringing it into the path of the firing movement of the pin, a carrier movable between the barrel and the magazine and actuated to grip and release the cartridge by a handle having a wedge-shaped end movable between the gripping-arms of the carrier, a cartridge-magazine carrying its cartridges in file and having a spring-actuated follower and provided with a scale to indicate the number of cartridges in the magazine, a carrier-feeding slide, a dog connected to a reciprocating handle and controlled by said slide to engage with and be disengaged from the carrier-feeding mechanism, a sear engaging the firing-pin and tripped by the handle to discharge the weapon, and a firing mechanism engaging both the pin and the handle and actuated by the trigger to release them.

The description of my invention with the accompanying drawings is as follows:

Figure 1 is a longitudinal sectional view of the barrel and stock of the firearm, showing the operating parts of the weapon assembled. Fig. 2 is a longitudinal section of the breech-bolt and firing-pin. Fig. 3 is a front end view of the same. Fig. 4 is a side elevation of the handle, showing the carrier cam-track. Fig. 5 is a transverse or cross section of the same. Fig. 6 is a section of the magazine, showing the follower C′ and the slide C^6 to open the magazine. Fig. 7 is an elevation of the bolt and firing-pin, showing the cam shape of their respective ends. Fig. 8 is a detail of the carrier-feeding slide or track, showing the slot D^2, in which the spur D′ is moved to cut off the magazine. Fig. 9 is a section through the receiver, showing the carrier. Fig. 10 is a plan view of the part H, showing the cam-slide for operating the bolt and the shape of this track to permit the firing movement of the handle. Fig. 11 is a longitudinal sectional view of the weapon with the operating parts assembled in forward position. Figs. 12 and 13 are detailed views of the cartridge-carrier. Fig. 14 is a horizontal sectional view taken through the weapon on a line with the under side of the part H, showing the cam-track H^5 and the dog T and the manner in which the dog T engages with the side wall to actuate it to release the pin H^4, which connects this slide H^5 with the breech-bolt. This view, Fig. 14, shows the straight part of the groove H^5 at its forward end to permit the carrier-lifting movement of the handle and the diagonal part of the groove to rotate the bolt and the straight part at the rear end of the groove to permit the firing movement of the handle. Fig. 15 is a horizontal section taken on a line with the extractor-grooves G′, showing the converging form of the side walls to cause the extractors to grip and release the cartridge. Fig. 16 is a perspective view of the part H, showing the dog T and groove H^5 and the concave upper surface of the part H to permit it to partially encircle the bolt. Fig. 17 is a plan view of the handle, showing its wedge-shaped forward end.

A is the frame, in which the side walls of the receiver are formed to be alike on either side of the openings through which the cartridge is received and the shell ejected, and the front end of the receiver is provided with helical-shaped lugs at opposite points of the

compass to engage the breech-bolt and to receive the strain of the discharge on the line of greatest strength and limit it to the least possible area of the frame to take it direct and to distribute it equally on all parts of the frame.

C is the cartridge-magazine, preferably located beneath the stock-frame and carrying its cartridges in file and having a spring-actuated cartridge-follower C′ and a scale and slot C^2 to indicate the number of its contained cartridges.

The cartridge-follower C′ has a pin-and-slot connection with the frame by means of the slots C^5 and C^7 and has a slide movement to open the magazine for the purpose of loading.

K is the actuating-handle controlled by the guard R to traverse a course on the under side of the stock and having a carrier-actuating track K′, which has a double or diamond-shaped forward end.

I is the carrier, having gripping-arms and engaging with the handle by means of the part I′ and pin I^2 and its forward end shaped to conform to the size and contour of the cartridge. The cam or beveled faces I^3, Fig. 12, of the carrier I are located in the path of the movements of the handle and are engaged by it to actuate the carrier to grip and release the cartridge.

E is the breech-bolt, Figs. 1, 2, and 7. It is movable in a chamber formed on a line with the bore of the barrel and is provided with cam-lugs E′ near its forward end to engage with corresponding cam-lugs A′ in the receiver. It has both a reciprocating and rotating movement and is connected to the reciprocating handle by means of the part H. This part H, Figs. 1 and 10, partially encircles the bolt and is provided with a cam-track to reciprocate and lock the bolt, the cam part of the track causing the bolt to rotate and the straight part of the track permitting the firing movement of the handle after locking movement of the bolt is complete. This part H is provided with a lock T, which engages the pin H^4 on the breech-bolt to control the locking movement of the bolt and is disengaged from the pin H^4 by the cam action of the side walls of the receiver. These cams A^2, Fig. 14, are located in the side walls of the receiver and have a curved part to cause the dog T to release the pin H^4, which connects the groove H^5 with the breech-bolt.

H^3 is a link connection of the parts H and K.

G′ is the track in which the extractors move and which tracks converge toward the bore of the barrel to cause the extractors to grip and release the cartridge.

G is the cartridge-extractors, attached to a collar which encircles the bolt. They are formed to be guided in the tracks G′ and to bear against the bottom of these tracks.

F is the firing-pin, Figs. 1, 2, and 7, movable in a chamber formed in the breech-bolt and having a cam-shaped part to engage with a corresponding cam-shaped end on the bolt, as seen in Fig. 7. The projecting cam-lug F^6 on the firing-pin engages with its companion notch E^2 on the breech-bolt, and the lug F^4 prevents the firing-pin from rotating and permits a rotating movement of the breech-bolt to bring the lug F^6 into line with its companion notch E^2, as seen in Fig. 7 of the drawings, thus permitting the full firing movement of the firing-pin only when the breech-bolt is in its locked position, the rotating movement of the bolt bringing it into line with the complete firing movement of the firing-pin. The firing-pin F is actuated by the spring F^2, which is set by the rearward movement of the bolt and is provided with a lug F^4 to prevent the rotation of the firing-pin and the notch F^5 to engage with the sear L.

The automatic sear L is pivotally attached to the frame, as seen in Fig. 11, and projects into the path of the handle and is disengaged by the pin K^2 of the handle to discharge the weapon.

H′ is the carrier-feeding dog, which is pivotally attached to the part H and is provided with a pivot which slides in the track H^3, which controls the carrier-feeding action of this dog and the handle.

The sear P, Fig. 1, engages with the firing-pin and with the trigger M and is disengaged from the firing-pin to discharge the weapon by the action of the said trigger. The trigger M also engages with the notch K^3 on the handle to lock and release the handle.

The slide D, Figs. 1 and 8, is located in the groove D^3 (see Fig. 11) in front of the foremost cartridge in the magazine and has a hook-shaped forward end to engage with said cartridge and a hook-shaped rearward end to engage the dog H′. This part D is also provided with a pin or button D′, which projects through a suitable slot (not shown) in the frame, having a direction parallel with the groove D^3, (see Figs. 1 and 11,) and by means of which the part D can be drawn forward by hand out of the path of the dog H′, thus cutting off the magazine.

When the operating parts are in the position illustrated in Fig. 1 and the handle is actuated to move forward, it causes the pin I^2 to traverse the groove K′ and the carrier to descend to position in front of the magazine. At the same time the part H is driven forward, and the lock T, being in engagement with the pin H^4, causes the breech-bolt to advance till this lock T comes in contact with the cam side walls of the receiver, which moves the lock T out of engagement with the pin H^4 at a time when the cam-lugs E′ have passed into position in front of the cam-lugs A′ of the receiver, and by the further movement of the handle the part H causes the pin H^4 to traverse the cam-guide H^5 and rotate the bolt to locked position. The pin H^4 then traverses the straight part of the guide H^5 and permits the firing movement of the handle. The dog H′, when the bolt moves forward, is guided by the rear part of the slide H^3 until

the hooked extremity of this dog has passed beyond the rear end of the carrier-feeding slide D, at which time the cam shape of this track H^3 causes the dog H′ to descend into engagement with the slide D and to pass forward beyond the rear end of this slide D until it has moved forward sufficiently to complete the locking and firing movement of the handle and to advance the slide D till it will permit the cartridge-follower C to feed the cartridges up into the path of the rearward movement of the slide D, as shown in Fig. 11. The reverse or loading movement of the parts is as follows, the handle and breech-bolt being then in their forward or locked position and the carrier in position in front of the magazine, the handle being also in locked engagement with the trigger M by means of the catch K^3: The trigger M when used is actuated to release the handle by the finger, and the rearward movement of the handle causes the part H to be drawn back and the pin H^4 to traverse the cam-guide H^5, thus causing the rotating and unlocking movement of the bolt, the further backward movement of the bolt withdrawing or extracting the shell and bringing the dog H′ into engagement with the slide D, and the further backward movement of the handle causing this part D to draw a cartridge from the magazine into the grip of the carrier at the same time that the shell is being extracted from the barrel. The cartridge, when it has passed from the magazine fully into the carrier, is actuated to rise into line with the bore of the barrel by the pin I^2 of the carrier traversing the double or forward end of the groove K′ in the handle K, thus lifting the carrier to position in front of the bore of the barrel. The part D, when it passes through this forward position, permits the action of the follower C′ and spring C^4 to lift the succeeding cartridge into the path of the movement of this part D. The slide D is provided with a spur D′, which projects through the slot D^2 in the stock-frame and is operated to move the slide D out of engagement with the bolt and cut the magazine out of action. This spring-actuated follower C′ has a pin-and-slot connection with the magazine-frame by means of the slots C^5 and C^7, which slots permit the pin-spur C^3, which projects through the side of the magazine, to be slid back, thus opening the magazine for the purpose of loading. The slot C^2 permits the vertical feeding movement of the follower C′ and is provided with a scale to indicate the number of cartridges contained in the magazine.

The operation of the safety mechanism is as follows: The firing-pin traverses a fixed path of movement and does not partake of the bolt's rotation, and when in its rear position it is engaged by the sears L and P, the spring F^2 being then compressed. The breech-bolt when it moves forward traverses a straight course until it reaches the limit of its forward movement, and when actuated to rotate into locked position the cam-face E^2 and the lug E^3 are turned until they pass beyond the corresponding cam-lug on the firing-pin, thus bringing the bolt into the path of the complete movement of the firing-pin and permitting the pin, when released by the sears L and P, to travel forward until it causes its front end to protrude through the bolt and encounter the cartridge to discharge it. The reverse or unlocking movement of the bolt causes the cam or helical shaped face E^2 and F^4 to slide past each other, thus starting the firing-pin back, drawing its point out of contact with the primer and cartridge and making it impossible for the pin to hit the primer until the bolt has been rotated into locked position.

I claim—

1. In a magazine-firearm, a cartridge-magazine carrying its cartridges in file, a stock-wall having a groove in line with the foremost cartridge in the magazine, a slide movable in the said groove and having a forward hooked extremity extending into the path of the cartridges, and a rearward hooked extremity extending into the path of the breech-bolt, and a reciprocating breech-bolt engaging the said slide to afford a limited movement of the same.

2. In a firearm, a reciprocating handle, a breech-bolt having a reciprocating and rotating movement, a connecting medium between the bolt and the handle having a cam-guide to rotate the bolt, a cartridge-magazine carrying its cartridges in file, a stock-wall having a guide D^3, opposite the foremost cartridge in the magazine, a slide D, movable in said guide-grooves, and engaging with the foremost cartridge in the magazine, and with the said connecting medium to turn the bolt and handle, and a cartridge-carrier to transfer cartridges from the magazine to the barrel.

3. In a breech-loading firearm, a reciprocating handle, having a wedge-shaped forward end, a cartridge-carrier having gripping-arms to engage the cartridge and beveled between the arms, a reciprocating breech-bolt connected to the said handle, and said handle movable between the arms of the carrier.

4. In a firearm, a reciprocating handle, a reciprocating carrier movable between the barrel and magazine and actuated by said handle, a reciprocating breech-bolt, a connecting medium H between said breech-bolt and handle, a dog H′ pivoted to the said part H, a stock-frame having a longitudinal cam-groove H^3 to guide the dog H′, a cartridge-magazine carrying its cartridges in file and a slide D engaging the foremost cartridge in the magazine and having a rear or hooked extremity in the path of the dog H′ and engaged by it to transfer cartridges from the magazine to the carrier, all substantially as described and set forth.

5. In a firearm, a cartridge-carrier movable between the magazine and barrel and having gripping-arms to engage the cartridge, a reciprocating handle movable between said arms and having a wedge-shaped forward end to cause the carrier to open and close, substantially as described and set forth.

6. In a firearm, a breech-bolt having both a reciprocating and rotating movement, a firing-pin movable in a chamber formed on the bolt and having only a reciprocating movement, the connecting part of the pin with the bolt having a cam shape and the connecting part of the bolt with the pin having a cam shape the rotating movement of the bolt bringing it into line with the firing movement of the pin, and a connecting medium H between said bolt and said handle partially encircling the bolt and having a cam-guide to reciprocate and lock it, shell-extractors attached to a collar which encircles the bolt, the stock-wall having converging cam-guides to cause the extractors to grip and release the cartridge, all substantially as described and set forth.

7. In a firearm, a cartridge-magazine carrying its cartridges in file, a spring-actuated follower, a stock-frame having slots C^5 and C^7 and a pin on said follower C′ coöperating with these slots in the stock to permit the magazine to be opened for the purpose of filling it, all substantially as described and set forth.

8. In a firearm, a reciprocating handle, a breech-bolt having near its forward end cam-shaped lugs E′, a stock-frame having a corresponding cam-shaped lug A′, a connecting medium H between said handle and bolt and partially encircling the bolt and connected with it by a cam-guide H^5, which guide has both a straight and a diagonal part to cause both a reciprocating and rotating movement of the bolt and to permit a firing movement of the handle after the locking movement of the bolt is complete, a lock T pivoted to the part H and engaging the pin H^4 and a stock-wall having a cam-guide H^3 to engage the said lock T, all substantially as described and set forth.

9. In a firearm, a reciprocating handle, a reciprocating breech-bolt, a connecting medium between said bolt and handle partially encircling the bolt and having a cam-guide to rotate and lock it, a firing-pin movable in a chamber formed in the bolt and having a lug which prevents it from partaking of the bolt's rotation, the face of the pin which connects with the bolt having a cam shape and the face of the bolt which connects with the pin having a corresponding cam shape, the rotating movement of the bolt bringing it into line with the complete firing movement of the pin, a dog L engaging the said spring-actuated firing-pin and located in the path of the handle and disengaged by the handle to discharge the weapon, all substantially as described and set forth.

10. In a firearm, a reciprocating handle, a longitudinally-reciprocating breech-bolt, a spring-actuated firing-pin carried by the bolt, a connecting medium between said bolt and handle which engages with the pin H^4 and employs the action of a cam-guide to reciprocate and rotate the bolt, a sear engaging the firing-pin and a trigger engaging the sear to disengage it from said pin and engaging with said handle by means of the notch K^3 which notch is of sufficient length to allow the trigger to disengage the sear and discharge the weapon, the further movement of the trigger causing said trigger to release the handle, all substantially as set forth and described.

11. In a firearm, a reciprocating handle, a reciprocating breech-bolt connected to said handle, a carrier movable between the magazine and barrel and actuated by said handle, a cartridge-magazine carrying its cartridges in file, a reciprocating slide engaging the foremost cartridge in the magazine, a dog having a hook-shaped extremity and pivotally attached to the connecting medium between the bolt and handle, a stock-wall having a longitudinal cam-guide connected to said wall to cause it to engage, actuate, and release the carrier-feeding slide, a spring-actuated firing-pin carried by said breech-bolt, shell-extractors attached to said bolt, a sear engaging the firing-pin and tripped by the handle, substantially as described.

12. In a firearm, a reciprocating handle, a reciprocating dog actuated by said handle, a stock-wall having a cam-guide to engage and control the movement of said dog, a cartridge-magazine carrying its cartridges in file, a carrier-feeding slide engaging the foremost cartridge in said magazine and engaged by the said reciprocating dog the dog having a sufficient forward movement to allow the initial part of the rearward movement of the handle to unlock the bolt before the dog encounters said slide to actuate it to draw a cartridge from the magazine into the receiver, substantially as described and set forth.

13. In a firearm, a reciprocating handle, a reciprocating dog actuated by the said handle, a cartridge-magazine carrying its cartridges in file, a reciprocating slide engaging the foremost cartridges in the magazine and engaged by the said dog to transfer cartridges from the magazine to the carrier, and a pin connected to said slide to draw it out of the path of said dog and cut off the magazine when it is desired to use the weapon as a single-loader, all substantially as set forth and described.

SAMUEL N. McCLEAN.

Witnesses:
FRED W. HERSEY,
MARY V. WELLER.