No. 705,736. Patented July 29, 1902.

J. H. CARL.

RIFLE.

(Application filed Oct. 3, 1901.)

(No Model.) 2 Sheets—Sheet 1.

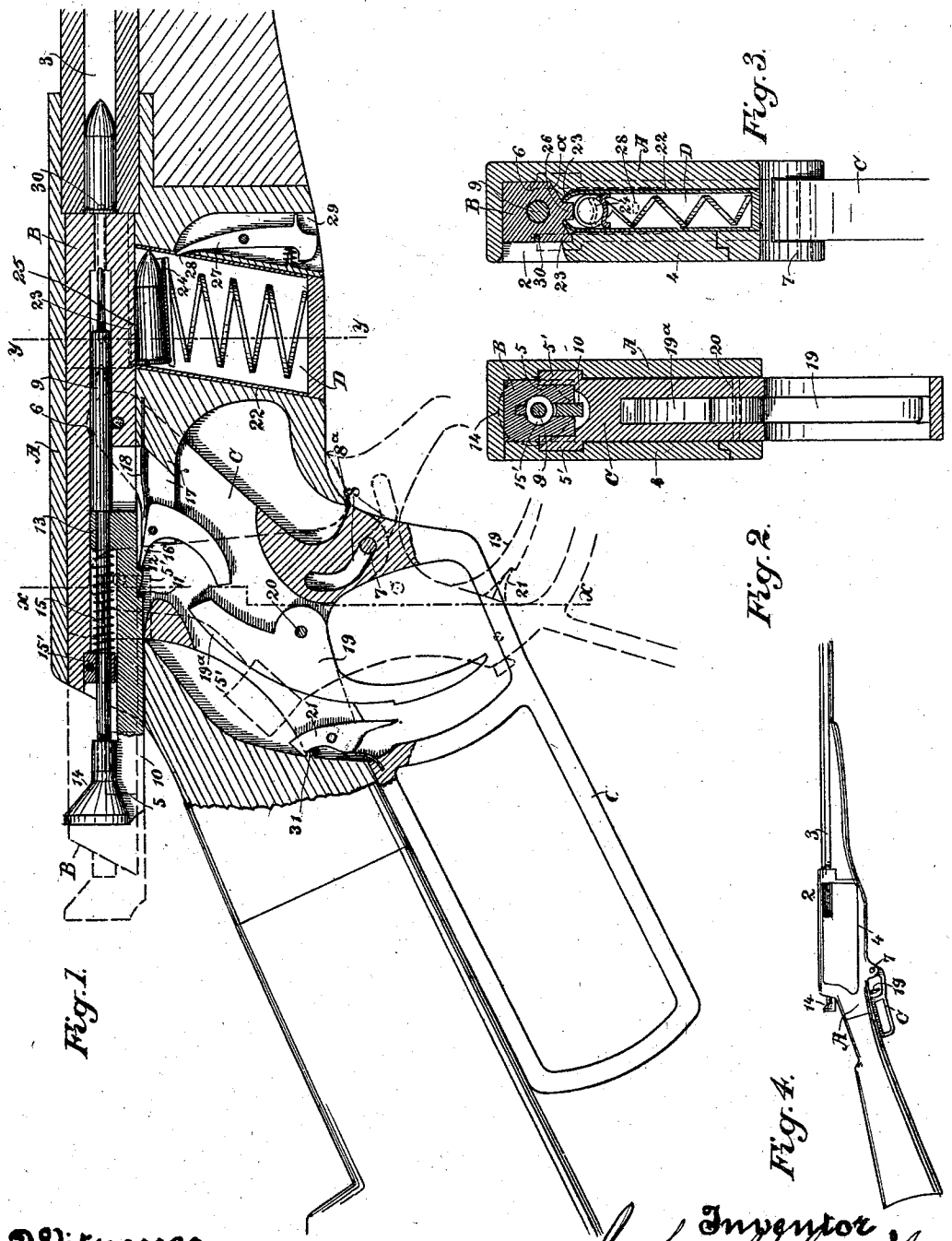


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Witnesses,
R. F. Lowse
H. F. Ascheck

Inventor,
John H. Carl
By Dewey Strong & Co.
Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

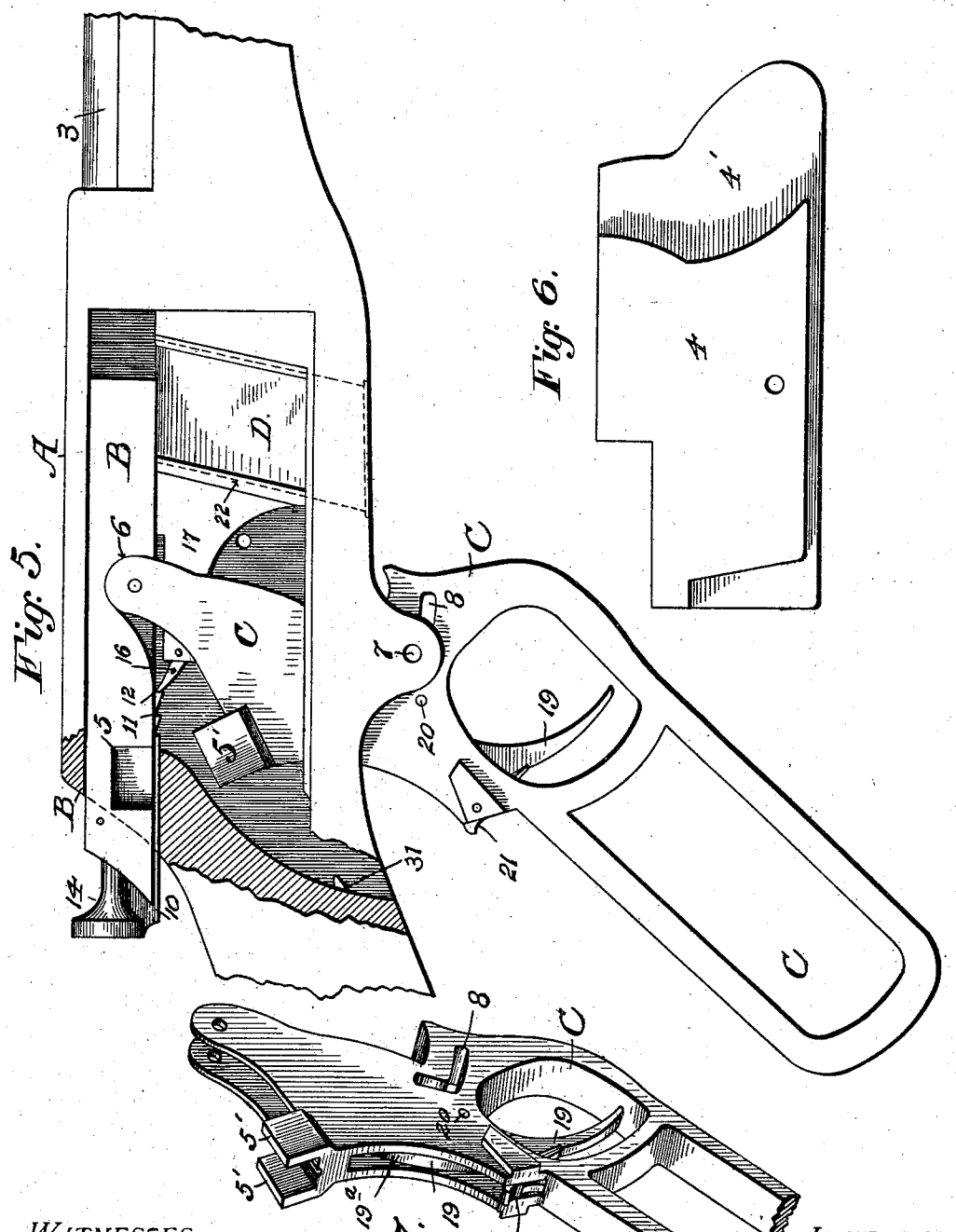
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WITNESSES:

Percy C. Bowen

Chapman N. Fowler

INVENTOR

John H. Carl

BY

T. W. Fowler

his Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN HOWARD CARL, OF GILROY, CALIFORNIA, ASSIGNOR OF ONE-HALF TO THOMAS HARRIS, OF GILROY, CALIFORNIA.

RIFLE.

SPECIFICATION forming part of Letters Patent No. 705,736, dated July 29, 1902.

Application filed October 3, 1901. Serial No. 77,435. (No model.)

To all whom it may concern:

Be it known that I, JOHN HOWARD CARL, a citizen of the United States, residing at Gilroy, county of Santa Clara, State of California, have invented an Improvement in Rifles; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in firearms such as are commonly known as "repeating rifles" and which are applicable for either sporting or military purposes. Its object is to provide a breech mechanism of simple construction and of positive movement and in which the magazine is capable of removal and replacement at will.

It consists of the parts and the constructions and combinations of parts hereinafter described and claimed.

Figure 1 is a longitudinal central section through the rear portion of the rifle. Fig. 2 is a lateral section on line $x\,x$ of Fig. 1. Fig. 3 is a similar section on line $y\,y$ of Fig. 1. Fig. 4 is an outside view of the rifle. Fig. 5 is a side elevation of the rifle, showing the plate 4 removed and the lever in its open position. Fig. 6 is a view of the inside of the plate 4, showing the groove or channel to accommodate one of the lugs 5′. Fig. 7 is a detail showing in perspective the upper portion of the lever C.

A represents a frame having a chamber formed in one side, in which the loading and firing mechanism is contained. The other side and the top of this frame are closed and solid. When the parts are in place, the chamber is ordinarily closed, except for a small opening 2 adjacent to the barrel 3, by means of a plate 4.

B is a breech-bolt slidable in the piece A and supported by the guide *a*. It is preferably formed of one piece of metal and in it are cut mortises 5 and 6 for the locking-lugs 5′ and the front end, respectively, of the lever C. The inner face of the plate 4 has a channel or grooved portion 4′ (see Fig. 6) and the inner wall of the opposite side of the chamber made in the breech-piece has a corresponding channel or groove to provide for the passage of the lugs 5′ in the opening and closing movements of the lever C. This lever is movable in a slot in the bottom of the frame and is fulcrumed thereto at 7. The front end of the lever is pivotally connected with the bolt in the mortises 6, above mentioned, and the reciprocation of the bolt is effected by means of the lever. In order that the lever may accommodate itself to the movement of the bolt, the lever travels about its fulcrum in the curved slot 8. The forward or open movement of the lever is limited by means of the shoulder 8^a striking the under side of the frame. The firing-pin is slidable axially within the breech-bolt. This firing-pin is made in two parts secured together and movable in unison—a firing-pin proper, as 9, and the cocking-piece 10. The cocking-piece consists of a shank portion having notches 11 and 12 corresponding, respectively, to half and full cock. On the upper side and at either end of the shank are projections, one of which forms a guide 13 for the firing-pin and the other forms a head 14 exterior to the frame. The firing-pin is secured in the head and a helical spring 15 surrounds the pin intermediate of the head and guide. One end of the spring abuts against the guide and the other is secured in a sleeve 15′, fastened to the breech-bolt. The shank of the cocking-piece is slidable in a channel in the lower portion of the breech-bolt and is adapted to have its lower edge project below the bolt, so as to offer a ready engagement of the notches 11 or 12 with the sear 16 when the bolt is retracted. This sear is in the form of a bell-crank lever fulcrumed on the piece 17, which latter is rigid with the frame. This piece 17 also serves to support and guide the breech-bolt in its backward and forward movement. A spring 18 presses upon the sear, so as always to throw the upper arm against the cocking-piece to insure engagement with the notches. The lever C is slotted in its upper portion, and in this slot the trigger 19 is fulcrumed, as at 20. The trigger has an upward and forward extension 19^a, which is adapted to engage the lower arm of the sear when the lever is locked and ready for firing. A trigger-safety 21 automatically locks the trigger whenever the guard-lever is down. When the lever is closed against the frame, the safety disengages the trigger and locks the lever to prevent the latter from accidentally drop-

ping down. This safety consists of a lever fulcrumed in and carried by the guard-lever and adapted to have one arm fit a notch upon the lower member of the trigger. The other arm projects beyond the lever and has a small hook 31, which is adapted to engage a rounded projection on the frame when the guard-lever is closed. The contact of this safety with the frame disengages the trigger, while the engagement of the hook and projection locks the lever.

D represents the magazine of my rifle, which is adapted to be easily detached from the gun to permit another magazine to be inserted in its place. It consists of a metal box which is inserted into a groove 22 in the frame. The box is closed except at the top, where the sides extend a trifle above the ends and are then bent toward each other to form shoulders 23, leaving a space between their adjacent edges. The spring-pressed follower 24 and the cartridges are retained in the magazine by reason of these shoulders. The forward portion of the shoulders is cut away, as at 25, to permit of the insertion of the cartridges. The cartridge is introduced simply by pressing the follower down and slipping the cartridge back under the shoulders. The box is made to contain a certain number of cartridges, usually six, though it may be made longer if desired, so as to project below the frame, or it may be made wider in some instances and the cartridges disposed zigzag. The magazine is locked in place in the breech by means of a spring-pressed lever 27, fulcrumed in the frame and having its upper arm extending through an opening in the wall of the groove 22 and engaging a nick or cavity 28 on the magazine-box. The lower end of the lever operates in a recess 29 on the lower side of the frame. The lock is thus entirely retained within the frame and fully protected from possibility of accidental disengagement, and yet is easy of access and manipulation. On the under side of the breech-bolt is a projection or bead 26, which is adapted on the forward movement of the bolt to engage the upper edge of the head of a cartridge when the magazine is in place and to force the cartridge forward into the chamber of the barrel. The shape of the box and its disposition in relation to the chamber, together with the action of the follower, are such that the cartridge is given a pitch, so that it is readily driven from the magazine into the chamber. One may carry a number of loaded individual magazines about the person, and as quickly as one is emptied it can be removed and replaced by a filled one. As a consequence a rapidity of fire can be kept up, such as would be impossible in guns having a fixed magazine.

If desired, the rifle can be used as a single-shot rifle by simply dropping the cartridge into the chamber through the opening 2.

In operation the action of throwing the lower portion of the guard-lever C forward or of opening the "lever," as it is termed, causes the breech-bolt to be retracted, carrying the firing-pin with it. The breech-bolt carries a spring-extractor 30 of ordinary design upon its side and by which the shell in the chamber is engaged. By reason of the spring 15 tending to force the breech-bolt and firing-pin in opposite directions the latter exerts a pressure on the head of the shell even after discharge. In consequence as the shell emerges from the chamber the pressure so exerted by the pin gives a fillip to the shell that ejects it through the opening 2. On the reverse movement of the guard-lever and breech-bolt or the action of closing and locking the sear engages the notch 12 and holds the striker-bolt while the breech-bolt continues its forward movement. This causes a compression of the spring 15 and a consequent cocking of the piece. If the guard-lever should not be closed completely, and it is not customary to close it except when one is ready to fire, the trigger-safety 21 will act to prevent any premature discharge. Furthermore, the sear acts as a safety by reason of its constant pressure against the cocking-piece and its disconnection from the trigger, for if by any chance the sear should slip from full-cock it would catch in the safety or half-cock notch 11. As before described, the forward movement of the breech-bolt carries a cartridge from the magazine into the chamber. As the guard-lever is closed against the stock the breech-bolt is finally locked in position by reason of the lugs 5′ on the lever entering the mortises 5 on the bolt.

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

1. The combination in a gun of a frame, a breech-bolt reciprocable therein, a piece rigid with the frame, a sear fulcrumed to the piece and having the form of a bell-crank lever the upper arm of which is substantially horizontal and has a point adapted to engage a cocking-piece, a horizontally-disposed spring above the upper arm of the sear and fixed to the frame, and adapted to bear upon the sear in front of its fulcrum-point, a spring-actuated firing-pin slidable in the breech-bolt, a cocking-piece fixed to the firing-pin and having an under surface provided with notches, to be engaged by the point of the sear, a fulcrumed guard-lever having its front end forked and connected to the outer sides of the breech-bolt, a trigger carried by the guard-lever, and a means carried by the lever adapted to lock the trigger when the guard-lever is open and to lock said lever to the frame when the lever is closed.

2. In a gun the combination with complementary firing mechanism including a firing-pin, sear and trigger, of a fulcrumed guard-lever carrying said trigger, and a pivoted lever also carried by the guard-lever and directly engaging the trigger and capable of locking the trigger against movement when the guard-lever is open, said second lever

engaging the breech-frame and locking the guard-lever in place when said lever is closed.

3. In a gun, the combination of a frame, a breech-bolt slidable therein, a pivoted sear, a combined firing and cocking piece, said cocking-piece mounted in a slot in the breech-bolt and having notches in its under side to be engaged by said sear, a fulcrumed guard-lever formed of a single piece having its front forked to straddle the lower part of the breech-bolt so as to be connected to the outer sides of the breech-bolt, a trigger mounted in and carried by said guard-lever, and a trigger-safety consisting of a lever fulcrumed in and carried by the trigger-guard, having one arm to engage a notch in the trigger, when the guard-lever is open, to lock the trigger, and said safety provided with a second arm having a hook, said frame having a projection to be engaged by said hook when the guard-lever is closed.

4. In a gun, the combination of a frame, a reciprocable breech-bolt, a firing-pin, a sear fulcrumed below the firing-pin and adapted to engage the same, a guard-lever fulcrumed between its ends and having its front end connected to the breech-bolt, a trigger fulcrumed in and carried by the guard-lever and provided with a notch, and a safety-lever, spring-actuated and also carried by the guard-lever in rear of the trigger said safety-lever fulcrumed between its ends, having one end to engage the notch in the trigger and the other end provided with a hook, said frame having a projection engaged by the hook of the safety-lever when the guard-lever is closed.

5. In a gun, the combination with a frame, and a firing mechanism including a breech-bolt, firing-pin and trigger, of a guard-lever having its front end forked to embrace the breech-bolt and having locking-lugs located in rear of said front ends, said bolt having mortises for the front ends of the lever and also for the locking-lugs and said frame also having its walls provided with channels or grooves for the lugs.

In witness whereof I have hereunto set my hand.

JOHN HOWARD CARL.

Witnesses:
GEO. A. REEVE,
BERT F. COLEMAN.