E. E. REDFIELD.

REPEATING FIREARM.

APPLICATION FILED JUNE 4, 1910.

984,490.

Patented Feb. 14, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

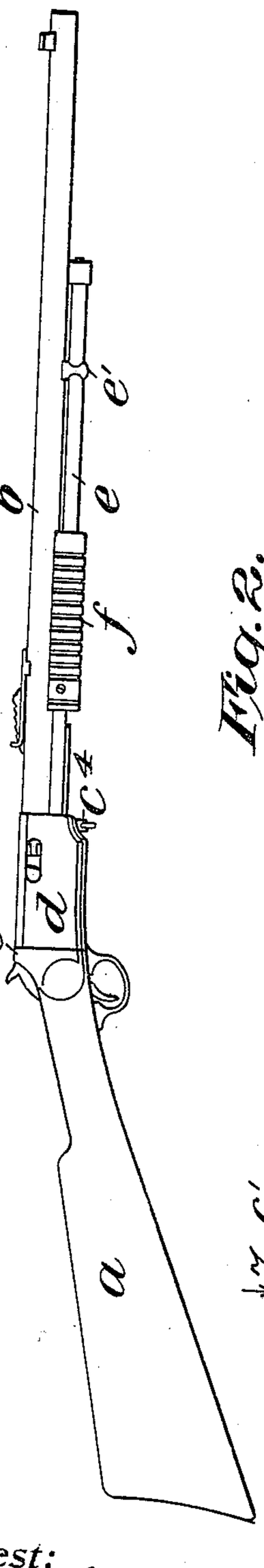


Fig. 2.

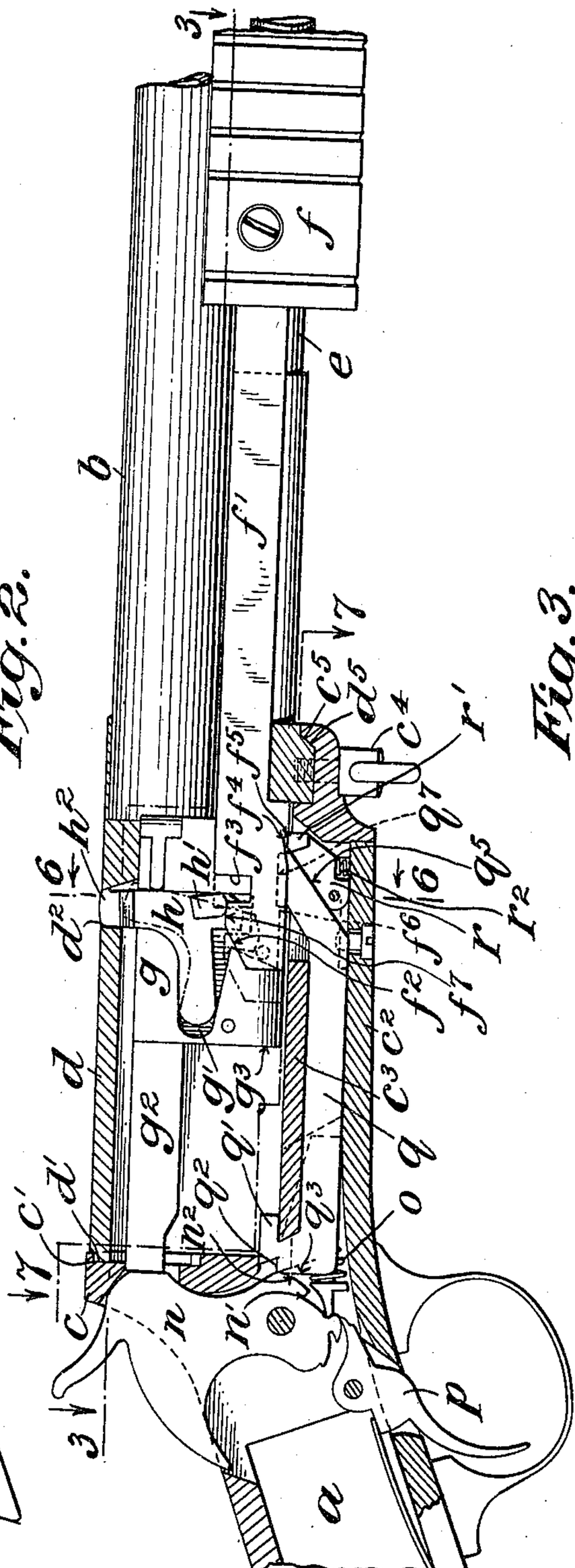
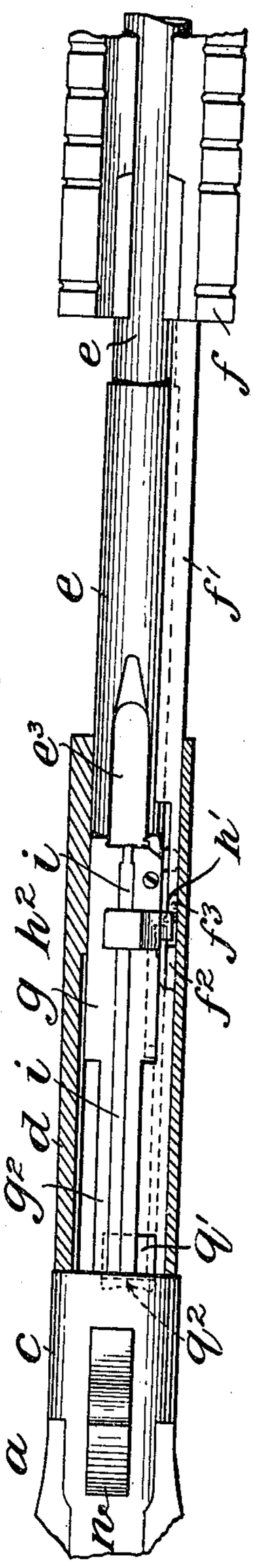


Fig. 3.



Attest:

W. F. McGinn

Edgeworth Green

Inventor:

by Edward E. Redfield

Redding, Greeley & Austin

Atty's.

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3 SHEETS—SHEET 2.

Fig. 4.

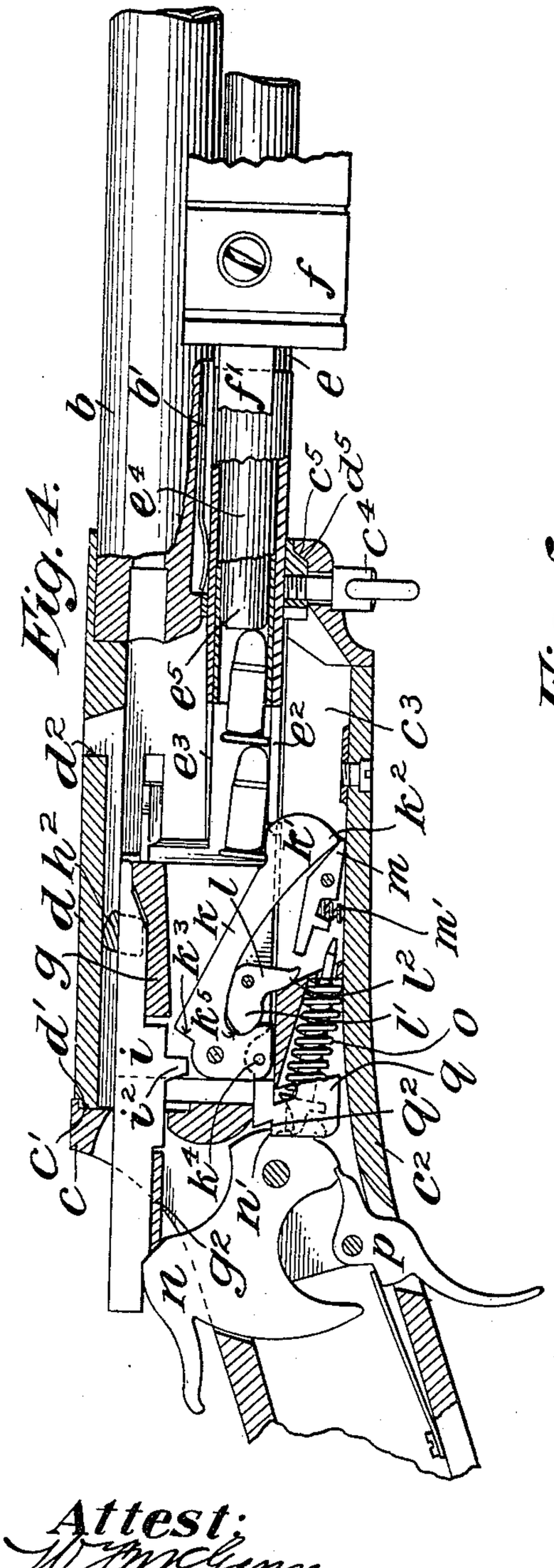
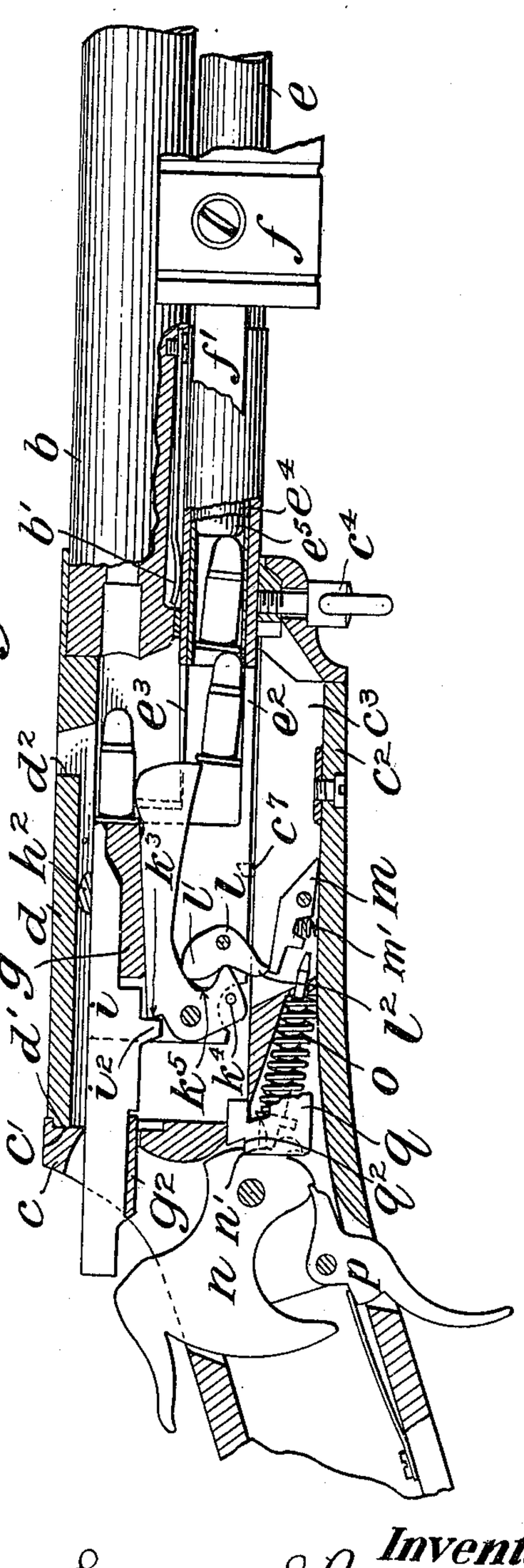


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 9.

Fig. 12.

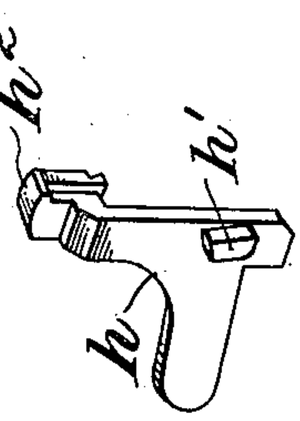


Fig. 10.

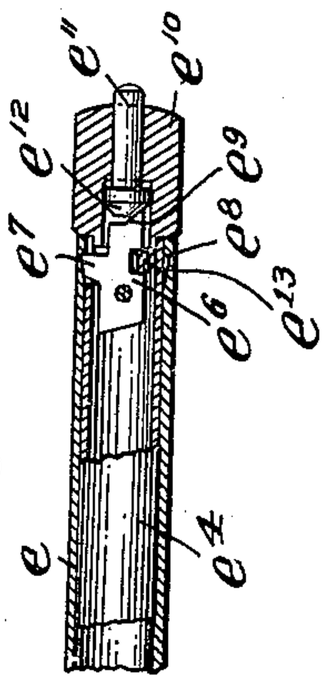


Fig. 8.

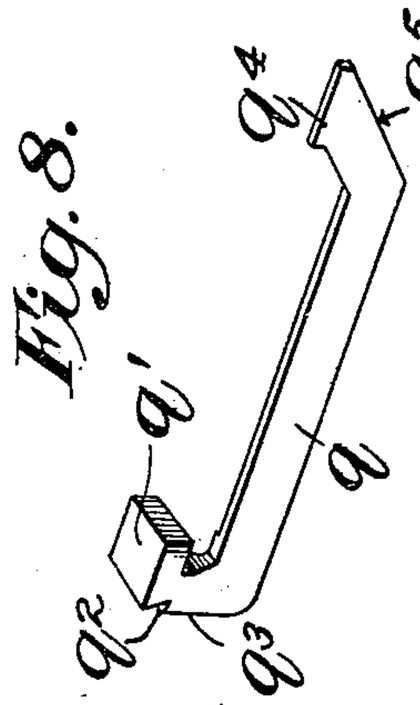


Fig. 6.

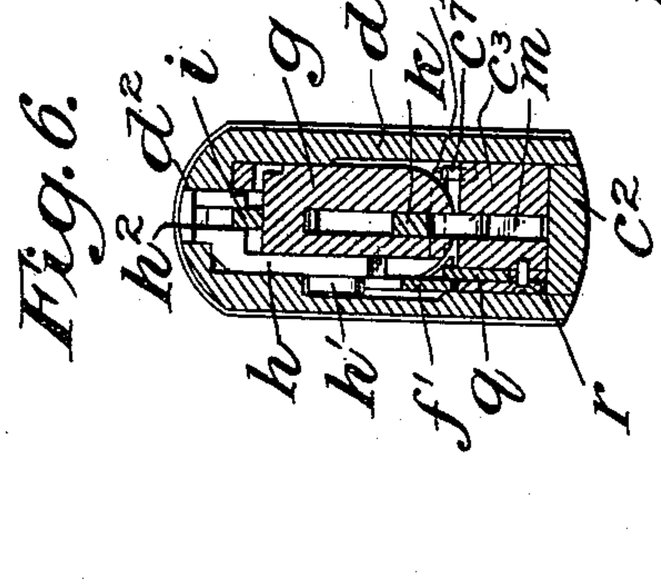


Fig. 11.

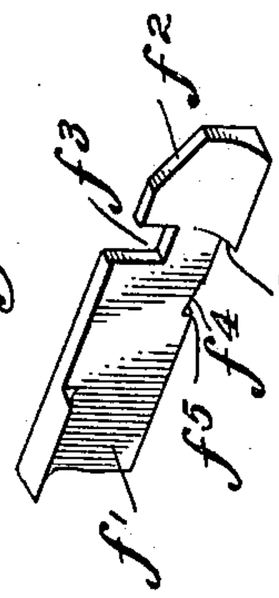
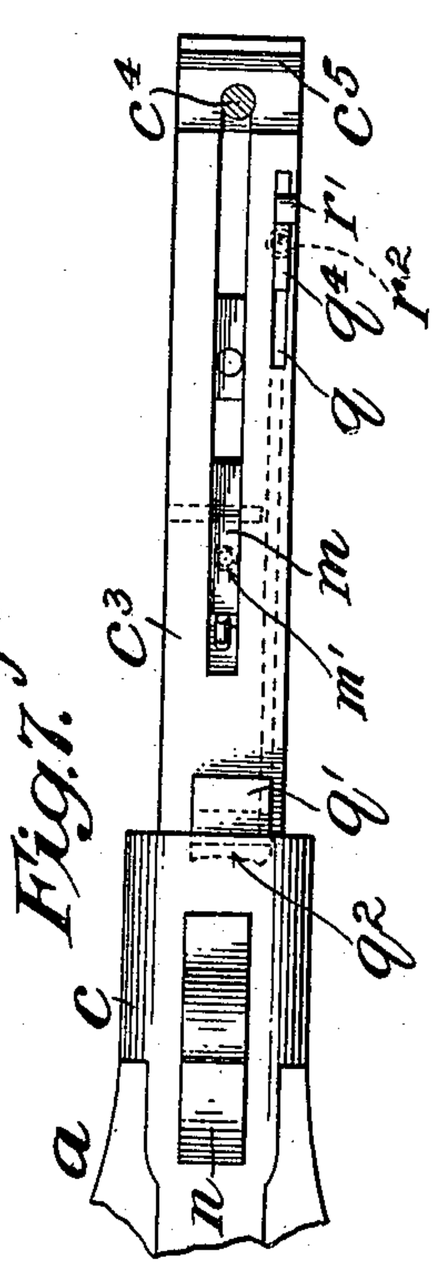


Fig. 7.



Attest:

W. T. McGinn

Edgerton Brown

Inventor:

Edward E. Redfield

by Redding, Greeley & Austin

Attys.

UNITED STATES PATENT OFFICE.

EDWARD E. REDFIELD, OF GLENDALE, OREGON.

REPEATING FIREARM.

984,490. Specification of Letters Patent. **Patented Feb. 14, 1911.**

Application filed June 4, 1910. Serial No. 565,093.

To all whom it may concern:

Be it known that I, EDWARD E. REDFIELD, a citizen of the United States, residing at Glendale, Douglas county, in the State of Oregon, have invented certain new and useful Improvements in Repeating Firearms, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates generally to repeating firearms of that type in which the breech block is moved backward and forward to extract the empty shell, cock the hammer and insert a fresh cartridge in the chamber of the barrel, through connection with the grip piece which slides longitudinally with respect to the barrel.

One object of the invention is to so construct the firearm and its working parts as not only to permit the firearm to be taken down readily, that is, to permit the barrel to be removed from the stock, but to permit the mechanism which is involved in the operations of ejecting the empty shell, cocking the hammer and placing a fresh cartridge in the barrel to be taken apart readily and without the use of tools for the purpose of cleaning or repair.

Another object is to provide improved locking means for the various parts of the mechanism of the gun so that accidental discharge, or discharge when any of the parts is not in proper position for discharge, is impossible.

Still another object is to provide improved means for locking the magazine tube in place while permitting its easy detachment and removal.

Other purposes will appear more clearly hereinafter.

The invention is described herein with reference to the embodiment of the various features thereof in a firearm of well known character, but it will be understood that such features of invention are applicable to other firearms than that shown and that some of such features are capable of use independently of other features.

In the drawings in which the invention is illustrated, Figure 1 is a view in side elevation of a firearm to which the invention is applied. Fig. 2 is a partial, detail view, partly in longitudinal, vertical section in a plane at the right hand side of the hammer and breech-block, the parts being shown in the positions which they occupy at the instant of discharge or just after the hammer has fallen. Fig. 3 is a detail view, partly in horizontal section on the irregular plane indicated by the broken line 3—3 of Fig. 2. Fig. 4 is a detail view, partly in central longitudinal section, showing the parts in the positions which they occupy when the breech-block has been moved rearwardly to its full extent. Fig. 5 is a detail view, similar to Fig. 4, but showing the parts in the positions which they occupy when the breech-block is in an intermediate position, moving forward. Fig. 6 is a transverse section on the plane indicated by the line 6—6 of Fig. 2. Fig. 7 is a view in horizontal section on the irregular plane indicated by the line 7—7 of Fig. 2, or a top view of the forward portion of the frame with the barrel and receiver removed, the securing screw being shown in section. Fig. 8 is a perspective view of the hammer lock. Fig. 9 is a perspective view of the slide latch. Fig. 10 is a detail view in section showing the means for securing and releasing the magazine tube. Fig. 11 is a detail view of the rear end of the slide. Fig. 12 is a detail view of the breech-block latch.

In the gun shown in the drawings the stock a, the barrel b, the frame c, the receiver d, the magazine tube e and the grip piece f are constructed and arranged substantially as usual. The receiver d, to which the barrel b is secured as usual, has on its rear face a projection or shoulder d', which is adapted to be seated in a recess c' in the front face of the frame c which forms an abutment behind the receiver and the breech-block. The forwardly extending tang c^2 of the frame lies in a slot in the underside of the receiver d and secured to its upper side is a block c^3 which carries some parts of the mechanism involved in the locking of the slide and of the hammer and in the operation of the cartridge lifter or carrier, as will be described hereinafter. The block c^3 carries at its forward end a thumb screw c^4 which is adapted to engage the receiver d and is provided with a toe or cam like projection c^5 to coöperate with an inclined shoulder d^5 of the receiver d, so that when the screw c^4 is turned home the receiver, with the barrel, will be drawn back so that the rear end of the receiver can be pressed firmly against the forward face of the frame and held securely locked in position, as shown in Figs. 2, 4 and 5.

The receiver d is suitably chambered to receive the sliding breech-block g, which supports the cartridge lifter or carrier and the breech- block latch, as described hereinafter.

The magazine tube e is formed in one piece with or is integrally secured to the breech-block g, so that the two move together, and is supported to slide longitudinally in the forward end of the receiver and in a guide e' on the underside of the barrel b. The magazine tube is slotted in the underside of its rear end, as at e^2, to permit the necessary movement of the cartridge lifter or carrier and its coöperating parts and is also slotted in its upper side forward of the breech-block, as at e^3, to permit the movement upward therethrough of the forward end of the carrier with the fresh cartridge in position thereon. In a shallow recess in the underside of the barrel, near its rear end, is secured a flat spring b', the free end of which overlies the slot e^3 in the magazine tube e, when the latter is in its forward position, and thereby holds down the next cartridge in the magazine in line with the magazine and prevents it from being pressed upward and from jamming the mechanism. The inner tube or magazine proper e^4, shown in Figs. 4, 5 and 10, provided with the usual spring-pressed plunger e^5, is inserted in the magazine tube e, as usual, from the forward end, and is detachably held in place therein, as shown in Fig. 10, by a spring-pressed latch e^6, the toe e^7 of which projects through a slot in the side of the magazine in position to engage a circumferential shoulder e^8, formed internally in the tube e, near its forward end. The forward end of the latch is beveled off, as at e^9, and in the head e^{10} of the maagzine is mounted a plunger e^{11} which has a tapered head e^{12} to coöperate with the beveled end of the latch. The spring e^{13}, which coöperates with the spring-pressed pivoted latch e^6, normally presses the toe e^7 outward to engage the shoulder e^8, but by pressure upon the projecting end of the plunger e^{11}, the latch is pressed back through the coöperation of the tapered head of the plunger with the beveled end e^9 of the latch so as to release the magazine.

In order to remove the magazine it is necessary to pull the magazine forward simultaneously with the pressure in the opposite direction on the plunger e^{11} so that accidental release of the magazine is practically impossible.

The grip-piece f is mounted movably on the magazine tube e and has extended rearwardly therefrom a slide f', the rear end of which is beveled, as at f^2. Just forward of the bevel f^2 is formed a notch f^3. The slide f' is located at the side of the receiver and overlaps laterally the forward portion of the breech-block. In the underside of the slide f is formed a tapered recess f^4 with a rearwardly facing shoulder f^5, for coöperation with the slide latch, as hereinafter described, and on the left hand side of the slide is a lateral projection forming a shoulder f^6 for coöperation with the hammer lock as hereinafter described.

Loosely seated in a recess g', in the right hand side of the breech-block g, is the L-shaped breech-block latch h, on the right hand side of which is a laterally projecting lug h', which is adapted to rest, when the latch is in locking position, on the flat f^7 of the slide between the bevel f^2 and the notch f^3. In this position of the latch the upper end or head h^2 of the latch h stands in an opening d^2 in the top of the receiver d, thereby not only locking the breech-block in its forward or firing position, but acting as an indicator to show when the breech-block is in its firing position. The head h^2 of the latch h overlies the forward end of the firing pin i which moves longitudinally in a slot in the upper portion of the breech-block. On the underside of the firing pin i is a lug i^2 which lies against the shoulder of the cartridge lifter or carrier, when the latter is in its elevated position, so that the firing pin is thereby moved into its rearward position when the carrier lifts the cartridge into position.

The cartridge lifter or carrier k is pivoted at its rear end in the vertical slot e^2 formed in the breech-block from the underside thereof. Its forward end or head k' is preferably rounded to coöperate properly with the cartridge which is to be lifted into position in rear of the chamber of the barrel, and is provided with a toe k^2 which is extended downwardly to such an extent that when the carrier is in its elevated position, as shown in Fig. 5, the toe k^2 will stand below the top of the rim of the next cartridge in the magazine so as to prevent the backward movement of the cartridges until the carrier is in position to receive the next cartridge. The carrier is also provided, above its pivot, with a shoulder k^3 with which the lug i^2 of the firing pin coöperates to move the firing pin back when the carrier rises as already described. On the lower end of the short, vertically depending arm of the carrier, below the pivot, is a lug or pin k^4 which projects to the left in position to strike a lug or pin c^7 on the block c^3 as the breech-block approaches its forward position, so that, when the cartridge has been guided into the chamber of the barrel the cartridge lifter or carrier k will drop out of the way.

The upward movement of the carrier is effected during the forward movement of the breech-block. For this purpose there is pivoted in the slot of the breech-block an elbow lever or rocker l, the rounded, cam-like heel of which lies in the angle k^5 of the carrier k. The toe l^2 of the rocker projects

below the breech-block into a slot in the block c^3, in position to coöperate with a spring-pressed trip dog m which is pivoted in the slot of the block c^3. A spring m' throws the rear end of the dog upward, but permits it to yield. When the breech-block is in its rearward position, as shown in Fig. 4, the carrier k is depressed and the rocker l stands in the position shown with its toe l^2 slightly below the rear end of the trip dog m. As the breech-block moves forward, the toe l^2 of the rocker strikes the end of the dog and the rocker is rocked on its pivot from the position shown in Fig. 4 to the position shown in Fig. 5, and in such movement throws the carrier from its depressed to its position shown in Fig. 5. As the breech-block continues its forward movement the toe of the rocker l slips over the end of the dog m, which yields to permit it, and the rocker is then free to swing back into its initial position, represented in Fig. 4, and permits the carrier to drop to its depressed position. In the rearward movement of the breech-block the rocker slips idly over the dog, the latter yielding, until the rocker again reaches the position shown in Fig. 4.

The hammer n, coiled main spring o and sear-trigger p may be arranged as usual, except that the hammer n is provided with a safety-lock notch n' with which the hammer lock q, shown in Figs. 2, 3, 6, 7 and 8, cooperates, as will now be described. The hammer lock q may be formed, as shown particularly in Figs. 2 and 8, having at its rear end a head q' which overlies the rear end of the block c^3 and is adapted to move rearwardly through an opening in the face of the frame c, so that the lip q^2 of the rear end of the lock may engage the locking notch n' of the hammer n. The rear face of the lock q, below the lip q^2, as at q^3, is impinged upon, when the hammer falls, by the cam-like projecting heel n^2 of the hammer so that the lock is then forced forward, but this movement can take place only after the lock has been disengaged from the hammer. The body of the lock q lies in a longitudinal slot in the block c^3 (which virtually forms a part of the receiver, as hereinbefore described) and the lock is provided at its forward end with a projection q^4 which rises above the upper surface of the block c^3, through a slotted opening in the upper surface thereof, into the path of the lateral shoulder f^6 on the underside of the rear end of the slide f', as before described. The forward end of the lock q is also beveled, as at q^5, to coöperate with the slide latch r, shown particularly in Figs. 2 and 9, which is pivoted in the slot of the block c^3 forward of the lock q, is beveled on its upper rear face to correspond with the beveled end q^5 of the lock q, is provided with a locking lug r' to engage the shoulder f^5 of the slide f', and is held normally but yieldingly in locking position by a spring r^2.

The cartridge extracting and ejecting devices may be of any usual or suitable character and need not be described herein.

The operation of the firearm will now be described. It being assumed that all the parts are in the positions which they occupy immediately after a discharge, as indicated in Fig. 2, the grip piece is grasped and moved rearwardly. The slide f' moves with the grip piece, the slide latch r having been depressed, as will be described hereinafter. The flat f^7 moves rearwardly from under the lug h' of the breech-block latch h and the forward, vertical wall of the notch f^3 strikes the lug h' below the pivotal plane of the latch h and therefore throws the latch down, withdrawing its head h^2 from the opening d^2 in the top of the receiver. Thereafter the breech-block moves rearwardly with the continued rearward movement of the slide f'. The upper rearward extension g^2 of the breech-block, in the continued rearward movement of the breech-block, moves the hammer to full-cock position in which it is held by the trigger sear as usual. As the breech-block approaches the limit of its rearward movement the lower rear face thereof, as at g^3, makes contact with the head q' of the hammer lock q and forces it back so that the lip q^2 thereof engages the locking notch n' of the hammer, thereby locking the hammer positively until the hammer lock is again moved forward as hereinafter described. During this rearward movement of the breech-block the carrier k remains in its depressed position, as shown in Fig. 4, and the empty shell is extracted and ejected in the usual manner. The parts being now in the position shown in Fig. 4, the grip piece is moved forward carrying the breech-block with it through the engagement of the projection h' of the latch h in the notch f^3 of the slide f'. As the breech-block moves forward, the toe l^2 of the rocker l engages the dog m and is thereby rocked upon its pivot to swing the carrier from its depressed position, shown in Fig. 4, to its elevated position, shown in Fig. 5, the cartridge which, by the magazine spring, was pushed rearward over the head of the carrier when the carrier was in its rearward position, as shown in Fig. 4, being then raised into the position shown in Fig. 5, in alinement with the chamber of the barrel. The continued forward movement of the breech-block pushes the cartridge into the chamber of the barrel, and as the breech-block approaches the forward limit of its movement, the carrier is thrown down, by the coöperation of the pin k^4 in the lower end of the carrier, with the stationary pin c^7, and the shoulder f^6 then engages the pro-

jection q^4 of the hammer lock and moves it forward, thus leaving the hammer free to fall when it is released by the sear. In the last of the forward movement of the slide f' the rear wall of the notch f^3 coöperates with the cam-like under surface of the lug h' to raise the breech-block latch h so that the breech-block is locked in firing position, the latch h being held in its elevated position by the flat f^7 in rear of the notch f^3. So long as the hammer lock q is in its rearward position, the slide latch r is pressed upward by its spring r^2 so that its lug r' is in position to engage the shoulder f^5 of the slide f' as soon as the latter has moved forward sufficiently to permit it, but when the hammer lock moves forward after the breech block has been locked by its latch h, the beveled end q^5 of the hammer lock throws the slide latch r down, thereby leaving all of the parts in position for another operation. It will be observed that the slide remains locked in its forward position, by the latch r, until the hammer falls, so that it is impossible to move the breech-block rearwardly when the hammer is raised.

It will be understood that various changes in details of construction, arrangement and combination of parts may be made to suit different requirements of use and that the invention is not restricted to the particular construction which is shown and described herein in explanation of the nature of the invention.

I claim as my invention:

1. A cartridge magazine for firearms, comprising an outer tube having an internal shoulder near its forward end, an inner tube, a latch mounted in the inner tube and adapted to engage said shoulder, and a longitudinally movable plunger mounted in the forward end of the inner tube and coöperating with the latch to disengage the same from said shoulder.

2. A cartridge magazine for firearms, comprising an outer tube having an internal shoulder near its forward end, an inner tube, a spring-pressed latch pivoted in the inner tube and adapted to engage said shoulder, and a longitudinally movable plunger mounted in the forward end of the inner tube and coöperating with the latch to disengage the same from said shoulder.

3. A cartridge magazine for firearms, comprising an outer tube having an internal shoulder near its forward end, an inner tube, a spring-pressed latch pivoted in the inner tube and adapted to engage said shoulder and having its free forward end beveled, and a longitudinally movable plunger mounted in the forward end of the inner tube and coöperating with the beveled end of the latch to disengage the latch from said shoulder.

4. In a firearm, the combination of a frame having an abutment in rear of the receiver, a barrel, a receiver, the receiver and the barrel being secured together and removable together from the frame, a magazine tube, a breech-block movable in the receiver and having the magazine tube secured thereto, a grip piece mounted movably on the magazine tube, a slide connected with the grip piece and adapted to have its rear end extended rearwardly beyond the receiver, and a latch to couple the slide and the breech-block and movable with both beyond the rear end of the receiver to permit the uncoupling of the slide and breech-block.

5. In a firearm, the combination of a frame having an abutment in rear of the receiver, a barrel, a receiver having an open rear end, the receiver and the barrel being secured together and removable together from the frame, a magazine tube, a breech-block movable bodily through the open rear end of the receiver and having the magazine tube secured thereto, a grip piece mounted movably on the magazine tube, a slide connected with the grip piece and adapted to have its rear end extended rearwardly beyond the receiver, and a latch to couple the slide and the breech-block and movable with both beyond the rear end of the receiver to permit the uncoupling of the slide and breech-block.

6. In a firearm, the combination of a frame having an abutment in rear of the receiver, a barrel, a receiver having a latch opening in its wall, the receiver and the barrel being secured together and removable together from the frame, a breech-block movable in the receiver, a slide, and a breech-block latch mounted on the breech-block and engaging the slide, said latch being moved by the slide during the last of the forward movement thereof, to enter the opening in the receiver and lock the breech-block and to release the slide, and being held by the wall of the receiver from disengaging the slide at other points in the movement of the breech-block.

7. In a firearm, the combination of a frame having an abutment in rear of the receiver, a barrel, a receiver having a latch opening in its wall, the receiver and the barrel being secured together and removable together from the frame, a breech-block movable in the receiver, a notched slide, an L-shaped breech-block latch mounted on the receiver and having a head to enter the opening in the receiver and a lug which engages the notch in the slide when below the pivotal plane of the latch.

8. In a firearm, the combination of a frame having an abutment in rear of the receiver, a barrel, a receiver having a latch opening in its wall, the receiver and the barrel being secured together and removable together from the frame, a breech-block mov-

able in the receiver and having a recess in its side, a notched slide, and a breech-block latch loosely mounted in the recess in the breech-block and having a head to enter the opening in the receiver and a lug to enter the notch in the slide when the lug is below the pivotal plane of the latch.

9. In a firearm, the combination of a frame having an abutment in rear of the receiver, a barrel, a receiver having a latch opening in its wall, the receiver and the barrel being secured together and removable together from the frame, a breech-block movable in the receiver and having a recess in its side, a slide having a beveled rear end and a notch forward of the bevel, and a breech-block latch mounted loosely in the recess of the breech-block and having a head to enter the opening in the receiver and a cam lug to coöperate with the bevel and the notch of the slide.

10. In a firearm, the combination of a barrel, a receiver, a breech-block movable in the receiver, a cartridge lifter or carrier pivoted in the breech-block and movable therewith, means on the breech-block coöperating with the carrier and a dog on the frame coöperating with said means whereby the carrier is swung upward on its pivot during the forward movement of the breech-block.

11. In a firearm, the combination of a barrel, a receiver, a breech-block movable in the receiver, a cartridge lifter or carrier pivoted in the breech-block and movable therewith, a rocker pivoted in the breech-block and coöperating with the carrier to swing the same upward, and means to engage the rocker during the forward movement of the breech-block and to cause it to turn on its pivot and to swing the carrier upward.

12. In a firearm, the combination of a barrel, a receiver, a breech-block movable in the receiver, a cartridge lifter or carrier pivoted in the breech-block and movable therewith, a rocker pivoted in the breech-block and coöperating with the carrier to swing the same upward and a yielding dog mounted on the receiver and engaging the rocker during the forward movement of the breech-block and permitting the rocker to slide idly over it during the rearward movement of the breech-block.

13. In a firearm, the combination of a barrel, a receiver, a breech-block movable in the receiver, a cartridge lifter or carrier pivoted in the breech-block and movable therewith, means whereby the carrier is swung upward during the first part of the forward movement of the breech-block, and means whereby the carrier is swung downward during the last part of the forward movement of the breech-block.

14. In a firearm, the combination of a barrel, a receiver, a breech-block movable in the receiver, a cartridge lifter or carrier pivoted in the breech-block and movable therewith and having a short depending arm near its pivot, said arm having a projection, means whereby the carrier is swung upward during the first part of the forward movement of the breech-block, and a fixed projection carried by the receiver and adapted to coöperate with the projection on the short arm of the carrier during the last part of the forward movement of the breech-block to swing the carrier downward.

15. In a firearm, the combination of a barrel, a receiver, a frame, a hammer mounted in the frame and having a safety lock notch, a breech-block movable in the receiver, a slide, and a hammer lock mounted in the receiver and adapted to engage the safety lock notch of the hammer, said hammer lock having a projection standing in the path of a projection on the breech-block, whereby the hammer lock is forced into engagement with the hammer during the last of the rearward movement of the breech-block, and having a projection in the path of a projection on the slide whereby the hammer lock is withdrawn from engagement with the hammer during the last of the forward movement of the slide.

16. In a firearm, the combination of a barrel, a receiver, a frame, a hammer mounted in the frame and having a cam projection, a breech-block movable in the receiver, a slide, a slide latch, and a bar movable longitudinally in the receiver and having its rear end in the path of the cam projection on the hammer and its forward end in operative relation with the slide latch, whereby the slide latch is disengaged from the slide by the movement of the hammer.

17. In a firearm, the combination of a barrel, a receiver, a frame, a hammer mounted in the frame and having a safety lock notch and a cam projection. a breech-block movable in the receiver, a slide, a spring-pressed slide lock mounted in the receiver and having a beveled rear upper face, a hammer lock adapted at its rear end to engage the safety lock notch of the hammer and to coöperate with the cam projection on the cam as the hammer falls and having its forward end beveled to coöperate with the slide lock, and means to move the safety lock forward to release the hammer.

This specification signed and witnessed this 2d day of June A. D., 1910.

EDWARD E. REDFIELD.

Signed in the presence of—
ALBERT F. CROWTHER,
CHARLES R. LOVELAND.