

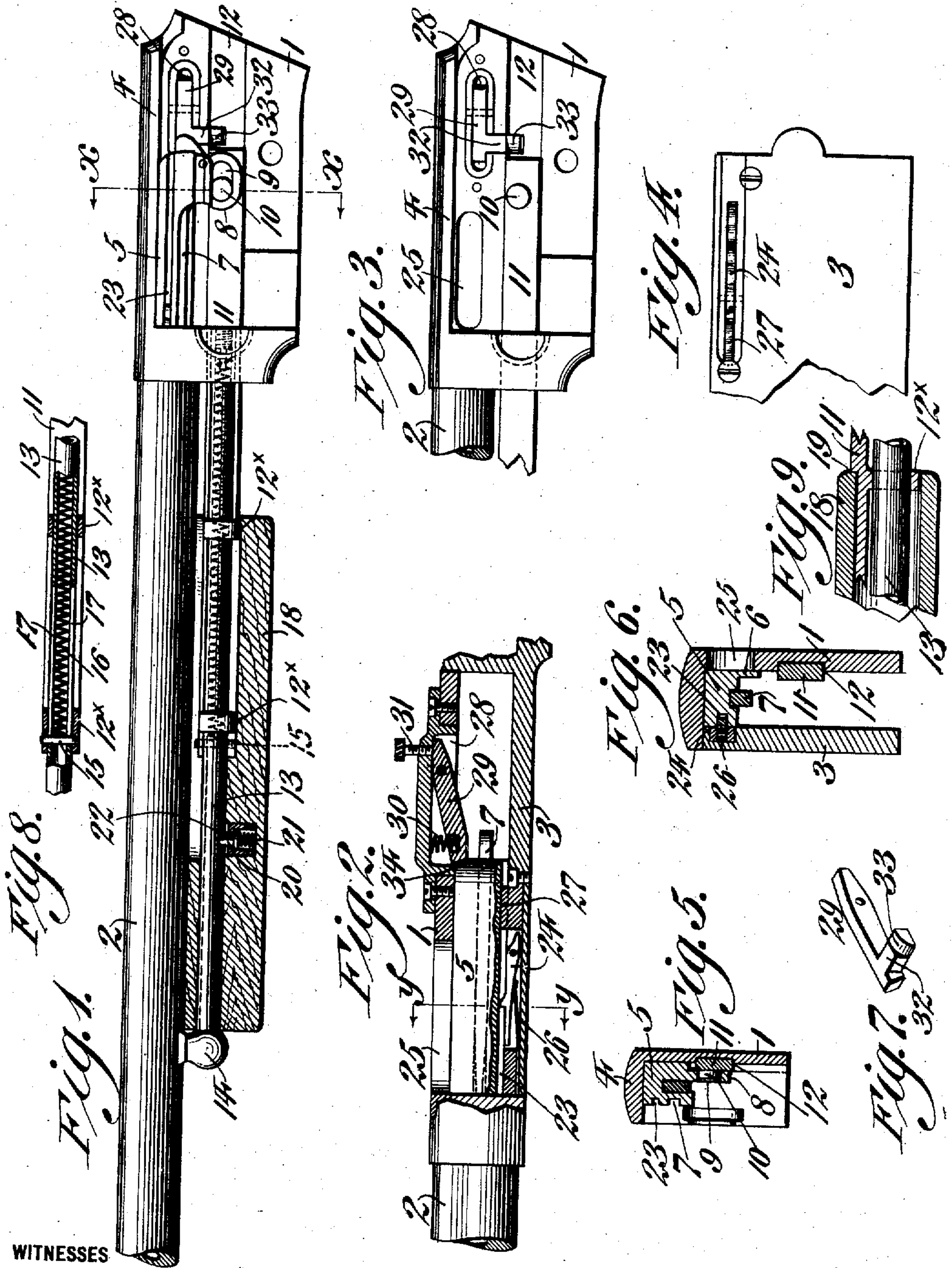
H. B. FEBIGER.

FIREARM.

APPLICATION FILED JULY 23, 1910.

987,350.

Patented Mar. 21, 1911.



WITNESSES

L. Douville,
P. H. Nagle.

INVENTOR
Henry B. Febiger.
BY
Wiedersheim & Fairbank.
ATTORNEYS

UNITED STATES PATENT OFFICE.

HENRY B. FEBIGER, OF NEW ORLEANS, LOUISIANA, ASSIGNOR OF ONE-SIXTEENTH TO LEON IRWIN, TWO-SIXTEENTHS TO MELVERN B. GRIFFIN, TWO-SIXTEENTHS TO HENRY H. BERLIN, AND FIVE-SIXTEENTHS TO JOHN C. FEBIGER, JR., ALL OF NEW ORLEANS, LOUISIANA.

FIREARM.

987,350.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed July 23, 1910. Serial No. 573,394.

To all whom it may concern:

Be it known that I, HENRY B. FEBIGER, a citizen of the United States, residing at New Orleans, in the parish of Orleans, State of Louisiana, have invented a new and useful Firearm, of which the following is a specification.

My invention consists of a magazine fire-arm capable of manual and automatic recoil operation.

It further consists of a manually controlled recoil abutment which may be adjusted to convert an automatic magazine fire-arm into a manually operated fire-arm or so-called pump-gun.

It further consists of novel means for supporting the breech-bolt in a magazine fire-arm.

It further consists of novel means for connecting the sliding handle and the slide action.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention I have shown in the accompanying drawing one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a side elevation of the barrel-portion of the receiver, and a portion of the barrel of my improved fire-arm, showing the sliding handle in longitudinal section. Fig. 2 represents a longitudinal horizontal section of the receiver of the arm, showing the breech-bolt in plan view, with a portion broken away and removed. Fig. 3 represents a side-elevation of the barrel-portion of the receiver with the breech-bolt removed. Fig. 4 represents a detail view of a portion of the stock-portion of the receiver. Fig. 5 represents a transverse section on the line $x-x$, Fig. 1. Fig. 6 represents a transverse section on the line $y-y$, in Fig. 2. Fig. 7 represents a perspective detail view of the movable and adjustable recoil abutment. Fig. 8 represents a sec-

tional detail view of the tubular guide-rod and the guide-bearings, illustrating the spring and the pin bearing against the same. Fig. 9 represents a sectional detail view of the rear end of the sliding handle and the shoulder upon the action-bar.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings: certain kinds of ammunition are suitable for use in automatic fire-arms, and other kinds, otherwise suitable in single-shot arms or in manually actuated magazine arms, are unsuitable for automatic arms. It is desirable to have a fire-arm capable of employing both kinds of ammunition, and for that purpose I have devised means whereby my fire-arm is adapted to be fired with smokeless ammunition as an automatic arm and with black powder as a manually operated arm or pump-gun.

Magazine fire-arms of the type here presented have been designed, in which the breech-block has been supported by movable parts of the action, as, for example, upon the action-bar, by a downward projection on the forward end of the breech-block. In my fire-arm, the breech-block is only loosely connected at its rear end to the action-bar by a pin engaging a slot in the same, and the breech-bolt is solely supported by the ejector engaging the longitudinal groove in the side of the bolt and guided in its reciprocating movement by such ejector and groove and by the sides and top overhang of the receiver. It has also been proposed to construct the receiver of a magazine fire-arm in two parts, divided along the median vertical plane of the receiver, and to connect one part to the barrel and one part to the stock. To avoid the possibility of gases from the fired cartridge leaking through such median joint into the eyes of the operator of the arm, I have constructed my receiver with an overhang along the upper edge of one receiver part, so that there will be no direct upward leak of the gases, and I prefer to place said overhang at the upper edge of that receiver part which is connected to the barrel, so that in taking down the arm, the breech-bolt will rest in the angle between such overhang and the side of the receiver. My present invention consequently distinctly differs from the

above earlier forms of construction of fire-arms in that the breech-bolt is solely supported and guided by the ejector engaging the longitudinal groove in the side of the same, and that the receiver has the overhang upon the upper edge of one portion of the same and is, consequently, divided upon two planes, as will be fully explained in the following description.

10 The receiver of the arm consists preferably of two portions, one, 1, of which is connected to the barrel, 2, and the other, 3, is connected to the stock (not shown). The barrel-portion 1 is preferably provided with
15 a top-piece or overhang, 4, engaging the upper edge of the stock-portion, 3, and closing the top of the receiver to prevent gases and smoke from leaking out at the top to irritate and possibly injure the eyes of the
20 shooter. A breech-bolt, 5, fits to reciprocate beneath the overhang of the receiver and is rectangular in cross-section with a downwardly extending flange, 6, at one side, bearing against the inner face of the side of
25 the barrel-portion of the receiver. The forward end of the breech-bolt bears against and closes the rear or breech-end of the barrel, and a firing-pin, 7, is mounted longitudinally movable in the breech-bolt to have
30 its projecting end struck by the hammer (not shown). An ear, 8, projects downward from the rear end of the breech-bolt and has a longitudinal slot, 9, which is engaged by a stud, 10, near the rear end of an
35 action-bar, 11, sliding in a longitudinal groove, 12, in the inner face of the barrel-portion of the receiver, and extending through the forward end of the latter. The forward end of the action-bar has guide-
40 bearings, 12*, encircling and sliding upon a tubular guide-rod, 13, having its rear end secured in the forward end of the receiver and having its forward end secured in a
45 post, 14, secured by its dovetailed base in a transverse dovetail groove in the barrel, or otherwise suitably secured upon the barrel. The forward guide-bearing has a transverse
50 pin, 15, which bears against the forward end of a spring, 16, which spring is inclosed within the tubular guide-rod and bears against the closed rear end of the same,—the
55 pin traversing the tubular guide-rod and sliding in longitudinal slots, 17, in the latter. A sliding handle, 18, slides upon the tubular guide-rod and engages a forwardly-
60 facing shoulder, 19, upon the action-bar to push the same rearward, while said bar is free to slide rearward without moving the handle. A bolt, 20, confined to have radial
65 play in the handle, and having a spring, 21, pushing it inward, engages a notch, 22, in the guide-rod with its rounded end, so as to form a slip-latch which will retain the handle when the action-bar is drawn rearward
by the recoil, while it will disengage suf-

ficiently freely to permit the handle to be manually slid upon the tubular guide-rod.

The side of the breech-bolt bearing against and sliding upon the inner face of the side of the stock-portion of the receiver 70 has a longitudinal groove, 23, which engages and slides upon an ejector, 24, pivoted in a recess in said side, opposite an ejection-opening, 25, in the side of the barrel-portion of the receiver, and said ejector has a spring, 26, 75 which forces it into the groove and, when the breech-bolt is moved rearward, against the shell of the cartridge, to eject the same through the ejection opening. A rib or lug, 27, projects inward from the inner face of 80 the side of the receiver into the groove in the breech-bolt and is in line with the ejector, so that said rib also serves as a support and guide for said bolt. The ejector may be made sufficiently long to guide and 85 support the breech-bolt, during its entire rearward movement, in which case the rib or lug may be dispensed with. When, however, short cartridges are used, it is desirable to have the ejector swing freely clear of the 90 breech-bolt when the latter is in its rearmost position, and in such case the rib or lug is necessary to support and guide the bolt.

A longitudinal recess, 28, is formed in the inner face of the side of the barrel-portion 95 of the receiver, and a bar, 29, is pivoted in said recess to have its forward arm swing into the path of the breech-bolt to form a forwardly facing movable and adjustable recoil-abutment. A spring, 30, bears against 100 the forward arm of this abutment-bar, forcing the same into the path of the breech-bolt, and a screw, 31, through the bottom of the recess, bears against the rear arm of the bar so as to rock the same to have its face 105 flush with the face of the side of the receiver when secured inward. A cam or other device for rocking the bar may be substituted for the screw to provide means for retracting the recoil abutment. A lug, 32, projects 110 laterally from one side of the forward arm of the bar, and said lug has a beveled cam-face, 33, projecting into the bottom of the groove in which the action-bar slides and in the path of the latter. When the action- 115 bar is slid rearward, it will move a short distance, on account of the play allowed by the longitudinal slot in the ear of the breech-bolt, before moving the latter, and the rear end of the action-bar may thus en- 120 gage and depress the cam-lug and the recoil abutment with it, so that the breech-bolt may move freely rearward. To facilitate the free rearward movement of the breech-bolt over the retracted recoil-abutment, the 125 rear corner of said bolt is beveled or rounded, as at 34.

When the arm is to be used as an automatic fire-arm, the recoil-abutment is withdrawn into its recess, so that the breech-bolt 130

may move freely rearward, actuated by the recoil and rearward movement of the cartridge-shell from the explosion of the charge. The arm is started for automatic action by the breech-bolt first being manually slid rearward by the handle, which cocks the hammer and, when thereupon again moving forward, pushes the upper cartridge in the magazine into the chamber of the barrel.

When the arm is fired, the recoil and rearward movement of the cartridge shell throws the breech-bolt rearward, again cocking the hammer and, when the bolt arrives at its rearmost position, allows the ejector to throw the empty shell out through the ejection-opening. The recoil spring in the tubular guide-rod will again draw the action-bar and breech-bolt forward, carrying another cartridge from the magazine into the chamber of the barrel, when the arm is again ready for firing. When cartridges of comparatively heavy residue, such as black powder cartridges, are employed, the arm cannot be automatically operated long without fouling, and provision is made so that the arm can be manually operated, as an ordinary pump gun. The movable and adjustable recoil abutment supplies this provision. The screw, or whatever means act against the rear arm of the abutment, is withdrawn to admit of the forward abutment-arm being thrown into the path of the breech-bolt to bear against its rear end when in its forward position, closing the breech. When now the cartridge is fired the abutment will take the recoil, and the breech-bolt will remain in place. When now ejection of the empty shell, feeding of a new cartridge, and cocking of the hammer is to take place, the sliding handle is slid rearward, pushing upon the action-rod. Owing to the longitudinal slot in the ear of the breech-bolt, the action-bar may first move sufficiently to cause its rear end to engage and depress the cam-lug of the recoil abutment, so as to force the same into its recess and out of engagement with the breech-bolt, whereupon the stud on the action-bar will engage the rear end of the slot in the ear of the breech-bolt and slide the latter rearward, causing the ejecting, cocking and reloading functions to take place, as when the arm is acting automatically. An arm is thus produced which may be used as an automatic fire-arm with ammunition suitable therefor, and as a manually actuated fire-arm or pump-gun with ammunition suitable for such action.

Wherever throughout the description and claims the terms "vertical" and "horizontal" are employed, such terms presume the fire-arm to be held horizontally extended and the parts so referred to as being in longitudinal planes or lines parallel to the axis of the barrel,—"vertical" planes being parallel to the planes of the sides of the re-

ceiver and "horizontal" planes being at right angles to said planes.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while I have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. In a fire-arm, a breech-bolt having means for automatically moving it into operative position, a movable and adjustable recoil abutment arranged to retain the breech-bolt against rearward movement, means for adjusting said abutment into operative position, and manually actuated means connected to the breech-bolt to retract the same and having loose connection to the same to withdraw the abutment before moving the bolt.

2. In a fire-arm, a breech-bolt, an action-spring connected to move the same into operative position, manually operated means for moving the breech-bolt, a movable and adjustable recoil abutment arranged to retain the breech-bolt against rearward movement, means for adjusting such abutment in inoperative position, and means connected to the bolt-moving means to withdraw the abutment into inoperative position before moving the bolt.

3. In a fire-arm, a breech-bolt having means for automatically moving it into operative position, a movable and adjustable recoil abutment arranged to retain the breech-bolt against rearward movement, means for adjusting said abutment into inoperative position, and a manually actuated action-slide connected to the breech-bolt to reciprocate the same and constructed to engage the abutment to move it into operative position before moving the bolt.

4. In a fire-arm, a breech-bolt having means for automatically moving it into operative position, a movable and adjustable recoil abutment arranged to retain the breech-bolt against rearward movement, means for adjusting said abutment into inoperative position, and a manually actuated action-slide arranged to engage and withdraw the abutment on its rearward movement and having loose connection to the breech-bolt to move the same rearward after the abutment has been withdrawn.

5. In a fire-arm, a breech-bolt having means for automatically moving it into op-

- erative position, a recoil-abutment bar pivoted at the side of the path of the bolt to have its forward end engage the rear end of the bolt when in operative position, a spring forcing said bar to engage the bolt, positive means for moving and holding the bar out of the path of the bolt, a cam-projection on said bar, and an action-bar having means for manually sliding it longitudinally and having its rear end engaging the cam-projection when moved rearward, and connected to move the breech-bolt and to have sufficient longitudinal play in its connection to engage and actuate the cam-projection before moving the bolt.
6. In a fire-arm, a breech-bolt having means for automatically moving it into operative position and formed with a longitudinally-slotted ear, a recoil-abutment bar pivoted at the side of the path of the bolt to have its forward end engage the bolt when in operative position, a spring forcing said bar to engage the bolt, positive means for moving and holding the bar out of the path of the bolt, a cam-projection on the side of the bar, and an action-bar having means for manually sliding it longitudinally and having its rear end engaging the cam-projection when moved rearward and having a stud engaging the longitudinal slot of the bolt whereby the action-bar may move longitudinally to push the abutment-bar into inoperative position before moving the breech-bolt.
7. In a fire-arm, a breech-bolt, a longitudinally-sliding action-bar connected to the same, a guide rod for the forward portion of said bar, a spring acting to move said bar

forward, a sliding handle upon the guide-rod and engaging the bar to move it rearward, and a slip-latch in said handle engaging a notch in the guide-rod.

8. In a fire-arm, a receiver having an ejection-opening in one side, a reciprocating breech-bolt having a longitudinal groove in its side, a spring ejector arranged longitudinally in the side of the receiver opposite the ejection-opening and engaging the groove in the breech bolt to guide and longitudinally support the same, and a lug aligned with the ejector upon the side of the receiver and engaging the groove in the bolt to guide and support the same.

9. In a fire-arm, a receiver consisting of two side-pieces one of which is formed with an ejection-opening and one of which is formed with an overhang at its upper edge closing the top of the receiver and fitting against the upper edge of the other side-piece, a breech-bolt reciprocating between and guided by the sides and overhang of the receiver and over the opening in the same and formed with a longitudinal groove in one side, means for reciprocating said breech-bolt, a spring-ejector arranged longitudinally in the side of the receiver and engaging the groove in the breech-bolt to longitudinally guide and support the same, and a lug aligned with the ejector upon the side of the receiver and engaging the groove in the bolt to guide and support the same.

HENRY B. FEBIGER.

Witnesses:

WM. SECHER,
C. D. McVAY.