

L. SCHMEISSER.
AUTOMATIC FIREARM.
APPLICATION FILED JAN. 2, 1907.

956,430.

Patented Apr. 26, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

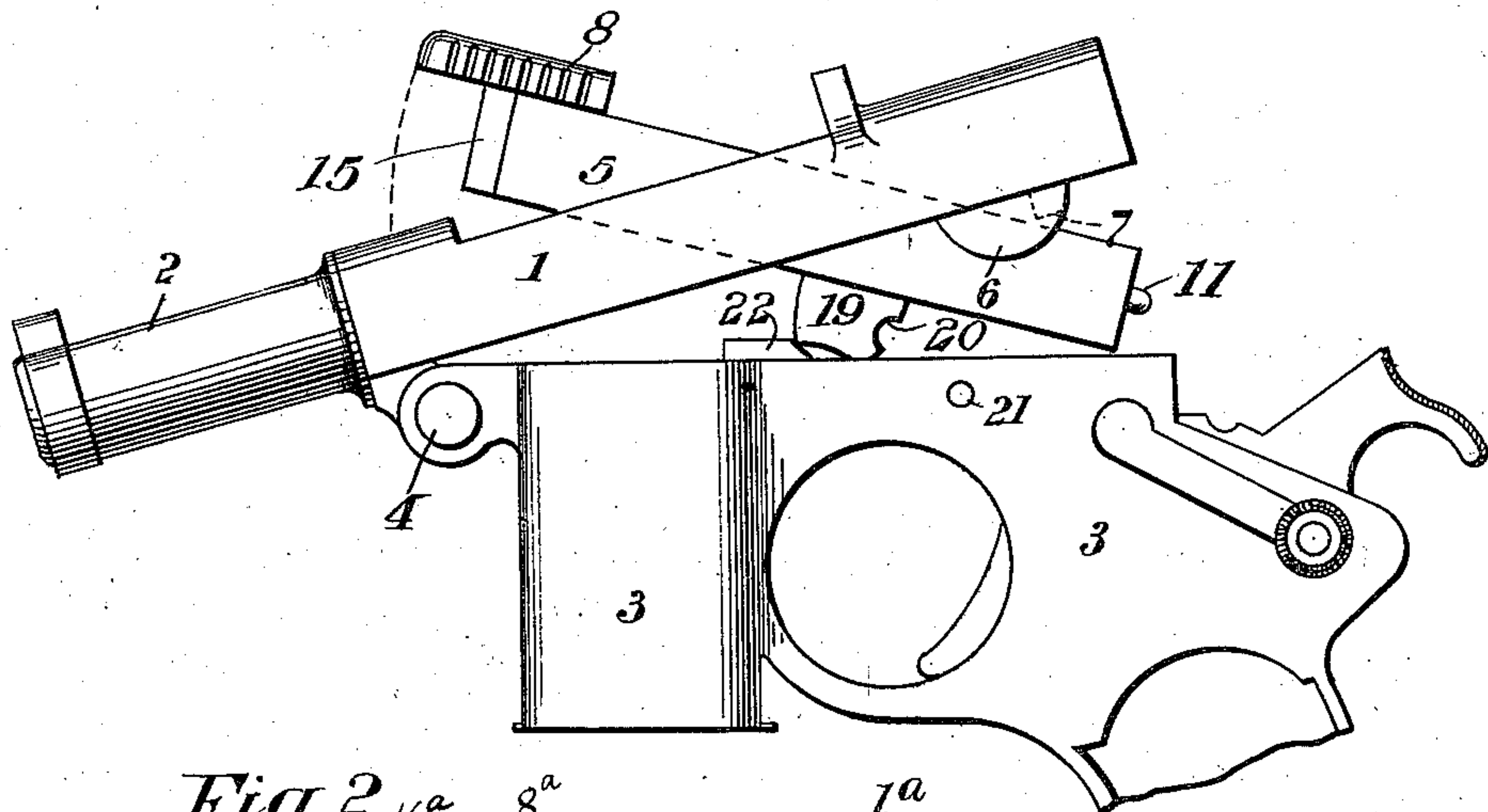


Fig. 2.

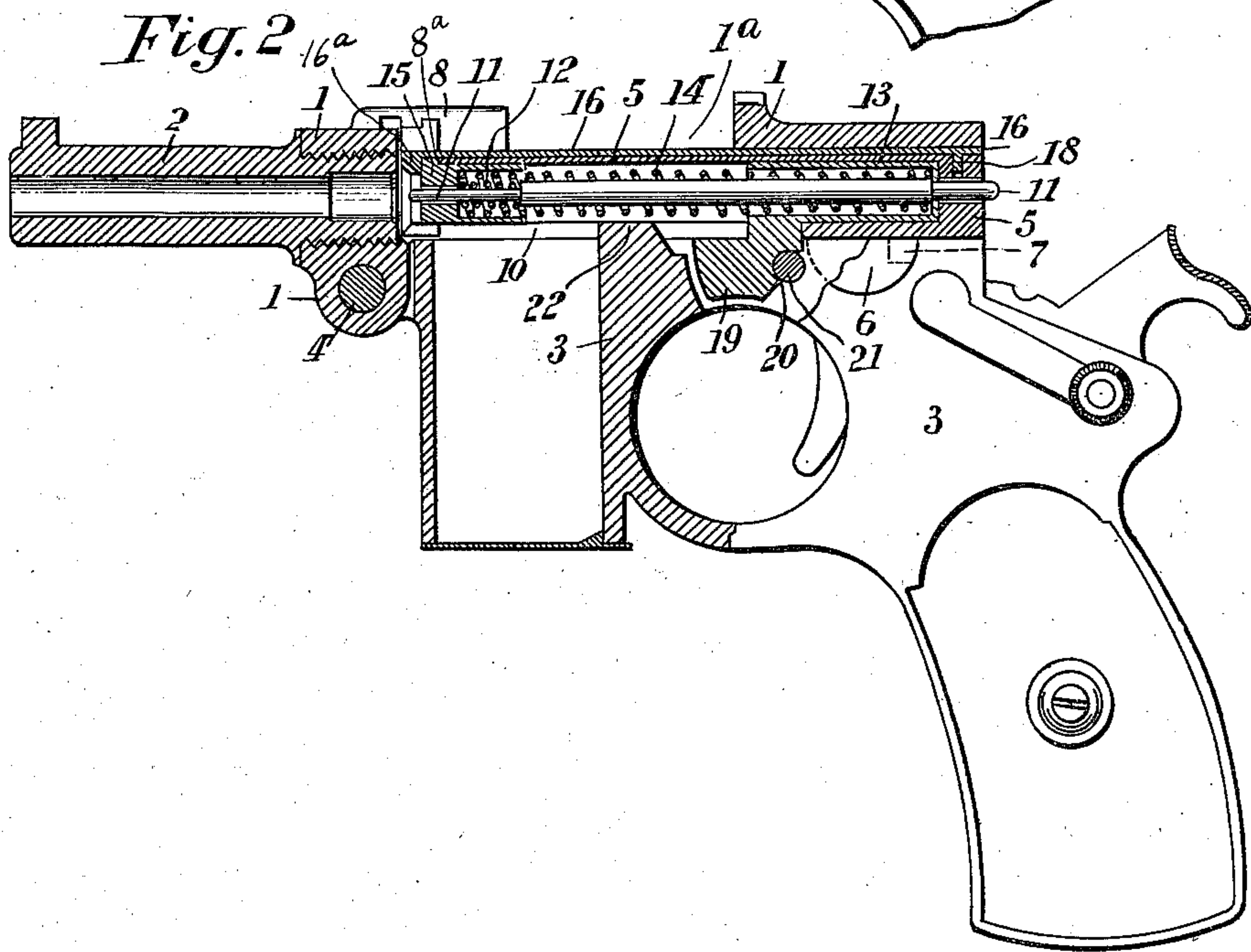
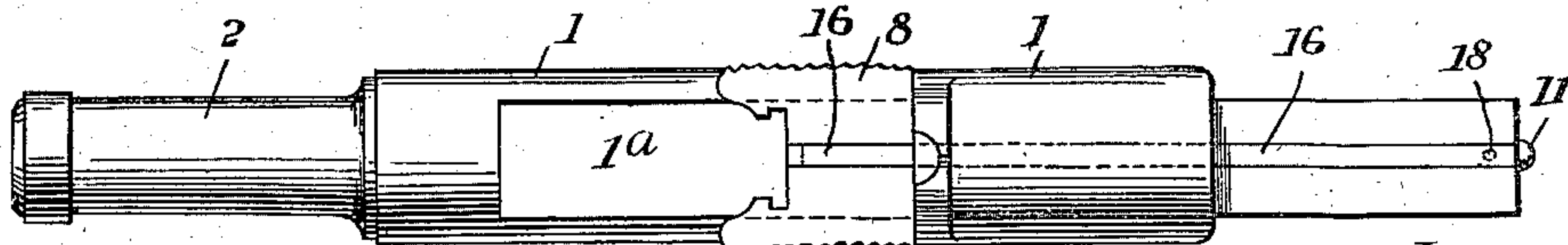


Fig. 7.



Witnesses:

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N. Reynolds

Inventor:

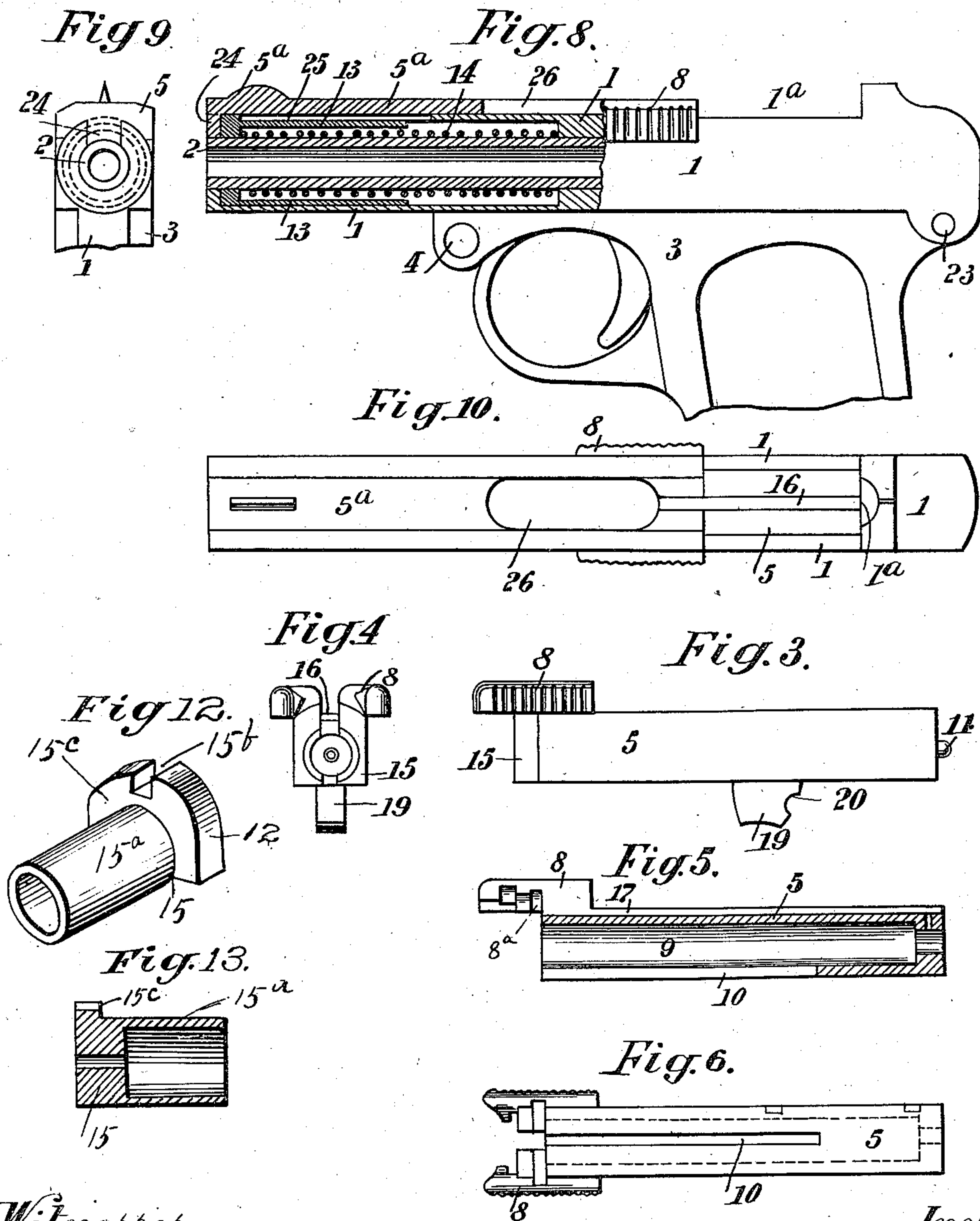
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3 SHEETS—SHEET 2.



Witnesses:

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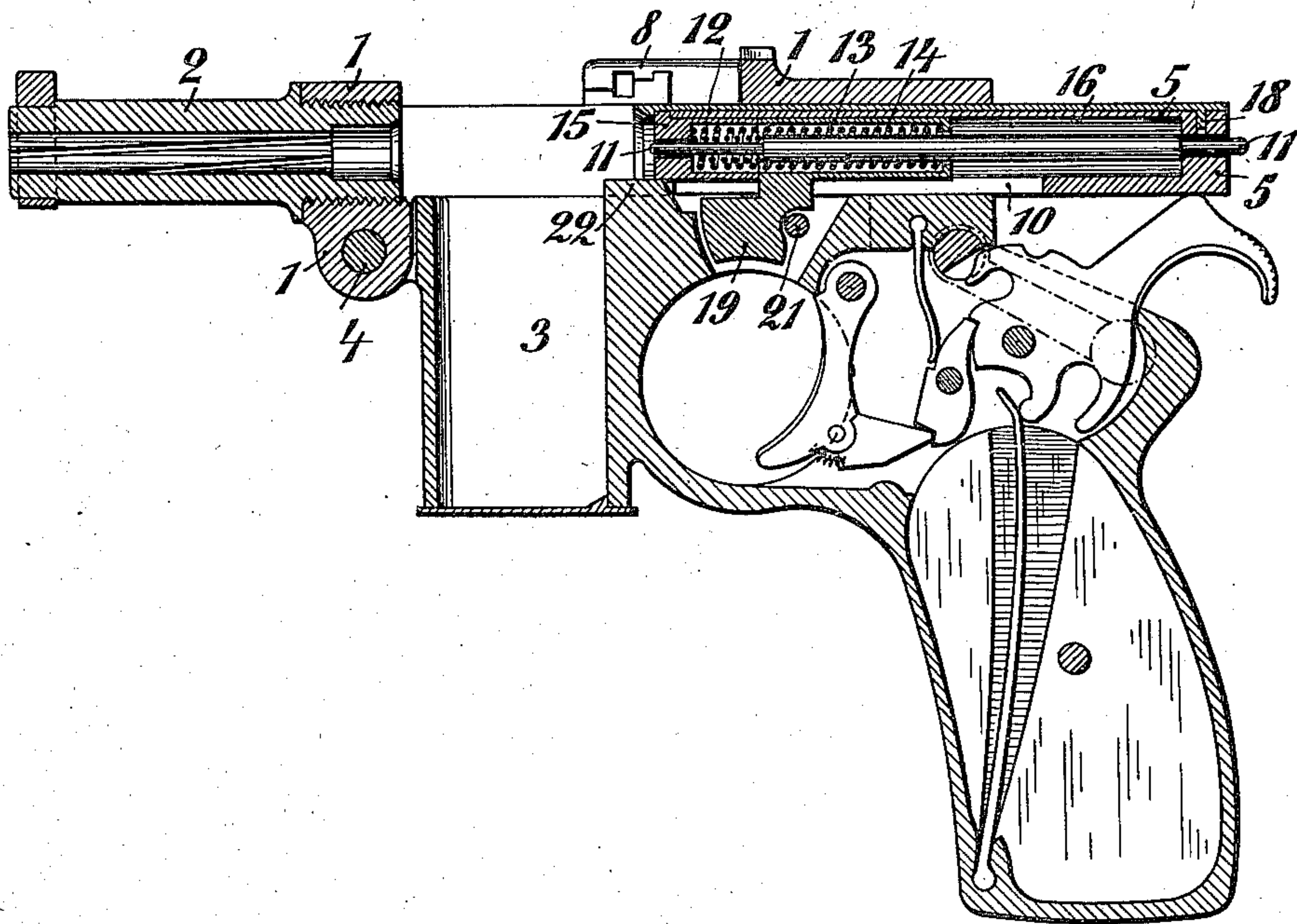
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3 SHEETS—SHEET 3.

Fig. 11



WITNESSES

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UNITED STATES PATENT OFFICE.

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AUTOMATIC FIREARM.

956,430.

Specification of Letters Patent.

Patented Apr. 26, 1910.

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To all whom it may concern:

Be it known that I, LOUIS SCHMEISSER, engineer, a subject of the German Emperor, residing at Suhl, Thuringia, Germany, have
5 invented certain new and useful Improvements in Automatic Firearms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art
10 to which it appertains to make and use the same.

This invention has reference to improvements in automatic fire-arms.

In fire-arms which are loaded automatically it is very important that the greatest
15 care be taken that the closing member or breech bolt, which is only brought into its closed position by a spring, cannot be accidentally projected rearward, on the discharge, in the direction of the person using
20 the gun or the like so as to injure him. Heretofore accidents of this kind have been best guarded against by completely closing the receiver at its rear end, so that the movable breech bolt in its rearward movement
25 impinges against the solid rear end of the receiver. But, however practical this arrangement may appear to be from other points of view, it has this defect that the receiver must be too long relatively to the
30 weight and to the form of the gun to preserve a proper balance, or the breech bolt must be made shorter than would be useful for suitably housing the return spring or the
35 other indispensable mechanism. Besides it is known that, in automatic-loading fire-arms with fixed barrel and without rigid locking of the breech bolt, certainty of action and the durability of the gun are increased if
40 the weight of the parts which recoil on the discharge, is increased as much as possible.

The main objects of the improvements which constitute this invention are to get
45 the necessary weight and the desired length of the breech bolt without exceeding the limits admissible for the length and the weight of the gun or the like, and, in spite of that, to limit the recoil of the breech bolt in the surest way; and besides, to permit of
50 mounting and dismounting the mechanism of the gun in a simpler manner than has been

possible heretofore, and to reduce considerably the cost of the complete gun.

My improved fire-arm, which is automatically loaded by the recoil and provided with
55 a tilting barrel, meets in all respects the aforesaid requirements, and it is characterized essentially in that the breech bolt, which is introduced into the receiver from the front, is raised with, and on being raised
60 can be removed from, the receiver which is rigidly connected to the barrel. Two forms of construction of this fire-arm are shown in the accompanying drawing, in which:—

Figure 1 is a side elevation of a pistol
65 with a magazine situated in front of the trigger, the stock being partly broken away and the receiver in its tilted position showing the position assumed by the breech slide or bolt when it is being removed; Fig. 2
70 shows the same pistol, the greater part being in vertical section; Fig. 3 shows the breech slide of this pistol as seen from the left side with the parts which are mounted within it; Fig. 4 is a front elevation of the
75 same part; Fig. 5 shows a longitudinal vertical section of the same breech slide (without the other mechanism) as seen from the left side; Fig. 6 is a view of the empty breech slide from below; Fig. 7, is a plan
80 view of the receiver dismounted, with the barrel, and the breech slide displaced rearward; Fig. 8 shows an elevation viewed from the left side, the front part being in vertical section, of a piston having a bolt
85 trigger mechanism and a magazine in the stock, said stock being partly broken away; Fig. 9 is a front elevation of the upper part of this pistol; Fig. 10 is a plan view of the same pistol; Fig. 11 is a vertical longitudinal
90 section of Fig. 2 with the breech open; Fig. 12 is a perspective view of the bolt-closing plug; and Fig. 13 is a longitudinal section through the same.

As shown in Figs. 1 and 2, the receiver 1,
95 with which the barrel 2 forms one piece, is connected to the frame 3 containing the magazine and the trigger mechanism by a hinge pin or a screw 4, in such a manner that the part 1 can be tilted so as to permit of
100 the breech bolt being mounted with all its fittings in the casing 1 downwardly from the

front, and of its being removed in a similar manner, as indicated in dotted lines in Fig. 1. The receiver 1, which is open to the rear and below throughout its length behind the barrel 2, takes, like a fork, with its two downward projections 6 arranged at its rear end over the frame 3 when the receiver is closed, and is provided with a transverse slot 1^a, the term slot being used not as defining an opening of a particular contour, but merely as distinguishing this opening from the downward and rearward openings to avoid confusion. A locking latch (like those employed in breech loading rifles) which is arranged on the side of the frame 3 but has not been specially shown in the drawing engages with its tooth in the notch 7, indicated by dotted lines, when the receiver 1 is closed and securely connects the said receiver with the frame 3 at its rear end while the pin 4 holds them assembled at their front ends. In this form of construction, the breech bolt 5 and its forward offset end 8 together constitute the breech slide, the term being a generic one used to define all or any portion of the member driven to the rear by the recoil.

Figs. 2 and 7 show how the solid part 8 of the breech slide is limited in its recoil movement by the equally solid upper rear wall of the receiver 1; this limitation is absolute.

In the construction shown in Fig. 1 the breech bolt 5 (Figs. 3 to 6) is formed with a bore 9 and a slit 10 which permit of the firing pin 11, its spring 12, the cap 13 of the return spring and the return spring 14 being introduced therein from the front and to have a bearing against the rear end. The bore of the breech bolt 5 is closed at its front end by an unsymmetrical plug 15 which retains the various parts inclosed therein; one side of the said plug engages like a bayonet in a recess 8^a formed in the upper front part of the forwardly extending offset portion 8 of one of the walls of the breech bolt 5 and an aperture is formed in it to allow the point of the firing pin to pass through. The plug has an inwardly extending portion 15^a which acts as a journal within the bolt as a bearing, and upon which the plug may rotate as an axis. When turned with its greatest diameter horizontal, the plug can be inserted within or removed from the open end of the bolt, but when given a half-turn, it will at its greatest diameter 15^c take into the recess 8^a and after the manner of a bayonet be locked against longitudinal movement by the recess, and, when the extractor 16 is in place, will be locked against rotation. The extractor 16 rests in a groove 17 formed in the bolt 5 and in the groove 15^b of the plug 15, and, being confined therein by the walls of the receiver, effectually precludes relative rotation of the breech bolt and plug while

in the receiver. The displacement of the extractor longitudinally is prevented by a small tenon or pin 18 situated at its rear end and engaging in a corresponding pin-hole formed at the rear end of the bolt. The claw 16^a of the extractor overlies the outer face of the plug in a position to engage the rim of a cartridge resting with its base against the plug as in the act of firing.

The arrangement described, which only permits of the mechanism within the breech bolt 5 being mounted and dismounted from the front prevents any of the members of this mechanism ever leaving their housing rearward on the discharge, and it has this further advantage that it permits of the breech slide with all its mechanism being removed from the receiver 1 through the slot 1^a, but only after the receiver has been tilted and without having first to dismount, slacken or unscrew any other part. If, after the introduction of the breech bolt 5 with its mechanism into the interior chamber of the receiver 1, through the slot 1^a, the said receiver is turned down to its closed position, the heel 19 of the spring cap 13, which projects downward from the breech bolt, enters a corresponding groove or notch in the frame 3 (Fig. 2) and the tooth (not visible in this figure) of the locking latch then engages in the notch 7 of the projection 6 of the receiver 1 and couples this latter with the frame 3 in such a manner that the breech bolt 5 is slidably housed between the two parts 1 and 3 as if they formed a single integral piece. The heel 19 of the cap 13 of the return spring then bears against a pin 21 which engages in the notch 20 in its rear face, the said pin being mounted transversely in the frame 3. In this manner the breech bolt 5 is held pressed toward the front against the barrel by the return spring 14 which bears at its rear end against its cap 13 and at its front end against the breech plug 15 which is locked with the breech bolt 5. Into the longitudinal slit 10 in the lower part of the breech bolt 5, in which the heel 19 of the spring cap 13 slides, the beak 22 of the ejector (Figs. 1 and 2) which is arranged on the frame 3, enters. The plug 15 is similarly slotted below to allow the beak 22 of the ejector to pass through and to encounter the base of the cartridge case on the recoil of the breech slide. When the breech slide is forced back under the action of the explosion, or is drawn rearward by hand by a pull upon its offset portion 8 which is corrugated exteriorly to enable it to be gripped and projects from the receiver 1 through slot 1^a, the said breech slide on being released or when the effect of the reaction of the gases generated by the explosion ceases, springs sharply back again into its closed position. The working is otherwise similar to that in the known automatic-loading fire-

arms and need not therefore be particularly described seeing that the construction of the trigger mechanism and of the magazine do not form any part of this invention.

5 In view of the different opinions held as to whether an automatic-loading pistol with a magazine in front of the trigger is better than a pistol with the magazine in the stock, another form of construction of my improved fire-arm is shown in Figs. 8, 9 and 10. In this construction, the magazine, not shown, is in the stock of the pistol, while the breech slide incloses suitable firing pin mechanism, not shown, the return spring being housed in a front extension of the breech casing around the barrel instead of within the breech bolt. In this construction, the receiver 1 is connected with the frame 3 by a hinged pin exactly as already described, and the connection of the two parts at the rear has been shown by way of example as being accomplished by means of a spring bolt 23. The receiver 1 in this case extends up to the mouth of the barrel 2 and is bored out at its front part so as to enable the return spring 14 to be mounted around the barrel and at the same time to receive the cap 13 of the return spring against which the front end of the said spring bears while its rear end finds a bearing against the rear end of the receiver 1. The breech slide comprises here the breech bolt 5, and a forwardly extending parallel offset portion 5^a connected by the offset 8, the portion 5^a extending to the mouth of the barrel and acting as a breech guide. At its front end there is a beak 24 which projects into the casing 1 and takes over the front end of the cap 13 of the return spring.

40 The receiver 1 is slitted at its upper part at the front, at 25, in the direction of its length, in such a manner that the beak 24 of the breech slide can move therein when the said breech slide recoils rearward. The breech slide is guided here by the barrel and between the parts 1 and 3, and its rearward movement is limited in exactly the same manner as in the first form of construction by the offset 8 engaging the rear wall of the slot 1^a. As the return spring 14 bears with its rear end against the receiver 1 and with its front end against the cap 13 which is arranged behind the beak 24 on the front end of the breech slide, the breech bolt 5 is here also held under tension against the rear end of the barrel by the spring 14 in such a manner that the action of the mechanism in question is exactly the same as that of the corresponding mechanism already described with reference to Fig. 1.

60 The empty cartridges are ejected through an aperture 26 formed in the barrel guide portion 5^a of the breech slide, which aperture comes into proper position for the ejection during the recoil of the breech slide.

This ejection aperture may, if desired, be formed laterally in the receiver 1 in such a manner that the ejection, in place of being upward, is toward one side: in this case the aperture 26 in the breech bolt 5 is formed in the side of the receiver.

Having thus fully described my invention, what I claim, is:—

1. In an automatic fire-arm, the combination, with the trigger mechanism, the barrel, and a receiver having an interior chamber with an opening in its wall, of a breech-slide comprising a breech-bolt mounted to recoil within the chamber, the size of the opening being sufficient to enable the bolt to be swung transversely of the chamber and mounted and dismounted through said opening, the breech-bolt being removable from the receiver only when the fire-arm is in an inoperative condition.

2. In an automatic fire-arm, the combination, with the trigger mechanism, the barrel, and a receiver having an interior chamber with oppositely disposed elongated openings in its wall, of a breech-slide comprising a breech-bolt mounted to recoil within the chamber, the size of the openings being sufficient to enable the bolt to be swung transversely of the chamber and mounted and dismounted through said openings, and means releasable only when the fire-arm is in an inoperative condition to prevent the movement of the bolt to an angular position in the chamber and openings.

3. In an automatic fire-arm, the combination, with the trigger mechanism, the barrel, and a tilting receiver having an interior chamber open to the rear and with oppositely disposed openings in its wall, of a breech slide comprising a breech-bolt mounted to recoil within the chamber and through the open rear end thereof, the size of the openings being sufficient to enable the bolt to be swung transversely of the chamber and mounted and dismounted through said openings, and means to prevent the movement of the bolt to an angular position in the chamber and openings except when the receiver is tilted.

4. In an automatic fire-arm, the combination, with the trigger mechanism, the barrel, and a tilting receiver having an interior chamber open to the rear and with elongated openings in its upper and lower wall, of a breech slide comprising a breech-bolt mounted to recoil within the chamber and through the open rear end thereof, and an integral off-set portion projecting into the upper elongated opening and limited in its range of recoil by the rear wall of said opening, the size of the elongated openings being sufficient to enable the bolt to be swung transversely of the chamber and mounted and dismounted through the said openings, and means to close the lower opening when

the fire-arm is in an operative condition to prevent the movement of the bolt to an angular position in the chamber and openings when the arm is in condition to be fired.

5. In an automatic fire-arm, the combination, with the frame, the trigger mechanism, the barrel, and a tilting receiver provided with an interior chamber coaxial with the barrel and with an elongated opening in its wall, of a breech-slide comprising a breech-bolt arranged to reciprocate within the interior chamber, and an off-set portion extending into the opening, the breech-bolt limited in its recoil by the impinging of the off-set against the rear wall of the opening and confined within the receiver when closed and removable through the opening when the casing is tilted.

6. In an automatic fire-arm, the combination, with the frame, the trigger mechanism, a tilting barrel hinged to the frame, and a receiver tilting with the barrel into and out of contact with the frame and provided with an interior chamber open to the rear and below and with an elongated opening in its wall, of a breech-slide comprising a breech-bolt arranged to recoil within the chamber and through the rear end thereof, and an off-set portion extending into the opening, the breech-bolt limited in its recoil by the impinging of the off-set against the rear wall of the opening and confined within the chamber when the receiver is closed by the frame and removable through the opening when the receiver is tilted.

7. In an automatic fire arm, the combination with the frame, the trigger mechanism, a tilting barrel hinged to the frame, and a receiver tilting with the barrel and provided with an interior chamber open to the rear and below and with an elongated opening to the outside, of a breech slide comprising a breech bolt arranged to recoil within the chamber and through the rear end thereof beyond the rearmost part of the receiver, and an offset portion extending into the opening, the recoil of the breech bolt limited by the impinging of the offset against the rear wall of the opening, the width of the opening being greater than that of the breech bolt to enable the bolt to be swung transversely of the receiver and mounted and dismounted through the opening when the receiver is tilted, and means to secure the receiver to the frame in its closed position to confine the bolt and prevent the accidental assumption by the bolt of a transverse position.

8. In an automatic fire arm of the kind described, the combination, with a frame, a trigger mechanism, and a magazine, of a tilting receiver, a barrel rigidly connected with this receiver, means for hingedly connecting the said receiver to the fore end of the frame of the fire-arm, means for locking

the said receiver to the said frame at its rear end, an upper opening in the said receiver, a breech bolt adapted to be inserted into the said receiver from the top through the said opening when the receiver is tilted and at other times confined within the casing, and means for preventing the said breech bolt from being projected rearward from the said receiver.

9. In an automatic fire-arm of the kind described, the combination, with a suitable frame, a trigger mechanism, and a magazine, of a tilting receiver, a barrel rigidly secured to this receiver, a pivot pin hingedly connecting the said receiver to the fore end of the frame of the fire arm, downward projections arranged on the rear end of the said tilting receiver and adapted to engage the said frame, means provided in said frame for positively locking the said downward projections in the said frame, an upper opening in the said tilting receiver at the rear of the barrel and at some distance from the rear end of the receiver, a breech bolt adapted to be inserted from the top and from the front through the said opening when the receiver is raised and confined to reciprocate in the said receiver when the latter is closed, a massive front part provided on the said breech bolt and projecting therefrom and from the tilting receiver, this part being adapted to impinge against the rear part of the receiver, and a firing pin, and ejecting and return spring mechanism arranged in the said breech bolt.

10. In an automatic fire-arm of the kind described, the combination, with a suitable frame, a trigger mechanism, and a magazine, of a tilting receiver open at its rear end and provided with an upper opening, a barrel rigidly connected with the said receiver, means for hingedly connecting the latter to the fore end of the frame, means for locking the two parts together at their rear end, a breech bolt adapted to slide in the said receiver and to be inserted in the latter when tilted from the front through the said opening and at other times confined within the receiver, a projecting massive front part on the said breech bolt, a slit in the under side of the latter, an ejecting beak arranged on the said frame and adapted to slide in the said slit, a firing pin, and ejecting and return spring mechanism arranged in the said breech bolt.

11. In a fire-arm, the combination, with the frame, the barrel, the trigger mechanism, and the receiver, of a hollow breech-bolt mounted to reciprocate in the receiver, said bolt having lateral and rear end walls and open to the front, a removable plug to close the front end of the bolt, means to lock the plug against removal while the bolt is in the receiver, a firing-pin mounted to reciprocate within the bolt, the firing-pin and

trigger mechanism arranged in operative relation to each other, a return spring housed in the said breech-bolt and bearing at one end against the said plug, a cap arranged to receive the rear end of the return spring, and means to hold the said cap stationary during the reciprocation of the breech-bolt.

12. In a fire-arm, the combination, with the frame, the barrel, the trigger mechanism, and the receiver, of a hollow breech-bolt mounted to reciprocate within the receiver, said bolt having lateral and rear end walls and open to the front, a removable plug to close the front end of the bolt, a bayonet joint connecting the plug and bolt, an extractor confined by the wall of the receiver in a groove in the side of the bolt and plug to prevent rotation to release the joint when the bolt is in the receiver, and a firing-pin mounted to reciprocate within the bolt and guided by perforations in the rear end wall thereof and in the plug, the firing-pin and trigger mechanism arranged in operative relation to each other.

13. In a fire-arm, the combination, with the frame, the barrel, the trigger mechanism, and the receiver, of a hollow breech-bolt mounted to reciprocate within the receiver, said bolt having lateral and rear end walls and open to the front, a removable plug to close the front end of the bolt and connected therewith by a bayonet joint, an extractor confined in a groove in the side of the bolt and plug to prevent rotation to release the joint when the bolt is in the receiver, and a firing-pin mounted to reciprocate within the bolt and guided by perforations in the rear end wall thereof and in the plug, a return spring housed in the said breech-bolt and bearing at one end against the said plug, a cap arranged to receive the rear end of the return spring, and means to hold the said cap stationary during the reciprocation of the breech-bolt.

14. In a fire-arm, the combination, with the frame, the barrel, the trigger mechanism, and the receiver, of a hollow breech-bolt mounted to reciprocate within the receiver, said bolt having lateral and rear end walls and open to the front, a removable plug to close the front end of the bolt, a bayonet joint connecting the plug and bolt, an extractor confined in the groove in the side of the bolt and plug to prevent rotation to release the joint when the bolt is in the receiver, and a firing-pin mounted to reciprocate within the bolt and guided by perforations in the rear end wall thereof and in the plug, a return spring housed in the said breech-bolt and bearing at one end against the said plug, a cap arranged to receive the rear end of the return spring, a heel carried by the cap and passing through a slit in the wall of the breech-bolt, a suitable recess in the receiver adapted to receive the heel,

means for preventing motion of the heel, an extractor spring arranged on the said breech bolt, and an ejector beak arranged on the frame to slide in the slit in the breech bolt.

15. In a firearm, the combination, with the receiver, of a hollow breech bolt mounted to reciprocate within the receiver and open at one end, a portable unsymmetrical plug mounted in the opening of the bolt, a portion of the bolt extending beyond its open end and provided with a recess opposite the plug, the edge of the plug at its greater radius engaging within the recess when in one position to secure the plug against removal from the bolt opening, and the plug when partially rotated clearing the recess to permit its removal from the bolt opening, and means to prevent relative rotation of the plug and bolt when the bolt is within the receiver.

16. In a firearm, the combination, with the receiver, of a hollow breech bolt mounted to reciprocate within the receiver, said bolt having lateral and rear walls and open to the front, a rotatable unsymmetrical plug mounted in the bolt opening, a portion of the bolt extending beyond its open end and provided with a recess opposite the plug, the edge of the plug at its greater radius engaging within the recess in one position to secure the plug against removal from the bolt opening, and the plug at its smaller radius clearing the recess when partially rotated to permit its removal from the opening, and an extractor confined in a groove in the side of the bolt and plug by the walls of the receiver to prevent rotation of the plug when the bolt is within the receiver.

17. In an automatic fire-arm of the kind described, the combination, with a suitable frame, trigger mechanism, and magazine, of a tilting receiver hingedly connected at its fore end to the said frame, means for locking the rear end of the receiver to the said frame, an upper slot in the said receiver, a hollow breech bolt adapted to slide in the said receiver and confined therein when locked, a stop on the fore end of the said breech bolt, a slit in the under side of the latter, a closing plug closing the front end of the said breech bolt, a firing pin in the said breech bolt and guided in the said closing plug and the rear wall of the breech bolt, a return spring housed in the said breech bolt and bearing at one end against the said closing plug, a cap adapted to receive the rear end of the return spring, and means for holding the said cap stationary during the reciprocating motion of the breech bolt.

18. In an automatic fire-arm of the kind described, the combination, with a suitable frame, trigger mechanism, and magazine, of a tilting receiver hingedly connected at its fore end to the said frame, means for locking the rear end of the receiver to the said

frame, an upper slot in the said receiver, a
hollow breech bolt adapted to slide in the
said receiver and confined therein when
locked, a stop on the fore end of the said
5 breech bolt, a slit in the under side of the
latter, a closing plug closing the front end
of the said breech bolt, a firing pin in the
said breech bolt and guided in the said clos-
ing plug and the rear wall of the breech bolt,
10 a return spring housed in the said breech
bolt and bearing at one end against the said
closing plug, a cap adapted to receive the
rear end of the return spring, a heel pro-
vided on the said cap and passing through
15 the said slit of the breech bolt, a suitable re-

cess in the said receiver adapted to receive
the said heel, means for preventing motion
of the latter, an extractor spring arranged
on the said breech bolt, and an ejector beak
arranged on the upper side of the said frame 20
and adapted to slide in the lower slit of the
breech bolt.

In testimony whereof I have hereunto
affixed my signature in the presence of two
witnesses.

LOUIS SCHMEISSER.

Witnesses:

PAUL TEICHMANN,
FRITZ SCHNELL.