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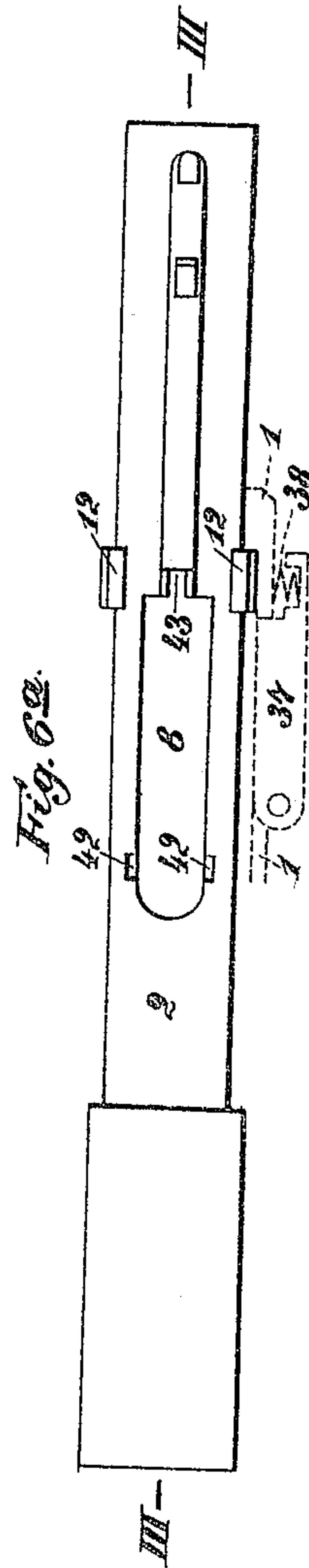
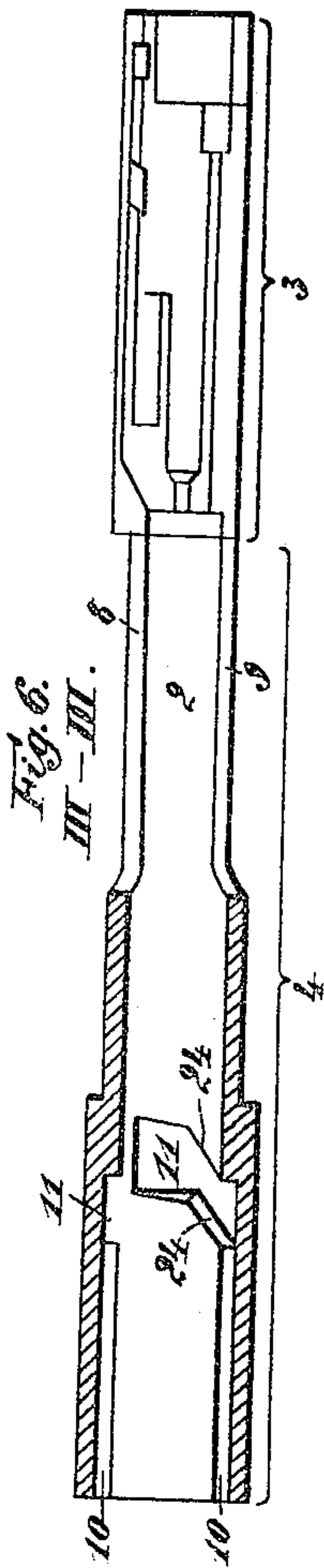
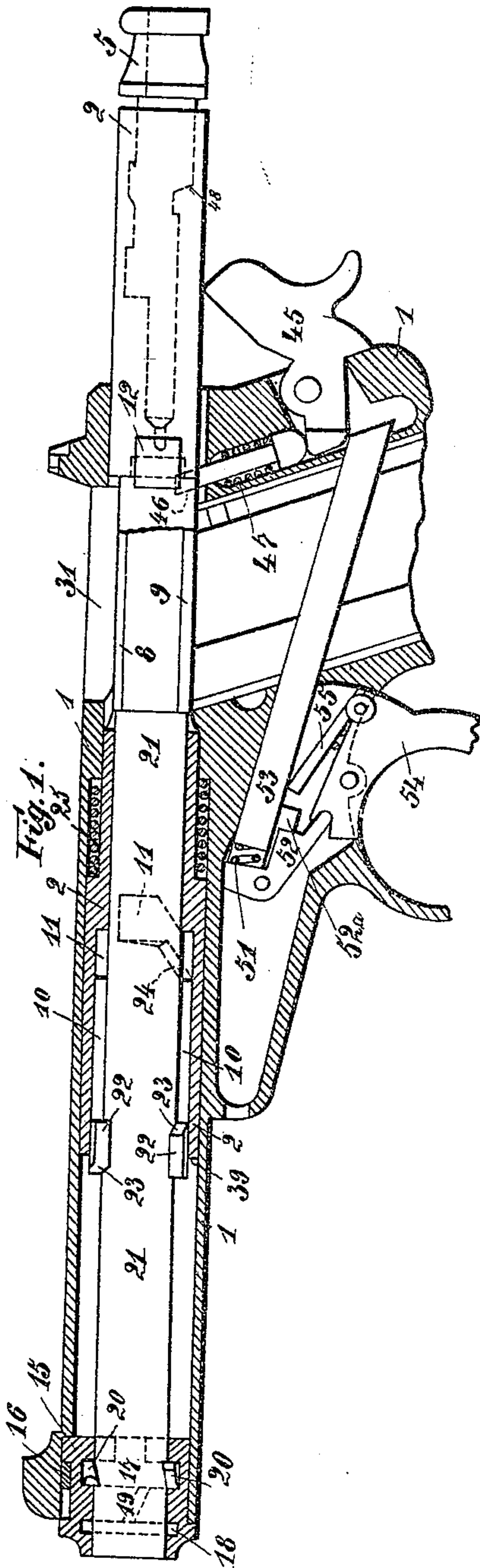
Patented Sept. 24, 1901.

G. ROTH & C. KRKA.
AUTOMATIC FIREARM.

(Application filed Apr. 14, 1900.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
Ella L. Giles
Oldrum

Inventors
George Roth
Charles Krka
By: Richard P. Pys.

No. 683,072.

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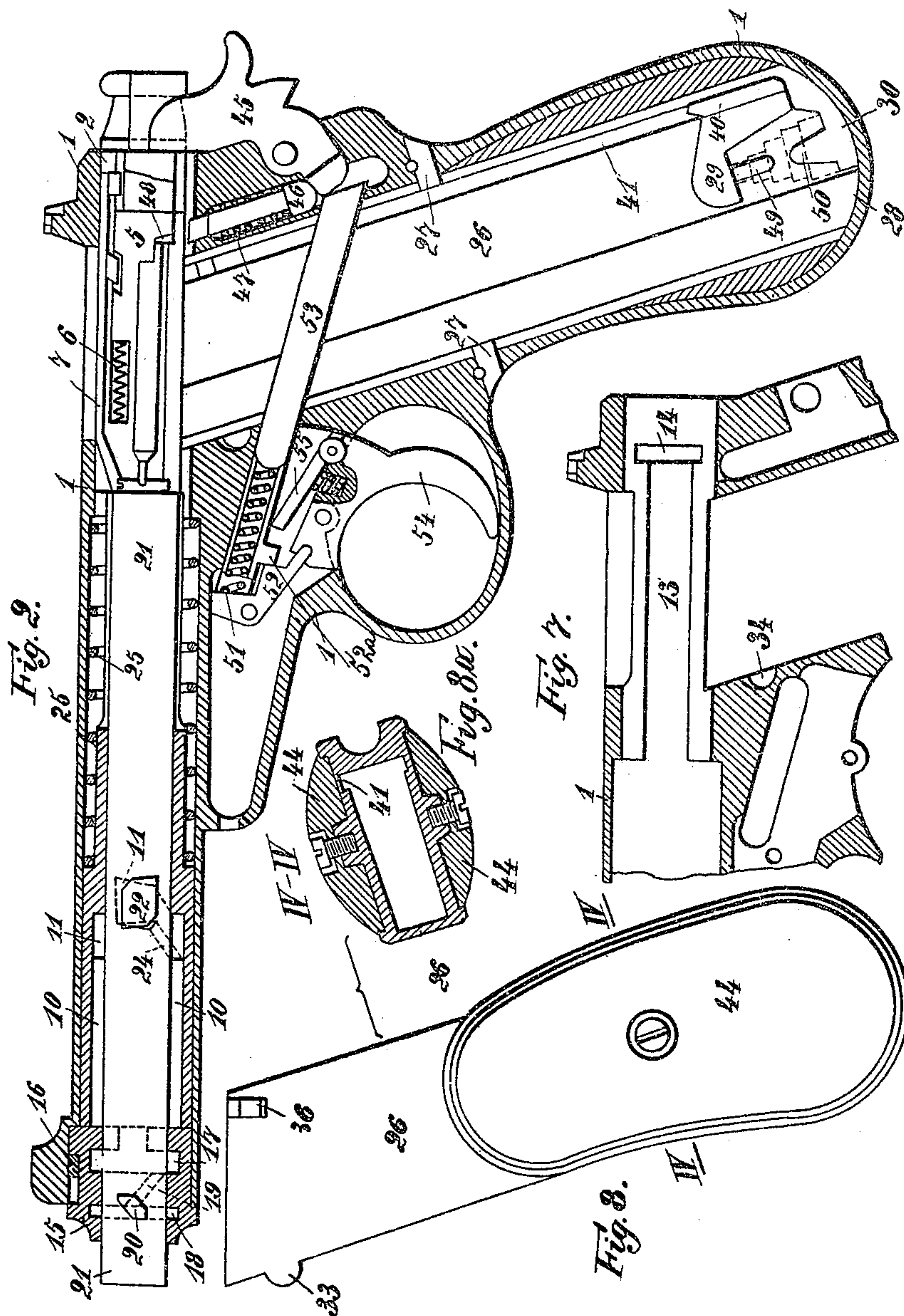
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(No Model.)

3 Sheets—Sheet 2.



Witnesses:

Ella L. Gile

Odum

Inventors

George Roth

Charles Krka

by Richard R. Att'ys.

No. 583,072.

Patented Sept. 24, 1901.

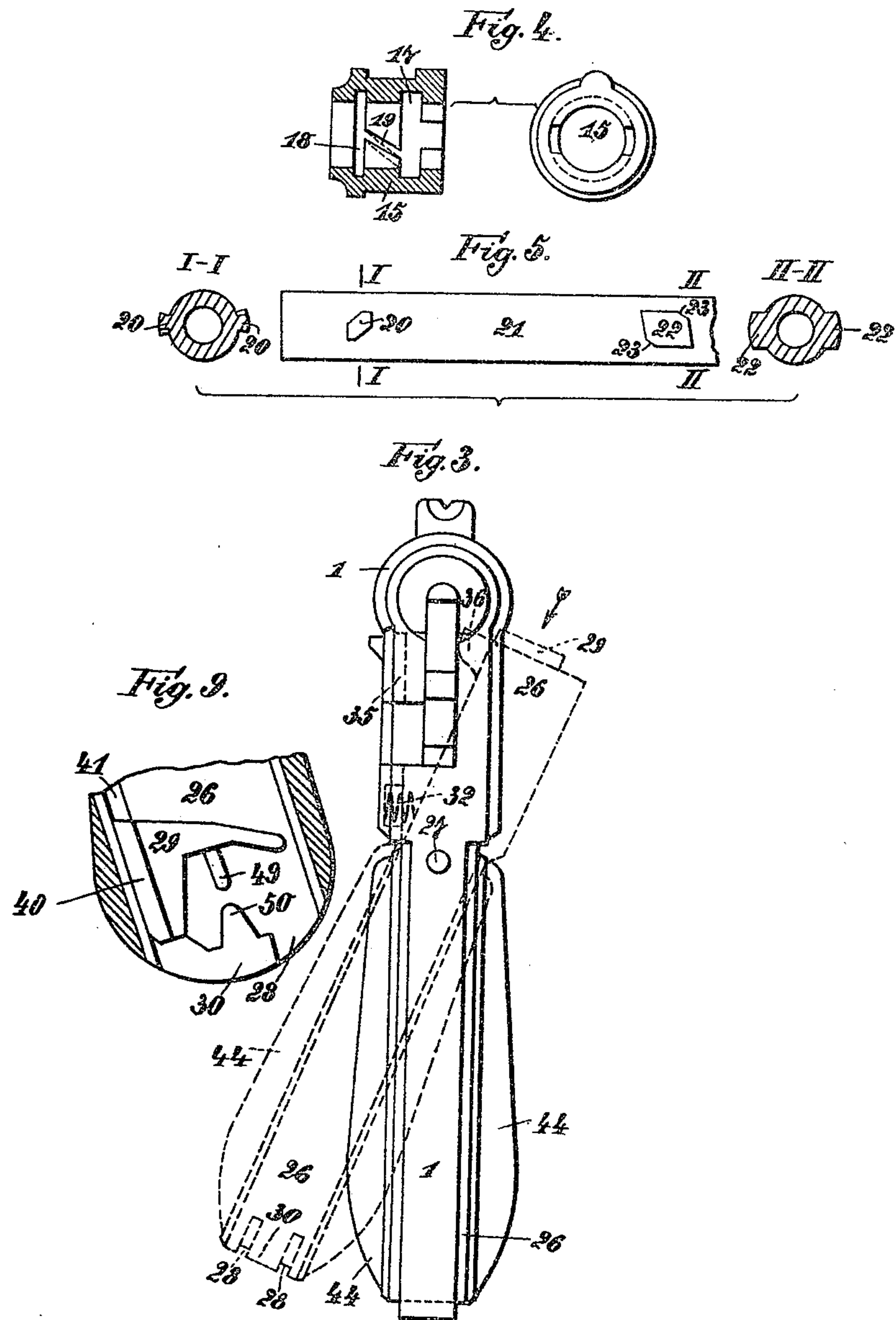
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(Application filed Apr. 14, 1900.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses:
Ella L. Giles
O. Munn

Inventors
George Roth
Charles Krka
By *Richard D. S.*
Attys.

UNITED STATES PATENT OFFICE.

GEORGES ROTH AND CHARLES KRKA, OF VIENNA, AUSTRIA-HUNGARY.

AUTOMATIC FIREARM.

SPECIFICATION forming part of Letters Patent No. 683,072, dated September 24, 1901.

Application filed April 14, 1900. Serial No. 12,916. (No model.)

To all whom it may concern:

Be it known that we, GEORGES ROTH and CHARLES KRKA, subjects of the Emperor of Austria-Hungary, residing at No. 50 Rennweg, Vienna, Empire of Austria-Hungary, have invented new and useful Improvements in Automatic Firearms, of which the following is a full, clear, and exact description.

The present invention relates to automatic firearms; and it consists, essentially, in means for locking the barrel in a rearward position and in retaining the same in such position until the movable breech-block has been properly locked and is in position for firing the next shot.

The invention also comprises certain improvements in the magazine and cartridge-lifting device, improvements in connection with the trigger-actuating mechanism, and a safety device in connection with the hammer, all as hereinafter particularly set forth, and pointed out in the claims.

In order to render the present specification easily intelligible, reference is had to the accompanying drawings, in which similar letters of reference denote similar parts throughout the several views.

Figure 1 is a longitudinal section through a pistol embodying my invention, showing the trigger cocked, the barrel locked, and the breech-block unlocked. Fig. 2 is a similar view showing the pistol immediately after firing, with the barrel unlocked and the breech-block locked. Fig. 3 is a rear elevation of the pistol, with the position of the magazine when loading shown in dotted lines. Fig. 4 is a longitudinal section and end elevation of the forward barrel-lock. Fig. 5 is a side elevation and cross-sections on the lines I I and II II, respectively, of the forward barrel end, showing the locking-lugs. Fig. 6 is a side elevation, partly in section, on the line III III of Fig. 6^a of the breech-block. Fig. 6^a is a plan of the same. Fig. 7 is a part longitudinal section through the stock. Fig. 8 is a side elevation of the butt; Fig. 8^a, a cross-section on the line IV IV of Fig. 8, and Fig. 9 a part longitudinal section through the lower end of the butt and magazine.

Referring first more particularly to Figs. 1, 2, 4, 6, and 6^a, the breech-block 2 is mounted to slide in the stock 1 and may be divided

into two main parts—viz., the hammer mechanism 3, Fig. 6, and the forward part 4, having the cartridge-openings 8 and 9 and the barrel-guiding grooves 10. These grooves are connected with the vertical end grooves or seats 11 by means of the slanting or inclined grooves 24. The grooves are symmetrically arranged, so that the lugs 22 of the barrel will move in the same and motion in a longitudinal direction of either the barrel or the breech-block will move the said barrel. The breech-block is guided by means of its lugs 12, which engage in the horizontal grooves 13 of the interior of the stock, Fig. 7, and the lugs 22 of the barrel 21 are provided with slanting or inclined sides 23, Fig. 5, to enable them to properly turn into and out of the curved grooves 24 11. The front end of the barrel is provided with inclined lugs 20 and is guided in the forward locking-cylinder 15, the construction of which will be clearly seen from Fig. 4. The locking-cylinder contains two annular grooves 17 and 18, which are connected by inclined grooves 19 at either side. The groove 18 is merely provided to enable the slanting grooves 19 to be properly cut; but the rear groove 17 serves to retain and lock the lugs 20 of the barrel after the shot has been fired and the recoil has taken place. By this means the barrel will be locked in its rearward position until the breech-block has been properly locked to discharge the next cartridge, whereupon the barrel will be unlocked and may move forward into the proper firing position. The operation of this part of the invention takes place in the following manner: Immediately the weapon has been discharged the barrel recoils, and since the lugs 20 are lying in the twisted or inclined grooves 19 at the forward end of the same the barrel in recoiling will be twisted or turned until the lugs 20 reach the rear annular groove 17. This movement turns the lugs 22 out of the ends 11 of the compound grooves 11 24, and further rearward motion of the barrel 21 is prevented by the groove 17. The breech-block, however, continues its rearward movement, and in so doing it turns the barrel 21 farther, owing to the passage of the inclined slots 24 over the lugs 22. This further turn of the barrel locks the lugs 20 in the rear slot 17, as indicated

a Fig. 1. When the breech-block returns, the slots 11 24 first turn the barrel so as to bring the lugs 20 into position at the ends of the grooves 19 under the action of the spring 15, and the movement of the breech-block turns the barrel into the front ends of these grooves, so that all the parts are in position for the next discharge.

The second part of the invention, which relates to improvements in the magazine and cartridge-feed device, as also to their particular arrangement, will now be described.

The magazine 26, into which the frame of cartridges is placed, is pivotally supported at 27, so as to swing laterally in the pistol-frame 1. Thus when the last cartridge has been discharged and the magazine is to be reloaded the magazine is swung around on its pivots 27 into the position shown in dotted lines in Fig. 3. The empty cartridge-frame is then pushed out at the bottom by the filled frame being inserted at the top. The bottom is closed by the bow-shaped part of the pistol-frame 1 when the magazine is returned to its normal position recharged. A snap-spring (not shown) may be employed to retain the magazine in its closed position. This arrangement has the advantage that the bottom of the magazine is always closed when the pistol is in use, so that no dust can get into it. The cartridge feed or lifting plate 29 is guided by means of its guide-cheeks 40 sliding in grooves 41 at the rear wall of the magazine, and as soon as the last cartridge has been discharged the raised end of the guide-cheeks 40, Fig. 2, projects into the path of movement of the breech-block in front of the part 43, Fig. 6^a, and prevents its return. As soon, however, as the magazine is swung out to receive a new cartridge-frame the projecting end of the guide-cheeks 40 would be moved away from the breech-block and allow the same to return, and in order to prevent this taking place the magazine 26, Fig. 3, is provided with a laterally-extending lug 36, the end of which remains in the path of movement of the breech-block when the magazine is swung out, as indicated in dotted lines in Fig. 3. A spring 32 may be inserted between the pistol-frame walls and the side of the magazine, said spring serving to press the magazine outward as soon as its retaining-catch is released. If it is desired to use the pistol in the ordinary manner and to load through the cartridge-opening 31, Fig. 1, with cartridges supported in the ordinary cartridge-frame having a back plate, the cartridge-lifter 29 and the bottom plate 30 of the magazine are turned about as shown in Fig. 9, so that the lifter-plate 29 will slide on the front wall of the magazine. The lifter-plate in both cases is raised by a spring after the manner of a diminutive buffer-spring, as indicated in dotted lines in Fig. 2, said spring being mounted between the oppositely-extending projecting pins 49 and 50. When the parts are turned about as illustrated in

Fig. 9, the lifter-plate 29 would not reach far enough back when the last cartridge has been fired to keep the breech-block properly back, 70 and in order to properly retain the breech-block at this moment the same is provided at its forward part with two notches 42, Fig. 6^a, into which the cheeks 40 spring when the last cartridge has been fired, and thus the breech- 75 block is retained open for the next charge. If, however, another frame of cartridges is inserted, the lifter-plate will be depressed, and as soon as the top cartridge has been pressed home by the thumb of the operator 80 the breech-block having no further hindrance would spring forward and injure the thumb, and in order to prevent this from taking place a spring-pressed lever 37, Fig. 6^a, is pivoted in the housing 1 to swing laterally through 85 the housing or frame wall, and when pressed inwardly by the thumb it will project into the path of movement of the breech and its shoulder will arrest the breech-block by contacting with one of the lugs 12 or with any 90 other suitable point of the breech-block, it being immaterial where the said thumb-lever is mounted as long as it is in some convenient part. Thus when the weapon is being loaded with the ordinary cartridge-frame this lever 95 37 should be pressed in against the action of its spring 38, and when the cartridges have been pressed home and the thumb removed from the breech it may be released and will then release the breech-block, which will 100 force the top cartridge into the barrel in the well-known manner. The sides of the magazine may be covered with cheek-pieces 44, Figs. 8 and 8^a, and the magazine will thus serve 105 as the handle of the weapon. The swinging movement of the magazine on its pivot is limited by the projection 33, which moves in a groove 34, Fig. 7, the end of the said groove serving to limit the swing of the magazine. In this class of pistol the firing-pin is retained 110 from moving forward when the breech-block is advanced by means of a spring 6, Fig. 2. This spring must necessarily be light, since its pressure has to be overcome by the blow of the hammer. Thus the danger that the 115 firing-pin might spring forward by the impetus of the forward movement of the breech-block and discharge the cartridge is still present. In order to obviate this disadvantage, the bolt 46, which, with its spring 47, serves 120 to operate the hammer 45, is prolonged upwardly and extends into a longitudinal slot of the firing-pin. This slot is provided with a shoulder 48, and as the breech-block flies forward the end of the bolt 46 meets this 125 shoulder 48 and effectually prevents the gun from being discharged. When the hammer is operated by the trigger mechanism, the bolt 46 is released, and the spring 47 forces the same downward to operate the hammer. This 130 brings the upper end of bolt 46 out of the path of movement of the shoulder 48, and the firing-pin is free to discharge the cartridge. In the present case a device is also provided

for securing the hammer against accidental movement. As previously mentioned, the hammer is operated by the pressure of the bolt 46, and the hammer is held cocked by the bar 53, which extends under the heel of the hammer and prevents the action of the bolt 46. The forward end of this bar is hollow, and a spring 51 is located therein, the forward end of which rests against the upwardly-turned arm of a pivoted lever 52, the lower arm of which is provided with a shoulder adapted to abut against a lug 52^a, formed on the bar 53, and prevent the forward movement of the latter until the said shoulder has been removed from the path of movement of the lug. The rear end of the lever-arm 52 engages a recess in the fore end of the trigger 54, and when the trigger is pulled the lower arm of lever 52 will be moved down, thus bringing the shoulder out of the path of movement of the lug 52^a of the bar 53. A further movement of the trigger in the same direction brings the spring-pressed latch 55, carried by the trigger, into contact with the opposite side of the lug 52^a and moves the bar 53 forward, thus releasing the hammer to discharge the pistol. At the same moment the latch 55 leaves the lug 52^a and allows the bar to fall back under the influence of its spring 51, so that the said bar is in its initial position again before the hammer has really been fired, and this bar will be pushed back again by the forward movement of the heel of the hammer when the latter is thrown back by the recoil of the barrel. At each recoil the movement of the parts will reload the pistol and recock the hammer; but if the hammer has been released it cannot be recocked by hand until the trigger has been pulled back a certain distance, because until the shoulder of the lever 52 has been withdrawn from in front of the lug 52^a the rod 53 cannot be pushed forward by the butt of the hammer to enable the latter to be passed back to the cocked position.

Another advantage of the spring-pressed bolt 46 being prolonged upwardly, as previously described, consists in the fact that the same may serve as an ejector to push the cartridge-case out.

We claim as our invention—

1. In an automatic firearm having a movable barrel and breech-block the combination of a forward and rearward pair of locking-lugs on said barrel and means for imparting to the said barrel a combined rotary and longitudinal movement and an independent rotary movement so as to lock the barrel either to the breech-block or to the pistol-frame substantially as described.

2. In an automatic firearm, the combination of a sliding and rotary barrel and a sliding, non-rotary breech-block, having a spring to actuate the same forwardly after the recoil, a stationary locking-cylinder at the forward end of the pistol-frame and lugs on the forward barrel end to engage therewith, a pair

of rear lugs on the said barrel and grooves in the breech-block having longitudinal extensions and spirally-shaped rear ends in which said rear lugs engage and means in connection with the forward locking-cylinder to partially turn the barrel at the commencement of the recoil movement and then to arrest the rearward progress of the barrel, whereupon the motion further rearwardly of the breech-block imparts by means of the said spiral grooves a rotary movement to the barrel to lock it in the rearward position substantially as described.

3. In an automatic firearm the combination of a longitudinally-movable barrel and a longitudinally-movable breech-block having a forward extension to partially inclose said barrel, a stationary locking-cylinder at the forward end of the barrel and means in connection therewith to impart to the barrel at the commencement of the recoil a combined longitudinal and rotary movement, and then to stop the longitudinal movement, and means in connection with the barrel and breech-block to subsequently impart rotary motion only to the barrel by the further movement of the breech-block backward, substantially as described.

4. In an automatic firearm having means for imparting a combined rotary and longitudinal motion to the barrel and a subsequent rotary motion only for the purpose specified the combination of a magazine mounted below the breech-block and pivots to support said magazine within a bow-shaped part of the pistol-frame so as to allow the same to be swung out of the pistol-frame laterally, said bow-shaped frame serving to close the lower end of the magazine when the same is in normal position, the said end being open for the discharge of the magazine-case when the magazine is swung aside, substantially as described.

5. In an automatic firearm having means for imparting to the barrel a combined rotary and longitudinal movement at the commencement of the recoil and a subsequent rotary locking movement as and for the purpose specified, the combination of a magazine and means for enabling the same to be swung laterally out of the pistol-frame, a laterally-arranged lug on the said magazine to move into the path of movement of the breech-block and prevent the same from moving forward when the magazine is swung out in the manner and for the purpose substantially as described.

6. In combination, the breech-bolt having a shoulder 48, a hammer and a spring-pressed bolt 46 engaging the hammer, said bolt being raised into the path of the shoulder 48 when the hammer and breech-bolt are retracted, substantially as described.

7. In an automatic firearm of the class specified the combination of a bar 53 to arrest, with its rear end the hammer in its cocked position and having its forward end in connection with the trigger mechanism, said bar

being located laterally of the magazine and means for moving the same longitudinally to release the hammer by the trigger movement in the manner and for the purpose substantially as described.

8. In an automatic firearm of the class specified the combination of a hammer and hammer-retaining bar 53, a stop at the lower forward end of said bar, a spring to normally press said bar toward the hammer, an angle-lever 52 pivotally mounted with its upper arm across the front end of said bar and a shoulder on its lower arm to extend into the path of motion of the said bar-stop and means

in connection with the trigger for withdrawing said shoulder from the path of movement of the stop immediately the trigger is actuated and before the hammer is released and for returning the shoulder in front of the bar after the hammer has been actuated substantially as described.

In witness whereof we have hereunto set our hands in presence of two witnesses.

GEORGES ROTH.

CHARLES KRNKA.

Witnesses:

ALVESTO S. HOGUE,

AUGUST FUGGER.