

**FIREARM FOR HAND AND AUTOMATIC LOADING.**

APPLICATION FILED NOV. 5, 1907.

Patented Mar. 22, 1910.

2 SHEETS—SHEET 1.

**952,896.**

*Fig. 1.*

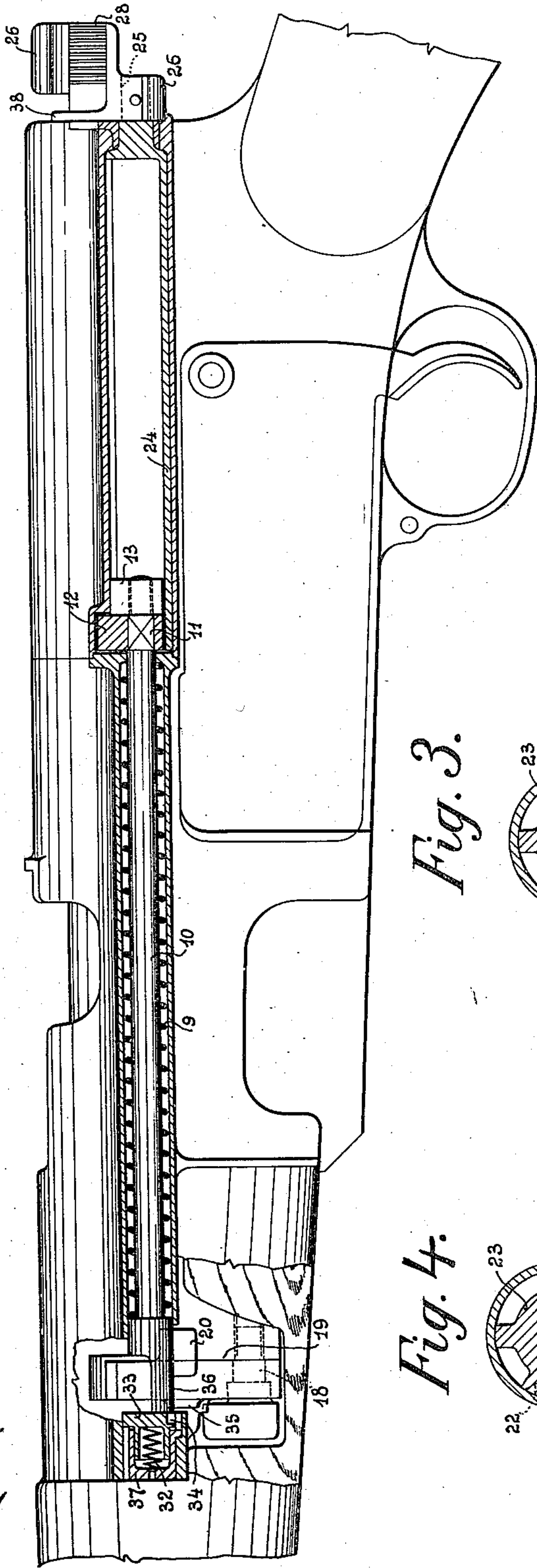


Fig. 3.

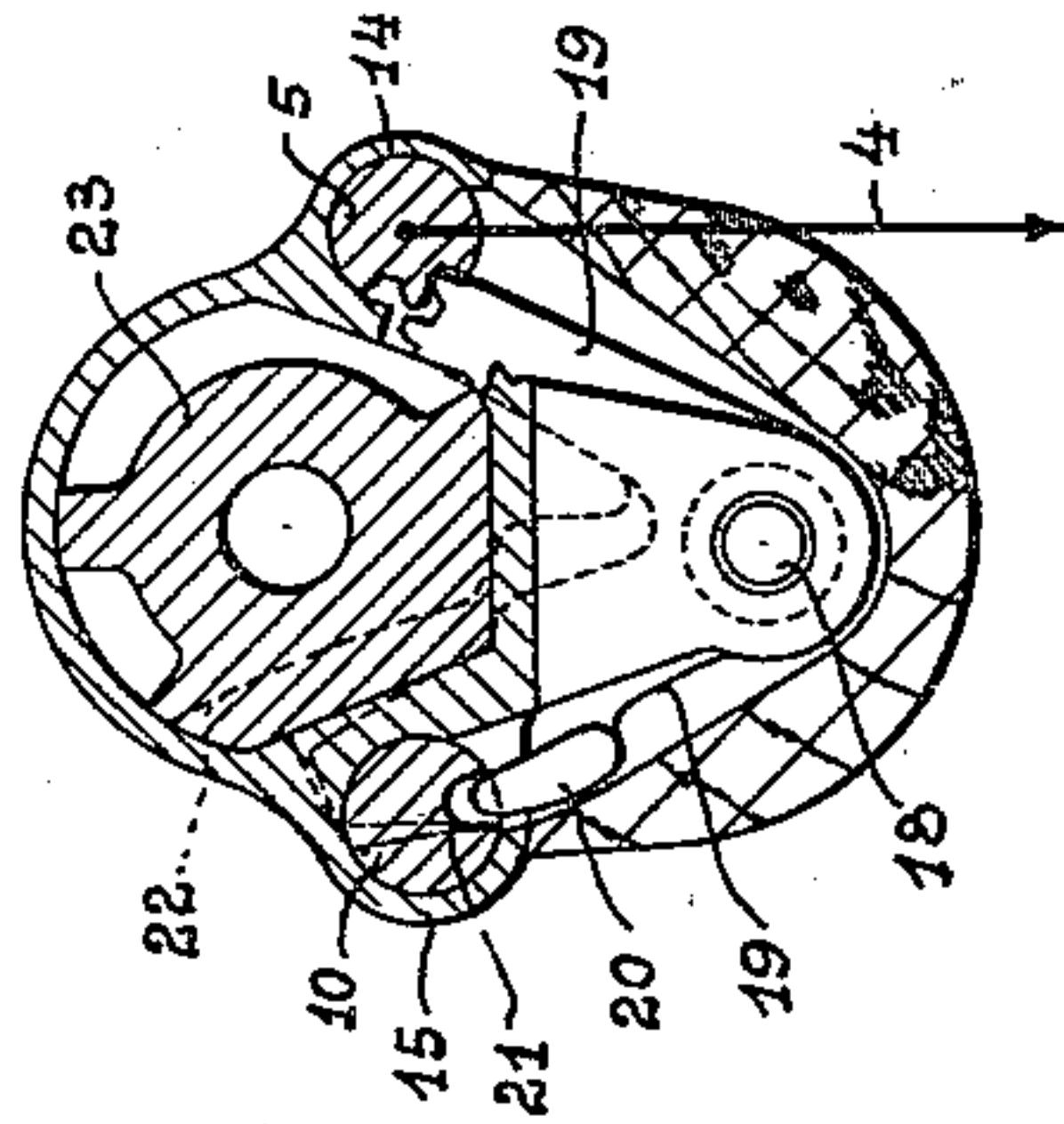
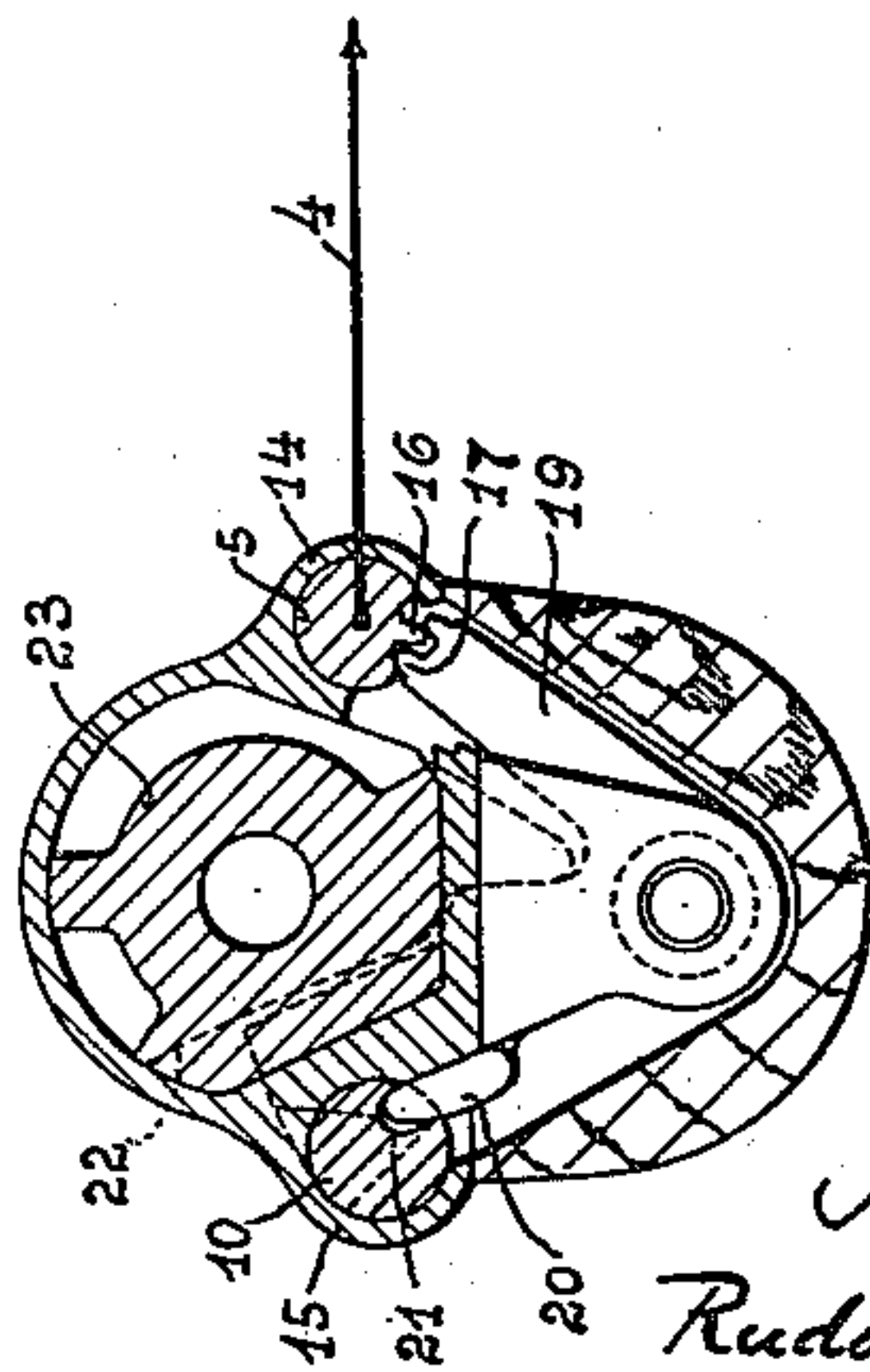


Fig. 4.



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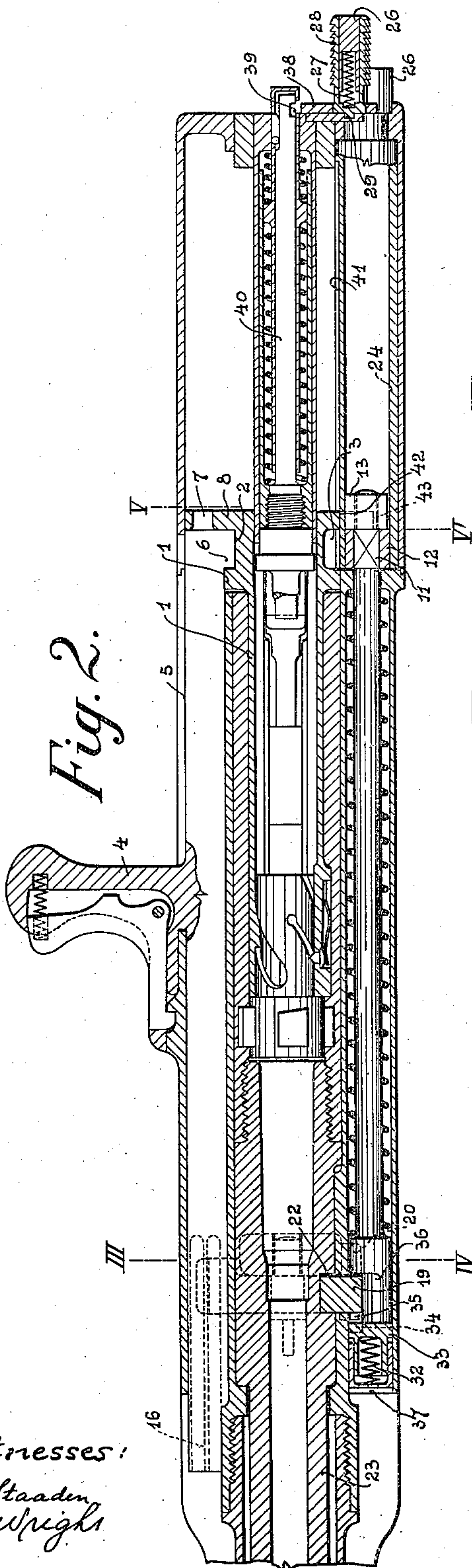


Fig. 2.

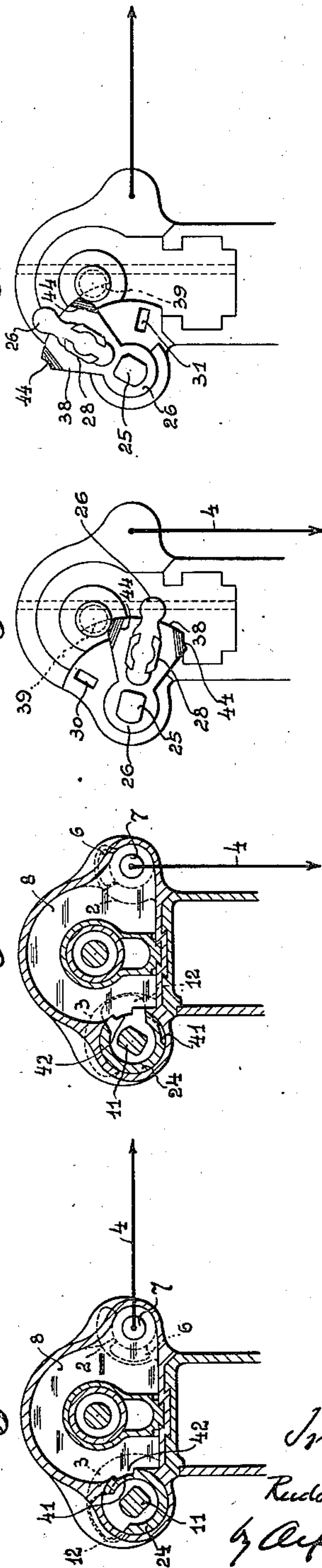
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Fig. 7.

Fig. 8.

Fig. 6.

Fig. 5.



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# UNITED STATES PATENT OFFICE.

RUDOLF FROMMER, OF BUDAPEST, AUSTRIA-HUNGARY.

FIREARM FOR HAND AND AUTOMATIC LOADING.

952,896.

Specification of Letters Patent. Patented Mar. 22, 1910.

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*To all whom it may concern:*

Be it known that I, RUDOLF FROMMER, manager, subject of the King of Hungary, residing at Budapest, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Firearms for Hand and Automatic Loading, of which the following is a specification.

This invention relates to a firearm which can be converted by a single handle from a hand loader into an automatic loader and vice versa.

If the weapon is arranged as a hand loader, then the closing spring of the breech-bolt and the barrel spring are put out of action, and the barrel adjusting lever and the handle engaged. The handle is brought into a position in which it is easily handled when the weapon is converted into an automatic loader, the breech-bolt and barrel spring are engaged and the barrel adjusting lever and the handle put out of engagement; the latter is also turned aside in the vertical position in which it does not project out of the weapon. These motions are effected completely automatically and with reliable certainty by the turning of a handle. The automatic engagement and disengagement of the handle on the alteration of the weapon is of especial importance, because whereas a handle projecting out of the weapon is essentially necessary for a hand loader, it is on the other hand required in an automatic firearm that it shall have projecting out of the weapon no portion of the mechanism which moves during the automatic action, because the user may be injured by the projecting part which is moving to and fro.

In the present invention the conversion from the hand loader to the automatic loader and vice versa takes place with the greatest certainty, avoiding any springs and quite compulsorily, and safety devices are provided which prevent the respective conversion from only taking place partially; that is to say safety devices are provided to insure that the specially desired conversion is effected completely, whereby injuries and damage to the weapon are avoided. Further the respective condition of the weapon, that is whether it is adjusted for hand loading or automatic loading can be immediately and easily recognized in a manner excluding any doubt by means of the position of the handle. It is moreover of very especial importance that the respective conversion can be effected by

means of a short, easy and quick hand action and one moreover which can be conveniently carried out by the user in any position. Moreover arrangements are made by means of which the conversion cannot take place without the intention of the user, that is the arrangement cannot be altered by accident and the conversion only operates in a certain position of the closing parts, that is only when the breech-bolt is completely closed. The present firearm is moreover provided with a device which in combination with the converting device insures that the weapon can only be discharged after a completely operated conversion. It is especially to be noticed in connection with this firearm that it is so constructed that all parts are completely closed, and with the exception of the cartridge opening which is exposed on the actuation, the weapon is completely protected in every direction against penetration of dust and impurities. The invention can of course be applied to all kinds of firearms. As an example it is illustrated in the accompanying drawings applied to a weapon with sliding barrel.

In these drawings, Figure 1 shows a side elevation and partial section. Fig. 2 is a central horizontal section. Figs. 3 and 4 show each a section on the line III—IV of Fig. 2 in two different positions. Figs. 5 and 6 show each a section on the line V—VI of Fig. 2 in two different positions. Figs. 7 and 8 show each a rear view of the weapon in two different positions.

The breech bolt 1 possesses at its rear part two cavities 2, 3 (Figs. 2, 5 and 6). The handle 4 is connected with a handle rod 5 displaceable in the direction of the barrel, which rod is provided at its rear end with a projection 6; this projection can be oscillated in the cavity 2 of the breech-bolt (Figs. 2 and 5) and can be turned out of the same (Fig. 6). Obviously the cavity might also be formed in the rod and a tooth arranged upon the breech-bolt to come into engagement with this cavity. The rod 5 is provided at its rear end with a bolt 7, which is contained in a boring of the rear wall 8 of the breech-bolt. The bar 10 operated by the closing spring 9 is provided at its rear end with a square end 11, upon which is placed a segment 12 secured by means of a nut 13. The segment 12 can be turned by corresponding turning of the bar 10 into the cavity 3 of the breech-bolt (Fig. 6) or out



of the same as shown in Figs. 2 and 5. In this case also the projecting part might be placed on the breech-bolt and the corresponding cavity formed in the bar. The rod 5 and the bar 10 fit revolvably and movably in respective borings 14 and 15 arranged parallel with the barrel of the weapon.

At the front part of the handle rod 5 are provided teeth 16 (Figs. 2, 3 and 4) with which the teeth 17 of a bell-crank 19 revolving on a pivot 18 can engage; said bell-crank causes a simultaneous rotation of the handle rod 5 and the drawbar 10. For this purpose the bell-crank 19 is provided with a tooth 20 upon the side lying opposite the teeth 17, which tooth engages in a cavity 21 of the bar 10. Through this connection the handle rod and the drawbar are so coupled that whenever the one is turned the other will also be turned in the corresponding direction.

Obviously in place of the above described connection any other mechanism can be employed which so connects the bars 5 and 10 together, that on the turning of the one bar the other is correspondingly revolved. If the handle 4 be turned down so that it rests against the weapon, as shown in Figs. 3, 6 and 8 in which the handle is only indicated by an arrow, then the projection 6 of the handle rod will be turned out of the cavity 2 of the breech-bolt and the latter will be out of engagement with the handle rod and with the handle 4. The breech-bolt can therefore move to and fro in the weapon without moving with it the handle 4 which remains in its position of rest. Through the above described downward motion of the handle there is nevertheless also the bell-crank 19 moved by means of the teeth 16, 17, whereby the tooth 20 engaging the cavity 21 also turns the bar 10 and so that the segment 12 arranged on the square end of the drawbar turns into the cavity 3 of the breech-bolt. Consequently on the release of the projection 6 the handle rod is brought out of the cavity 2 of the breech-bolt and at the same time the segment 12 of the drawbar is brought into engagement with the breech-bolt. On the repetition of the motion in the opposite direction the actuation of the above parts takes place likewise in the opposite direction. The bell-crank 19 engages when in the position shown in Fig. 3 in a cavity 22 of the barrel 23 (Fig. 2) whereby the barrel is held fast. On the shifting of the handle into the position shown in Fig. 3, the bell-crank 19 is turned out of the cavity of the barrel and the barrel is released. This arrangement for the holding fast and liberating of the barrel is obviously only necessary in weapons with sliding barrel. If the invention is applied to weapons with a fixed barrel, then this device becomes unnecessary.

As may be seen from the foregoing, in the position shown in Figs. 3 and 5 the handle rod is connected with the breech-bolt (the projection 6 engaging in the cavity 2) the drawbar with the closing spring is disconnected from the breech-bolt (segment 12 being out of engagement with the cavity 3) and the barrel is held fast (lever 19 engaging in the cavity 22). In this case the handle 4 is in the horizontal position projecting out of the barrel casing, and the weapon can then be used as a hand loader. In the position shown in Figs. 3 and 6 on the other hand the handle rod is disconnected from the breech-bolt, the drawbar with closing spring is connected with the breech-bolt and the barrel is released, while the handle is turned down. The weapon is in this position a self-loader. The character of the weapon can at once be recognized by the position of the handle 4.

The reconversion of the weapon is effected equally simply either by turning the handle rod or the drawbar about their longitudinal axes. In order to be able to effect this turning not by means of the handle 4, but as easily and conveniently as possible with a single grip, there is provided a turning piece 24 in the prolongation of the drawbar 10 (Figs. 1, 2, 5 and 6) which by means of a square end 25 (Figs. 7 and 8) is firmly connected with the part 26. On the part 26 there is movable under action of the spring 27 a locking piece 28, having a tooth 29; the latter is pressed into the recesses 30 or 31 of the barrel casing according to the position of the piece 26, whereby the piece 26 and the part 24 connected with it are held fast in their positions. The part 24 is also used as a key for operating the conversion system, because it engages the segment 12 arranged upon the square end 11 and also the safety nut 13, so that by turning the converter 24 by aid of the piece 26, the rod 10 is turned and consequently the whole conversion system is actuated. In order to be able freely to turn backward the drawbar 10 with segment 12 and nut 13 on the automatic operation of the weapon, the converter 24 is slotted longitudinally so that the segment 12 projects through this slot out of the piece 24 as shown in Figs. 5 and 6. For the purpose of converting the weapon it is consequently only necessary to raise the locking piece 28 against the action of the spring 27 out of its cavity, to revolve the piece 26 and to allow the locking piece to spring back into the other cavity. Through the locking piece 28 the position of the bar 26 is locked in both terminal positions and the same can only be altered by the user and in the manner indicated.

In self-loaders the breech-bolt remains open after using up the last cartridges. In this condition the drawbar 10 is placed in



the backward position and consequently out of engagement with the bell-crank 19, whereby the locking of the bar 5 would be removed. In order in this case also to secure a locking of the bar 5 there is placed in front of the bar 10 a locking sleeve 33 under the influence of the spring 32 and displaceable in the casing 37. This locking sleeve possesses a cavity 34. The piece 33 is pushed back when the bar is pushed forward by means of a projection 36 on the bar against the action of the spring 32. As soon, however, as the drawbar recedes, the part 33 is liberated and is again pushed out of its casing by the spring 32, so that the notch 34 engages with a projection 35 of the lever 19, whereby the lever and together with it the handle rod is held fast even when the drawbar is retracted. As soon as the drawbar again moves forward this hold is released by the excess of pressure of the spring 9 over the spring 32, and then again taken over by the drawbar or by the locking piece 28. The prolongation 36 of the bar 10 serves at the same time for the fixing of the lever 19 in the position as hand loader, because the inner edge of this projection rests against the lever (Figs. 2 and 3).

The part 26 is provided with a segment 38, which when the weapon is cocked engages with a groove 39 on the firing bolt 40. The groove 39 is so placed on the firing bolt that in the cocked position of the firing bolt it lies in the plane of the segment 38. The arched part of the segment is so fitted that it only projects out of the groove 39 when the piece 26 is in the terminal positions (Figs. 7 and 8). By this means the cocked firing bolt is held fast by the segment 38 until the piece 26 reaches one of its terminal positions, so that the firing bolt can only strike when the conversion either to a hand loader or an automatic loader has been completely effected, because otherwise the segment 38 remains in the groove 39 of the firing bolt and prevents it from striking. The segment 38 consequently forms a safety device so that the weapon can only then be discharged, when the conversion in either sense has been fully effected. The segment 38 has the further object to draw back the firing bolt a little during the conversion, in order to relieve the operating arrangement from the pressure of the cocked firing bolt spring and to give the drawbar free play. This safety mechanism is necessary in order to prevent an unintentional discharge under the following circumstances.

Assuming that the conversion was accidentally not fully completed, consequently the segment 38 being left standing in a position between its two end positions, and that by a second mistake the trigger was actuated, then of course the cartridge cannot be

discharged because the segment 38 is still in the slot of the firing bolt. The sear will nevertheless be brought out of the range of the firing bolt, and when the trigger is again released would not again arrive with certainty before the stop of the firing bolt, because the firing bolt is pressed forward a little by the pressure of its spring, so that the sear remains standing below the stop of the firing bolt without holding the bolt fast; the latter will be consequently retained only by means of the segment 38. If the weapon in this position be entirely converted, then the discharge will take place. In order to prevent this the segment 38 is so arranged that by the introduction thereof in the slot 39 the firing bolt is drawn back a little so that the sear is released from the pressure of the firing bolt and in the case of an action as above described can return with certainty after release of the trigger again to the fast holding position. For this purpose the segment is provided at both ends with sloping parts 44 so that the segment holds back a little the firing bolt through the wedge action of the slopes.

In order, as originally stated, that the conversion can only take place when the breech-bolt is fully closed, there is formed in the converter 24 a longitudinal groove 41, (Figs. 2, 5 and 6) in which a tooth 42 of the breech-bolt engages. Obviously the tooth might be upon the converter and the groove be formed on the breech-bolt. The longitudinal groove 41 is only interrupted by means of a cross groove 43 (Fig. 2) at the point where the tooth 42 fits when the breech-bolt is closed. Consequently only in this position can the converter 24 be turned for the purpose of converting the weapon, because then the tooth 42 can travel along the cross groove 43; in all other positions conversion is impossible because the converter cannot be revolved on account of the tooth 42 being held in the longitudinal groove 41. This relates of course to the convertibility of the weapon when it is used as a hand loader. When it is used for automatic loading there are only two possible positions for the breech-bolt, namely, it must be either entirely closed or in the case of an empty magazine entirely open. In the latter case the conversion is impossible because the drawbar 10 and its cavity are in their rearmost position and consequently out of engagement with the tooth 20 of the adjusting lever. If, however, the breech-bolt is entirely closed, the conversion as already stated can be effected without difficulty.

I claim—

1. A fire-arm for hand and automatic loading comprising in combination with the breech-bolt a handle and a closing spring both adapted to be alternately engaged with, and disengaged from the breech-bolt



at will, the arrangement being such that upon the engagement of the closing spring with the breech-bolt the disengagement of the handle with the breech-bolt is positively effected, and vice versa.

2. A fire-arm for hand and automatic loading, comprising in combination with the breech-bolt a handle and a closing spring, a movable rod carrying said handle, a movable bar connected with said closing spring, the said rod and bar both being adapted to be alternately engaged with, and disengaged from said breech-bolt at will.

3. A fire-arm for hand and automatic loading comprising in combination with a breech-bolt having two cavities a closing spring and a handle, a revoluble bar connected with said closing spring and provided with a projection adapted to enter one of said cavities in said breech-bolt and a revoluble rod carrying the handle and provided with a projection adapted to enter the other cavity in said breech-bolt, whereby the said movable bar and rod are alternately engaged with, and disengaged from the said breech-bolt at will.

4. A fire-arm for hand and automatic loading, comprising in combination with a breech-bolt a closing spring and a handle, a revoluble bar connected with the said closing spring, a revoluble rod, carrying said handle, the said bar and rod both being adapted to be alternately engaged with, and disengaged from the said breech-bolt at will and means connecting the said bar and rod in such a manner, that upon turning the one also the other is turned.

5. A fire arm for hand and automatic loading, comprising in combination with a breech bolt a closing spring and a handle, a movable bar connected with said closing spring, a movable rod carrying said handle, both the said bar and rod being adapted to be alternately engaged with, and disengaged from the breech-bolt at will, and a bell-crank both in engagement with the said bar and rod in such a manner that upon engaging the said bar with the said breech-bolt the disengagement of the said rod with the breech-bolt is effected, and vice versa.

6. A fire-arm for hand and automatic loading comprising in combination with a sliding barrel and breech-bolt a closing spring, and a handle, a revoluble member connected with said closing spring, a revoluble member carrying said handle, both said members being adapted to be alternately engaged with, and disengaged from said breech-bolt at will, a bell-crank operatively connecting said members so that upon the engagement of one of said members with the breech-bolt the other member will be disengaged therefrom, and means on said bell-crank adapted upon the turning of the said bell-crank in one direction to engage

the said barrel, thereby locking the same in its position, and to release the said barrel upon the turning of the said bell-crank in the other direction.

7. A fire arm for hand and automatic loading comprising in combination with a sliding barrel and breech-bolt a closing spring, a handle, a movable bar connected with said closing spring, a movable rod carrying said handle, a bell-crank operatively connected with both the said bar and rod, so that upon turning the bar also the rod will be turned, and vice versa, means on said crank-lever adapted to engage with the sliding barrel and lock the same in position, a locking member for the said crank-lever, and a projection on the said bar adapted to hold the said locking member out of engagement with the said bell-crank when the said bar is pushed forward and to release the said locking member to engage with the said bell-crank upon the return movement of the said bar.

8. A fire-arm for hand and automatic loading comprising in combination with a barrel and a breech-bolt a closing spring, and a handle, a movable bar connected with said closing spring, a movable rod carrying said handle, both the said bar and rod being adapted to be alternately engaged with, and disengaged from the said breech-bolt at will, means operatively connecting the said bar and rod to move one upon the movement of the other, and a converter adapted to be connected with the said bar at will for the purpose of turning the same in one or the other direction.

9. A fire-arm for hand and automatic loading comprising in combination with the barrel and breech-bolt a closing spring and a handle, a movable bar connected with said closing spring, and a movable rod carrying said handle, a means operatively connecting the said movable bar and rod, whereby one is turned upon the operation of the other, a projection on the said movable bar, and a converter having a longitudinal slot to receive said projection and adapted to be coupled with the said movable bar to turn the same in one or the other direction.

10. A fire-arm for hand and automatic loading comprising in combination with the barrel and breech-bolt, a closing spring, a handle, a movable bar connected with said closing spring, a movable rod, carrying said handle, means operatively connecting the said bar and rod and a converter adapted to be coupled with said movable bar and provided with a groove, a projection on said breech-bolt, adapted to engage the said groove, and a cross groove located at the point where the said projection fits when the breech bolt is closed, thus permitting the turning of the said converter only in this position of the said projection.



11. A fire-arm for hand and automatic loading comprising in combination with the barrel and the breech-bolt a closing spring and a handle, a movable bar connected with said closing spring, a movable rod carrying said handle, means operatively connecting the said bar and rod, means on said bar and said rod to effect their alternative engagement with and disengagement from the said breech-bolt, a converter adapted to be coupled with said movable bar and provided with a groove, a projection on said breech-bolt adapted to enter the said groove, a cross groove located at the point where the said projection fits when the said breech-bolt is closed, thus permitting the turning of the said converter only in this position of the said projection, a firing bolt, a thumb piece connected with said converter and having a segment adapted to enter a groove in the said firing bolt to hold it in its retracted position until the conversion of the fire-arm from a hand to an automatic loader is completed.

12. A fire-arm for hand and automatic loading comprising in combination with the barrel and the breech-bolt a closing spring and a handle, a movable bar connected with said closing spring and a movable rod carrying said handle, means for operatively connecting said movable bar and rod to effect their alternate engagement with and disengagement from the said breech-bolt, a converter adapted to be coupled with said movable bar, a firing bolt, a spring surrounding said firing bolt, a thumb piece on said converter provided with a segment adapted to enter a groove in the said firing bolt and of such a shape as to slightly draw back the said firing bolt upon entering the groove therein to release the said spring surrounding the said firing bolt.

In testimony whereof I affix my signature in presence of two witnesses.

RUDOLF FROMMER.

Witnesses:

SILSON FRUOFF,  
LESLIE LESLIE.