

J. L. McCULLOUGH.
MAGAZINE FIREARM.

No. 539,230.

Patented May 14, 1895.

FIG:1.

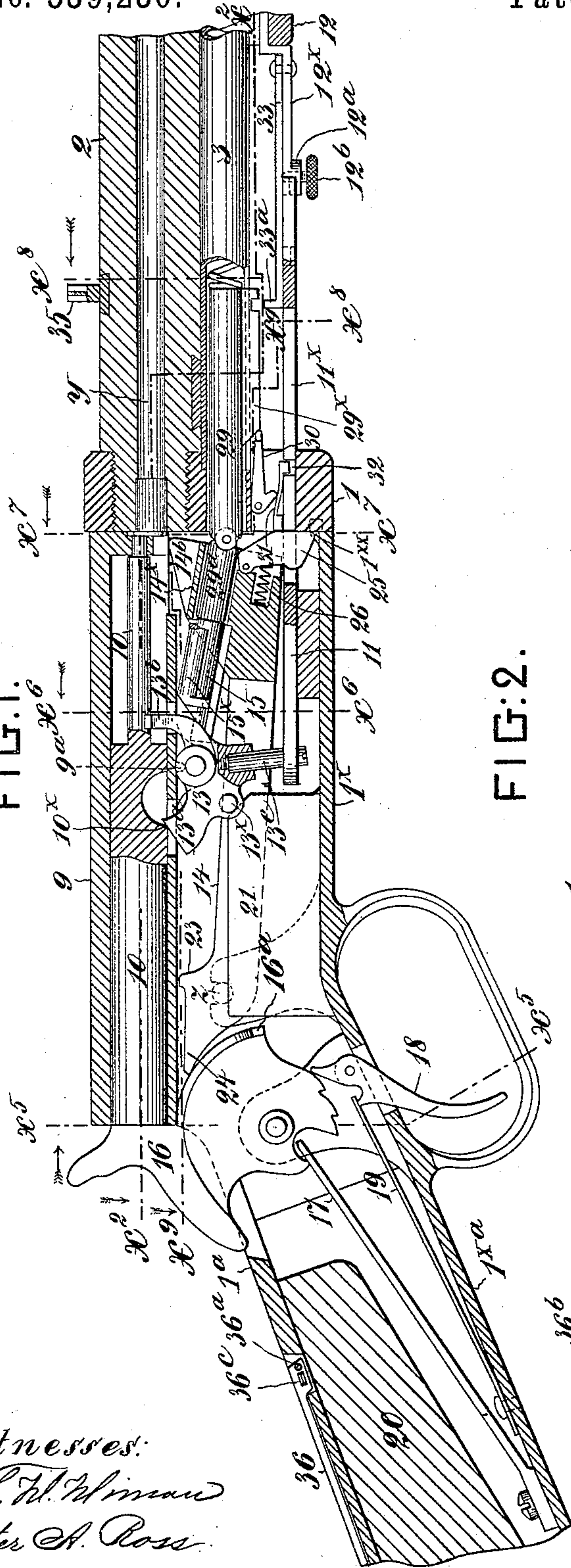
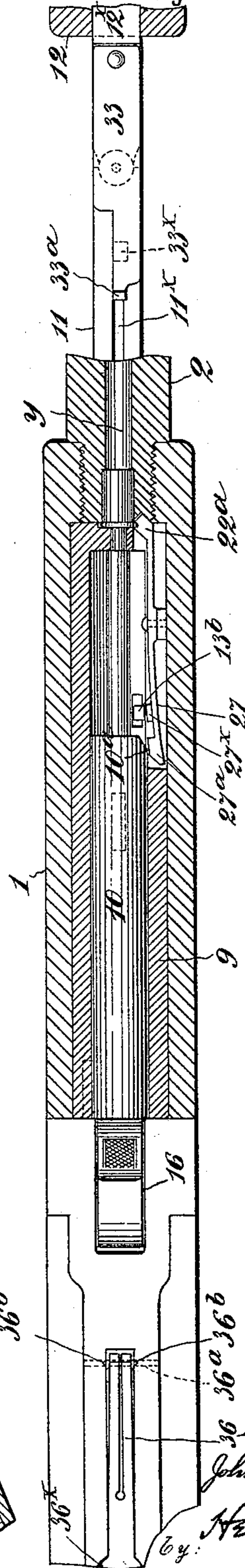


FIG:2.



Witnesses:
J. H. Wiman
Peter A. Ross.

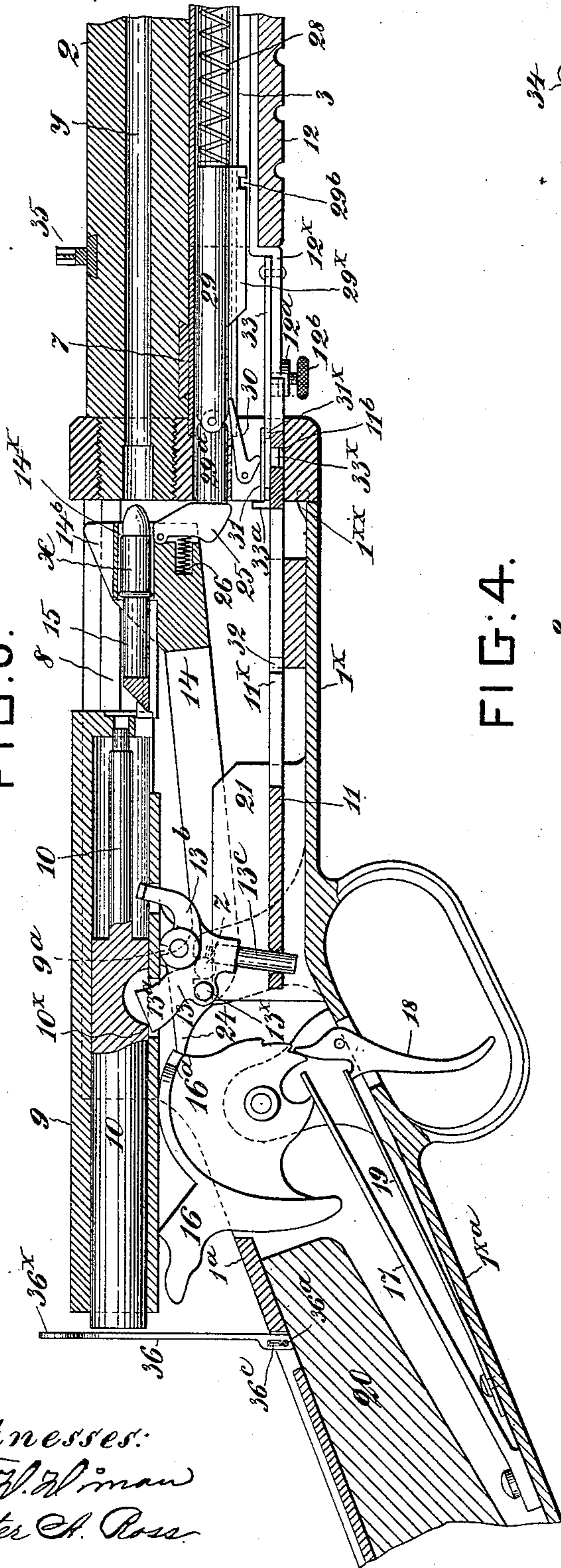
Inventor:
John L. McCullough
By: Henry Conrad
his Attorney

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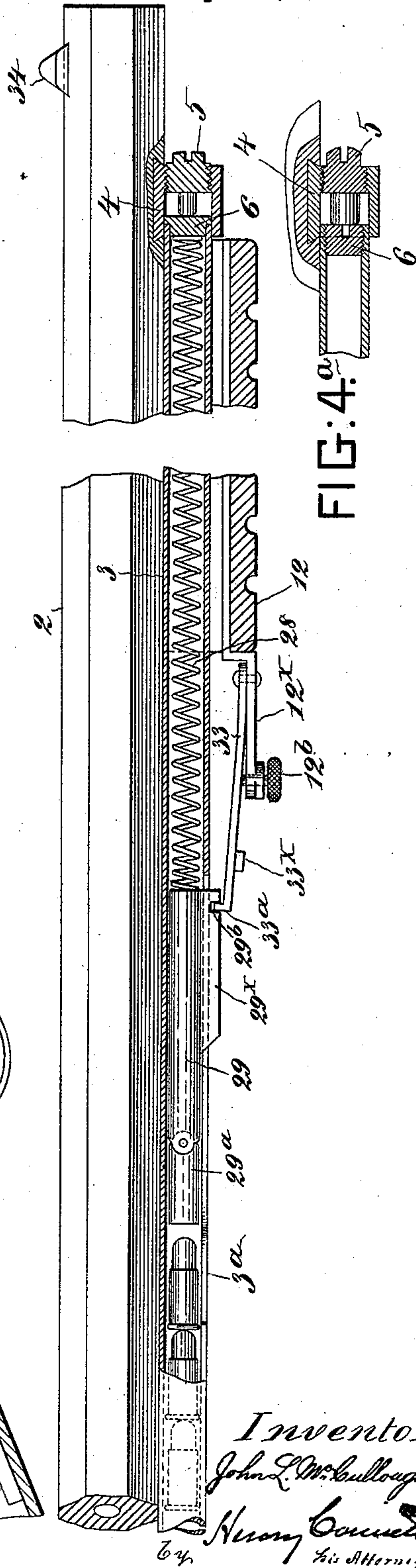
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FIG:3.



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FIG:4.



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(No Model.)

4 Sheets—Sheet 3.

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FIG:8.

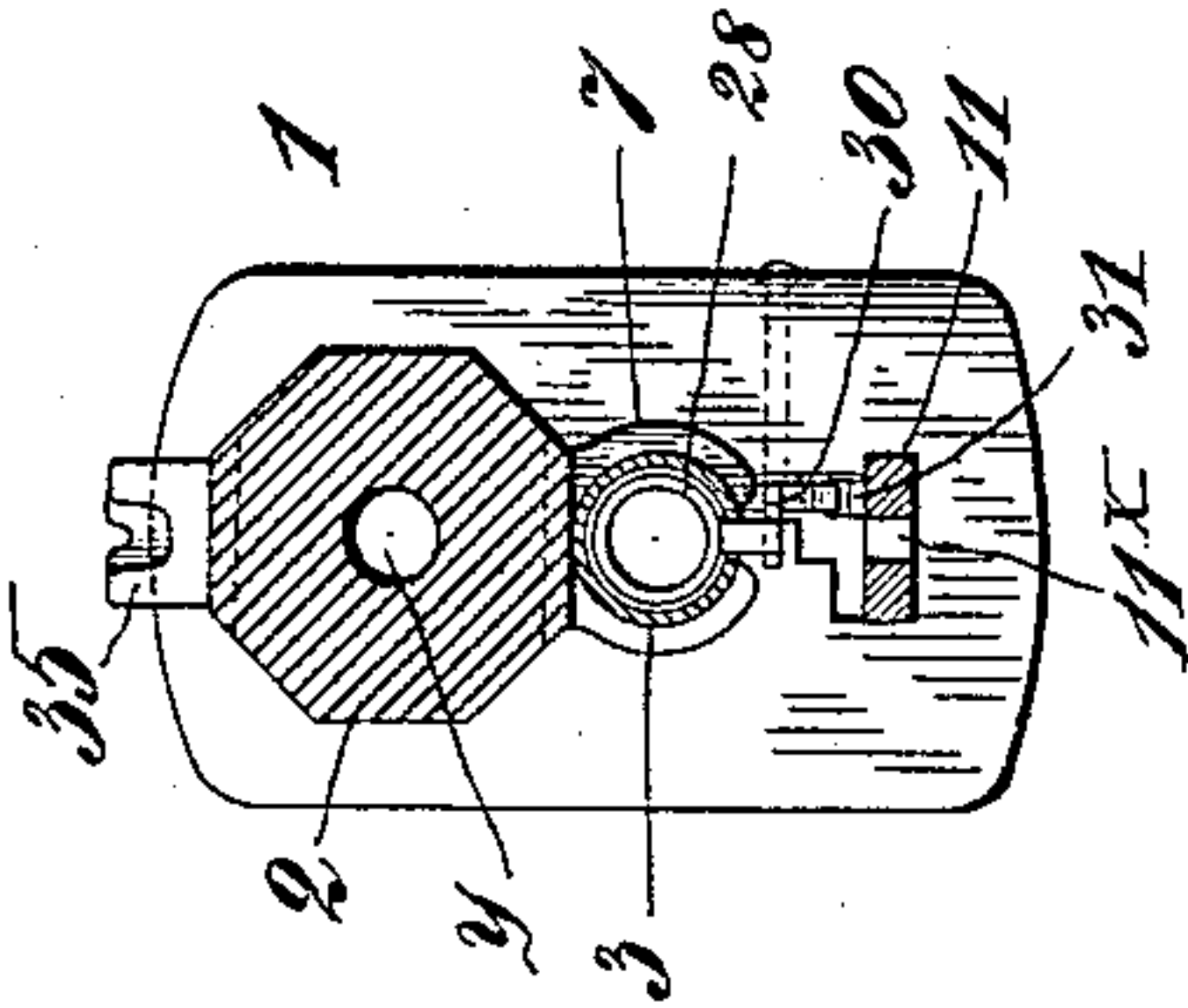


FIG:7.

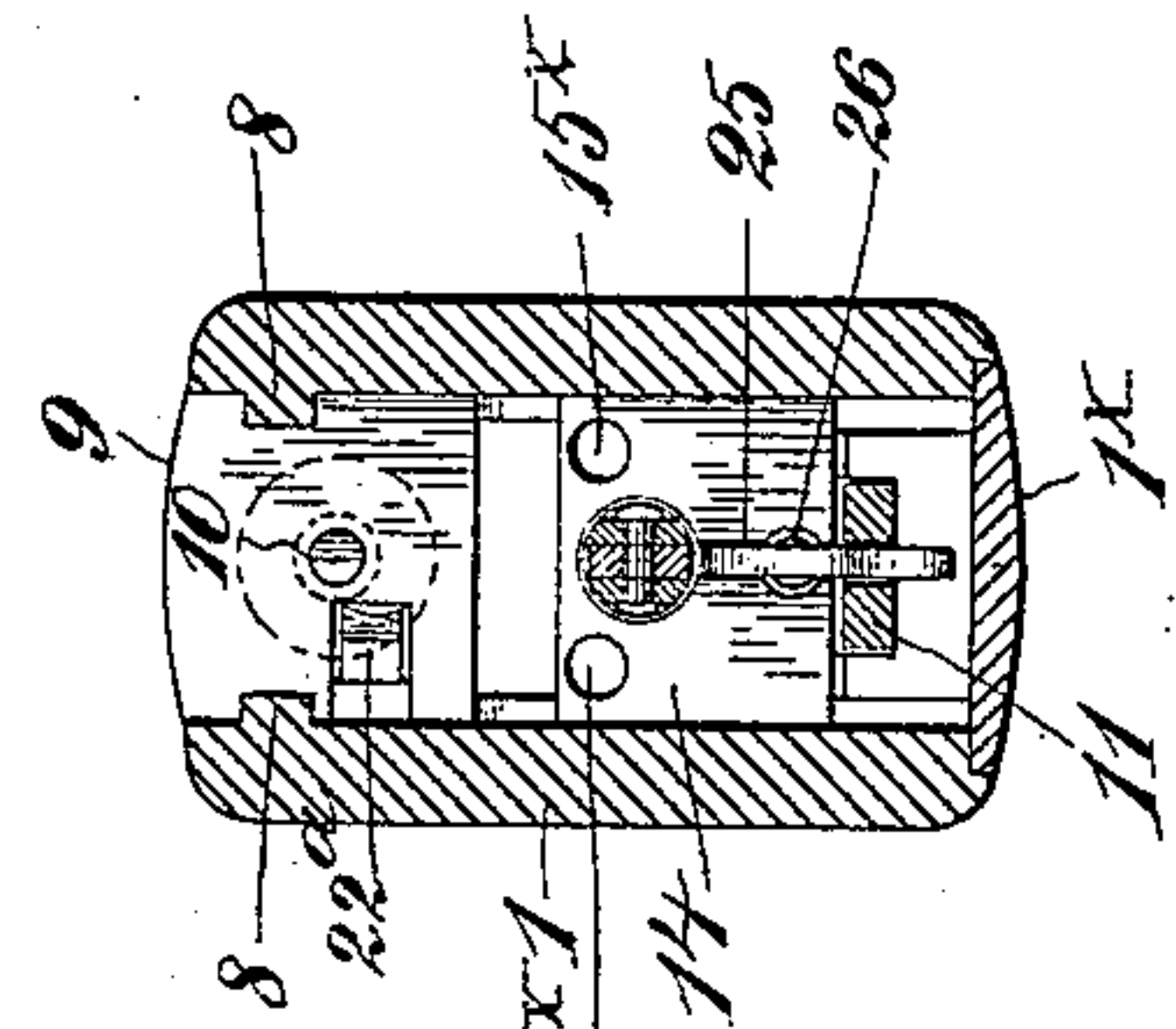


FIG:6.

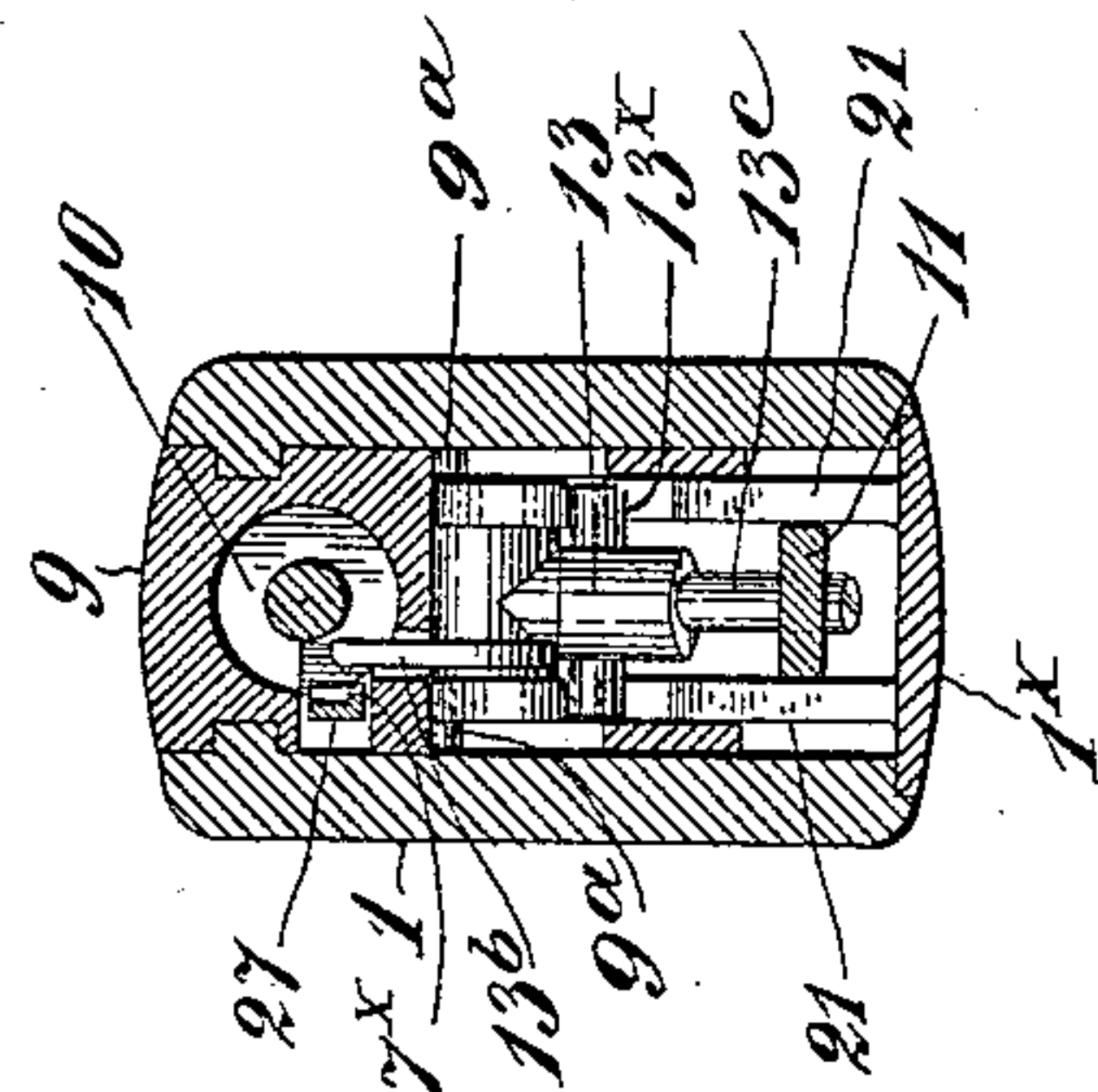


FIG:5.

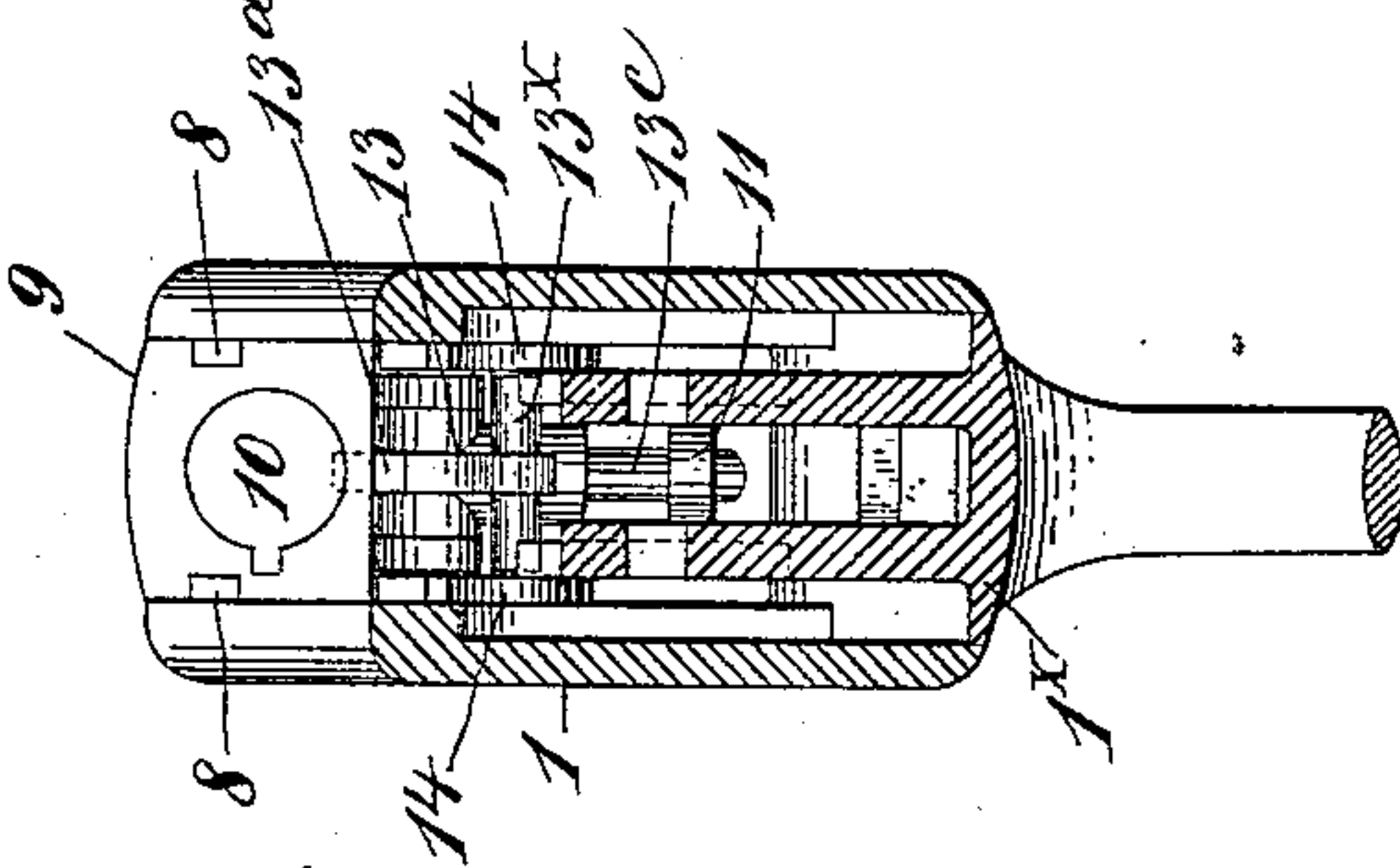
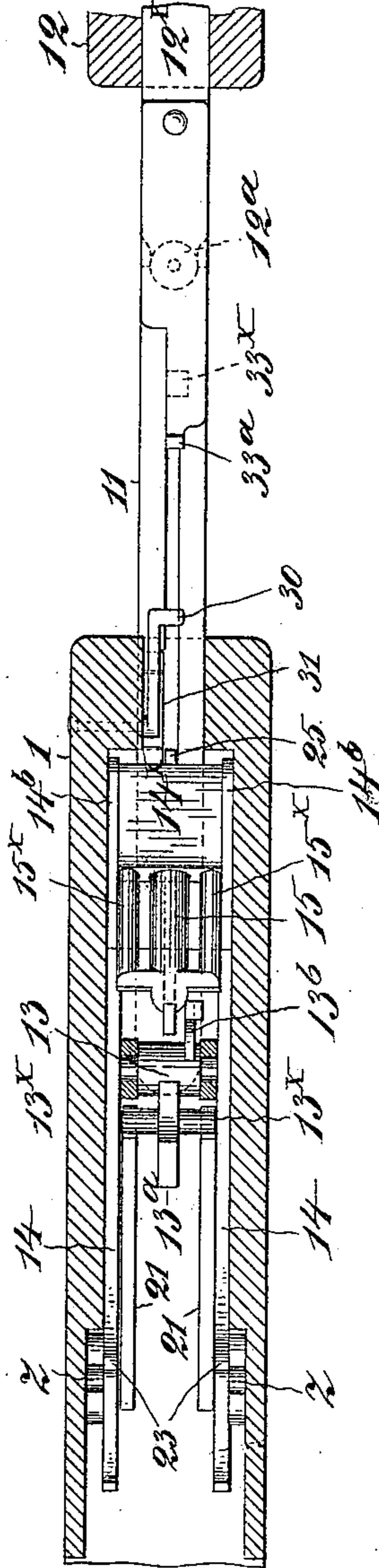


FIG:9.



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(No Model.)

4 Sheets—Sheet 4.

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FIG:10.

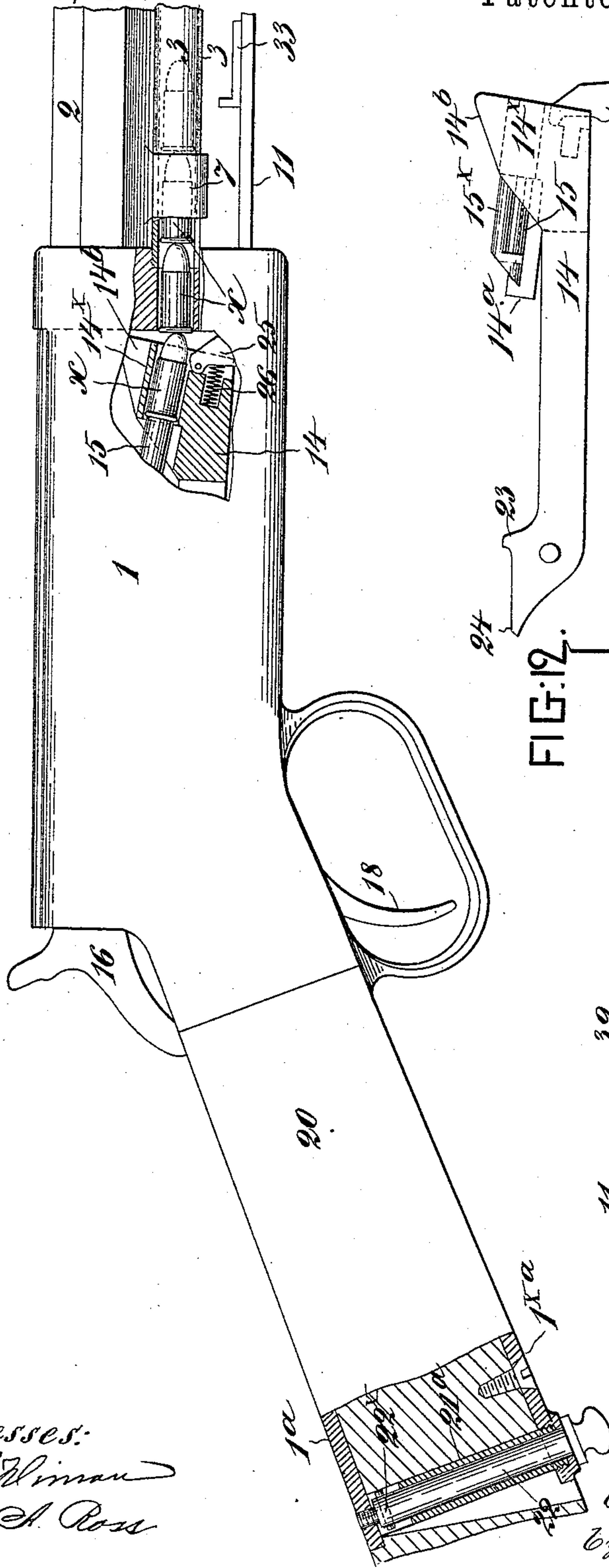


FIG:12.

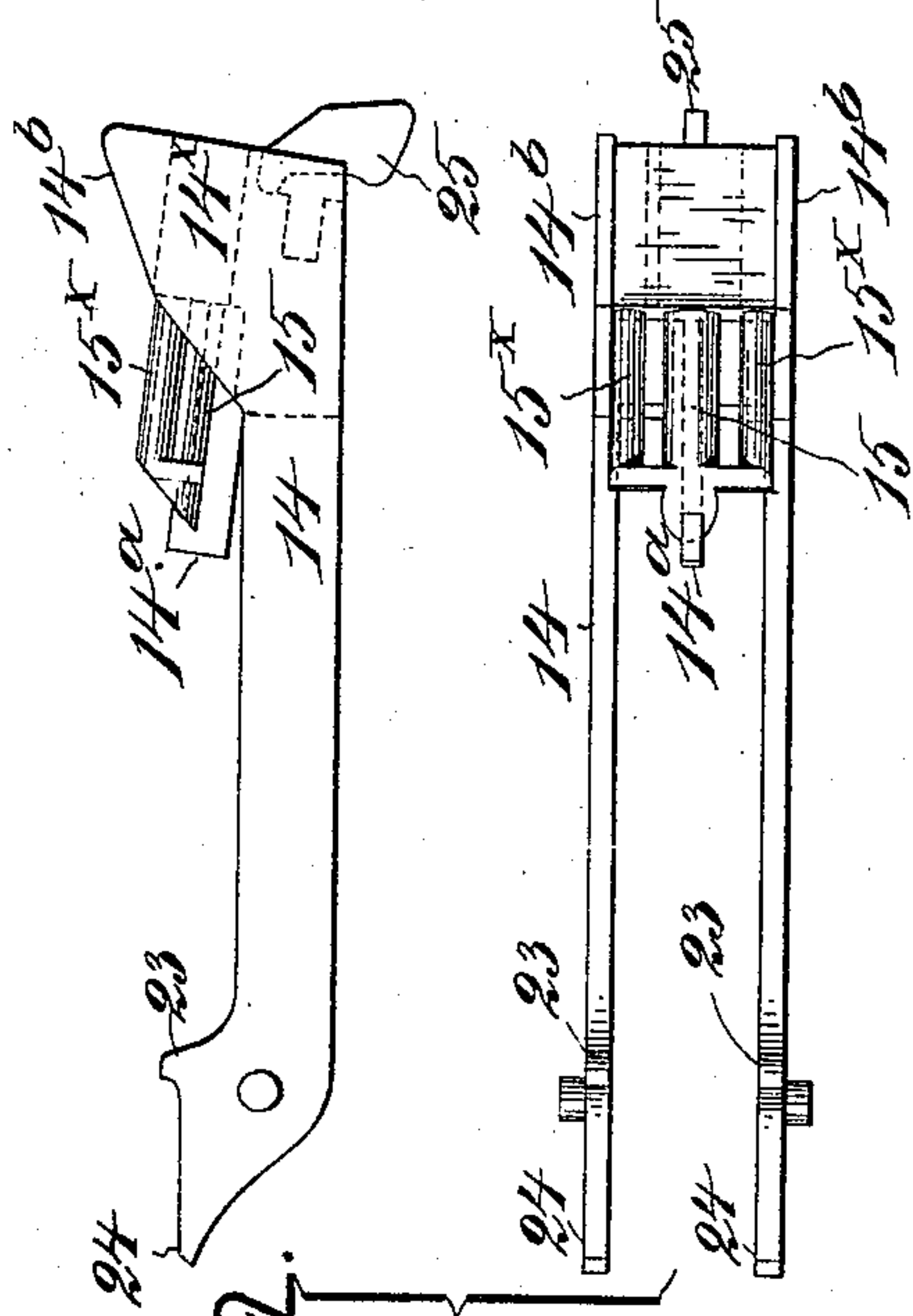
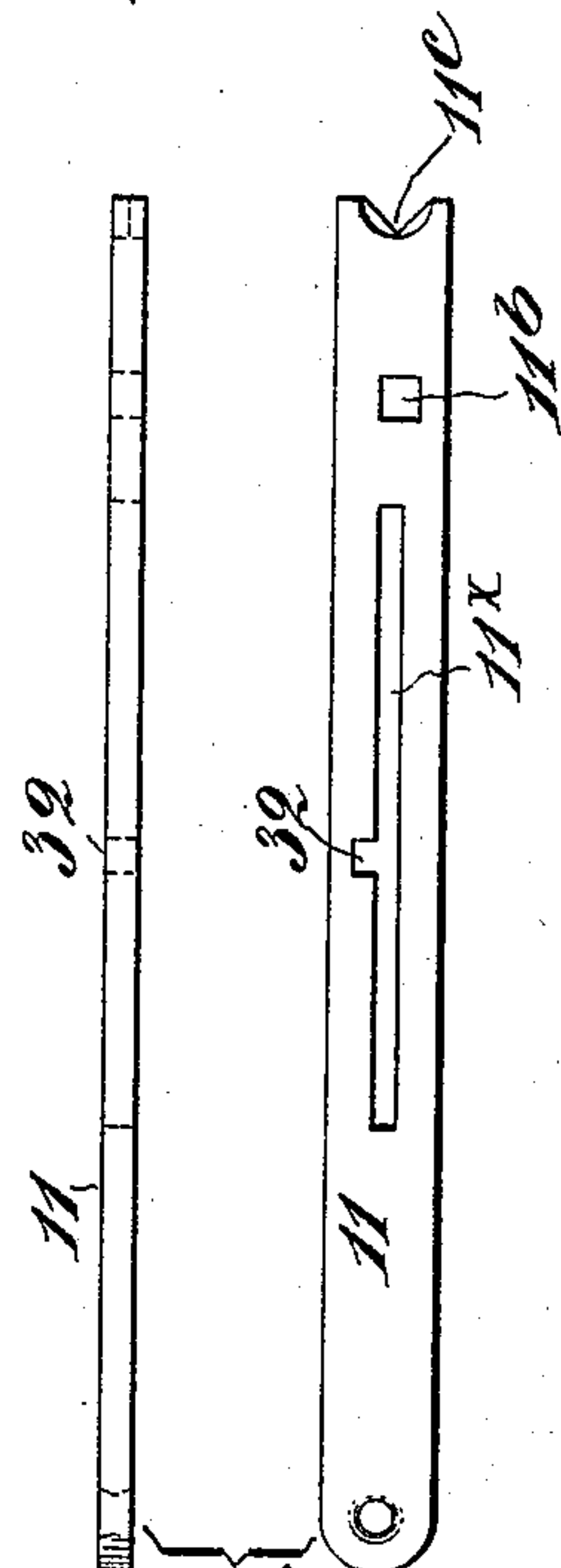


FIG:11.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN L. McCULLOUGH, OF BROOKLYN, ASSIGNOR TO HENRY M. McCULLOUGH,
OF NEW YORK, N. Y.

MAGAZINE-FIREARM.

SPECIFICATION forming part of Letters Patent No. 539,230, dated May 14, 1895.

Application filed July 25, 1894. Serial No. 518,542. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. McCULLOUGH, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Magazine-Firearms, of which the following is a specification.

My invention relates to the class of magazine fire arms wherein the loading is effected by the reciprocation of an operating slide, and it is especially well adapted to target rifles used in galleries.

The general purpose of the invention is to simplify the construction and facilitate the dismantling and assembling of the parts.

The improvements in detail will be herein-after fully described and their novel features carefully defined in the claims.

In the accompanying drawings, wherein is illustrated an embodiment of the invention, Figure 1 is a sectional side elevation of the main operative portion of the piece where the receiver is situated, showing the mechanism within the latter. This view represents the parts in position directly after the discharge and after the last cartridge from the magazine has been fired. Fig. 2 is a horizontal section taken in the plane indicated by line $x^2 x^2$ in Fig. 1. Fig. 3 is a sectional elevation similar to Fig. 1, but showing the parts in the position they assume when the breech-block is drawn back in loading. Fig. 4 is a side elevation of the front part of the barrel, showing the magazine partly in longitudinal section and illustrating the operation of charging the magazine; and Fig. 4^a illustrates a slight modification of the magazine. Figs. 5, 6, 7, and 8 are cross-sections taken in the planes indicated, respectively, by the lines x^5 , x^6 , x^7 , and x^8 in Fig. 1. Fig. 9 is a horizontal section taken substantially in the plane indicated by line x^9 in Fig. 1. Fig. 10 is a side elevation of the piece at the receiver with parts broken away to disclose the construction, as will be described. Fig. 11 shows a part of the operating-slide, detached, in side elevation and plan. Fig. 12 shows the cartridge-carrier, detached, in side elevation and plan.

1 is the receiver proper, and 2 is the barrel screwed into the front end of same.

3 is the magazine, in the form of a tube, arranged under the barrel 2, and substantially parallel with the latter. The rear end of the magazine fits into a counterbored socket in the front end of the receiver 1, and the outer or front end thereof fits into a similar socket in a bracket, 4, (Fig. 4) fixed to the under side of the barrel 2. In the outer end of the socket of said bracket 4 is set a screw, 5, which when driven in, impinges on a washer or plug, 6, interposed between the end of the screw 5 and the outer end of the magazine tube. At its rear end the magazine tube is supported in a slotted bracket, 7, secured to the barrel. When the screw 5 is drawn out, or partly out, the magazine tube may be slipped or moved forward endwise far enough to disengage its rear end from the socket in the receiver and thus allow the barrel 2 to be unscrewed without detaching the magazine therefrom. The plug or washer 6 might be secured to the magazine tube so as to close the end of same permanently; or said plug might be screwed into the end of the magazine tube, as seen in Fig. 4^a.

Mounted to slide longitudinally on lateral guide ways, 8, in the receiver 1, is the breech-block, 9, in which is mounted the firing-pin, 10. The breech-block is operated by means of an operating slide, 11, connected at its forward end to an operating handle, 12, mounted to slide on the magazine tube. The operating slide 11 is coupled at its rear end, within the receiver, to a rocker, 13, pivotally mounted on the under side of the breech-block. This rocker has a limited rocking movement to effect certain objects to be hereinafter explained, but the major portion of the movement of the operating slide is devoted to moving the breech-block to and fro.

Situated below the breech-block, within the receiver, is the cartridge carrier, 14, which receives the cartridge, x , from the magazine and carries it up to alignment with the bore, y , in the barrel 2. This carrier 14 is pivotally mounted at z , in the receiver, and has a chamber at its front end to receive the cartridge and a plunger, 15, adapted to push the cartridge out from the said chamber and into the cartridge chamber or bore in the barrel.

16 is the hammer; 17, the hammer spring.

18 is the trigger and 19, the trigger spring. These are all mounted on the bottom plate, 1^x, which closes the receiver below when the parts are all assembled.

5 The tang, 1^a, of the receiver 1, is recessed into the wooden stock, 20, as usual and the tang, 1^{xa}, of the plate 1^x, is recessed into the under side of the stock.

10 In Fig. 10 is illustrated the means for securing the parts together so that they may be readily dismounted or taken apart. The lower tang 1^{xa} is secured to the wood by a screw or screws in a permanent manner and is provided with a tube, or socket, 21^a, extending
15 upwardly through the wood nearly to the other side, and through this tube extends the shank of a screw, 22, which has a cross pin, 22^x, to prevent it from dropping out of the socket. The screw-threaded tip of this screw
20 is driven through the tang 1^a. The forward end of the plate 1^x has a nose, 1^{xx}, which engages a recess in the front end of the receiver 1. By drawing the screw 22, the piece may be readily dismounted.

25 Figs. 1, 2 and 10 show the position of the parts immediately after firing. The cartridge carrier 14 is now depressed (see Fig. 10) and has received a cartridge *x* from the magazine. The operator, to load the piece, seizes the
30 handle 12 and draws it back. The first effect is to slightly rotate the rocker 13, and this rotation of the rocker first displaces the recoil-stop of the breech-block and then drives back the firing-pin to a limited extent. I will explain how this is done. On the bottom plate
35 1^x, are two abutments, 21, and on the rocker 13 are two stop-pins or projections, 13^x, which when the parts are in the position seen in Fig. 1, bear on inclined faces at the front ends of
40 the abutments 21, and resist the recoil of the breech-block when the piece is discharged. On the rocker 13 is also a cam, 13^a, which, when the former is rocked, encounters a shoulder, 10^x, on the firing-pin 10 and draws or
45 moves the latter back. As soon as the rocker is rocked far enough for the stop-pins to clear the inclined faces on the abutments 21, and ride over the upper surfaces of the same, the breech-block moves back to the position seen
50 in Fig. 3, cocking the piece in the operation. When the breech-block shall have moved back to the proper extent, carrying with it the empty cartridge shell (see Fig. 2) through the medium of the spring extractor, 22^a, a stud, 9^a, on the
55 under side of the breech-block, encounters a shoulder, 23, on the carrier 14 and throws up the latter, thus causing it to strike and expel the shell and at the same time bring the cartridge in the carrier into line with the bore *y* in
60 the barrel. The movement of the breech-block rocks the hammer 16 to an extent a little in excess of full cock (see Fig. 3) and so that a dog, 24, on the rear end of the carrier 14, takes under a shoulder, 16^a, on the hammer.
65 The effect of this is to lock the hammer against the control or influence of the trigger and also to hold the carrier 14 elevated. The ele-

vation of the carrier brings up in front of the magazine entrance a cushion stop, 25, for the
70 cartridges in the magazine to abut or impinge against. As the cartridges strike the stop butt first, I find that when the rim thereof strikes a stop which is rigid or unyielding, the fulminate in the rim is liable to explode. Therefore I pivot the stop 25 in the carrier
75 and place behind it a cushion spring, 26. When the cartridge enters the chamber, 14^x, in the carrier, from the magazine, it displaces the plunger 15, pushing the latter back to the position seen in Fig. 3. As here shown the
80 plunger 15 is rigidly connected with two guide-pins, 15^x, which play in bores or holes in the head of the carrier 14 (see Figs. 7 and 9) and serve to guide the plunger in its movements, but I do not consider these pins as absolutely
85 essential; one would serve. The plunger has a beveled cam-like head and is grooved longitudinally on its under side to engage a fin, 14^a, on the carrier, as clearly seen in Fig. 12. Having drawn back the parts to the position
90 seen in Fig. 3, the operator next moves the handle 12 forward again. The advancing end of the breech-block 9 encounters the plunger 15 and drives it forward, thus driving the cartridge *x* out of the carrier into the bore of
95 the barrel far enough for it to clear the chamber in the carrier. The breech-block then encounters cams, 14^b, on the carrier, thus depressing the latter as the block advances. When the breech-block shall have forced the
100 carrier down out of the way, it will continue on and drive the cartridge *x* fully into the bore of the barrel. The last part of the downward movement of the carrier withdraws the
105 dog 24 from under the shoulder 16^a on the hammer and allows the latter to fall until the trigger engages properly for control in firing; and when the breech-block shall have reached the end of its movement forward, the stop-
110 pins, 13^x, which move over the upper faces of the abutments 21, and thus prevent any movement of the rocker, now reach the inclines on the front ends of the abutments and allow the
115 operating slide 11 to rock the rocker 13 to the position seen in Fig. 1. This serves to lock the breech-block against recoil, to withdraw the cam 13^a so as to leave the firing-pin free, and also to force upward a catch or hook, 13^b, on
120 the front side of the rocker 13 (see Figs. 1, 2 and 6) into engagement with a lip, 27^x, on a spring, 27, secured in a recess in the breech-block. This hook holds the rocker against movement and prevents any further move-
125 ment of the operating slide until the piece is discharged. When the hammer falls, the firing-pin 10 is driven forward (see Fig. 2) and a beveled shoulder 10^a, thereon wipes over the beveled end, 27^a, of the spring 27 and presses the latter back far enough to free the catch
130 13^b from the lip on the spring 27.

For convenience of construction the carrier 14 is forked at its rear end and is pivoted at *z* in bearings on the plate 1^x. Consequently there will be two dogs 24, one on each branch

of the forked carrier, and two shoulders 16^a on the hammer. There will also be two shoulders 23, one on each branch of the carrier, and two projections 9^a on the breech-block to engage said shoulders. This duplication of parts I do not consider absolutely essential, but preferable.

The hammer and trigger, and their respective springs, being mounted on the bottom plate 1^x, and the bearings of the carrier 14 being also mounted on the said plate, it will be seen that when the screw 22 is drawn the piece may be readily taken apart. In the rocker 13, is screwed a pendent screw-stud, 13^c, which engages an aperture in the operating slide 11, and when this screw-stud is drawn the breech-block can be slipped out of the receiver at the back, carrying with it the rocker 13.

It is desirable that when the last cartridge shall have been taken from the magazine and fired, the operating slide 11 shall be locked against movement, and I provide an automatic locking device for this purpose. This device I will now describe with especial reference to Figs. 1, 3 and 4.

In the magazine tube is the usual magazine spring, 28, for expelling the cartridges, and in the said tube is also a follower, 29, interposed between the spring and the cartridges. The tube of the magazine is slotted along the under side, and along this slot plays a rib or fin, 29^x, on the follower. At 3^a (see Fig. 4) is an enlargement of the slot in the magazine tube for the insertion of the cartridges in charging the magazine.

Coupled or hinged to the follower 29 is a section or part, 29^a, thereof, such section being adapted to enter the chamber 14^x of the carrier 14, after the last cartridge shall have been expelled from the magazine. This is the position of the parts seen in Fig. 1. While there is a cartridge in the carrier the follower will be held back, but when the chamber 14^x is empty, the follower is enabled to move up until the beveled end of its fin 29^x takes behind the arm of a cam-lever, 30, pivotally mounted in the front end of the receiver, thus depressing the shorter nose of the cam-lever on the back of a spring detent, 31, also mounted in the receiver.

Fig. 3 shows the normal position of the cam-lever 30 and detent 31. A nose or stud, 31^x, on the free end of the detent stands free above the upper surface of the operating slide 11; but when the beveled end of the fin 29^x presses down upon and flexes the spring detent, the nose 31^x is made to press with elastic force on the surface of the operating slide, and consequently, when the operator moves the slide forward in order to drive the last cartridge into the barrel, an aperture or recess, 32, in said slide is brought into coincidence with the locking stud 31^x, and the latter snaps into said recess thus locking the slide against endwise movement. The slide will remain thus locked until the follower 29 is moved away, when the spring detent will

rise by its own resiliency and release the slide. I may say here, by way of explanation, that the operating slide 11 is provided with a longitudinal slot, 11^x, seen in the lower view, Fig. 11, to permit the cartridge stop 25 to play through it, and that the recess 32 will be formed by preference in the side of this slot, as herein shown.

It is desirable to be able to disconnect the handle 12 from the operating slide 11, and also to be able to connect said handle with the follower 29 while it is disconnected from the operating slide. This coupling of the handle to the follower is to enable the latter to be moved forward in the magazine tube for the purpose of charging the latter with cartridges. The construction whereby these objects are attained will now be described with especial reference to Figs. 3, 4, 9 and 11.

To the handle 12 is rigidly secured a metal plate or piece, 12^x, which may have the same dimensions as the operating slide. At the free end of this plate 12^x is a boss, 12^a, through which is driven a screw, 12^b. On the upper face of the plate 12^x is mounted and fixed a flat spring, 33, which has on its lower face, beyond the end of the plate 12^x, a short stud, 33^x, and on its upper face, preferably at its extremity, another stud, 33^a. Normally the spring 33 applies itself closely to the upper face of the plate 12^x, the stud 33^x engaging a recess or aperture 11^b (see Figs. 3 and 11) in the operating slide, and the notched end (11^c in Fig. 11) of said slide taking into a recess in the boss 12^a. This locks the operating slide and the plate 12^x securely together, and they are adapted to be separated only by driving in the screw 12^b, which by impinging on the spring 33 forces it upwardly and disengages the stud 33^x from its recess in the slide. When this detachment is effected the handle 12 is free to be moved.

Now when the cartridges have all been expended and the operating slide is locked against movement, (as seen in Fig. 1) the stud 33^a on the upper side of the spring 33, will be in co-incidence with a recess 29^b in the fin 29^x, on the follower 29, and if the screw 12^b be driven in, the effect will be, first, to disconnect the operating slide from the handle, and then to connect the handle with the follower 29, by causing the stud 33^a to engage the recess 29^b in the fin, as shown in Fig. 4. The handle may now be moved out along the barrel to the position seen in Fig. 4, carrying the follower with it, and the magazine re-filled at the inlet 3^a.

34 designates the usual front sight on the barrel and 35, the ordinary rear sight.

I am aware that it is not broadly new to provide a cushioned stop, somewhat similar to the stop 25, and I do not broadly claim such a stop.

I do not limit myself to the exact construction herein shown as this may be departed from to some extent without materially affecting the operation of the mechanism of the

piece. For example, a spring may be employed to retract the plunger 15 in lieu of the incoming cartridge, but I prefer the latter arrangement.

5 The object in providing the follower 29 with a hinged section 29^a is to allow for the inclined position of chamber 14^x of the carrier when it is presented to the magazine.

I have stated that one object in providing means for connecting the handle 12 to the follower in the magazine is to enable the magazine to be conveniently filled; but this construction also allows the user to detach and push forward the handle so as to expose the cartridges remaining in the magazine and permit them to be counted.

Having described my invention, I claim—

1. In a magazine fire arm, the combination with a receiver, a barrel, a magazine, a breech-block mounted in lateral guides in the receiver and adapted for longitudinal movement only, of a cartridge carrier 14, pivotally mounted in the receiver and provided with a cartridge chamber 14^x, a cam 14^b, a plunger 15 for expelling the cartridge and a shoulder 23 to engage a stud on the breech-block, and an operating slide for moving the breech-block to and fro, said breech-block being adapted to operate the plunger and depress the carrier in its forward movement, as set forth.

2. In a magazine fire arm, the combination with a receiver, a magazine, a spring and follower in the slotted magazine tube, said follower having a fin projecting through said slot, a sliding breech-block in the receiver, a slide for operating said breech-block, said slide having a recess 32, the spring detent 31, mounted in the receiver and provided with a stud 31^x adapted to engage the recess 32 in the slide, and the cam-lever 30, mounted in the receiver with its arm in the path of the beveled end of the fin on the follower, whereby the detent is set for operation whenever the last cartridge shall have left the magazine, substantially as set forth.

3. In a magazine fire arm, the combination with the operating slide, provided with a recess 11^b, and the handle 12, provided with a plate 12^x, of the spring 33, mounted on the plate 12^x and provided with a stud 33^x, to engage the recess in the operating slide, and the screw 12^b set in the plate 12^x and impinging on the spring 33, substantially as and for the purposes set forth.

4. In a magazine fire arm, the combination with the slotted magazine tube, the spring therein, the follower therein provided with a recessed fin which plays in said slot, and the

handle 12, mounted to slide on the magazine tube and provided with a plate 12^x, of the spring 33, mounted on said plate and provided with a stud 33^a to engage the recessed fin on the follower, and the screw 12^b, set in the plate 12^x and impinging on the spring 33, substantially as and for the purposes set forth.

5. In a magazine fire arm, the combination with the receiver, the barrel screwed therein and provided with brackets 4 and 7 to receive the tube of the magazine, of the said tube, engaging a socket in the receiver at one end and a socket in the bracket 4 at the other end, and the screw 5 set in the bracket 4 and bearing on the stopped end of the magazine tube, substantially as and for the purposes set forth.

6. In a magazine fire arm, the combination with the receiver, the breech-block mounted to slide therein, the hammer provided with a shoulder 16^a, and the cartridge carrier mounted pivotally in the receiver and provided with a dog 24 adapted to take under the shoulder on the hammer when the hammer is thrown back and the carrier thrown up by the withdrawing breech-block, substantially as set forth.

7. In a magazine fire arm, the combination with the receiver, the breech-block mounted in lateral guides therein, the firing-pin mounted in the breech-block, and the operating slide, of a rocker 13, pivotally mounted on the breech-block and provided with a pin which engages the operating slide, the abutment 21, in the receiver, the stud 13^x on the rocker, adapted to engage the abutment and lock the breech-block against recoil, the spring 27, carried by the breech-block and provided with a lip 27^x and head 27^a in the path of a shoulder on the firing-pin, the cam 13^a, on the rocker adapted to withdraw the firing-pin, and the hook 13^b adapted to engage the lip 27^x on the spring 27, substantially as and for the purposes set forth.

8. The combination with the wooden stock, 20, of the receiver provided with a tang 1^a, and the bottom plate 1^x, provided with a tang 1^a, a lip 1^x, adapted to engage a recess in the receiver, and a socket 21^a, of the screw 22, mounted in the socket 21^a and provided with a pin to prevent it from falling from the socket, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN L. McCULLOUGH.

Witnesses:

HENRY CONNETT,
JAS. KING DUFFY.