

C. H. A. F. L. ROSS.  
 TRIGGER MECHANISM.  
 APPLICATION FILED MAR. 5, 1910.

975,286.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

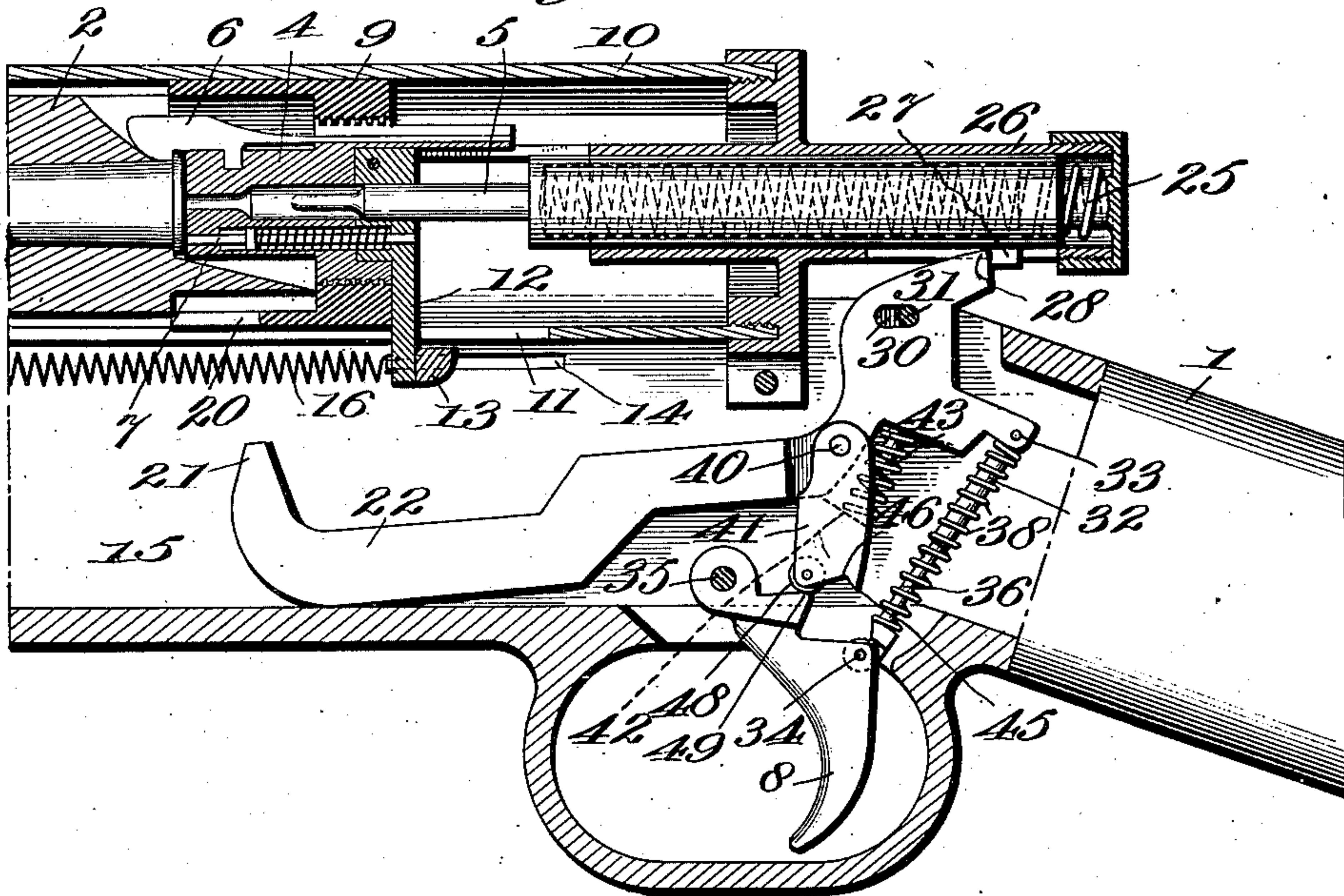
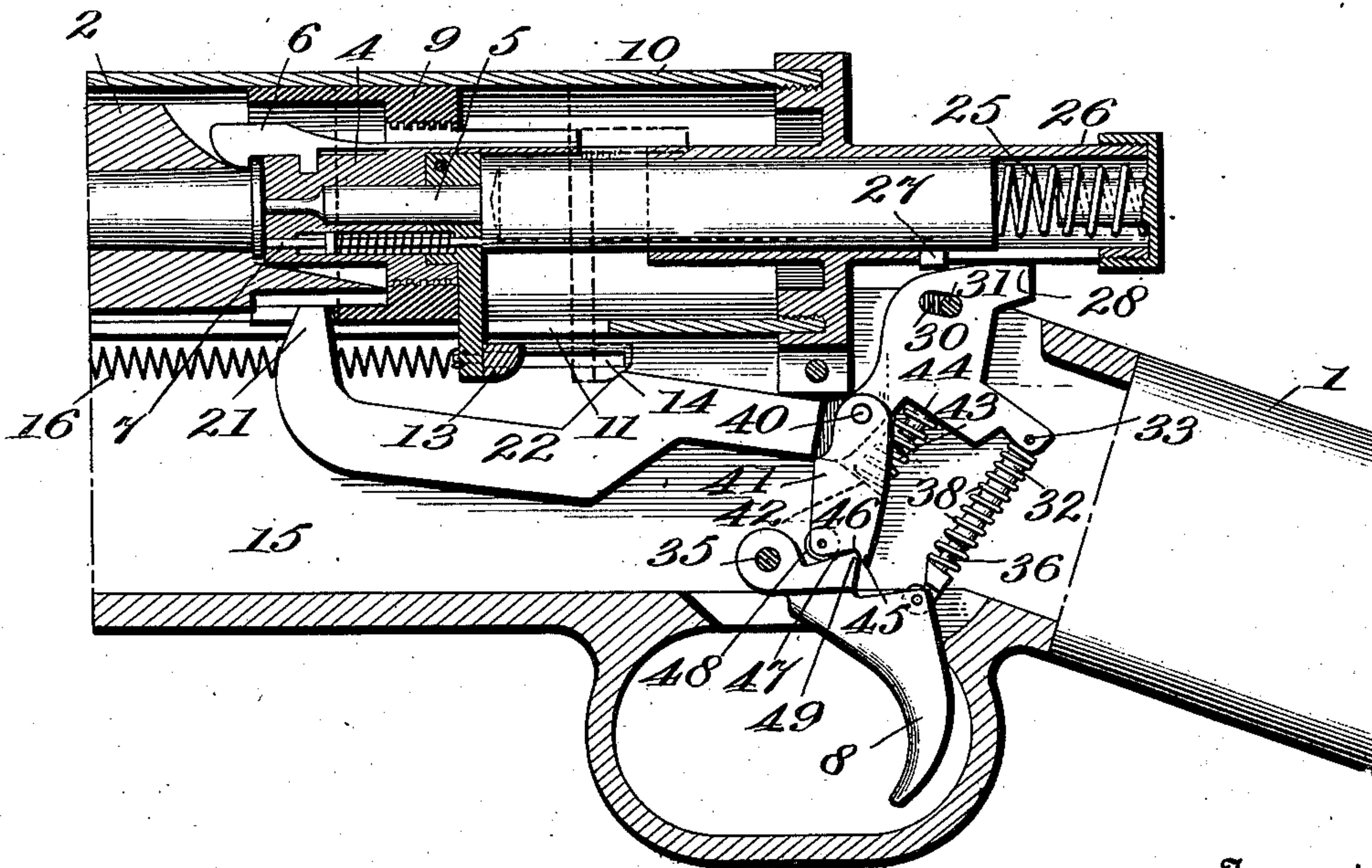


Fig. 2.



Witnesses  
 Geo. A. Reppel.  
 B. B. Collings.

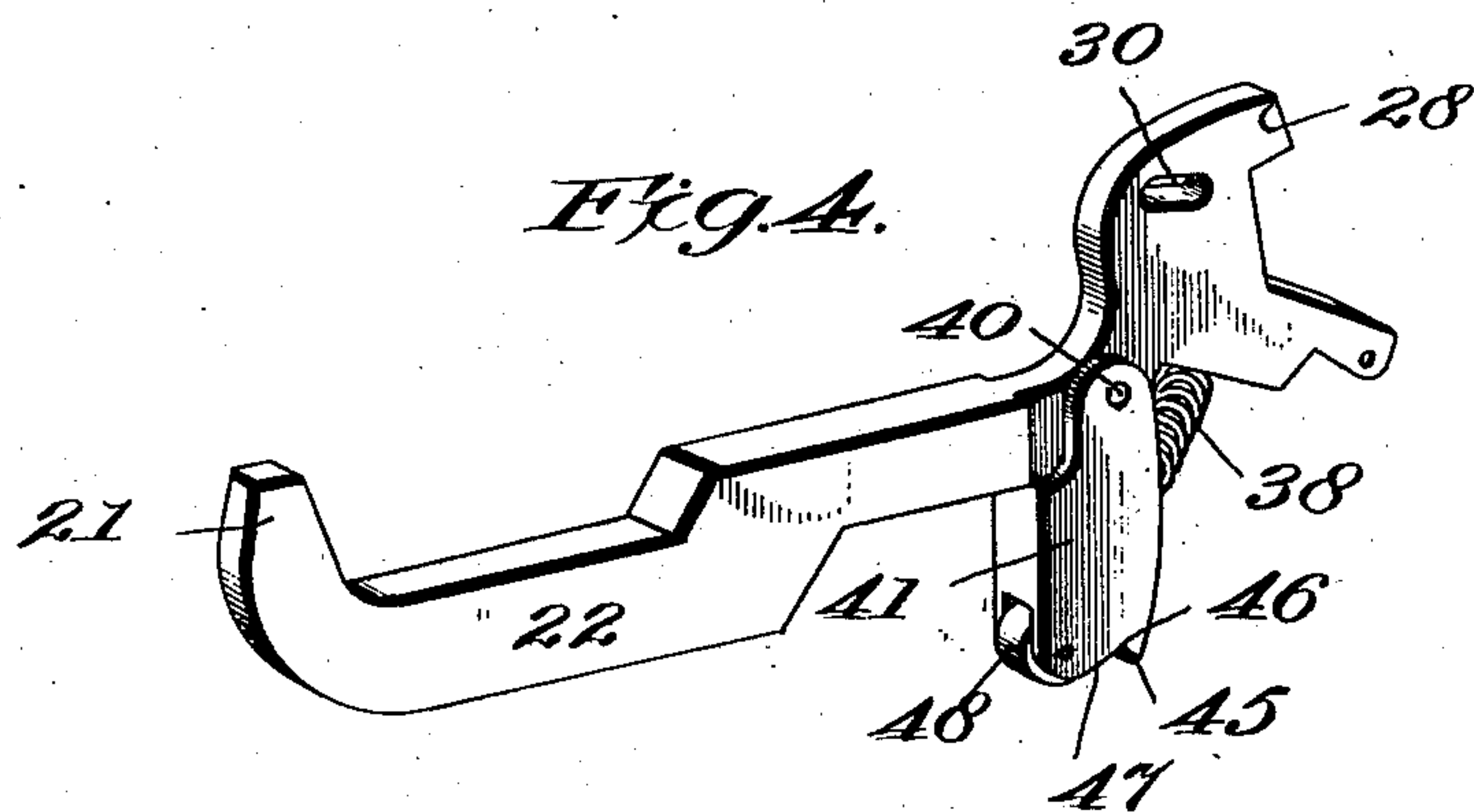
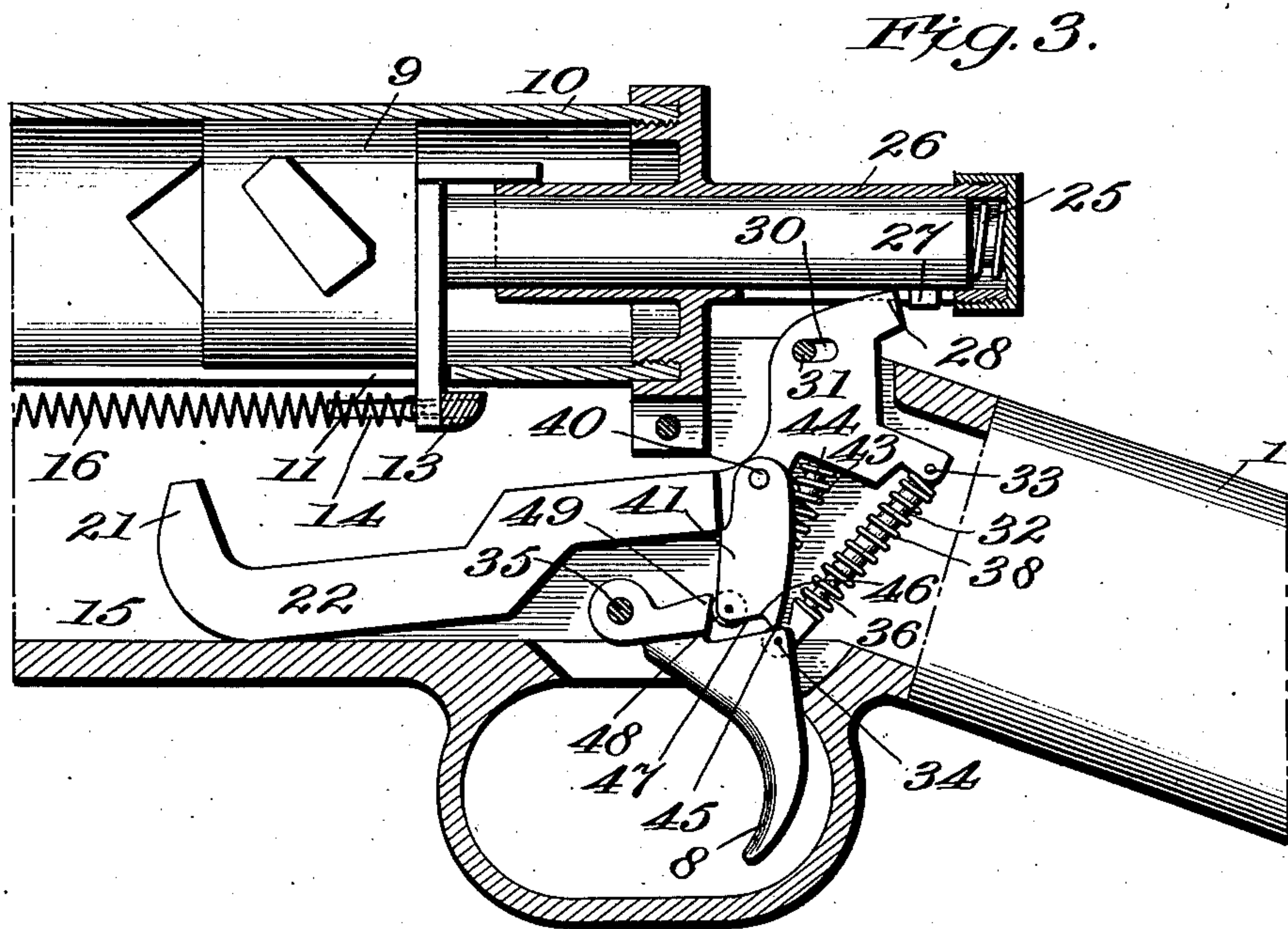
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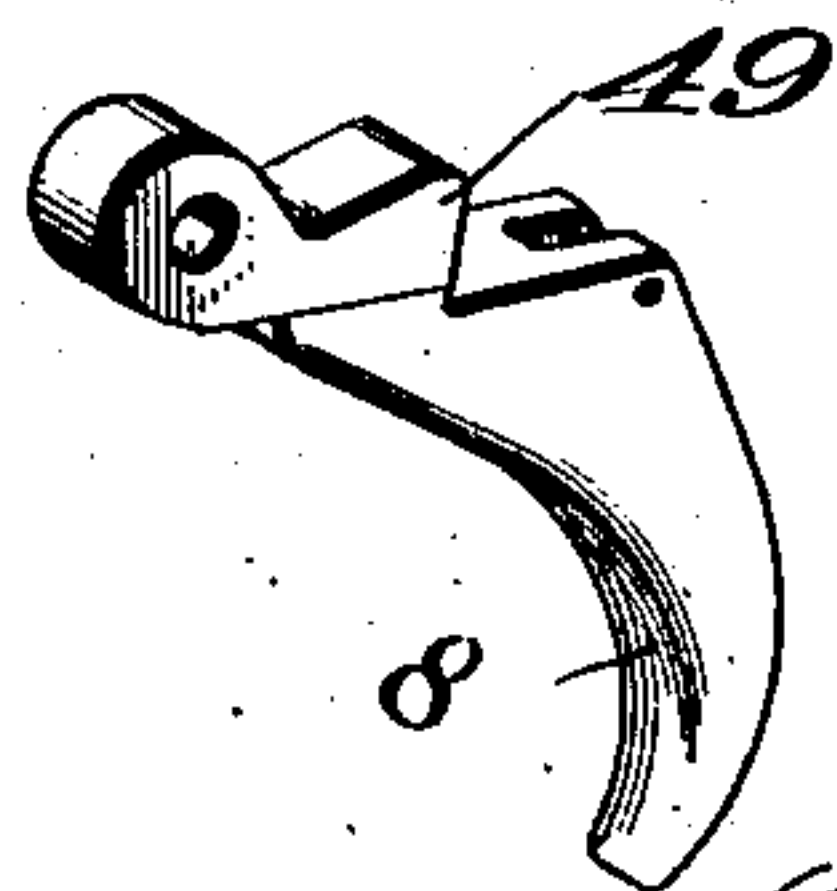
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2 SHEETS—SHEET 2.



*Fig. 5.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHARLES H. A. F. L. ROSS, OF BALNAGOWN CASTLE, SCOTLAND.

## TRIGGER MECHANISM.

975,286.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed March 5, 1910. Serial No. 547,445.

*To all whom it may concern:*

Be it known that I, CHARLES H. A. F. L. Ross, a subject of His Majesty the King of Great Britain, residing at Balnagown Castle, Ross-shire, Scotland, have invented certain new and useful Improvements in Trigger Mechanisms; 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 to which it appertains to make and use the same.

This invention relates to trigger mechanisms for automatic fire arms and has for its object to produce a device of this nature which will be simple in construction certain in action, will provide a long pull for the trigger and one which will also provide a safety device which will render it impossible to fire the piece except when the breech bolt and barrel are interlocked.

With these and other objects in view, the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals refer to like parts in all the views: Figure 1, is a sectional view of the breech portion of a fire arm, showing the parts cocked and ready for firing; Fig. 2, is a like view showing the position of the parts after the trigger has been pulled and the firing pin has gone forward, but before the barrel has moved; Fig. 3, is a sectional view, partly in elevation, of the parts shown in Fig. 2 after the barrel has gone forward and the breech bolt and firing pin have been blown to the rear to re-cock the piece; and, Figs. 4 and 5, are detail perspective views of the individual parts of the mechanism.

1 indicates any suitable stock, 2 the barrel, 4 a breech bolt, 5 a firing pin, 6 an extractor, 7 an ejector, and 8 a trigger. The barrel is further provided with any suitable mechanism, not shown, for permitting it to move forward upon firing the piece and to move to the rear upon counter recoil in order that it may reengage the breech block 9, which is provided with any suitable means preferably mutilated screw threads, not shown, for engaging and disengaging the barrel, as will be readily understood.

10 represents a casing provided with a slot 11, the breech bolt 4 is provided with a downwardly projecting piece 12 which slides in the slot 11, and across the lower end of the piece 12 is a yoke 13 which is guided in the slot 14 with which the frame 15 is provided.

16 represents a spring which returns the breech block 9 and bolt 4 carried thereby, after it has been moved to the rear upon firing the piece. The breech block 9 is provided with any suitable mechanism, not shown, for rotating it on its axis as it moves longitudinally of the piece to engage and disengage the barrel.

The above parts do not in themselves form an integral portion of the present invention, and, therefore, are not further illustrated.

The breech block 9 is further provided with a safety slot 20 with which the point 21 of the lever 22 is adapted to engage when the said block and barrel are properly interlocked and ready for firing, as best illustrated in Fig. 2.

25 represents a spring for projecting forward the firing pin 5 and 26 represents a casing for said spring extending slightly to the rear of the casing 10. The firing pin 5 may be enlarged as it enters the casing 26 and carries the lug or projection 27 with which the sear 28 of the lever 22 engages. The lever 22 is provided with a slot 30 and pivotally slides on the pin 31, as will be more fully explained hereinafter.

A tube 32 is pivoted as at 33 to the extension of the lever 22 and the rod 36 telescoping in said tube is pivoted as at 34 to the trigger, which in turn is pivoted as at 35 to the frame 15 of the piece. A spring 38 surrounds the tube 32 the rod 36 and serves to yieldingly normally force the sear 28 upwardly when the trigger 8 is in its forward position, as shown in Fig. 1.

Pivoted as at 40 and slightly forward of the pin 31 is the dog 41 provided with the shoulder 42 against which the spring 43 takes at one end. The other end of said spring 43 takes against a shoulder 44 of the lever 22, and therefore, said spring 43 tends normally to force the lower end of said dog 41 forward, as will be readily understood. The lower end of this dog is provided with a projection 45 a notch 46 and an inclined



surface 47 and preferably with a roller 48. The trigger is provided with a projection 49 adapted to engage the roller, as indicated in Fig. 1, to slide along the incline surface 47 until it reaches the notch 46 as indicated in Fig. 2, and then upon further pressure to further force the dog 41 upwardly and cause the sear 28 to be tripped or disengaged from the lug 27, as will be clear from the drawings.

The spring 25 controlling the firing pin normally presses the lug 27 forward, and, therefore, normally presses forward the entire lever 22 so that the pin 31 normally occupies the rear end of the slot 30, as indicated in Figs. 1 and 2. On the other hand the spring 38 has a tendency to force the lever 22 bodily to the rear, and, therefore, to cause the said pin 31 to occupy the forward portion of the slot 30, as indicated in Fig. 3.

The operation of the invention is as follows:—Supposing the parts to be in the position for firing illustrated in Fig. 1 and the trigger to be pulled, the projection 49 of the trigger will move over the roller 48 on the dog 41 and along the inclined surface 47 until it reaches the notch 46, thus giving an easy and long pull to the trigger which is now essential in all military fire arms. This pull of the trigger is further cushioned by the spring 38 which will be compressed during the movement just described and which will tend to force the sear 28 against the lug 27, as above stated. The pressure of the projection 49, however, on the dog 41 will slightly revolve the sear 28 around its pivot 31 and will almost disengage the said sear from the said lug by the time the projection 49 reaches the notch 46, so that a slight additional pull will fire the piece. In other words, the trigger may be pulled rapidly until the notch 46 is reached and then upon reaching said notch the trigger finger will feel the engagement of the projection 49 with said notch and a very slight additional pull may then be exerted to fire the piece, thereby enabling the marksman to carefully sight the piece and make sure that his sights are on the object at the instant of firing. When the sear 28 finally disengages the lug 27 the firing pin goes forward under the action of the spring 25. The cartridge is fired and the bolt 4, arm 12 and yoke 13 now recoil to the position shown in dotted lines Fig. 2, and in full lines in Fig. 3, in which position the yoke 13 strikes the lever 22 in its elevated position, as shown in Fig. 2, which causes the same to be moved downwardly and to the rear. The downward movement of the lever, as well as its rearward movement forces the lower end of the dog 41 to the rear and past the projection

49 on the trigger and into the position shown in Fig. 3, so that the pin 31 engages the forward end of the slot 30. In this position of the parts although the piece is cocked owing to the lug 27 having been blown back behind the sear 28, yet it is impossible to fire the piece for the operating portion of the projection 49 is out of engagement with the dog 41. Upon the trigger being released, however, and permitted to again occupy the position shown in Fig. 1, the spring 43 forces the dog 41 forward and reengages the parts, as shown in said Fig. 1. But should the trigger now be pulled the piece still could not be fired unless the parts are properly interlocked, and for the reason that the safety notch 20 in the breech block 9 would not permit the point 21 of the lever 22 to enter the same, as will be explained. As the breech block 9 came to the rear it not only moved longitudinally of the barrel but it also rotated upon its axis in order to disengage its threads from the threads of the barrel, and, therefore, if the said block and barrel are not properly interlocked the said slot 20 would be angularly displaced so that the point 21 could not enter the same. The parts are so proportioned that unless the point 21 enters the slot 20, the sear 28 cannot disengage the lug 27, and, therefore, even though the trigger be pulled when the piece is cocked, yet, the cartridge will not be fired unless all the parts are in their proper interlocked positions. It, therefore, follows, that after having once fired the piece it could not be again fired without releasing the trigger even though the breech block and barrel are properly interlocked, nor can the piece be fired after the trigger has been released unless the said breech block and barrel are properly interlocked. Consequently, it is plain that the trigger mechanism above disclosed not only provides a long and easy pull but also effectually prevents the piece from being fired unintentionally no matter what may be the condition of its parts; while at the same time it provides for firing as fast as the trigger can be released and pulled, whether this be by hand or done automatically.

Those skilled in the art, it is obvious, may vary the details of construction and arrangement of parts without departing from the spirit of my invention and, therefore, I do not wish to be limited to such features except as may be required by the claims.

What I claim is:

1. In a trigger mechanism for fire arms the combination of a barrel; a breech block; a firing means; a sear controlling said means; a trigger controlling said sear; and means rigid with said sear and under the control



of the trigger for preventing the piece from being fired before said block is locked to said barrel, substantially as described.

2. In a trigger mechanism for fire arms, the combination of a barrel; a breech block; a firing means; a pivoted sear controlling said means; a trigger controlling said sear; and pivoted means rigidly connected to said sear and under the control of the trigger for preventing the piece from being fired after being cocked but before said block is locked to said barrel, substantially as described.

3. In a trigger mechanism for fire arms the combination of a lever having a sear; a trigger; connections between said trigger and sear by which the latter may be turned on its pivot upon pulling the trigger; means by which said connections are rendered inoperative to move said sear after the piece is fired and before the trigger is released, and means carried by said lever adapted to contact with the breech block and prevent the piece from being fired before said block is locked in place, substantially as described.

4. In a trigger mechanism for fire arms, the combination of a lever having a sear; a pivoted dog carried by said lever; a trigger adapted to engage said dog and to move said sear and lever; and means by which upon firing the piece the engagement between said trigger and said dog is rendered inoperative to move said sear, substantially as described.

5. In a trigger mechanism for fire arms the combination of a lever provided with a pivot and a slot and having a sear; a pivoted dog carried by said lever; a trigger adapted to engage said dog and to move said sear and lever; and means by which upon firing the piece the said sear and lever are moved longitudinally of said slot and the engagement between said trigger and said dog is rendered inoperative to move said sear; substantially as described.

6. In a trigger mechanism for fire arms, the combination of a lever having a sear; a pivoted dog carried by said lever; a spring between said dog and lever; a trigger adapted to engage said dog and to move said sear and lever; a spring between said trigger and lever; and means by which upon firing the piece the engagement between said trigger and said dog is rendered inoperative to move said sear, substantially as described.

7. In a trigger mechanism for fire arms the combination of a barrel; a recoiling breech bolt; a firing pin carrying a lug; a slidingly pivoted lever adapted to be moved by said bolt and carrying a sear adapted to engage said lug; a trigger connected to said lever; and a dog pivoted to said lever adapted to be engaged by said trigger when the piece is fired and to be moved out of its

operative relation with said trigger upon the recoil of said breech bolt, substantially as described.

8. In a trigger mechanism for fire arms, the combination of a trigger; a slidingly pivoted lever carrying a sear at one end and a safety point at the other; and means by which said sear and point are controlled by said trigger, substantially as described.

9. In a trigger mechanism for fire arms, the combination of a trigger; a slidingly pivoted lever carrying a sear at one end and a safety point at the other; and means comprising a spring controlled dog pivoted to said lever by which said sear and point are controlled by said trigger, substantially as described.

10. In a trigger mechanism for fire arms, the combination of a breech block provided with a slot; a lever having a safety point adapted to enter said slot; a sear carried by said lever; and a trigger for controlling said sear and point, substantially as described.

11. In a trigger mechanism for fire arms, the combination of a breech block provided with a slot; a slidingly pivoted lever having a safety point adapted to enter said slot; a sear carried by said lever; a spring controlled dog carried by said lever adapted to contact with a trigger; and a trigger for controlling said sear and point; substantially as described.

12. In a trigger mechanism for fire arms, the combination of a breech block adapted to be moved to the rear and provided with a slot; a pivoted lever adapted to be moved by said block in its rearward motion and having a safety point adapted to enter said slot; a sear; a trigger; and connections between said trigger and said lever and sear, substantially as described.

13. In a trigger mechanism for fire arms, the combination of a breech block adapted to move to the rear upon firing; a sear adapted to be moved by said breech block; a trigger for controlling said sear, and means rigid with said sear for preventing the piece from being fired before the said block is locked in place, substantially as described.

14. In a trigger mechanism for fire arms, the combination of a rearwardly moving breech block; a trigger; a sear; means pivotally connected with said sear for preventing the piece from being fired after being cocked and before the trigger is released; and additional means rigid with said sear for preventing the piece being fired before the breech block is in its firing position, substantially as described.

15. In a trigger mechanism for fire arms, the combination of a sear; a dog pivotally connected thereto and provided with the inclined surface 47 and notch 46; and a trigger



controlling said sear and provided with a projection 49 adapted to engage said surface and notch, substantially as described.

16. In a trigger mechanism for fire arms, the combination of a slidingly pivoted sear; a dog provided with a roller, an inclined surface and a notch pivotally connected to said sear; and a trigger yieldingly connected to said sear and provided with a pro-

jection adapted to successively engage said roller, inclined surface, and notch on said dog, substantially as described.

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

CHARLES H. A. F. L. ROSS.

Witnesses:

H. D. JAMESON,  
RIPLEY WILSON.