March 12, 1929. R. M. GARDINER 1,704,889

BREECH LOADING SAFETY GUN

Filed May 21, 1926

Fig. 1.

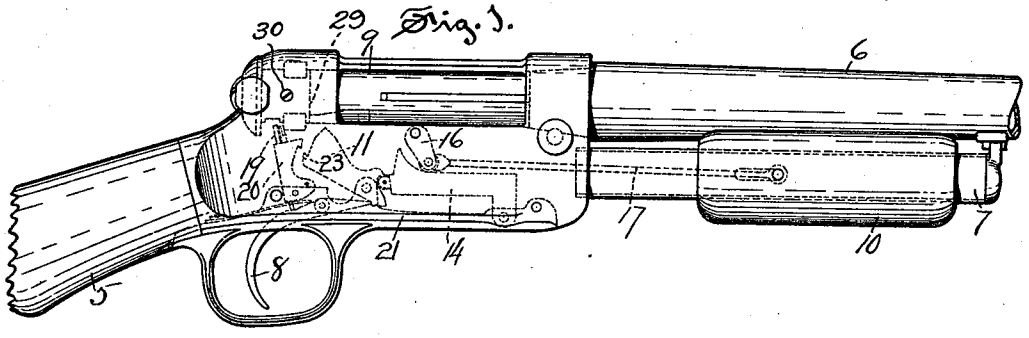


Fig. 2.

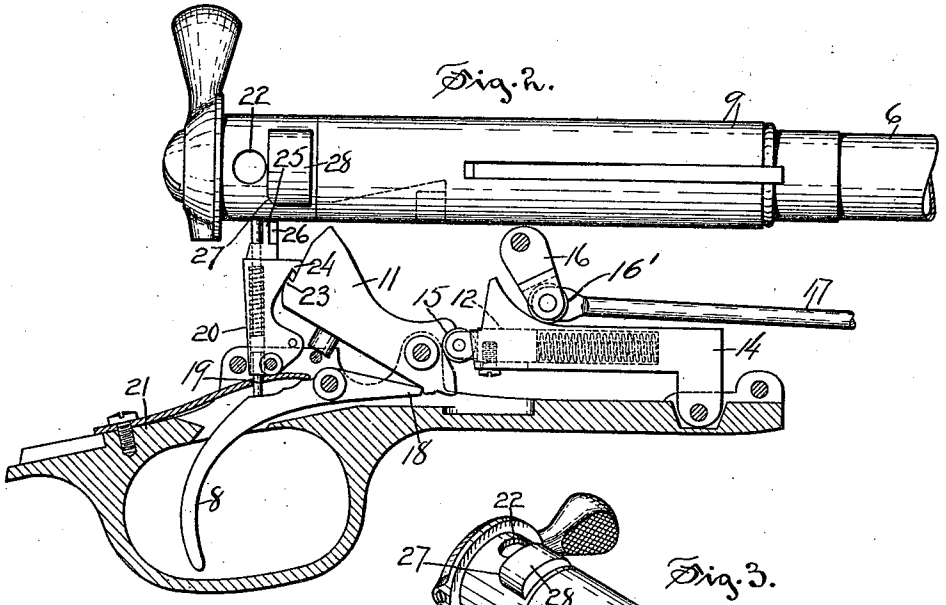


Fig. 3.

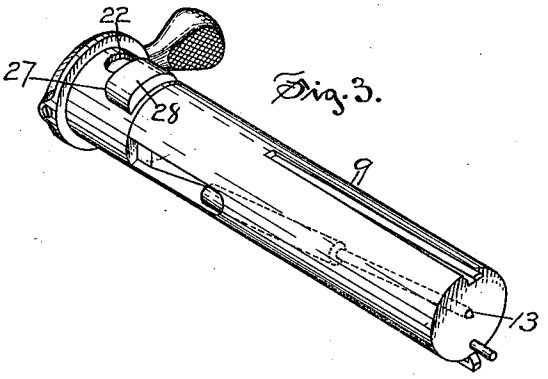
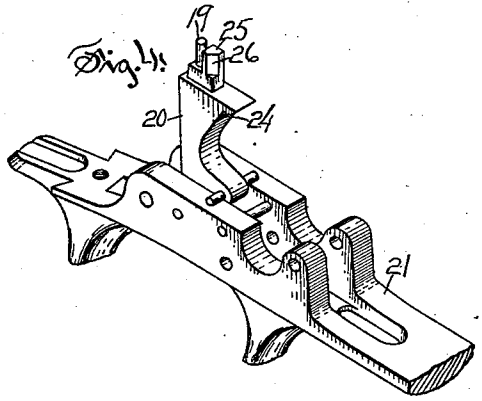


Fig. 4.



INVENTOR
Robert M. Gardiner,
by
Arthur B. Jenkins,
ATTORNEY

Patented Mar. 12, 1929. 1,704,889

UNITED STATES PATENT OFFICE.

ROBERT M. GARDINER, OF HARTFORD, CONNECTICUT.

BREECH-LOADING SAFETY GUN.

Application filed May 21, 1926. Serial No. 110,759.

My invention relates more especially to that class of firearms that are supported against the person when being fired, such as rifles, shot guns, and similar structures, and an object of my invention, among others, is to provide a firearm of this class that shall have means whereby the prevention of unintentional discharge is practically assured, and one in which the breech-bolt must be closed before the device can be discharged.

One form of firearm embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of a portion of a firearm embodying my invention.

Figure 2 is a view in lengthwise vertical section, scale enlarged, illustrating operative parts of the mechanism.

Figure 3 is an isometric view of the back end of the breech-bolt.

Figure 4 is an isometric view of parts of the mechanism, especially illustrating the trigger and sear lock.

In the accompanying drawings the numeral 5 denotes the stock, 6 the barrel, 7 the fore-arm, 8 the trigger, 9 the breech-bolt and 10 the fore-piece mounted on the fore-arm, all of which parts may be of any common and ordinary construction.

A hammer 11 is pivotally mounted in the frame and is engaged by a spring pressed plunger 12 having a roller 15, by means of which the hammer is forced against a firing pin 13 to explode a cartride. The plunger 12 is mounted in a plunger carrier 14 pivotally mounted in the frame and that is adapted to be forced downwardly by a roller 16′ on a cam lever 16, the roller pressing against a cam surface on the carrier and the plunger 12 engaging a cam surface on the hammer, and as shown in Figure 2 of the drawings. A safety actuating rod 17 connects the cam lever 16 with the fore piece 10. The spring within the carrier 14 and against which the plunger 12 is seated constitutes the main spring of the gun.

From this description it will be noted that when the parts are in the position shown in Figure 2 the gun cannot be discharged for the reason that the spring pressure against the hammer 11 is such as to force the hammer rearwardly, and it cannot move forwardly, even disregarding a catch to be hereinafter described. When the stock is placed against the shoulder and the fore piece 10 is moved backwardly the carrier 14 is pushed down, thereby locating the plunger 12 on that side of the pivot of the hammer 11 to exert a pressure on the hammer to swing its upper end forward to contact with the firing pin 13. This movement of the carrier 14 also tensions the main spring, thus increasing its force for action against the hammer. The trigger 8 being now pulled in the ordinary manner a sear 18 that is integral with the trigger is released from the hammer and the gun may be discharged, and upon release of pressure on the fore piece 10 the return of the hammer to its firing position will be effected and the parts will again assume the position shown in Figure 2 in which position, as before stated, the gun cannot be fired.

This return of the parts to their safety positions is caused by the tendency of the spring pressed roller 15 to travel to the low point of the cam surface formed on the hammer 11. The pivoting of the carrier 14 laterally of or below its axis also assists in the return of the spring pressed plunger 12 to the safety side of the hammer pivot. Of course, the upward movement of the free end of the carrier 12 will cause the roller 16′ to travel down the cam surface on the carrier and the elements 10, 16 and 17 will be returned to the positions shown in Figs. 1 and 2.

The hammer is returned to its firing or cocked position by the rearward movement of the breech-bolt 9 to open the breech if such action has not been effected by the plunger 12. It will be noted that Figs. 1 and 2 show the rear end portion of the breech-bolt in its locked and unlocked positions respectively. When the breech-bolt is in the unlocked condition shown in Fig. 2, assuming that the hammer is in its fired position in engagement with the rear end of the firing pin 13, a rearward opening movement of the entire breech-bolt will move the hammer into its cocked position where it will be engaged and held by the sear 18.

In order to prevent firing of the gun when

the breech-bolt is unlocked I have provided means both for preventing movement of the trigger and also for preventing forward movement of the hammer, even should the fore piece 10 be pressed to its backward position, as hereinbefore described. This trigger lock comprises a safety pin 19 extending through a hammer locking latch 20 pivotally mounted on the trigger plate 21, the lower end of said safety-pin resting against the trigger 8 back of its pivot and the upper end of the pin resting against the side of the breech-bolt when the latter is turned to its unlocked position. A locking recess 22 in the breech-bolt is adapted to lie opposite the upper end of the safety pin 19 when the breech-bolt is in its closed and locked position so that when the parts are relatively so placed the pin may be moved upwardly thus permitting the trigger to be pulled for firing purposes.

The means for locking the hammer against movement, except when the breech-bolt is in its closed position, comprises a lip 23 on the hammer positioned for engagement by a lip 24 on the latch 20. A releasing lug 25 on the top of the latch 20 has a cam surface 26 positioned for engagement by a cam 27 on the breech-bolt locking lug 28 whereby when the rear end portion of the breech-bolt is rotated to its locked position the cam 27 engaging the cam surface 26 will move the latch 20 so that the lips 23 and 24 will be disengaged and the hammer will not thereby be held.

Therefore, it will be noted that when the breech-bolt is in its closed and locked position the pin 19 is free to permit movement of the trigger, the lips 23—24 are disengaged to permit firing movement of the hammer and if the fore piece 10 be now pressed backwardly a pull of the trigger will release the hammer and the gun may be discharged.

In order to provide of ready attachment of the barrel to and its removal from the frame said barrel is tapered at its rear end as at 29 to fit a correspondingly tapered barrel receiving recess in the frame, and a retaining pin 30 is inserted crosswise through the frame with the periphery of said pin entering a groove formed transversely across the tapered portion 29 of the barrel as shown in dotted lines in Figure 1 of the drawings. As there is no material force in the use of the firearm tending to move the barrel outwardly from the frame I have found that the pin 29 amply serves to hold the parts together, and that by taking out this pin the barrel may be easily removed.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim—

1. In combination with the pivotally mounted hammer of a firearm, means engaged with said hammer and movable independently thereof for exerting force upon said hammer for firing purposes, means for moving said member along the edge of said hammer to a safety position when the latter is moved to its cocked or its firing position, and means for releasing the hammer.

2. In combination with the pivotally mounted hammer of a firearm, means for exerting force upon said hammer for firing purposes, means for applying said force on different sides of the pivot of said hammer without moving the latter and at the same time for varying the amount of said force exerted upon said hammer, and means for releasing said hammer.

3. In combination with the pivotally mounted hammer of a firearm, a spring for exerting force upon said hammer for firing purposes, means for shifting the force of said spring from one side of the pivot of the hammer to the opposite side thereof without moving the hammer to place the latter in condition for firing, means for increasing the force exerted by said spring upon the hammer by said shifting movement, and means for releasing the hammer.

4. In combination with the pivotally mounted hammer of a firearm, a carrier, a spring mounted on the carrier, a member mounted on the carrier against said spring and movably engaged with said hammer to exert force of said spring against said hammer, means for moving the carrier to slide said member along the edge of said hammer to transfer the force of the spring from one side to the other of said hammer, and means for releasing the hammer.

5. In combination with the pivotally mounted hammer of a firearm, a carrier, a spring pressed plunger mounted in the carrier and slidably engaged with said hammer, means for moving the carrier to slide said member along the edge of the hammer to transfer the force of the spring from one side to the other of the pivot of said hammer, and means for releasing the hammer.

6. In combination with the pivotally mounted hammer of a firearm, a movably mounted carrier, a spring pressed plunger mounted in the carrier, a cam on the hammer to move said plunger inwardly against the tension of its spring, means for shifting the carrier to transfer the force of said spring from one side to the other of the pivot of the hammer and to increase the tension of the spring, and means for releasing said hammer.

7. In combination with the pivotally mounted hammer of a firearm, a pivotally

mounted carrier, a spring pressed plunger mounted in the carrier to slidably engage said hammer to apply the force of the spring on one side of the pivot of the hammer, means for depressing said carrier to slide said plunger along the edge of the hammer to transfer the force of the spring to opposite sides of the pivot of the hammer, and means for releasing the hammer.

8. In combination with the pivotally mounted hammer of a firearm, a carrier, a spring mounted on the carrier to exert its force against said hammer, a cam upon said carrier, a cam lever to engage said cam to depress said carrier, means for actuating the cam lever, and means for releasing the hammer.

9. In combination with the pivotally mounted hammer of a firearm, a pivotally mounted carrier, a spring mounted on the carrier to exert its force upon the hammer upon one side of its pivot, a cam upon said carrier, a cam lever to engage said cam, a slidably mounted fore piece, a connection between said fore piece and lever for operation of the latter, and means for releasing the hammer.

10. In combination with the pivotally mounted hammer of a firearm, a hammer locking latch movably mounted and adapted to engage said hammer and hold it against movement, a breech-bolt, and a cam upon said breech-bolt to engage said latch to move it from the hammer engaging position when the breech-bolt is rotated to its locked position.

11. In combination with the pivotally mounted hammer of a firearm, a pivotally mounted latch adapted to engage said hammer to hold it against movement, a breech-bolt having a locking lug, and a cam upon said lug to engage said latch to move it from the hammer engaging position when the breech-bolt is in its locked position.

12. In combination with the pivotally mounted hammer of a firearm, a trigger for said hammer, a latch movably mounted and adapted to engage said hammer, a safety pin movably mounted in said latch and in engagement with said trigger, and a breech-bolt rotatably mounted in the firearm and having a recess to receive said safety pin only when the breech-bolt is in its locked position.

13. In combination with the pivotally mounted hammer of a firearm, of means for exerting force upon said hammer for firing purposes, means other than said hammer movable relative to the aforesaid means for shifting said force from one side to the other of the pivot of said hammer, and means for releasing said hammer.

14. In combination with the pivotally mounted hammer of a firearm, of means for exerting force upon said hammer for firing purposes, means for changing entirely the point of application of said force upon said hammer, and means for releasing said hammer.

15. In combination with the pivotally mounted hammer of a firearm, of means for exerting force upon said hammer for firing purposes, means for changing entirely the point of application of said force upon said hammer from one side of the pivot to the other, and means for releasing said hammer.

16. In combination with the pivotally mounted hammer of a firearm, of means for exerting force upon said hammer for firing purposes or for safety purposes, means for selectively conditioning the aforesaid means to accomplish either of said purposes without moving the hammer, and a trigger selectively opposing the force of the first mentioned means when the latter is in condition for firing.

17. In combination with the pivotally mounted hammer of a firearm, of means for exerting force upon said hammer, means for changing entirely the point of application of said force upon said hammer so that the said force will hold the hammer against firing or will condition the hammer for firing, means for increasing the amount of the force applied when the hammer is conditioned for firing, and means for releasing the hammer.

18. In combination with the pivotally mounted hammer of a firearm, means for exerting force upon said hammer for firing purposes, means for applying said force on different sides of the pivot of said hammer, a cam surface on said hammer for varying the amount of force exerted upon the latter, and means for releasing said hammer.

19. In combination with the pivotally mounted hammer of a firearm, means for exerting force upon said hammer for firing purposes, means for applying said force on different sides of the pivot of the hammer without releasing the latter from its firing position, and means for releasing the hammer.

20. In combination with the pivotally mounted hammer of a firearm, means for exerting force upon different portions of the hammer for holding the latter against firing and for effecting firing respectively, means for shifting the force producing means from the holding portion to the firing portion of the hammer, means for increasing the force exerted by said first mentioned means when positioned to effect firing and for automatically returning the force producing means to its hammer holding position whenever the hammer is cocked and no operating force is being applied to the second mentioned means, and means for releasing the hammer.

ROBERT M. GARDINER.