Dec. 18, 1945. T. F. HORAN 2,391,237

HAMMER MECHANISM FOR FIREARMS

Filed Jan. 6, 1944

Fig. 1.

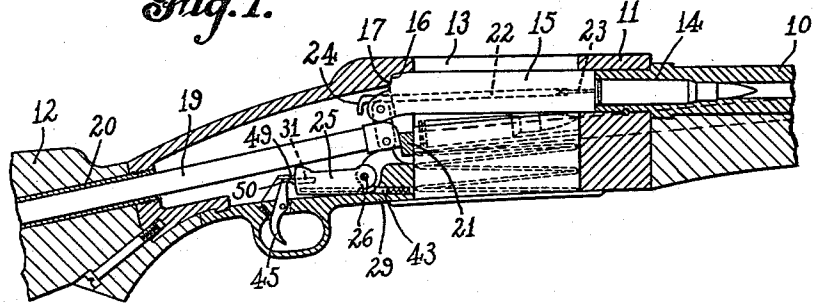


Fig. 2.

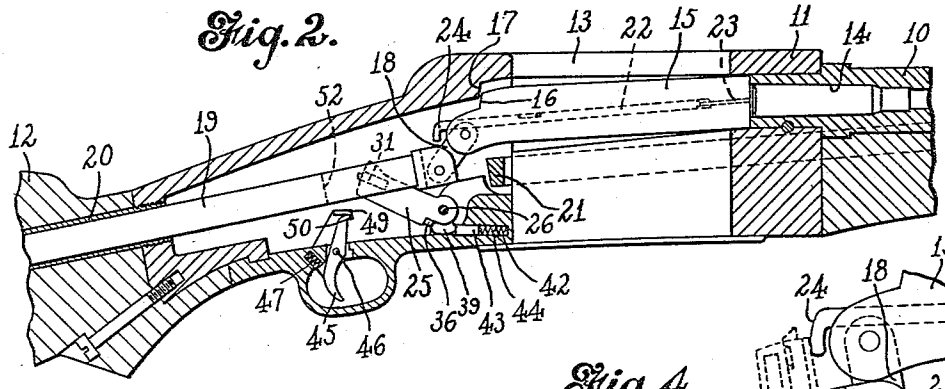


Fig. 3.

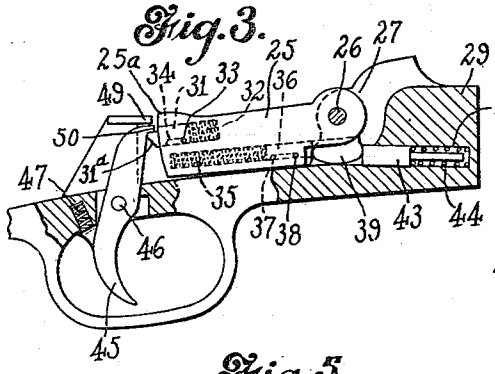


Fig. 4.

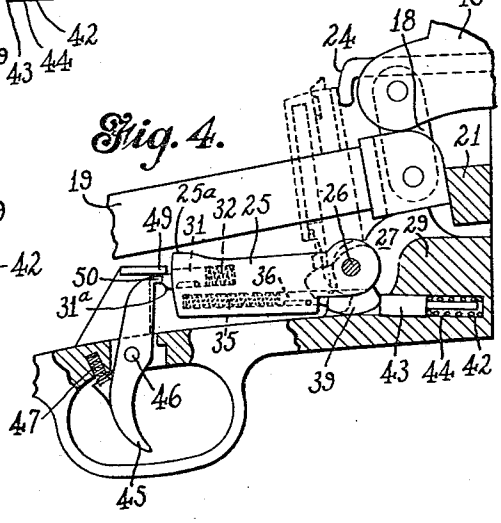
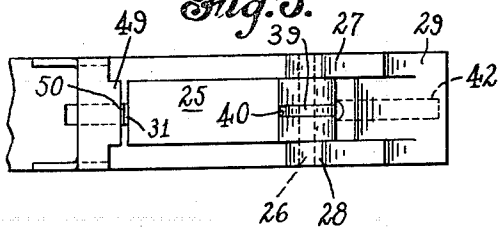


Fig. 5.



INVENTOR.
Timothy F. Horan
BY
Rockwell-Rockwell
ATTORNEYS.

Patented Dec. 18, 1945 2,391,237

UNITED STATES PATENT OFFICE

2,391,237

HAMMER MECHANISM FOR FIREARMS

Timothy F. Horan, New Haven, Conn.

Application January 6, 1944, Serial No. 517,159

6 Claims. (Cl. 42—69)

This invention relates to firearms and, more particularly, to the hammer and trigger mechanism for firearms. As illustrated, it is shown in connection with a firearm of the automatic or semi-automatic type such as is illustrated in my prior application, No. 354,174, filed August 26, 1940, Patent No. 2,341,780.

In firearms of the automatic or semi-automatic type, the hammer is usually cocked by the rearward movement of the bolt, the hammer being arranged to be moved to cocked position by the movement of the bolt where it is caught by a sear which holds it in this position until the trigger is pulled. Devices for effecting this result, in the past, have been more or less complicated and require the utilization of a large number of parts. Also, as the firing pin is usually movably mounted within the bolt, there is, in certain constructions, some difficulty in securing the proper cooperating engagement between the hammer and the firing pin by a simple and inexpensive construction.

One of the objects of the present invention is to provide an improved firearm of the type described, having a novel form of trigger and hammer mechanism.

A further object of the invention is to provide, in a gun of the class described, a hammer mechanism of novel construction which will be simple and economical to manufacture and at the same time be positive and efficient in operation.

Still another object of the invention is to provide an improved hammer mechanism, so constructed and arranged that it will be moved positively against the firing pin by considerable force, in that the tension of the spring, which actuates the hammer, will be maintained throughout the greater part of the stroke of the hammer in contrast to prior devices wherein, at the end of the stroke of the hammer, the spring will be practically spent.

To these and other ends, the invention relates to the novel features and combination of parts to be hereinafter described and claimed.

In the accompanying drawing:

Fig. 1 is a sectional view of a portion of a firearm embodying my invention;

Fig. 2 is a view similar to Fig. 1, showing the parts in a slightly different position;

Fig. 3 is a fragmentary enlarged sectional view, showing the hammer in the position to which it is moved by the rearward movement of the bolt and associated parts;

Fig. 4 is a fragmentary sectional view, showing the position of the parts when the hammer is cocked;

Fig. 5 is a top plan view of the hammer and associated parts.

In illustrating a preferred embodiment of my invention, I have shown in Fig. 1 a firearm having a barrel 10, a receiver 11, and a stock 12, the receiver having an opening 13 for a cartridge clip (not shown) of the usual form. As the present invention is not concerned with this portion of the firearm or the particular mechanism for moving a fresh cartridge into position in front of the bolt, it is unnecessary to show these features in detail. It will suffice to say that it is contemplated that a cartridge inserted into the magazine through the opening 13 will be moved into the cartridge chamber 14 in the rear portion of the barrel.

The cartridge chamber 14 is closed by a breech bolt 15, this bolt being provided with a shoulder 16 designed to lock against a shoulder 17 in the upper portion of the receiver. It will be understood that the shoulders 16 and 17 are slightly beveled so as to facilitate the unlocking of the bolt when the gun is fired.

At its rear end, the bolt is pivoted to one end of a link 18, the other end of which is pivoted to a rodlike inertia member 19 projecting into, and guided, by a tube 20 in the gun stock. Slidably mounted below the bolt and adapted to contact with the forward end of the inertia member 19, when the gun is closed, is a driver 21, which driver may be actuated by the explosion gases of the gun, as explained in my prior application above referred to, so that, when the gun is fired, this driver will be propelled rearwardly against the inertia member 19 so as to drive it rearwardly within the stock.

It may also be stated at this time that, when member 19 is moved rearwardly, it will, by means of the link 18, first move the rear end of the bolt 15 downwardly, thus disengaging the shoulder 16 from the shoulder 17, as shown for example in Fig. 2, and thereupon a continued rearward movement of the member 19 will move the bolt rearwardly to a position in the receiver so that a fresh cartridge can be moved into the position in front of the bolt to be inserted in chamber 14.

In an opening in the bolt 15 is slidably mounted the striker 22, having at its front end the usual firing pin 23, which striker projects from the bolt at its rear end as shown at 24 where it is provided with a downwardly turned portion to be engaged by the hammer 25.

As shown more particularly in Figs. 3, 4, and 5,

the hammer 25 is pivoted at its forward or base end at 26 between two ears 27 and 28 provided upon a supporting member 29, so that it may swing upwardly from the full-line position shown in Fig. 4 to the dotted line position shown in that figure.

At its free end, the hammer is provided with a sear in the form of a plunger 31 urged to protracted position by the spring 32 but retained in a recess in the hammer by means of the engagement therewith of a pin 33 secured to the hammer and disposed in a slot 34 in the plunger. Thus the end of the sear 31 normally projects from the hammer but is retractable into its recess in the hammer against the tension of the spring 32.

Also mounted in a recess in the lower portion of the hammer is a spring 35, the rear end of which bears against a plunger 36 provided with a recessed portion 37 in which lies a pin 38 secured to the hammer so that the plunger has a limited movement in its recess in the hammer and may project slightly therefrom at the forward end of the hammer.

A follower 39 is pivoted at 26 on the same pivotal axis with the hammer and lies within a slot 40 in the end of the latter as shown in Fig. 5, this follower having a free swinging movement about its pivot. In the lower wall of the receiver is provided a rearwardly facing recess 42 in which is mounted a plunger 43 urged outwardly by the spring 44, the outer end of which plunger contacts one edge of the follower 39. The other edge of this follower is designed to contact the outer end of the plunger 36 so as to urge this plunger inwardly and maintain the hammer spring 35 under compression. Preferably the spring 42 will be somewhat stronger than the spring 35 so as to effect this result.

A trigger 45 is pivoted to the receiver at 46 and it lower end is held in a forward or cocked position by the trigger spring 47. Above the upper end of the trigger is an abutment 49, below which the protruding end of the sear 31 is adapted to engage when the hammer is in cocked position, as shown, for example, in Fig. 1 and in full lines in Fig. 4, and the trigger is provided at its upper end with a forwardly extending finger 50 designed to engage the extreme end of the sear 31 and move it out of engagement with the abutment 49 when the trigger is pulled. It will be seen from the position of the parts in Fig. 4, for example, that, when the parts are in cocked position as shown in the full lines in this figure, the movement of the lower end of the trigger rearwardly will cause the finger 50 to move forwardly and thus disengage the sear from the abutment. As the pivot 46 of the trigger is substantially directly below the finger 50, it will be seen that the initial movement imparted to this finger will be substantially horizontal, so that the principal movement of the finger when the trigger is pulled will be toward the sear rather than downwardly, thus disengaging the sear from the abutment before it is moved out of engagement with the sear.

The inertia member 19 is provided with a longitudinal slot 52 to permit the hammer to swing upwardly therethrough and strike against the rear end of the striker. It will be understood that the hammer can thus be positioned directly below this rod and at the same time swing upwardly in a vertical plane and contact the rear end of the striker. Also, this provides for the hammer to be engaged by the front wall of the slot 52 when the gun is fired and be moved downwardly to cocked position from the dotted-line position shown in Fig. 4, which dotted-line position is the firing position of the parts.

The operation of the device will now be described. The parts are illustrated in Fig. 4 of the drawing in the position assumed when the gun is cocked and ready for firing. Upon the trigger 45 being pulled, the finger 50 disengages the sear 31 from the abutment 49 and the hammer spring 35, acting against the swinging follower 39, forces the hammer upwardly about its pivot 26 to strike against the rear end 24 of the striker, as shown in the dotted-line position in Fig. 4, the hammer swinging upwardly through the slot 52. During this movement of the hammer, the plunger 36 would tend to move away from the adjacent end of the follower 39. However, the plunger 43 will move the follower in a clockwise direction about the pivot 26 so that this follower, in general, follows the movement of the hammer upwardly as shown in dotted lines in Fig. 4, so as to maintain the plunger 36 in a position to compress the spring 35 and cause it to continue to exert pressure on the hammer throughout its stroke, whereby it will strike a sharp blow upon the striker. The hammer is now in the position shown in the dotted lines in Fig. 4 and the bolt and associated parts are in the closed positions as shown in Figs. 1 and 4.

Upon the discharge of the gun, the explosion gases will cause the driver 21 to move rearwardly, striking the forward end of the inertia member 19 and causing it to be driven rearwardly into the tube 20 of the stock, drawing with it the bolt 15. Also, the inertia member 19, by engaging the boss 25a, will move the hammer in an anti-clockwise direction about its pivot, as shown for example in Fig. 2, until the hammer has been brought downwardly by this member to the position shown in Fig. 3. It will be remembered that this is immediately after the discharge of the gun with the upper end of the trigger still held in a forward position as, presumably, it has not yet been released by the operator of the gun. The sear 31, which is beveled upon one side as shown at 31a, will be moved past the abutment 49 and past the finger 50, and will engage under the latter as shown in Fig. 3. As soon, however, as the pressure of the finger on the trigger 45 is released, the trigger spring 47 will move the upper end of the trigger rearwardly, thus releasing the plunger or sear 31 from finger 50 and causing the sear to engage below the abutment 49. This places the parts in position for a further operation, as they are now in the full-line position shown in Fig. 4.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all of the details shown but is capable of modification and variation within the spirit of the invention and within the scope of the claims.

What I claim is:

1. A firearm comprising a receiver, a hammer pivoted to the receiver, a spring constructed and arranged to actuate the hammer, a movable follower against which said spring reacts to maintain it under tension during the active stroke of the hammer, and means urging said follower toward said spring.

2. A firearm comprising a receiver, a hammer pivoted to the receiver, a spring constructed and arranged to actuate the hammer, a movable follower acting on said spring to maintain it under tension during the active stroke of the hammer, and a second spring acting on said follower to

urge it toward said first spring to compress the latter.

3. A firearm comprising a receiver, a hammer pivoted to the receiver, a spring constructed and arranged to actuate the hammer, and a spring-pressed movable follower acting on said spring to maintain it under tension during the active stroke of the hammer, said follower being pivoted on the same pivotal axis with the hammer.

4. A firearm comprising a receiver, a hammer pivoted to the receiver, a spring constructed and arranged to actuate the hammer, a spring-pressed movable follower acting on said spring to maintain it under tension during the active stroke of the hammer, said spring being mounted in a recess in the hammer, and a plunger engaging said spring and projecting from said recess, said follower engaging the plunger.

5. A firearm comprising a receiver, a hammer pivoted to the receiver, a spring mounted in a recess in the hammer, a movable follower against which the said spring reacts to move the hammer from cocked position, and means urging said follower toward said spring.

6. A firearm comprising a receiver, a hammer pivoted to the receiver, a spring mounted in a recess in the hammer, a movable follower against which the said spring reacts to move the hammer from cocked position, and means urging said follower toward said spring, said follower being pivotally mounted on a pivot coincident with that of the hammer and disposed within a recess in the hammer.

TIMOTHY F. HORAN.