Oct. 15, 1929. F. K. YONNG 1,732,115

TRIGGER MECHANISM FOR FIREARMS

Filed Nov. 1, 1926

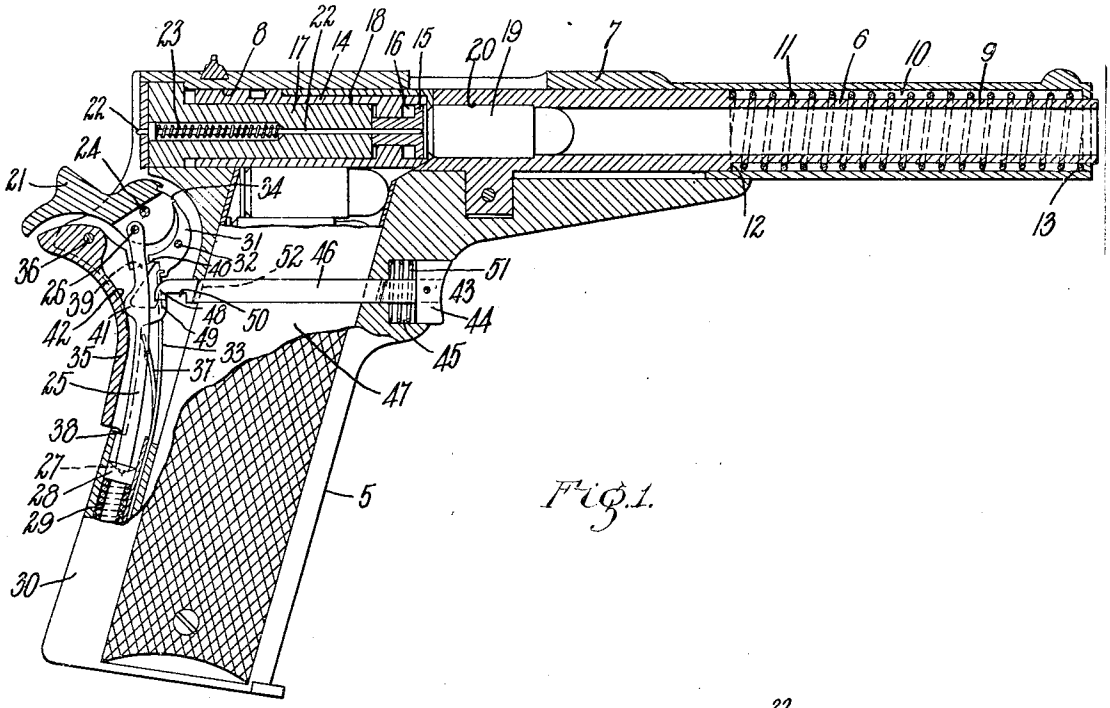



FIG. 1.

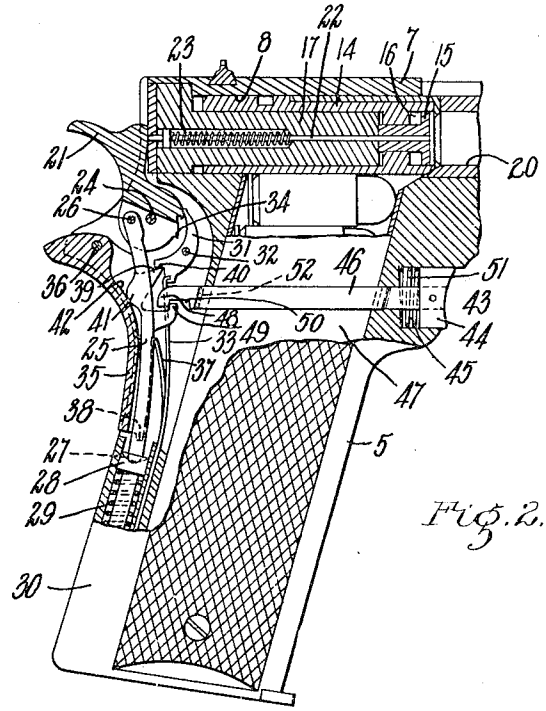



FIG. 2.

Inventor:
Franklin K. Young.
by his atty.
Charles S. Gooding.

Patented Oct. 15, 1929 1,732,115

# UNITED STATES PATENT OFFICE

FRANKLIN K. YOUNG, OF WINTHROP CENTER, MASSACHUSETTS, ASSIGNOR TO AUTOMATIC PISTOLS, INC., OF DOVER, DELAWARE, A CORPORATION OF DELAWARE

## TRIGGER MECHANISM FOR FIREARMS

Application filed November 1, 1926. Serial No. 145,427.

This invention relates to an improvement in firearms and particularly to a trigger mechanism for automatic pistols.

Certain types of automatic pistols in common use are fired by tightly gripping the stock thereof and simultaneously applying pressure to a safety grip at the rear of said stock and to a trigger at the front of said stock, the gripping action of the palm of the hand pressing the safety grip forwardly and operating a safety lock, thereby making it possible to operate the trigger, and a rearward pressure of the forefinger upon said trigger operating the latter. As it is generally necessary to apply a pressure of three and one-half pounds, or more, upon the trigger, before the pistol can be fired, it is very difficult to shoot accurately with this type of firearm, as there is a tendency for the aim to be destroyed when the trigger is pulled.

It is the object of this invention to so construct a pistol and the trigger mechanism therefor, that in applying the pressure necessary to fire said pistol, there will not be the tendency hereinbefore mentioned to destroy the aim, and to accomplish this result, the trigger is located at the rear of the stock, and the safety locking mechanism therefor is actuated from the front of said stock, the result being that the pressure required to operate the trigger is exerted forwardly and the action of the hand in firing the pistol is more in the nature of a squeeze than formerly.

The invention consists in a trigger mechanism for firearms as set forth in the following specification and particularly as pointed out in the claims thereof.

Referring to the drawings:

Figure 1 is a partial side elevation and partial central longitudinal section of a pistol, a trigger mechanism embodying my invention being illustrated in connection therewith, the hammer of the pistol being illustrated in its rearward or cocked position.

Fig. 2 is a sectional view of the trigger mechanism, the hammer being illustrated in its forward or firing position.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 5 represents a stock, 6 a barrel and 7 a slide surrounding said barrel and movable longitudinally thereon. The slide 7 projects rearwardly beyond the rear end of the barrel 6 and has a chamber 8 provided therein in which the breech mechanism of the firearm is located.

The firearm illustrated is of a type in which the slide and breech mechanism are forced rearwardly by the explosion of the cartridge, and the forward portion of the barrel 6 is reduced at 9, thereby forming a space 10 in which a recoil spring 11 is mounted, said spring surrounding the portion 9 of said barrel. The spring 11 at its rear end engages a shoulder 12 formed upon the barrel 6 and at its forward end said spring engages a shoulder 13 provided upon the slide 7 in a manner tending to force said slide forwardly upon said barrel following the rearward movement thereof.

The mechanism hereinbefore described, together with the breech mechanism previously mentioned, form no part of this invention and a detailed description is therefore not necessary. The breech mechanism is similar to the mechanisms that have been described in previous patents granted to me No. 1,157,750, dated October 26, 1915, and No. 1,517,483, dated Dec. 2, 1924, to which reference may be had for a complete description. Briefly described, however, this mechanism embodies therein a locking sleeve 14, which is both reciprocable and rotatable in the chamber 8 behind the barrel 6; a yieldable bolt head 15 mounted in a recess 16 at the forward end of the locking sleeve, and an inertia member 17 located within a bore 18 which extends forwardly from the rear end of said locking sleeve. The bolt head 15 is located directly at the rear of a cartridge 19 when the latter is located in the firing chamber 20 of the barrel 6, the forward extremity of said bolt head contacting with the rear extremity of said cartridge, and the rear extremity of said bolt head contacting with the front extremity of said inertia member, and the rearward thrust caused by the recoil when the cartridge explodes, is transmitted to the bolt head 15 and from thence to the inertia member 17 operating the breech mechanism for purposes well

known to those versed in the art, and including the cocking of a hammer 21.

A firing pin 22 extends longitudinally through the inertia member 17, the forward end of said firing pin being adapted to engage the percussion cap of the cartridge 19, and a spring 23 surrounds said firing pin and acts to normally hold said firing pin out of engagement with said cartridge.

The hammer 21 is pivoted at 24 at the rear of the stock 5 and a strut 25 is pivotally attached at one end thereof at 26 to said hammer, while the other end of said strut is provided with a rounded extremity which projects into a tapered recess 27 provided in the upper extremity of a cap 28 secured to the upper end of a main spring 29, said cap and main spring being located within a housing 30 at the rear of the stock 5. The hammer 21 is held in its cocked position as illustrated in Fig. 1 by a sear 31 pivoted at 32 to the stock 5, and a spring 33 acts to always hold the upper extremity of said sear against the periphery of the hammer 21 and hold said sear in engagement with a notch 34 formed in the periphery of said hammer.

A trigger 35 is provided for the hammer 21, and said trigger is pivotally mounted upon the stock 5 at 36 at the rear of and below said hammer. The trigger 35 extends from a point adjacent to the hammer downwardly at the rear of the stock 5 and is curved forwardly and downwardly in order that it may fit and be gripped by the palm of the hand, and a spring 37 acts to normally hold said trigger in the position illustrated in Fig. 1, at which time a stop 38 at the lower extremity of said trigger engages a portion of the main spring housing. The trigger 35 has a projection or finger 39 formed integral therewith and positioned to engage a surface 40 of the sear 31, and when said trigger is pressed forwardly, said finger will cause the sear to be rocked upon its pivot 32, thereby disengaging the upper extremity of said sear from the notch 34 of the hammer 21 and releasing said hammer from its cocked position, at which time the main spring 29 acting through the strut 25 will force said hammer against the firing pin 22, thereby exploding the cartridge that is located within the firing chamber 20.

The strut 25 has a cam portion 41 formed at the rear thereof, and said cam portion is adapted to engage a surface 42 provided upon the trigger 35, and when the hammer 21 is moved to its cocked position, the strut 25 in moving downwardly will engage the surface 42 of said trigger and force the latter rearwardly until the stop 38 engages the main spring housing.

A safety locking mechanism 43 is provided for the trigger 35 to prevent the latter from being operated accidentally, and said locking mechanism embodies therein a finger piece 44 which is slidably mounted in a recess 45 located at the front of the stock 5. A yoke portion 46 projects rearwardly from the finger piece 44, extending around the cartridge magazine casing 47, and at the rear of said yoke a detent 48 is provided and adapted to engage a similar detent 49 formed upon the trigger 35.

When the hammer 21 is located in its cocked position, as illustrated in Fig. 1, the upper extremity of the detent 49 engages the lower extremity of the detent 48 and the trigger 35 is prevented from being moved forwardly. When pressure is applied rearwardly upon the finger piece 44, the detent 48 is forced rearwardly out of engagement with the detent 49 and forward pressure upon the trigger 35 will cause the detent 48 to enter a notch 50 formed at the rear of the yoke 46. A spring 51 is located within the recess 45 at the rear of the finger piece 44, and said spring acts to always force the locking mechanism 43 forwardly into the position illustrated in Fig. 1. A portion 52 of the yoke 46 engages the magazine casing 47 at the rear thereof and limits the extent to which the locking mechanism 43 may move forwardly within the stock 5.

The general operation of the trigger mechanism hereinbefore specifically described is as follows: Assuming that the various parts are in the position illustrated in Fig. 2 with the hammer in its forward position, and it is desired to shoot the pistol, the action is as follows: With the hand grasping the stock 5, the thumb is placed upon the hammer 21 and the latter is moved rearwardly upon its pivot 24 forcing the strut 25 downwardly against the action of the main spring 29. During the downward movement of the strut 25 the cam portion 41 formed upon said strut engages the surface 42 of the trigger 35 and positively forces said trigger rearwardly until the stop 38 at the lower end thereof engages the wall 30 of the main spring housing. In this position the locking mechanism 43 will be located in its forward position as illustrated in Fig. 1, and the detent 48 at the rear end thereof will engage the detent 49 formed upon the trigger 35 in a manner to prevent a forward movement of said trigger tending to operate the sear to release the hammer until such time as said trigger is released by the locking mechanism.

With the hand now firmly gripping the stock 5 and with the forefinger in position upon the finger piece 44 of the locking mechanism 43, and with the palm of the hand resting against the rear surface of the trigger 35, the finger piece and trigger are squeezed simultaneously, the forefinger forcing the locking mechanism 43 rearwardly and disengaging the detent 48 from the detent 49, and the forward movement of the trigger 35 when the latter is released by the locking mechanism causing the finger 39 of said trig-

ger to rock the sear 31 releasing the hammer 21 and firing the cartridge 19 which is located within the firing chamber 20 in the usual well-known manner.

The actual forward movement that is required of the trigger 35 to release the hammer 21 is very slight, and when the pressure is applied to said trigger, the lower portion of the strut 25 which is rounded and projects into the tapered recess 27 of the cap 28 yields forwardly, said rounded end sliding upon the inclined surface of the recess of the cap, the latter yielding downward slightly against the tension of the spring 29.

The rearward thrust caused by the recoil of the exploding cartridge 19 causes the breech mechanism to be forced rearwardly, automatically throwing out the exploded cartridge shell and allowing a fresh cartridge to be thrown by the magazine mechanism and forward action of the breech mechanism into the cartridge chamber in a well-known manner, and the rearward movement of the breech mechanism forces the hammer 21 rearwardly into a cocked position where it will be locked by the locking mechanism 43 as hereinbefore described. The pistol is then ready to be fired again as hereinbefore set forth.

I claim:

1. In a firearm a stock, a hammer pivotally attached thereto, a trigger located at the rear of said stock and operatively connected to said hammer, and a lock normally obstructing the movement of said trigger and adapted when moved rearwardly to permit a forward movement of the latter to release said hammer from its cocked position.

2. In a firearm a stock, a hammer pivotally attached thereto, a sear adapted to hold said hammer in its cocked position, a trigger located at the rear of said stock and adapted to operate said sear, and a lock normally obstructing the movement of said trigger and adapted when moved rearwardly to permit the operation of said trigger and sear to release said hammer from its cocked position.

3. In a firearm a hammer, a sear for said hammer, a trigger adapted to operate said sear, and a spring-actuated strut operatively connected to said hammer and having a cam portion formed thereon engaging said trigger and adapted to move the latter into a firing position when said hammer is moved to its cocked position.

4. In a firearm a stock, a spring-actuated hammer pivotally attached to said stock, a sear for said hammer, a trigger provided with a finger thereon adapted to operate said sear to release said hammer from its cocked position, said trigger also having a detent formed thereon, and a safety lock normally engaging said detent and obstructing the movement of said trigger in a forward direction and adapted, when actuated, to permit the operation of said trigger and sear to release said hammer from its cocked position.

5. In a firearm a hammer, a sear for said hammer, a spring-actuated strut operatively connected to said hammer, and a trigger provided with a finger thereon adapted to operate said sear to release said hammer from its cocked position, said strut having a cam portion formed thereon engaging said trigger and adapted to move the latter into a firing position when said hammer is moved to a cocked position.

6. In a firearm a hammer, a sear for said hammer, a spring-actuated strut operatively connected to said hammer, a trigger provided with a finger thereon adapted to operate said sear to release said hammer from its cocked position, said strut having a cam portion formed thereon engaging said trigger and adapted to move the latter into a firing position when said hammer is moved to a cocked position, and a locking mechanism normally engaging said trigger and obstructing the movement thereof and adapted, when pressure is applied thereto, to permit the operation of said trigger and sear to release said hammer from its cocked position.

7. In a firearm a hammer, a sear for said hammer, a spring-actuated strut operatively connected to said hammer, a trigger provided with a finger thereon adapted to operate said sear to release said hammer from its cocked position, said strut having a cam portion formed thereon engaging said trigger and adapted to move the latter into a firing position when said hammer is moved to a cocked position, said trigger also having a detent formed thereon, and a safety lock normally engaging said detent and obstructing the movement of said trigger and adapted when actuated to permit the operation of said trigger and sear to release said hammer from its cocked position.

In testimony whereof I have hereunto set my hand.

FRANKLIN K. YOUNG.