July 20, 1943. J D BUCHANAN 2,324,674

FIREARM ACTION

Filed July 3, 1939

FIG. 1.

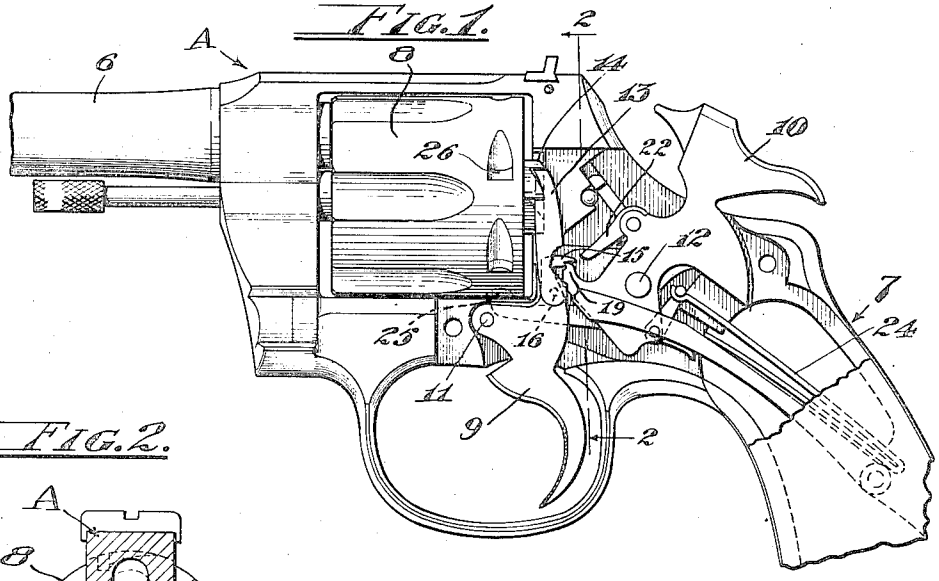


FIG. 2.

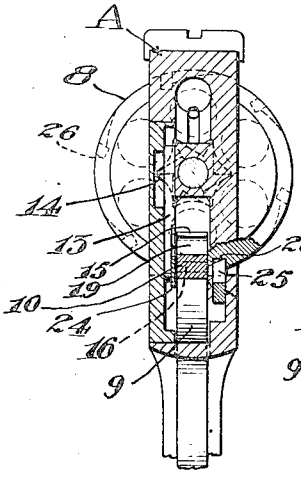


FIG. 6.

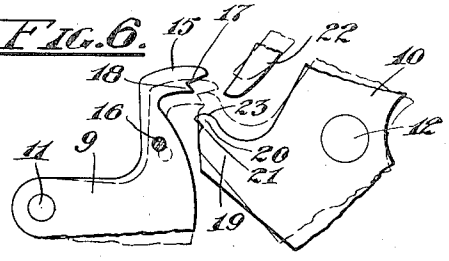


FIG. 5.

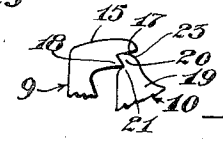


FIG. 4.

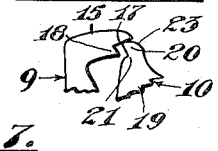


FIG. 3.

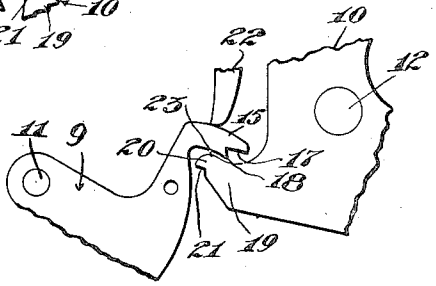
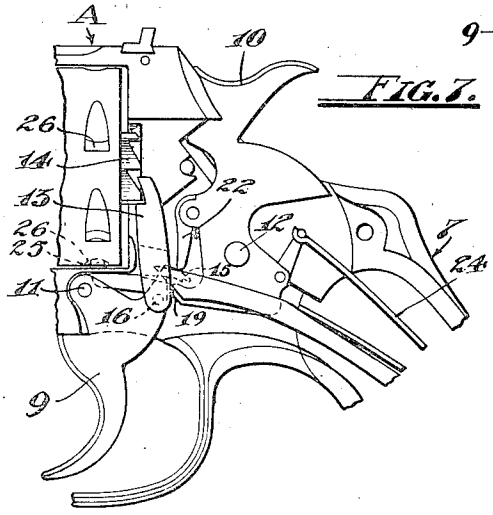


FIG. 7.



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FIREARM ACTION

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2 Claims. (Cl. 42—65)

This invention relates to an action for a firearm, particularly for a revolver having a sear connection between the hammer and trigger.

One object of the invention is to improve the sear connection between the hammer and trigger.

Revolvers are commonly provided with means operated by the trigger for stepping or actuating the cylinder, and with a cylinder lock. It has been found that after repeated use, the stepping means wears whereby the cylinder is not moved far enough to properly align a cartridge with the barrel, at the time that the hammer is moved to fully cocked position.

Another object of the invention is to improve the sear connection between the hammer and trigger whereby the hammer may be moved beyond fully cocked position by an amount necessary to offset the wear on the stepping means, and until the cylinder is moved to locked position and while obtaining the proper sear connection between the hammer and trigger, when the hammer is then permitted to move back to its fully cocked position.

With the foregoing objects in view, together with such other objects and advantages as may subsequently appear, the invention is carried into effect as illustrated by way of example in the accompanying drawing, in which:

Fig. 1 is a view in side elevation of a fragmentary portion of the revolver with a portion of the handle cover removed and showing the hammer in its manually cocked and shortened stroke position;

Fig. 2 is a view in cross section with portions broken away, taken on the line 2—2 of Fig. 1 and as viewed in the direction indicated by the arrows;

Fig. 3 is a detail in elevation of the trigger and hammer connection constituting the essence of the invention and illustrating the parts as disposed in their normal uncocked position;

Fig. 4 is a detail in elevation of a fragmentary portion of the trigger and hammer connection, showing the parts in an initially advanced position relative to each other at the start of the trigger cocking operation;

Fig. 5 is a view depicting the parts shown in Fig. 4 in the cocked position;

Fig. 6 is an elevational view of the parts shown in Figs. 3, 4 and 5 illustrating the mode of operation thereof in effecting release of the hammer;

Fig. 7 is a view in elevation of the revolver action showing the parts disposed in their normal position and in readiness for effecting either automatic operation of the hammer on actuating the trigger, or to effect manual cocking of the hammer.

Referring to the drawing more specifically, A indicates generally a conventional revolver body fitted with the usual barrel 6, grip 7, cartridge cylinder 8, trigger 9, and hammer 10. The trigger and hammer are mounted on pivot pins 11 and 12 respectively in the usual manner; and the trigger 9 is equipped with an upwardly extending pawl 13 having its upper end disposed in operative relation to a ratchet 14 on the barrel 8 to effect turning of the latter a partial revolution on actuation of the trigger in the usual manner.

In carrying out the invention the trigger 9 is formed with an arcuate rearward extension 15 on its upper end which is arranged above the pivot 16 connecting the pawl 13 to the trigger 9, and which arcuate extension 15 is formed on its outer end with a V-shaped sear notch 17 including a lip 18 constituting the lower margin of the notch.

The hammer 10 is formed with an upward and forward extension 19 on its lower forward end portion normally projecting on a plane below the hammer pivot 12 and below the extension 15 on the trigger, and which projection is formed at its tip with a sear 20 arranged for engagement in the sear notch 17 as will presently be described; the sear 20 including a V-notch 21 adapted to receive the lip 18 on the trigger extension 15.

The extensions 15 and 19 are so relatively arranged that when the parts are in their normal uncocked position as shown in Figs. 3 and 7, the trigger extension 15 will overlie the hammer extension 19 in close proximity thereto, and with the tips of the extensions arranged to move along opposed arcuate paths of travel.

The upper margin of the trigger extension 15 is arched longitudinally and affords a seat for a dependent finger 22 pivoted on the forward edge of the hammer 10 through the medium of which automatic operation of the hammer is effected on pulling the trigger in the usual manner.

The upper margin of the hammer extension 19 is rounded lengthwise as indicated at 23 to afford a curved face adapted to be brought to bear against the underside of the trigger extension and to ride thereover when the hammer is moved back on effecting manual cocking thereof.

When the parts are disposed in their normal position as shown in Figs. 3 and 7, that is, with the hammer 10 in its advanced position, the ratchet engaging pawl 13 is disposed in a slightly retracted position relative to the end of a ratchet tooth 14 to be engaged thereby, while the de-

pendent finger 22 on the hammer 10 will be seated on the arcuate upper face of the trigger extension 15.

Automatic operation of the revolver action is effected in the usual manner; pulling of the trigger 9 acting through the extension 15 thereof and the finger 22 abutting thereon to retract the hammer 10 the full length of its retraction stroke at the termination of which the extension 15 will ride clear of the finger 22 thereby permitting advance movement of the hammer 10 under the urge of the usual hammer actuating spring 24 to effect firing of a cartridge carried by the cylinder 8. The pawl 13 acts as usual on retraction of the trigger to advance the cylinder 8 to a position to align a cartridge chamber therein with the bore of the barrel 6 in which position the cylinder is held by a releasable pawl detent 25 engaging a notch 26 in the outer periphery of the cylinder in the usual fashion.

In the operation of the invention, which as before stated has to do only with manual cocking of the hammer 10, the hammer is swung rearwardly on its pivot 12 by forcing the upper end portion of the hammer backward in the manner commonly employed in effecting manual cocking of a revolver hammer. As the upper portion of the hammer moves rearwardly the extension 19 on the hammer moves upwardly so as to cause the rounded upper face 23 thereof to engage the under side of the trigger extension 15 and move the latter upwardly and forwardly until the tip of the extension 19 passes upwardly over the tip of the lip 18 and seats on the upper marginal portion of the sear notch, as shown in Fig. 4.

During the operation just described, the trigger 9 will be rocked such distance as to cause the pawl 13 thereon to engage a tooth of the ratchet 14 and then advance the cylinder 8 to a firing position, that is, with a cartridge chamber therein aligned with the bore of the barrel 6 and in which position the detent pawl 25 will become engaged in one of the notches 26 on the cylinder in the usual manner and thereby limit turning movement of the cylinder. When the cylinder is brought to rest by the detent pawl 25 engaging a notch 26 the rocking movement of the trigger 9 under the action of the hammer extension will be terminated since the tooth of the ratchet 14 engaged by the outer end of the pawl 13 will then act as a stop to limit retraction of the hammer. When the trigger is thus brought to rest its extension 15 will act as a stop to limit retraction of the hammer 10 and whereby the hammer will be brought to rest with the tip of its extension 19 abutting the upper marginal portion of the sear notch 17 and with the tip of the sear 20 spaced from the lower marginal portion of the sear notch 17 as shown in Fig. 4.

On release of the hammer it will be advanced a short distance under the urge of its actuating spring 24 so as to cause the sear 20 to seat in the sear notch 17 as shown in Fig. 5, whereupon forward movement of the hammer will be arrested, the lip 18 of the sear riding into the notch 21 on the hammer extension 19 thereby effecting interlocking connection between the extensions 15 and 19 as shown in Fig. 1 and as indicated in dotted lines in Fig. 6.

When the parts are thus disposed the pressure of the spring 24 on the hammer will be transmitted through the hammer and its extension 19 to the trigger extension 15 and thereby exert an end thrust on the latter in a forward direction whereby the upper end portion of the trigger will be maintained in an advanced position. By reason of the tip of the sear 20 advancing into the sear notch 17 from the position shown in Fig. 4 to that shown in Fig. 5 a slight retractive movement of the upper end of the trigger will be effected so that the pawl 13 will be lowered to dispose the upper end thereof out of contact with the end of the ratchet tooth engaged thereby. This retraction affords sufficient clearance between the pawl and ratchet to permit the trigger, on imposing a pull thereon, to advance the trigger extension 15 upwardly and forwardly out of engagement with the hammer extension 19 so that the sear notch 17 no longer engages the sear 20 as shown in full lines in Fig. 6, and thus effect release of the hammer and cause it to advance on its firing stroke under the urge of the spring 24.

When the hammer is retracted as above set forth it will be brought to rest in an intermediate position. On release of the hammer by pulling the trigger and on release of the trigger the parts will be automatically restored to the normal position shown in Figs. 3 and 7, in readiness for further operation.

The sear and sear notch arrangement herein set forth in association with the intermediate position of the hammer when manually cocked affords a means of compensating for wear of the several wearing parts of the revolver action, including the mounting of the cylinder 8, the pivotal mountings 11 and 12 of the trigger 9 and hammer 10, the abutting surfaces of the pawl 13 and teeth of the ratchet 14, the abutting surfaces of the detent pawl 25 and the notches 26, and of the surfaces of the sear 20 and sear notch 17, whether such wear occurs in the parts separately or collectively, since any lost motion that may be occasioned by wear of the parts will be taken up when the hammer is retracted to the limit of its cocking stroke as determined by the abutment of the sear 20 against the upper wall of the sear notch 17. In order to accomplish such action, the upper wall of the sear notch is elongated and is formed of sufficient length to permit the sear to advance outwardly along such wall whatever distance is necessary in order to take up the lost motion occasioned by wear of the parts. The stopping point of the sear is determined, as before stated, by the pawl 13 advancing the cylinder 8 to the limit of its movement against the detent pawl 25. When such limit is reached, any lost motion due to wear of the parts will be taken up, thereby insuring proper alignment of the cartridge receiving chambers of the cylinder with the bore of the revolver barrel.

I claim:

1. A firearm action comprising the combination of a pivoted trigger extension terminating in a rearwardly facing V notch providing a comparatively short lower lip and an elongated upper lip, the outer end of said elongated upper lip terminating at the extremity of said trigger extension, a hammer having a cooperating pivotal hammer extension having a rounded end bearing on the underside of said trigger extension at a place inwardly of said notch when said hammer is in uncocked position, said pivoted extensions being so constructed and arranged that said rounded end slides outwardly from said place in engagement with said lower lip and then enters said notch as said hammer is moved into cocked position, a sear face on the side of said rounded end engageable with that side of

said V notch defining said lower lip, a cylinder for said firearm action, and stepping means for said cylinder associated with said trigger extension, said rounded end of said hammer extension and said V notch being so constructed and arranged that said rounded end of said hammer extension has slidable engagement along that side of said V notch defining said elongated upper lip to permit said hammer extension, when manually moved to cocked position, to move said trigger extension and said stepping means beyond their normal cocked position, thereby to gradually increase the throw of said stepping means as it wears.

2. An action for the hammer and trigger of a firearm comprising the combination of a pivoted trigger extension comprising an outwardly projecting arm having top and smooth bottom portions terminating in a V notch at the end of said arm in the lower portion thereof, said V notch having an elongated upper lip, the outer end of said upper lip terminating at the extremity of said trigger extension, a pivoted hammer extension comprising an arm projecting toward said trigger arm and having a smooth top and a convex end conjoining a sear face under said end, said end of said hammer extension projecting under said trigger extension inwardly of said V notch, with said smooth top of said hammer arm in face to face relation with said smooth bottom portion of said trigger arm when the hammer is un-cocked in normal position; said smooth top and convex end of said hammer arm being so constructed and arranged that, on initial movement from normal position, said end of said hammer arm slides outwardly along said smooth bottom portion of said trigger arm and then enters said V notch to bring said sear face opposite one side of said V notch when the hammer is manually cocked, a cylinder for said firearm, stepping means on said trigger for said cylinder, a cylinder lock, said elongated lip of said V notch being elongated and constructed and arranged to permit said convex end of said hammer arm to have increasing slidable engagement therewith to permit raising said trigger by increasing amounts and increasing the throw of said stepping means as said stepping means wears.

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