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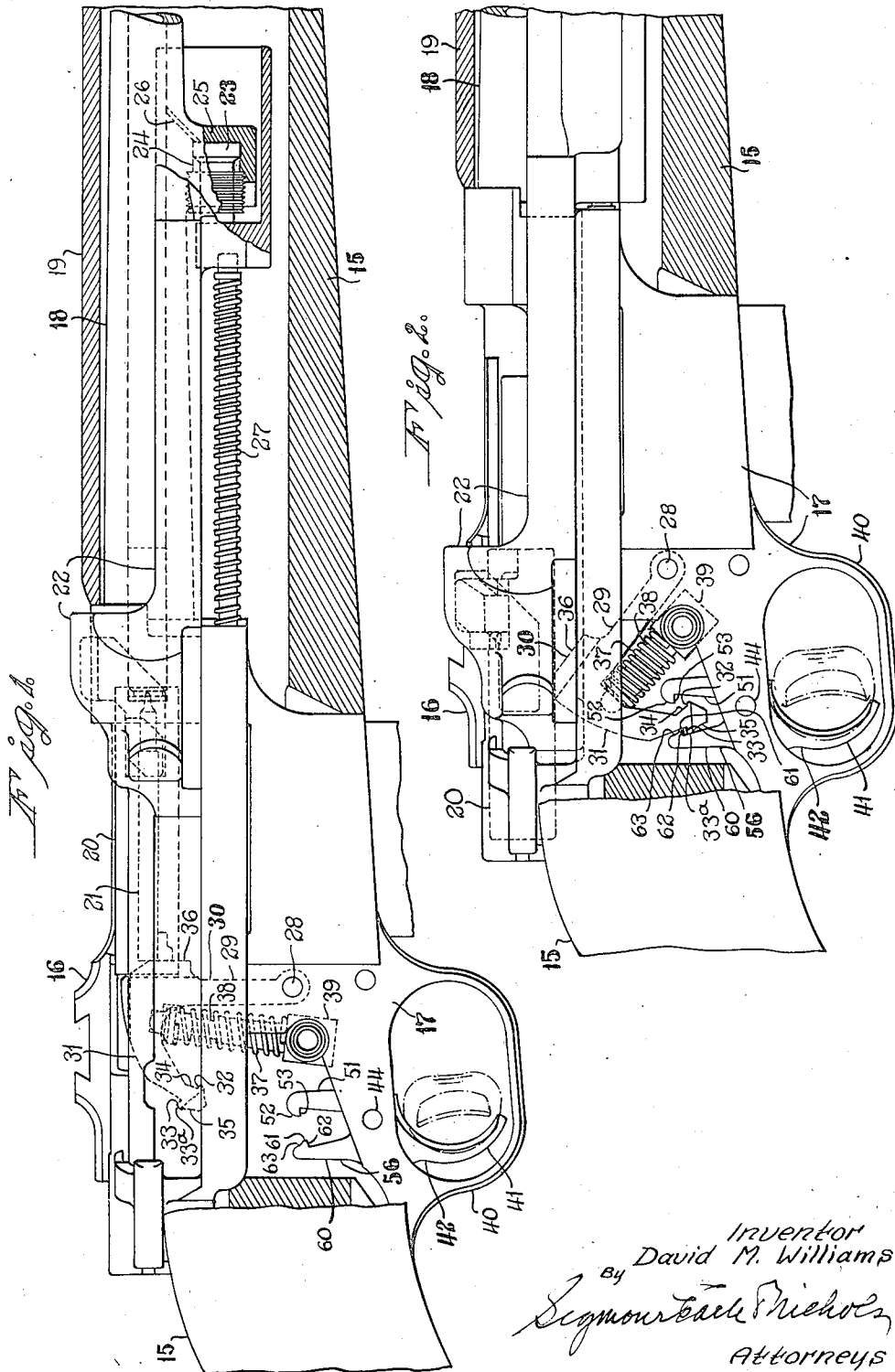
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FIRING MECHANISM FOR FIREARMS

Filed Jan. 29, 1943

3 Sheets-Sheet 1



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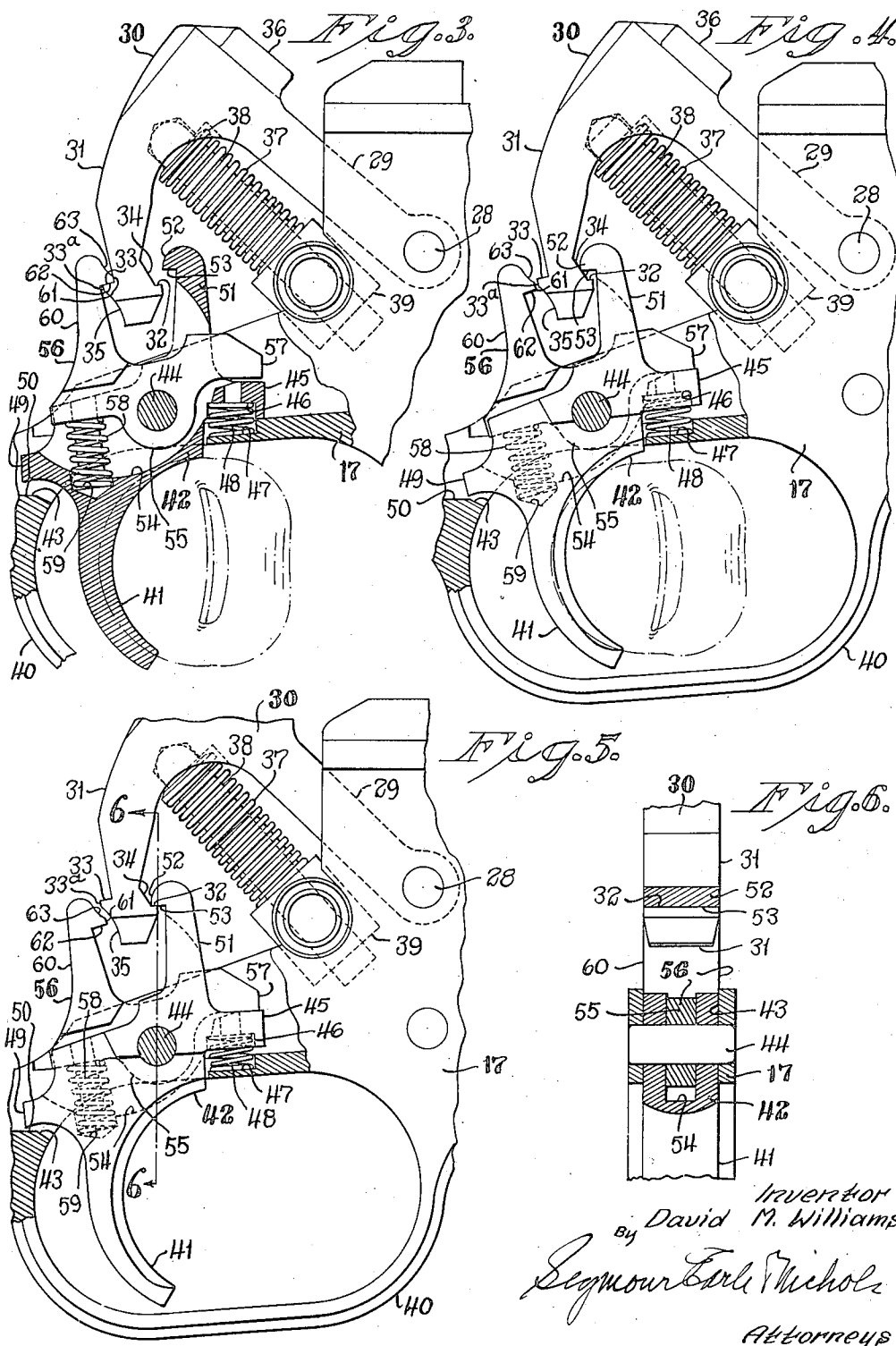
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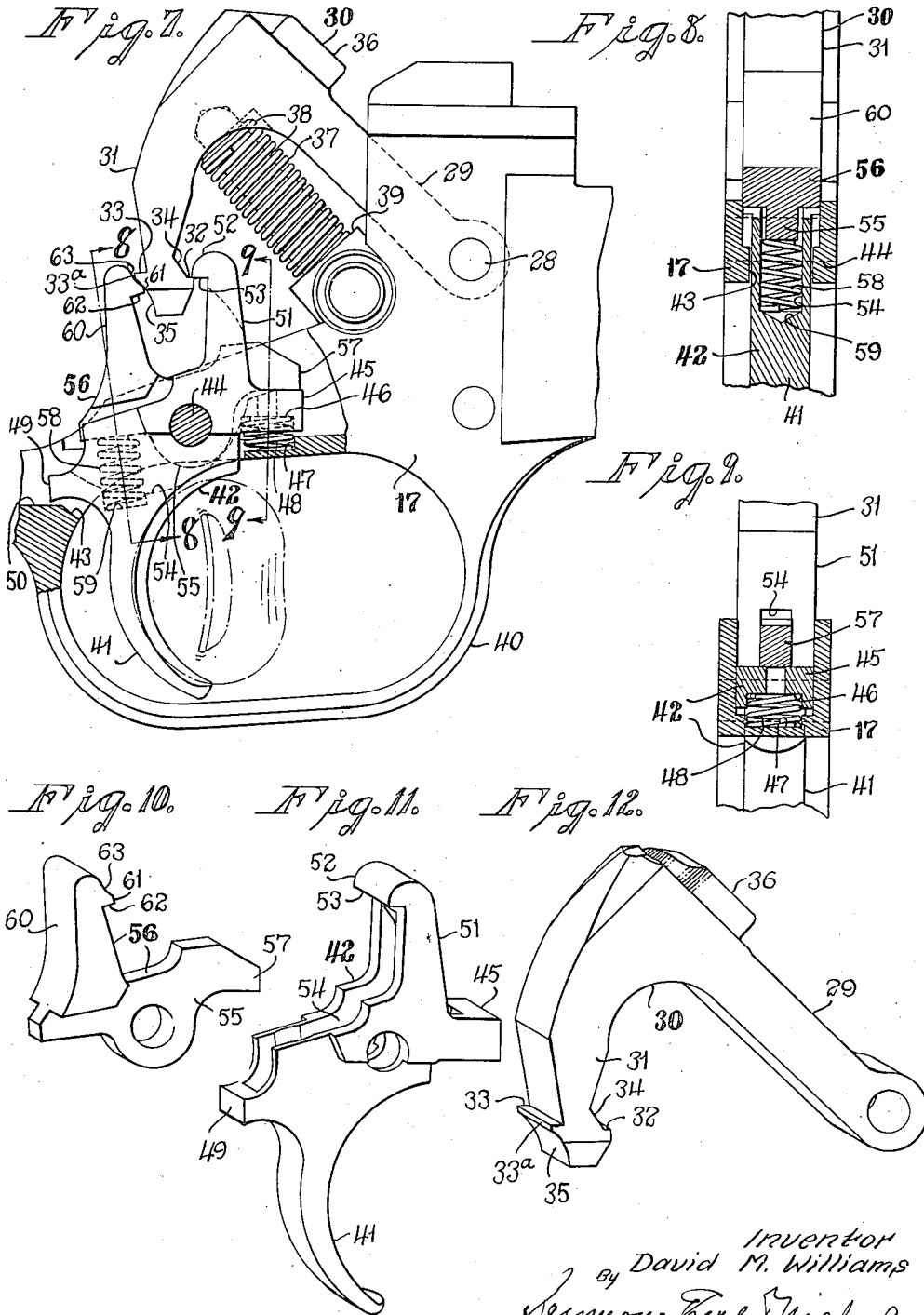
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3 Sheets-Sheet 3



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## UNITED STATES PATENT OFFICE

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## FIRING MECHANISM FOR FIREARMS

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7 Claims. (Cl. 42—69)

The present invention relates to improvements in firing-mechanisms and relates more particularly to improvements in firing-mechanisms which are suitable for use in self-loading firearms, i. e., firearms of the type wherein the discharge of a cartridge effects the automatic extraction and ejection of the just-fired cartridge, and the cocking of the firing-mechanism, as well as the ultimate insertion into the cartridge-chamber of the firearm of a fresh cartridge, preparatory to another cycle of operation.

In order that the following may be more fully understood, it may here be explained that in self-loading firearms, the hammer is thrown back for being cocked so rapidly that the marksman does not have time to relax the rearward draft upon the finger-piece of the trigger before the action referred to is completed. Under these conditions, the hammer will not be caught by the normal sear so as to be retained in its cocked position, but the hammer will immediately swing forwardly as the breech-bolt moves forwardly, and will thus effect the unintentional second discharge of the firearm. Thus, the firearm, instead of requiring, as is intended, the pulling of the trigger for each successive shot, will function as a full automatic firearm. To avoid having the undesired action above described, both a primary-sear and a secondary- or safety-sear have been heretofore employed in self-loading firearms. Such secondary- or safety-sears function to latch the hammer backwardly while the finger-piece of the trigger is still held in its rearward position. When, however, rearward draft upon the finger-piece of the trigger is relaxed, the secondary- or safety-sear releases the hammer for engagement with the primary-sear, which has been restored to substantially its normal position by the relaxation of rearward draft upon the finger-piece of the trigger.

One of the objects of this present invention is to provide a superior firing-mechanism embodying both a primary-sear and a secondary-sear and so constructed and arranged as to reliably perform under adverse conditions.

Another object of the present invention is to provide a superior firing-mechanism embodying both a primary-sear and a secondary-sear and in which provision is made for a substantially "hair-trigger" effect without endangering the surety of action of the mechanism.

A further object of the present invention is to provide a superior firing-mechanism of the character above referred to and in which the effective double-sear action is caused to take place

without requiring but a minimum total amount of trigger-pull to effect the discharge of the firearm.

Still another object of the present invention is to provide a superior firing-mechanism embodying both primary- and secondary-sears and in which provision is made in a simple, reliable and effective manner, for cushioning the engagement of the hammer with the primary-sear following its release by the secondary-sear, to thereby avoid such sharp action as might cause the unintentional release of the hammer.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art and which are not claimed in any separate application.

In the accompanying drawings, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a broken view partly in side elevation and partly in vertical central-longitudinal section of the central portion of a firearm equipped with a firing-mechanism embodying the present invention and showing the firearm at the instant of discharge;

Fig. 2 is a broken view similar to Fig. 1 but showing the parts in the positions which they assume when the breech-bolt reaches the limit of its rearward travel and while the finger-piece of the trigger is still held in its rearward position;

Fig. 3 is a broken view of the hammer, trigger, sears and a portion of the trigger-plate, together with some of the associated parts, and showing the hammer as caught by the secondary-sear;

Fig. 4 is a view similar to Fig. 3 but showing the position of the parts immediately following the release of the hammer by the secondary-sear and just prior to the catching of the hammer by the primary-sear;

Fig. 5 is a view similar to Figs. 3 and 4 but showing the hammer in its normal cocked position as caught by the primary-sear;

Fig. 6 is a broken transverse sectional view taken on the line 6—6 of Fig. 5;

Fig. 7 is a view similar to Figs. 3, 4 and 5 but showing the position which the parts assume at the conclusion of the preliminary pull or take-up-pull phase of the trigger-pull and just prior to the release-pull phase of the trigger-pull;

Fig. 8 is a broken transverse sectional view taken on the line 8—8 of Fig. 7;

Fig. 9 is a similar view taken on the line 9—9 of Fig. 7;

Fig. 10 is a perspective view of the secondary-sear;

Fig. 11 is a similar view of the trigger; and

Fig. 12 is a perspective view of the hammer.

The particular firearm herein chosen for illustration in connection with the present invention includes a stock 15 by which is supported a receiver 16, a trigger-plate 17 and a barrel 18. The said barrel 18, in a manner usual in firearms, projects rigidly forwardly from the receiver 16. Throughout the major portion of its length, the barrel 18 has extending over it a barrel-cover 19 which, like the stock 15, is preferably formed of wood or other heat-insulating and shock-absorbing material.

Reciprocating in the receiver 16 is a breech-bolt 20 in which is axially mounted a reciprocating firing-pin 21. The particular firearm shown is of the gas-operated type and, since the present invention relates to the trigger-mechanism, no detailed description is required herein other than possibly to note that the breech-bolt 20 is operated by means of an action-slide 22 which, in turn, is actuated by a piston 23 located in a rearwardly-opening piston-chamber 24. The said piston-chamber 24 is formed in a cylinder-lug 25 integrally depending from the barrel 18 a short distance forwardly of the rear end thereof. Leading upwardly from the forward end of the piston-chamber 24 to the bore of the barrel 18 is an inclined gas-passage 26. The action-slide 22 and hence, also, the breech-bolt 20, are urged forwardly by a helical breech-closing spring 27, as is shown in Fig. 1.

The trigger-plate 17 is provided about midway of its length with a transverse hammer-pin 28 located in substantially the same vertical plane as the rear end of the breech-bolt 20 when the latter is in its forward or breech-closing position, as shown in Fig. 1. Pivotally mounted upon the hammer-pin 28 just referred to, is the lower end of the normally-vertical arm 29 of a pivotal hammer generally designated by the reference character 30. In addition to its arm 29, the hammer 30 includes a rearwardly- and downwardly-curved arcuate arm or tail 31 formed integral with the outer end of the said arm 29.

Formed on the inner lower portion of the free end of the tail 31 of the hammer 30 is a primary cocking-abutment 32 extending in a plane which is substantially radial with respect to the center of the hammer-pin 28. A secondary cocking-abutment 33 also forms a feature of the hammer 30 and is located on the upper surface of a cocking-rib 33a formed on the outer lower portion of the tail 31 of the said hammer.

The cocking-abutment 33 is also located in a plane which extends substantially radially from the center of the hammer-pin 28 but is displaced with respect to the plane of the primary cocking-abutment 32 in a direction toward the arm 29 of the hammer 30. It will be noted by reference to the drawings that the width of the primary cocking-abutment 32 in a direction radially from the hammer-pin 28 is materially less than the width in a similar direction of the secondary cocking-abutment 33. Leading upwardly at an obtuse angle with respect to the primary cocking-abutment 32 is an inclined checking-surface 34 arranged to coact with a primary-sear in a manner as will be hereinafter described.

The portion of the free end of the tail 31 of the hammer 30 lying outwardly beyond the sec-

ondary cocking-abutment 33 thereof is formed with a concave face 35 which may be said to lead generally downwardly and forwardly from the rear edge of the said secondary cocking-abutment 33 when the hammer 30 is in its cocked position. On the forward face of the outer portion of the substantially-vertical arm 29 of the hammer 30 is formed a hammer-lug 36 which is adapted to strike the rear end of the firing-pin 21 to drive the same forwardly and thus effect the discharge of the firearm, all in a manner well understood in the art.

For the purpose of swinging the hammer 30 in a clockwise direction (as viewed in the drawings), a helical hammer-spring 37 is employed. The said hammer-spring 37 in the instance shown encircles a plunger 38 and thrusts the same outwardly. The outer end of the plunger 38 bears in the under portion of the arcuate tail 31 of the hammer 30 near its junction with the arm 29, while the opposite end of the said plunger reciprocates in a trunnion-block 39 pivoted in the trigger-plate 17. As shown, the lower or inner end of the hammer-spring 37 bears upon the upper surface of the trunnion-block 39 and by urging the plunger 38 outwardly serves to, in turn, urge the hammer 30 to turn in a clockwise direction.

The rear portion of the trigger-plate 17 is formed with a depending loop-like trigger-guard 40 serving to shield the curved finger-piece 41 of a pivotal trigger generally designated by the reference character 42. The said trigger 42 extends through a vertical longitudinal passage 43 formed in the rear portion of the trigger-plate 17 and communicating at its upper end with the upper surface of the rear portion of the said trigger-plate and also communicating with the under surface of the said trigger-plate within the rear portion of the trigger-guard 40.

The trigger 42 is mounted for pivotal movement upon a transverse pivot-pin 44 extending crosswise of the vertical-longitudinal passage 43 in the trigger-plate 17 and supported in the respective opposite side-walls thereof. Forwardly of the pivot-pin 44, the trigger 42 is formed with a lug 45 having a shallow downwardly-opening spring-pocket 46 in its under face in alignment with an upwardly-opening spring-pocket 47 formed in the adjacent portion of the trigger-plate 17, as is especially well shown in Figs. 3 to 5 inclusive. Fitting at its respective upper and lower ends into the spring-pockets 46 and 47 is a helical trigger-spring 48 which exerts a constant but yielding effort to turn the trigger 42 in a counterclockwise direction, as viewed in the drawings.

To the rear of the pivot-pin 44 and at the upper rear portion of its finger-piece 41, the trigger 42 is formed with a rearwardly-projecting stop-finger 49 which is normally engaged with an upwardly-facing stop-abutment 50 located in the rear portion of the passage 43 in the trigger-plate 17.

The trigger 42 includes an integral upwardly-extending primary sear-arm 52 having at its upper end an integral rearwardly-extending sear-nose or hook 52. The under face of the sear-nose 52 extends substantially perpendicularly with respect to a line drawn from it to the center of the pivot-pin 44 and constitutes a cocking-abutment designated by the reference character 53. The said cocking-abutment 52 is adapted to coact with both the primary cocking-abutment 32 of the hammer 30 and the checking-

surface 34 thereof, all in a manner as will hereinafter appear.

The trigger 42 is itself formed with a central vertical-longitudinal recess 54 which opens mainly upwardly and which extends also horizontally through the lower portion of the primary sear-arm 51, as is especially well shown in Fig. 3.

Fitting within the vertical-longitudinal recess 54 in the trigger 42 with capacity for oscillating movement therein, is the plate-like lower portion 55 of a secondary-sear generally designated by the reference character 56. About midway of its length, the lower portion 55 of the secondary-sear 56 is suitably perforated for the reception of the pivot-pin 44 upon which latter the secondary-sear is pivotally mounted for concentric swinging movement with respect to the trigger 42. At its forward end, the plate-like lower portion 55 of the secondary-sear 56 is formed with a stop-finger 57 reaching through the forward portion of the vertical-longitudinal recess 54 in the trigger 42 and normally having its under face in engagement with the upper face of the lug 45 at the forward end of the trigger 42 to limit the clockwise turning movement of the secondary-sear with respect to the said trigger.

Thrusting upwardly against the under face of the rear of the plate-like lower portion 55 of the secondary-sear 56, is the upper end of a helical sear-spring 58. The lower end of the said sear-spring 58 extends downwardly into a shallow upwardly-opening spring-pocket 59 formed in the rear portion of the trigger 42 at the bottom of the vertical-longitudinal recess 54 therein.

The secondary-sear 56 includes a sear-arm 60 formed integral with and upstanding from the rear portion of the plate-like lower portion 55. The sear-arm 60 terminates at its upper end in a forwardly-extending sear-nose 61, the under face of which constitutes a cocking-abutment 62 which is adapted to engage with the secondary cocking-abutment 33 of the hammer 30, all in a manner as will hereinafter appear. The forward face 63 of the upper portion of the sear-nose 61 is concave and has a generally downwardly-and-forwardly-sloping direction to accommodate under certain conditions the secondary cocking-rib 33a of the hammer 30.

#### Operation

For purposes of making clear the operation of the present invention, let it be assumed that the parts are in the positions which they occupy in Fig. 1, which figure shows the finger-piece 41 of the trigger as having been pulled rearwardly to the limit of its movement in that direction to thus release the hammer 30. In the figure referred to, the hammer has reached the limit of its clockwise swinging movement under the urge of the hammer-spring 37 and has driven the firing-pin 21 forwardly to effect the discharge of the firearm.

The discharge of the cartridge as above described will cause gas under pressure to pass downwardly through the gas-passage 26 into the forward portion of the piston-chamber 24 and thereby drive the piston 23 rearwardly. The rearward movement of the piston, while but relatively short in stroke, will drive the action-slide 22 rearwardly against the tension of the breech-closing spring 27, and thereby also drive the breech-bolt 20 rearwardly to the limit of its rearward travel, as shown in Fig. 2.

In traveling rearwardly as just above described, the breech-bolt 20 will rock the hammer 30 in a counter-clockwise direction against the tension of the hammer-spring 37 and will force the concave

face 35 of the tail 31 of the hammer 30 to rock the secondary-sear 56 in a counterclockwise direction with reference to the trigger 42, by camming engagement with the concave face 63 of the said secondary-sear. The parts may now be assumed to have reached the position in which they are shown in Fig. 2, from which it will be noted that the breech-bolt 20 has turned the hammer 30 to a degree sufficient to over-cock the same, i. e., to place the upwardly-facing secondary cocking-abutment 33 of the hammer 30 in a plane slightly below the downwardly-facing cocking-abutment 62 of the secondary-sear 56.

Following the action by which the parts reach the position in which they are shown in Fig. 2, the breech-closing spring 27 will assert itself and again restore the breech-bolt to its full forward position, thereby freeing the hammer 30 for swinging movement in a clockwise direction. Under the circumstances, the hammer 30 will swing but a slight distance in a clockwise direction before its upwardly-facing secondary cocking-abutment 33 engages with the downwardly-facing cocking-abutment 62 of the secondary-sear 56, as is shown in Fig. 3.

Now when rearward draft upon the finger-piece 41 of the trigger 42 is relaxed, the said trigger will swing in a counterclockwise direction toward its normal position and will carry with it the secondary-sear 56 to thereby disengage the cocking-abutment 62 of the latter from the secondary cocking-abutment 33 of the hammer 30, as shown in Fig. 4.

As soon as the hammer 30 is released by the partial counterclockwise turning movement of the trigger 42 and the secondary-sear 56 as just above described, the hammer 30 will swing slightly further in a clockwise direction until its checking-surface 34 engages with the lower rear corner of the sear-nose 61 of the trigger 42. Under the circumstances just described, the sloping checking-surface 34 will act as a cam-surface and force the trigger 42 to turn in a clockwise direction (and also the secondary-sear 56 carried by the said trigger) against the tension of the trigger-spring 48. The hammer 42 will continue to turn a short distance in a clockwise direction until the primary cocking-abutment 32 thereof is engaged with the downwardly-facing cocking-abutment 53 of the trigger 42, as is shown in Fig. 5, whereupon the parts may be said to have reached their normal cocked positions in which the firearm is in readiness for again being discharged.

By employing the checking-surface 34 or its equivalent and having the same engage with the primary-sear before the primary cocking-abutment 32 engages with the cocking-abutment 53 of the trigger 42, a sufficient retardation is given to avoid having the parts rebound and thus possibly accidentally effect the release of the hammer when such release is unintended. It will be noted that the checking-surface 34 is sloped with respect to the arcuate path followed by it in swinging about the hammer-pin 28 as a center, so as to cam the trigger in a clockwise direction.

With the trigger-mechanism in readiness to again effect the discharge of the firearm as is shown in Fig. 5, the marksman may effect such discharge by drawing rearwardly upon the finger-piece 41 of the trigger. During the first phase of movement, the resistance encountered will be substantially solely that of the trigger-spring 48 and the said phase will continue until such time as the parts reach the positions in which they are

shown in Fig. 7. When the parts reach the positions just referred to, the downwardly-facing cocking-abutment 53 of the trigger 42 will have moved forwardly along the surface of the upwardly-facing primary cocking-abutment 32 of the hammer 30 until but a very slight further movement will effect complete release of the hammer. At this time, however, the sear-nose 61 of the secondary-sear 56 will engage with the concave face 35 at the free end of the tail 31 of the hammer 30, whereupon increased resistance will be encountered by the finger of the user to further rearward draft upon the finger-piece 41. This further resistance will be caused by the force of the sear-spring 58. The first phase of the movement of the trigger 42 to bring it from the position shown in Fig. 5 to the position shown in Fig. 7 may be designated as the "take-up pull" or "preliminary pull." Upon the completion of the said take-up or preliminary pull, the marksman is advised that a very slight further pull will effect the discharge of the firearm. The second stage of the pull upon the trigger 42 is commonly known as the "release pull" or "second-stage pull."

Now as rearward draft is continued to be exerted upon the finger-piece 41 of the trigger 42 during the second stage or release pull of the said trigger, the resistance encountered will be mainly provided by both the trigger-spring 48 and the sear-spring 58, since the secondary-sear 56 must now yield in a counterclockwise direction relative to the trigger 42, which latter is now being swung in a clockwise direction.

The instant that, during the second-stage movement of the trigger 42, the rear edge of the downwardly-facing cocking-abutment 53 of the trigger 42 clears the forward edge of the upwardly-facing primary cocking-abutment 32 of the hammer 30, the said hammer will be released to the action of its hammer-spring 37 and will swing in a clockwise direction into the position in which it is shown in Fig. 1, to thereby effect the discharge of the firearm and the repetition of a full cycle of operations similar to that already described.

It will be noted that at the conclusion of the preliminary pull or take-up pull and at the start of the second stage or release pull upon the trigger 42, the secondary sear-rib 33a of the hammer 30 fits into the space provided by the concave face 63 of the secondary-sear 56, while at the same time the sear-nose 61 of the said secondary-sear is accommodated in the space provided by the concave face 35 of the hammer 30, as is especially well shown in Fig. 7. Now as the second-stage or release pull is applied to the trigger 42, this interfitting of the sear-rib 33a and sear-nose 61 respectively with the concave surfaces 63 and 35 will continue until the hammer 42 is fully released to discharge the firearm. In this manner, not only is the required total clockwise movement of the trigger minimized, but the movement of the hammer 30 between its position shown in Fig. 3 and that shown in Fig. 5 is also kept at a minimum, thus making the entire trigger-mechanism substantially as sensitive and as free of lost motion as an ordinary trigger-and-sear mechanism, in which no secondary- or safety-sear is employed.

By minimizing the distance which the hammer 30 advances in a clockwise direction when moving from the position in which it is held by the secondary-sear 56 (Fig. 3) into the position in which it is caught by the cocking-abutment 53 of the trigger 42 (Fig. 5), the shock imposed upon both the primary cocking-abutment 32 of the hammer

and the primary cocking-abutment 53 of the trigger is also minimized. This minimizing of shock is due mainly to the fact that the said hammer has not been permitted to travel a sufficient distance to gather an appreciable amount of momentum. In other words, were the said hammer to be permitted to swing a much greater distance than that represented by its travel just above referred to, it would in all likelihood gather such momentum as would occasion an undue sharp or harsh engagement between the cocking-abutments 32 and 53 and not only tend to damage the same but to cause, under some conditions, the rebounding or bouncing of the said abutments with respect to each other, with the possibility of causing the said abutments to slip out of engagement with each other, and hence causing the accidental and unintentional discharge of the firearm.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A firing-mechanism for firearms, comprising: a pivotal trigger provided with a primary cocking-abutment and having an advanced or hammer-latching position and a retired or hammer-releasing position; a trigger-spring urging the said trigger into its advanced position; a secondary-sear associated with the said trigger for movement with respect thereto and therewith and provided with a secondary cocking-abutment; abutment-means constructed and arranged to cause the said secondary-sear to move with the said trigger when the latter moves toward its advanced position under the urge of the said trigger-spring; a sear-spring yieldingly coupling the said secondary-sear to the said trigger for yielding movement therewith when the said trigger is manually pulled into its retired position; and a pivotal hammer having a primary cocking-abutment engageable with the primary cocking-abutment of the said trigger and also having an inclined checking-surface adjacent its said primary cocking-abutment and disposed at an obtuse angle with respect thereto in position for engagement by a portion of the trigger adjacent the primary cocking-abutment thereof, the said hammer also having a secondary cocking-abutment engageable with the secondary cocking-abutment of the said secondary-sear; all of the four aforesaid cocking-abutments being positioned with respect to each other so that the two said secondary-abutments engage with each other prior to the engagement of the two said primary cocking-abutments with each other.

2. A firing-mechanism for firearms, comprising: a pivotal trigger having a vertical-longitudinal passage therein and provided with a primary cocking-abutment, the said trigger having an advanced or hammer-latching position and a retired or hammer-releasing position; a trigger-spring urging the said trigger into its advanced position; a secondary-sear provided with a secondary cocking-abutment and located in the vertical-longitudinal passage in the said trigger for movement with respect thereto and therewith; abutment-means adjacent the forward ends of both the said trigger and the said secondary-sear and constructed and arranged to cause the

said secondary-sear to move with the said trigger when the latter moves into its advanced position under the urge of the said trigger-spring; a sear-spring yieldingly coupling the said secondary-sear to the said trigger for yielding movement therewith when the said trigger is manually pulled into its retired position; and a pivotal hammer having a primary cocking-abutment engageable with the primary cocking-abutment of the said trigger and also having an inclined checking-surface adjacent its said primary cocking-abutment and disposed at an obtuse angle with respect thereto in position for engagement by a portion of the trigger adjacent the primary cocking-abutment thereof, the said hammer also having a secondary cocking-abutment engageable with the secondary cocking-abutment of the said secondary-sear; all of the four aforesaid cocking-abutments being positioned with respect to each other so that the two said secondary-abutments engage with each other prior to the engagement of the two said primary cocking-abutments with each other.

3. A firing-mechanism for firearms, comprising: a pivotal trigger provided with a primary cocking-abutment and having an advanced or hammer-latching position and a retired or hammer-releasing position; a pivot-pin extending transversely through the said trigger to pivotally support the same; a trigger-spring urging the said trigger into its advanced position; a secondary-sear pivoted upon the aforesaid pivot-pin and associated with the said trigger for movement with respect thereto and therewith and provided with a secondary cocking-abutment; abutment-means constructed and arranged to cause the said secondary-sear to move with the said trigger when the latter moves toward its advanced position under the urge of the said trigger-spring; a sear-spring yieldingly coupling the said secondary-sear to the said trigger for yielding movement therewith when the said trigger is manually pulled into its retired position; and a pivotal hammer having a primary cocking-abutment engageable with the primary cocking-abutment of the said trigger and also having an inclined checking-surface adjacent its said primary cocking-abutment and disposed at an obtuse angle with respect thereto in position for engagement by a portion of the trigger adjacent the primary cocking-abutment thereof, the said hammer also having a secondary cocking-abutment engageable with the secondary cocking-abutment of the said secondary-sear; all of the four aforesaid cocking-abutments being positioned with respect to each other so that the two said secondary-abutments engage with each other prior to the engagement of the two said primary cocking-abutments with each other.

4. A firing-mechanism for firearms, comprising: a pivotal trigger having a vertical-longitudinal passage therein and provided with a primary cocking-abutment, the said trigger having an advanced or hammer-latching position and a retired or hammer-releasing position; a pivot-pin extending transversely through the said trigger to pivotally support the same and spanning the vertical-longitudinal passage therein; a trigger-spring urging the said trigger into its advanced position; a secondary-sear provided with a secondary cocking-abutment and located in the vertical-longitudinal passage in the said trigger for movement with respect thereto and therewith and pivoted upon the portion of the afore-

said pivot-pin spanning the vertical-longitudinal passage in the said trigger; abutment-means constructed and arranged to cause the said secondary-sear to move with the said trigger when the latter moves toward its advanced position under the urge of the said trigger-spring; a sear-spring yieldingly coupling the said secondary-sear to the said trigger for yielding movement therewith when the said trigger is manually pulled into its retired position; and a pivotal hammer having a primary cocking-abutment engageable with the primary cocking-abutment of the said trigger and also having an inclined checking-surface adjacent its said primary cocking-abutment and disposed at an obtuse angle with respect thereto in position for engagement by a portion of the trigger adjacent the primary cocking-abutment thereof, the said hammer also having a secondary cocking-abutment engageable with the secondary cocking-abutment of the said secondary-sear; all of the four aforesaid cocking-abutments being positioned with respect to each other so that the two said secondary abutments engage with each other prior to the engagement of the two said primary cocking-abutments with each other.

5. A firing-mechanism for firearms, comprising: a pivotal trigger provided with a downwardly-facing primary cocking-abutment, the said trigger having an advanced or hammer-latching position and a retired or hammer-releasing position; a trigger-spring urging the said trigger into its said advanced position; a secondary-sear associated with the said trigger for movement with respect thereto and therewith, the said secondary-sear being provided with a sear-nose having a concave forward face and provided with a downwardly-facing secondary cocking-abutment beneath the said concave face; abutment-means constructed and arranged to cause the said secondary-sear to move with the said trigger when the latter moves toward its advanced position under the urge of the said trigger-spring; a sear-spring yieldingly coupling the said secondary-sear to the said trigger for yielding movement therewith when the said trigger is manually pulled into its retired position; and a pivotal-hammer having a portion fitting between the primary cocking-abutment of the trigger and the secondary cocking-abutment of the said secondary-sear, the said portion of the hammer being provided with an upwardly-facing primary cocking-abutment engageable with the primary cocking-abutment of the said trigger, the said portion of the hammer also having an inclined checking-surface adjacent its said primary cocking-abutment and disposed at an obtuse angle with respect thereto in position for engagement by a portion of the trigger adjacent the primary cocking-abutment thereof, the said portion of the hammer also having a secondary cocking-abutment engageable with the downwardly-facing secondary cocking-abutment of the said secondary-sear and formed with a concave rearward face beneath its said secondary cocking-abutment; all four of the aforesaid cocking-abutments being positioned with respect to each other so that the two said secondary-abutments engage with each other prior to the engagement of the two said primary cocking-abutments with each other.

6. A firing-mechanism for firearms, comprising: a pivotal trigger having a vertical-longitudinal passage therein and provided with a downwardly-facing primary cocking-abutment, the

said trigger having an advanced or hammer-latching position and a retired or hammer-releasing position; a pivot-pin extending transversely through the said trigger to pivotally support the same and spanning the vertical-longitudinal passage therein; a trigger-spring urging the said trigger into its said advanced position; a secondary-sear located in the vertical-longitudinal passage in the said trigger for movement with respect thereto and therewith and pivoted upon the portion of the aforesaid pivot-pin spanning the vertical-longitudinal passage in the said trigger, the said secondary-sear being provided with a sear-nose spaced rearwardly of the primary cocking-abutment of the said trigger and having a concave forward face and provided with a downwardly-facing secondary cocking-abutment beneath the said concave face; abutment-means constructed and arranged to cause the said secondary-sear to move with the said trigger when the latter moves toward its advanced position under the urge of the said trigger-spring; a sear-spring yieldingly coupling the said secondary-sear to the said trigger for yielding movement therewith when the said trigger is manually pulled into its retired position; and a pivotal-hammer having a portion fitting between the primary cocking-abutment of the trigger and the secondary cocking-abutment of the said secondary-sear, the said portion of the hammer being provided with an upwardly-facing primary cocking-abutment engageable with the primary cocking-abutment of the said trigger, the said portion of the hammer also having an inclined checking-surface adjacent its said primary cocking-abutment and disposed at an obtuse angle with respect thereto in position for engagement by a portion of the trigger adjacent the primary cocking-abutment thereof, the said portion of the hammer also having a secondary cocking-abutment engageable with the downwardly-facing secondary cocking-abutment of

the said secondary-sear and formed with a concave rearward face beneath its said secondary cocking-abutment; all four of the aforesaid cocking-abutments being positioned with respect to each other so that the two said secondary-abutments engage with each other prior to the engagement of the two said primary cocking-abutments with each other.

7. A firing-mechanism for firearms, comprising: a pivotal trigger provided with a primary cocking-abutment and having an advanced or hammer-latching position and a retired or hammer-releasing position; a trigger-spring urging the said trigger into its advanced position; a secondary-sear associated with the said trigger for movement with respect thereto and therewith and provided with a secondary cocking-abutment; abutment-means constructed and arranged to cause the said secondary-sear to move with the said trigger when the latter moves toward its advanced position under the urge of the said trigger-spring; a sear-spring yieldingly coupling the said secondary-sear to the said trigger for yielding movement therewith when the said trigger is manually pulled into its retired position; and a pivotal hammer having a primary cocking-abutment engageable with the primary cocking-abutment of the said trigger and also having an inclined checking-surface adjacent its said primary cocking-abutment and disposed at a camming-angle with respect to a portion of the trigger adjacent the primary cocking-abutment thereof, the said hammer also having a secondary cocking-abutment engageable with the secondary cocking-abutment of the said secondary-sear; all of the four aforesaid cocking-abutments being positioned with respect to each other so that the two said secondary-abutments engage with each other prior to the engagement of the two said primary cocking-abutments with each other.

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