April 24, 1951 A. F. GAIDOS 2,549,797

FIRE CONTROL MECHANISM

Filed June 21, 1946 2 Sheets-Sheet 1

Fig. 1.

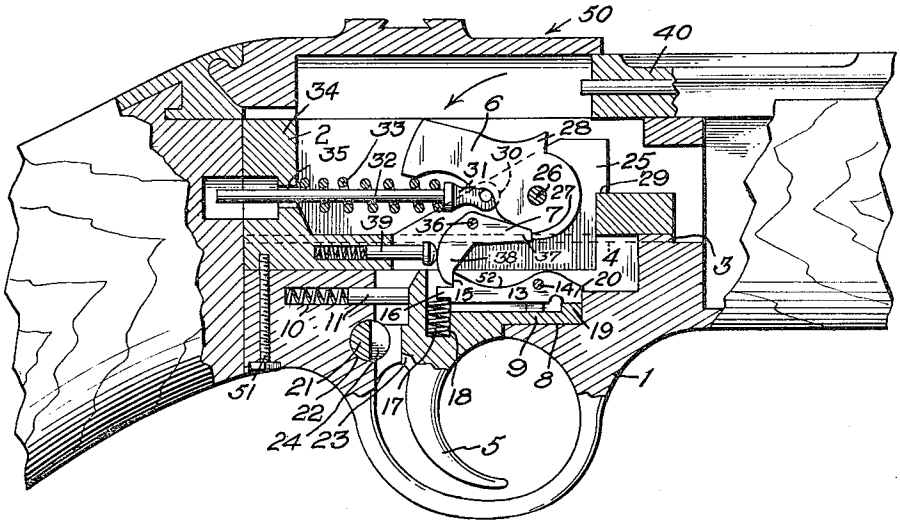
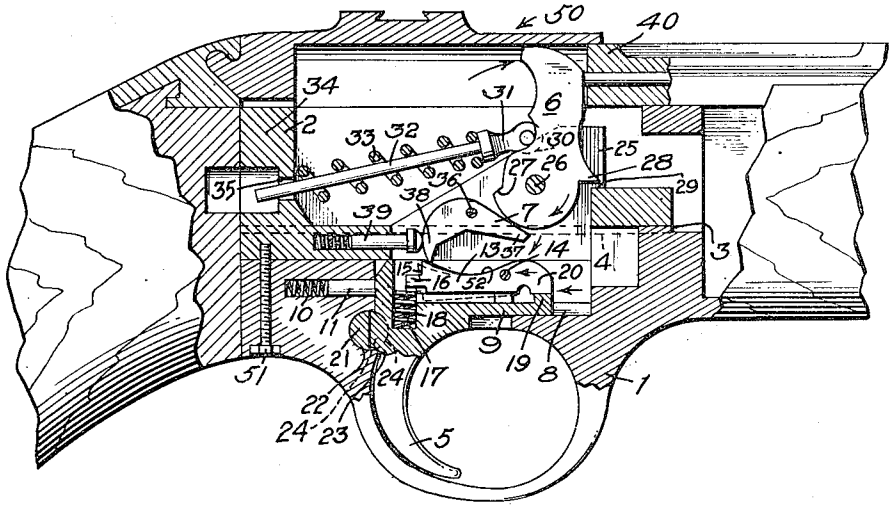


Fig. 2.



Inventor

Alonzo F. Gaidos

By J. H. Church & H. C. Thibodeau

Attorneys

April 24, 1951 A. F. GAIDOS 2,549,797

FIRE CONTROL MECHANISM

Filed June 21, 1946 2 Sheets-Sheet 2

Fig. 3.

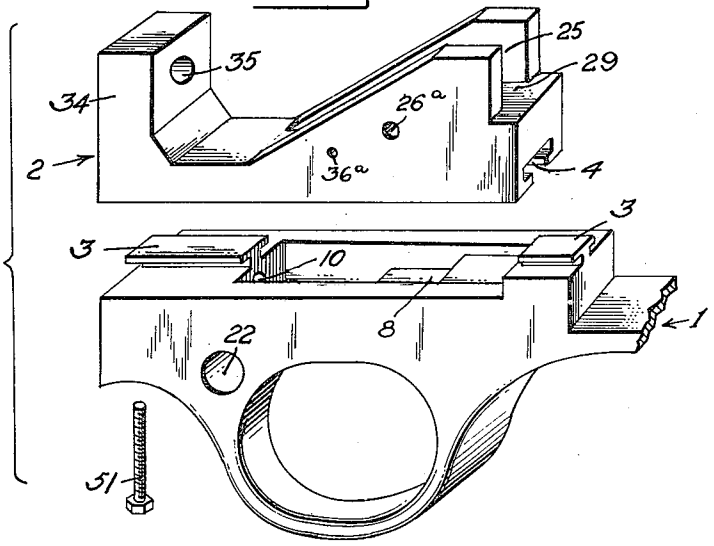
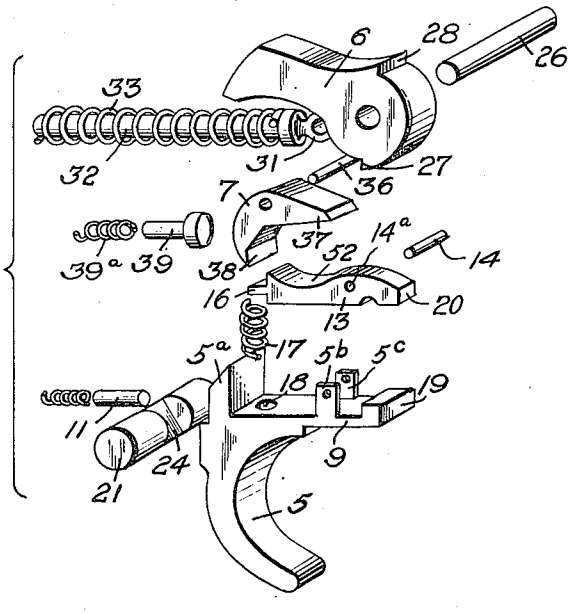


Fig. 4.



Inventor

Alonzo F. Gaidos

By J. H. Church & H. C. Thibodeau

Attorney

Patented Apr. 24, 1951

2,549,797

UNITED STATES PATENT OFFICE

2,549,797

FIRE CONTROL MECHANISM

Alonzo F. Gaidos, Redwood City, Calif.

Application June 21, 1946, Serial No. 678,186

4 Claims. (Cl. 42—69)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

1

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a fire control mechanism and more particularly to a fire control mechanism for obtaining semi-automatic fire in a firearm.

It is an object of this invention to provide a fire control mechanism for an automatic firearm to obtain semi-automatic fire wherein the hammer of such mechanism is automatically cocked by the opening stroke of the reciprocating breech member of the firearm and wherein the trigger must be pulled each time for release of the hammer.

A particular object of this invention is to provide a semi-automatic fire control mechanism having a slidable trigger for effecting release of the hammer.

Another object of this invention is to provide a semi-automatic fire control mechanism for a firearm wherein the hammer and sear mechanism is contained in a unit separable from another unit containing a sliding trigger and disconnector whereby positive inspection and adjustment of the parts may be more readily effected.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawings in which:

Figure 1 is a fragmentary longitudinal sectional view of the trigger mechanism assembled in a firearm, the parts thereof being in armed position;

Figure 2 is a similar view showing the parts in fired position;

Figure 3 is an exploded perspective view of the trigger housing; and

Figure 4 is a similar view showing the trigger mechanism.

This invention provides a novel fire control mechanism to effect semi-automatic functioning of a firearm by utilizing a sliding trigger and a disconnector to effect release of a sear when such trigger is pulled rearwardly. Such disconnector is positively disconnected from the sear after such sear has been released in order to permit the sear to re-engage the sear notch in the hammer as such hammer is re-cocked in order to provide semi-automatic fire. Thus more than one cartridge cannot be discharged with but a single pull of the trigger because such trigger must be released and allowed to travel to its forward position before a succeeding cartridge can be fired.

2

In Figure 1 there is shown in assembled relation a preferred embodiment of this invention. The elements of the trigger mechanism shown in such figure are mounted in a trigger housing 1 and such housing is contained within a firearm 50 and suitably secured thereto. To facilitate manufacture, trigger housing 1 preferably comprises two parts. An upper part 2 of trigger housing 1 is slidably connected to trigger housing 1 by cooperation of a T-shaped rib 3 provided on top of trigger housing 1 with a corresponding way 4 in the base of upper part 2. Upper part 2 may be rigidly secured to housing 1 by any convenient means such as by a screw 51, welding or staking. A trigger 5 is slidably mounted in trigger housing 1 while a hammer 6 and a sear 7 are pivotally mounted on the upper part 2 as will be presently described.

A horizontal recess 8 is provided on top of trigger housing 1 as shown in Figure 1 wherein trigger 5 is mounted to have a smooth sliding fit therein limiting said trigger to fore and aft translation. A substantially rectangular portion 9 is provided on top of trigger 5 which rests within recess 8. A horizontal hole 10 is provided in trigger housing 1 in the rear of recess 8 as shown in Figures 1 and 3. A spring biased plunger 11 is inserted in such hole and plunger 11 bears against the rear surface of an upstanding projection 5a of trigger 5 to bias such trigger forwardly. See Figure 4. A disconnector 13 is pivotally mounted by a horizontal transverse pin 14 mounted in holes in upstanding lugs 5b and 5c of trigger 5.

Disconnector 13 is a substantially rectangular member and is provided with a horizontal rearwardly projecting lug 16 on its rear end which is engaged by a vertical spring 17 mounted in a vertical hole 18 provided in the rear end of trigger as clearly shown upon Figure 4. The forwardly projecting end 20 of disconnector 13 rests on the top of a shelf 19 provided on the forward end of trigger 5. Spring 17 is provided to bias disconnector 13 toward clockwise rotation to bear against sear 7 as will be later described.

A safety 21 is mounted in trigger housing 1 in back of trigger 5 as shown in Figure 1 in a transverse hole 22. Safety 21 is constructed and mounted to selectively block the rearward travel of trigger 5 to prevent release of sear 7 from hammer 6. The blocking trigger 5 is accomplished by engagement of an integral, rearwardly

projecting lug 23 on the trigger with safety 21 when in its "safe" position, thereby obstructing rearward travel of trigger 5.

Safety 21 is provided with a slot 24 in the center thereof. When safety 21 is pushed transversely across trigger guard housing 1 to bring slot 24 into alignment with lug 23, trigger 5 is then free to be pulled rearwardly without interference from the safety. Safety 21 is yieldingly held in either of its two positions by a suitable detent (not shown).

A vertical slot 25 is provided in the upper part 2 of trigger housing 1 and hammer 6 is pivotally mounted in such slot by a transverse pin 26 mounted in holes 26a in part 2. Hammer 6 is of conventional configuration. A sear notch 27 provided on the lower end of such hammer is engaged by the sear 7 when hammer 6 is in the cocked position as shown in Figure 1. An integral lug 28 is provided on the forward edge of hammer 6 which strikes a shelf 29 on the forward end of upper part 2 of trigger housing 1. Thus a stop is provided for hammer 6 which restrains such hammer from forwardly rotating substantially beyond its normal fired position when the mechanism is not assembled to a firearm.

A recess 30 is provided in the rear surface of hammer 6 which provides a seat for a head 31 attached to the forward end of a strut 32. One end of said strut projects rearwardly through an opening 35 provided in an upstanding lug 34 on the rear end of part 2. A spring 33 surrounds the strut 32, one end of which abuts the lug 34 and the other against head 31, and provides pressure to hold the strut against the hammer. The rear end of opening 35 is counterbored as shown in Figure 1 to provide freedom of movement of strut 32 as hammer 6 pivots about pin 26.

Sear 7 is pivotally mounted on a transverse pin 36 back of hammer 6 as shown in Figure 1. This pin is mounted in holes 36a in upper part 2. See Figure 3. Sear 7 comprises two angularly-related arms 37 and 38. The end of arm 37 is shaped to engage sear notch 27 of hammer 6. The end of arm 38 is of suitable shape to engage notch 15 of disconnector 13 when the trigger is in forward position. A spring biased plunger 39 horizontally mounted in a suitable bore in the upper part 2 of trigger housing 1 biases sear 7 in a counterclockwise direction as shown in Figure 1 so that arm 37 will continually bear against the bottom of hammer 6.

The sear mechanism above described becomes operative when hammer 6 has been rotated to the cocked position shown in Figure 1. Such cocking of hammer 6 is normally effected by rearward movement of the reciprocating breech member 40 of the firearm 50 to which this trigger mechanism may be assembled. When hammer 6 has been rotated to the position shown in Figure 1, arm 37 of sear 7 snaps into engagement with sear notch 27 of hammer 6. The end of arm 38 of sear 7 is likewise in engagement with notch 15 provided on disconnector 13 when the hammer is in cocked position. Trigger 5 is then in a forward position so that the front end thereof will bear against the front end of recess 8.

To release hammer 6, trigger 5 is pulled rearwardly to the position shown in Figure 2. As trigger 5 slides rearwardly, sear 7 is rotated in a clockwise direction against the compression of spring 39a. This forces the end of arm 37 of sear 7 to slip out of sear notch 27 in hammer 6 thereby permitting hammer 6 to rotate forwardly under the bias of spring 33. The end of arm 38 of sear 7 is raised sufficiently so that such end will clear the notch 15 and spring biased plunger 39 will urge sear 7 in a counterclockwise direction so that the end of arm 37 of sear 7 will bear against the bottom of hammer 6. An arcuate clearance surface 52 is provided on top of disconnector 13 to permit the end of arm 38 of sear 7 to freely rotate in a counterclockwise direction about pin 36 and thereby keep the end of arm 37 in contact with hammer 6 when trigger 5 is pulled rearwardly a sufficient distance to trip the sear and release the hammer.

Trigger 5 is now held rearwardly in the fired position by pressure of the finger. The recoiling breech member 40 of firearm 50 then strikes hammer 6 and rotates such hammer rearwardly whereupon the end of arm 37 of sear 7 is rotated counterclockwise into sear notch 27 by the spring biased plunger 39. Thus hammer 6 is held in the cocked position and cannot be released until trigger 5 is released and permitted to go forwardly. Spring biased plunger 11 forces trigger 5 forwardly when the finger is removed from trigger 5. As such trigger goes forwardly, disconnector 13 is forced to pivot in a counterclockwise direction against the bias of spring 17 as such disconnector and trigger pass underneath the end of arm 38 of sear 7. When trigger 5 has reached the forward limit of travel, disconnector 13 slips over the end of arm 38 of sear 7 and snaps upwardly under urge of spring 17 into engagement with the forward face of such arm so that arm 38 will be in engagement with notch 15. Hammer 6 may now be released by another pull of trigger 5 which releases the sear in the same manner as above described.

It should be noted that by proportioning the length of the sear arm 38 relative to arm 37, the frictional resistance exerted by the hammer on the sear during the releasing movement of the sear may be greatly diminished so far as its effect on trigger pull is concerned.

From the foregoing description it is apparent that a simple and positive semi-automatic fire control mechanism is hereby provided. It is further evident that such mechanism can be readily adapted to any firearm utilizing a reciprocating bolt member to effect rotation of the hammer for cocking purposes.

I claim:

1. A fire control mechanism for a firearm comprising a first and second housing separably mounted thereto, a hammer pivotally mounted in said first housing, a sear pivotally mounted in said first housing, said sear being engageable with said hammer to retain said hammer in a cocked position, a trigger slidably mounted in said second housing for longitudinal movement relative to said sear, and a disconnector on said trigger engageable with said sear during rearward movement of said trigger to pivot said sear out of engagement with said hammer.

2. The combination defined in claim 1 wherein said disconnector comprises a member pivotally mounted on said trigger, a spring biasing said disconnector into a sear engaging position, said disconnector being constructed and arranged relative to said sear to disengage therefrom after movement of said sear to its hammer releasing position, and a second spring biasing said sear to its hammer engaging position overlying said disconnector in the pulled position of the trigger.

3. A fire control mechanism for a firearm com-

prising a first and second housing, means for slidably connecting said first and second housings, a mammer pivotally mounted in said first housing, a sear pivotally mounted in said first housing, said sear being engageable with said hammer to retain said hammer in a cocked position, a trigger slidably mounted in said second housing for longitudinal movement relative to said sear, and a disconnector on said trigger engageable with said sear during rearward movement of said trigger to pivot said sear out of engagement with said hammer.

4. A fire control mechanism for a firearm comprising a first and second housing, means for slidably connecting said first and second housings, a hammer pivotally mounted in said first housing, spring means urging said hammer from a cocked position to a firing position, a sear pivotally mounted on said first housing, said sear being engageable with said hammer to retain said hammer in a cocked position, yielding means urging said sear into its engaging position with said hammer, a trigger slidably mounted in said

second housing for longitudinal movement relative to said sear, resilient means urging said trigger forwardly to an inoperative position, and a disconnector on said trigger engageable with said sear during rearward movement of said trigger to pivot said sear out of engagement with said hammer.

ALONZO F. GAIDOS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
898,038	Clarus	Sept. 8, 1908
915,087	Flyberg	Mar. 16, 1909
930,305	Maudry	Aug. 3, 1909
950,576	Paulson	Mar. 1, 1910
976,122	Clement	Nov. 15, 1910
1,972,763	Dutton	Sept. 4, 1934
2,117,218	Sanders	May 10, 1938
2,356,615	Revelli	Aug. 22, 1944