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SINGLE TRIGGER MECHANISM FOR DOUBLE-BARRELED SHOTGUNS
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INVENTOR
Noel Defourny
By: Abbotins, Lake & Co.
AGENTS
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SINGLE TRIGGER MECHANISM FOR DOUBLE-BARRELED SHOTGUNS

Noël Defourny, Herstal-lez-Liege, Belgium

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1. The present invention relates to improved trigger mechanisms for double-barreled shotguns and is particularly directed to a safety device for such trigger mechanisms which unfailingly prevents the simultaneous actuation of the firing pins for both barrels.

An object of the present invention is to provide a single trigger mechanism for a double-barreled shotgun which is constructed and arranged so that a selected one of the barrels may be fired or discharged when the trigger is first pressed and the other barrel cannot be fired until after the recoil resulting from the first discharge.

Another object is to provide a single trigger mechanism for a double-barreled shotgun which includes a rear actuating assembly operated by the trigger and adjustable to provide for the initial firing of a selected one of the barrels, and a safety device moving in response to the counter-recoil movement of the shotgun to then position the rear actuating assembly for firing of the other barrel.

In accordance with the present invention, the above objects are achieved by providing a rear actuating assembly mounted on the single trigger for both oscillating and sliding movement relative to the latter, a control assembly for manually setting the oscillated position of the rear actuating assembly to determine which of the barrels will be first discharged, and a safety device controlling the sliding movement of the rear actuating assembly to position the latter for discharging the second barrel in response to the counter-recoil movement of the shotgun and including a swingable mass movable in response to movements of the gun and connected to the rear actuating assembly, spring means urging the mass in one direction and a latch member which, when the gun is cocked, holds the mass against the action of the spring means and releases the mass when the latter is displaced by the counter-recoil movement of the gun so that the spring means may then move the released mass to a position disposing the rear actuating assembly for discharge of the second barrel when the single trigger is next pulled.

In order to facilitate understanding of the present invention, a preferred embodiment thereof, as applied to a double-barreled shotgun, is set forth in the following detail description and illustrated in the accompanying drawings which form a part hereof and wherein:

Fig. 1 is a side elevational view of a trigger mechanism embodying the present invention and shown associated with a double-barreled shotgun, with the usual bolt for locking the barrels being open and the barrels still in their closed position;

Fig. 2 is a longitudinal sectional view of the trigger mechanism of Fig. 1 taken along the longitudinal axis of the shotgun;

Fig. 3 is a view similar to that of Fig. 1, but with the barrel locking bolt engaged, the barrels in their closed position and the right hand barrel already discharged;

Fig. 4 is a top plan view of the trigger plate bearing the illustrated trigger mechanism;

Fig. 5 is an end elevational view of the device determining which of the barrels is to be first discharged;

Fig. 6 is a fragmentary top plan view of the rear actuating assembly positioned for firing of the first barrel, and with the parts arranged so that the left-hand barrel is discharged first; and

Fig. 7 is a fragmentary top plan view, similar to Fig. 6, but showing the various parts positioned for discharge of the second barrel.

Referring to the drawings in detail, the frame of a double-barreled shotgun is indicated by the reference numeral 1 and has a pair of barrels 2 pivoted thereon adjacent the breech ends of the barrels with the usual slideable bolt 5 being provided to lock the barrels in their operative position. An operating handle 3 is mounted at the top of frame 1 and is connected to the bolt 5 in a conventional manner for moving the latter between barrel locking and releasing positions. The frame 1 has conventional hammers (not shown) pivoted thereon and carrying firing pins for discharging each of the two barrels, and a pair of sears 39 and 42 are rockable on the frame 1 and operatively associated with the hammers of the left and right hand barrels, respectively, in the usual manner.

A trigger plate 4 is disposed at the bottom of frame 1 and supports the entire trigger mechanism which, according to the present invention, consists of a single trigger 7 having a lug 43 thereon and pivoted within a bracket 9 on the trigger plate 4 by a pin 8 which passes through lug 43 and bracket 9. The usual spring 55 engages trigger 7 for urging the latter to swing to its rest position. An L-shaped or right-angle bent latch lever 15 is pivoted at 14 in the upper part of bracket 9, and the vertical, downwardly directed leg of latch lever 15 is adapted to receive the rearwardly directed thrust of the rear end of bolt 5 against the front edge 49 of the latch lever. The other leg of latch lever 15 is substantially horizontal and terminates in a nose portion 17 which is engageable either in a notch 19 formed in the front face of a swingable mass.
member 12 or, as at 19 (Fig. 3), under the lower edge of the mass member 12. The swingable mass member 12 is pivoted at 11 or, rearwardly extending arms of the bracket 8, with the center of mass of the mass member 12 being situated well above the axis defined by the pivot 11.

A finger 13 extends downwardly from the mass member 12 below the pivot 11 and projects loosely by a central hole or aperture 44 of a rear actuating member or plate 24 which is mounted for sliding and oscillating movement on the upper face of trigger 1. A notch 23 is formed in the front edge of finger 13 to receive a head 22 on the rear end of a rod 26 which passes through a central groove formed in the bracket 8 and is guided at the front end by engagement in a hole 16 formed in the vertical leg of latch lever 15. A spiral coil spring 21 is wound on rod 20 and interposed between the back face 50 of the vertical leg of latch lever 15 and head 22 on the rear end of the rod. The spring 21 tends to swing the mass member 12 forwardly and to displace the latch lever 15 in the direction tending to move the nose portion 17 thereof downwardly out of the notch 18 to the location 19 below the lower edge of the mass member 12.

The rear actuating member or plate 24 includes a forwardly extending rod 25, which oscillates in an opening at the back of lug 43 on trigger 7 where it is maintained by a pin 45, and a rearwardly extending rod 26, which is slidable and oscillatably received in a notch 47 formed at the front of a small plate 27 pivotally mounted on a screw or pin 28 providing a vertical pivoting axis. The plate 27 is provided with a rearwardly directed horizontal extension or rod 30 engaging in a fork formed on a lever 31 which is rockingly mounted upon a pivot pin 34 extending longitudinally of the gun (Figs. 2 and 5).

The position of the lever 31 swinging about an axis extending longitudinally of the gun is manually controlled by a knob 35 integral with that lever and extending below trigger plate 4.

The knob 35 swings in a transverse plane and, in order to hold it in position either to the left or to the right, the lever 31, at its central portion, is formed with oppositely inclined faces 32 and 33 (Fig. 3) against which the free end of a leaf spring 36 engages. Thus, the leaf spring 36 and inclined faces 32 and 33 cooperate to act as a detent means for holding the lever 31 and its knob 35 in one or the other of two laterally inclined positions. When the knob 35 is displaced either to the left or to the right, plate 27 is angularly displaced around its vertical axis 28 by the action of the fork of lever 31 and a corresponding angular displacement of rear actuating member 24 is produced.

The trigger 7 is further formed with an upwardly directed projection 29 extending from the rear portion thereof in order to prevent movement of the trigger 7 by engagement against a safety abutment 48 which is slidable in the top 3 of the frame from a release position (Fig. 1) to a safety position (not shown) in the path of movement of the projection 29.

The above described mechanism operates as follows:

As mentioned before, the spring 21 tends to swing mass member 12 forwardly and to rotate latch lever 15 in the direction moving the nose portion 17 thereof downwardly out of the notch 18. However, when the handle 5 is manipulated to displace the bolt 6 rearwardly for freeing the barrels 2, the rear end of bolt 6 engages against the face 49 of the latch lever 15 and swings the latter in a counter-clockwise direction, as viewed in Figs. 1 and 2, so that the nose 17 of the latch lever comes over the lower edge of mass member 12 and engages in the notch 18 to displace the mass member rearwardly while compressing spring 21. Since finger 13 extending downwardly from mass member 12 engages in aperture 44 of the rear actuating plate 24, such rearward movement of the member 12 slides the plate 24 forwardly. When the bolt 6 is in its forward or barrel locking position, the rear end thereof moves away from the face or edge 49 of latch lever 15 and discharges of one of the barrels causes the mass member 12 to swing rearwardly in response to the counter-recoil movement of the gun so that nose portion 17 of latch lever 15 is freed from notch 18 and the spring 21 is then effective to rock lever 15 to position the nose portion 17 in the recessed space or location 19 below member 12. With the nose portion 17 of latch lever 15 disposed in the recessed space 19, the mass member 12 is then free to be urged to a forward position (Fig. 3) by the action of spring 21 against finger 13. When the fingers 13 swings to a forward position, finger 13 extends therefrom to act to slide the rear actuating plate 24 in the rearward direction.

Displacement of the knob 35 to the right causes the rear actuating plate 24 to swing in the direction displacing its rod 26 to the left so that the upper face 37 of rod 26 comes under the inwardly turned or bent nose 40 of left side 39 (Fig. 6). With the parts of the mechanism being disposed as shown in Figs. 1, 2 and 6, actuation of trigger 7 lifts rear actuating plate 24 and causes the rod 26 thereof to contact nose 40 of side 39 and rock the latter so that the related hammer (not shown) is released for discharging the left-hand barrel. With the parts disposed as in Figs. 1, 2 and 6, nose 41 of the right-hand side 42 is outside the path or stroke of rod 26 and consequently acts 42 then remains undisturbed by any actuation of the trigger. When the first barrel is discharged and, due to the counter-recoil movement of the gun, the mass member 12 acts as described above to slide the plate 24 rearwardly, for example to the position of Fig. 7, the central part of the face 38 of plate 24 comes under nose 41 of the right-hand side 42, subsequent actuation of trigger 7 effects rocking of the right-hand side to release the associated hammer (not shown) and effect discharge of the right-hand barrel.

When the second barrel has been discharged and the parts of the gun are as shown in Fig. 3, actuation of the handle 5 to displace bolt 6 for permitting opening of the weapon and to allow cocking of sides 39 and 42 and reloading of the barrels causes the rear end of bolt to move backwards against edge 49 of latch lever 15 for restoring mass member 12 to its rearward position with nose portion 17 of the latch lever engaged in notch 18 of the mass member. Thus, the parts of the trigger mechanism are again in the positions of Fig. 1 and, when the bolt 6 is returned to its locking or forward position out of contact with lever 18 (Fig. 2), the gun is again ready for firing. If it is desired to effect discharge of the right-hand barrel in response to the first actuation of trigger 7, it is necessary only to tilt the knob 35 to the left and the above described mechanism would then operate in the same manner to first discharge the right-hand barrel and then, only after the counter-recoil movement of the gun, to
condition the trigger mechanism for discharge of the left-hand barrel in response to a second or subsequent actuation of trigger 7. While a particular control mechanism for effecting the angular displacement of plate 24 in a horizontal plane has been described and illustrated, it is apparent that the same movement of plate 24 may be achieved with other and equivalent mechanisms. Further, the single trigger mechanism embodying the present invention can be easily applied to double-barreled guns in which the barrels are arranged one above the other, rather than side-by-side as herein illustrated, by merely altering the sizes and arrangements of the various parts in a manner which will be readily apparent.

It is to be noted that the mass member 12 is independent of the trigger 7 and that all of the operating parts of the mechanism, being mounted on plate 4, are also independent of other parts of the gun, so that the accurate alignment of the parts of the described mechanism necessary for its reliable operation will not be disturbed by any deformation of the gun structure resulting from hard use or mishandling thereof. Further, the illustrated mechanism is constructed and designed so that it cannot adopt an intermediate position for simultaneous discharge of both barrels since the displacement of plate 24 fully to one side or the other is prevented thereby by the cooperation of spring 36 and the converging faces 32 and 33 on fork 31 which prevents the positioning of the fork at a central location.

While I have described in detail and illustrated a specific embodiment of the invention, it is to be understood that the invention is not limited to that precise embodiment, and that many changes and modifications may be effected therein by a person skilled in the art without departing from the scope or spirit of the invention which is intended to be defined in the appended claims.

I claim:

1. In a single trigger mechanism for a double-barreled shotgun having two rockable sears for releasing hammers associated with the related barrels and a longitudinally movable bolt for locking the barrels in operative position; the combination of a support plate adapted to be fixed below the sears, a bracket on said support plate, a trigger extending through said support plate and pivoted on said bracket, said trigger being formed with a substantially flat top surface, a sear actuating member mounted on said flat top surface of said trigger for lateral oscillating and longitudinal sliding movement relative to the latter, a mass member pivoted on said bracket for swinging about a transverse axis disposed substantially below the center of gravity of said mass member, a finger extending downwardly from said mass member below the pivoting axis thereof, said sear actuating member having a central opening receiving said finger so that sliding of said sear actuating member is effected by swinging movement of said mass member and the latter determines the longitudinal position of the sear actuating member, means operatively connected to said sear actuating member for oscillating the latter to determine its angular position relative to the sears, said sear actuating member being formed so that in one angular position the sear of the right hand barrel is engageable thereby with said mass member disposed at a rearward position and the sear of the left hand barrel is engageable thereby with said mass member at a forward position, and

so that in another angular position of the sear actuating member the sear of the left hand barrel is engageable thereby with said mass member in said rearward position and the sear of the right hand barrel is engageable thereby with said mass member in said forward position, a latch lever pivoted on said bracket and formed at one end to selectively engage, in one angular position, against said mass member and hold the latter in said rearward position thereof and, in another angular position, to permit swinging of said mass member to said forward position thereof, the other end of said latch lever projecting into the path of movement of the barrel locking bolt and moved by the latter when the bolt is displaced for releasing the barrels so that said latch lever assumes said one angular position thereof, said mass member having a recess for receiving said one end of the latch lever in said one angular position of the latch, and spring means acting on said latch lever and on said mass member and operative to continuously urge the former to said another angular position thereof and the latter to said forward position thereof so that said mass member is released from said latch lever by counter-recoil movement of the shotgun following the first discharge of a selected barrel and then moves to said forward position to condition said sear actuating member for discharge of the other barrels.

2. In a single trigger mechanism for a double-barreled shotgun having two rockable sears for releasing hammers associated with the related barrels and a longitudinally movable bolt for locking the barrels in operative position; the combination according to claim 1, wherein said sear actuating member includes a rearwardly extending rod, and said means for oscillating said sear actuating member includes a manually operable adjusting member pivotally mounted for swinging about a longitudinal axis, spring means urging said adjusting member to assume a selected one of two oppositely inclined positions, and transmission means operatively connected between said rearwardly extending rod and said adjusting member for transmitting movement of the latter to said sear actuating member.

3. In a single trigger mechanism for a double-barreled shotgun having two rockable sears for releasing hammers associated with the related barrels and a longitudinally movable bolt for locking the barrels in operative position; the combination according to claim 1, wherein said transmission means includes a forked portion on said adjusting member, a transmission plate pivoted for oscillation about an axis at right angles to the axis of said adjusting member and having an extension rod engageable loosely between the legs of said forked portion, said transmission plate having a notch formed to loosely receive said rearwardly extending rod of the said acting member.

NOÉL DEFOURNY.

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