Rifle Patents

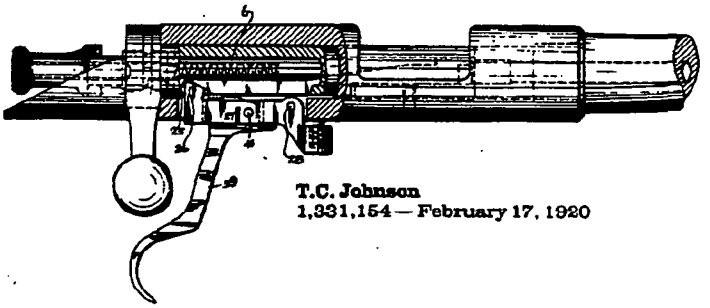
by Stuart Otteson

Target Triggers: Winchester Model 52

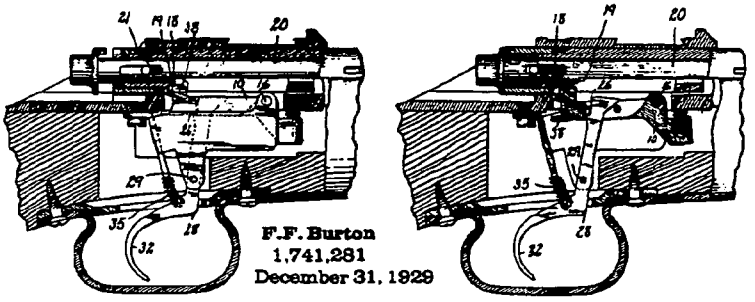
THE WINCHESTER Model 52 target rifle has had four basic triggers during its sixty-year history, each documented by a Winchester patent. The original Model 52, designed in 1918-1919, essentially had nothing more than a military-rifle trigger. This was replaced in 1929 by an "override" type. A special sear actuator was added in 1937 to yield the third type. In 1951 came the "micromotion" trigger, which remains the current version, although in recent years, Winchester has also offered Kenyon triggers as extra-cost options.

As Johnson's patent shows, the first Model 52 trigger was simply a commercial adaptation of the direct-draw triggers used in the military rifles of the day. The trigger piece (39) is suspended from the sear (27) by a pivot pin (40). When the trigger piece is pulled, its cam-shaped head reacts against the underside of the action, causing the sear to rotate down about a pin (28) and thus draw the sear nose (26) out of engagement with the notch (25) of the firing pin (6).

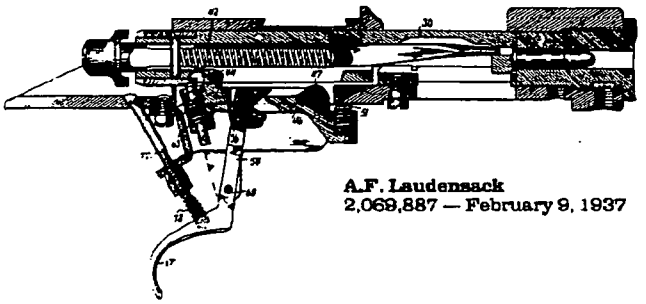
While this is a very reliable and sturdy trigger, its pull is long because



T.C. Johnson
1,331,154 — February 17, 1920



F.F. Burton
1,741,281
December 31, 1929



A.F. Laudensack
2,069,887 — February 9, 1937

of the direct link between trigger and sear. Thus it was not ideally adapted, at least in the opinion of many shooters, to target work.

Burton's trigger, coming along some ten years later, was something of a milestone in U.S. bolt-action-rifle development. Burton did not invent the basic concept of the override trigger. His patent specification, in fact, begins by acknowledging previous versions dating back to the 1800's. Burton's object was rather to improve upon the basic type to make it better suited to a bolt-action.

Movement of the firing pin (20) is blocked by the sear (10) pivoted on a pin (16). The sear is in turn supported by the shoulder (26) of the trigger piece (28).

Because of an angled contact plane between the surface (19) of the firing pin and the surface (18) of the sear, the sear is unstable and could not stand without the shoulder (26). When the finger curve (32) is pulled, the trigger piece pivots about a pin (29), sliding this support shoulder out from under the sear, which is then overridden by the firing pin as it is propelled forward by the mainspring (21).

Engagement between the sear and its support shoulder is regulated by a screw (38). This is the only adjustment. The purchase for the poundage spring (35) is simply a tab bent down from the trigger housing. Nor is backlash controlled, because trigger overtravel is employed for removal of the bolt.

Laudensack developed a rather novel variation of Burton's trigger, using a small precision spring assembly to press the sear downward rather than tapping a vector off the mainspring for this purpose. According to the invention, mainspring loading can be subject to variation, depending on how rapidly the bolt is closed, whereas this special spring assembly ensures a uniform force balance within the trigger at all times to eliminate variations in pull from shot to shot.

In the illustration, the firing pin (30) is blocked by engagement between the notch (43) on its underside and the face (44) of the sear (46). This engagement is square to the firing-pin axis, thus creating no downward vector. Instead, the sear is pressed down onto the support shoulder (56) of the trigger piece (54) by a special spring (63). Although the spring (63) does not vary greatly in size and strength from the sear-return spring (51) that opposes it, it is effective because of its relatively greater distance from the sear pivot pin (47).

When the finger curve (67) is

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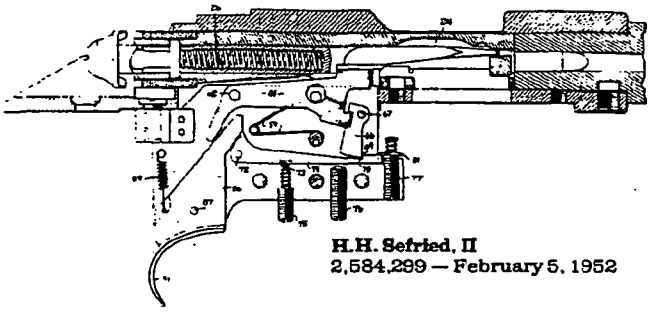

H.H. Sefried, II
2,584,299 — February 5, 1952

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pressed against the adjustable poundage spring (78), the trigger piece pivots about a pin (68), sliding the support shoulder out from under the sear. Once this small shoulder clears, the spring (63) snaps the sear down clear of the firing pin, allowing ignition to occur.

Besides the special sear actuator, Laudensack added a poundage adjustment (threaded rod, 77). This was obviously a much easier concept to explain, and accordingly, advertisements that began appearing in 1937 for this new Model 52 emphasized the "patented two-adjustment trigger pull."

Sefried's "micromotion" trigger, introduced in 1951, was an all-new design with four levers, two in the primary circuit and two in the override circuit.

The firing pin (24) is blocked by the sear (41), which pivots on a pin (42). Because of the location of this pivot, the sear is unstable and would be driven out of position by the firing pin were it not supported by the sear latch (66) pivoting on a pin (67). The sear latch is in turn checked by the transmitting lever (71), which is pivoted on a pin (72) and held in set position by the adjustable poundage spring (73). Finally, the trigger piece (86) pivots on a pin (87) and is biased forward by a spring (89).

Pressure applied against the finger curve (91) pivots both the trigger piece and the transmitting lever clockwise. The location of the pivots for these parts causes finger movement to be greatly amplified at the shoulder (70), so that a pull of only a few thousandths of an inch can free the sear latch. Everything else is then automatic. The sear latch breaks forward to free the sear, which is immediately snapped downward from the path of the firing pin by the mainspring (26).

When the firing pin is drawn back, a spring (59) lifts the sear, which on its way up also pulls the sear latch back into set position. As the transmitting lever in turn begins rising back up, it is controlled and prevented from rebounding by the spring-buffer assembly (81). As a result of this spring buffer, engagement between surfaces 69 and 70, a critical factor in obtaining uniform trigger pull, is precisely constant from shot to shot.

Sefried's version was the first fully adjustable Model 52 trigger. Poundage is regulated by screw 75, engagement by screw 77, and backlash by screw 76. This last adjustment was made possible by positioning the parts so that the trigger piece is pushed *forward* to actuate the bolt stop.

This was one reason for the separate transmitting lever. A more fundamental reason was the need to balance the trigger piece statically about its pivot. Sefried put much emphasis on protecting his trigger from jarring and vibration, and this balanced trigger, with the trigger piece and transmitting lever cushioned between opposing springs, served that end.

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