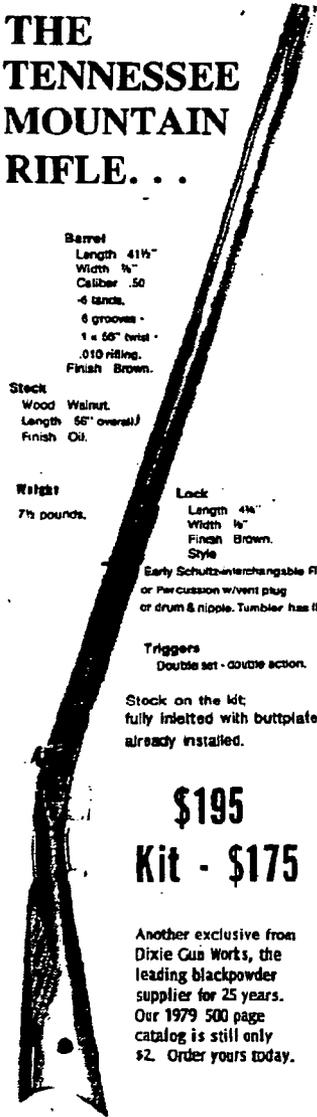


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Rifle Patents

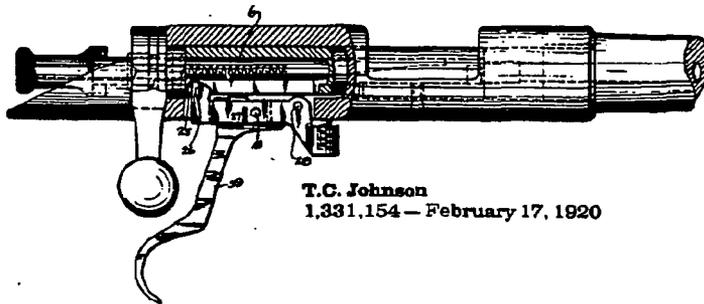
by *Stuart Otteson*

Target Triggers: Winchester Model 52

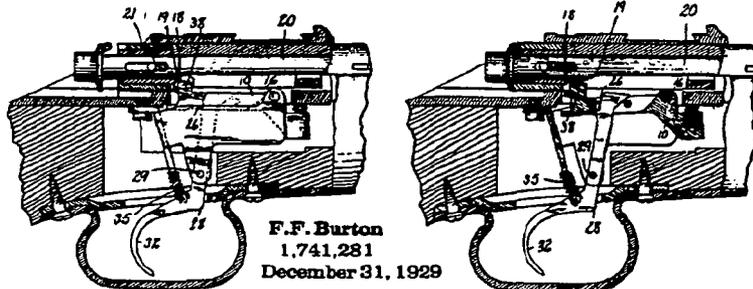
THE WINCHESTER Model 52 target rifle has had four basic triggers during its sixty-year history, each documented by a Winchester patent. The original Model 52, designed in 1918-1919, essentially had nothing more than a military-rifle trigger. This was replaced in 1929 by an "override" type. A special 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).

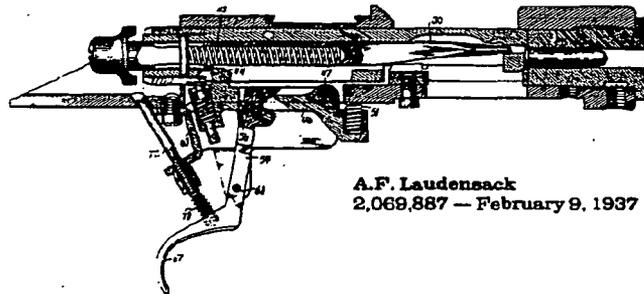
While this is a very reliable and sturdy trigger, its pull is long because



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).

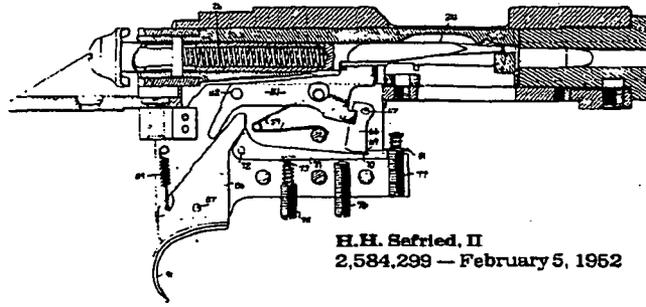
Engagement between the sear and its support shoulder is regulated by a screw (38). This is the only adjustment. The purchase for the poundage spring (35) is simply a tab bent down from the trigger housing. Nor is backlash controlled, because trigger overtravel is employed for removal of the bolt.

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.

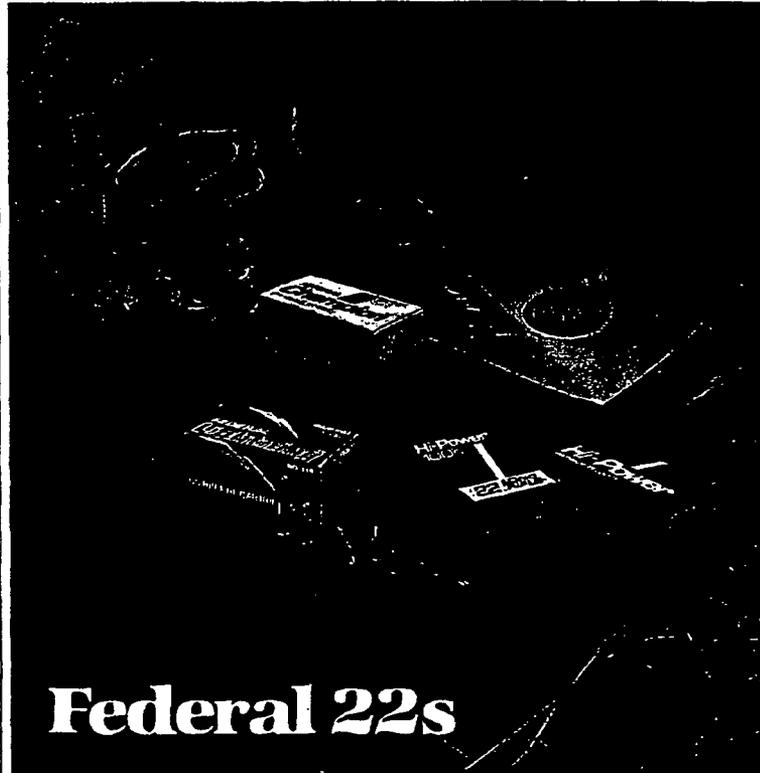
In the illustration, the firing pin (30) is blocked by engagement between the notch (43) on its underside and the face (44) of the sear (46). This engagement is square to the firing-pin axis, thus creating no downward vector. Instead, the sear is pressed down onto the support shoulder (56) of the trigger 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

(Continued on page 50)



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



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Rifle Patents
(Continued from page 9)

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, adver-
tisements 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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