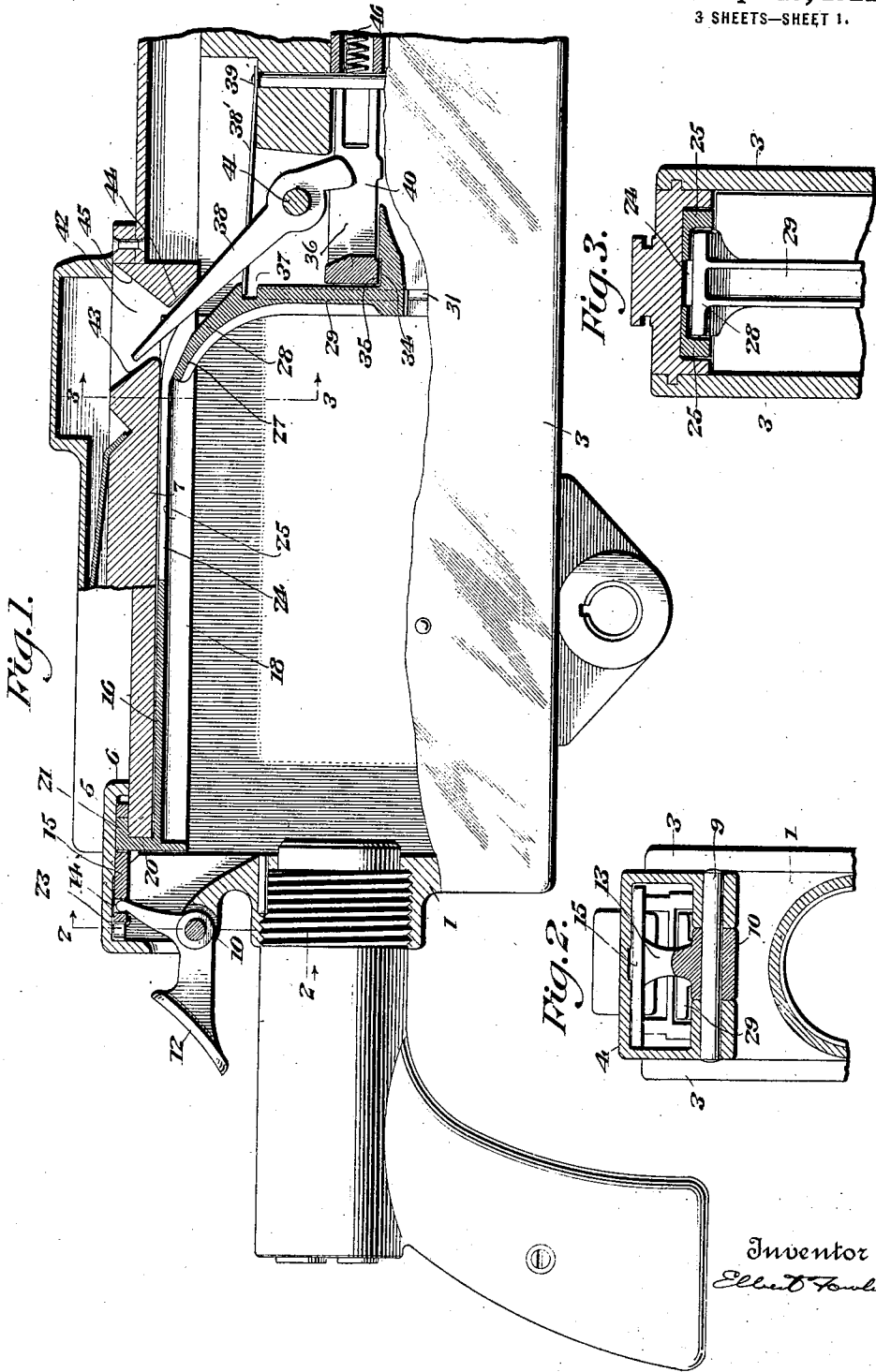


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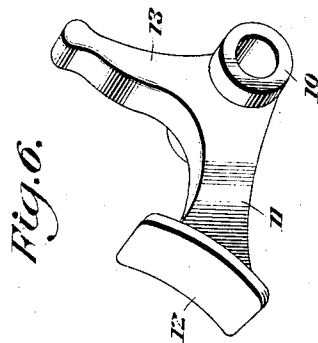
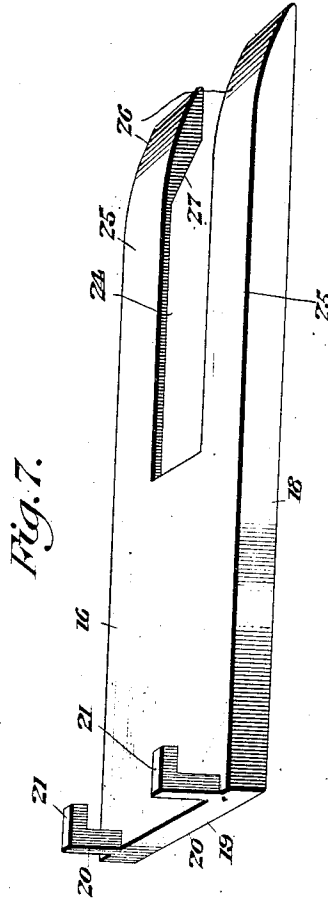
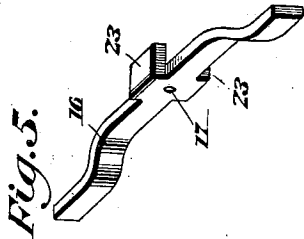
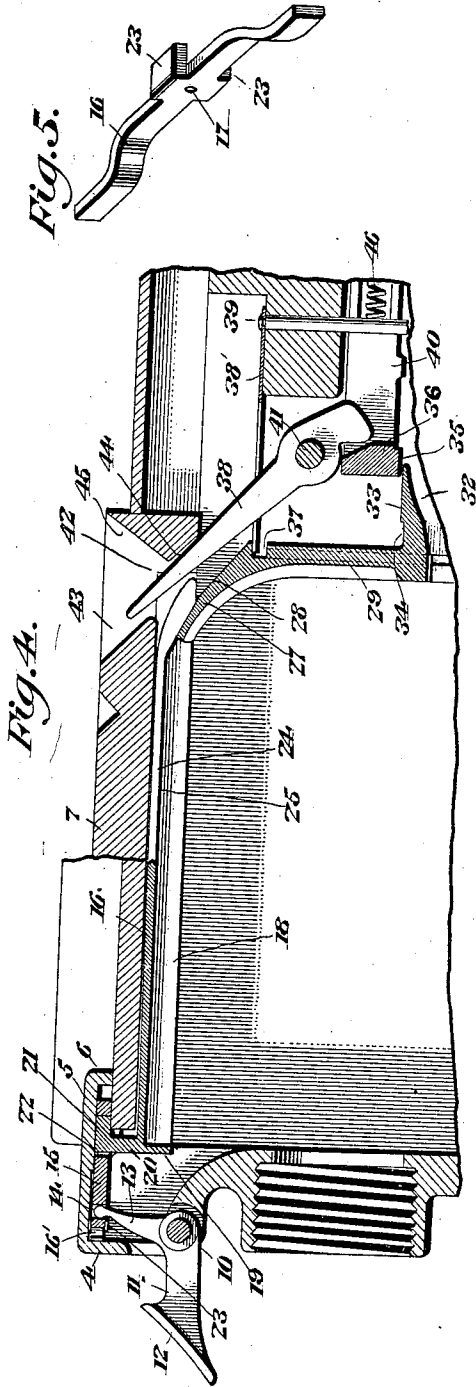
Patented Apr. 19, 1921.
3 SHEETS—SHEET 1.



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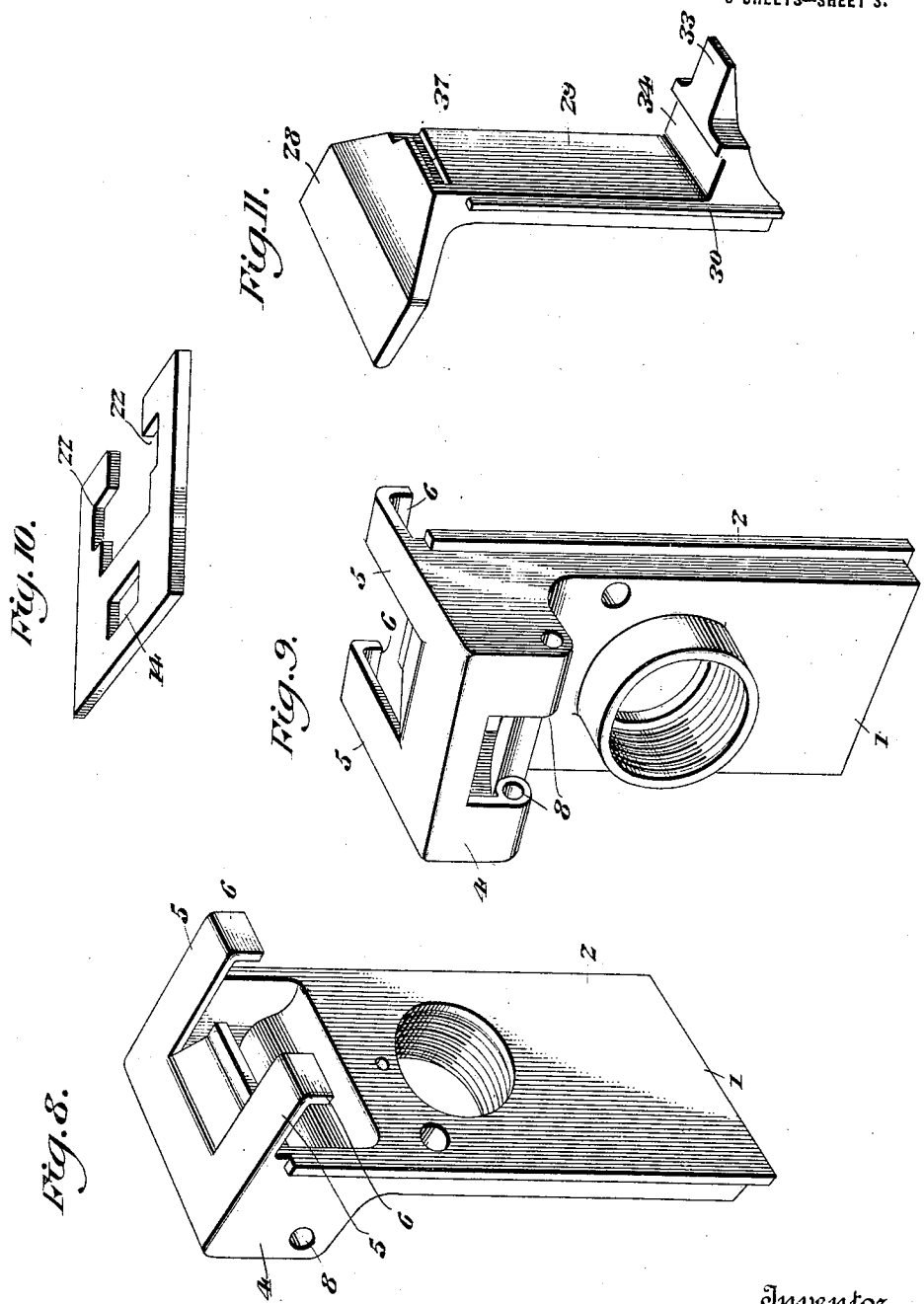


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UNITED STATES PATENT OFFICE.

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TRIGGER AND SEAR MECHANISM FOR MACHINE-GUNS.

1,375,451.

Specification of Letters Patent. Patented Apr. 19, 1921.

Application filed December 6, 1918. Serial No. 265,609.

(FILED UNDER THE ACT OF MARCH 3, 1883, 22 STAT. L., 625.)

To all whom it may concern:

Be it known that I, ELBERT FOWLER, captain, Ordnance Dept., United States Army, a citizen of the United States, stationed at Washington, D. C., have invented an Improvement in Trigger and Sear Mechanism for Machine-Guns, of which the following is a specification.

The invention described herein may be used by the Government, or any of its officers or employees in prosecution of work for the Government, or by any other person in the United States, without payment of any royalty thereon.

The object of my invention is to provide a novel form of trigger and sear mechanism for machine guns, which is of maximum simplicity of construction and extremely sensitive and reliable in operation, and which is not likely to get out of order.

With this object in view, the invention resides, generally and broadly stated, in the combination, with a sear, operably engageable with the firing-pin, of a trigger-controlled cam-member for releasing said sear from engagement with the firing pin.

The invention resides, more specifically stated in a vertically-positioned and vertically-movable sear, and a horizontally-rectilinearly movable, trigger-controlled cam-member for actuating said sear to firing-pin releasing position.

The invention also resides in various improvements in structural parts going to make up the ultimate perfection of the gun, as an entirety.

The accompanying drawings disclose an exemplary embodiment of the underlying principles of my invention. Like reference characters denote corresponding parts throughout the several views, which latter may be briefly described as follows:

Figure 1 is a view in side elevation, partly in section, of a machine gun embodying my improved trigger and sear mechanism;

Figs. 2 and 3 are cross sectional views on the lines 2—2 and 3—3, respectively, Fig. 1;

Fig. 4 is a fragmentary longitudinal sectional view of a machine gun equipped with my improvements, showing the relative position of the parts after the firing-pin has been released;

Fig. 5 is a detail perspective view of the trigger spring removed from the gun;

Fig. 6 is a detail perspective view of the trigger removed from the gun;

Fig. 7 is a detail perspective view of the cam member removed from the gun;

Figs. 8 and 9 are detail perspective views looking at the back and front, respectively, of the rear end plate of the gun, removed therefrom;

Fig. 10 is a detail perspective view of the connection between the trigger and the cam member; and

Fig. 11 is a detail perspective view of the sear removed from the gun.

Referring now in detail to the drawings.

1 designates the rear end plate of the gun, which plate is provided with side ribs or splines 2, 2 which slide in corresponding grooves in the side plates 3, 3 of the gun. The plate at its upper end is provided with a rearward-projecting, hollow head 4, having, on its upper surface, lateral, forward-projecting tongues 5, 5 bent at their free ends, as shown, to form downward-projecting terminals 6, 6, which, in the assembled position of the parts, bear upon the upper surface of the top plate 7, as shown in Figs. 1 and 4.

The head 4 is provided with bearings 8, 8, for the reception of a trigger-pivot 9, which passes through the hub 10 of the trigger 11, the latter being provided with a finger 12 at its rear end.

The trigger is in the form of a bell-crank lever having the lever arm 13 engageable with an opening 14, in a plate 15, constituting a link or connection between the lever arm 13 and a cam member 16 (more particularly hereinafter to be described).

The link 15 is horizontally disposed within the hollow head 4; is adapted for limited rectilinear movement; and is supported, at its forward end, upon the upper surface of the top plate 7.

Bearing against the rear end of said link 15, is a bowed leaf-spring 16', which is preferably secured to the link by a pin passing through a transverse hole 17, intermediate the ends of said spring. The spring bears, at its ends, upon the inner surface of the vertical wall of the hollow head 4. Above and below the hole 17, the spring carries forward-projecting lugs 23, 23, constituting a support for the rear end of the link 15, which is seated therebetween, as shown in

Figs. 1, and 4. The spring is for the purpose of returning the trigger 11, the link 15, and the cam member 16 to normal position, after actuation thereof.

5 The cam member 16 is an elongated plate, as shown more particularly in Fig. 7, of light weight metal (preferably sheet metal), and may be provided, if desired, with side flanges 18, 18 and with an end flange 19.

10 The cam member is provided, on its upper surface, with lateral, upstanding lugs 20, 20 provided, at their ends, with bent, forwardly-projecting terminals 21, 21, which enter a recess 22, 22 in the link 15 and bear
15 against the front and rear walls of such recess. The terminals 21, 21 slide upon the upper surface of the top plate, 7, thereby supporting the cam-member at its rear end. The cam member 16 is bifurcated, as shown
20 at 24, to provide legs 25, 25, having, at their free ends, downwardly-extending cam-portions 26, 26 having the downwardly and forwardly inclined rear faces 27, 27, bearing
25 upon the correspondingly-inclined upper surfaces of the inclined wing 28, at the upper end of the sear 29. The inclined faces 27, 27, may be formed on side flanges on the legs 25 opposite the flanges 18, 18. The cam member may conveniently be formed of sheet
30 metal, bent or stamped to the desired form.

The sear 29 is a vertically disposed member, having splines 30, 30, slidable in corresponding grooves 31, 31 in the breech-bolt 32. The sear is provided with the locking
35 recess 34, in its upper surface, engageable with a projection 35 in the end surface of the firing-pin 36.

The sear is also provided with a recess 37, in its front face, in which engages one end
40 of a leaf spring 38', which is bifurcated to straddle the cocking-lever 38, and which is secured at its opposite end to the breech bolt 32, as by a pin 39, which projects through a recess 40 in the firing-pin. The
45 spring 38' is operable to return the sear 29 to normal position, after depression thereof by the cam member 16.

By the construction and arrangement of the parts, as described, it will be noted that
50 a horizontally rectilinear movement of the cam-member 16 effects a vertical movement of the sear 29.

The firing-pin cocking lever 38 is pivoted, at 41, to the breech bolt 32 and, at its lower
55 end, projects into the recess 40 in said firing pin and, at its upper end, into a slot 42 in the top plate 7 of the breech-casing. The upper end of the lever, in the cocked position of the firing-pin, is in proximity to the rear
60 inclined face 43 of the slot 42, and to the inclined face 44 beneath the face 43. The slot 42 has a front wall 45 inclined oppositely to the wall 44.

As the breech bolt 32 moves from the position thereof shown in Figs. 1 and 4, to its

retracted position, the upper end of the cocking lever 38 strikes the inclined rear wall 43, which, in the continued rearward movement of the breech-bolt, causes the lever to turn
70 upward and forward, until the upper end thereof escapes from the slot 42 in the top plate 7. This movement of the lever will cock the firing-pin 36, since the lower end of the lever acts against the rear wall of the slot 40 of the firing-pin 36, and thereby re-
75 tracts the firing-pin so that its projection 35 seats in the recess 34 of the sear. The cocking lever, in the forward movement of the breech-bolt, strikes against the inclined wall 45, and is thereby rocked to the position
80 thereof shown in Fig. 1, so that, as the breech bolt reaches the firing position, the lower end of the lever is withdrawn from engagement with the rear wall of the slot 40, as shown in
85 Fig. 1, leaving the firing-pin free to move forward, when the trigger 11 is depressed.

It is thought that the operation of the sear and trigger mechanism is apparent from the foregoing detailed description of the construction and relative arrangement of the
90 parts; but, briefly described, it is as follows:

The normal position of the parts, when the firing-pin is cocked and the breech-bolt is in its forward firing position, is as indicated in Fig. 1. In firing the gun, the
95 trigger 11 is depressed, by pressing upon the finger piece 12. This throws the lever arm 13 rearward, moving with it the link 15, which, in turn, pulls the cam-member 16 rearward.

The down-turned end portions 26, 26 of the cam-member will thereupon force the sear 29 downward (from the position thereof shown in Fig. 1 to the position thereof
105 shown in Fig. 4), since the inclined cam faces 27, 27 of said end portions bear against the correspondingly-inclined face of the wing 28 of the sear. This downward movement of the sear moves the locking recess 34
110 out of engagement with the projection 35 of the firing-pin 36, whereupon said firing-pin, under the impetus of the driving spring 46, drives the firing-pin forward sufficiently to transmit the igniting blow to the primer
115 of the cartridge, in front of the breech bolt 32.

If the trigger 11 is immediately released, after movement thereof, the spring 16' returns the trigger, the link 15 and the cam member 16 to the normal position thereof
120 shown in Fig. 1, and the sear spring 38 returns the sear 29 to its upper position.

While I have described with great particularity a physical embodiment of the underlying principles of my invention, it is
125 to be understood that various changes and modifications may be resorted to, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus fully described my inven- 130

tion, what I claim as new and desire to secure by Letters Patent is:

1. In a machine gun, a sear, a sear-actuating cam-member, comprising a plate bifurcated to form legs, the ends of which bear upon said sear, a trigger, and a connection between said cam-member and said trigger.

2. In a machine gun, a sear, a sear-actuating cam-member, comprising a plate bifurcated to form legs, the ends of which are downwardly inclined and bear upon said sear, a trigger, and a connection between said cam-member and said trigger.

3. In a machine gun having a top plate, a sear, a sear-actuating cam-member having

upstanding lugs bent at their upper ends to form forwardly-projecting terminals bearing upon the top plate, a trigger, and a connection between said trigger and said cam-member and having recesses with which said terminals engage.

4. In a machine gun having a rear end plate, a sear, a sear-actuating cam-member, a trigger carried by said end plate, a connection between said trigger and said cam-member and a bowed leaf spring between said end plate and said connection, and having projections, between which said connection is seated and by which it is supported.

ELBERT FOWLER.