S. PAULSON.

AUTOMATIC FIREARM.

APPLICATION FILED JAN. 25, 1908.

950,576.

Patented Mar. 1, 1910.

2 SHEETS—SHEET 1.

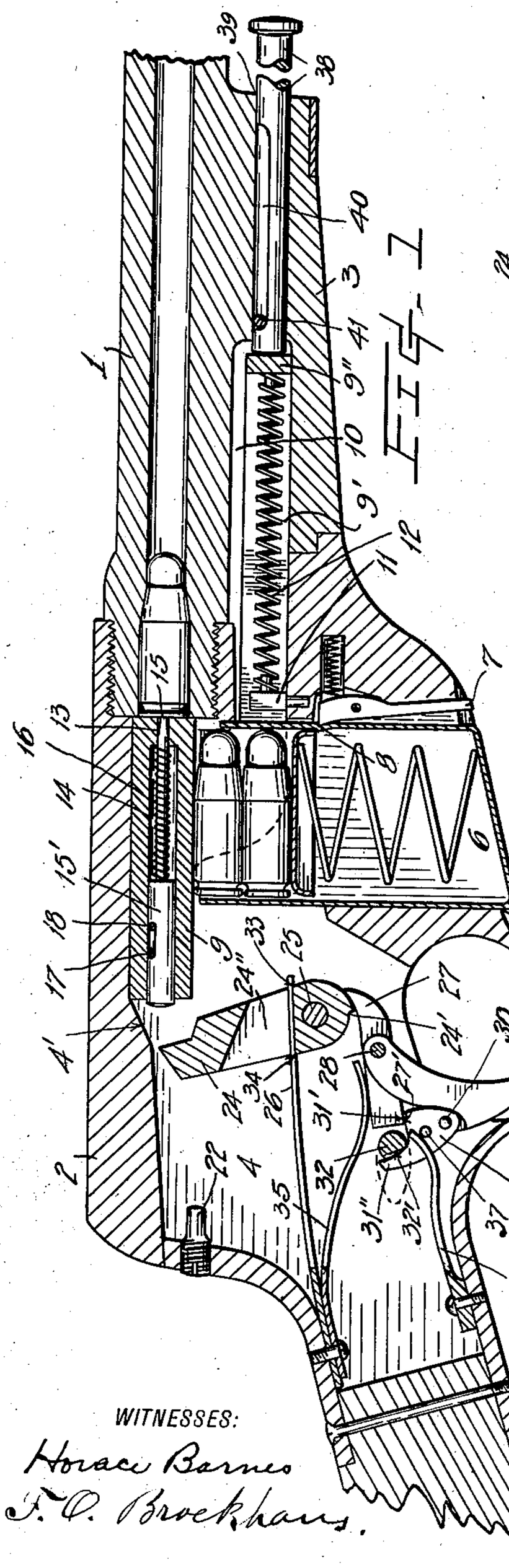

FIG. 1.

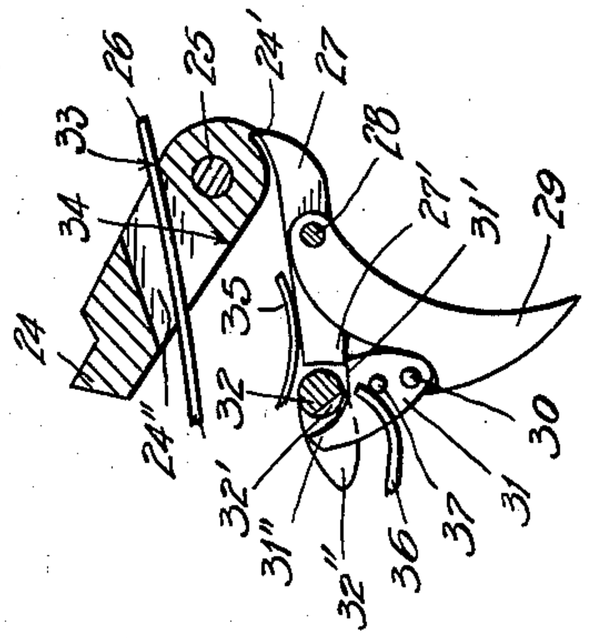

FIG. 5.

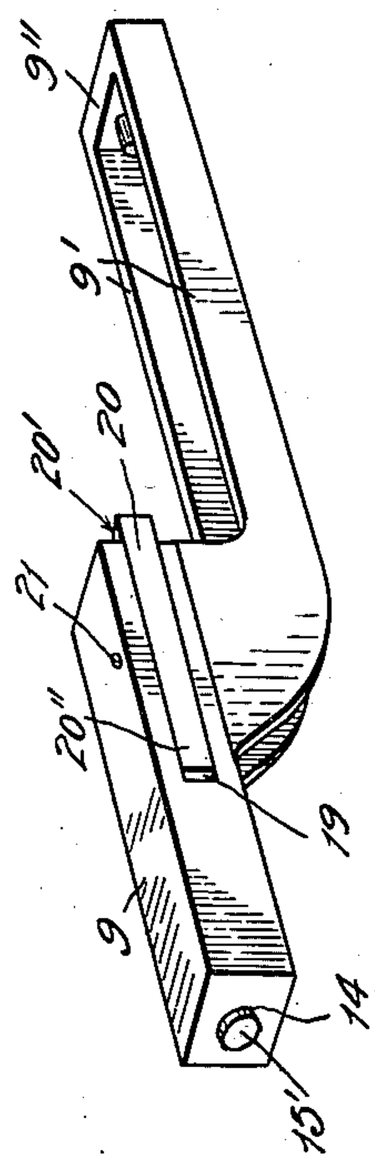

FIG. 4.

WITNESSES:

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2 SHEETS—SHEET 2.

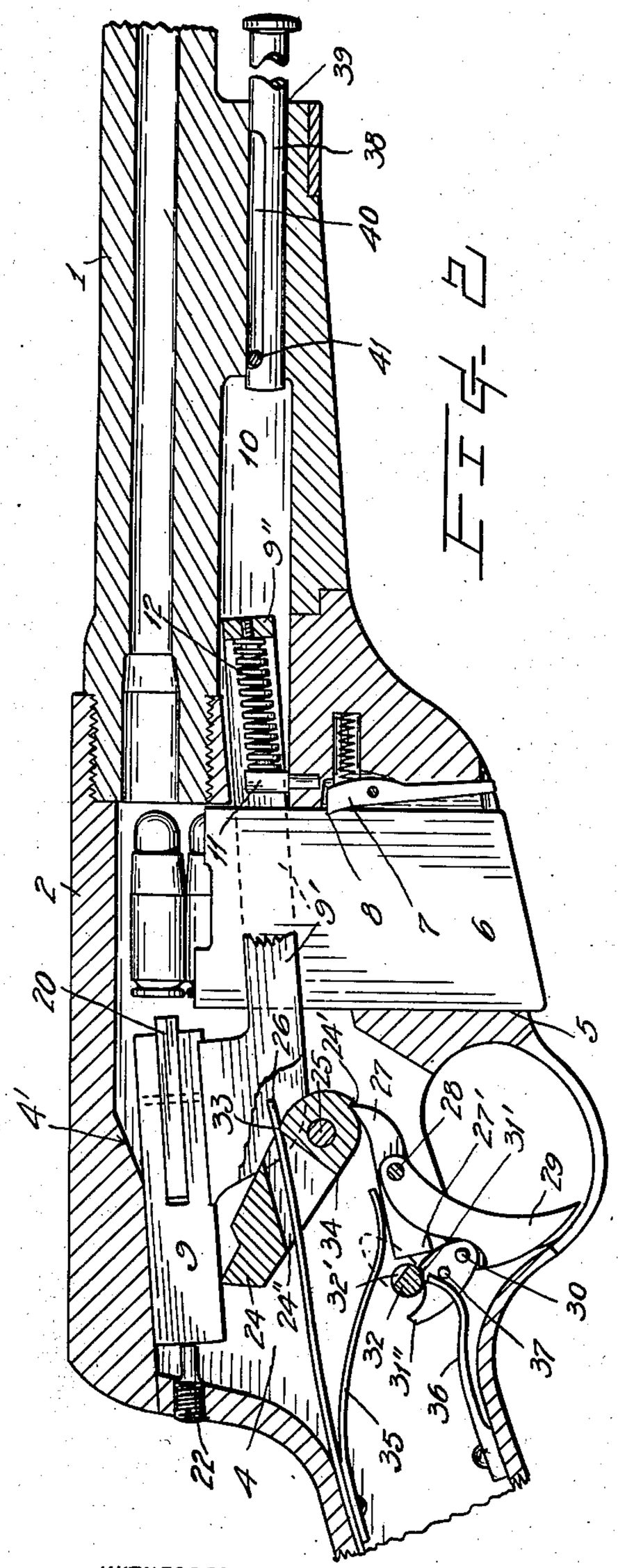

FIG. 2

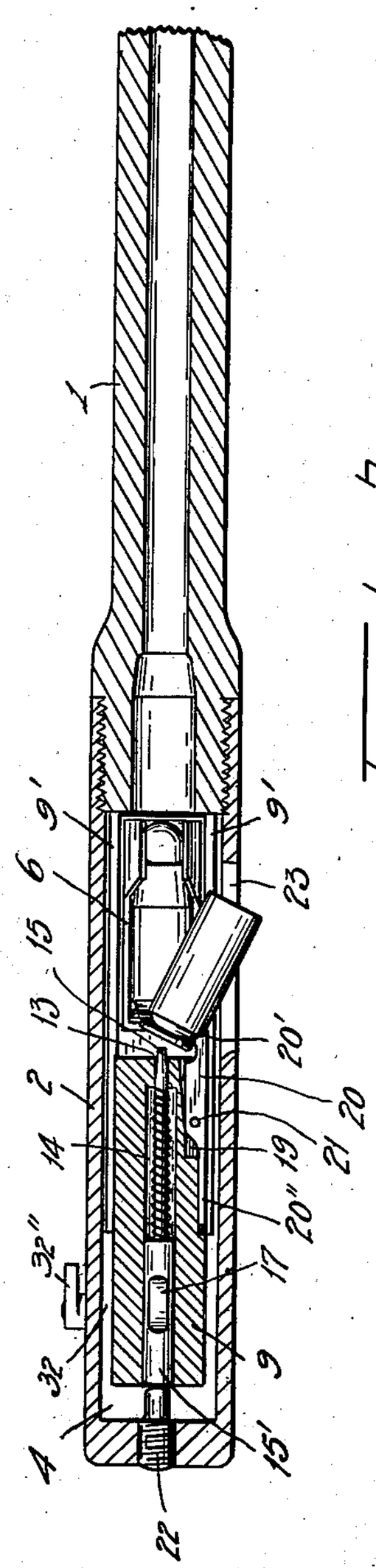

FIG. 3

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SIVIL PAULSON, OF RED WILLOW, ALBERTA, CANADA.

AUTOMATIC FIREARM.

950,576. Specification of Letters Patent. Patented Mar. 1, 1910.

Application filed January 25, 1908. Serial No. 412,545.

To all whom it may concern:

Be it known that I, SIVIL PAULSON, a citizen of Canada, residing at Red Willow, Province of Alberta, Canada, have invented certain new and useful Improvements in Automatic Firearms, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to firearms and especially to that class known as automatic repeaters.

The object of the invention is to produce an arm of this class which will be reliable in action, simple in construction, which is not liable to become deranged, and which can be predeterminately and interchangeably employed to fire its charges automatically and in rapid succession, or to have the discharges occur by manipulating the trigger.

The invention consists in the novel construction and adaptation of devices and the combinations thereof, as will be hereinafter described and claimed.

In the drawings, which illustrate an embodiment of the invention as applied to a rifle, Figure 1 is a longitudinal vertical section of a portion of a firearm in condition for firing. Fig. 2 is a similar view with the breech-block in its rearmost position and a cartridge in position to be conveyed into the gun barrel through the retraction of said breech-block. Fig. 3 is a horizontal section of the gun and breech-block disclosing the shell ejecting devices. Fig. 4 is a perspective view of the breech-block, and Fig. 5 is a view of the hammer and allied parts to illustrate a phase of the gun-action.

The reference numeral 1 designates the barrel of a rifle which is rigidly connected with the frame 2 and to the forearm 3. The frame is chambered, as at 4, for the housing of the operative gun-parts, and is provided at the bottom with an opening 5 for the reception of a cartridge magazine 6, of the box type, which is removably held in place by suitable means, such as a spring-pressed latch 7 engaging within a notch 8 provided in the magazine casing.

Positioned within the chamber 4 is a breech-block 9 having integral therewith forwardly extending bars 9′ which terminate in an end 9″. Said bars are offset sufficiently to extend into a way 10 provided in the fore-arm and are spaced apart so as to extend upon each side of said magazine. At the rear end of the way 10 is a post 11 to furnish an abutment between which and the end 9″ of the block extension is a helical spring 12 serving to yieldingly retain the breech-block so that its front end will bear against the rear of the barrel.

The breech-block is bored and counterbored, as at 13 and 14, to respectively accommodate a longitudinally arranged firing-pin 15 and the enlarged shank 15′ thereof; the counter-bored portion being of such length as to accommodate a spring 16 between its inner end and the adjacent end of such shank. The office of this spring is to yieldingly retain the firing-pin so as to have its point normally sheathed by the block to an extent limited by a notch 17 provided in the firing-pin for the play of a fixed stop-pin 18 therefor in the breech-block.

In the side of the block 9 is a recess 19 for an extractor 20 which protrudes forward of the front of the block as a hook terminating in a sharp edge and having a sloping inner face 20′ from the hook-bill outwardly. The extractor is fulcrumed to a pin 21 and to the rear thereof is made relatively thin, as at 20″, so as to afford sufficient resiliency for the hooked outer end to be sprung outwardly engaging over the rim of a cartridge shell as the block is forcibly drawn thereagainst through the offices of the spring 12.

Extending into the frame chamber 4 from the rear is an adjustable stud 22 which is disposed so that the block in its rearward travel will cause the firing-pin to impinge thereagainst, resulting in the pin being forced forwardly against the shell of a previously discharged cartridge, whereupon and through the engagement by the extractor of the rim of the shell, the latter is tilted and ejected from the frame through an opening 23, as will be understood from an inspection of Fig. 3.

The rearward movements of the breech-block are effected by the recoil had from the discharges of the successively fired cartridges but which are of such force that I cause the block to be retarded in its rear flights by providing an enlargement or abutment having an obturating sloping face 4′ at the top of the frame chamber.

24 is the gun hammer pivotally mounted upon a fixed fulcrum pin 25 and is provided with a notch 24′ whereby it is engaged by a mainspring 26 with the toe of a sear 27 which, intermediate its length, is fulcrumed

to a fixed pin 28. The trigger 29 is pivotally connected to the pin 28 and is pivotally connected at its rear by a pin 30 with a tumbler 31. This tumbler 31 is formed with a shoulder 31′ serving upon occasion as a support for then maintaining the sear in disengaged position with respect to the hammer, see Fig. 1. The tumbler is provided at the rear of said shoulder with an upwardly extending finger 31″ arranged for engagement by a safety-lock, when so desired to safe-guard the gun against firing. This lock consists of a bolt 32 which extends transversely through the frame and is notched upon its periphery, as at 32′, so that when the bolt is partially rotated to present such notch opposite the tumbler-finger the latter is not engaged thereby leaving the various operative parts of the gun free to act. When the bolt is, however, rotated sufficiently to present the opposite unrecessed part of the bolt to the tumbler, as represented in Fig. 2, then by its engagement with the tumbler it is locked against retrograde movement and prevents the sear toe from being withdrawn from the hammer-notch 24′ or the releasing of the hammer. Upon the end of the bolt and exteriorly of the frame is an arm 32″ for adjusting the same.

The mainspring 26 extends through an aperture 24″ of the hammer and exerts a pressure against the front and rear edges 33 and 34, respectively, according to whether the hammer is at the front or rearmost of its angular positions. When pressing against the edge 33 its effect is to cause the hammer to deliver a blow to the firing-pin in the attainment of which the hammer is tilted to bring the other edge 34 thereof to bear with the mainspring and assist the rebounding movement of the hammer.

35 is a spring provided to tiltably press the sear to the rear of its fulcrum pin for causing the engagement of the sear-toe within the hammer-notch, when unobstructed by the tumbler, or, where the tumbler is in opposition, the spring tends to press the heel 27′ of the sear against the aforesaid tumbler shoulder, 31′.

Another spring 36 is provided to act upon the tumbler in such manner as to press the same forwardly and downwardly and likewise to swing the trigger forward into the position in which it is illustrated in Figs. 1 and 5. Said spring 36 may be inserted through an aperture in the tumbler, similarly to the hammer connection with its spring, as above explained, or as shown in the drawings, by employing a stud 37 upon the tumbler for engagement with the spring 36.

38 is a bolt which is socketed in a channel 39 of the fore-arm in advance of and communicating with the way 10, and is, by the provision of an elongated notch 40 and a stop 41, adapted to be moved in or out to a limited extent.

Assuming that the gun-parts are as represented in Fig. 1, to operate the arm, the block 9 is, in the first instance, thrust rearwardly through the offices of the bolt 38 acting against the end 9″ of the block extension. This movement of the block carries it into the position in which it is illustrated in Fig. 2 and also, through impinging against the hammer, moves the latter into cocked position, as shown in this view.

Meanwhile the shell of a previously fired cartridge is ejected by the joint action of the extractor 20 and the firing-pin 15, as before explained. The spring 36 acting on the sear 27 forces the toe of the latter to engage the hammer and retain the same in such cocked position so long as the trigger is held back by a finger grip, as in Fig. 2, to prevent the shoulder 31′ of the tumbler being obtruded by the spring 36 below the heel 27′ of the sear.

The block being released by the rod 38 and through the agency of the retractile spring 12 is propelled forward to convey a cartridge which has been elevated from the magazine into the barrel 1. To fire the cartridge thus deposited, the trigger is allowed to move forward and permit the shoulder of the tumbler passing below the heel of the sear whereby the power of the spring 35 is overcome and the toe of the sear disengaged from the hammer, which being released is urged forward by the mainspring 33 to effect the firing. In Fig. 5 I show the tumbler accomplishing such ends.

When the firing occurs the recoil from the explosion forces the breech-block rearwardly, accompanied by the hammer, with sufficient power to overcome the retarding of the block by the chamber face 4′, and the counter action due to the mainspring 33.

In Fig. 2 the safety lock is shown in operative position to prevent the tumbler being moved downwardly, and is made ineffective by partially rotating the same to present the notch 32′ opposite the tumbler finger 31″, as in Figs. 1 and 5.

Having described my invention, what I claim, is—

1. In an automatic firearm, the combination with the barrel, a frame, and a fore-arm provided with a way, of a breech-block mounted in the frame and provided with an extension projecting into said way, a firing-pin provided in the block, a spring within said way and tending to yieldingly maintain said block against the end of the barrel, a hammer, a mainspring, a trigger, a tumbler pivotally connected with the trigger, a sear adapted for engagement with said hammer, said sear being adapted to be disengaged from said hammer by the tumbler when the latter is moved downwardly and forwardly,

a spring for effecting such movement of the tumbler, and means for preventing such movement.

2. In an automatic firearm, the combination with the barrel, a frame, and a fore-arm provided with a way, of a breech-block mounted in the frame and provided with an extension projecting into said way, a spring within said way and tending to yieldingly maintain said block against the end of the barrel, a hammer, a mainspring, a trigger, a tumbler, pivotally connected with the trigger, a sear adapted for engagement with said hammer, a spring for accomplishing such engagement, said sear being adapted to be disengaged from said hammer by the tumbler when the latter is moved downwardly and forwardly, a spring for effecting such movement of the tumbler, and means for preventing such movement.

3. In an automatic firearm, the combination with the barrel, a frame, and a fore-arm provided with a way, of a breech-block mounted in the frame and provided with an extension projecting into said way, a spring within said way and tending to yieldingly maintain said block against the end of the barrel, an extractor carried by the block, a bolt extending into said fore-arm and adapted for engagement with said extension, a hammer, a mainspring, a trigger, a tumbler pivotally connected with the trigger, a sear adapted for engagement with said hammer, a spring for accomplishing such engagement, said sear being adapted to be disengaged from said hammer by the tumbler when the latter is moved downwardly and forwardly, a spring for effecting such movement of the tumbler, and means for preventing such movement.

4. In an automatic firearm, the combination with the barrel, a frame, and a fore-arm provided with a way, of a breech-block mounted in the frame and provided with an extension projecting into said way, a firing-pin provided in the block, a spring within said way and tending to yieldingly maintain said block against the end of the barrel, a bolt extending into said fore-arm and adapted for engagement with said extension, an extractor carried by said block, a hammer, a mainspring, a trigger, a tumbler pivotally connected with the trigger, a sear adapted for engagement with said hammer, a spring for accomplishing such engagement, said sear being adapted to be disengaged from said hammer by the tumbler when the latter is moved downwardly and forwardly, a spring for effecting such movement of the tumbler, means for preventing such movement, and a stud which coacts with the firing-pin and said extractor for making the latter operative.

5. In an automatic firearm, a frame having a barrel and a breech-block in the frame, a trigger, a tumbler pivoted at one end to the rear side of said trigger between the pivoted point of the latter and its outer end, a shoulder on the tumbler with a finger projecting upwardly from the shoulder, a pivoted sear having its rear end for engagement with said shoulder, a hammer for engagement with the sear, and a rotatable element to engage said finger of the tumbler to render the movement of the trigger inoperative.

6. In an automatic firearm, a frame having a barrel and a breech-block in the frame, a hammer, a trigger, a sear, a single pin for pivoting said sear between its ends and said trigger at its upper end, said sear engaging said hammer at its free end, and a tumbler pivoted to the trigger to engage the rear end of the sear, to control the engagement and disengagement of said sear with said hammer.

7. In an automatic firearm, the combination with a hammer, of a trigger and a pivoted sear, the sear at one end engaging the hammer, a tumbler pivoted to the trigger to engage the rear end of the sear, and means extending transversely of said tumbler and having a cam action thereon whereby to cause said tumbler to swing clear of said sear, whereby to render said tumbler inoperative on said sear.

In testimony whereof I affix my signature in presence of two witnesses.

SIVIL PAULSON.

Witnesses:
PIERRE BARNES,
HORACE BARNES.