

W. E. ROSEBUSH.
FIREARM.
APPLICATION FILED JUNE 25, 1920.

1,376,165.

Patented Apr. 26, 1921.
4 SHEETS—SHEET 1.

Fig. 1.

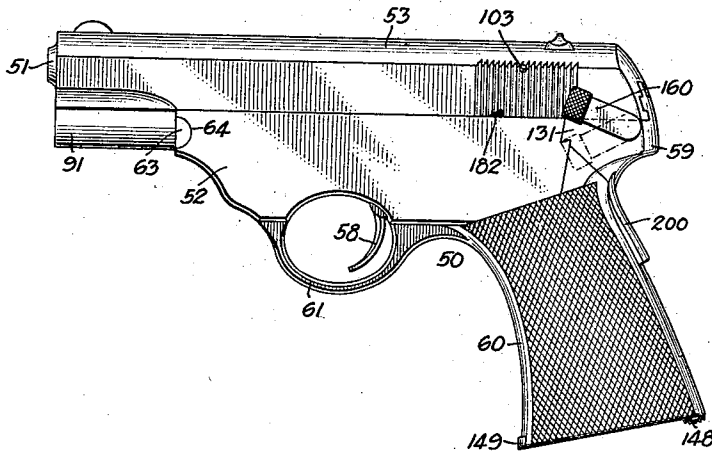


Fig. 2.

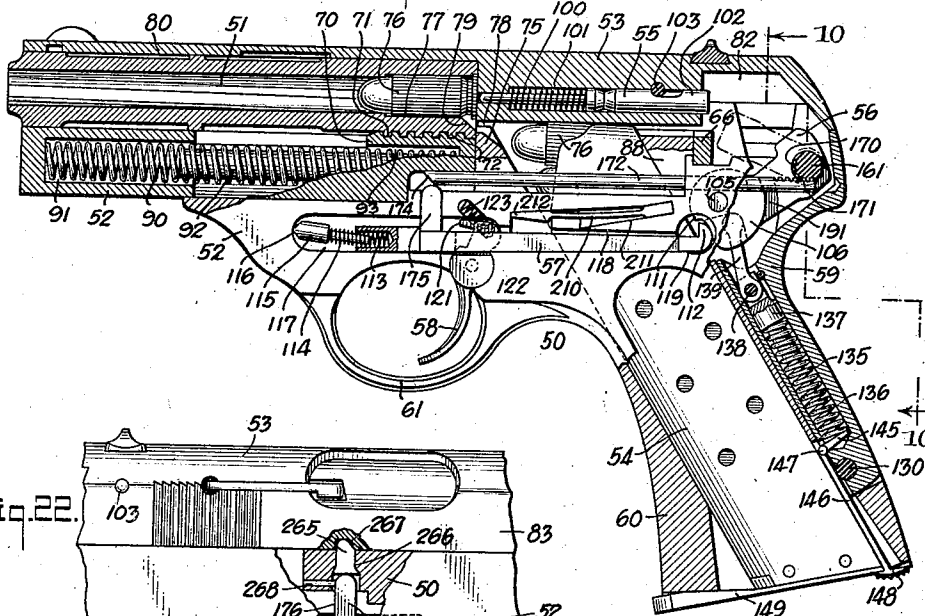
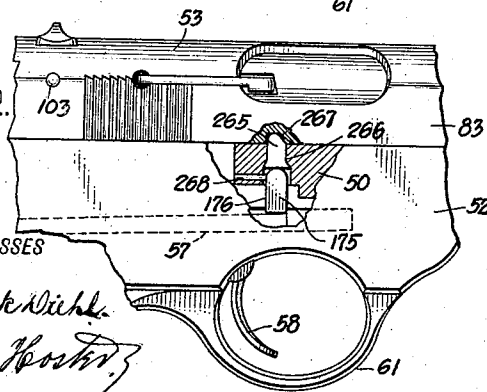


Fig. 22.



WITNESSES

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Fig. 3.

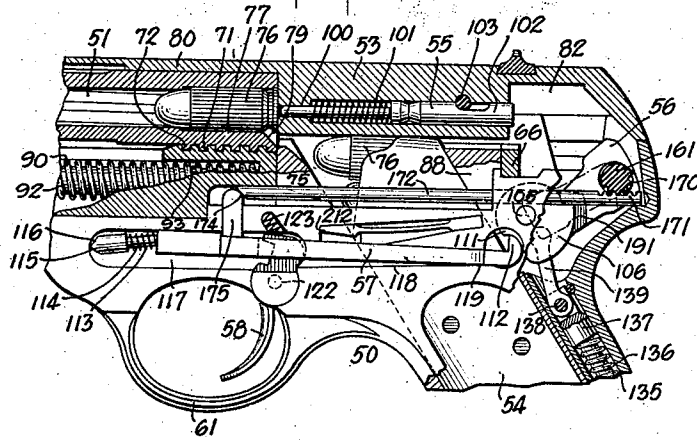


Fig. 4.

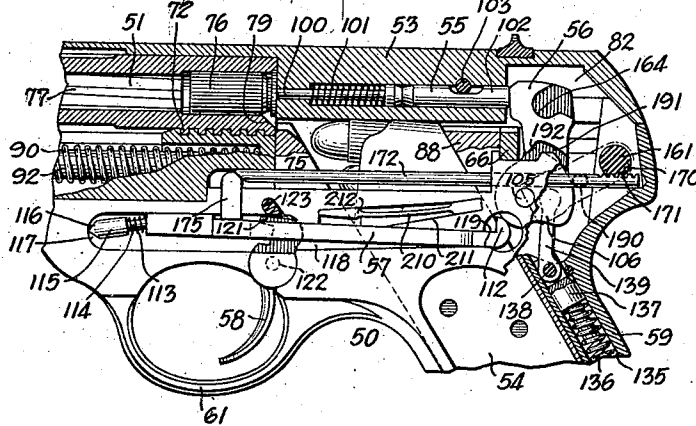


Fig. 5.

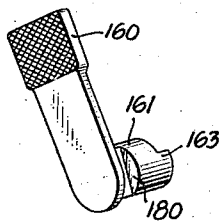


Fig. 6.

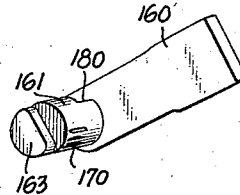
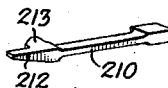


Fig. 7.



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4 SHEETS—SHEET 3.

Fig. 8.

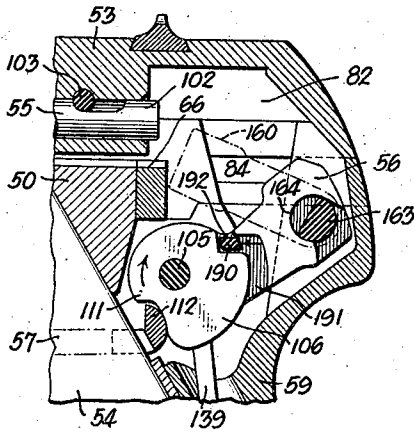


Fig. 9.

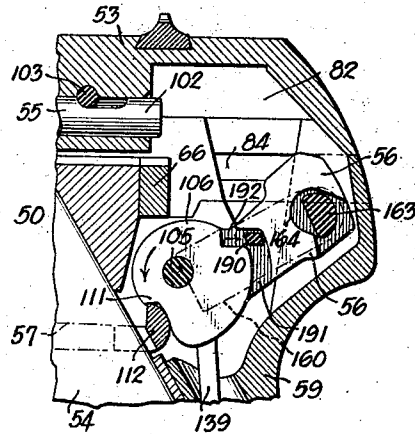


Fig. 10.

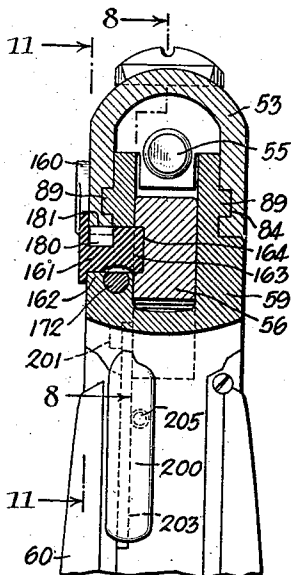


Fig. 11.

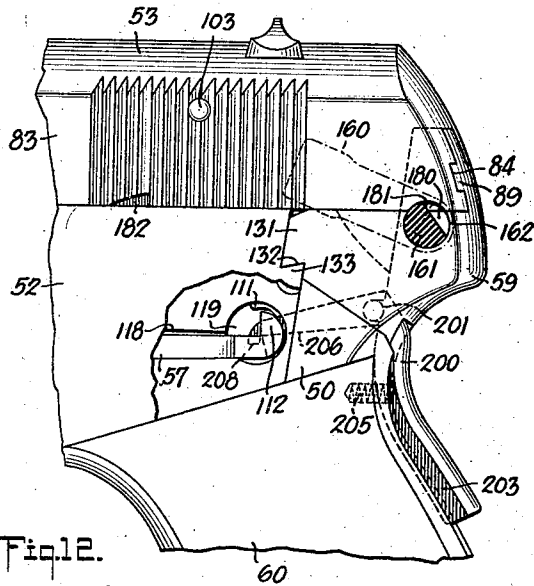
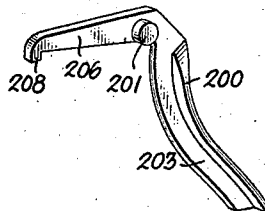


Fig. 12.



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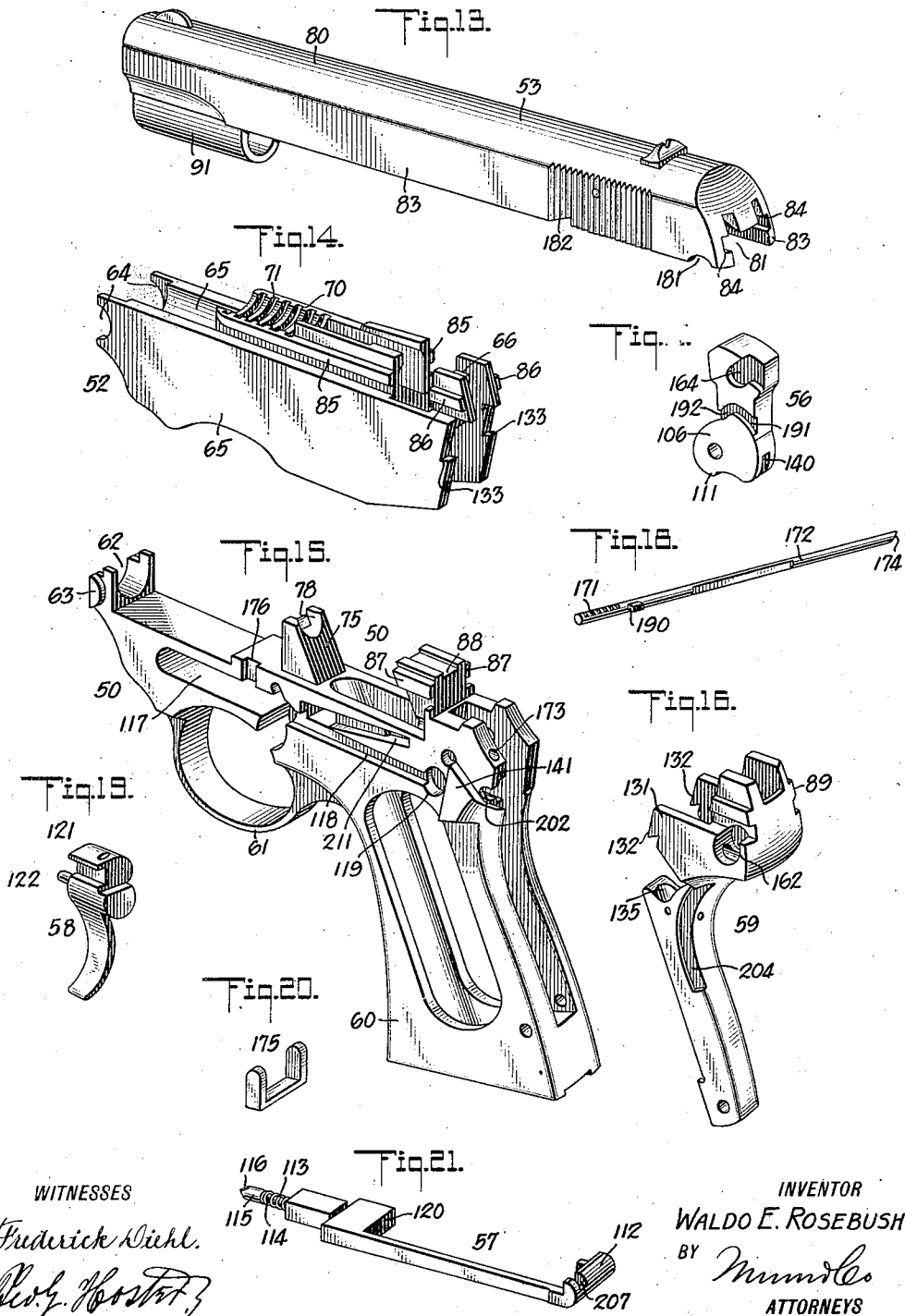
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4 SHEETS—SHEET 4.



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FIREARM.

1,376,165.

Specification of Letters Patent. Patented Apr. 26, 1921.

Original application filed January 26, 1920, Serial No. 353,983. Divided and this application filed June 25, 1920. Serial No. 391,582.

To all whom it may concern:

Be it known that I, WALDO E. ROSEBUSH, a citizen of the United States, and a resident of Spokane, in the county of Spokane and State of Washington, have invented new and useful Improvements in Firearms, of which the following is a full, clear, and exact description, this being a division of the application for Letters Patent of the United States for a composite automatic firearm, Serial No. 353,983, filed by me on January 26, 1920.

The invention relates to recoil operated breech loading hand firearms, such, for instance, as shown and described in the Letters Patent of the United States, No. 1,291,688 and No. 1,311,715, granted to me on January 14, 1919, and July 29, 1919, respectively.

The object of the invention is to provide certain new and useful improvements in automatic hand firearms of the concealed hammer type whereby the hammer can be securely locked when in cocked position and the sear rendered inoperative relative to the trigger.

Another object is to allow the user to readily lock the breech block or bolt temporarily against rearward movement and against return movement after the breech block has been pushed by hand into rearmost position.

Another object is to provide a grip safety arranged to prevent accidental discharge of the gun in case the latter is accidentally dropped or not held securely in the hand.

Another object is to visually indicate whether the hammer is in fired position and not in cocked position.

With these and other objects in view, the invention consists of certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a firearm arranged as a hammerless of 32-caliber and provided with the improved safety devices;

Fig. 2 is an enlarged longitudinal section of the same and with the safety in active position;

Fig. 3 is a fragmentary view of the same with the safety off and the parts in firing position;

Fig. 4 is a similar view of the same with the parts in position after firing and with the breech block in position prior to its recoil;

Figs. 5 and 6 are perspective views of the safety lever;

Fig. 7 is a perspective view of the spring for moving the sear into inoperative position on withdrawing the magazine;

Fig. 8 is an enlarged fragmentary view of the safety device with the parts in active position, the section being on the line 8—8 of Fig. 10;

Fig. 9 is a similar view of the same with the parts in inactive position;

Fig. 10 is an enlarged cross section of the improved firearm on the line 10—10 of Fig. 2;

Fig. 11 is an enlarged side elevation of the rear end of the firearm with parts in section on the line 11—11 of Fig. 10;

Fig. 12 is a perspective view of the grip safety lever;

Fig. 13 is a perspective view of the breech block or bolt;

Fig. 14 is a perspective view of the barrel receiver;

Fig. 15 is a perspective view of the main frame;

Fig. 16 is a perspective view of the back strap;

Fig. 17 is a perspective view of the hammer;

Fig. 18 is a perspective view of the controlling bar controlled by the safety and controlling the sear;

Fig. 19 is a perspective view of the trigger;

Fig. 20 is a similar view of the U-piece controlling the sear;

Fig. 21 is a perspective view of the sear; and

Fig. 22 is a fragmentary rear side elevation of the improved firearm with parts shown in section.

The automatic firearm illustrated in the drawings consists essentially of a main frame 50, a barrel 51, a barrel receiver 52, a recoil-operated breech block or bolt 53, a magazine 54, a firing pin 55, a hammer 56, a sear 57, a trigger 58 and a back strap 59. The main frame 50 is provided with a suit-

able handle 60 made hollow and forming a guideway for the removable magazine 54, and the said frame 50 is further provided with the usual trigger guard 61 for the trigger 58. The forward end of the main frame 50 is provided with two upwardly extending lugs 62 (see Fig. 15) forming a guideway or a saddle, and on the sides of the said lugs are formed half-round pivots 63 adapted to be engaged by correspondingly shaped notches 64 formed in the sides 65 of the barrel receiver 52 (see Figs. 14 and 15). By the arrangement described the barrel receiver 52 is mounted to swing on a pivot 63 into and out of position on the main frame 50 when assembling or disassembling the firearm. The sides 65 fit snugly over the sides of the main frame 50 so as to hold the parts mounted on the main frame against accidental displacement. The barrel receiver 52 is provided on top with a saddle 70 provided with spaced segmental grooves 71 engaged by correspondingly shaped lugs or ribs 72 formed on the under side of the rear end of the barrel 51 to hold the latter in position on the receiver 52. The rear end of the saddle 70 and the rear end of the barrel 51 abut against the forward face of a lug 75 (see Fig. 15) which is an integral part of the main frame 50, and the back of this lug 75 is beveled to guide a cartridge 76 into the bore 77 of the barrel 51. The top of the lug 75 is provided with a half-round recess 78 having an upwardly and forwardly inclined bottom 79 at the rear end of the bore 77 of the barrel 51 to insure proper seating of the cartridge 76 in the rear end of the barrel.

The breech block 53 is provided with the usual forwardly extending cover 80 for the barrel 51 and with the recess 82 at the rear end for receiving the upper portion of the hammer 56. The sides 83 of the breech block 53 are provided at the inner faces with longitudinally extending grooves 84 mounted to slide on guideways, of which portions 85 and 86 are spaced apart and formed on the barrel receiver 52 (see Fig. 14), other portions 87 are formed on a lug 88 forming an integral part of the main frame 50 (see Fig. 15), and still other portions 89 of the guideways are formed on the back strap 59 (see Fig. 16). The lug 88 of the main frame 50 fits into the space between the spaced guideway portions 85 and 86 of the barrel receiver 52. It will be noticed that by the arrangement described a continuous guideway is formed which, however, is partly on the barrel receiver 52, partly on the main frame 50, and partly on the back strap 59, and hence the breech block 53 is securely held against upward movement by the upward pressure of the uppermost cartridge 76 in the magazine 54 at the same time the barrel receiver 52 and the back strap 59 are

locked to the main frame 50. In order to strengthen the barrel receiver 52 the sides 65 thereof are rigidly connected with each of the guideway portions 86 by an integral crossbar 66 to stiffen the barrel receiver. The crossbar 66 is adapted to abut against the back of the lug 88 thus holding the barrel receiver 52 against accidental forward movement.

The breech block 53 is pressed on by a spring 90 extending with its forward end into a chamber 91 forming an integral part of the breech block at the bottom of the forward end, and this chamber 91 fits into the guideway formed by the lugs 62. The rear portion of the spring 90 is coiled around the pin 92 seated in a recess 93 formed in the saddle 70 of the barrel receiver 52. It is understood that the forward movement of the breech block 53 is limited by its forward shoulder abutting against the rear end of the barrel 51, as plainly shown in Figs. 2, 3 and 4.

The firing pin 55 is mounted to slide in the breech block 53 and is arranged for center firing the cartridge 76 in the barrel 51 at the time. The firing pin 55 is of any approved construction and is preferably of the sectional type illustrated in Figs. 2, 3 and 4, and comprises a front firing pin 100 pressed on by a spring 101, and a rear firing pin 102 engaged by a lock pin 103 to limit the sliding movement of the firing pin 55.

The hammer 56 is mounted to swing on a pivot 105 held in the rear portion of the main frame 50, and the said hammer is adapted to actuate the firing pin 55 in the usual manner. The heel 106 of the hammer 56 is provided with the usual shoulder 111 adapted to engage a tooth or lug 112 formed on the rear end of the sear 57 to hold the hammer 56 in cocked position, as shown in Figs. 2, 3 and 9. The sear 57 is practically the same as the one shown and described in the Letters Patent above referred to so that further detail description of the same is not deemed necessary, it being understood, however, that the forward end of the sear 57 is pressed on by a spring 113 to normally hold the sear 57 in rearmost position to engage the hammer 56 to hold the same in cocked position. The spring 113 is mounted on a pin 114 provided with a head 115 having a transverse knife edge 116 bearing on the front wall of a slot 117 formed in the main frame 50. The knife edge 116 allows a free up and down rocking movement of the sear 57. Into the rear end of the slot 117 opens a groove 118 formed in the left-hand side of the main frame 50 to accommodate the sear 57, and the rear end of this groove 116 terminates in a bearing 119 engaged by the front portion of a rounded-off tooth 112 which thus forms a pivot for the sear to rock on up and down, and also to allow the

forward and rearward movement of the said sear. The sear 57 is provided near its forward end with a square shoulder 120 adapted to be engaged by a projection 121 formed on the trigger 58 fulcrumed at 122 in the main frame 50. The finger-piece of the trigger 58 extends into the trigger guard 61 to be within convenient position for the operator's finger for pressing the trigger whenever it is desired to move the sear 57 forward against the tension of the spring 113 to release the hammer 56 for firing purposes. A spring 123 is mounted in the main frame 50 and engages the top of the trigger 58 to hold the latter normally in a rear-most position.

The rear ends of the sides 65 of the barrel receiver 52 are locked in place by the back strap 59 fitting into a recess in the back of the handle 60 of the main frame 50. The lower end of the back strap 59 is pivoted at 130 to the handle 60 and the upper end of the back strap 59 is provided with forwardly extending lugs 131 (see Figs. 1, 11 and 16) fitting the sides of the main frame 50 and terminating in catches 132 engaging shoulders 133 formed on the rear edges of the sides 65 of the barrel receiver 52, thus holding the barrel receiver locked in position at its rear end. The back strap 59 is provided with a recess 135 in which is arranged a hammer spring 136 pressing with its upper end on the under side of the plunger or head 137 mounted to slide in the recess 135. The top of the plunger 137 is pivotally connected at 138 with a link 139 engaging at its upper end a recess 140 formed in the under side of the heel 106 of the hammer 56 to impart a forward swinging movement to the hammer when the latter is released by the sear 57. It is understood that when the hammer 56 swings forward it engages the firing pin 55 and moves the same forward to fire a cartridge 76 held in the rear end of the bore of the barrel 51, as previously mentioned. The bottoms of the lugs 131 of the back strap 59 normally rest on lugs 141 formed integrally with the sides of the main frame 50, as plainly indicated in the drawings. The lower end of the hammer spring 136 bears on an arm 145 projecting at an angle from a catch 146 provided with trunnions 147 mounted to turn in the back strap 59. The catch 146 extends downward through the handle 60, and its lower end is provided with a plate 148 adapted to engage the under side of the bottom 149 of the magazine 54 removably held in the handle 60. By the arrangement described the hammer spring 136 controls the hammer 56, the catch 146 and the back strap 59 owing to the fact that the catch 146 is pivoted on the back strap, as will be readily understood by reference to Fig. 2.

In order to effectively lock the firearm,

use is made of a safety device capable of rendering the hammer 56 and the trigger 58 inoperative, at the same time locking the breech block 53 against movement. For the purpose mentioned use is made of a safety lever 160 arranged on the left-hand side at the rear end of the firearm and provided with a pivot 161 mounted to turn in a bearing 162 formed in the back strap 59. The inner end of the pivot 161 terminates in a cam 163 and adapted to engage a cam 164 formed on the hammer 56 to lock the latter when in cocked position, and at the time the safety lever 160 is swung upward from its normal lowermost position (indicated in dotted lines in Figs. 1 and 9) to uppermost position (shown in full lines in Fig. 1 and in dotted lines in Figs. 8 and 11). It is understood that when the safety lever 160 is in lowermost or "off" position then the cams 163 and 164 are in unlocked position (see Fig. 9) to allow free movement of the hammer from cocked firing position and vice versa. When the hammer is in cocked position and the lever 160 is swung upward then the cams 163 and 164 interlock (see Fig. 8) to hold the hammer 56 against swinging forward into firing position.

In order to render the trigger 58 inoperative at the time the hammer 56 is locked in cocked position by the safety device, the following arrangement is made: On the under side of the pivot 161 are formed rack teeth 170 in mesh with the teeth 171 of a rack bar 172 extending forwardly and mounted to slide in a bearing 173 formed in the left-hand rear portion of the main frame 50. The forward end of the rack bar 172 is provided with a bevel 174 adapted to engage the rounded-off top of one side of a U-shaped controlling safety piece 175 mounted to slide up and down on a bearing 176 formed on the main frame 50 (see Fig. 15), and this controlling safety piece 175 is seated on the top of the forward portion of the sear 57. When the safety lever 160 is in lowermost position the rack bar 172 is in rearward retracted position and hence does not affect the working of the controlling safety piece 175 to allow the latter to function the same as described in the Letters Patent above referred to. When the safety lever 160 is swung into uppermost position the rack bar 172 is moved forwardly by the action of the meshing rack teeth 170 and 171 and hence the beveled end 174 engages the controlling safety piece 175 and bears the same downward thus moving the sear 57 downward at its forward end thereby moving the shoulder 120 out of the path of the projection 121 of the trigger 58 thus rendering the latter inoperative relative to the sear (see Fig. 2). It will be noticed that should the hammer safety fail for any cause whatever, the trigger safety, controlled by the

same safety lever 160, renders the trigger and hence the firearm inoperative for firing.

In order to hold the breech block 53 locked against sliding movement at the time the safety lever 160 is in uppermost position, the following arrangement is made: The pivot 161 is provided adjacent the lever 160 with a cut-out portion or notch 180, the bottom of which is flush with the under side of the left-hand side 83 of the breech block 53, and this side 83 is provided with a cut-out portion 181 in register with the pivot 161 and engaged by the latter at the time the safety lever 160 is swung into an uppermost position, as shown in Fig. 11. It will be noticed that by the portion of the pivot 161 engaging the cut-out portion or notch 181 the breech block 53 is locked against rearward movement. A second notch 182 is formed on the left-hand side 83 of the breech block 50 a distance forward of the notch 181, and this notch is adapted to be engaged by the pivot 161 at the time the breech block 53 is pushed into rearmost position by hand and the safety lever 160 is swung upward to hold the breech block 53 locked in rearmost position.

As the hammer 56 is concealed in the recess 82 the user cannot see the position of the hammer, that is, whether the same is in cocked position or in forward or firing position. When the safety lever 160 is in lowermost position and cannot be pushed up by the user then the hammer 56 is in forward or firing position and not in cocked position. In order to accomplish this result the following arrangement is made: The rack bar 172 is provided at its inner side with a lug 190 adapted to register with a segmental groove 191 formed on the left-hand side of the hammer 56, and this groove terminates at its forward end in an angular groove 192 which extends horizontally at the time the hammer 56 is in cocked position to allow the lug 190 to move from the inner end of the groove 191 into and along the groove 192 at the time the rack bar 172 is moved forward on swinging the safety lever 160 from lowermost into uppermost position, as previously explained (see Figs. 8 and 9). When the hammer 56 is in the firing position shown in Fig. 4, then the lug 190 abuts against the back of the heel 106 of the hammer 56 and consequently the safety lever 160 cannot be swung upward from the lowermost or "off" position into uppermost or "on" position and hence the user knows that the hammer 56 is in fired position and not in cocked position. It is understood that when the safety lever 160 is "off" and the hammer 56 is cocked, as indicated in Fig. 9, then the lug 190 is at the upper end of the groove 191 and as the latter is a segmental one the hammer 56 can readily swing forward for firing the gun whenever the trigger 58 is pulled. When, how-

ever, the hammer 56 is in cocked position and the safety lever 160 is swung upward and the rack bar 172 is moved forward then the lug 190 moves along into the groove 192 thus forming a lock for the hammer to prevent the same from accidentally swinging out of cocked position into firing position, as will be readily understood by reference to Fig. 8. By the arrangement described, a supplementary locking device for the hammer is provided and at the same time the user of the firearm knows what position the hammer 56 is in at the time.

A grip safety is provided for holding the sear 57 in inoperative position relative to the trigger 58 unless the grip safety is pressed by the palm of the hand having hold of the handle 60. This grip safety is in the form of a lever 200 having a pivot 201 engaging an open bearing 202 formed on the rear end of the main frame 50 (see Fig. 15), and the lever 200 is provided with a rib 203 engaging a slot 204 formed in the back strap 59. A spring 205 is mounted on the handle 60 and presses the lever 200 to normally hold the latter in rearmost position, as plainly shown in Figs. 1 and 11. The lever 200 is provided with a forwardly extending arm 206 extending through a notch 207 formed in the tooth or pivot 112 of the sear 57 (see Fig. 21), and the arm 206 terminates in a downwardly extending hook 208 normally engaging the forward face of the tooth or pivot 112 (see Fig. 11) to hold the sear 57 against forward movement on pressing the trigger 58. When the user takes hold of the handle 60 the lever 200 is pressed forward whereby the hook 208 is lifted out of engagement with the tooth 112 to allow the sear 57 to be moved forward on pressing the trigger 58. The position of the grip safety indicates the position of the hammer. When the hammer is down the rounded top portion 111 of the hammer stays the sear 57 so far forward as to prevent the hook 208 from dropping below the bottom of the notch 207 of the sear 57. The result is that the handle portion of the lever 200 is not exposed when the hammer is down.

The magazine 54 is removably held in the handle 60 and is preferably of the construction shown and described in the patents above referred to so that further description of the same is not deemed necessary, it being sufficient to state that the magazine 54 is provided with the usual spring-pressed plunger (not shown) for pressing the cartridges upward against the under side of the breech block 53 to be successively pushed into the bore of the barrel 51 during the return movement of the breech block. In case the last cartridge has been pushed into the barrel 51 and the magazine 54 is removed for refilling then the sear 57 is moved automatically into inoperative position to pre-

vent accidental firing of the firearm while the last cartridge is in position in the barrel. For the purpose mentioned use is made of a flat spring 210 held in a recess 211 formed in the left-hand side of the main frame 50, and the free end of this spring 210 terminates in a head 212 bearing on the sear 57 and provided at one side with a lug 213 (see Fig. 7) adapted to be engaged by the upper forward edge of the magazine 54 at the time the latter is moved into final position in the handle 60 to swing the spring 210 upward with a view to move the head 212 out of engagement with the sear 57. Now when the magazine 54 is removed from the handle 60 then the spring 210 by its resiliency swings downward and its head 212 engages the sear 57 and swings the same downward into inoperative position relative to the trigger 58.

The sear controlling piece 175 is engaged at the top of its right-hand lug by a slide 265 (see Fig. 22) mounted to slide up and down in a bearing 266 formed in the barrel receiver 52, and the upper end of this slide 265 is adapted to engage a notch 267 formed in the right-hand side of the breech block 255. When the breech block 53 moves into recoil position it imparts a downward sliding movement to the slide 265 which in turn moves the sear controlling piece 175 downward thus moving the sear 57 into inactive position, and when the breech block 53 returns to normal position the slide 265 reengages the notch 267. The slide 265 is held against dropping out of position by a retaining pin 268. The slide 265 forms an extension member of the sear controlling piece 175 to allow of conveniently placing the latter in position on the frame 50.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In an automatic hand firearm, a hammer, a sear adapted to coact with the said hammer, a trigger adapted to actuate the said sear, and a safety device under the control of the operator and adapted to lock the said hammer in cocked position and to move the sear into inoperative position relative to the trigger.

2. In an automatic hand firearm, a hammer, a sear adapted to coact with the said hammer, a trigger adapted to control the said sear, a safety lever, interlocking means on the said hammer and the said safety lever

to lock the said hammer in cocked position, and coacting means connecting the said safety lever with the said sear to move the latter into inactive position relative to the trigger.

3. In an automatic hand firearm, a hammer, a sear adapted to coact with the said hammer, a trigger adapted to control the said sear, a safety lever, the said hammer and safety lever having interlocking cams to lock the hammer in cocked position, a bar adapted to be moved forward or backward by the said safety lever, and a sear controlling piece adapted to be actuated by the said bar and engaging the said sear to move the latter into inoperative position relative to the trigger.

4. In an automatic hand firearm, a hammer, a sear adapted to coact with the said hammer, a trigger adapted to control the said sear, a safety lever, the said hammer and safety lever having interlocking cams to lock the hammer in cocked position, the said safety lever having a segmental rack, a rack bar engaged by the said segmental rack, and a sear controlling piece engaging the sear and adapted to be engaged by the said rack bar.

5. In an automatic hand firearm, a main frame, a back strap held on the said frame, a hammer pivoted on the said main frame and provided with a segmental groove terminating in an angular portion, a safety lever having teeth and pivoted on the back strap, a rack bar in mesh with the said teeth and provided with a lug adapted to engage the said groove, a sear for the said hammer, and a sear controlling piece adapted to be actuated by the said rack bar.

6. In an automatic hand firearm, a main frame, a magazine removably mounted on the said frame, a recoil controlled breech block provided with a firing pin, a hammer, a sear, a trigger controlling the sear, and a flat spring held on the said frame and adapted to bear on the said sear to hold the latter in inoperative position, the said spring being provided with a lug adapted to be engaged by the upper end of the said magazine to hold the spring out of engagement with the sear at the time the magazine is in position on the frame and to allow the spring to engage the sear and move it into inoperative position on withdrawing the magazine from the main frame.

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