

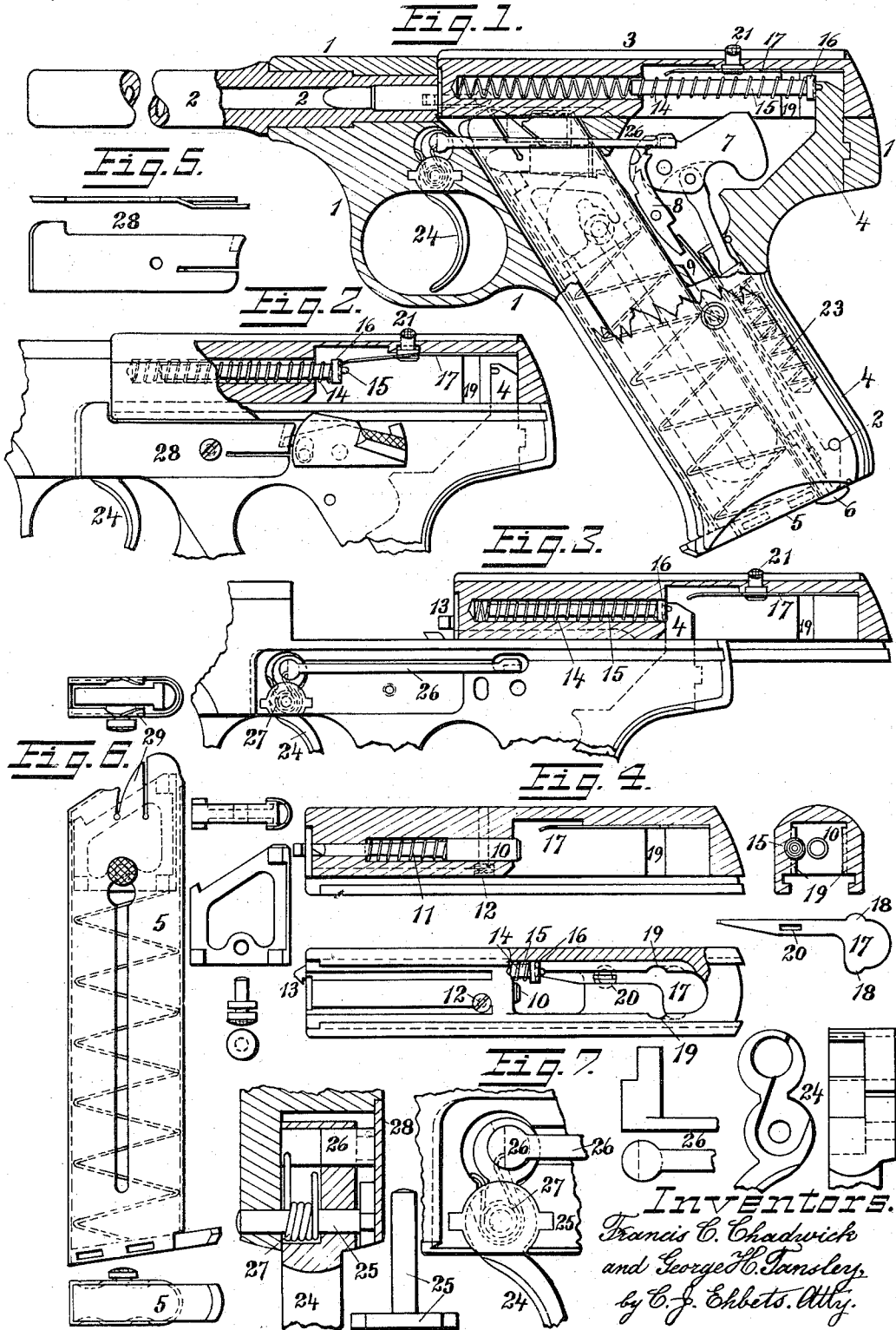
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FIREARM.

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UNITED STATES PATENT OFFICE.

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FIREARM.

1,277,379.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, FRANCIS C. CHADWICK and GEORGE H. TANSLEY, citizens of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Firearms, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to improvements in automatic pistols in which energy is stored during the opening movement of the breech-slide in a spring, the re-action of which is utilized for the return or closing movement of the breech-slide.

The main object of the invention is to produce a firearm of this class which shall be simple and inexpensive in construction, reliable and safe under all conditions of use.

Another object of the invention is to produce an automatic pistol especially adapted for target practice, in which the frame of the arm shall support the comparatively long barrel rigidly, and in which the grip of the pistol shall be formed to be securely grasped and conveniently held in aiming and firing, and in which the breech-slide may be at will and readily detached and removed from the frame, and replaced and attached upon the same without requiring the use of any tool therefor.

These objects are attained by mechanism of simple and practical construction which is efficient, perfectly safe in use and not liable to get out of order.

In the accompanying drawings, wherein is illustrated an embodiment of the invention,

Figure 1 is a left-hand side view of a central vertical section through the frame and the rear portion of the barrel with the breech closed and ready for firing; but showing the breech-slide in a vertical section in a plane somewhat to the left side of its central axis, thereby exposing to view the re-action spring and its guide rod for storing the energy of the recoil on firing a shot, and showing the manner in which the two ends of the re-action spring are supported, the front end in the breech-bolt and the rear end by the butt piece of the grip or mainspring housing. The trigger and trigger-bar are shown in a side view,

Fig. 2 is a left-hand side view of the upper portion of the frame of the pistol and of the breech-slide in the closed position, the rear portion of the breech-slide being shown in a section through the axis of the re-action spring and its guide rod.

Fig. 3 is a left-hand side view of the upper portion of the frame of the pistol with the side plate removed and with the breech-slide in section in its open rear position.

Fig. 4 shows the breech-slide detached, in a longitudinal vertical section in the plane through the axis of the firing pin, in a bottom view and in a vertical transverse section through its rear portion, seen from the rear; Fig. 4 also shows in the longitudinal section and in the bottom view of the breech-slide the re-action spring stop in its place in the top of the recess of the slide; and shows a bottom view of the stop detached.

Fig. 5 shows the side plate detached, in a side view and in a top view.

Fig. 6 shows the cartridge magazine in a top view, in a right-hand side view and in a bottom view; and it also shows the magazine follower detached in a top view and right-hand side view; and the follower button detached in a top view and end view.

Fig. 7 shows, on an increased scale, the trigger, trigger spring and trigger-bar and their locations in the frame, in a front view and in a partial left-hand side view; it also shows the trigger pivot pin, detached, the forward portion of the trigger-bar detached; and a right-hand side view and a front view of the upper portion of the trigger, detached.

Similar numerals refer to similar parts throughout the several views.

The pistol represented in the drawing has four main parts, the frame 1, the barrel 2, the breech-slide 3, and the butt piece or main-spring housing 4.

The frame 1 has a strong upwardly projecting abutment at its front end for seating the rear portion of the barrel 2, as shown in Fig. 1, this seat and the portion of the barrel therein are of considerable length and the barrel has an annular shoulder fitting against the front end of the frame, by means of which the barrel is rigidly supported in the frame, being fastened therein by screw threads or any other well known means. From the barrel seat rearward the top of

the frame is lower and open, and is provided with external longitudinal grooves in its sides, and the bottom of the breech-slide 3 has corresponding internal ribs, by which the breech-slide when placed from the rear upon the frame, is vertically confined upon the same and guided thereon in its rearward and forward movements in opening and closing the breech of the barrel.

In rear of the barrel, the frame 1 extends downward and rearward forming the grip of the pistol, the hollow interior of the grip forming the seat for the cartridge magazine 5, which is inserted from below into the seat and held therein by the pivoted magazine catch 6 which may be at will forced rearward to release the magazine for removal or for placing a magazine into the grip.

In rear of the magazine seat, the grip and the upper part of the frame are provided with a central recess in which the butt piece or mainspring housing 4, the hammer 7, the sear 8 and the sear spring 9 are located; the butt piece 4, thus forming the central rear portion of the butt of the grip, and its upper end extending through and projecting above the top of the frame.

The forward portion of the breech-slide 3 forms the breech-bolt which carries a firing pin 10 and a firing pin retracting spring 11, confined in the breech-bolt by a vertical locking screw 12, clearly shown in Fig. 4, the breech-bolt is also provided on its right side with a shell extractor 13 of usual construction. In rear of the breech-bolt, the breech-slide 3 is recessed from the bottom upward for the reception of the top of the hammer and the upper end of the butt piece 4, the rear end of said recess being closed by an imperforate wall which fits upon the top of the frame 1, thus positively preventing rearward escape of powder gases.

As clearly shown in Fig. 4 in the cross section and in the bottom view of the breech-slide, the re-action spring 14 and its guide rod 15 are seated in the breech-bolt in a vertical longitudinal plane somewhat to the left side of the central firing pin, the forward end of said spring 14 thus resting in the breech-bolt and holding the same yieldingly forward, and the rear end of the spring and of its guide rod being supported by the upper end of the butt piece 4, see Figs. 1 and 3. The face of the butt piece 4 is provided with a small recess for receiving and holding the reduced rear end of the guide rod 15, and the guide rod carries a fixed collar 16 forward of its reduced rear end, in the rear face the collar 16 has a shallow annular recess, while the rear end of the re-action spring 14 bears against the front face of the collar 16.

In the top of the recess in the breech-slide in rear of the breech-bolt, the re-action spring stop 17 is located, this stop 17 is shown detached in Fig. 4 and consists of

a thin flat tempered piece of steel, its rear portion, wider than its forward portion, carries on each side a partly circular projection 18; in the side walls of the recess in the breech-slide similarly formed cuts 19 are provided, see Fig. 4, from these cuts 19 rearward the breech-slide has on each side in its top an under-cut recess corresponding in height and width with the rear portion of the re-action spring stop 17, so that the re-action spring stop 17 may be placed from below against the top of the recess in the breech-slide, its projections 18 passing upward through the cuts 19, then the stop may be pushed rearward with the projections 18 into the under-cut recesses. By this means, the rear end of the re-action spring stop 17 is fixed in the top of the breech-slide, its narrow forward portion being left free, forms a spring extending forward just above the re-action spring 14 and its guide rod 15, but by its tension in upward direction the forward arm of the stop 17 is held raised so as not to interfere with the top of the butt piece 4 nor with the rear end of the re-action spring guide rod 15, see Figs. 1 and 3.

In the forward free portion of the stop 17 a narrow longitudinal slot 20 is provided and a piston 21 is fitted in the top wall of the breech-slide above the recess, so that the larger lower portion of the piston 21 fills a corresponding seat in the top of the breech-slide, and the smaller upper end projects some distance above the top surface thereof, see Figs. 1 and 3.

The lowest end of the piston 21 is reduced in width being cut away on each side to form a narrow fin fitting into the slot 20 in the spring stop 17. By this construction the tension of the spring arm of the stop 17 yieldingly holds the piston 21 with its top end projecting from the top of the breech-slide 3, see Figs. 1 and 3.

When the breech-slide is in its rearmost position, as shown in Fig. 3, the re-action spring 14 and its guide rod 15 are in their forward compressed position in the breech-bolt; see Fig. 3, the butt piece 4 holding them in that position. If it is desired to free the re-action spring from the butt piece pressure is exerted upon the top of the piston 21 and the breech-slide is slowly moved forward, then the front end of the re-action spring stop 17, being forced down by the pressure upon the piston 21, will on the forward movement of the breech-slide take hold of the guide rod 15, the front end of the stop 17 entering into the annular recess in the collar of the guide rod, and thereby hold guide rod and re-action spring in their forward compressed position in the breech-bolt, as clearly shown in Fig. 2; this leaves the top end of the butt piece 4 free.

In the lower portion of the grip in rear

of the magazine catch 6 a transverse pin 22 is fixed in the grip, and the lower end of the butt piece 4 has a semi-circular recess for engaging said pin, see Fig. 1, thus the lower end of the butt piece is downwardly and rearwardly supported in position by said transverse pin 22. The mainspring 23 seated in the butt piece, the upper end of the spring being connected by a strut with the hammer 7, tends to move the hammer upward, the lower end of the mainspring 23, pressing downward upon the end of its seat, yieldingly holds the butt piece down upon the pin 22. Near its upper end the butt piece 4 has on its rear face a projecting rib fitting into a corresponding groove in the frame, and the tension of the re-action spring 14 exerted through the guide rod 15 against the face of the butt piece, as heretofore described, serves to hold said rib yieldingly in engagement with the groove and thus to lock the butt piece vertically in the frame.

With the re-action spring and its guide rod confined as shown in Fig. 2, upward pressure near its lower end and forward pressure near its upper portion against the butt piece will free the same for removal from the frame, and for withdrawal of the butt piece out of the path of the breech-slide, the latter being thus released for removal from the frame.

In front of the grip, the frame 1 forms the trigger guard into which the finger-piece of the trigger 24 depends, the hub of the trigger and its pivot pin 25 being seated in a circular recess in the frame open to the left side, from the hub the trigger extends upward and has a second circular portion which is seated in a corresponding upper recess in the frame, see Figs. 1, 3 and 7. The trigger pivot pin 25 carries on its left end an integral flat circular washer or collar with two horizontal projections fitting into the correspondingly shaped left end of the seat of the trigger, so that with the trigger 24 and the trigger pivot pin 25 inserted into their seat in the frame from the left side, the washer limits the lateral movement of the trigger pin 25, and supports the left side of the trigger and of its pivot pin in the frame.

The upper circular extension of the trigger has a circular transverse seat for the arbor on the front end of the trigger-bar 26, the trigger-bar being thereby pivotally connected with the trigger, to transmit the movements of the trigger to the firing mechanism in rear of the grip, see Figs. 1, 3 and 7.

The inner right-hand end of the arbor of the trigger-bar 26 is flattened by the removal of a forward segment of the arbor and the right-hand side of the trigger hub and its upward extension carry a recess for

the reception of the trigger spring 27, see right-hand side view of the trigger in Fig. 7; this spring 27 consists of a steel wire coiled several turns around the trigger pivot pin from which the forward end of said spring extends upward, its end resting against the front wall of the upper recess in the frame; the other, rear end of the spring, extends upward and its end rests against the flat front face of the arbor of the trigger-bar. By this construction, the tension of the coiled trigger spring is exerted to hold the trigger-bar and through it the upward extension of the trigger in the rearmost position, and thus to hold the finger-piece of the trigger in its forward inoperative position.

Besides holding the trigger extension and the trigger-bar 26 in the rearmost position, the rear arm of the spring, because its end presses against the flat front of the trigger-bar arbor at a point below the axis of said arbor, the spring tends also to yieldingly raise the rear end of the trigger-bar to its operative position; the spring thus serving to hold the trigger in its forward inoperative position while holding the trigger-bar in its operative rear position with its rear end raised.

To close the open seats of the trigger and of the trigger-bar in the left side of the frame, a side plate 28 shown detached in Fig. 5 and shown in its place on the frame in Fig. 2, is attached to the frame by its front end slanting forward and inward, fitting into an under-cut recess in the side of the frame, at the center the side plate 28 is fastened in its position on the frame by a screw.

In Fig. 1, the cartridge magazine 5 with several cartridges contained therein is represented as seated in the grip of the pistol and in Fig. 6, the cartridge magazine is clearly shown detached as are also the follower and the follower button.

The magazine 5 consists of the usual tubular holder in which the cartridges may be held one upon the other. The rear portion of the top of each side of the magazine is turned inward, so that the turned in edges will overhang the head of the topmost cartridge in the magazine and thereby prevent the cartridges from escaping from the magazine unless they are successively pushed forward so as to escape from the overhanging edges in the usual manner. A follower and a follower spring in the magazine serve to press upward the cartridges therein and the right-hand side of the magazine is slotted and a button, the inner end of the stem of which extends through the slot into the follower, serves to at will depress the follower so as to facilitate the loading of the cartridges into the magazine.

When, as shown in Fig. 1, the cartridge

magazine is in the grip with some cartridges therein, and after firing the breech-bolt recoils, the topmost cartridge will be raised by the follower so that a portion of its head will project from the magazine into the path of the breech-bolt, on the ensuing forward movement of the breech-bolt under the tension of the reaction spring, the face of the breech-bolt will engage the upwardly projecting head of the topmost cartridge in the magazine and press the same forward from the magazine into the chamber of the barrel. As long as the head of the cartridge to be transferred to the barrel remains under the overhanging edges of the sides of the magazine, the head of the cartridge cannot rise while the forward movement of the breech-bolt and cartridge forces the bullet upward into the barrel; this steeply inclined position of the cartridge is apt to block the free forward movement of the cartridge and of the breech-slide and to interfere with the smooth working of the pistol; to overcome this drawback each side of the magazine has two cuts by which on each side a resilient finger is formed which is bent inward so as to yieldingly clasp the body of the topmost cartridge. The rear edge of these resilient fingers is inclining upward and forward, as clearly shown in Figs. 1 and 6, and when the head of the topmost cartridge during its transfer from the magazine to the chamber of the barrel escapes from the overhanging edges of the sides, the sides of the head will strike the upwardly inclined rear edges of the resilient fingers and, riding upon these edges the head of the cartridge will be forced to rise until the cartridge assumes a horizontal position in front of the breech-bolt, which will then readily push the cartridge home into the chamber of the barrel.

It will be understood that several of the features of our improvements herein described are not necessarily combined in the same construction with one another, nor are they necessarily employed in a firearm of the particular character of that shown. Obviously, also, various changes in form and arrangement of parts may be made within the scope of the invention.

We claim as our invention:

1. In a firearm, the combination of a frame, a barrel rigidly supported by the frame, the frame open on top in rear of the barrel, a breech-slide mounted from the rear upon the frame and vertically locked to reciprocate thereon, and comprising a breech-bolt for opening and closing the barrel, and having a recess in rear of the breech-bolt, a butt piece removably mounted in the frame and projecting above the top thereof into said recess in the breech-slide, whereby said butt piece limits the rearward movement of the breech-slide and confines the same upon the frame, a re-action spring seated in the

breech-bolt and carrying a guide rod extending rearward to and engaging the butt piece, and operative means carried in the breech-slide for locking said re-action spring and said guide rod in their compressed forward position in said breech-bolt, and for holding said guide rod disengaged from the butt piece for the removal of said butt piece and for the release of the breech-slide for removal from the frame.

2. In a firearm, the combination of a frame, a barrel rigidly supported by the frame, the frame open on top in rear of the barrel, a breech-slide mounted from the rear upon the frame and vertically locked to reciprocate thereon, and comprising a breech-bolt for opening and closing the barrel, and having a recess in rear of the breech-bolt, a butt piece removably mounted in the frame and projecting above the top thereof into said recess in the breech-slide, whereby said butt piece limits the rearward movement of the breech-slide and confines the same upon the frame, a re-action spring seated in the breech-bolt and carrying a guide rod extending rearward to and engaging the butt piece, and a spring stop and a piston carried in the breech-slide for locking said re-action spring and said guide rod in their compressed forward position in said breech-bolt, and for holding said guide rod disengaged from the butt piece for the removal of said butt piece and for the release of the breech-slide for removal from the frame.

3. In a firearm, the combination of a frame having an upward extending front abutment and a downward extending grip, and having an open top in rear of said abutment, a barrel rigidly supported by the frame in the abutment, a breech-slide mounted from the rear upon the frame and vertically locked to reciprocate thereon, and comprising a breech-bolt for opening and closing the barrel, and having a recess in rear of the breech-bolt, a butt piece removably mounted in said frame and projecting above the top thereof into said recess in the breech-slide, whereby said butt piece limits the rearward movement of the breech-slide and confines the same upon the frame, said butt piece provided with a rib near its upper portion and said frame having a groove to receive said rib, and a re-action spring seated in the breech-bolt and extending rearward through said recess to the butt piece, whereby said re-action spring yieldingly holds said butt piece vertically interlocked with the frame.

4. In a firearm, the combination of a frame having an upward extending front abutment and a downward extending grip, and having an open top in rear of said abutment, a barrel rigidly supported by the frame in the abutment, a breech-slide mounted from the rear upon the frame and

vertically locked to reciprocate thereon, and comprising a breech-bolt for opening and closing the barrel, and having a recess in rear of the breech-bolt, a butt piece removably mounted in said frame and projecting above the top thereof into said recess in the breech-slide, whereby said butt piece limits the rearward movement of the breech-slide and confines the same upon the frame, said butt piece provided with a rib near its upper portion and said frame having a groove to receive said rib, and a re-action spring and a guide rod seated in the breech-bolt and extending rearward through said recess to said butt piece, said guide rod engaging an opening in the face of said butt piece, whereby said re-action spring and said guide rod yieldingly hold said butt piece vertically in engagement with the frame.

5. In a firearm, the combination of a frame having an upward extending front abutment and a downward extending grip, and having an open top in rear of said abutment, a barrel rigidly supported by the frame in the abutment, a breech-slide mounted from the rear upon the frame and vertically locked to reciprocate thereon, and comprising a breech-bolt for opening and closing the barrel, and having a recess in rear of the breech-bolt, a butt piece removably mounted in said frame and projecting above the top thereof into said recess in the breech-slide, a rib on said butt piece near its upper portion and a groove in said frame to receive said rib, a transverse pin fixed in the grip and the lower portion of said butt piece adapted to engage said transverse pin, a re-action spring and a guide rod seated in the breech-bolt and extending rearward to engage the butt piece, and a mainspring seated in said butt piece and yieldingly holding the lower end of said butt piece interlocked with said pin in the grip, whereby said butt piece limits the rearward movement of the breech-slide and confines the same upon the frame and whereby said butt piece may be disengaged from the frame and from said transverse pin for removal and for releasing the breech-slide for removal from the frame.

6. In a firearm, the frame having a downward extending grip, a hammer and a sear mounted in the frame in rear of the grip, a trigger pivotally mounted in front of the grip and a trigger-bar pivotally mounted in the trigger and connecting the trigger with the sear, a coiled trigger spring mounted on the pivot pin of the trigger and in a recess in said trigger, the forward end of said spring bearing on the frame in front of the trigger, the rear arm of said spring bearing against the trigger-bar below its axis, whereby said trigger spring holds the

trigger in its inoperative forward position and holds said trigger-bar in its operative raised position.

7. In a firearm, the frame having a downward extending grip, a hammer and a sear mounted in the frame in rear of the grip, a trigger pivotally mounted in front of the grip and a trigger-bar pivotally mounted in the trigger and connecting the trigger with the sear, a coiled trigger spring mounted on the pivot pin of the trigger and in a recess in said trigger, the forward end of said spring bearing on the frame in front of the trigger, the rear arm of said spring bearing against the trigger-bar below its axis, whereby said trigger spring holds the trigger in its inoperative forward position and holds said trigger-bar in its operative raised position, and a side plate fastened to the side of the frame and confining said trigger, trigger-bar and trigger spring in the frame.

8. In a firearm, the combination of a frame, a barrel rigidly supported by the frame, the frame having an open top in rear of the barrel, a breech-slide mounted from the rear upon the frame and vertically locked to reciprocate thereon, and comprising a breech-bolt for opening and closing the barrel, and having a recess in rear of the breech-bolt, a butt piece removably mounted in the frame and projecting above the top thereof into said recess in the breech-slide, said butt piece having a rib engaging a groove in the frame, whereby said butt piece limits the rearward movement of the breech-slide and confines the same upon the frame, a re-action spring seated in the breech-bolt and carrying a guide rod extending rearward through said recess to the butt piece, a stop mounted in the top of the recess in the breech-slide and carrying a piston to project from the top of the breech-slide, whereby pressure upon the piston may lower the end of said stop when the breech-slide is in its rearmost position and whereby during the forward movement of the breech-slide the stop will engage the guide rod and hold the same and the re-action spring in their forward compressed position, whereby said butt piece may be disengaged from said guide rod for removal and for releasing the breech-slide for removal from the frame.

This specification signed and witnessed this twenty-eighth day of March, A. D. 1917.

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In the presence of—
C. J. EHBETS,
A. L. ULRICH.