March 25, 1924. 1,487,799

J. D. PEDERSEN

FIREARM

Filed Sept. 15, 1919

Fig. 1.

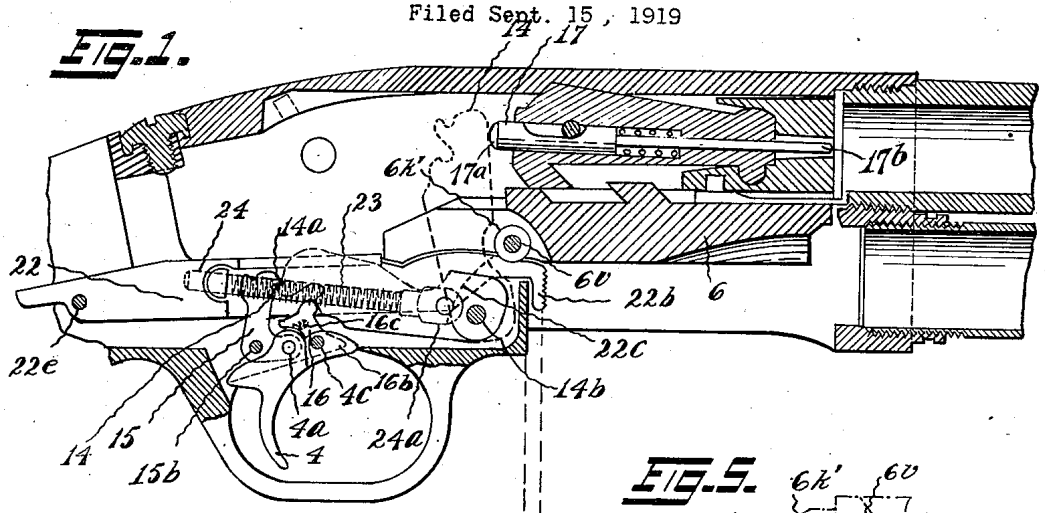


Fig. 2.

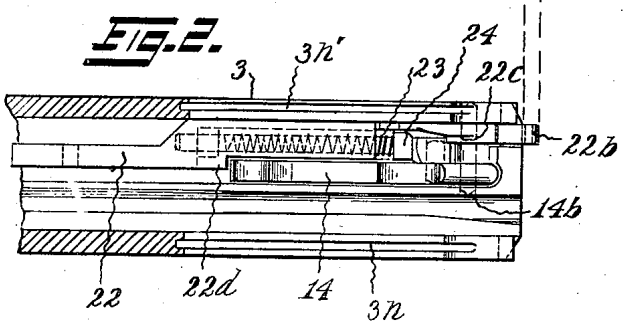


Fig. 5.

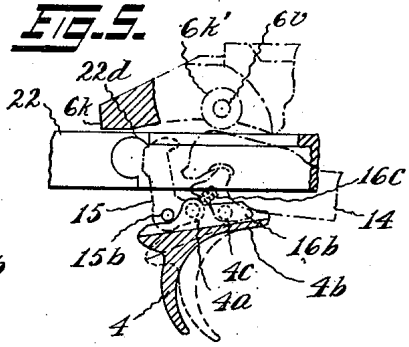


Fig. 3.

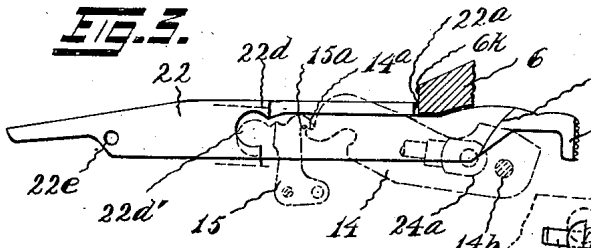


Fig. 6.

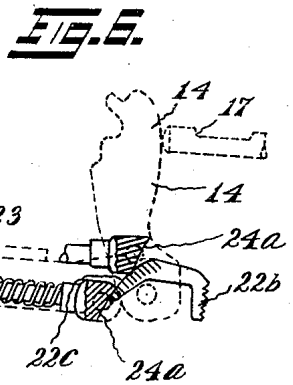
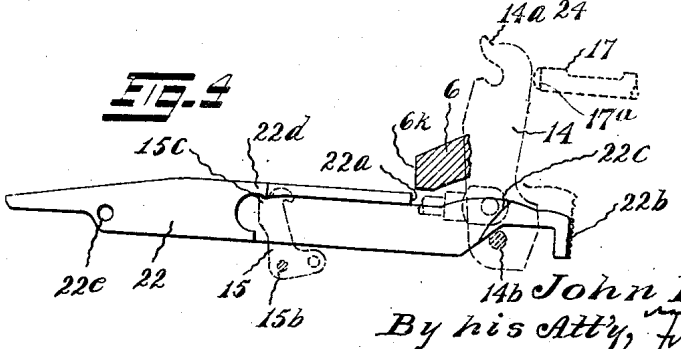


Fig. 4.



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By his Atty, F. A. Richards.

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UNITED STATES PATENT OFFICE.

JOHN D. PEDERSEN, OF JACKSON, WYOMING.

FIREARM.

Application filed September 15, 1919. Serial No. 323,765.

To all whom it may concern:

Be it known that I, JOHN D. PEDERSEN, a citizen of the United States, residing in Jackson, in the county of Lincoln and State of Wyoming, have invented certain new and useful Improvements in Firearms, of which the following is a specification.

This invention relates more especially to firing mechanism for use in firearms of the shoulder-arm class. A principal object of the invention is to furnish such a mechanism especially adapted for holding in cocked position, and for releasing the hammer or firing-pin striker in firearms having a reciprocatable breech-closing bolt mechanism, or breechaction; also, to furnish an improved hammer-trigger system whereby effective operation may be secured in connection with safety devices appurtenant to the trigger mechanism and to a co-operative breechaction.

A further object is to provide an effective trigger and connected devices whereby a pivotally-supported hammer, which is retractable to cocked position by the action of a rearwardly moving block, may be engaged and safely held in such position by a trigger-device while the trigger itself remains in a retracted position following the firing of a cartridge; and whereby such control of the hammer may be continued during and after a releasing of the retracted trigger, whether this be done before or after a next following movement of the retracted block. Further objects and advantages are pointed out and explained in the course of the following description.

In the accompanying drawing, my present improvements,—for convenience of illustration,—are shown applied to a breech-loading magazine shoulder-arm which, as to the frame, the bolt-mechanism block, and the magazine thereof, is substantially of the improved bottom-ejection kind more fully illustrated in U. S. Patent No. 1,317,988, issued to me October 7, 1919, on my application filed June 6, 1916, Serial No. 101,931. In that prior application, however, the present invention is illustrated in connection with an improved breechaction which is reciprocatable in the frame, and comprises a bolt-carrying slide provided with a breech-closing bolt member that is arranged for longitudinal, and also for rotatable move-

ent application, however, this firing mechanism is shown employed in connection with a breechaction of a different organization, and not provided with a bolt of the said character.

In the accompanying drawing forming a part of this specification, Fig. 1 is a side elevation showing the frame in section; in this view the firing mechanism is shown in side view, and the breechaction in longitudinal vertical section; also this breechaction, which is a bolt-mechanism, is here shown in its forward and firing position. This bolt-mechanism considered as a separate invention, is not claimed herein, since it is intended to constitute in part the subject-matter of a separate application, and hence the construction and details thereof are herein only partially illustrated, but sufficiently for the purpose of a description of the present improvements in firing mechanism.

Fig. 2 is a plan view of the firing-mechanism, and shows the principal operative details thereof arranged above a forward portion of the guard-frame 3; the hammer-actuator and the slide-lock being shown in plan view, while the hammer is retracted to its cocked position.

Figs. 3, 4, 5 and 6 are a series of views similar to a portion of, as showing parts illustrated in,— Fig. 1, for illustrating the mode of operation of the principal details of the hammer-trigger mechanism; of these views, Figs. 3 and 4 include a side view of the slide lock 22, which is thus shown in two successive positions, respectively, while Figs. 5 and 6 further illustrate some features of a preferred means for retracting and preliminarily locking the hammer, temporarily, in a non-firing position, and for later unlocking the breechaction, as hereinafter more fully explained.

Similar characters designate like parts in all the views.

Referring now to the drawing, it will be seen that in Fig. 1, the breechaction mechanism is shown in its forward and locked position ready for firing. Also, in this view the hammer 14 is cocked, compressing the main spring 23 which surrounds the main spring rod 24, and the rear end of the main spring by thrusting against the slide lock 22 tends to raise the front end of this

(Fig. 3) upward to a position immediately back of the face 6^k of the slide 6 and thus prevent the breechaction from moving rearward until said lock end is depressed by hand (not shown in Fig. 3) or by the hammer in moving forward during the act of firing. This latter position and operation further is illustrated in the diagram Fig. 4. For the said manual release of the slide-lock the forward end thereof (at the right-hand in Figs. 1, 3, 4) is shown provided with a roughened finger piece 22^b, which is accessible through the ejection opening of the frame, as will be obvious from a comparison of Figs. 1, 2, 3.

In a hammer-trigger mechanism of the preferred form and arrangement herein illustrated, the hammer 14 is held in its cocked position (Figs. 1, 2, 3) by means of the sear 15 to which the trigger 4, is secured (operatively connected) by means of the pin 4^a. The sear 15 is shown supported in the frame 3 on a pin 15^b, so that pulling the trigger backward in the usual manner, (Fig. 5), moves the top end of the sear 15 backward, thereby disengaging the face 15^a of the sear from the notch or face 14^a of the hammer; this allows the hammer to swing upward on its pivot 14^b, as shown by the dotted lines in Figs. 1, 4, to strike the rear end, 17^a, of the firing-pin 17, so that its front end 17^b will project through the face of the breech-bolt and reach the primer of the cartridge in the ordinary manner.

On the described forward movement of the hammer 14, from the cocked position (Fig. 3) to the position shown by dotted lines in Fig. 4, the actuator-face 24^a which is appurtenant to the hammer, operates upon the face 22^c of the slide-lock 22, to withdraw the breechaction-locking face 22^a out of engagement with, and out of the path of movement of, said face 6^k. During this operation, the hammer and said connected device may be said to constitute a slide-lock-retracting actuator. The movement of the pivot-pin 24^a from its position in Fig. 3 to its position in Fig. 4 so shifts the line of action of the spring as between the forward pivot 14^b and the rearward pivot 22^e, as to materially reduce the angle of action so that the spring 23 will transmit but little if any lifting force to the locking member 22, until after the hammer shall have been again retracted. The above described mode of action of the main-spring rod 24, hammer 14, and lock-bar face 22^c, is further illustrated in Fig. 6, where the actuator face of the pivot pin 24^a, is shown in two positions relatively to said face 22^c.

On the sear 15 being drawn back (as in Fig. 4) to release the hammer from its position in Fig. 3, the rearward catch 15^c of the sear is carried under the slide-lock catch 22^d, so that when the slide-lock member 22 is swung downwardly to its lower position as in Fig. 5, said catch 22^d thereof engages the sear catch 15^c for preventing the sear from again moving forwardly until after said member 22 shall have been returned to its upper position, as in Fig. 3. The hammer on being released from the sear, is driven forward by the spring 23 and rod 24, from the dotted position 14 in Fig. 3 to the dotted position 14 in Fig. 4, and during this firing stroke of the hammer, the face 24^a of said rod 24 (in this instance shown as a rounded corner) acts upon the cam-like depression-face 22^c of said lock member 22, and thereby depresses this member in the manner and for the purpose above set forth. The said downward movement of the lock 22 unlocks the slide 6 as already mentioned, (Fig. 4), so that on the firing of the charge, the slide 6 is ready for instant retraction, and during this rearward movement by reason of the roller $6^{k'}$ engaging the hammer will move the hammer to firing position and will reset the hammer in engagement with the safety-sear 16, this safety-locked position of the hammer is then maintained until, in going forward, the slide 6, by permitting the lock-bar 22 to rise up, and so unlock the sear 15,—as in Fig. 3,—and thus permit the trigger to resume its forward and operative position.

A further feature of this hammer-sear-trigger mechanism relates to a safety-locking of the trigger when the hammer is retracted ready for firing. When the firearm mechanism is in firing position, (Fig. 1), if the operator lowers the slide-lock 22 (as in Fig. 4), the slide 6 is thereby unlocked, but, at the same time, the face 22^d of the member 22 is brought down to the rearward of the sear-catch 15^c, as shown at $22^{d'}$ by dotted lines, (Fig. 3), so that the sear, and through this the trigger, is thereby blocked against retraction, while the forward sear-catch 15^a is locked into an engaged position relatively to the hammer face 14^a. Thus while the member 22 is held down by hand,—or is so held by the retracted slide,—the said firing devices are locked in a safety position.

In Fig. 1, the safety-sear 16 is shown bearing forwardly at the upper end thereof against the hammer 14, while this member engages the firing sear 15; at this time, the trigger is in forward position, so that said sear 16 is held retracted by the forward end 16^b thereof bearing against a face at 4^b on the trigger. The safety-sear 16 is shown as being carried on pivot 4^c and forwardly actuated by a small spring, 16^c, (see Fig. 5), which may be applied or arranged in various ways in accordance with a well-known practice; in the present instance, however, the spring 16^c is shown in position for reacting against a surface on the forward arm of the sear 15. In practice, the trigger 4, will

be, or may be, forwardly actuated by some suitable spring, to be applied in any usual or convenient manner, and preferably such spring may be arranged as fully shown and described in my aforesaid Letters Patent No. 1,317,988.

For a further illustration and description of my present invention as employed and operable in connection with an improved breech-closing and bolt-mechanism, reference is hereby made to Letters Patent No. 1,317,988, dated October 7, 1919, granted to me on my application filed June 6, 1916, Serial No. 101,931, renewal No. 185,394, but since my present invention constituted a distinct and separate subject-matter, it is not claimed in said prior application; and, it should be understood that the improvements herein set forth and claimed are readily adaptable wholly or in part for use with various well-known kinds of reciprocatable breech-mechanisms, different from the preferred kinds illustrated in said Letters Patent and in the present application.

Having thus described my invention, I claim:—

1. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a movable bar for locking the block in firing postion; and means appurtenant to the hammer engaging the movable bar for retaining it in position for locking the block in firing position when the hammer is in firing position and for moving, when the hammer is moved to fired position, said bar to unlock the block and permit rearward movement thereof.

2. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a bar pivotally attached to said frame and engageable with the block for locking the block in firing position; and means appurtenant to the hammer engaging said bar for retaining it in position for locking the block in firing position when the hammer is in firing position and for moving, when the hammer is moved to fired position, said bar to unlock the block and permit rearward movement thereof.

3. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a movable bar for locking the block in firing position; and means appurtenant to the hammer having a face engaging a face on said bar for retaining the bar in position for locking the block in firing position when the hammer is in firing position and for moving, when the hammer is moved to fired position, said bar to unlock the block and permit rearward movement thereof.

4. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a movable bar for locking the block in firing position; and spring actuated means appurtenant to the hammer engaging said bar for retaining the bar in position for locking the block in firing position when the hammer is in firing position and for moving, when the hammer is moved to fired position, said bar to unlock the block and permit rearward movement thereof.

5. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a firing spring; a movable bar for locking the block in firing position; and means actuated by said firing spring and appurtenant to the hammer engaging said bar for retaining the bar in position for locking the block in firing position when the hammer is in firing position and for moving, when the hammer is moved to fired position, said bar to unlock the block and permit rearward movement thereof.

6. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a firing spring, a bar pivotally secured at its rear end to said frame and engageable with the block for locking the block in firing position; the firing spring tending to support said bar at its forward end by raising the forward end; and means appurtenant to the hammer having a face engaging a face on said bar for retaining the bar in position for locking the block in firing position when the hammer is in firing position and a face for moving, when the hammer is moved to fired position, said bar to unlock the block and permit rearward movement thereof.

7. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a movable bar normally in position for locking the block in firing position provided with manually operable means for moving the bar from normal locking position; and means cooperating between the hammer and said bar for locking the hammer in firing position when the bar is moved by said manual means.

8. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a movable bar normally in position for locking the block in

firing position provided with manually operable means for moving the bar from normal locking position; and a member having means engageable with said bar and means engageable with said hammer for locking the hammer in firing position when the bar is moved by said manual means.

9. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a movable bar normally in position for locking the block in firing position provided with manually operable means for moving the bar from normal locking position; and a member having a face engageable with said bar and a face engageable with the hammer for locking the hammer in firing position when the bar is moved by said manual means.

10. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a firing spring; a bar normally in position for locking the block in firing position, said bar being pivotally secured at one end to said frame, the firing spring tending to maintain the bar at its opposite end in normal locking position; manually operable means for moving the bar from normal locking position; and means cooperating between the hammer and said bar for locking the hammer in firing position when the bar is moved by said manual means.

11. In a firearm, in combination, a frame; a bolt mechanism comprising a block member reciprocatable in said frame to and from a firing position, and a firing pin; a hammer pivoted in said frame below said block and provided with means for the spring-actuation thereof forwardly to strike the firing pin when the bolt-mechanism is in forward and firing position; means appurtenant to the block and hammer for retracting the hammer to its cocked position by a rearward movement of the block; and a trigger mechanism comprising a trigger and two hammer-engaging hooks, one of these hooks being pivoted to the frame and operable to engage and retain the hammer when the trigger is in forward position and the other said hook being pivoted to the trigger and in position and connected for engaging and retaining the hammer when the trigger is in the retracted position thereof.

12. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; and roller means on said block engageable with the hammer for moving the hammer to firing position when the hammer is in fired position and said block is moved rearwardly; said roller means being located on the block forwardly of the rear end of the block.

13. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; and roller means on said block engageable with the hammer for moving the hammer to firing position when the hammer is in fired position and said block is moved rearwardly; said roller means being located on the block forwardly of the rear end of the block and on one side of the block.

14. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; a lock-bar pivotally secured at one end to said frame and engageable with said block for locking the block in firing position and having a forwardly extending end; the lock-bar when the hammer is moved to fired position being moved to unlocking position by means appurtenant to the hammer depressing said forward end of the lock-bar; and means on the block arranged to ride over the forward end of the lock-bar and maintain the same in depressed position when the block is moved rearwardly, and engageable with the hammer when the hammer is in firing position.

15. In a firearm, in combination, a frame; a block supported for reciprocation in the frame to and from a forward and firing position, a hammer pivoted in the frame for movement to cocked position and to fired position; a lock-bar operably-supported by a connection near its rearward end with the frame, and having near its forward end a lock-face in position for engaging the block when this is in said firing position, said lock-bar being arranged for unlocking the block by a downward movement of the forward block engaging end of the bar; a hammer-actuator pivotally connected with the hammer and comprising a spring reacting against an actuator-abutment carried by said lock-bar forward of said connection of the lock-bar and frame and arranged for changing the direction of the actuation force of the spring, as transmitted to the hammer; means appurtenant to the block for retracting the hammer to a cocked position on a rearward stroke of the block; a trigger in position and connected for holding the hammer in and releasing it from cocked position; and, means appurtenant to the hammer and said hammer-actuator for downwardly moving the lock-bar during the forward stroke of the hammer, and thereby unlock said block in advance of the hammer striking the firing pin.

16. In a firearm, in combination, a frame;

a block supported for reciprocation in the frame to and from a forward and firing position, a breech-bolt carried by said block and comprising a firing pin; a hammer pivoted in the frame in position for coaction with said firing pin; a lock-bar operably-supported by a connection near its rearward end with the frame, and having near its forward end a lock-face in position for engaging the block when this is in said firing position, said lock-bar being arranged for unlocking the block by a downward movement of the forward block engaging end of the bar; a hammer-actuator pivotally connected with the hammer and comprising a spring reacting against an actuator-abutment carried by said lock-bar forward of said connection of the lock-bar and frame and arranged for changing the direction of the actuation force of the spring, as transmitted to the hammer, said force being modified by the downward movement of the lock-bar for the unlocking of the block; means appurtenant to the block for retracting the hammer to a cocked position on a rearward stroke of the block; a trigger in position and connected for holding the hammer in and releasing it from cocked position; and, means appurtenant to the hammer and said hammer-actuator for downwardly moving the lock-bar during the forward stroke of the hammer, and thereby unlock said block only slightly in advance of the hammer striking the firing pin.

17. In a firearm, in combination, a frame; a block reciprocatable in said frame rearwardly from and forwardly to a firing position; a hammer movable to firing position and to fired position; trigger mechanism comprising a trigger and two hooks, one of these hooks being pivoted to the frame and engageable with the hammer when the hammer is in firing position and the other of said hooks being pivoted to the trigger and engageable with the hammer when the hammer is in safety position; and a lock-bar for locking said block in firing position depressible for unlocking the block; the lock-bar when depressed being engageable with said hook pivoted to the frame to engage the hook with the hammer for retaining the hammer in firing position when the trigger is retracted from its forward position; and means appurtenant to the trigger mechanism for shifting the hammer-retaining engagement from the first hook to said second hook on a movement of the trigger forwardly from its retracted position.

JOHN D. PEDERSEN.

Witnesses:
FRANCIS H. RICHARDS,
GEORGE J. BARTEL.