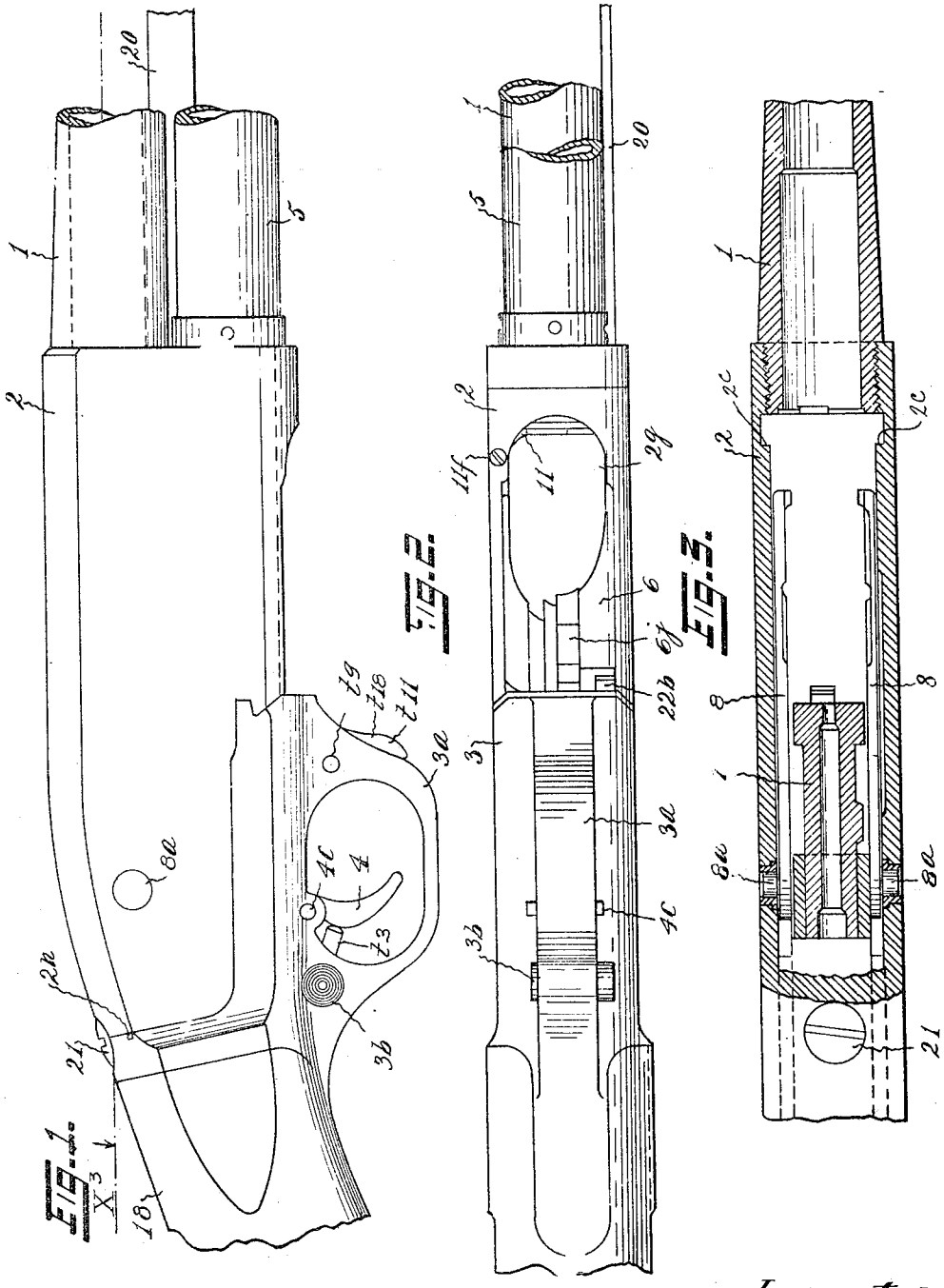
Oct. 9, 1923. 1,470,029

J. D. PEDERSEN

FIREARM

Filed Sept. 13, 1919 4 Sheets-Sheet 1



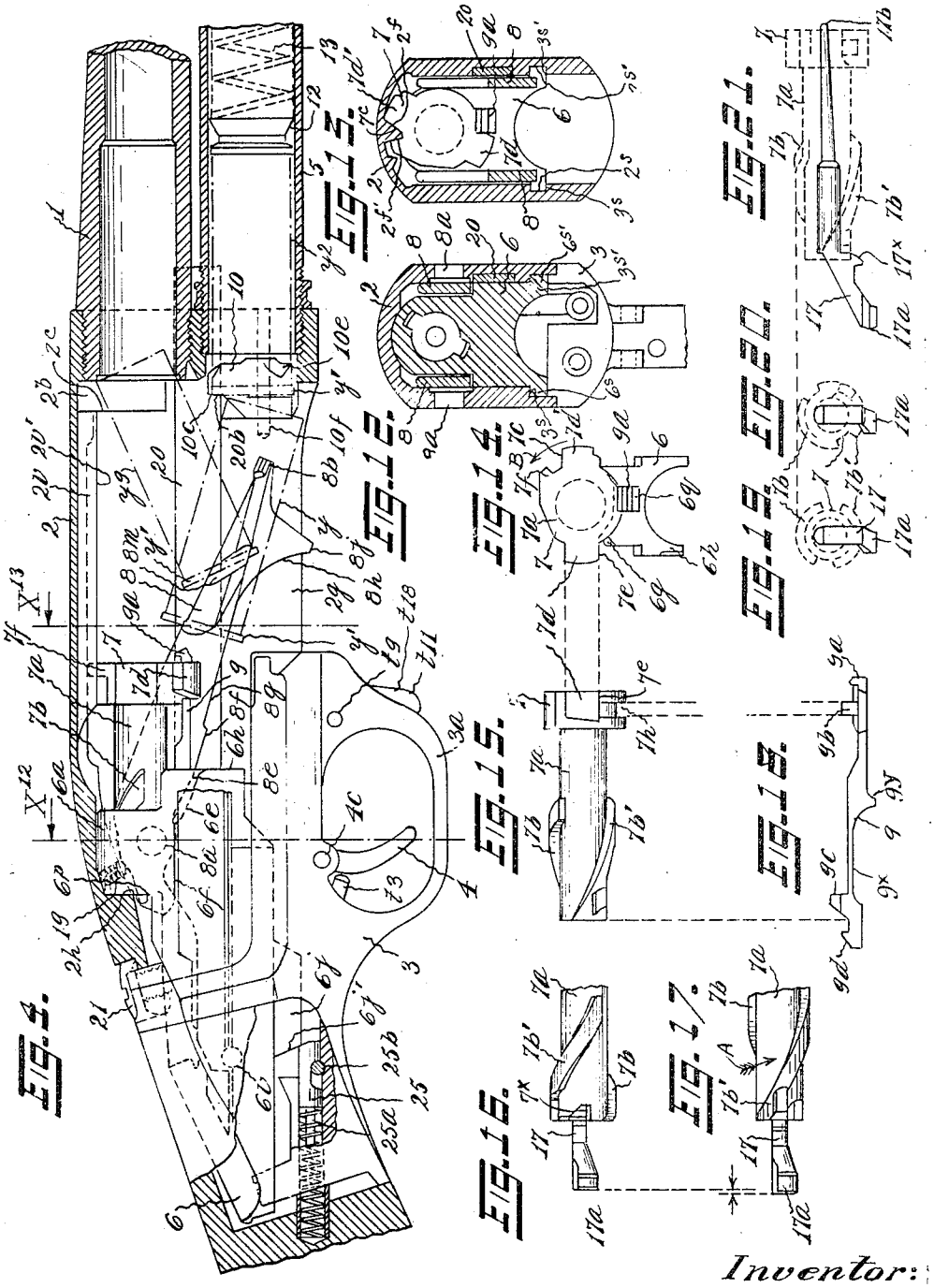
Inventor
John D. Pedersen,
By his Atty, F. H. Richards

Oct. 9, 1923. 1,470,029

J. D. PEDERSEN

FIREARM

Filed Sept. 18, 1919 4 Sheets-Sheet 2



Inventor:
John D. Pedersen,
By his Att'y, F. H. Richards

Oct. 9, 1923 1,470,029

J. D. PEDERSEN

FIREARM

Filed Sept. 18, 1919 4 Sheets-Sheet 3

FIG. 5.

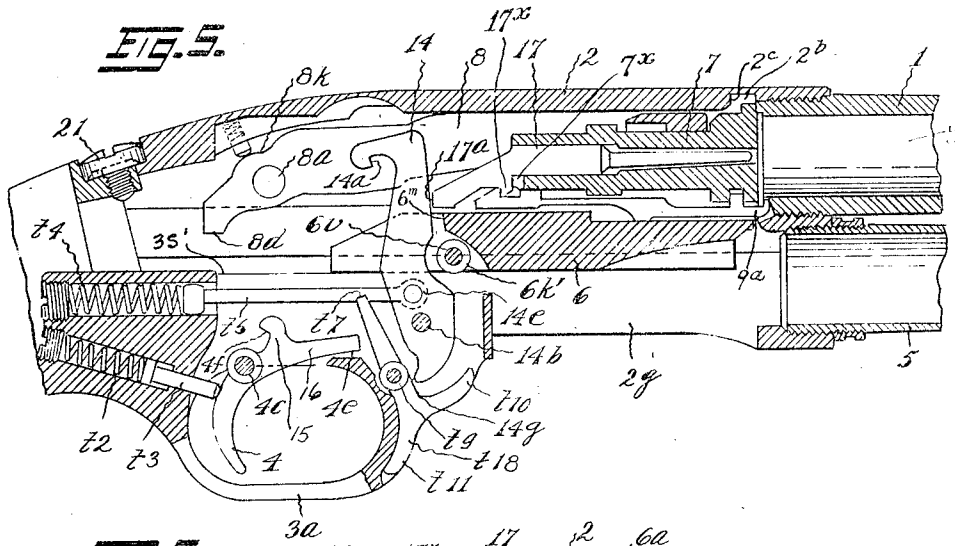


FIG. 6.

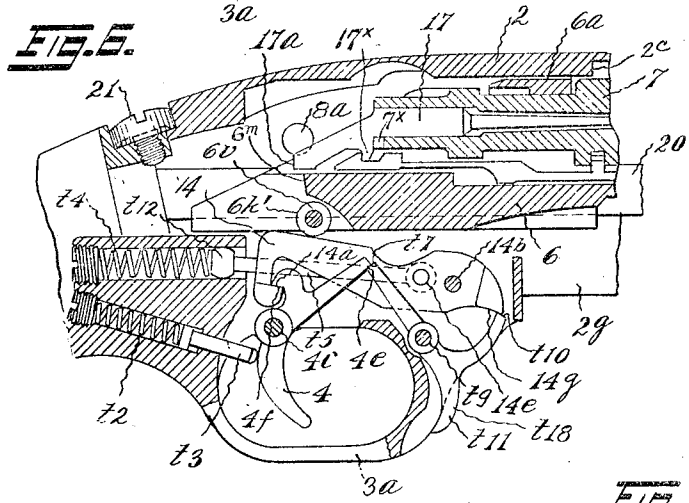
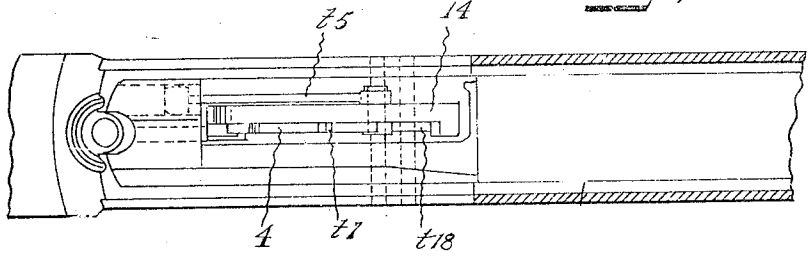


FIG. 7.



Inventor:
John D. Pedersen,
By his Att'y, H. H. Richards.

Oct. 9, 1923. **1,470,029**

J. D. PEDERSEN

FIREARM

Filed Sept. 18, 1919 4 Sheets-Sheet 4

Fig. 8.

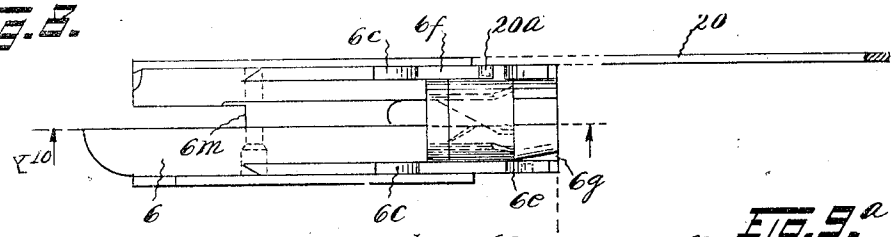


Fig. 9.

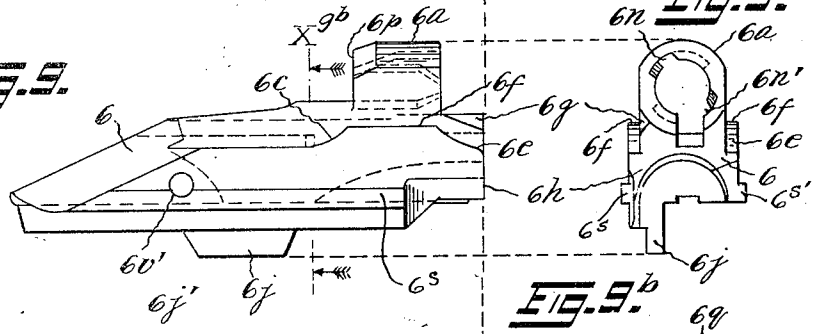


Fig. 9a.

Fig. 9b.

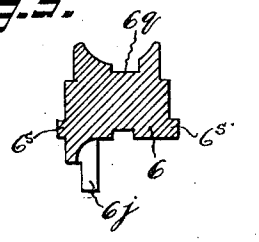


Fig. 10.

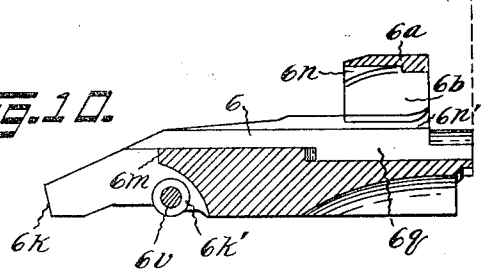
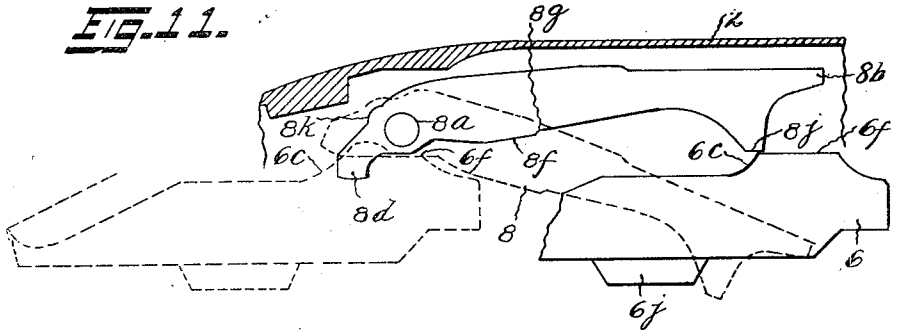


Fig. 11.



Inventor:
John D. Pedersen,
By his Att'y, F. H. Richards

Patented Oct. 9, 1923.

1,470,029

UNITED STATES PATENT OFFICE.

JOHN D. PEDERSEN, OF JACKSON, WYOMING.

FIREARM.

Application filed September 18, 1919. Serial No. 324,402.

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 that class of reciprocable bolt mechanisms which are applicable to breech-loading shoulder-arms, and a principal object is to furnish such a bolt mechanism having improved means for effecting and safeguarding the movements and operation thereof. The present invention is described in connection with other but distinct improvements, in U. S. Patent No. 1,317,988, issued to me October 7th, 1919, on my application filed June 6th, 1916, Serial No. 102,931, but is not claimed therein, having been duly reserved to constitute the subject-matter of this present application, this application being a continuation in part of the application of my said Patent No. 1,317,988, filed June 6, 1916.

For convenience of illustration, and to facilitate comparison of certain details, my present improvements are herein shown employed in connection with other mechanism which is or may be contained in or supported by a frame work such as illustrated in said patent. This frame or receiver is of the so-called "take-down" class and constitutes the subject-matter of a separate and copending application Serial No. 323,766 to which reference may be had for a more complete explanation thereof. Briefly described, and in the form thereof herein shown, the firearm frame comprises a main frame, or receiver proper; a guard-frame releasably secured to the main frame by interlocking means, and a clamping device removably held in place by a suitable screw. Said frame-members' interlocking means preferably comprises intrengaging tongues and recesses, or ribs and grooves, arranged for rigidly but releasably positioning and retaining each said member with relation to the other. In the present instance, as also, but more fully shown in said separate application, the projections engage in corresponding recesses, and the ribs engage in corresponding grooves or channels respectively; but these features while convenient for use in connection with my present invention, constitute no part thereof.

In the accompanying drawings forming a part of this specification, Fig. 1 is a side view or elevation, and Fig. 2 is an underside or inverted plan view, of the breech-loading magazine firearm shown in my said prior Patent No. 1,317,988; in these views, —which show portions of the stock, barrel and magazine broken away,—the frame or receiver is shown of the preferred form thereof as already stated, but only a few of the details of the mechanism are shown or indicated.

Fig. 3 is a portion of plan view, showing the bolt in longitudinal section in an axial plane thereof, and in a forward position relatively to the bolt-carrying slide when this is in its most retracted position; this view substantially corresponds with Fig. 8ª of said Patent No. 1,317,988.

Fig. 4 is a side view or elevation showing the frame in section, and the breechaction fully retracted; the slide and bolt are shown in side view and in the same retracted positions as in Fig. 3; also, this view (Fig. 4) illustrates some mechanism and devices described in said Patent No. 1,317,988, and with which, among others, my present improvements are adapted for use in a cooperative manner.

Figs. 5 and 6 are sectional side views for further illustrating the mode of operation of the present invention, as hereinafter more fully explained.

Fig. 7 is a plan view of that portion of the guard-frame which carries the hammer and the trigger mechanism.

Figs. 8, 9 and 9ª are, respectively, a plan side elevation and end elevation of the base-member or slide 6, of the breechaction; these views are drawn in alinement, or projection, in a conventional manner to facilitate comparison.

Fig. 9ᵇ is a cross-section of the slide 6 taken on line Xᵇ, of Fig. 8; and, Fig. 10 is a longitudinal vertical section of said slide, taken on the line Xᵃ, of Fig. 8; viewed in the direction of the arrows.

Fig. 11 is a diagrammatic and fragmentary side view showing the slide 6 (by solid lines) in the extreme forward position and

also (by dotted lines) in the extreme rearward position thereof in relation to the abutment 2^h whereby the rearward stroke is limited; and, incidentally, but for illustrative purposes only, the cartridge-carrier, 8, is similarly shown in two positions.

Fig. 12 is a cross-section in line X^{12}, Fig. 4, and Fig. 13 is a cross-section in line X^{13}, Fig. 4, viewed in the direction of the arrows, for illustrating certain features and arrangements of some details of the bolt-mechanism; and, Fig. 14 is a view similar to a portion of Fig. 13, for showing the bolt rotated to a different and slide-locking position, and is drawn in projection with this member as shown in Fig. 15.

Figs. 15 to 21, inclusive, are a series of detail and fragmentary views for illustrating certain features of the breech-bolt, the firing-pin and the extractor, as hereinafter more fully explained.

Similar characters designate like parts in all the views.

The principal members of the preferred construction of firearm, so far as these members are herein illustrated,—are indicated in the present drawings (as also in said Patent No. 1,317,988), by the following characters, viz: the barrel, by 1; the receiver, or forward frame-member, by 2; the guard-frame or rearward frame-member, by 3; the trigger, by 4; the trigger-guard, by 3^a; the magazine, by 5; the base-member, or "slide" of the breechaction, by 6; the breech-bolt, by 7; the cartridge carrier, (which in this instance, is a combined carrier and ejector), by 8; the extractor, by 9; the bolt-stop, or action-bar latch, by 10; the magazine follower, by 12; the magazine spring, by 13; the hammer, by 14; the sear, by 15; the safety-sear, by 16; the firing-pin, by 17; the stock, by 18; the carrier detent, by 19; the action bar, by 20; the take-down screw, by 21; the main-spring, by t^4, and the main-spring rod, by t^5. In this particular firearm the frame or receiver, 2, is shown formed with an opening in only one of the four sides thereof, so that the right-hand and left-hand sides, as also the upper side, may be unperforated by any opening which would permit the escape of gases or metal debris in the event of a back-fire or a premature explosion of a cartridge at any time during the loading operation. For meeting such conditions in the most desirable manner, said frame is herein shown provided with a single opening for loading and ejection, as 2^g, (Figs. 2, 4), in the side thereof which is the lower side when the firearm is held in the usual manner.

The reciprocable breechaction, in the preferred form thereof herein illustrated, comprises a slidable base-member, as 6, (which in practice may have any suitable form and proportions), and a rotatable bolt-member, as 7, which operates in combinations that include the extractor and firing-pin, together with the several details and features thereof.

As more fully explained in said prior patent the usual action bar, as 20, may be conveniently coupled to the slide 6 by means of the rib 20^a formed on the action bar and engaged into a suitable bearing in the slide 6. An ordinary handpiece or operating handle,—not shown,—may be fastened to the action bar 20 forwardly of the receiver, in a well-known manner, for the purpose of operating the breechaction. In Figs. 12 and 13, the action-bar 20 is shown located on the left-hand side of the firearm, but in some instances, if desired it may be arranged on the right-hand side, by a corresponding change in other parts.

This preferred form of breechaction has the base-member, as 6, arranged for a sliding movement, and in now describing the construction and arrangement of the details of the firearm, said member 6 will be sometimes referred to, for convenience, as a "slide," or as "the slide," or as being slidable, as the case may require.

For actuating the firing-pin by a suitable blow thereon, I have illustrated in the drawings an improved hammer-sear-trigger mechanism which is not specifically claimed herein, but which constitutes in part the subject-matter of application Serial No. 323,765 copending herewith. In the preferred arrangement of such a firing or hammer-mechanism, the hammer, as 14, is pivotally supported in the frame of the firearm, and is provided with coacting devices which, and the mode of operation thereof, will be understood from the references made thereto in the course of the following description.

The sliding bolt-carrier 6, may, in practice, be of such form as suitable for coaction with the devices to be associated with the bolt-mechanism. But I prefer the construction herein shown, the slide being here provided with guide ribs 6^a, $6^{a'}$, formed on the opposite sides respectively of this block or carrier, and fitted to slide in the grooves or slideways, 2^a, $2^{a'}$, respectively of the frame. These grooves, or channels, are formed in the main frame or receiver, 2, at such a height or position that the lower faces thereof coincide in alinement with faces, as 3^s, $3^{s'}$, Figs. 5 and 12 on the upper side of the guard-frame 3, so that when said slide 6 is in forward position (Fig. 5) it is supported wholly by its engagement with the main frame, and when in rearward position, (Figs. 3, 4), said slide is supported upon the lower frame 3, and below the main frame 2, being thus held between the two frames. Thus, when the slide is in said rearward position, and the take-down fastening 21 is removed, the guard-frame can be slipped off,

thereby releasing the slide so this may be taken out downwardly, without requiring other means or preparation therefor.

The breechaction being retractably supported in the frame, constitutes, when properly equipped and operated, a combined loading and breech-closing mechanism. For this purpose the present improvement has the slide-member 6 provided with the upwardly projecting bearing, 6^a, in which a central bore, 6^b, (Fig. 9^a), is made for receiving the tubular stem, 7^a, of the bolt-head 7. The bearing 6^a and stem 7^a are shown provided with means whereby to impart to the stem a rotatory movement when the stem is moved either forwardly or rearwardly in said bearing, consisting of coacting helical ribs and grooves as ribs 7^b, $7^{b'}$, on the stem, and grooves 6^a, $6^{a'}$, in the said bearing 6^a, whereby the movement imparted to the bolt 7 relatively to said bearing is of a helical character. These movements, however, occur only during a longitudinal movement of the base member relatively to the receiver and while the bolt has only a rotatable movement relatively to the receiver; a leading purpose of this arrangement is to lock and unlock the bolt-head 7 to and from the receiver.

When the two locking-lugs 7^d, and $7^{d'}$ of the bolt are brought (by turning the bolt forwardly as indicated by arrow A), to the cross-wise position indicated in Fig. 14, these lugs lock in front of frame faces or abutments, 2^c, 2^c (see Figs. 3, 4), for thereby sustaining the reaction of the cartridge when this is fired; and when turned backward,—see arrow B Fig. 14,—to the position in Fig. 12, said lugs stand one above and the other below the bolt-stem 7^a, so that in width of space occupied, the bolt-head, 7, now has a space on each side thereof (see Fig. 3) sufficient for the operation of other devices, as for instance, the carrier-arms, 8, 8, of a cartridge-placing and ejector mechanism such as described and claimed in my aforesaid Patent No. 1,317,988. The latter said mechanism and the said carrier-arms therefor,—those not being a part of the present invention,—are not fully shown or described in the present application, and are now referred to only for the purpose of briefly illustrating herein one mechanism with which in practice, the herein described bolt mechanism may be associated for practical use and operation. This explanation also applies to other details shown or only partially indicated in the drawings but not a part of, or necessary to, the present invention, including the magazine 5, cartridge-releaser 10, action bar 20, slide-abutment 2^h; also the hammer and trigger and their accessory or constitutent devices.

In Fig. 13 the locking lugs 7^d, $7^{d'}$, on the breech-bolt are shown rotated out of engagement with the locking shoulders 2^e, on the receiver, and the top lug $7^{d'}$, projecting from the bolt is in position to enter the recess or slot 2^b, which is formed in the top of the receiver. The unlocking rotation of the breech-bolt is limited by the side 7^e of the lug $7^{d'}$ striking against the side face 2^v of the recess or slot 2^b in the receiver. The breech-bolt at its front end also carries a lug or projection, 7^t, which passes through the opening 2^e during the unlocking rotation of the bolt and at the completion of this unlocking rotation, the lug 7^t occupies a position adjacent to the surface 2^t in the receiver. Thus the breech-bolt, in its successive backward and forward movements, will be guided and prevented from further rotation by means of the opposing faces of lugs $7^{d'}$ and 7^t bearing against correspondingly opposed faces or surfaces 2^t and $2^{t'}$ of the rib 2^v in the receiver, see Fig. 13.

In the operation of the breechaction, the breech-bolt,—in addition to its rotative movements,—may have a relatively long stroke relative to the block or slide 6. Thus, in Fig. 4, the bolt 7 is in its forward position relatively to said block or slide 6, while the block or slide is in its extreme rearward position; in Fig. 5 the bolt is in the extreme rearward position thereof relatively to block or slide 6, while both the block or slide and the bolt are in the extreme forward position thereof relatively to the frame and the barrel. When the breechaction, during its forward movement, comes to a position in which the bolt 7 is ready for beginning to be turned into locking engagement with the frame, (see Fig. 13), this forward bolt-movement is then completed, so that the bolt remains stationary (as regards endwise movement) while the block or slide 6 continues to advance to firing position Fig. 5.

Said forward movement of the slide 6 relatively to the bolt 7 is herein provided for by the spiral ribs 7^b, $7^{b'}$, of the bolt engaging in the nut grooves 6^a, $6^{a'}$, of the bearing 6^a of the slide; and when the slide is sufficiently advanced said bolt ribs 7^b, $7^{b'}$ pass partially out of engagement with the said grooves, so that during the latter portion of said relative advance, the bolt 7 is non-rotating, and so that the face 6^g of the slide runs forwardly under the lug 7^d of the bolt, and thereby positively blocks the bolt from turning backwardly. Thus the face 6^g of the slide (forward of said bearing 6^a,) by engaging under the face 7^v of the bolt-head during the said final part of the forward slide movement, securely locks the bolt in firing position while the guard-face 6^m at the rearward end of the slide (Fig. 5) is being brought forward to the position required for thereby permitting the hammer 14, to be swung upwardly and strike the firing pin.

On the initial retraction of the slide 6

from firing position, said face 6^m (or the roller $6^{k'}$, when this is provided) forces back the hammer, 14, before the bolt begins to be turned for the unlocking thereof from the frame; and by this means the slide may have a considerable amount of rearward movement wherein to acquire momentum, so that on engaging the said bolt ribs, the relatively heavy slide acts after the manner of a hammer, and by a sharp blow imparts a powerful turning movement to the bolt-head 7, for thereby first overcoming (by an impact action) such an adhesive effect as may normally (in some instances) result from the pressure of the powder gases, and then disengaging the said lug-faces from the coacting frame face.

When the breech-bolt, driving the cartridge ahead of it into the barrel-chamber, reaches its forward position and is rotated to lock into the receiver, the extractor hook 9^a is then sprung in the usual manner over the rim of the cartridge in the barrel-chamber to engage the front face of the cartridge rim,—see Fig. 5.

In Fig. 5, the entire mechanism is indicated as being in its position at the instant of firing the cartridge, y, in the barrel 1, this operation being effected,—on pulling the trigger 4,—by means of the hammer-sear-trigger mechanism. During the following retractive stroke of the slide 6, the shell-extracting and ejecting operations are performed. On the next forward movement of the breechaction to the position shown in Fig. 5, a new cartridge is pushed fully forward into the chamber of the barrel; and as the slide 6 advances relatively to the bolt 7, to the position shown in Fig. 5, the described bolt-operating and bolt-locking means cooperate with the magazine mechanism and the hammer-sear-trigger mechanism in the manner and for the purposes as elsewhere herein more fully explained.

In order to reduce the illustration and description of cooperating mechanisms not forming a part of the subject matter of this application, the hammer-and-trigger mechanism is herein shown in a simple form and arrangement, and to include only the more essential elements, such as a hammer, 14, a trigger, 4, and a firing-spring t^4, suitably connected. In practice, however, the hammer may be supplemented by such safety devices as may be found desirable or suitable, and one suitable mechanism of this kind is described and claimed in my Patent No. 1,317,933.

For actuating the firing-pin 17, a hammer 14, is herein shown pivoted to the guard-frame 3 by a pivot-pin at 14^b, and the hammer is actuated by a main-spring, t^4, removably retained in a bore of the frame, by an ordinary screw-plug as shown. Said spring t^4 bears against a thrust-rod, t^5, which at its forward end is connected to the hammer by a pivot-screw 14^e.

From the foregoing description as illustrated, it will be seen that the extractor, 9, is reciprocable in relation to the bolt-carrying block, 6, on which the extractor is carried. Also, the extractor is shown having a hook face 9^d in position for limiting the retractive movement of the firing pin 17, relative to the bolt member 7; thus said face 9^d, constitutes a firing pin engaging and retaining face, and this cooperates with the block and bolt, and particularly with the projection 9^b of the extractor, this projection having engagement in the segmented groove 7^h of the bolt 7. The rearward end (on which is face 17^a) of the firing pin 17, is shown, (Fig. 6) extending downwardly to a position between the side-faces of the channel or groove 6^a in block 6,—see Figs. 9^b and 10,—and thus serves to prevent a rotation of the firing pin relative to the block while permitting the bolt to have the required turning or rotatable movement outside of the firing pin. During said rotation of the bolt, a cam or face, 7^x, thereon (Fig. 16) engages the face 17^x (Fig. 21) of the firing pin 17, and thus rearwardly actuates or retracts said pin to the safety position thereof, (relative to block 6), as shown in Fig. 5. The extractor comprises a spring arm portion 9^x and is provided on its under side with a fulcrum bearing 9^y.

In the arrangement thereof herein illustrated, the hammer is provided with a face 14^s for engaging the sear face 4^f of a trigger-arm, which is pivoted at 4^c to the guard-frame and is actuated toward its hammer-engaging position (Fig. 6) by a spring t^2, and pushpin t^3, these operating in a well-known manner. Thus said trigger-sear member is a combined member which includes the trigger 4, the sear 15, and the safety-sear arm 16; said member is therein shown provided with the usual finger piece or operating arm, and also with an arm-extension end-part 4^e which reaches forwardly to coact with a face on the arm t^7 of a forward safety-lock or secondary trigger, t^{18}, which is pivotally supported at t^9, and is provided with an operating arm or lever t^{11}.

Said secondary trigger should be provided in practice with an ordinary spring-actuation means, (not shown) and also provided with a hammer-engaging face t^{16}, in position for engaging under a face 14^s of a lever-end of the hammer, so that on the hammer being retracted to cocked position (Fig. 6) the forward trigger-lock will directly engage both the hammer and said arm 4^e of the primary trigger. Thus, in order to release the hammer, the trigger 4 is first unlocked by retracting the forward trigger-device t^{18}.

In practice, pressure may be manually

applied simultaneously to each of said pair of triggers, so that on the yielding, or retraction of the forward one, the rearward one will be instantly operated; this mode of operating said pair for hammer release, may be readily accomplished by the use of two fingers, in an evident manner.

The frame or receiver 2, being provided with a bolt engaging abutment face, as 2^e, and the combined lock and bolt mechanism being supported for reciprocation forwardly to and rearwardly from the firing position in the frame or receiver, the bolt, when advanced to its locking position, (said bolt being mounted on the block as described), is then rotated into engagement with said abutment face or faces, this operation being performed by the aid of the bolt-rotating means already described in detail, (and also fully described in my aforesaid Letters Patent). Thus the bolt rotating means is coactive between the block and bolt and is arranged for retractively rotating the bolt out of the frame-abutment-locking-face engagement on a rearward movement of the block from its firing position.

In connection with these operations the firing mechanism, comprising the firing pin striker, is arranged for forwardly actuating the firing pin until the time when the block and bolt are both brought into the described firing positions thereof. These operations are further controlled by the described means on the block for intercepting the striker on an initial retraction of the block from said firing position thereof, so that the retractive rotation of the bolt, for retracting the firing pin relative to the bolt, as a means for safe-guarding the same against the accidental firing of a cartridge during the loading operation. These operations and devices are also coactive in the manner set forth in said prior patent and in the present application with specific features and details (herein illustrated) of the several said members of said combined block-mechanism and firing-mechanism, whereby to control the loading operation, the extraction of the cartridge and the ejection thereof, and also retain the extractor in working relation to the bolt during longitudinal movements of the bolt relatively to the block. As regards these several features it will be understood that the construction and arrangement herein illustrated as regards various details and minor features thereof, are a preferred construction which in some instances, may be modified within the purview of my present invention.

Having thus described my invention, I claim:—

1. In a breech-loading firearm, in combination, a frame having a wall provided with a bolt-engaging abutment face; a combined block and bolt mechanism comprising a non-turning bolt-carrying block supported for reciprocation forwardly to and rearwardly from a firing position in the frame, and a bolt rotatable around a firing pin which is reciprocable in the bolt, said bolt being mounted on the block for forward and rearward movements to and from a firing position relatively to the block and provided with a locking face for engaging said frame abutment face; bolt-rotative means coactive between the block and bolt and arranged for retractively rotating the bolt out of frame-abutment-locking-face engagement on a rearward movement of the block from its firing position; and means appurtenant to the block and firing pin arranged for preventing rotation of the firing pin during a rotative movement of the bolt relative to the block, whereby said retractive rotation of the bolt operates to retract the firing pin to an ineffective position in advance of unlocking the bolt from the frame.

2. In a breech-loading firearm, in combination, a mechanism enclosing frame having a wall provided with a bolt-engaging abutment face; a combined block and bolt mechanism comprising a non-turning bolt-carrying block slidably supported for reciprocation forwardly to and rearwardly from a firing position in the frame, and a bolt rotatable around a firing pin which is reciprocatable in the bolt, said bolt being mounted on the block for forward and rearward movements to and from a firing position relatively to the block, and provided with a locking-face for engaging said frame abutment face; bolt-rotating means comprising coactive spiral faces on the block and bolt for retractively rotating the bolt out of frame-abutment-locking-face engagement on a rearward movement of the block from its firing position; and means appurtenant to the block and firing pin arranged for preventing rotation of the firing pin during a rotative movement of the bolt relative to the block.

3. In a breech-loading firearm, in combination, a mechanism enclosing frame having a wall provided with a bolt-engaging abutment-face; a combined block and bolt mechanism comprising a non-turning bolt-carrying block slidably supported for reciprocation forwardly to and rearwardly from a firing position in the frame, and a bolt rotatable around a firing pin which is reciprocable in the bolt, said bolt being mounted on the block for forward and rearward movements to and from a firing position relatively to the block and provided with a locking-face for engaging said frame abutment face; bolt-rotating means comprising spiral faces on the block and bolt and arranged for retractively rotating the bolt out of frame-abutment-locking-face engagement on a rearward movement of the

block from its firing position; and, coacting guide-faces appurtenant to the block and firing pin, respectively, and arranged for preventing rotation of the firing pin during a rotative movement of the bolt relatively to the block.

4. In a firearm, in combination, a frame having a wall provided with a guide-rib and having a bolt-engaging abutment face; a combined block and bolt mechanism comprising a non-turning bolt-carrying block slidably supported for reciprocation forwardly to and rearwardly from a firing position in the frame, and a bolt rotatable around a firing pin which is reciprocable in the bolt, said bolt being mounted on the block for forward and rearward movements to and from a firing position relatively to the block and provided with a locking-face for engaging said frame abutment face, and also provided with rib-engaging guide-faces; bolt-rotating means comprising coactive spiral faces on the block and bolt and arranged for retractively rotating the bolt out of engagement with said abutment of the bolt into position for engaging said guide-rib on the retraction rearwardly of the bolt; and coacting guide-faces appurtenant to the block and firing pin, respectively, and arranged for holding the firing pin against rotation.

5. In a firearm, in combination, a frame having a wall provided with a guide-rib and having a bolt-engaging abutment face; a combined block and bolt mechanism comprising a non-turning bolt-carrying block slidably supported for reciprocation forwardly to and rearwardly from a firing position in the frame, and a bolt rotatable around a firing-pin which is reciprocable in the bolt, said bolt being mounted on the block for forward and rearward movements to and from a firing position relatively to the block and provided with a locking-face for engaging said frame abutment face, and also provided with rib-engaging guide-faces; bolt-rotating means comprising coactive spiral faces on the block and bolt and arranged for retractively rotating the bolt out of engagement with said abutment face and thereby bringing said guide-faces of the bolt into position for engaging said guide-rib on the retraction rearwardly of the bolt; and a pair of coacting safety-stop faces in position one on the firing pin and the other on the block, for blocking the firing pin against a forward firing stroke on a partial rotation of the bolt in a direction for disengaging the locking-face thereof from said abutment face of the frame.

6. In a breech-loading firearm, in combination, a frame having a wall provided with a bolt-engaging abutment face; a combined block and bolt mechanism comprising a non-turning bolt-carrying block slidably supported for reciprocation forwardly to and rearwardly from a firing position in the frame, and a bolt rotatable around a firing-pin which is reciprocable in the bolt, said bolt being mounted on the block for forward and rearward movements to and from a firing position relatively to the block and provided with a locking-face for engaging said frame abutment face; bolt-rotating means coactive between the block and bolt and arranged for retractively rotating the bolt out of frame-abutment-locking-face engagement on a rearward movement of the block from its firing position; and a firing mechanism comprising a firing pin striker for forwardly actuating the firing pin when the block and bolt are both in firing position, means on the block for intercepting the striker on the initial retraction of the block from the firing position thereof, and means operable on a retractive rotation of the bolt to retract the firing pin in the bolt.

7. In a breech-loading firearm, in combination, a frame having a wall provided with a bolt-engaging abutment face; a combined block and bolt mechanism comprising a non-turning bolt-carrying block slidably supported for reciprocation forwardly to and rearwardly from a firing position in the frame, and a bolt having a firing pin provided with a safety-stop face, the bolt being rotatable around the firing pin which is reciprocable in the bolt, said bolt being mounted on the block for forward and rearward movements to and from a firing position relatively to the block and provided with a locking-face for engaging said frame abutment face; bolt-rotating means coactive between the block and bolt and arranged for retractively rotating the bolt out of frame-abutment-locking-face engagement on a rearward movement of the block from its firing position; and a firing mechanism comprising a firing-pin-striker in position and normally operable for forwardly actuating the firing pin when the block and bolt are both in forward and firing position, the block having a striker-stopping face in position on the block for intercepting the striker on the initial movement of the block rearwardly from the firing position thereof, and the rearward end of said block having a relief-space in position for receiving said above mentioned safety-stop face of the firing pin, and an inclined pin-retracting face at one side of said relief-space and operable on a retractive rotation of the bolt to retract the firing pin in the bolt.

8. In a bolt-mechanism for breech-loading firearms, in combination, a non-turning bolt-carrying block adapted for reciprocation in the frame of a firearm and having a bearing for a bolt reciprocable relatively to the block; a bolt supported in said bolt

bearing and having in the forward end thereof an arcual channel; a firing pin carried by the bolt and provided with a face for engaging the firing pin retaining face of an extractor; and a reciprocable cartridge-shell extractor supported on the block provided with a projection in position for engaging in said arcual channel of the bolt, and provided with a firing pin engaging and retaining face.

9. In a bolt mechanism for breech-loading firearms, in combination, a non-turning bolt-carrying block adapted for reciprocation in the frame of a firearm and having longitudinally thereof a bearing for a bolt reciprocable relatively to the block, and having below said bearing a seat for reciprocable cartridge-shell extractor; a bolt supported in said bolt bearing and having in the forward end thereof an arcual channel; a firing pin carried by the bolt provided with a face for engaging the firing pin retaining face of an extractor; and a reciprocable cartridge-shell extractor supported on said seat of the block comprising a spring-arm portion and provided near its forward end with a projection for engaging in said arcual channel of the bolt, and provided on the under side thereof with a fulcrum bearing, and provided rearwardly of said spring-arm portion with a firing pin engaging and retaining face.

10. In a bolt mechanism for breech-loading firearms, in combination, a non-turning bolt-carrying block adapted for reciprocation in the frame of the firearm and having longitudinally thereof a bearing for a bolt reciprocable relatively to the block, and having below said bearing a seat for a reciprocable cartridge-shell extractor; a bolt supported in said bolt bearing and having in the forward end thereof an arcual channel; a firing pin carried by the bolt provided with a rearwardly facing face for engaging the firing pin retaining face of an extractor; and a reciprocable cartridge-shell extractor supported on said seat of the block comprising a spring-arm portion and provided near its forward end with a projection for engaging in said arcual channel of the bolt, and provided on the under side thereof with a fulcrum bearing, and provided with a face in position for engaging said rearwardly facing face of the firing pin and thereby retain said pin in place, and also retain said cartridge-shell extractor in working relation to the bolt during a movement of the bolt relative to the block.

11. In a bolt mechanism for breech-loading firearms, in combination, a non-turning bolt-carrying block adapted for reciprocation in the frame of a firearm and having longitudinally thereof a bearing for a bolt reciprocable relatively to the block, and also having below said bearing a seat for a reciprocable cartridge-shell extractor; a longitudinally perforated bolt supported in said bolt-bearing and having in the forward head-end thereof an arcual channel; a firing-pin carried in said perforation of the bolt and provided with a rearwardly-facing face for engaging the firing-pin-retaining face of an extractor; and, a cartridge-shell extractor comprising a spring-arm portion and supported on said extractor seat of the block and provided near its forward end with a projection for engaging in said arcual channel of the bolt-head, and provided about midway of its length and on the underside thereof with a fulcrum bearing, and provided rearward of said spring-arm portion thereof with a firing-pin engaging and retaining face and with a bearing face resting against the bolt and under tension of said spring, and provided near its rearward end with a transversely disposed face in position for engaging said rearwardly-facing face of the firing-pin and thereby retain said pin in place, and also retain the extractor in working relation to the bolt during longitudinal movements of the bolt relatively to the block.

JOHN D. PEDERSEN.

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