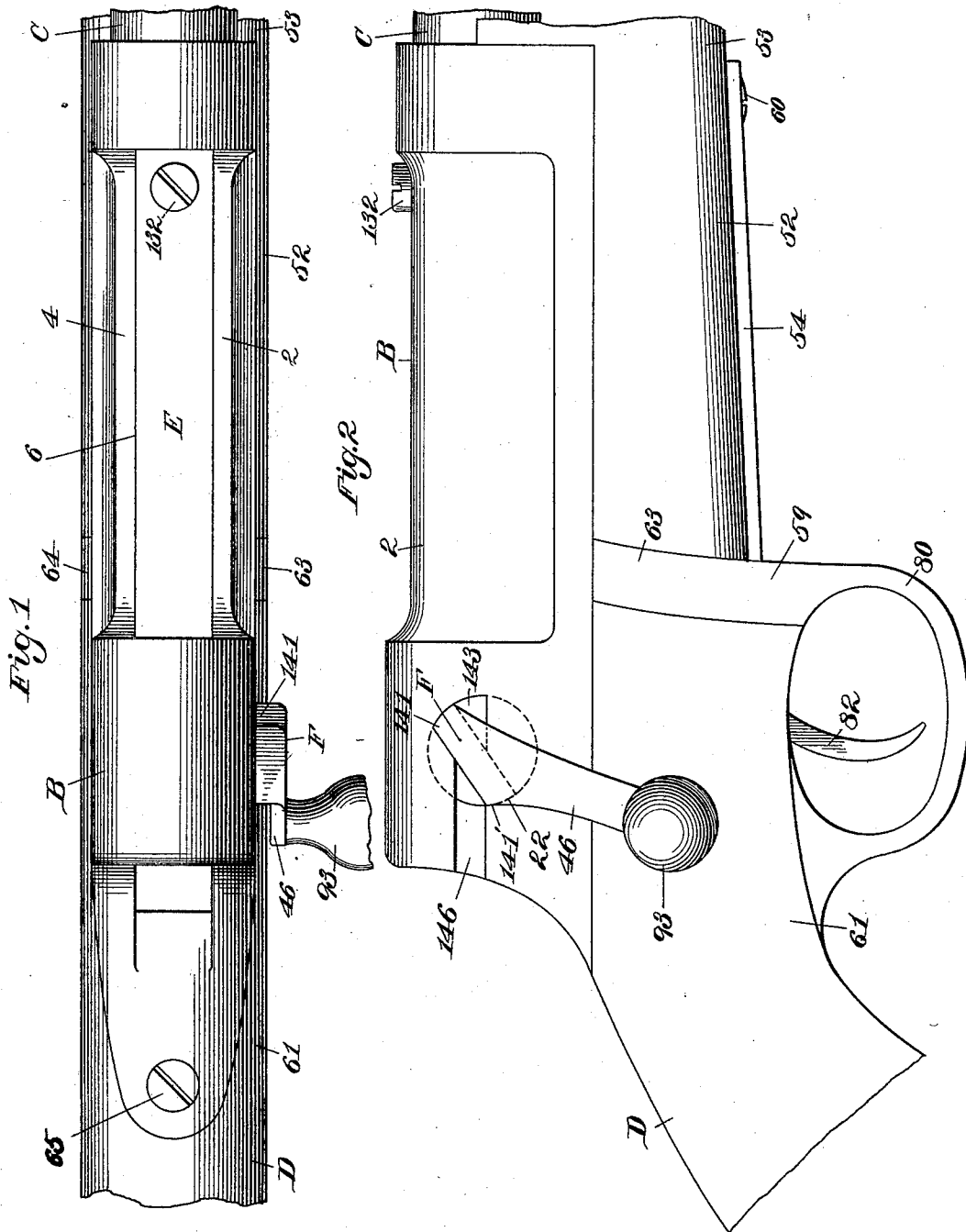


J. P. LEE.
STRAIGHT PULL BOLT GUN.

No. 506,321.

Patented Oct. 10, 1893.



Witnesses:
Henry L. Reckard.
H. C. Mallon.

Inventor:
James P. Lee,
By his Attorney,
F. H. Richards.

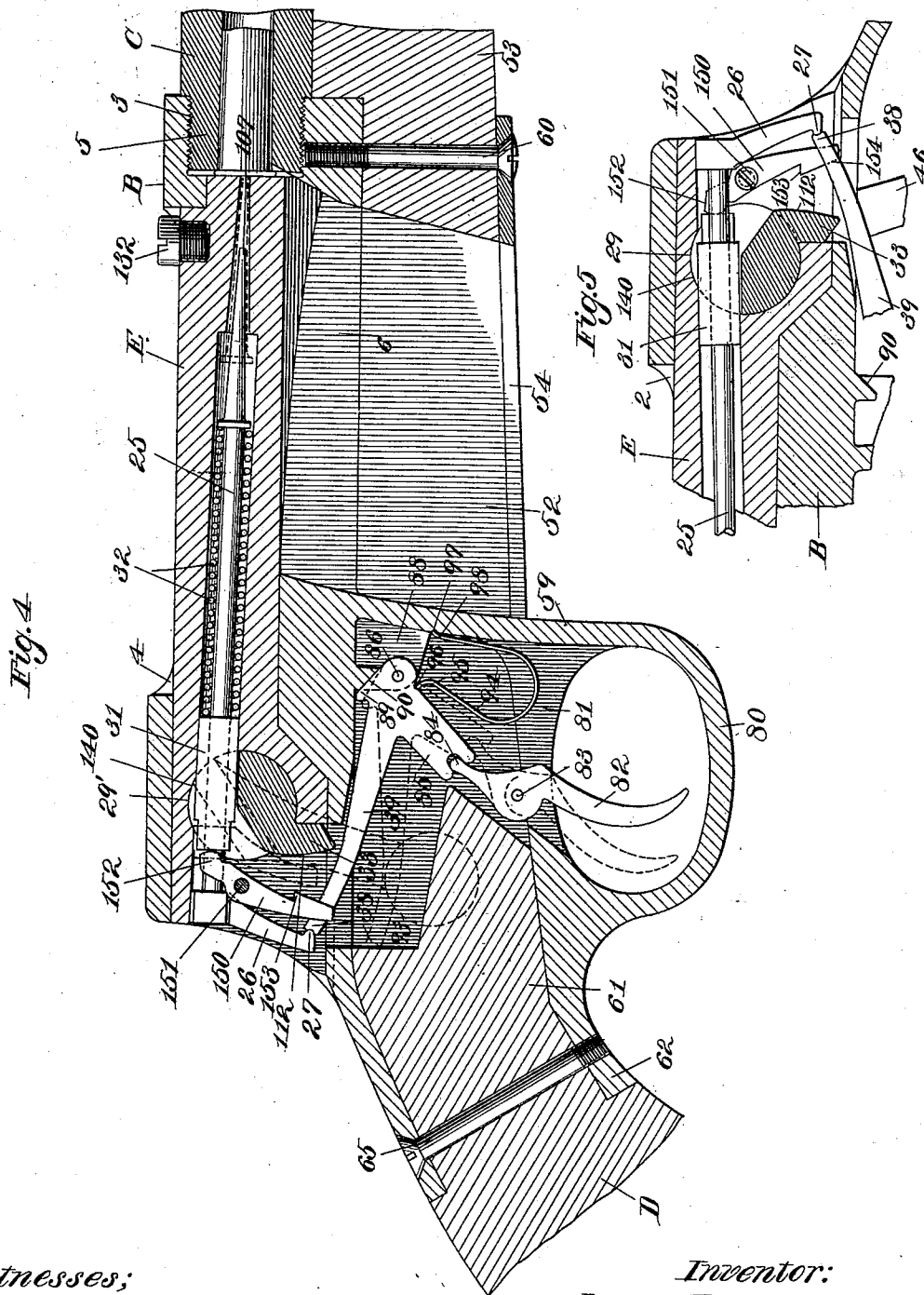
(No Model.)

5 Sheets—Sheet 3.

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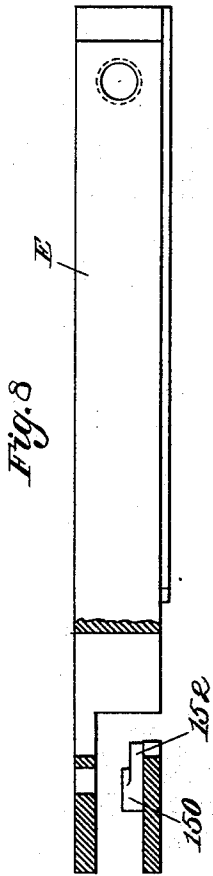


Fig. 11

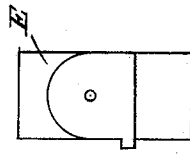


Fig. 9

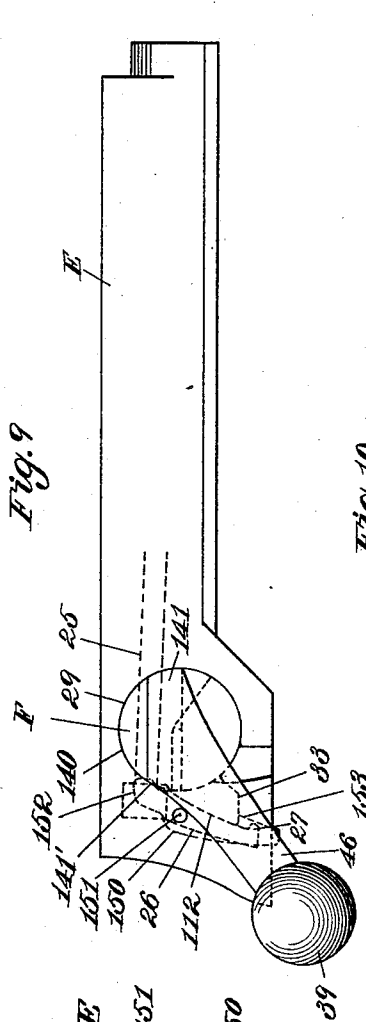


Fig. 10

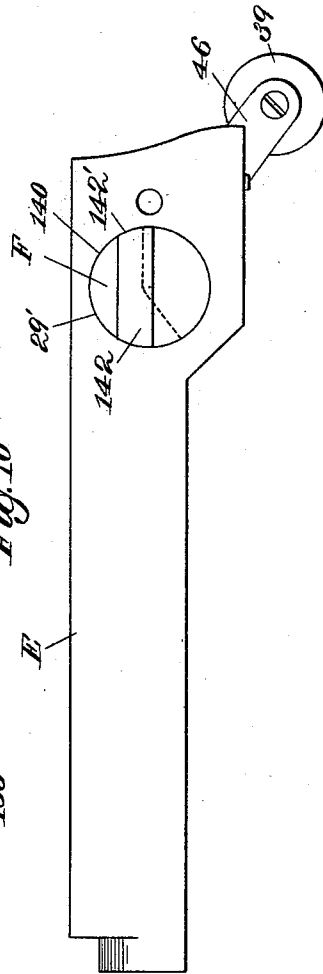
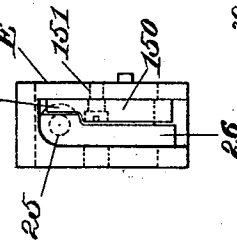


Fig. 12



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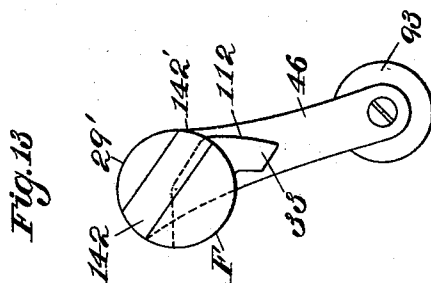
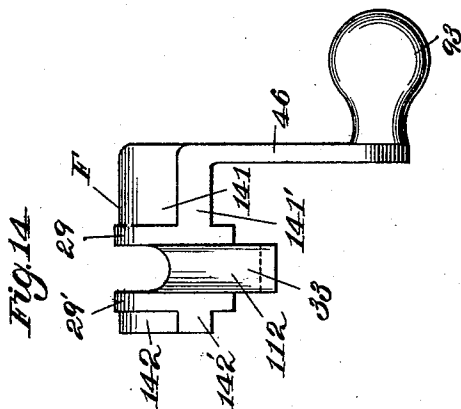
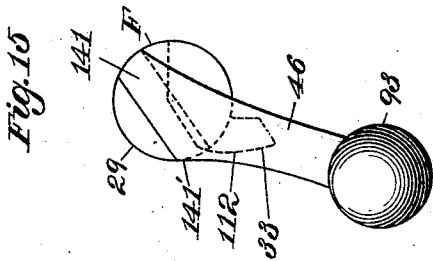
(No Model.)

5 Sheets—Sheet 5.

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UNITED STATES PATENT OFFICE.

JAMES P. LEE, OF ILION, NEW YORK.

STRAIGHT-PULL BOLT-GUN.

SPECIFICATION forming part of Letters Patent No. 506,321, dated October 10, 1893.

Application filed September 26 1892. Serial No. 446,862. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. LEE, a citizen of the United States, and a resident of Ilion, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Bolt-Guns, of which the following is a specification.

This invention relates to that class of breech-loading fire-arms generally known as "bolt-guns."

The object of my invention is to provide an improved bolt-mechanism for breech-loading guns, whereby, after firing the gun, the sliding bolt and its actuator may be unlocked, operated and re-locked without imparting to the bolt any rotary movement on its longitudinal axis.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan view of a bolt-gun embodying my present invention. Fig. 2 is a right-hand side elevation of the gun. Fig. 3 is a vertical longitudinal section of the mechanism of the gun, showing in solid lines the position of the several parts just before the beginning of the bolt-locking movement; and in dotted lines the position of the bolt and the parts carried thereby, when these are drawn fully back to their rearward position. Fig. 4 is a sectional view similar to Fig. 3, showing in solid lines the bolt-mechanism closed ready for firing; and in dotted lines showing the trigger drawn back and firing-pin thrown forward. Fig. 5 is a sectional view similar to a portion of Fig. 4, showing the parts in the position shown in said figure, but as seen from the opposite, or left-hand, side of the gun. Fig. 6 is a view of the rearward end of the receiver, with a portion of the tail-piece, or strap, thereof broken away. Fig. 7 is a vertical section of the rearward part of said receiver. Fig. 8 is a plan view, partly in section, of the bolt with the actuator-locking pawl, or hook, in place therein. Fig. 9 is a right-hand side elevation of the bolt, with the bolt-actuator in place therein, and indicating in dotted lines the relative positions of certain other parts carried by the bolt. Fig. 10 is a left-hand side elevation of the bolt and bolt-actuator. Fig. 11 is a view of the front end of the bolt. Fig. 12 is a view of the rear end of the bolt, showing the act-

uator-locking hook and the firing-pin and its arm in place therein. Fig. 13 is a left-hand side view of the bolt-actuator, and Fig. 14 is a rear view of the same. Fig. 15 is a right-hand side elevation of the bolt-actuator. Figs. 13, 14 and 15 are drawn in projection with each other.

The receiver, or gun-frame, which is designated in a general way by B, and is shown adapted to carry a sliding bolt, consists in the preferred form thereof herein shown, of an open frame having the two side-walls 2 and 4, joined at their front and rearward ends and constructed to carry the barrel C and for attachment to the stock, D, of the gun; and to receive within it the bolt-mechanism. At its front end, the receiver has the bore 3, Figs. 3 and 4, for receiving the threaded end, 5, of the barrel C. A mortise, 6, Figs. 3 and 4, is formed for receiving the upper end of a magazine, and also to load the gun when using this as a single-loader; the gun may be used as a single-loader at any time when the magazine is emptied of cartridges. Or, a cut-off may be used, as shown, for instance, in Letters Patent of the United States No. 221,328, granted to me November 4, 1879; which cut-off being thrown into working position, holds the supply of cartridges down in the magazine.

For preventing, during the ordinary operation of the gun, the retraction of the bolt beyond its normal rearward working position shown in Fig. 3, I provide said bolt with the detent-pin, or screw, 132. When it is desired to remove the bolt from the gun, the screw 132 is first removed, after which the bolt may be freely withdrawn. The bolt E is bored longitudinally thereof to receive the firing-pin 25, and at the rearward end thereof is downwardly slotted for the depending arm 26 of said firing-pin, which arm has on the forward side of its lower end a catch, 27, whereby said pin may be retracted, as hereinafter more fully set forth. Near its rearward end the bolt is transversely bored to receive the journals, 29 and 29', of the bolt-actuator, which is designated in a general way by F. The bolt-actuator F, also designated as the "bolt-locker," is shiftable from one position to another relatively to the bolt, and has several functions; among the principal of

these is the locking of the bolt against recoil. Another function of said actuator is to prevent the full forward movement of the firing-pin until after the bolt has been carried fully forward and into a safe locked position. For these purposes the actuator, or bolt-locker, F, is furnished with the depending arm 33. The rearward side, 112, of the depending actuator-arm 33 serves, on the retractive movement of the bolt-actuator, to draw back the firing-pin from the position (relative to the bolt) shown in dotted lines in Fig. 4 to that shown in dotted lines in Fig. 3. The bolt-actuator is journaled in the rearward end of the bolt E, with its axis crosswise of the line of movement of said bolt, and adapted to be turned by means of its handle from the locked position shown in Figs. 2 and 4 to the open, or unlocked, position shown in Fig. 3. The working portion of said bolt-actuator is of the general form of a cylinder, as will be understood by comparison of the figures of drawings, Figs. 13 to 15, inclusive. The end portions of the cylindrical part of the actuator constitute the journals on which the actuator turns within the bearing 140 (Figs. 9 and 10) of the bolt E, said journal surfaces being designated by 29—29', respectively. Intermediate to its said journals, the actuator F is shown provided with an arm, 33, whereby to lock the actuator in its open position, as in Fig. 3, during the greater part of the longitudinal movement of the bolt-mechanism.

As a means for locking the bolt in its closed position shown in Figs. 1, 2 and 4, the actuator F is provided at each end of the cylindrical portion thereof with the projecting abutment-plates 141 and 142, respectively, whose rear edges, 141' and 142', are adapted to engage (when the bolt is in its forward position and the actuator is turned from its position shown—partially by solid and partially by dotted lines—in Fig. 3, down to its position shown in Figs. 2, 4 and 5,) with the corresponding receiver-abutments 22 and 22', (see Figs. 2 and 7.) Said receiver-abutment faces 22—22' are at the rearward side of the openings 143 and 144, respectively, which are formed in the receiver walls. The opening, 144, formed in the left-hand wall is made to extend only partially through the thickness of the wall, and is shaped to permit of the required rotatory movement of the actuator-abutment-plate 142 within said opening. For permitting the withdrawal of said abutment-plate 142 from the receiver on the retraction of the bolt, a groove, or channel, 145, communicates with said space, or opening, 144, as will be understood from Figs. 6 and 7. A corresponding opening, or channel, 146, is cut entirely through the right-hand wall, 2, of the receiver, (see Figs. 1 and 6,) for the passage of the abutment-plate 141, to the outer end of which is connected, as well shown in the drawings, the actuator-arm 46. Similarly, the opening 146 in the said right-hand wall 2 extends entirely through

the said right-hand wall; this is for the purpose of permitting the operation of the outwardly-projecting right-hand abutment-plate, 141, of said actuator, as will be understood from Figs. 1 and 2. An actuator-locking hook, or pawl, 150, is pivotally supported on a stud, or screw, 151, fixed in the bolt; and the upper end, 152, of said hook engages the abutment-sleeve, 31, of the firing-pin spring. A catch, 153, is formed on said pawl near the lower end thereof, which, on the retraction of the actuator-arm 33, is thrown under the end of said arm by the action of the main-spring, thus locking the actuator in its retracted position. Said several parts being thus positioned and locked together, may then be drawn back as one member of the gun-mechanism, as illustrated by dotted lines at the left-hand in Fig. 3, and afterward pushed forward to the position shown by solid lines in Fig. 3; just previous to which time the firing-arm 26 engages the rearward end, 38, of the sear 39, and is thereby held retracted during the remaining forward movement of the bolt-mechanism.

As illustrated in Fig. 5, a stop, 154, is formed on the receiver, against which the lower end of the pawl 150 strikes, to disengage the catch, 153, thereof from the actuator-arm 33 and allow said actuator to be turned down to lock the bolt when this has reached its full forward position.

In Fig. 3 the bolt is shown by dotted lines in its retracted position, and by solid lines in its nearly full forward position; at this time the actuator-arm 33 is about being released from the actuator locking-pawl.

In Fig. 4, the bolt has been pushed fully forward and the actuator-arm released from the pawl 150 and turned down, thereby locking the bolt in its full forward position, thus making the gun ready for firing.

In Figs. 1 and 2, a short portion of the rearward part, 52, of the tip, 53, of the gun-stock is shown. On the end of this tip is usually placed the escutcheon-plate 54, which forms a guide for the insertion of the magazine, and whose rearward ends fit into notches in the forward face of the guard-block 59. Through the forward end of said escutcheon passes a screw, 60, which extends through said tip 53 and screws into the forward end of the receiver, as shown in Figs. 3 and 4. The breech-piece, 61, of the stock is fitted to the under side of the receiver and between the receiver and the strap, 62, of the guard-block; the forward end of the breech-piece being fitted within the side-walls, 63 and 64, of said block. The screw 65 passes through the rearward end of the receiver through the stock, and screws into the rearward end of said strap 62, as will be understood from comparison of the figures of drawings in which said parts are shown. The trigger guard 80 joins at its front end the front portion of the guard-block, and at its rearward end joins the strap, 62, thereof; the guard being generally and preferably made into

gral with the other portions of the guard-block. The mortise 81 of the guard-block is extended backward into the strap 62 thereof to receive the trigger 82, which is pivoted at 83, and whose upper end, 84, connects with the arm 85 of the sear 39, which is pivoted at 86 in ears, as 88, formed on the guard-block. The stop 89 on the sear limits the upward movement of the sear by striking against the stop-face, 90, of the framework. The rearward end, 38, of the sear is shaped to engage the lower end, 27, of the firing-pin-arm 26 when this is moved forward and during the closing movement of the bolt. These several features are more fully described, and in part are claimed, in my prior application, Serial No. 443,481, filed August 19, 1892.

By means of the described construction and organization of the mechanism, the gunner may hold back the firing-pin, when it is not desired to fire the loaded arm, by first forcibly drawing back for a little distance the bolt-actuator, (but not sufficiently far to unlock the bolt,) the firing-pin being, in this case, stopped in its course by the striking of its arm 26 against the firing-pin stop, 112, on the rearward side of the bolt-locker arm 33.

For retracting the sear, the sear-spring 94 is inserted thereunder, having its end 95 working in a notch, 96, formed in the sear-arm 85, as shown. Said spring also is shown having its opposite end seated in a notch, 97, in the frame-work. The forward end, 98, of said spring is broadened so as to stand immediately under the flanges, 88—88, in which the sear is pivoted, for the purpose of normally preventing any upward movement of said spring.

The general operation of the fire-arm is as follows: The gun having been fired, and the bolt remaining closed as illustrated by dotted lines in Fig. 4, the gunner, seizing the handle, 93, of the bolt-actuator, draws backward thereon to retract the bolt-mechanism throughout its full stroke to the position shown by dotted lines in Fig. 3. The first movement of the actuator F is to turn upon its axis from its said position in Fig. 4 to its position in Fig. 3. This movement of the actuator carries the actuator-arm 33 backward against the firing-pin-arm 26, and retracts the firing-pin to its position shown by dotted lines in Fig. 3. At this time the catch, 153, of the actuator-locking hook 150 is, by the action of the main-spring, brought under the "catch-arm," 33, of the actuator, thereby locking said actuator in its retracted position; this position of the bolt-mechanism having been reached, the further drawing back upon the actuator-handle 93 slides the bolt backward to its retracted position shown by dotted lines in Fig. 3. The operator next pushes forward the bolt by a steady pressure upon the actuator-lever 46, and drives the cartridge forward into place in the gun-chamber. When the bolt has gone forward the major part of its stroke, the lower end of the firing-pin-arm 26 engages the sear

and is thereby held retracted during the remaining forward movement of the bolt-mechanism; and on the continued forward movement of the bolt, the lower end of the pawl, or actuator-locker, 150 strikes the stop 154 on the receiver; which stop operates to disengage said hook from the actuator-arm. In Fig. 3 the hook 153 is shown nearly, but not quite, disengaged from said arm, the bolt being in its corresponding position, nearly, but not fully, forward. The bolt-mechanism having been pushed fully forward, and the actuator-arm released from hook 153, the continued pressure upon the actuator-handle now turns, or shifts, said actuator from the position shown in Fig. 3 to that shown in Fig. 4, thereby locking the bolt in position for firing. The gun now being loaded and locked ready for firing, the gunner has only to take aim, and, when ready to fire, pull the trigger; this, through the connections described, retracts the sear from its engagement with the firing-pin, which is then thrown forward by the main-spring 32 to strike with its point, 107, the cap of the cartridge and thus fire the same. The gun having been fired, is then ready for a repetition of the loading operation, which is again performed as hereinbefore described.

It is to be understood that in the combinations herein claimed the particular construction of the bolt-locking actuator is not essential, and that the form of actuator shown and described in my aforesaid prior application, Serial No. 443,481, may be substituted for the one herein shown and described.

Those features of the invention herein shown and described but not claimed herein (being of my invention and not pertaining to the particular construction of the actuator F, nor to the arrangement of the same with the bolt E) constitute in part the subject-matter of a prior application, Serial No. 443,481, filed August 19, 1892, to which reference may be had.

Having thus described my invention, I claim—

1. In a bolt-gun, the combination with a receiver adapted for carrying a sliding bolt, of a bolt fitted to slide in said receiver, and having a longitudinal bore to receive a firing-pin; a bolt-locking-actuator carried by the bolt and adapted for engaging the receiver for locking the bolt with relation thereto, and having a transverse recess in alignment with the bore of the bolt, a firing-pin carried by the bolt and extending through the recess of the bolt-locking-actuator and having a depending-arm in the rear of said actuator, and an independent actuator-locker pivoted intermediate to the rear end of said firing-pin and the actuator, and adapted for engagement with said actuator and firing-pin, substantially as and for the purpose described.

2. In a bolt-gun, the combination with a receiver adapted for carrying a sliding bolt, of a sliding bolt longitudinally bored to receive

a firing-pin, a bolt-locking-actuator transversely journaled in said bolt and adapted for engagement with the receiver to lock the bolt with relation thereto, and having a transverse firing-pin-receiving-recess, a firing-pin projected through said recess at both sides of the actuator and having a depending-arm at its rear end, and an independent actuator-locker pivotally supported intermediate to the rear end of the firing-pin and the actuator, and adapted for engagement with said actuator to lock the same in its retracted position and adapted for engagement with the firing-pin, substantially as and for the purpose described.

3. In a bolt-gun, the combination with a receiver adapted for carrying a sliding bolt, and with the longitudinally bored bolt sliding in said receiver, of the bolt-locking-actuator carried by the bolt, the firing-pin adapted for reciprocation in the bore of the bolt and extending at each side of said actuator, a sleeve loosely supported upon said firing-pin, the firing-spring intermediate to said sleeve and to a shoulder formed upon the forward end of said firing-pin, and a pivoted actuator-locker bearing at its upper free end against said firing-pin sleeve and having a hook at its lower end adapted to engage and lock the actuator, in its retracted position, substantially as described.

4. In a bolt-gun, the combination with the receiver and with the longitudinally bored bolt carried thereby, of the bolt-locking-actuator journaled in said bolt having a transverse recess in alignment with the bore of the bolt, a firing-pin carried in the bolt and extending through said actuator and having a depending firing-pin-arm at its rear end, an actuator-locker pivoted intermediate to its ends in the rear of the actuator and adapted for engagement with said actuator to lock the same in its retracted position, a firing-spring carried by the firing-pin, and a firing-pin sleeve loosely supported upon the firing-pin intermediate to said spring and actuator-locker and bearing against the upper end of said actuator-locker to throw the lower end thereof into engagement with the actuator, substantially as described.

5. In a bolt-gun, the combination with a re-

ceiver adapted for receiving a sliding bolt, and with the longitudinally bored bolt sliding in said receiver, of a transversely recessed bolt-actuator journaled in the bolt and having a depending catch-arm for engagement with an actuator-locker, a firing-pin movably contained in the longitudinal bore of the bolt and extending through the recess of the bolt-actuator, and having a depending-arm, a sear adapted for engagement with said firing-pin-arm to hold the same in a retracted position, an actuator-locker pivoted intermediate to its ends in the rear of the actuator and having a catch to engage the arm of, and lock the actuator in its retracted position, substantially as described, and a spring-actuated sleeve in engagement with the upper end of the actuator-locker to retain the same normally in a locking position, substantially as described.

6. In a bolt-gun, the combination with a receiver adapted for carrying a sliding bolt, and with the longitudinally bored bolt sliding in said receiver, of a cylindrical bolt-actuator-locker journaled horizontally and transversely in the bolt and having a firing-pin-groove formed transversely therein, as shown, in alignment with the bore of the bolt, a firing-pin loosely contained in said bolt and extending through the groove in the bolt-actuator, and having a shoulder or projection at its forward end and a depending arm at its opposite end in the rear of the bolt-actuator, a spring-actuated sleeve and firing-spring intermediate to said shoulder and firing-pin-arm, an actuator-locker pivoted in the rear of the bolt-actuator and bearing at its upper end against the spring-actuated sleeve, and adapted, at its lower end, for engagement with the bolt-actuator to lock the same in a retracted position, a pivoted spring-actuated sear adapted for engagement with the firing-pin-arm to hold the same in a retracted position, and means, substantially as described, for disengaging said sear from the actuator-arm, all substantially as and for the purpose set forth.

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