(No Model.) 2 Sheets—Sheet 1.

L. H. SMITH.

BREECH LOADING FIRE ARM.

No. 399,214. Patented Mar. 5, 1889.

Fig I.

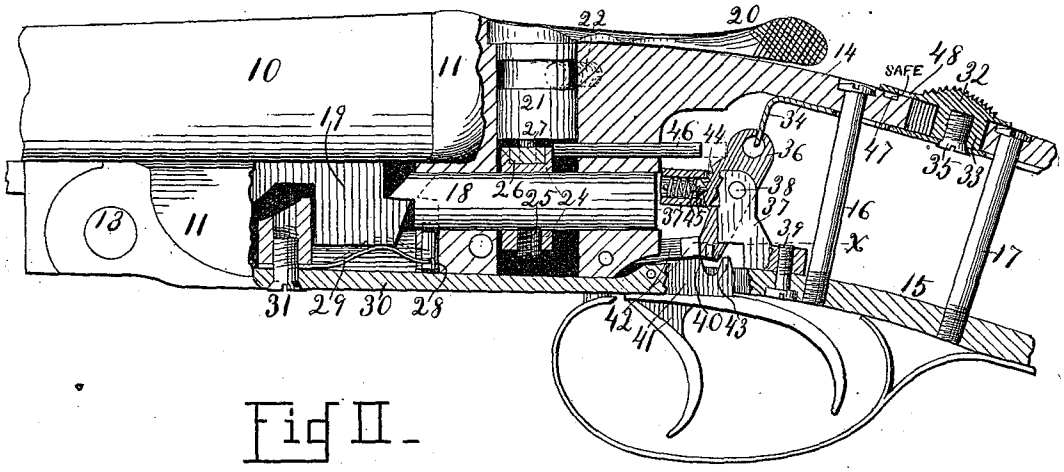


Fig II.

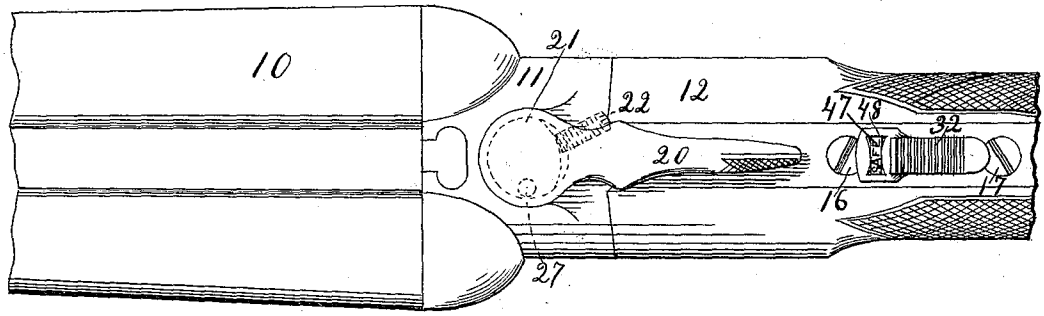


Fig III.

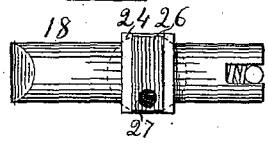
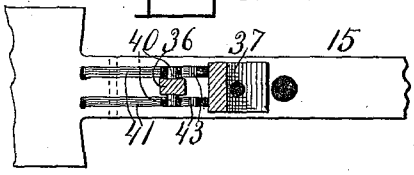


Fig IV.



Witnesses,
S. E. Stevens.
P. E. Stevens.

Inventor,
Leroy H. Smith.
By his Attorney. W. E. Stevens.

(No Model.) 2 Sheets—Sheet 2.

L. H. SMITH.

BREECH LOADING FIRE ARM.

No. 399,214. Patented Mar. 5, 1889.

Fig V.

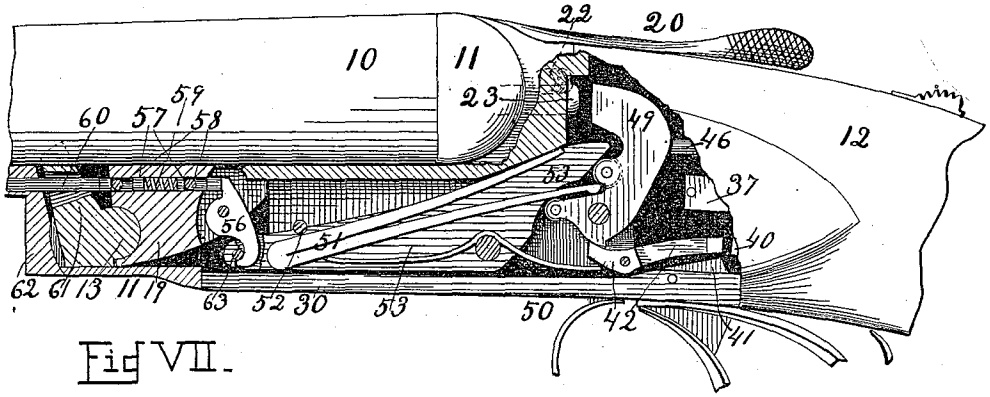


Fig VII.

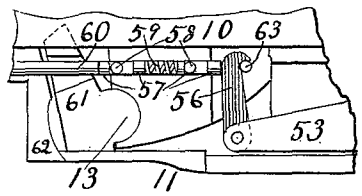
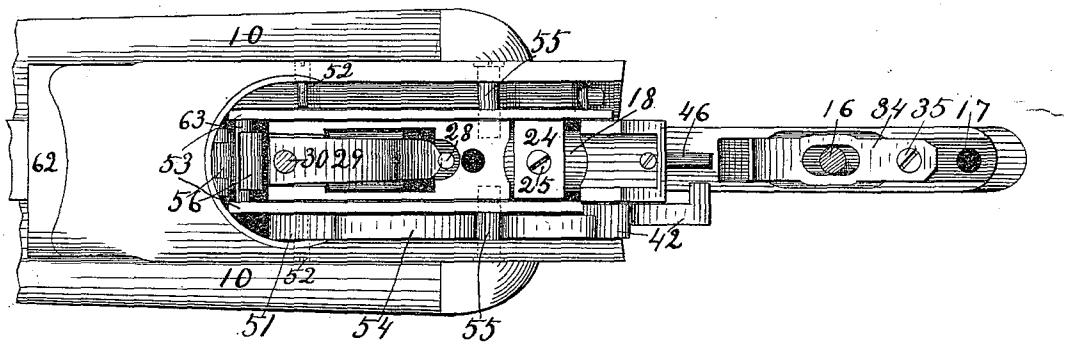


Fig VI.



Witnesses.

S. E. E. Stevens.

P. E. Stevens.

Inventor.

Leroy H. Smith.

By his Attorney W. E. Stevens.

UNITED STATES PATENT OFFICE.

LEROY H. SMITH, OF LISLE, ASSIGNOR TO THE ITHACA GUN COMPANY, OF ITHACA, NEW YORK.

BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 399,214, dated March 5, 1889.

Application filed November 3, 1888. Serial No. 289,920. (No model.)

To all whom it may concern:

Be it known that I, LEROY H. SMITH, a citizen of the United States, residing at Lisle, in the county of Broome and State of New York, have invented certain new and useful Improvements in Breech-Loading Guns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to breech-loading hammerless double guns, and its object is, first, to provide mechanical and durable means for withdrawing the locking-bolt; second, to provide means for distinctly showing the "safe" mark, so that the position of the hammers may be readily discovered even in a dim light, and at the same time to enable the manufacturer of the gun to easily stamp the said mark upon guns made principally of hardened metal; third, to provide a safety device whose operation is positively reliable and simple and which may be readily attached to or removed from the gun; fourth, to provide means for securing the locking-bolt in a retracted position when the gun is in the breakdown condition for loading and for releasing the said locking-bolt by the action of closing the gun, whereby the resistance of the locking-bolt to closing the gun is avoided and the operation is made very much easier; fifth, to provide hidden means for securing the locking-bolt lever, so that the said lever cannot be either carelessly or accidentally loosened and removed or lost from the gun; sixth, to provide means for securing the mainspring and sear-springs in the frame, and other minor objects, as will be more fully hereinafter described, and definitely pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure I is a side elevation of a portion of a breech-loading double gun according to my invention, portions being broken away to expose interior parts and some portions shown in longitudinal vertical section. Fig. II is a top view of the same. Fig. III is a plan or top view of the locking-bolt and collar. Fig. IV is a top view of a portion of the under tang, showing certain parts in horizontal section at line *x*, Fig. I. Fig. V is a side elevation similar to Fig. I, but differently broken away to expose other interior parts. Fig. VI is an under side view of a portion of the same gun with its under tang and one lock removed. Fig. VII shows a modification of the cocking-lever hook action.

10 represents the barrels pivoted at 13 to the frame 11, to swing up and down for loading in the usual manner of breakdown guns, and 12 is the wooden stock, secured, as usual, to the frame 11 by means of the two tangs 14 and 15 of the frame and the screws 16 17.

18 is the locking-bolt, constantly pressed forward by a concealed spring to engage the hook-shaped lug 19 of the barrels 10.

20 is the locking-bolt lever, made integral with its shaft 21, which is cylindrical and journaled vertically in the frame 11.

22 is a screw threaded into the frame in the angle formed by the juncture of the tang 14 with the body of the frame, and its end passes through the frame into a circumferential groove in the shaft 21, thus preventing the shaft from being drawn up out of its bearing. The screw 22 is covered and concealed by the stock 12 and kept from being worked out by the stock abutting against its head. It cannot be seen nor removed without first removing the stock. Furthermore, if this screw were threaded directly through the side of the frame it would either interfere with the firing-pin 23 (see Fig. V) or it would enter a curved portion of the frame at a slant difficult to drill and difficult to make with a good finish externally.

24 is a square collar secured upon the locking-bolt 18 by a set-screw, 25, and having in its upper face a transverse groove in which a shoe, 26, is fitted to slide.

27 is a crank-pin projecting down from the end of the shaft 21 and journaled in the shoe 26. When the lever 20 is swung to the right, it acts through the crank-pin 27, the shoe 26, and the collar 24 to withdraw the bolt 18, thus unlocking the barrels, so that they may be broken down for loading. The shoe 26 permits the transverse movement of the crank-pin,

while it maintains a true mechanical bearing in the collar 24, thus preventing the lever 20 from looseness or rattling. The bolt 18 engages the lug 19 at a slant, which gives it a drawing hold that insures tightness and at the same time compensates for wear by pushing farther and farther forward. The set-screw 25 enables the collar to be adjusted upon and rigidly secured to the bolt at such a point as will hold the lever in line on the tang when the bolt is firmly set in the lug-hook.

28 is a pin fitted to slide vertically in the frame, and it is notched in its front side to receive the end of a spring, 29, whereby it is constantly pressed upward. This spring is rigidly held at its shank end to the frame 11 by the lower tang-plate, 30, and the screw 31, which latter passes through both plate and spring and is threaded in the frame. The spring is curved up midway to press against the lug 19. When the bolt 18 is withdrawn and the barrels are tilted, the spring 29 presses the pin 28 up in front of the bolt 18, as shown in dotted lines, Fig. I, and holds it retracted against its spring, even though the lever 20 be set free. By this bolt-retaining device the bolt is held from obstructing the free return of the barrels to place; but the act of thus returning the barrels presses the lug 19 upon the spring 29 and draws down the pin 28, permitting the bolt 18 to spring into engagement with the lug 19. This construction not only insures the easy closing of the gun, but it prevents the wear on the lug 19 and bolt 18 consequent to the usual wedging back of the bolt by the descending lug.

32 is the knob of the safety device, fitted to slide on top of the tang 14, and provided with a lug, 33, which extends down through a slot in the tang, where a reach, 34, is rigidly secured to it by a screw, 35. The reach 34 is spring-tempered, and, bearing its forward end up against the tang, it holds the knob 32 by friction at any point wherever the knob is set, the lug 33 being of sufficient vertical height to permit the rear end of the spring to slide to and fro without binding on the tang. This spring also keeps the knob from rattling. This reach is fitted to slide in a slot in the lower side of the tang, and is bent downward at its forward end to engage the stop-lever 36, which is pivoted at 38 in a block, 37, that is secured rigidly to the lower tang, 15, by a screw, 39. The lower end of the lever 36 is provided with studs 40, projecting from its sides across the path of the triggers 41.

42 represents the sears, on which the triggers act, as usual, to set free the hammers in firing. Forward-and-backward movement is given to the studs 40 by means of the sliding knob 32, acting through the reach 34 upon the horns of the lever 36. When in its middle position, the stud 40 will be directly over the knob 43 of the trigger and prevent the trigger being pulled, so that the gun cannot then be discharged; but when the stud 40 is either in its forward or rear position the knob 43 may pass up by it and the gun may be discharged.

To maintain the stud 40 in any one of the positions named, an arc of teeth, 44, is provided on the side of lever 36, forming between them three notches to be engaged by a spring-catch, 45, arranged in the block 37. When the lever is forcibly pressed either way, the catch is wedged out of the teeth; but before being thus thrown out the catch will hold the lever in any one of its positions with sufficient firmness to prevent its being jarred out or otherwise accidentally displaced.

46 is a push-pin fitted to slide freely in the frame 11 in line between the collar 24 and the lever 36. Retracting the bolt 18 to unlock and open the gun pushes the pin 46 back, thereby setting the lower end of lever 36 forward with its studs 40 out of line with the trigger-knob 43. This is necessary to be done, because the act of opening this gun cocks the concealed hammers, and when the gun is closed again it should be ready to be fired. By thus communicating motion through the pin 46 and collar 24 to the bolt 18 the safety device always bears a fixed relation to the bolt movement, even though the bolt be set forward in the collar to compensate for wear.

At 47 the word "Safe" is stamped into the top of the tang to be seen through a window, 48, in the slide-knob 32 at the time when the studs 40 are over the knobs 43 of the triggers. As the triggers cannot then be pulled, the gun cannot be fired; therefore the sign "Safe" is then exposed. If the knob 32 be either forward or back of the aforesaid position, the triggers are free to be pulled to fire the gun, and the word "Safe" is then covered by the knob.

In order that the condition of the safety device may be seen in a dim light, a piece of light-colored metal, 47—such as gold, silver, or brass—is set permanently into the tang to receive the stamped letters "Safe." The knob 32 is a dead dark color from case-hardening the steel or iron of which it is made, so that any shiny or light metal, 47, of about the size of the window 48, would as readily indicate the safety of the gun when seen through the window as though the word "Safe" could be read. Furthermore, the light-colored metal 47 is also very soft in comparison with the steel of the tang surrounding it and causes a great saving of stamping-dies used to imprint the word "Safe" therein.

49 represents one hammer having a forward arm provided with an anti-friction roller, 50, which is engaged by the lower arm of the mainspring 51. This spring is kept in place by means of the lower tang-plate, 30, and a screw, 52, which passes through the side of the frame and projects across the spring-cavity, but not across the path of the cocking-lever 53. The sear-spring 54 rests its forward end up against the mainspring and is bent midway into a notch to engage the screw 55 and bears at its rear end upon the sear 42.

This makes a very effective and cheap spring, and it is held in place by parts required for other purposes, the screw 55 serving also as the pivot or fulcrum of the cocking-lever 53. This lever and the hook 56, which removably engages it with the barrels, are claimed in a former patent, No. 381,088, to me, and its operation need not be here described; but in Figs. V and VII I have shown means whereby the fore-arm when in place keeps the hook engaged with the levers or with the barrels, according as the hook is adapted to engage the one or the other.

57 represents a sliding pin, here shown as made in two sections, each slotted or cut away at one side to engage screws 58 in the lug 19 of the barrels, and 59 is a spring acting between them.

60 is a stud fixed in the fore-end 62 to engage the end of the forward section of the pin 57. When the gun is closed, the stud 60 presses the pin 57 back against the upper end of the hook 56 and forces it into engagement with the cross-bar 63, and the spring 59 permits such freedom of motion as may be required of the hook to keep it engaged when in service. When the fore-end 62 is removed, the pin 57 is at liberty to slide freely with its spring 59 either way, and the hook 56 is no longer held into engagement, and it will be removed freely from the lever 53 by the act of removing the barrels from the frame, as described in the aforesaid patent.

61 represents the common cartridge-retractor finger secured to the frame 11, and it requires to be bored through to permit the passage of the stud 60. In the modification shown in Fig. VII the hook is permanently hung at its lower end to the levers, and the upper end is free to be unhooked from the barrels when not pressed on by the spring-pin 57.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

1. The combination of a gun-frame having a narrow tang forming side angles therewith, a stock fitted to the said frame and tang to fill the said angles, a bolt-retracting lever having a shaft vertically journaled in the frame and circumferentially grooved, and a screw threaded through the said frame in one of the said angles and adapted to engage one end with the said groove in the shaft when its other end is flush in the said corner, substantially as shown and described, whereby the stock will both conceal the screw and prevent its being worked out of place.

2. The combination of a gun-frame, a locking-bolt fitted to slide therein, a collar transversely grooved in its upper side and adjustably secured upon the said bolt, a lever having a shaft vertically journaled in the frame above the said collar and provided with a crank-pin projecting down from the shaft, and a shoe fitted to slide in the said groove in the collar and perforated to receive the said crank-pin, substantially as shown and described.

3. The combination of a gun-frame, a barrel pivoted to the forward end thereof and provided with a hook-lug projecting downward, a locking-bolt fitted to slide in the frame to engage the said hook and provided with a forward-impelling spring, a pin fitted to slide in the frame and into the path of the said bolt in front of the bolt when retracted, a spring adapted to impel the pin into the path of the bolt, and means, substantially as described, for connecting the said pin with the said hook-lug, whereby the descent of the lug retracts the pin, as and for the purpose specified.

4. The combination of a gun-frame, a barrel pivoted therein and provided with a downwardly-projecting lug, a locking-bolt fitted to slide in the frame to engage the said hook, a pin fitted to slide in the frame forward of the retracted bolt and notched in one side, and a spring adapted to engage the said notch and secured at its shank to the frame and curved upward to be engaged by the said hook-lug when the barrels are closed down, substantially as shown and described.

5. The combination of the gun-frame 11, the barrels provided with the hook-lug 19, the locking-bolt 18, the pin 28, fitted to slide across in front of the bolt and notched in one side, the spring 29, fitted at one end to engage the notch in pin 28 and perforated for a screw at the other end and curved upward midway to be engaged by lug 19 when closed down, the plate 30, fitted to the frame, and the screw 31, binding the plate, the spring, and the frame together, substantially as shown and described.

6. The combination of a gun locking-bolt, a pin fitted to move transversely thereto in the frame and adapted to spring in front of the locking-bolt in its retracted position, and connections comprising a lug, 19, projecting down from the barrel, and an arm, 29, between the pin and barrel, substantially as described, whereby, first, the bolt is retained when retracted, and, second, the retaining-pin is withdrawn and the bolt is set free by closing the gun, as described.

7. The combination of a gun-frame, 11, a knob, 32, fitted to slide upon the upper tang thereof, the reach 34 beneath the said tang and secured to the said knob to slide therewith and having a downward-bent forward end, a stop-lever, 36, pivoted in a fixture of the frame and provided with horns at its upper end to engage the reach 34 and with studs 40, projecting from its sides at its lower end, and the triggers 41, provided each with a knob, 43, having a cavity in front of it and adapted to pass up either before or behind the said studs 40, substantially as shown and described, whereby the positions may be given to the safety device, as set forth.

8. The combination of gun-triggers provided each with a knob, 43, a stop-lever, 36, having studs 40 in the path of the triggers and pro-

vided with teeth or stop-notches 44, and a spring-catch, 45, arranged to engage the said notches, substantially as shown and described.

9. The combination of the removable lower tang, 15, the block 37, secured thereon by means of a screw, 39, the stop-lever 36, pivoted in the block and having notches 44, and the spring-catch 45, fitted in the removable block 37 and adapted to engage the said notches, substantially as shown and described.

10. The combination of the gun-frame 11, the barrel-locking bolt 18, fitted to slide longitudinally therein, the collar 24, adjustably secured upon the said bolt, the stop-lever 36, pivoted in a fixture of the frame, the push-pin 46, fitted to slide in the frame between the said collar and stop-lever, and trigger mechanism connected with the stop-lever, substantially as shown and described.

11. The combination of a gun-locking bolt fitted to slide longitudinally in the gun-frame, an adjustable collar on the bolt, a safety device, substantially as described, and a push-pin, 46, or similar connection between the said device and collar, whereby a certain amount of rearward motion of the bolt communicates to the safety device a certain amount of motion whether the bolt be set forward or backward in the collar.

12. The combination of a gun-tang, the knob of a safety device, substantially as described, fitted to slide thereon, and having a window through it, and a piece of metal, of different color from the said knob and about the size and form of the said window, secured in the said tang to register with the window when the latter is in one of its fixed positions, substantially as shown and described.

13. The combination of a gun-frame, 11, a pair of cocking-levers, 53, pivoted therein, mainsprings 51, located in the frame beside the said levers and in the same slots therewith, hammers connected with both the levers and springs, and screws 52, passing through the side of the frame and across the path of the mainsprings, but not crossing the path of the cocking-levers, as shown and described.

14. The combination of the mainspring 51, the sear 42, the screw 55, and the sear-spring 54, curved upward midway forming a notch to engage the said screw and resting its ends respectively on the mainspring and on the sear, as shown and described.

15. The combination of the levers 53, the lug 19, the hook 56, removably connecting the said levers and lug, the sectional pin 57, and the spring 58, fitted to slide in the lug in line of the hook 56, the removable fore-end 62, and the stud 60, projecting therefrom in line of the pin 57, substantially as shown and described.

16. The combination of gun-cocking levers 53, a removable hook, 56, engaging the same with the gun-barrels, a stud projecting from the fore-end of the gun, and a push-pin or other means, substantially as described, for connecting the stud with the said hook, whereby the hook is held engaged when the fore-end is in position and is liberated when the fore-end is removed.

In testimony whereof I affix my signature in presence of two witnesses.

LEROY H. SMITH.

Witnesses:
P. G. ELLSWORTH,
FRANK M. LEVY.