UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. **184,683**, dated November 21, 1876; application filed September 22, 1876.

To all whom it may concern:

Be it known that I, THOMAS WOODWARD, of Birmingham, in the county of Warwick, England, gun-manufacturer, have invented new and useful Improvements in Breech-Loading Small-Arms, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

My invention has reference to breech-loading small-arms of the kind commonly called "drop-down guns;" and consists, principally, of the combination or arrangement of parts, hereinafter described, for effecting the cocking and discharge of the gun. My said invention consists, further, of a simple safety apparatus, for preventing the accidental discharge of the fire-arm.

The mechanism for cocking and discharging breech-loading small-arms is constructed as follows: The firing of the gun is effected by means of a striker or sliding bolt contained in a tubular barrel or case, a coiled spring surrounding the striker urging forward the said striker, when it is at liberty to move, with the required momentum for discharging the gun. The said coiled spring bears at its rear end against the rear closed end of the tubular case, and its front end engages behind a collar or shoulder on the front end of the striker. In a slot in the base of the barrel or case a sear-lever is jointed, one arm of the said lever being external to the case, and the other arm being within the case, its end working in a slot in the under side of the case; or the whole of the sear-lever may be external to the case. The inner end of this sear-lever is hooked, and engages with a catch on the striker when the latter is drawn back, and thereby holds the said striker in a cocked position. The said sear-lever is pressed upward, to make its hooked end engage with the catch on the striker, by means of a light spring. The rear end of the said sear-lever is situated immediately over the trigger. The hand-lever, by the depression of which the barrels are unlocked for loading, carries an arm, the top of which is situated in front of the shoulder or catch on the striker. When the hand-lever is depressed to unlock the barrels, the said arm pushes back the striker, thereby compressing the coiled spring. The hook end of the sear-lever is, at the same time, made by its spring to engage with the catch on the striker. After the barrels have been loaded and locked by the raising of the hand-lever, the striker is left in its cocked position, the return of the striker, on the raising of the hand-lever, being prevented in consequence of the hook of the sear-lever retaining it. In order to discharge the gun it is only necessary to press upon the trigger in the usual manner, when the sear-lever is disengaged from the striker, which is urged forward by the coiled spring, and discharges the gun. The barrel or case and striker may be inserted in their places from the face of the break-off, and a cross steel slide be passed into a dovetail or other groove in the said face of the break-off; or the barrel or case and striker may be inserted from the side of the gun. An indicator, acted upon by the cocking mechanism, shows whether the gun is cocked or not.

A safety apparatus constructed according to my invention consists of a vertical pin with a thumb-plate at top. The lower end of this pin is flat, and is over the sear-lever or trigger. When the pin is turned in one direction its lower end crosses the rear end of the sear-lever or top of the trigger, and prevents its rising, and the gun cannot be discharged. When turned into another position it does not interfere with the discharge of the gun.

Having explained the nature of my invention, I will proceed to describe, with reference to the accompanying drawings, the manner in which the same is to be performed.

Figure 1 represents, in side elevation, the body of a double-barrel breech-loading drop-down gun, containing cocking and discharging mechanism, indicating mechanism, and a safety apparatus constructed according to my invention. Figs. 2 and 3 are longitudinal vertical sections of the same, Fig. 2 representing the cocking and discharging mechanism in its cocked or withdrawn position, and Fig. 3 the same in its discharged position. In Fig. 2 the section is taken through the middle of the body, and in Fig. 3 the section is taken through one of the tubular cases containing the striker or discharging-bolt of the gun. Fig. 4 represents a plan of the same, and Fig.

5 the same partly in horizontal section, the mechanism being in its cocked position. Fig. 6 is a cross-section of the same, and Fig. 7 is an elevation of the body, taken at the back face of the break-off, and exhibits the recessed parts in which the cocking and discharging mechanism is situated. Fig. 8 is a modification of this part of my invention.

The same letters of reference indicate the same parts in Figs. 1 to 8, both inclusive, of the accompanying drawings.

a a are the tubular barrels or cases, in which the strikers or sliding bolts *b b*, by which the gun is discharged, are contained, a strong coiled spring, *c*, around each striker urging it forward when at liberty to move, the acting end or nose of the striker passing through a hole in the face of the break-off to act upon the cartridge. The coiled spring *c* of the striker bears at one end against the closed rear end of the tubular case *a*, and at the other end against a shoulder near the front end of the striker, as seen in the sections, Figs. 2, 3, and 5. Jointed at d^2 to the inner side of each tubular case *a* is a sear-lever, *d* d^1. The inner end *d* of each sear-lever is hooked, and the rear end d^1 is situated immediately over the shoulder *e* on the trigger *f*. A light spring, *g*, (best seen in Fig. 6,) presses upon the rear end d^1 of the sear-lever *d* d^1, and raises its opposite or hooked end *d*. At the front end of each striker *b*, and on the side thereof, is a catch or projection, *h*, working in a slot, a^2, in the inner side of the tubular case *a*. These catches *h* have the functions hereinafter pointed out, and their upper and lower faces have the cam-like or curved figures shown in the drawing. *i* i^2 is the hand-lever by which the barrels of the gun are locked down and unlocked, and the cocking mechanism brought into action. The upper arm *i* of the said hand-lever passes through and works the sliding bolt *k*, and the extreme upper end of the said arm *i* is situated at the front of the two catches or projections *h h* on the strikers *b b*. (See the horizontal section, Fig. 5.)

When the gun has been discharged, as illustrated in Fig. 3, the catches *h h* are nearly in contact with the top of the arm *i* of the hand-lever; and by depressing the handle or thumb-plate i^2 of the said lever, as indicated in dotted lines in Fig. 2, the short arm *i* acting against the projections or catches *h h* on the strikers *b*, pushes back the said strikers into the position represented in Figs. 1, 2, and 5, and compresses the coiled springs *c c* around the said strikers. As the said strikers *b b* are pushed back, the curved bottoms or cam-like faces of the catches *h h* bear against the curved noses of the hooked ends *d d* of the sear-levers *d* d^1 *d* d^1, and depress the said hooked ends; and when the strikers have been pushed back or withdrawn to their full extent, the hooks of the said sear-levers are pressed upward by the light springs *g g* at their rear ends, and made to engage with the catches *h h* of the strikers, as illustrated in Figs. 1, 2, and 5, and the strikers are thereby held in their cocked positions. The gun having been reloaded, the hand-lever *i* i^2 is restored to its normal position, so as to shoot the bolt *k*, when the barrels are locked down, and the gun is ready for discharge, the strikers *b b* being left in their cocked positions by the retaining sear-levers *d* d^1 *d* d^1. To discharge the gun, each trigger *f* is pressed in the usual manner.

When the trigger *f* is pressed its projecting rear part or shoulder *e* raises the rear end d^1 of the sear-lever, under which it is situated, and depresses the hooked end *d*. The said hooked end is thereby liberated from the catch or projection *h* of the striker *b*, which striker is urged forward by the coiled spring *c*, and discharges the gun, the several parts now occupying the respective positions represented in Fig. 3.

The tubular barrels or cases *a a*, containing the strikers *b b*, and carrying the sear-levers *d* d^1, are inserted in their places in the body, from the face of the break-off *p*, through an opening or groove in the said break-off, and are firmly held in their places by a cross steel slide, *q*, passed into the said opening or groove in the face of the break-off, as represented in the several figures of the drawing; or each tubular barrel or case carrying the striker and sear-lever may be secured to the inner side of a plate, and the said plate be fixed to the side of the body. This modification is illustrated in front and side elevation in Fig. 8, where the plate carrying the tubular barrel or case and sear-lever is marked *r*, the said plate *r* being fixed to the side of the body by screws.

In order to indicate whether the barrels of the gun are either loaded or have been discharged, I combine with the cocking mechanism indicators, (marked *l l*.) These indicators, when the barrels are loaded and the strikers are in their cocked position, project above the tang *m* of the break-off, as shown in Figs. 1, 2, and 6; but when the barrels have been discharged the said indicators *l l* are flush with the said tang, as shown in Fig. 3. The said indicators work in tubular cases l^2 l^2, and when unsupported are pressed down by coiled springs bearing against shoulders on the said indicators. The bottoms of the said indicators are rounded. When the strikers *b b* are pushed back for cocking them by the action of the hand-lever *i* i^2, the curved upper faces of the catches *h h* of the said strikers act against the rounded ends of the indicators *l l*, and raise the said indicators into the position represented in Figs. 1, 2, 4, and 6, and maintain them in that position so long as the gun is not discharged. On the discharge of one of the barrels, the striker of that barrel being urged forward by its spring, its catch or projection *h* is removed from under the indicator, which is pressed down by its coiled spring, and indicates that the barrel in a line with the said indicator has been discharged. The same action takes place when the other barrel is discharged.

The safety apparatus of the gun consists of a jointed pin or lever, n n^2, turning on the center n^3. The thumb-plate end n, when the safety apparatus is not in action, lies on the tang m, as illustrated in Figs. 1 and 3, its acting inner arm n^2 occupying a recess in the said tang. When it is required to prevent the discharge of the gun, the safety apparatus n n^2 is lifted into the position represented in Fig. 2. The lower arm n^2 is thereby made to cross the tops of the prolonged parts or shoulders e of the triggers f, and prevent the rising of the said triggers and the discharge of the gun; or the lower arm n^2 of the safety apparatus may be made to cross the rear ends of the sear-levers d d^1 with like effect. A spring, as represented, firmly holds the safety apparatus in its acting and non-acting positions.

Although I have only represented my invention in connection with a double-barrel gun, yet my invention is equally applicable to single-barrel guns.

Having now described the nature of my invention, and the manner in which the same is to be performed, I wish it to be understood that I do not limit myself to the precise details herein described and illustrated, as the same may be varied without departing from the nature of my invention; but

I claim as my invention of improvements in breech-loading small-arms—

1. The combination of the tubular barrel or case a, (or barrels or cases,) striker b, (urged forward by a coiled spring, and provided with a catch or projecting part, h,) and hooked sear-lever d d^1, with the hand-lever i i^2, by which the barrel or barrels is or are locked and unlocked, the said parts being constructed, and arranged, and working substantially as described and illustrated.

2. The combination, with the sear-lever or trigger, operating substantially as herein shown and described, of the pivoted safety-pin, provided with a thumb-plate to be worked from without the lock, substantially as herein shown and set forth.

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