(No Model.)

2 Sheets—Sheet 1.

A. E. WHITMORE.

BREECH LOADING FIRE ARM.

No. 386,174. Patented July 17, 1888.

Fig. 1.

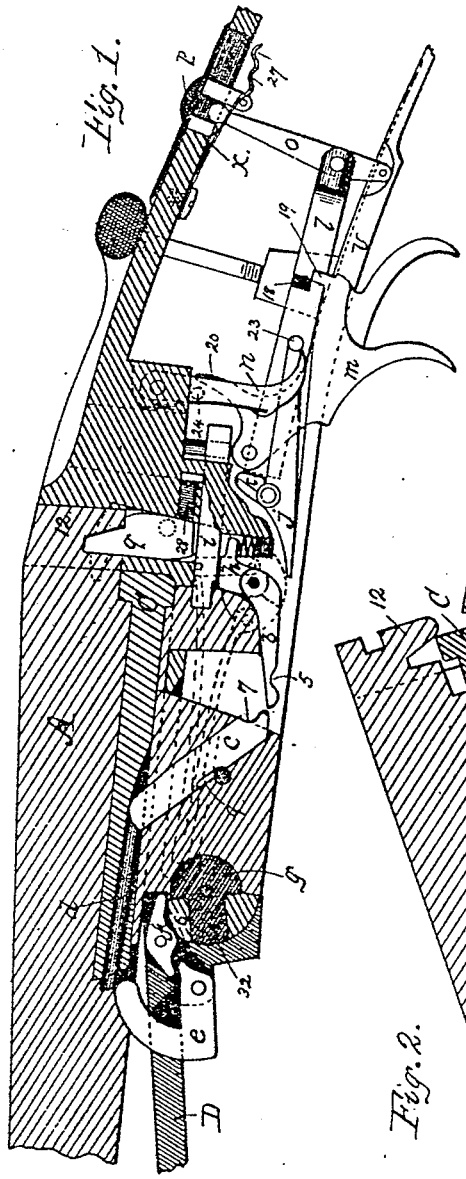
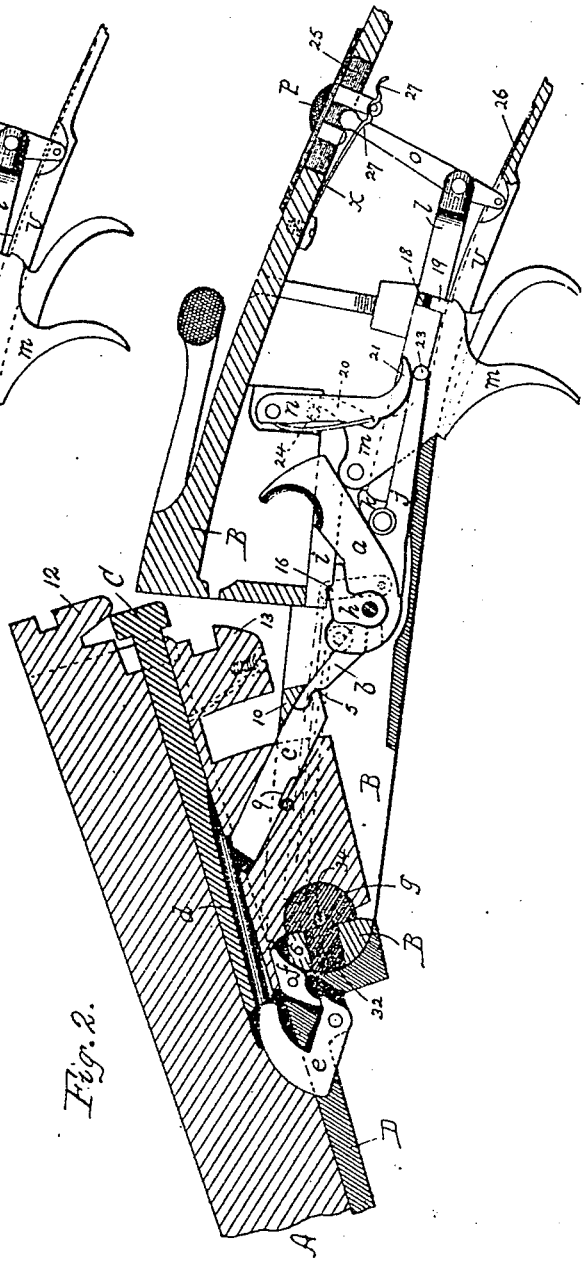


Fig. 2.



Witnesses.
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Geo. H. Fox.

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by H. G. Ludy Atty.

(No Model.)

2 Sheets—Sheet 2

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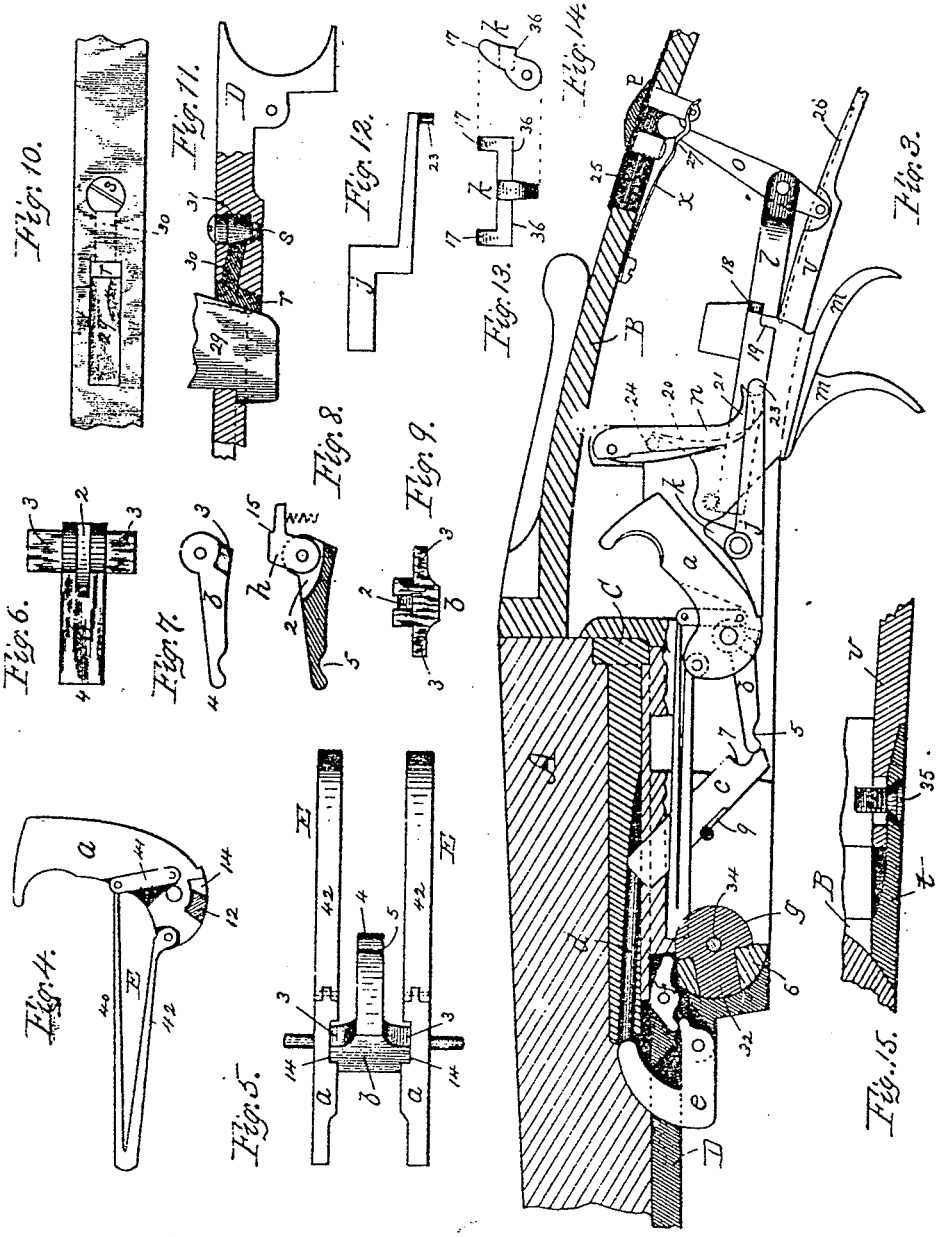

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UNITED STATES PATENT OFFICE.

ANDREW E. WHITMORE, OF SPRINGFIELD, MASSACHUSETTS.

BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 386,174, dated July 17, 1888.

Application filed April 2, 1888. Serial No. 269,353. (No model.)

To all whom it may concern:

Be it known that I, ANDREW E. WHITMORE, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Breech-Loading Fire-Arms; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to breech-loading fire-arms, more particularly that class termed "breakdown internal-hammer guns," having instrumentalities which operate by breaking of the weapon to simultaneously cock the hammer, block the sear, and lock the trigger.

This invention further consists in the construction and combination of parts, as hereinafter described, set forth, and claimed.

The above-mentioned improvements and details of construction, as well as the operation of the several instrumentalities, as applied to a single-barrel breech-loading fire-arm are the same in a double-barreled weapon, except in the latter instance, where certain parts must necessarily be duplicated.

In the drawings herewith annexed I have shown several parts constructed for a weapon having two barrels.

Figure 1 represents a sectional elevation longitudinally of the mid-rib with the weapon closed, the hammer down, and the fore-end only partially engaged. Fig. 2 represents a similar view showing the weapon broken down and with the hammer in elevation, cocked. Fig. 3 is a sectional elevation similar to Fig. 2, but with the weapon closed, the hammer and sear blocked, but with the trigger free to operate. Fig. 4 is an elevation of a hammer, showing the manner of mounting the mainspring thereupon, and with the lateral arm of the cocking-lever in section. Fig. 5 is a plan view of the under side of the hammers, springs, and cocking-lever in a double-barreled fire-arm. Fig. 6 is a plan of the cocking-lever. Fig. 7 is a side view, and Fig. 8 is a longitudinal section, of the same with the trip-lever in elevation. Fig. 9 is a rear end view of said cocking-lever. Fig. 10 is a plan. Fig. 11 is a sectional view longitudinally of the fore-end, showing my novel compensator device. Fig. 12 is a plan view of one of the sears; Fig. 13, a side view, and Fig. 14 an end view, of the intermediate extension-arm rocker. Fig. 15 is a vertical section longitudinally of the lock-cap and trigger plates.

In said drawings, A represents the mid-rib of a fire-arm constructed, as usual, with fastening-lugs, which engage the frame B, and furnished with an extractor, C.

The primary feature of my invention consists in simultaneously locking the hammer, blocking the sear, and locking the trigger in the act of breaking the weapon. The hammer is shown at *a*, located and pivoted, as usual, in the frame, and operated by a cocking-lever, *b*, provided with a slot, 2, (see Fig. 6,) lengthwise of it and at its rear end, also two lateral arms, 3, (in a double fire-arm,) transversely of it, and a projecting free end, 4, with a depression or notch, 5, on its under side. Reference to Fig. 4 shows the mainspring at E, its lower leaf at 42, pivoted to the hammer at a point in front of the pivot of the latter. The upper leaf, 40, overlaps the lower and is secured to the upper end of a stirrup, 41, pivotally attached to said hammer in rear or to one side of the hammer-pivot. Several advantages are obtained thereby. The hammer or hammers are readily removed and replaced. Further, no frictional contact occurs between the fixed parts of the weapon when the mainspring is actuated. The front free end, 4, of said cocking-lever engages a notch, 7, in the rear upper end portion of a cocking-pin, *c*, located obliquely in the barrel-lug and secured thereto by a pin beneath. Furthermore, said cocking-pin *c* has endwise movement, sliding in the barrel-lug, to force it to engage the front end of the cocking-lever when the weapon is made up. This is effected by a connecting-rod, *d*, disposed obliquely in the extractor-stem. The latter is in turn operated by the free hooked end of the extractor-lever *e*, pivoted to the fore-end D, and when the latter is sprung into place the cocking-pin *c* moves rearwardly and engages beneath the end 4 of the cocking-lever.

The pivotal end of the lever *e* is formed to engage the intermediary lever *f*. One end of the latter rests upon the lever *e*, while the rear end of said lever *f*, wiping upon the front portion, 6, of the frame B, is operated thereby. Thus prior to the act of breaking the weapon the several parts above described are as shown in Fig. 1, with the exception that the fore-end is in position and the connecting-rod *d* is retracted within the extractor-stem, while the cocking-pin *c* is forced rearwardly, and its fastening-pin would be at the upper end of the slot 9 (see Figs. 2 and 3) on the under side, and said cocking-pin *c* has fully engaged the cocking-lever. Upon breaking the weapon and swinging of the barrels upon the joint-circle *g* (see Fig. 2) the rear end of the lever *f* is lifted by the frame portion 6 and actuates the extractor-lever *e*, throwing the hooked end of the latter against the extractor-stem, which is pushed rearwardly and ejects the empty shell. Coincident with the swinging movement of the barrel, and also that of the cocking-pin *c* in the lug, the rear end of said pin is lifted, while the cocking-lever *b* is raised until the two are brought against the frame portion 10 as a stop. The interlocking of said cocking-pin and lever by means of the notch 7 in the former and the depression 5 in the latter effectually opposes the action of the mainspring E to close the weapon partially. Thus the barrel and frame are firmly held (see Fig. 2) in position until fresh cartridges have been inserted.

Cocking of the hammer by the upward throw of the cocking-lever *b* is produced as follows: Upon reference to Fig. 6 the cocking-lever *b* is shown with two transverse arms, 3 3, for a double fire-arm. The hammers are cut away at 14, (see Figs. 4 and 5,) and said arms engage therein. The movement of the free end of the cocking-lever by engagement of said arm 3 with the hammer cocks the hammer, throwing the latter back until engaged by the sear.

Within the slot 2 upon the upper side of the cocking-lever and loosely hung upon the pivot of the latter is placed a trip-lever, *h*, spring-actuated and provided with a shoulder, 15, adapted to engage a similarly-formed shoulder, 16, upon the barrel-locking bolt *i*. When the latter is retracted to release the barrels in breaking the weapon, said shoulders 15 16 engage with each other, and the bolt is held drawn back until the weapon is in the act of closing. At this moment said trip-lever is tilted rearwardly by the wiping contact of the lug 13 against it, and said lever is disengaged from the bolt, which is free to advance. This permits the weapon to be closed more easily.

In the act of cocking the hammer, and when the cock-notch has reached the nose of the sear *j*, a further backward movement of the hammer is effected by the parts then actuating said hammer. By means of this slight additional travel of the hammer the latter wipes and oscillates an intermediate piece, *k*. This I term the "extension arm rocker," since it rocks freely on the sear-pivot and is furnished with extension-arms 17 to engage the hammers. (See Figs. 13 and 14.) Furthermore, said arms are formed with a shoulder, 36, which engages the top edge of the sears. Thus, when the hammer actuates said rocker *k*, to thrust the trigger-locking bolt back, the tail end of the sears are depressed. This act brings the nose of the sears in active engagement with the hammers to hold them cocked.

By the action of the hammer upon the arm 17 the trigger-locking bolt *l* is thrust back and the tail of the sear simultaneously operated, as above premised.

Centrally of the frame, longitudinally thereof and back of the hammer, is located the trigger-locking bolt *l*, secured at its rear to the cross-lever *o*, the latter pivoted to the trigger-frame *v*. A "lug" or "safety," 18, so called, is formed laterally of the bolt and co-operates with the lug 19 on the trigger *m*. Furthermore, the latter is pivoted, as usual, and is furnished with an upwardly-projecting prong, 20. Vertically above the rear end of the sear *j*, and secured to the wall of the frame B, is placed the spring-actuated sear-guard *n*, hook-shaped, with its free lower end, 21, pointing rearwardly and adapted to engage an arm, 23, upon the tail of the sear. (See Fig. 12.) A lateral stud, 24, in the upper part of said sear-guard serves to co-operate with the prong 20 on the trigger in unlocking the sear.

Assuming the above parts are in the relative positions shown in Fig. 1, breaking of the weapon and the consequent cocking of the hammer will produce the following changes and operation of the above last-mentioned parts: When the hammer contacts with and pushes the extension-arm 17 of the intermediate rocker, *k*, the trigger-bolt is thrust back and the safety 18 is aligned with and above the lug 19, which act locks the trigger. The same movement of said rocker *k*, by contact of its arm 17 with the sear, depresses the tail end of the latter and permits the hooked end 21 of the sear-guard *n* by its spring to swing rearwardly and upwardly above the stud 23. The position of the sear-guard is then as shown in Fig. 2, and the sear is blocked.

In a double-barreled weapon it is evident that this method of independently blocking each sear prevents premature action of either hammer by jarring, and no discharge can possibly occur until each sear is unblocked by a pull upon its co-operating trigger. This is effected as follows: To release the trigger now blocked, as shown in Fig. 2, the thumb-slide *p*, which grasps the head of the cross-lever *o*, and now central of the slot 25 in the tang, is thrust forward, advancing the bolt, and with it the safety 18, now placed to one side of and in front of the lip 19 on the trigger *m*. (See Fig. 1.) Pull upon the latter raises the rear end of the trigger, and simultaneously its

prong 20 presses against the pin 24. The lower hooked end, 21, of the sear-guard is swung forward, unblocking the sear. The rear end is then raised by the trigger, when the hammer is released. A spring, 26, returns the trigger to its normal position as before the pull. The thumb-slide *p* is held in position by the spring *x*, the free extremity of which is formed with holding-notches 27, three in number. By the employment thereof three different positions are obtained for the trigger-locking bolt. When this cross-lever rests in the front one, (see Fig. 1,) the triggers are not locked and are free to operate. When in the center notch, (see Fig. 2,) the triggers are blocked. When in the rear notch, (see Fig. 3,) the locking-bolt is thrown far back and the said bolt is inoperative. The weapon now may be broken, when the hammer is cocked and at once released, without movement of the thumb-slide, the triggers being then free to act at all times, since the trigger-locking bolt does not move.

To obviate wear and cause the barrels to closely fit against the breech-block, I have located a rocking block, *q*, in the latter. This block *q* co-operates with the rib-hook 12 and is rendered adjustable by the screw 28. Forward movement of the latter against the lower end of said compensating block *q* forces the upper end backward, and the rib-hook 12 of the barrel, when the latter is closed, is forced closely against the recoil or breech block.

To take up and prevent lost motion in the fore-end D, and to compel it to engage tightly upon the front end of the lug 29 on the barrel, (see Figs. 10 and 11,) I have provided in the fore-end, just back where the lug enters it, a removable compensator, *r*, with a pin, 30, which engages the tapered shaft 31 of a regulating-screw, *s*. Inward advance of the screw thrusts the compensator forward, and the lug contacting therewith forces the fore-end a corresponding amount backward and maintains it thereby against the frame.

The joint-circle is shown at *g* provided with a projection or barrel, 32. The sides of the joint-circle are flat and fit in the lug-cut, while the barrel 32 engages in the end 6 of the frame B. This circle abuts against the frame on an angle, and is bored transversely to receive a pin, 34, by which it is secured to the frame.

In order to bring this pin within the body of the joint-circle and likewise have it coincide with the center of rotation of said circle, the frame is cut obliquely and the barrel of the joint-circle, in lieu of being horizontally positioned, as hitherto, is arranged as shown. This is an important feature.

To reduce the number of parts, I have shown in Fig. 15 a longitudinal vertical section of the lock-cap plate *t*, the trigger-plate *v*, and a portion of the frame B and barrel-lug. In this instance the front end of the lock-cap plate rests on the frame, the rear portion is lap-jointed over the end of the trigger-plate, and the two are bored to receive a common retaining-screw, 35. By this means but one screw is employed and the several parts are all securely united and put together more readily.

What I desire to claim is—

1. The combination, with the extractor, its operating-levers, the fore end, and the connecting-pin movable in the extractor-stem, of the cocking-pin swinging with the barrel, having cam engagement with the connecting-pin and having endwise travel to engage the cocking-lever, substantially as and for purposes stated.

2. In combination, the barrel, its locking-bolt, the spring-actuated trip-lever *h* on the hammer-pivot, adapted to engage said bolt to hold it inactive, and the barrel-lug 13, which by its cam-face engages and actuates said trip-lever to release said barrel-locking bolt, as herein specified.

3. In fire-arms wherein the breaking of the weapon serves to cock the hammer, the combination, with the hammer and the sear, of the extension-arm rocker which actuates said sear and the spring-impelled sear-guard operating to block the sear upon movement of the extension-arm rocker, substantially as described.

4. In fire-arms provided with a hammer cocked by the breaking of the weapon, the combination, with the hammer, its co-operating sear, the intermediate extension-arm rocker, and the spring-impelled sear-guard with its stud 24, of the trigger and its prong 20, which operates the sear-guard, substantially as herein set forth.

5. In fire-arms having an internal hammer cocked by the act of breaking the weapon, the hammer and the trigger, combined with the intermediate extension-arm rocker, the trigger-locking bolt movable endwise, its lug 18, and the cross-lever to which said locking-bolt is attached, as and for purposes herein stated.

6. In combination with the hammer and its operating mechanism actuated by the breaking of the weapon, the intermediate extension-arm rocker actuated by said hammer, but not locking it, and engaging the sear, substantially as set forth.

7. In combination with a hammer cocked by the breaking of the weapon, the intermediate extension-arm rocker actuated by said hammer, but not locking it, and the trigger-locking bolt which contacts with said rocker, for purposes herein described.

8. In combination with the fore-end, barrel, and stock, a lever, *f*, pivoted in said fore-end, a lever, *e*, also pivoted in said fore-end and engaging the lever *f*, a connecting-pin, *d*, in contact with the lever *e*, an extractor, C, in contact with said connecting-stem, a cocking-pin, *c*, in contact with said connecting-pin, a cocking-lever, *b*, in engagement with said cocking-pin and having an arm, 3, a hammer cocked by said cocking-lever, an extension-arm rocker,

k, actuated by said hammer, a trigger, and trigger-locking bolt and sear actuated by said rocker, substantially as set forth.

9. The hammer *a* and the sear *j*, engaging therewith, in combination with the extension-arm rocker *k*, provided with a shoulder which is arranged to be moved by said hammer and a shoulder which is arranged to move said sear, and the sear-guard *n*, which has a curved end engaging a stud on said sear, substantially as set forth.

10. In combination with the frame B of a breech-loading fire-arm, the trigger-plate *v* and the lock-cap plate *t*, which overlaps said trigger-plate, both united by a single fastening-screw, substantially as stated.

11. In combination, the lug 29, secured beneath the barrel and with a bolt-notch in its front edge, the fore end D, slotted to receive said lug, the compensator *r*, likewise in slot behind the lug, and the adjusting-screw *s*, which operates said compensator by the arm 30 upon the latter, for purposes herein specified.

12. In combination, the fore-end, the frame B, the joint-circle *g*, abutting thereagainst on an angle, with flat sides which fit the lug-cut, the barrel 32, which enters the end of the frame, and the fastening-pin 34 transversely of said circle and having its center coincident with that of the recess in said frame B containing the circle, substantially as and for purposes stated.

13. In combination with the frame and barrel, fore-end, and hammer, a cocking-lever attached to said frame and arranged to operate said hammer, and a cocking-pin attached to said fore-end and engaging said cocking-lever, said frame being provided with a stop, 10, arranged to be in contact with said cocking-pin and cocking-lever at their joint when the barrel is tilted, substantially as set forth.

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

ANDREW E. WHITMORE.

Witnesses:

H. E. LODGE,

E. K. BOYNTON.