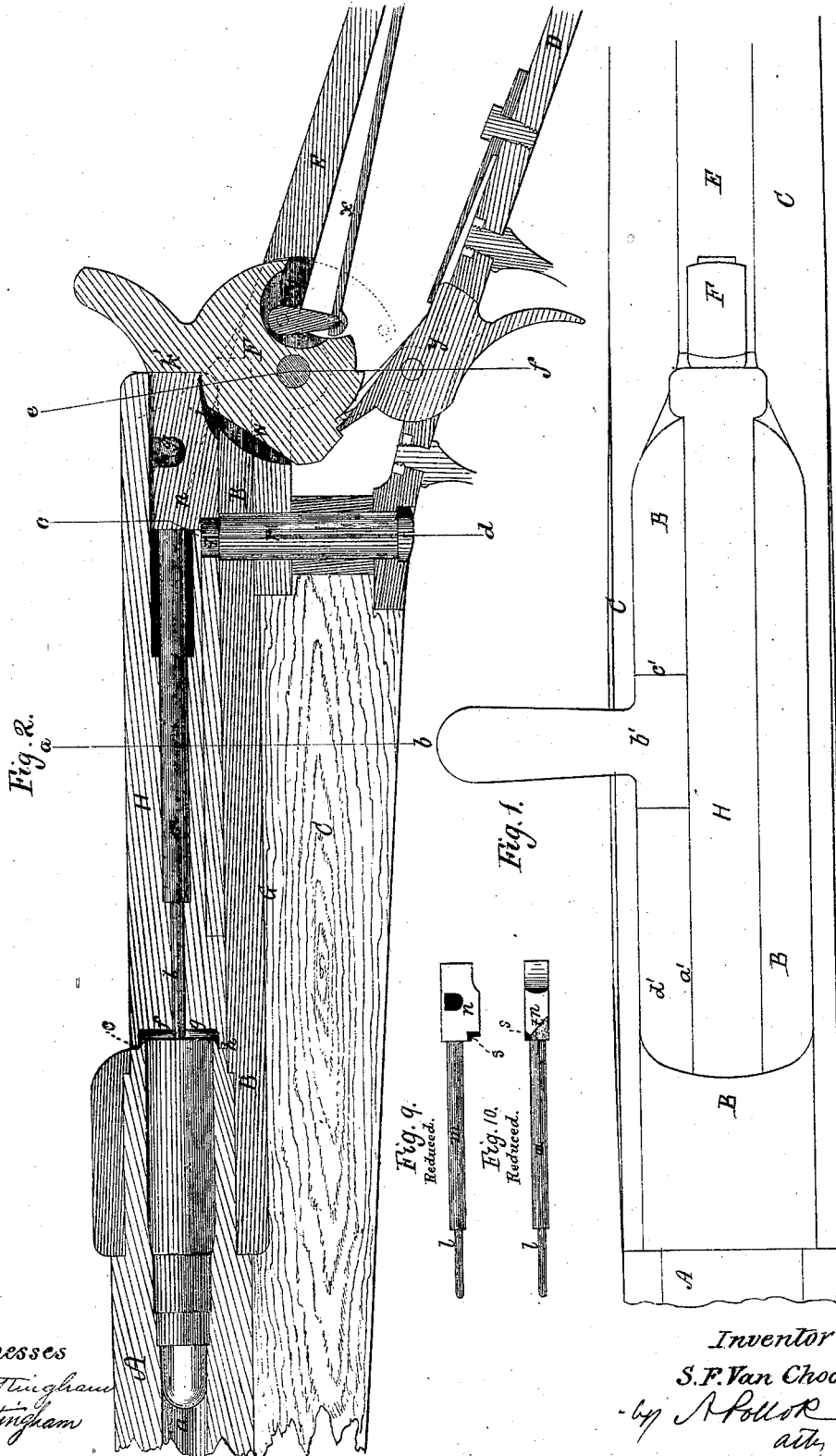


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Improvement in Breech-Loading Fire-Arms.

No. 132,505.

Patented Oct. 22, 1872.



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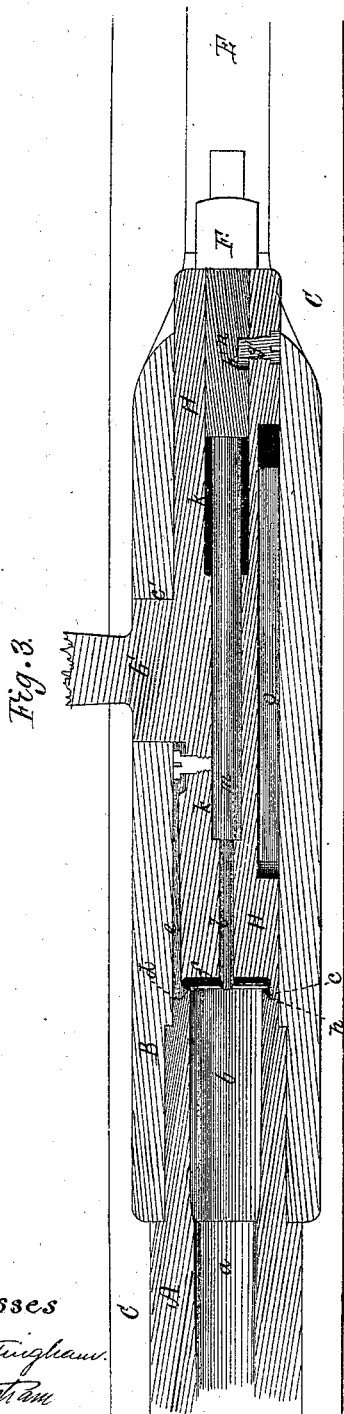


Fig. 3.

Fig. 4.  
on line a.b. of Fig. 2.

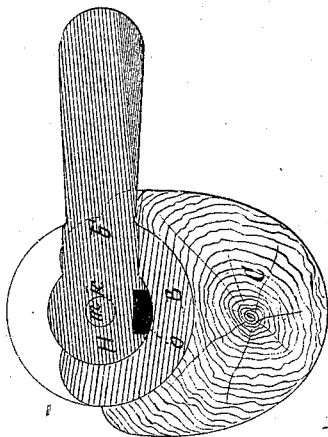


Fig. 5.  
on line c.d. of Fig. 2.

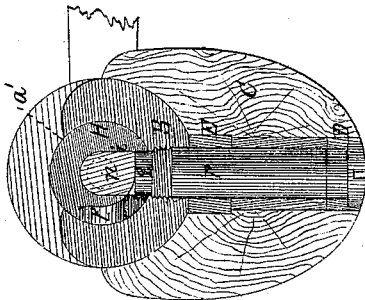


Fig. 6.  
on line e.f. of Fig. 2.

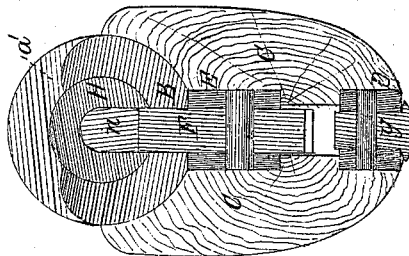


Fig. 8.

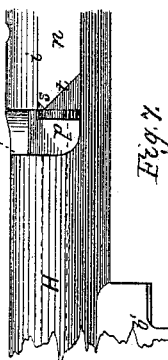
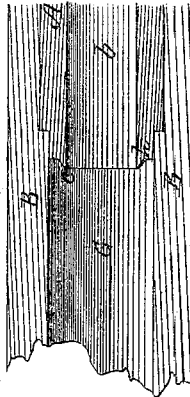


Fig. 7.



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# UNITED STATES PATENT OFFICE.

SILVANUS F. VAN CHOATE, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 132,505, dated October 22, 1872.

*To all whom it may concern:*

Be it known that I, SILVANUS F. VAN CHOATE, of Boston, in the county of Suffolk and State of Massachusetts, have made an invention of certain new and useful Improvements in Breech-Loading Fire-Arms; and do hereby declare the following to be a full, clear, and exact description thereof, due reference being had to the accompanying drawing making part of this specification, and in which—

Figure 1 is a plan; Fig. 2, a vertical and longitudinal section; Fig. 3, a horizontal section; and Figs. 4, 5, and 6 vertical and transverse sections of a fire-arm embodying my improvements, or such portions of a fire-arm as are immediately related to such improvements; Fig. 7 is a horizontal section of the rear end of the barrel; Fig. 8, a side elevation of the rear end of the breech-bolt; and Figs. 9 and 10, side views of the firing-pin and its carrier or rod.

The drawing accompanying and making part of this specification represents at A the barrel, whereof *a* is the bore, and *b* the cartridge-receiving chamber; at B the frame of the arm which receives the rear end of the barrel and the general working parts of the breech mechanism, and usually termed the "receiver;" at C the stock; at D the trigger plate or strap; at E the shank or tang, which extends rearward from the lower part of the receiver B, and is either integral therewith or screwed to it in a proper manner; the cock of the arm being shown at F, and formed and disposed as hereinafter stated; while the channel of the receiver which contains and constitutes the roadway of the breech-bolt is shown at G; and the breech-bolt which traverses it at H. The upper part of the receiver is formed with a channel, *a'*, extending its entire length, and of a width equal to the thickness of the base of the handle or knob *b'*, by which the breech-bolt is operated, this base extending into a notch, *c'*, made in one side of the receiver, which serves to lock the breech in firing position. The side of the breech-bolt opposite the handle *b'* and extractor *e* is scored with a longitudinal channel or groove, *o*, which terminates at rear in a short right-angular bend, *p*, as shown in Figs. 5 and 8 of the drawing, and into this channel the point *q* of a screw or stop pin, *r*, extends, such pin serving to

estop the rearward motion or retraction of the breech-bolt, as well as the lateral or rocking motion of such bolt. The rear end of the barrel is reduced to a tapering sharp annular edge, *c*, which projects into the roadway of the receiver a distance equal to the length of the hook *d* of the spring-extractor *e* of the breech-bolt. The extractor is flush with the exterior of the breech-bolt, the forward end of which is recessed at *f* to receive both the cartridge-flange and the annular lip *c* of the barrel, and, when pushed fully forward, abuts against the shoulder *h* on the barrel. Under this arrangement a tight joint is made, and a very perfect finish is given to the arm. The extractor moves with the breech-bolt, and when the latter is turned so as to be locked in position the extractor will be carried out of sight below the top of the receiver.

The arrangement just described, of the barrel and the reciprocating and rotary breech-bolt, is necessary in order to provide for the rotation of the retractor, and to obtain a tight joint and a proper support for the annular lip of the barrel. Some recess in or around the barrel is needed to allow the proper hold of the extractor on the cartridge-flange; and by making the lip continuous around the bore of the barrel, and arranging it to be received within the end of the bolt, as shown, all these objects are attained.

The firing-position of the arm is that shown in Figs. 4 and 6 of the drawing—that is, with the handle *b'* horizontal or turned down, and its base inserted with the recoil seat or notch *c'*. I make in one side of the rear part of the breech-bolt H a rectangular channel or slot, *i*, which extends from its periphery inward, and intersects the axial bore or passage *k*, which receives the firing-pin *l* and its rod *m*, the rear portion of such rod terminating in an oblong rectangular head or carrier, *n*, which plays within the channel *i*, the greatest width of the said head *n* and of the channel *i* being at right angles to the axis of the handle *b'* and the plane of the extractor *e*. The forward end of the needle-rod carrier extends slightly into the bend *p* of the channel *o*, and so that the stop-pin *r* shall abut against it at certain times, and the inner corner of the carrier thus protruding is reduced to a short sloping face or inclined plane, *s*, while the remainder is cut

away upon an angle of about forty-five degrees, in order to produce a second and longer inclined plane, *t*. (See Figs. 8, 9, and 10.) The cock F resembles in general form many now in use, and is pivoted within a slot, *v*, cut centrally in the shank or tang E, and in axial alignment with the bore of the barrel and of the breech-bolt, the front face *w* of this hammer being cut away at such an angle that when full cocked it shall be parallel to the plane of the breech bolt and its roadway, and abut flush with the bottom of the latter, and when driven forward by its spring *x* in the act of exploding a cartridge, or when at half or safety cock it shall enter the slot of the breech-bolt, and prevent rotation and unlocking of the latter until the cock is again brought to its full-cock position.

The action of the above-described mechanism is as follows: Supposing the cock to be thrown forward by its spring and resting in the slot of the breech-bolt, such bolt in turn being locked in firing-position, in which case the point *q* of the stop-pin rests in the bend *p* of the channel *o*, and in front of the inclined face *t* of the carrier *n*. As the breech-bolt, after full cocking the hammer, in the act of unlocking preparatory to loading the arm, is rotated through ninety degrees of a circle by means of its handle *b'*, the inclined face *t* impinges against the stop-pin *r*, and the firing-pin is retracted to such an extent that its forward end retreats within the breech-bolt and out of reach of the cartridge-case. The inclined plane *t* compels the firing-pin with every unlocking of the breech to retreat within the latter, should it incline to stick within its inclosing-passage from becoming rusted or foul or from any other cause, thus removing it from contact with the cartridge as the latter is driven into the barrel by the advance of the breech. As the handle *b'* is brought to an upright position the stop-pin *r* leaves the bend *p*, and stands in alignment with the main channel *o*, thus enabling the breech-bolt to be drawn back to its fullest extent, the entire body of the cock F being situated below the breech-bolt. The cartridge is now inserted within the roadway G in advance of the breech-bolt, and the latter driven forward and seizing the flange of the cartridge-case, as hereinbefore explained, the handle *b'* being last of all lowered into the recoil-seat notch *c'*. This lowering of the handle again introduces the point of the stop-pin into the bend *p* of the channel *o*, and in so doing it abuts against the

inclined face *s* of the carrier *u*, and retracts the firing-pin should this pin from any cause have been pushed forward while the breech-bolt was unlocked; if not the stop-pin has no effect upon such carrier until the breech is a second time unlocked, and the said stop-pin abuts against the long face *t* of the carrier, which had been driven forward by the hammer in the act of exploding the contents of the cartridge. As the hammer is released by a pull upon the trigger *y* it enters the slot or recess *i* of the breech-bolt, and prevents rotation and unlocking of the latter until again brought to full-cock, and at the same time by means of a second face or abutment, *k*, formed upon it, strikes and drives forward the firing-pin and explodes the cartridge. The trigger is pivoted within the trigger-strap D and centrally thereof, and impinges directly against the cock without intermediate devices, the rear end of the roadway of the receiver B being slotted to receive in connection with the slot of the breech-bolt, the front portion W of the hammer, which enters them conjointly. The firing-pin is retained in place within the breech-bolt by a screw or pin, *g'*, which passes through such bolt and enters a short notch or recess, *h'*, created in the side of the carrier *n*, as shown in Fig. 3 of the drawing.

#### Claims.

Having thus explained what I believe to be the novel features in my present improvements, I claim as such, and desire to have secured to myself, the following:

1. The combination of the receiver B, the sliding and rotating breech-bolt H provided with recess *f*, the spring-extractor *e* sliding and rotating with said breech-block, and the barrel provided with annular lip *c*, all constructed and arranged as herein shown and set forth.
2. The combination of the receiver, the breech-bolt, slotted as herein described, and the hammer F with its two faces W and *k'*, said parts being constructed and arranged for joint operation, as herein shown and set forth.
3. I claim, in combination with the breech-bolt H, the firing-pin *l m n*, with its inclines *s t*, or their equivalents, and stop-pin *r*, substantially under the arrangement, and operating as stated.

S. F. VAN CHOATE.

Witnesses:

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