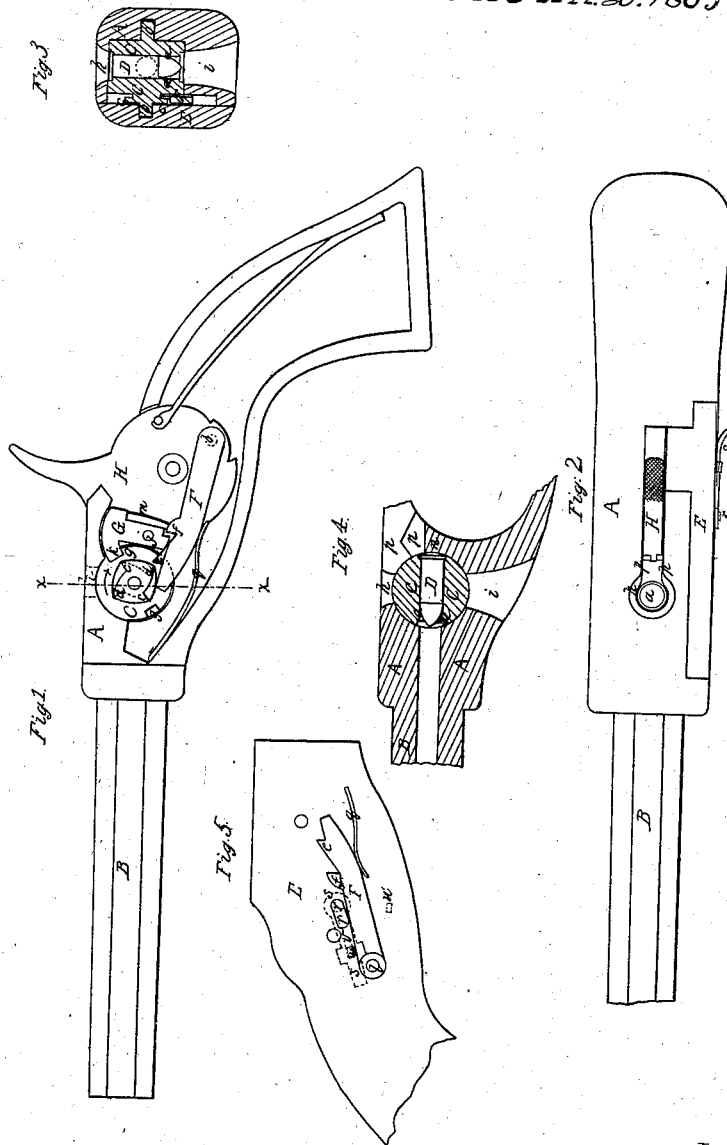


H. Underwood.
Breech-loading Fire-arm.
 N^o 38772. Patented Jun. 2. 1863



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY UNDERWOOD, OF TOLLAND, CONNECTICUT.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 38,772, dated June 2, 1863.

To all whom it may concern:

Be it known that I, HENRY UNDERWOOD, of Tolland, in the county of Tolland and State of Connecticut, have invented certain new and useful Improvements in Breech-Loading Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a sideview of a pistol constructed according to my invention, having one side of the stock removed to expose the lock to view. Fig. 2 is a top view of the same. Fig. 3 is a transverse vertical section in the line *x x* of Fig. 1. Fig. 4 is a central longitudinal section of the breech and chamber and a portion of the barrel. Fig. 5 is an inside view of the device for disengaging the dog which unlocks and rotates the breech.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to fire-arms having a single-chambered revolving cylinder, the axis of which is arranged in a horizontal position transverse to the axis of the bore of the barrel; and it consists in certain means of combining the said cylinder with the hammer of the fire-arm, whereby the backward or upward movement of the hammer to the position of half-cock brings the cylinder to the position for loading, and the continued movement to the full-cocked position brings the cylinder to the position for firing.

It also consists in an improved arrangement of and mode of operating a stop for locking the cylinder in position for firing, and for disengaging it to enable it to be brought to the position for loading; and it further consists in a device for disengaging the cylinder from the hammer whenever desirable.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the frame of the arm; B, the barrel; C, the cylinder, fitted into a cavity bored for its reception in the frame A. This cylinder has the chamber *a* bored through it diametrically, or at right angles to its axis, and the said chamber is countersunk at each end for the reception of the flanges on the rear ends of metallic cartridges, one of which is shown in Fig. 3, and indicated by the letter D. The said cylinder has solid journals *b b*, one of

which is received in a bearing in the right side of the frame A, and the other in a bearing in a side plate, E, which is screwed to the frame. On the right-hand end of the cylinder there are formed or provided four ratchet-teeth, *c c d d*, arranged at equal divisions of a circle concentric with the axis of the cylinder; but the two opposite teeth, *c c*, are arranged farther from the body of the cylinder than the two intervening ones, *d d*, so that the latter two can be operated by one tooth, *e*, of a dog, F, and the former two by another tooth, *f*, of the same dog, to produce a rotary motion of the cylinder, the said teeth *e* and *f* being arranged sufficiently out of line with each other to prevent *f* from operating on *d d*, and prevent *e* from operating on *c c*. At opposite points in the periphery of the cylinder, close to the right-end thereof, there are two square notches, *g g*, for the reception of the stop G, by which it is locked in position for firing—that is to say, with the chamber opposite to and in line with the bore of the barrel. Directly over the axis of the cylinder there is provided in the frame A the opening *h*, for loading, and directly below its axis there is the opening *i*, for the expulsion of the discharged cartridge-shells.

H is the hammer, having its tumbler made somewhat larger than usual, to obtain a sufficient length of movement to the dog F, which is attached to it by a pivot, *l*. This dog and the ratchet-teeth *c c d d* constitute the means of combining the cylinder with the hammer to enable the cylinder to be brought to the proper positions for loading and firing, and it is held up to its work by a spring, *q*. The tooth *f* of the said dog also serves to act upon stop G for the purpose of unlocking the cylinder, preparatory to loading. The stop G is of a hammer-like form, and arranged to work upon a stationary pin, *j*, in rear of the cylinder, and its head *k* fits snugly into the notches *g g* of the cylinder. The part below the pin *j* is so arranged as to enable it to be operated upon by the tooth *f* of the dog F to produce the withdrawal of the head *k* from the notches *g g*. A spring, *m*, is applied to the stop to press it into the notches.

I will now describe the operations of loading and firing, first supposing the hammer to be down and the cylinder locked by the dog G, with its chamber in line with the bore of the barrel. By drawing back the hammer the

dog F is moved forward, and its tooth *f* at once comes in contact with the lower part of the dog G, and so acts upon it as to throw back the head *k* and unlock the cylinder. As soon as the cylinder is unlocked, the tooth *e* of the dog comes in contact with one of the ratchet-teeth *d d* and commences to turn the cylinder in the direction of the arrow shown in Figs. 1 and 4, producing a quarter-revolution and bringing the chamber to a vertical position by the time the hammer arrives at a half-cock. The tooth *f* passes the stop and lets it escape when the cylinder has turned far enough to prevent the head of the stop from re-entering the notch *g*, and the spring *m* then presses the stop forward against the periphery of the cylinder, where it rests until again required to operate. The hammer is stopped at half-cock and the cartridge inserted through the hole *h* of the frame and into the chamber, with the bullet downward, being prevented from dropping through and stopped in the proper position by the flange at its rear end. By this act of inserting the cartridge, if there were a discharged shell in the chamber it would be expelled through the hole *i* in the bottom of the frame. After the insertion of the cartridge, the drawing back of the hammer to full-cock causes the teeth *e* and *f* to produce by their acting upon the ratchet-teeth *c d* another quarter-revolution of the cylinder, bringing the chamber opposite to and in line with the bore of the barrel, and bringing the other notch *g* opposite to the head of the stop G, which then drops into the said notch and locks the cylinder, which is now in condition for firing, the bullet being toward the barrel and the base of the cartridge opposite the solid metal *n* of the frame at the back of the cylinder, which constitutes the breech of the arm.

The firing is effected in the same manner as in other fire-arms, by the pulling of the trigger, and the hammer strikes through a slot, *p*, in the frame upon the flange of the cartridge in which the fulminate priming is contained. During the fall of the hammer the cylinder remains locked by the stop G, the tooth *f* being allowed to pass the lower part of the stop, and the teeth *e f* being allowed to pass the teeth *c d* by the yielding of the spring *q* under the dog as the latter is drawn back by the hammer.

In the movement of the hammer from half-cock to full-cock the tooth *f* of the dog F does not come into operation on the tooth *c* of the cylinder until the tooth *e* is about ceasing to operate on the tooth *d*.

The object of having the ratchet-teeth *c c* and *d d* in different planes and the teeth *e f* in corresponding planes, instead of having them all arranged in the same planes, as in an ordinary ratchet-wheel and dog, is to provide for letting back the hammer to half-cock, in case, after having cocked it, it is not desired to fire. If the teeth were all in one plane, the letting down the hammer from full to half-cock would cause the tooth *e*, in the accompanying backward movement of the dog, to slip behind the

tooth *e*, and on attempting to recock the said teeth would abut against each other and prevent the forward movement of the dog, and thus stop the hammer; but by having the teeth in different planes, as hereinbefore described, the tooth slides on the back of the lower tooth, *d*, and cannot by any possibility pass behind *e*, as it is in a different plane, and hence when the hammer is again cocked the tooth *e* passes forward again without obstruction.

r is a pin fitted to turn in a suitable hole provided for its reception in the plate E. The inner end of this pin is bent to form a cam, *r'*, and to the outer end is attached a small lever, *s*, which is made flexible in a lateral direction. The cam is so situated with respect to the dog F that by turning the said pin by means of the said lever the said cam may press down the said dog out of the way of the ratchet *c c d d* and the stop G, and thereby disengage the cylinder entirely from the hammer. After the cylinder has been loaded and brought, by cocking the hammer, to a position for firing, the depression of the dog by this means allows the hammer to be let down and recocked as often as may be desired, without disturbing the cylinder, which will remain locked by the stop G. The said lever may be secured either in position to hold the said pin *r* and its cam out of the way of the dog F, as shown in Fig. 5, to allow the said dog to operate on the cylinder, as first described, and as represented in Fig. 5, or in position to keep the said dog disengaged from the cylinder by means of two short fixed stop-pins, *u u'*, provided on the outside of the plate E, to enter a hole, *v*, in the said lever. The lever is disengaged from these pins by springing it aside from the plate, and when moved from one pin to the other its hole slips over that pin to which it has been moved, and so locks in one or the other position.

I do not claim, broadly, the use, in a fire-arm, of a revolving cylinder having a single chamber arranged transversely to the axis of the cylinder; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Combining the cylinder with the chamber by means of the ratchet-teeth *c c d d* in the cylinder, arranged in different planes, and the dog F, attached to the hammer and having two teeth, *e f*, set in planes to correspond with the ratchet-teeth, substantially as and for the purpose set forth.

2. The stop G, applied in combination with the cylinder C and dog F, and operated by a tooth on the said dog, substantially as and for the purpose herein specified.

3. The cam *r'* and lever *s*, applied in combination with the dog F, substantially as and for the purpose herein specified.

HENRY UNDERWOOD.

Witnesses:

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