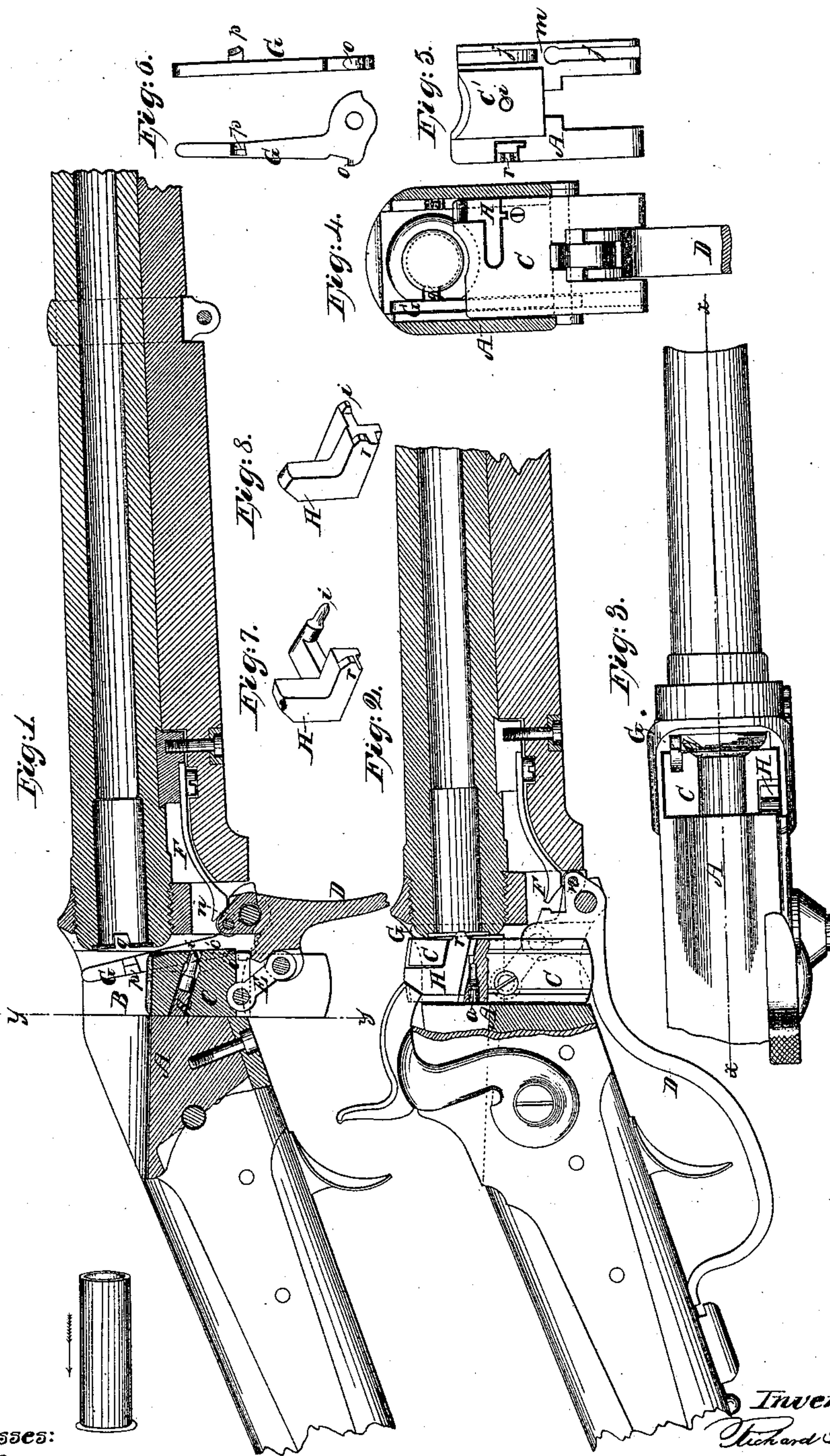


R. S. LAWRENCE.  
Breech Loading Fire Arm.

No. 88,645.

Patented April 6, 1869.



Witnesses:  
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# United States Patent Office.

RICHARD S. LAWRENCE, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE SHARP'S RIFLE MANUFACTURING COMPANY, OF THE SAME PLACE.

Letters Patent No. 88,645, dated April 6, 1869.

## IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, RICHARD S. LAWRENCE, of Hartford, in the county of Hartford, and State of Connecticut, have invented a new and useful Improvement in Fire-Arms; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to new and useful improvements in fire-arms, having more particular reference to the class of fire-arms known as "Sharp's rifles," but which improvements, (either in whole or in part,) are applicable to other description of fire-arms.

The invention consists in the method of operating the extractor; the form and method of operating the detonator, (or firing-bolt), in applying a friction-roll to the lever; in forming the movable breech-block with a portion of the front side, or face, of a wedge-shape; and in forming the mortise for the movable breech-block in the receiver on an angle, other than a right angle with the bore of the barrel, as will be hereinafter more fully described.

In the accompanying plate of drawings—

Figure 1 represents a vertical longitudinal section through the line *xx* of fig. 3, showing the breech-block drawn down for the extraction of the cartridge-shell.

Figure 2 is a longitudinal vertical section, showing the receiver closed by the breech-block, as when the piece has been just discharged.

Figure 3 is a top view of a longitudinal section, embracing the part of the gun to which my invention applies, giving a view of the top of the movable breech-block, extractor, and detonator.

Figure 4 is a vertical cross-section of fig. 1, through the line *yy*, giving a back view of the breech-block, detonator, and extractor, and also the base of the cartridge-shell in position.

Figure 5 is a view of the reverse or face side of the breech-block.

Figure 6 represents two views, (a side and edge view) of the extractor.

Figure 7 is a perspective view of the detonator, or firing-bolt.

Figure 8 represents a perspective view of the same, so modified in form as to adapt it to a "rim-fire" cartridge.

Similar letters of reference indicate corresponding parts.

A represents the receiver.

B is the inclined mortise through the receiver, in which the breech-block moves.

C is the movable breech-block.

D is the lever, by which the breech-block is operated, it being attached to the breech-block by the connecting-bar E.

F is the lever-spring.

G is the extractor.

H is the detonator, or firing-bolt.

In carrying out my invention, I form the mortise through the receiver, at an angle, (differing from a right angle,) with the base of the barrel, and I form a portion of the face or front side of the movable breech-block C' of a wedge-shape, which wedge, or inclined portion C', comes in contact with the end of the barrel, or base of the cartridge-shell, when it is thrown up ready for firing.

When in this position, this wedge, or inclined portion C' stands perpendicular to or at right angles with the bore of the barrel, as seen in fig. 2.

By making the mortise somewhat inclining back from the top, as represented, the breech-block, when thrown down for inserting the cartridge, will recede from the end of the barrel, or shell, while the inclined front side will work at a right angle with the bore of the barrel.

This feature is of great importance in loading the piece, as variations in the thickness of the cartridge-shell base will not affect the movement of the breech-block, but the shell will be forced in and out of the way by the inclined surface.

The same result is produced should the shell not be pushed entirely home in loading, so that obstructions which would materially interfere with the proper working of the ordinary breech-block are rendered perfectly harmless by this arrangement.

It will be seen that the movable breech-block is relieved from the base of the cartridge-shell on its downward movement, and also prevented from coming in contact with the shell with any considerable friction, before it is closed.

The detonator, or firing-bolt, seen in figs. 7 and 8, operates in a recess in the breech-block, and is limited in its back movement by a stop-screw, *a*. On its outer forward end, there is a cam, *r*, which works in a nick, or recess, S', (see fig. 5,) in the receiver, only when the movable breech-block is in position for discharging the piece.

The detonator is constructed with this cam for the purpose of preventing the point *i*, which explodes the cartridge, from coming in contact with the cartridge-shell before the breech-block is in position for discharging, also for relieving the point *i* from the cartridge-shell as the breech-block is moved down, as the cam S works out the recess, or nick in the receiver, and throws the point back.



The lever D is provided with a friction-roll, *n*, which works upon the lever-spring F.

The lever is so constructed with regard to its connections with the movable breech-block, that by its forward movement, the breech-block is drawn down.

As the roll on the lever passes the centre on the lever-spring, the lever is thrown forward past the position for loading. This movement causes the shoulder, or projection *m*, in the extractor channel *j* in breech-block, to strike the arm, or projection *o*, on the extractor G, which gives the upper portion of the extractor a sudden back movement.

When the extractor is in place with the cartridge inserted, the lip *p* sets into a nick, or recess, *q*, in the end of the barrel, as seen in fig. 1, and forward of the flange on the base of the cartridge-shell, so that the back throw produced by the downward movement of the breech-block, extracts the shell, and throws it from the gun.

The action of the lever-spring on the roll and on the end of the lever, causes the lever, breech-block, and

extractor to return to the proper position for reloading.

It will be seen that the extractor, as well as the detonator, or firing-bolt, is operated by positive movement, no spring being necessary for the performance of the proper functions of either.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

1. Operating the retractor, by means of the projection *o*, and the shoulder *m*, formed in the channel *j* of the breech-block, as herein shown and described.

2. The detonator H with its cam *r*, connected with the breech-block, and operating therewith, and with the receiver, substantially as and for the purpose shown and described.

RICHARD S. LAWRENCE.

Witnesses:

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