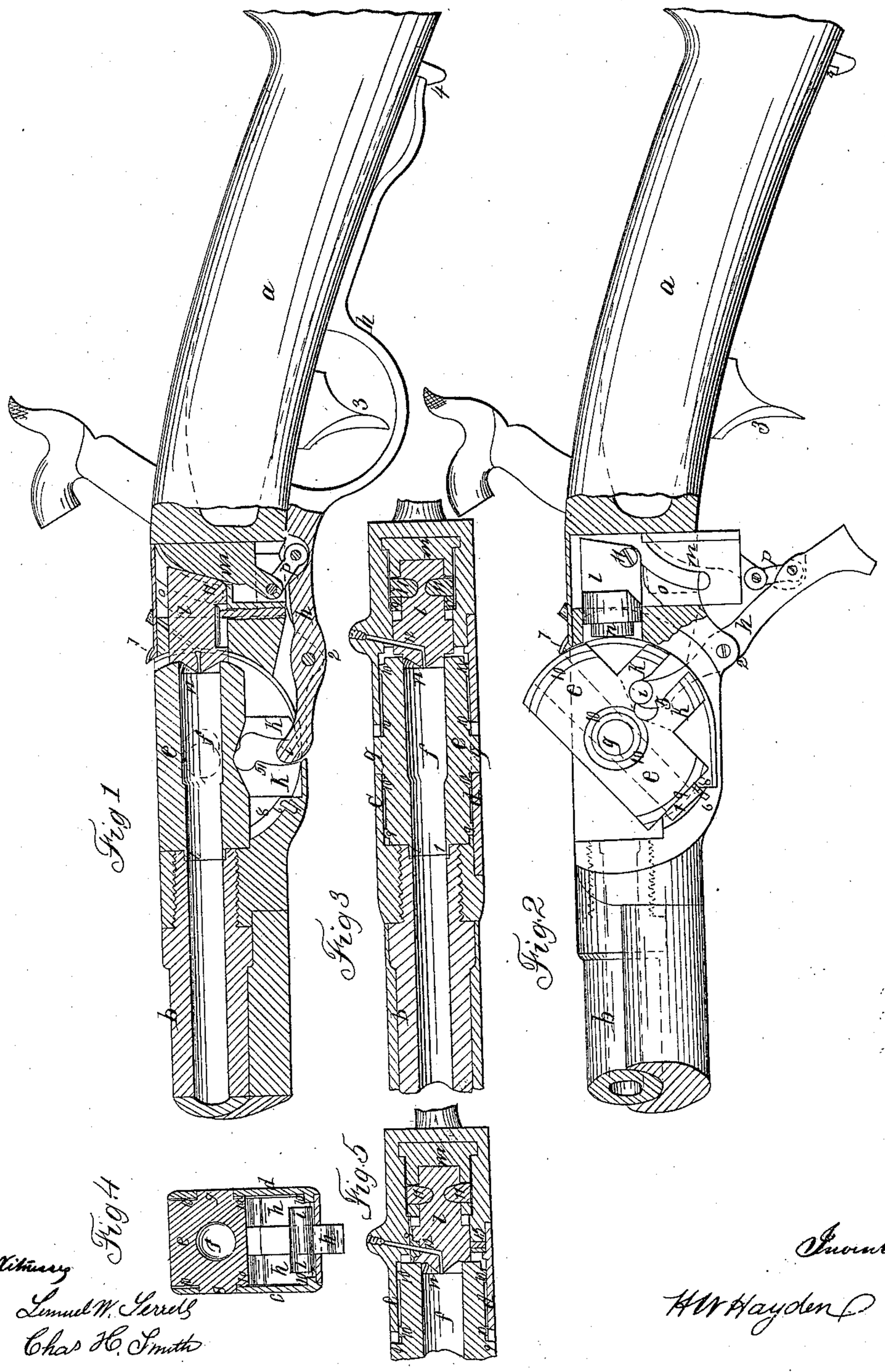
H. W. HAYDEN.

Breech-Loading Fire-Arm.

No. 45,495. Patented Dec. 20, 1864.



Witnesses:
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HIRAM W. HAYDEN, OF WATERBURY, CONNECTICUT.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. **45,495**, dated December 20, 1864.

To all whom it may concern:

Be it known that I, HIRAM W. HAYDEN, of Waterbury, in the county of New Haven and State of Connecticut, have invented, made, and applied to use 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 said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a longitudinal section of my improvements with the chambered breech in line with the barrel. Fig. 2 is an elevation, with the cap-plate at the side of the breech removed and the breech in a position for receiving a cartridge. Fig. 3 is a sectional plan of the breech and rear end of the barrel, and Fig. 4 is a cross-section of said breech and chamber.

Similar marks of reference denote the same parts.

The nature of my said invention consists in a breech moving on trunnions in elongated bearings, and containing a chamber passing through it, in combination with a lever that imparts a forward-and-backward movement to the breech, to press it to or draw it from the barrel, and also a swinging motion on its trunnions for exposing the rear end of the chamber, so that a cartridge can be introduced therein, the rear end of which cartridge, if projecting, is cut off by a shearing operation in turning the breech down to its place previous to pressing it forward in contact with the barrel. I also make use of a sliding breech-pin, that is actuated from the movement of the lever by a sliding wedge, and is pressed into the open rear end of the breech-chamber, to close the same gas-tight and sustain the recoil in firing the piece.

In the drawings, *a* is the stock and *b* the barrel, that are of any usual character; the latter being either rifled or plain. The metallic connection *c*, from the stock *a* to the barrel *b*, is formed with a recess or cavity to receive the parts of the breech, and *d* is a movable plate on one side, by the removal of which access is given to the breech and parts connected therewith.

e is the breech-block, in which is a chamber, *f*, bored through the block, and *g g* are trunnions passing into elongated holes in *c* and *d* in such a manner that the breech *e* can be slid back on line with the barrel until the ferrule 1 is drawn out of the barrel, and then the chamber can be turned on the trunnions into a diagonal position, as represented in Fig. 2.

h is a lever on a fulcrum, 2, which lever also forms a guard for the trigger 3, and is to be retained in place by a latch at 4, on the pressing back of which the lever *h* may be turned down into the position shown in Fig. 2.

i is a T-head on said lever *h*, which works in slots in the pendent jaws *k k*, that are formed upon the lower part of the breech *e*. This part *i* of the lever *h* turns the breech up into the position of Fig. 2, after sliding it back, and on the reverse movement turns the breech down on line with the barrel suddenly by acting on the projecting parts 5 of the slots in *k*, and then said projections *i i* drive the breech forward and slide the thimble 1 into the barrel.

6 is a stop that prevents the breech turning too far, and the motion of the breech in being turned back to its place may be used to shear off the rear end of a paper cartridge, if such is inserted in the chamber *f*, by forming a cutting-edge at 7; and to keep the surface of the rear end of the breech to the shear I employ a rib at 8 on each side of the opening in *c d*, taking a rib, 9, on *e*, both being arcs of circles from the centers of the trunnions *g*, which arcs clear each other at the time the breech comes down to its position on the line of the barrel, so that said breech can be pressed forward. The sides of the breech-block *e* are formed with ribs, as at 10 10, to guide the same but prevent clogging in case the parts become dirty. The rear end of the chamber *f* is closed gas-tight by sliding breech-pin *l*, that is formed with a cup or ferrule, *n*, sitting within the said chamber, and the breech-pin is moved back and forth by the cam-wedge *m*, that has curved forks *o o* at the sides, taking the studs 11 11 on the sides of the breech-pin *l*, and *p* is a link to the lever *h*, by which the wedge *m* is moved vertically behind the breech-pin *l*.

r is a screw passing into a slot in *l*, in the bottom of which slot is a spring. By this sufficient yielding friction is applied to the breech-pin to prevent its shaking out of place when the breech is open.

12 is the touch-hole to the nipple, by means of which the piece can be exploded when the breech-pin is up to its place, as in Fig. 3; but

if the breech-pin is not fully home the fire will not communicate through the touch-hole.

The parts are so shaped that on moving the lever *h* downward and forward the wedge *m* is relieved from behind the breech-pin, and the forks *o o* draw the breech-pin *l* back. During this movement the T-head *i* of the lever *h* moves in the jaws *k* without turning the breech *e*, but only slides it back, and as soon as the breech-pin *l* is withdrawn the parts *i* swing the breech into the position of Fig. 2 for receiving the cartridge. On drawing the lever *h* back to place the breech *e* is turned down to place, and then shoved forward as the breech-pin is pressed into the rear end of the chamber *f*, and the parts are rendered gas-tight and secure against the action of the explosion.

An arm on the breech-pin *l* may be extended through a slot in the side of the gun, to receive the nipple for the cap; or the nipple might be screwed into the top of the breech-pin, a slot being provided for it to slide in, so that there will not be any fouling of the pin at the point where the touch-hole passes through; or, if preferred, a small block may be introduced, as seen in Fig. 5, so that the pressure of gases keeps said block up to the inside of the place in which the breech-pin slides; or a screw, 13, as shown also in Fig. 5, might be used on the opposite side of the breech-pin to keep the parts tight at the touch-hole.

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

1. A breech-block having a chamber passing entirely through it and fitted upon trunnions, in combination with the pendent jaws *k* and lever *h*, substantially as specified, whereby the said lever first slides the breech-block back and then partially rotates it, and the reverse in closing the breech, as set forth.

2. The shear 7, in combination with the swinging breech-block *e*, having the chamber *f*, passing entirely through said block, and the projections 9, taking the ribs 8, for keeping the rear portion of the breech-block to the shear, as set forth.

3. A sliding breech-pin, *l*, in combination with a chambered breech swinging on trunnions, and acting to close the rear end of the chamber in said breech when on line with the barrel, as set forth.

4. The wedge *m* and forks *o o*, in combination with the sliding breech-pin *l*, and swinging breech *e*, having a chamber passing through it, whereby the breech-pin *l* is secured at the rear end of the chamber in the swinging breech, as set forth.

5. The screw *r* and spring in the slot of the breech-pin, for the purposes and as specified.

6. The combination of the lever *h*, breech *e*, breech-pin *l*, and wedge *m*, whereby said lever effects the movement of all the parts in harmony with each other, as specified.

In witness whereof I have hereunto set my signature this 21st day of May, 1864.

H. W. HAYDEN.

Witnesses:
LEMUEL W. SERRELL,
CHAS. H. SMITH.