

R. S. LAWRENCE.
Breech-Loading Fire-Arm.

No. 26,504.

Patented Dec. 20, 1859.

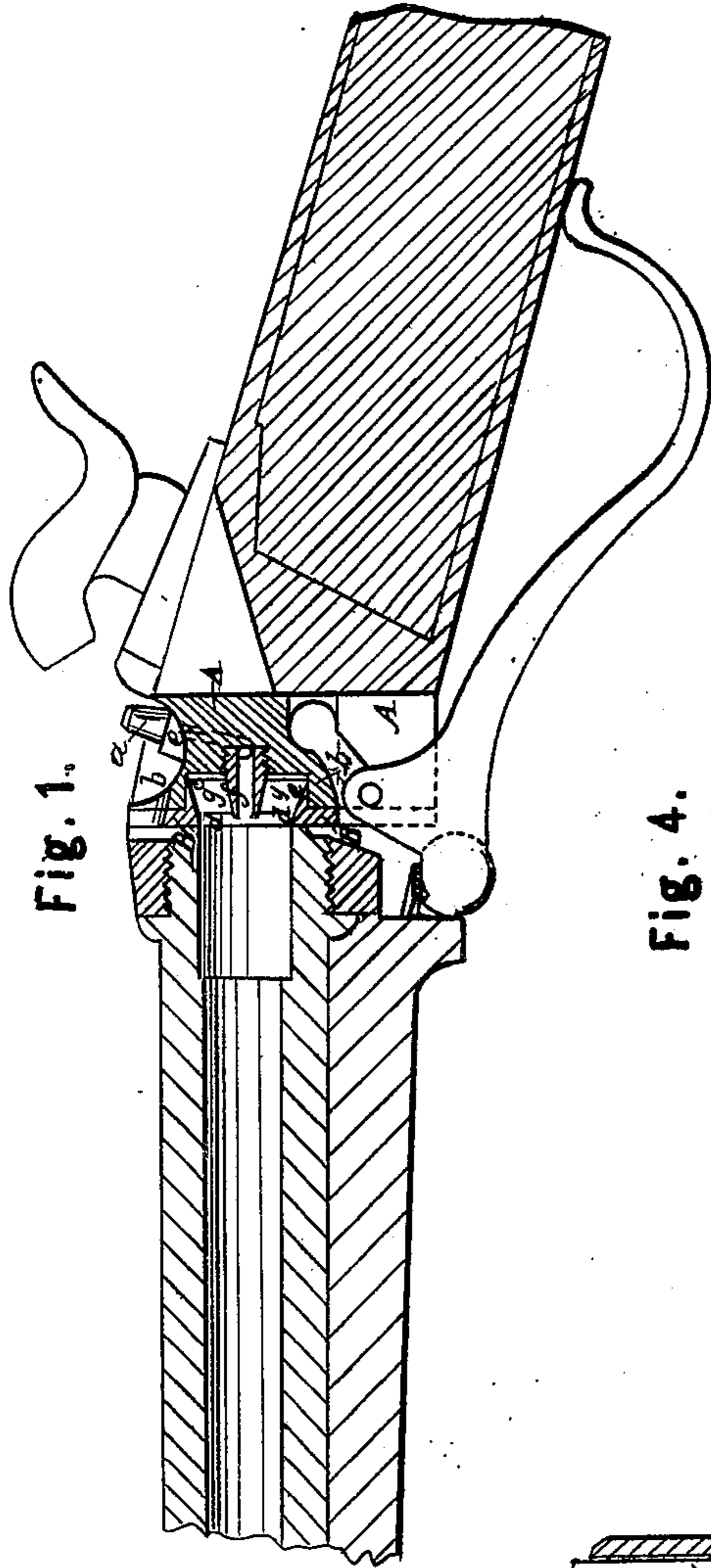


Fig. 1.

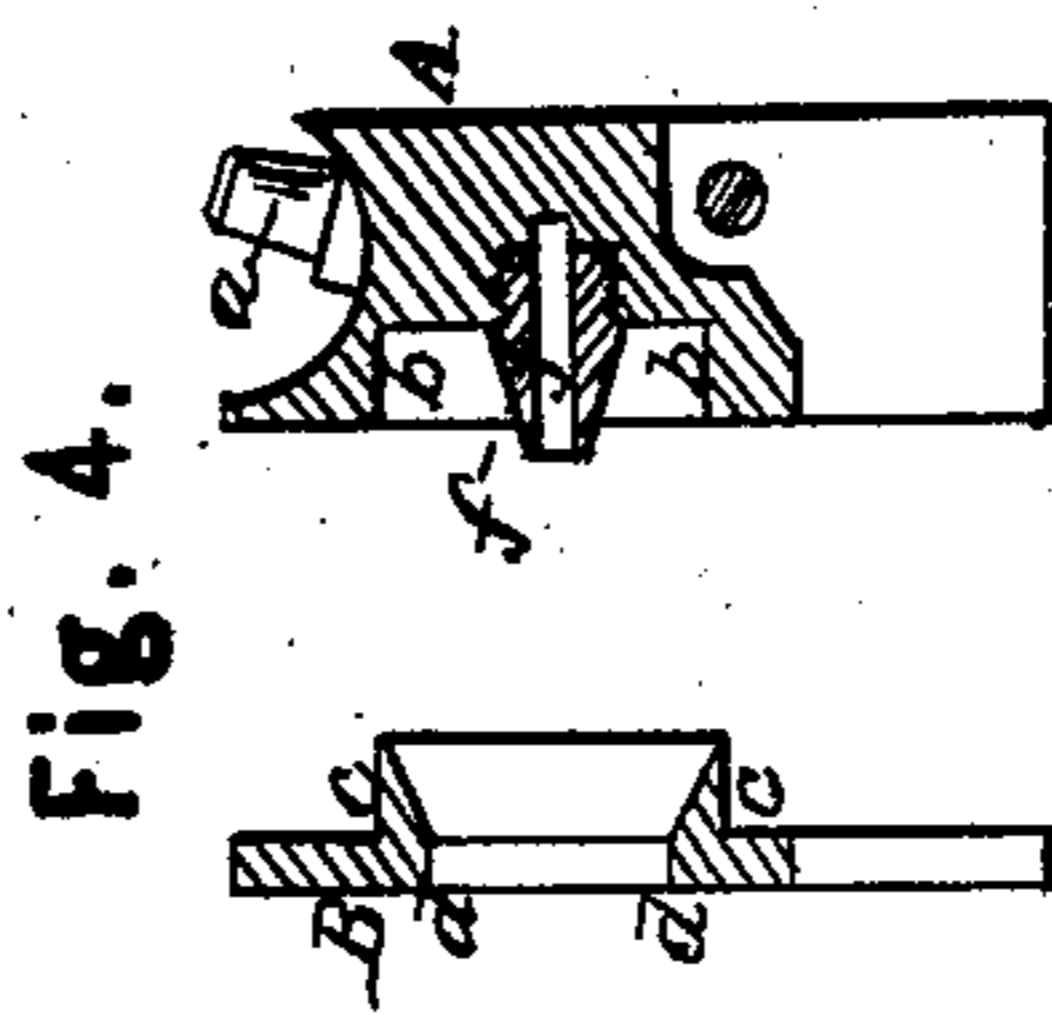


Fig. 4.

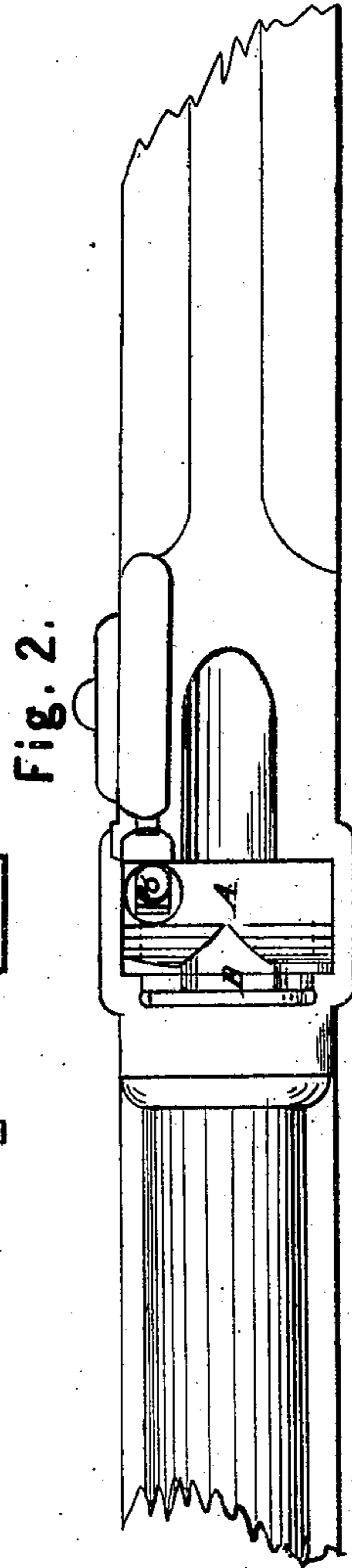


Fig. 2.

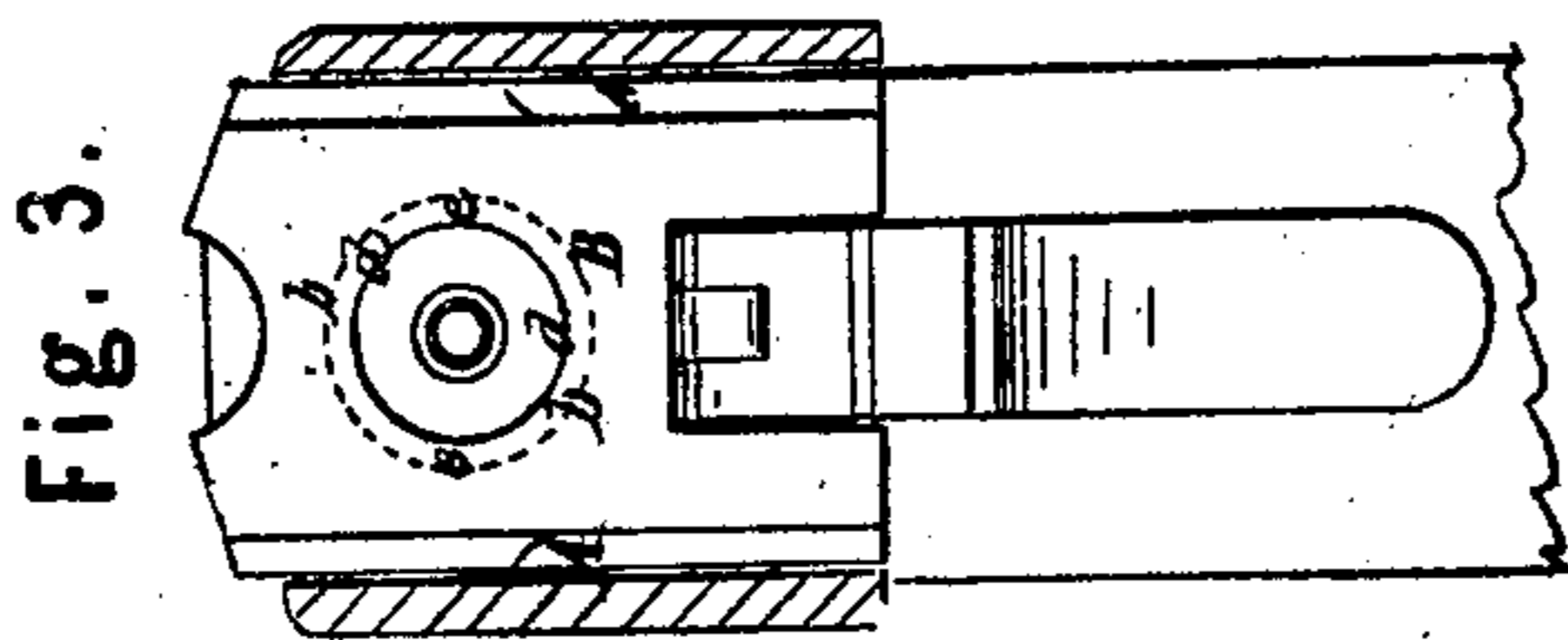


Fig. 3.

Witnesses.

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RICHARD S. LAWRENCE, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 26,504, dated December 20, 1859.

To all whom it may concern:

Be it known that I, RICHARD S. LAWRENCE, of the city of Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement 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 part of this specification, in which—

Figure 1 is a longitudinal vertical section of the sliding breech and part of the barrel and stock of a breech-loading rifle with my improvement. Fig. 2 is a top view of the same. Fig. 3 is a front view of the sliding breech and section of that portion of the stock which contains it. Fig. 4 is a section, corresponding with Fig. 1, of the two parts of the breech separated.

Similar letters of reference indicate corresponding parts.

The patent granted to H. Conant on the 1st of April, 1856, consists in setting a movable ring into that part of the movable breech which is immediately behind the barrel in such a manner that the expansive force of the gases resulting from the ignition of the powder shall expand said ring in such a manner as to seal the joint between the breech-piece and barrel and prevent the escape of fire or gas at said joint.

My invention is intended as an improvement on the said device of Conant, and therefore I of course make no claim to any parts or principles patented to him.

My improvement consists in the combination of a detachable plate between the barrel and the sliding breech-piece, with the aforesaid expanding ring; also, in the combination, with the said plate and breech, of a hollow nipple, as hereinafter shown.

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

The drawings represent the sliding breech in black outline, and the other parts of the arm in red.

A is the sliding breech, and B the detachable plate, the breech A having connected with it the lever by which the sliding motion to open and close it is produced, and having

screwed into it the nipple *a*, to receive the cap or other priming.

b b is the cylindrical cavity formed in the front of the breech A, of a depth of about one-quarter of an inch, and of a diameter considerably larger than the rear portion of the bore of the barrel.

c c is the expanding ring attached on the rear of the plate B, and made to fit the cavity *b b*, into which it is ground to make a perfect fit. Said ring is made in one piece with plate B, and projects therefrom. The said plate B has an opening, *d d*, concentric with the said expanding ring *c c*, of a size corresponding with the rear portion of the bore of the barrel, and the ring *c c* is countersunk in a tapering form so as to have a thin edge only all round the rear and form, the gas-chamber *g*, Fig. 1, within the breech. When the breech is closed, the opening *d d* coincides exactly with the bore of the barrel, as shown in Fig. 1.

f is the hollow cone in the center of the cavity *b b*, said cone being either screwed into the center of the back of the said cavity, as represented in the drawings, or turned out of the solid metal of the breech A, and communicating with the vent *e*. The front of this cone should be almost flush with the front face of the plate B.

The operation of the invention is as follows: When the fire from the priming communicates with the cartridge through the cone *f*, the gases resulting from the explosion of the charge fill the chamber *g*, and by their expansive force drive the plate B tightly against the face of the rear end of the barrel, and thus prevent any escape between the barrel and breech. The thin rear edge of the ring *c* is also expanded laterally against the interior of the cavity *b b*, and by these means a perfect joint is insured between the two plates, A and B, composing the breech. When the expanding ring is loose and merely sunk in the face of the breech, the edges of said ring, when the breech is withdrawn, pass below the edges of the barrel, and both in the ascent and descent of the breech the edges of the ring are liable to spring out and come in contact with the edges of the barrel, rendering the movement of the breech difficult and cutting or chipping the barrel, thus injuring the joint. The use

of a thin flat plate, B, of the same size as the breech, and covering the entire rear of the barrel, as shown in my improvement, obviates the above difficulty and maintains a smooth and easy movement of the breech parts. The paring or chipping of the barrel by the use of the loose ring is continued and increased by the collection of sediment between the back part of the ring and its cavity in the breech, the pressure of which sediment pushes out the ring, causing it to cut or pare the barrel, as stated. In the use of the loose ring it is requisite that the back or thin edge should be forced firmly against the bottom of the cavity. In closing the gun for discharge, the ring is thus driven back by the end of the barrel. If not thus firmly driven back, the gun is leaky and fire escapes at the joint; but by being thus forced into or against the bottom of the cavity, the thin or flexible edge is injured by cutting into the steel bottom of the cavity and soon becomes broken, or the bottom of the cavity becomes cut or worn, so as to allow the gas to escape on the outside of the ring, thus destroying the tightness of the joint.

In my improvement the ring is attached to and supported by the plate B independently of the breech A, so that the ring may be firmly and tightly combined with the breech without injuring the flexible portion of the ring. A gas-tight joint is thus maintained under all circumstances. The plate B, presenting a continuous flat face against the end of the barrel, will always remain in exact and proper posi-

tion and move freely either up or down, no matter how long continued the firing may be; but the loose ring is liable to be turned sideways by the force of an explosion or by the ingress of sediment, and thus to act as a wedge between the breech and barrel and render the operation of the breech difficult.

The face of the plate B may be case-hardened to augment durability; but the loose ring must be made of soft iron, or it will rapidly cut the barrel and breech parts. The cutting-edge of the plate B is self-sharpening, so that the more the arm is used the more readily will the plate cut the cartridge; but the more the loose ring is used the more it will pare off the barrel, and by increasing the space between breech and barrel diminish the cutting power of the sliding breech.

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

1. The combination of the detachable plate B, between the barrel and the sliding breech, with the expanding ring *c c*, substantially as and for the purposes set forth.

2. In combination with the sliding breech and plate, the hollow nipple *f*, situated in the center of the gas-chamber, and projecting forward nearly or quite to the face of the breech, substantially as and for the purpose herein set forth.

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Witnesses:

S. H. GREEN,
ORRIN S. CASE.