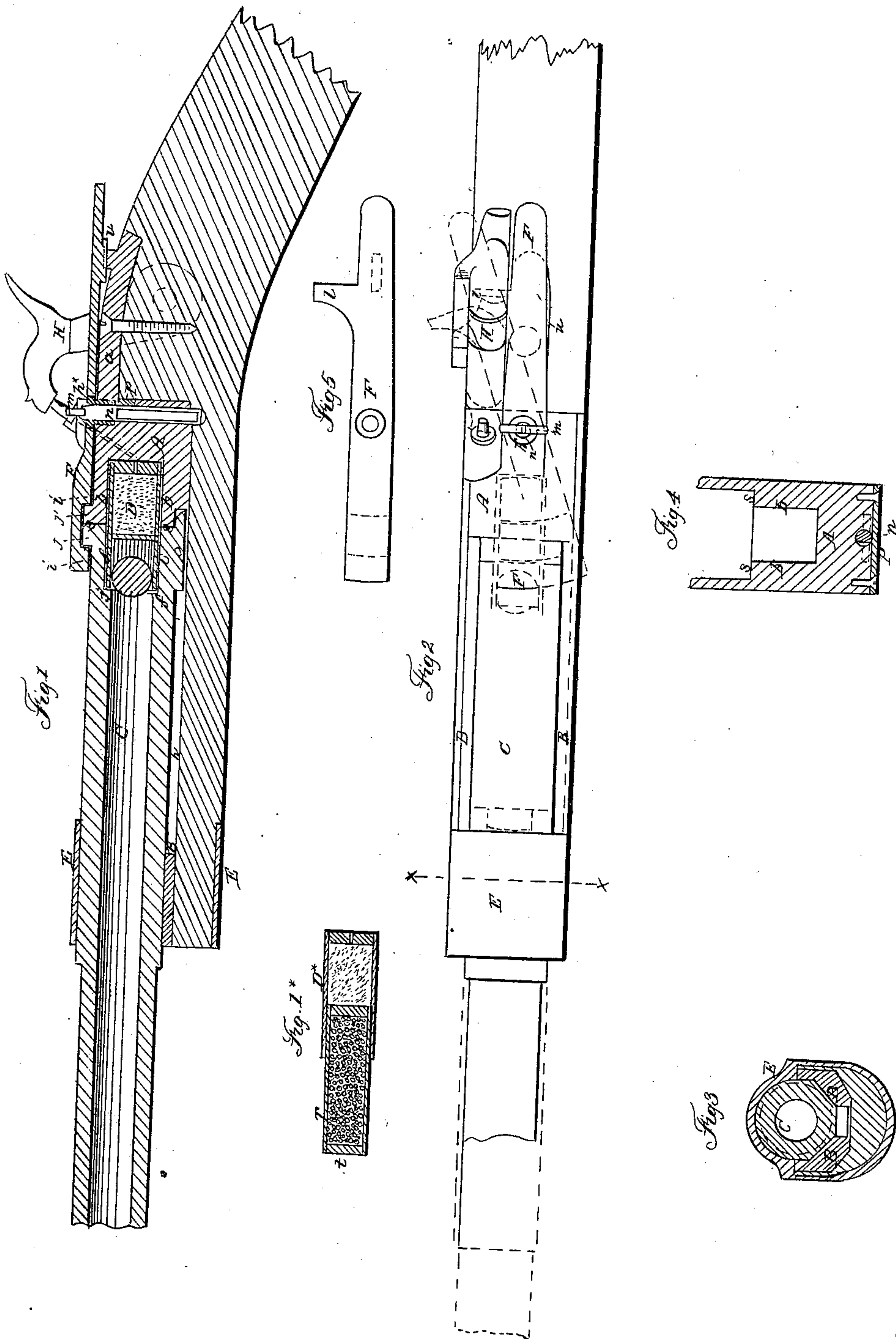


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Breech-Loading Fire-Arm.

No. 17,644.

Patented June 23, 1857.

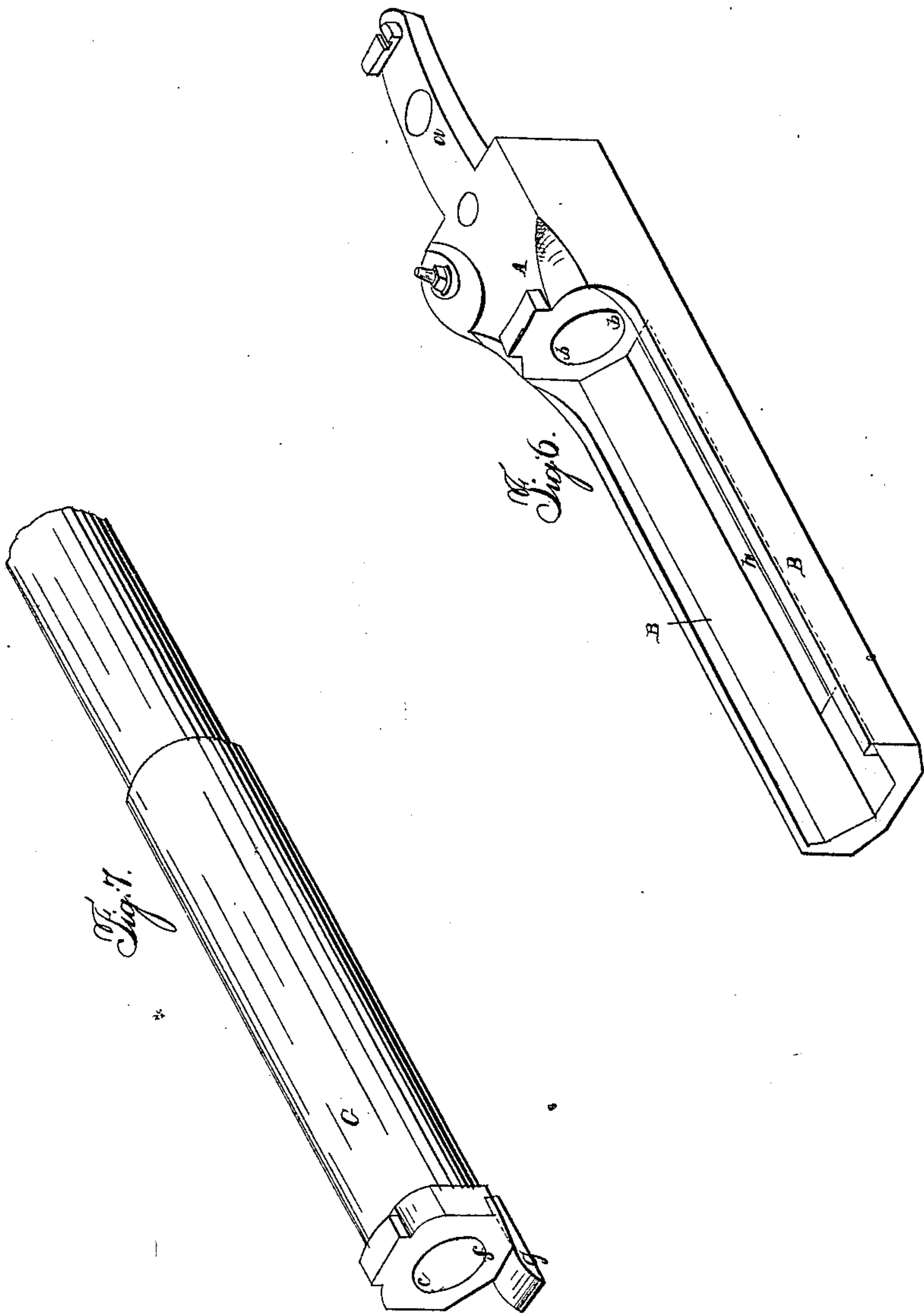


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UNITED STATES PATENT OFFICE.

GILBERT SMITH, OF BUTTERMILK FALLS, NEW YORK.

IMPROVED BREECH-LOADING FIRE-ARM.

Specification forming part of Letters Patent No. **17,644**, dated June 23, 1857.

To all whom it may concern:

Be it known that I, GILBERT SMITH, of Buttermilk Falls, in the county of Orange and State of New York, 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 central section of the breech and parts of the barrel and stock of a gun constructed according to my invention. Fig. 2 is a top view of the same. Fig. 3 is a transverse section taken in the line *x x* of Figs. 1 and 2. Fig. 4 is a central section of the breech at right angles to Fig. 1. Fig. 5 is a top view of the clamping-lever which secures the barrel and breech-piece together. Fig. 6 is a perspective view of the breech and its attached frame in which the barrel slides. Fig. 7 is a perspective view of the rear portion of the barrel.

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

This invention consists in a certain construction of the breech and chamber of fire-arms, and mode of opening the chamber to receive a cartridge, by which, with the use of a cartridge-case of suitable material, the cartridge-case is made to serve as a packing to make the breech perfectly tight when the explosion of the charge takes place.

It also consists in certain means of insuring the locking of the barrel and the breech together at the time of the discharge of the piece; also, in certain novel and convenient means of providing for the adjustment of a sight.

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 breech-piece, having attached to or made in the same piece with it a seat, B, in which the rear portion of the barrel C is fitted to slide longitudinally, and having made in the same piece with it the break-off *a*, by which it is secured to the stock. This breech-piece is chambered out in parallel or cylindrical form, as shown at *b b*, Figs. 1 and 6, to a depth equal to about from one-quarter to three-quarters but generally equal to about half the length of the cartridge to be used in the piece, and of a size to receive the cartridge.

It is to be observed that my improved construction of the breech and chamber requires the charge to be used in a cartridge. The rear portion of the barrel is chambered out cylindrically, as shown at *c c* in Fig. 1, to the same size as the chamber in the breech, and to a depth sufficient to receive that portion of the cartridge that is not received in the chambered portion of the breech, as is illustrated in Fig. 1, where a ball-cartridge, D, is shown in the gun. It will be seen, therefore, that the chamber of the barrel is partly in the barrel and partly in the breech. This chamber, it will be observed, is larger than the general bore *c c* of the barrel, as the latter is only just large enough for the bullet to be driven through, and the cartridge which I employ, and have represented in Fig. 1, has its case parallel from front to rear, and receives the bullet entirely within it. The front of the chambered portion of the barrel terminates in a shoulder, as shown at *f f*, to prevent the cartridge-case leaving the chamber when the piece is discharged. The front of the breech-piece and rear of the barrel may be merely faced square to fit each other, as shown at *s s* in Fig. 1, or to be fitted together with a valve-joint. The chamber is opened to receive the cartridge by sliding the barrel forward in the seat B away from the breech-piece, and the cartridge may be inserted by pushing it forward into that part of the chamber that is within the barrel, or by pushing it back into that portion of the chamber that is within the breech-piece, after which the barrel is moved back again to inclose it within the chamber.

The barrel is confined in the seat B by a metal band, E, which surrounds the barrel and the front part of the stock, and the same band, E, serves to confine the front portion of the seat B to its place in the stock. A short tongue, *g*, on the under side of the rear end of the barrel, fitting to a slot, *h*, in the bottom of the seat B, (see Figs. 1, 6, and 7,) prevents the barrel turning in the seat, and at the same time serves as a stop to prevent it being drawn entirely out of the seat. The barrel and the breech-piece A are locked together during the discharge of the piece by a clamping-lever, F, which works on the top of the barrel and breech-piece on a pivot, *h**, that is screwed into the breech-piece, the said lever receiving and confining between its two lips *i i* (see

Fig. 1) two lugs, $j j'$, one of which is formed on the rear portion of the barrel and the other on the front portion of the breech-piece. The vent for this construction of the breech and chamber may be made to enter through the center of the breech, and the lock of the gun be of ordinary construction.

The case of the cartridge to be used in the breech constructed as above described should be made of vulcanized india-rubber or india-rubber cloth, as it requires to be to a certain degree elastic, and I find by frequently-repeated experiments that that substance is never cut at the joint in the chamber by the force of the explosion, while it is impossible to make a case of paper, unless of very great thickness, that will not cut at the joint $s s$; besides which, paper is not sufficiently elastic to serve as packing. When the explosion takes place, the india-rubber cartridge-case is expanded laterally by the force thereof against the joint $s s$ and the interior surface of the chamber on either side of the said joint, and not the slightest escape of gas takes place at the joint. The cartridge-case does not leave the chamber with the ball, but is confined therein by the shoulder $f f$, and when the chamber is opened after the discharge by turning aside the clamping-lever F and drawing forward the barrel in its seat B the case remains either in the chambered portion of the breech or that of the barrel, but generally in the former, protruding far enough therefrom to be readily taken hold of by the fingers and pulled out and replaced by a new cartridge, which is held in readiness. No lever is necessary to move the barrel to open the chamber for loading, as it can be moved with the greatest ease and expedition by taking hold of it with the left hand and drawing it forward, while the stock remains in the right in the condition in which it was held in firing, and hence this construction of the breech and chamber makes one of the simplest breech-loading fire-arms known; besides which, from the tightness of the joint, in firing, it carries its ball with the full force due to the explosion of the charge, and owing to the absence of all escape of gas the joint remains clean and uncorroded during any number of discharges. This construction of breech and chamber is applicable to shotguns as well as to rifles, muskets, and other pieces intended to fire single balls. In a gun constructed for shot it is not, however, necessary to make the chambered portion of the barrel long enough to receive the whole charge of shot; but a shot-cartridge may be used, substantially like that shown in Fig. 1*, the shot being contained in a paper case, r , which is received partly within the india-rubber case D^* , and a portion of this paper case which protrudes beyond the mouth of the india-rubber is allowed to protrude beyond the chambered portion of the barrel into the smaller part thereof, while the front end of the elastic case only reaches as far as the shoulder $f f$. The elastic case of

this cartridge acts in the same way as that of the ball-cartridge, and remains in the chamber after the discharge. The paper shot-case will sometimes, with the exception of its head t , remain attached to the india-rubber case, but sometimes be blown out by the discharge.

In order to insure the locking together of the barrel and the breech-piece at the time of the discharge of the piece, the clamping-lever F is arranged to move toward the hammer, to release the barrel from the breech-piece, the hammer being in its usual position at the right side of the stock; and the clamping-lever F is constructed with a projection, l , in the side next the hammer, said projection being inclined in front, and so situated relatively to the hammer H that if the lever remains in the position which leaves the barrel released from the breech-piece, as represented in red outline, Fig. 2, the hammer, in being cocked, will come in contact with the inclined front side of the projection and move the lever into line with the barrel, so as to bring its lips $i i$ over the lugs $j j'$ of the barrel and breech-piece and secure them. This will prevent any failure of the locking of the barrel and breech-piece and any accident that might result therefrom, and will also save trouble in the use of the weapon, as when the barrel is moved up to the breech-piece the cocking of the hammer and locking of the barrel and breech-piece together are performed by one movement. When the lever is in the position to lock the barrel and breech, a tooth, u , on its under side (see Fig. 1) snaps into a notch on the top of the break-off and secures it.

m is a sight substantially similar in its form to the ordinary crotch-sight, but made adjustable by being provided with an upright stem, n , which is movable up and down in a hole in the back part of the breech-piece A , for the purpose of adjusting the sight for various distances. The stem n is cylindrical, except that it has a flat filed on one side, as shown in Fig. 4. At the back of the breech-piece a groove is cut through into the hole which receives the stem n of the sight, to receive a spring, p , (see Figs. 1 and 4,) which has both ends secured to the breech by screws. When the sight is turned to the proper position for taking aim, the round portion of the stem n is presented to the spring p , which bears so hard upon it that the sight cannot be elevated or depressed—or at any rate not easily; but by turning it a quarter of the way round the flat part is presented opposite the spring, and upon this part the spring will not press, but leaves the sight at liberty to be elevated or depressed, to adjust it for aim at any distance. By turning it again to the proper position for looking through the notch, the round part is brought opposite the spring and the stem is held tightly. The stem may be provided with suitable marks, to enable the sight to be adjusted accurately for various distances.

I do not claim generally the packing of the joint between the barrel and the breech in breech-loading fire-arms by the expansion or

other action of a portion of the cartridge consequent upon the explosion of the charge, as I am aware that the butt or rear portion of the cartridge has been used to pack the joint in that way when the said joint has been made at the extreme rear of the chamber and close to the face of the breech; neither do I claim generally the retention of the cartridge-case in the chamber until after the discharge; but

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

1. Making the chamber to receive the charge in the form of a cartridge, partly in the barrel and partly in the breech, and so much larger than the general bore of the barrel as to have a shoulder in front to retain the cartridge-case thereon till after the discharge, whereby the joint between the breech and the barrel is brought near the middle of the chamber and not in a corner at the extreme rear or in the front thereof, and is caused to be packed by the lateral expansion of an elastic cartridge-case.

2. Though I do not claim the clamping-lever herein represented for securing the barrel to the breech, I claim furnishing the said clamping-lever with a projection, *l*, so arranged as to be acted upon by the hammer in the act of cocking the latter, for the purpose of insuring locking the breech and barrel together before the discharge, and effecting the operations of cocking the hammer and locking the breech and barrel by one movement.

3. The sight *m*, constructed with a round stem, *n*, flattened on one side, and having a spring, *p*, applied to it, substantially as herein described, for the purpose of enabling it to be adjusted and secured at various elevations, as herein set forth.

GILBERT SMITH.

Witnesses:

J. F. BUCKLEY,
S. F. COHEN.