



# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 31,268, dated January 29, 1861.

To all whom it may concern:

Be it known that I, FREDERICK TOWNSEND, of the city of Albany, State of New York, have invented certain new and useful Improvements in the Construction of Breech-Loading Fire-Arms; and I declare the following specification, with the drawings hereto attached as part thereof, to be a full and complete description of my invention.

In the drawings, Figure 1 represents a portion of the barrel of a carbine, and of the iron framing to which it is attached, with a portion of the movable breech, the whole being in a horizontal section through the line of the axis of the barrel and load-chamber. Fig. 2 is a perspective view in section of the thimble G, shown in Fig. 1.

My invention is intended to furnish a gas-tight joint at the point of conjunction of the load-chamber and the bore of the barrel, with a provision for the maintenance of that joint gas-tight, although the force of the fired charge, by the yielding of the frame or maneuvering apparatus, should cause the movable breech to set back temporarily or permanently, that provision, to be automatic, independent of adjustment by hand.

In Fig. 1, A A is the barrel, screwed in the usual manner into the frame B B, from which extend the lateral straps C C, between which the movable breech D D slides and oscillates by appropriate mechanism, which, for the purpose of exhibiting the present invention, it is unnecessary to represent and describe. E is the bore of the barrel. At the base of the barrel a cylindrical chamber, *a a a a*, which I call the "ring-chamber," is made concentric with the bore and of sufficient diameter to receive the thimble G. This thimble is a solid ring, having a cylindrical exterior surface and a conical interior surface. That the general shape of the thimble may be more clearly apparent, Fig. 2 is drawn, presenting a perspective view of its bisection in the plane of its axis. The exterior of the thimble is exactly fitted diametrically to the interior of the ring-chamber, but its depth from *r* to *n* (which in a carbine should be about one-half an inch) is not equal to the depth of the ring-chamber, leaving, when in place, a vacancy at the back end of the thimble, as shown in Fig. 1. Just forward of this ring-chamber is another concentric chamber or recess, *e e*, which I call the

"packing-chamber." The latter is very shallow and somewhat smaller in diameter than the ring-chamber, the difference in the diameters of the two chambers forming a shoulder or seat for the forward end of the thimble G. The construction is such that when the thimble is in its seat at the forward end of the ring-chamber *a a a a* the packing-chamber *e e* shall constitute a thin annular vacant space between the thimble G and the proper commencement of the bore at *x*. The internal bore of the thimble is tapering or beveling, as above described, the front, *b b*, of the opening, Fig. 2, being a little larger than the bore E of the barrel, the angle of the bevel *b d* being similar to that of the conical end of breech D D, which is fitted to it. This breech also has its bore or chamber H a little larger than E. Its conical front end has its outer surface fitted to the inner surface of the thimble G as nearly gas-tight as it can be made. The screw-socket of the frame B B is fitted with a shoulder at *f f*, against which the rear end of the barrel rests, and it projects downward to form a stop to the backward movement of G beyond its chamber *a a a a*.

The bullet employed is similar to the regulation-bullet now used with rifles in the United States army—viz., a cylinder, 1 1, with a conoidal head, 2, the cylindrical part having three slightly-projecting belts, 3 4 5, the bullets fitting to the bore of the load-chamber, which is made, as described, larger than the bore of the barrel in order to compel the bullets to be abraded or swaged out before they can pass out of the barrel.

The operation of the piece is thus: The breech D D being drawn back, the chamber H is loaded with powder and bullet, the bullet projecting from the mouth of the chamber, as shown. D D being then moved forward, the bullet takes its place so as to bring its belt 3 against the square end *x* of the barrel, left uncovered by the opening of the chamber *e e*. Upon the firing of the charge a portion of the ring 3 is shaved off by the edge of the square end of the barrel, and is forced as a thin ring of metal into the chamber *e e*. Should this furnish metal enough to fill the chamber tightly, the rings 4 and 5 will be drawn out or swaged backward as they pass over the lead filling of the chamber *e e* between the point of the breech-piece D and the bore E. Should

ring 3 fail to fill up the chamber, 4 and 5 in succession will furnish the material. It seldom fails to occur in practice that the expenditure of the first bullet makes a leaden joint pressing so firmly against the end edge of the breech-piece as not to pass a particle of gas. This it is that forms the true joint, securing perfect immunity from leakage. If after the formation of the joint it happens that, by reason of the elasticity of the frame or working machinery, or the wear of parts, the breech-piece settles backward, then the thimble G will also fall back in its chamber *a a a*, leaving the lead packing open and defective; but then the passage of the first bullet thereafter, operating in the manner described, will supply the deficient metal and perfect the joint. In firing, after the bullet has passed into the barrel, the pressure of the gas from the powder tends to pack the metal more thoroughly and confirm the joint.

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

1. The combination of the movable thimble G, the chamber *a a a*, the recess or packing-chamber *ee* between the front end of the thimble G and the rear end of the bore of the barrel, in the manner described, and for the purposes set forth.

2. The method of forming and maintaining in the manner described a gas-tight joint by the abrasion of material from the bullet against the edge of the barrel, and its deposit and compression into a variable recess or packing-chamber formed for its reception between the front end of a movable thimble and the rear end of the bore of the barrel.

FREDK. TOWNSEND.

Witnesses:

RICHD. VARUK DE WITT,  
A. V. DE WITT.