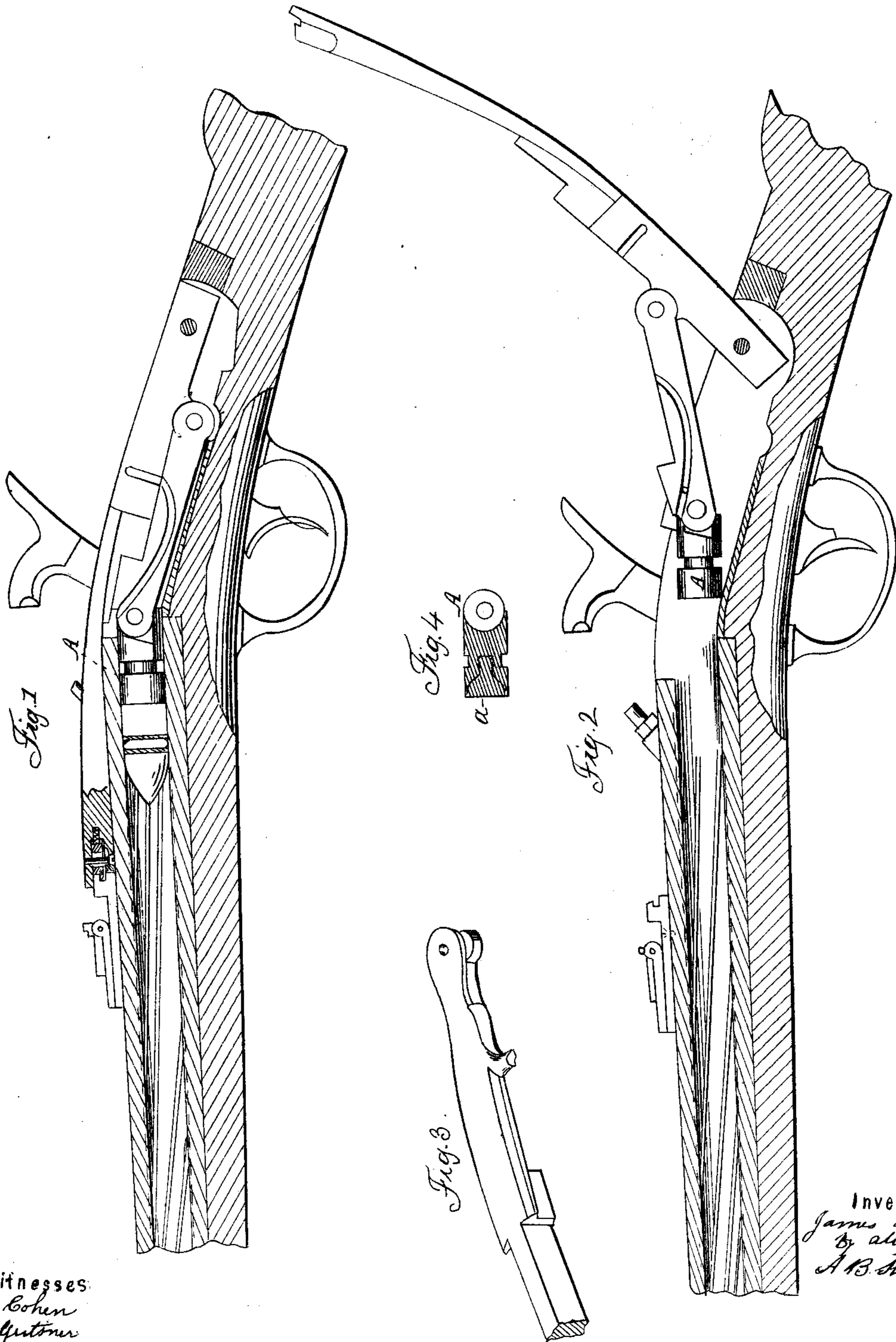


J. H. MERRILL.

Breech-Loading Fire-Arm.

Patented May 28, 1861

No. { 1,446, }  
      { 32,450. }



Witnesses:  
E. Cohen  
H. G. Putnam

Inventor:  
James H. Merrill  
by ally  
A. B. Houghton

# UNITED STATES PATENT OFFICE.

JAMES H. MERRILL, OF BALTIMORE, MD., ASSIGNOR TO THE MERRILL PATENT FIRE ARMS MANUFACTURING COMPANY, OF SAME PLACE.

## IMPROVEMENT IN FIRE-ARMS.

Specification forming part of Letters Patent No. 32,450, dated May 28, 1861.

*To all whom it may concern:*

Be it known that I, JAMES H. MERRILL, of the city of Baltimore and State of Maryland, have invented 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 same, reference being had to the accompanying drawings, making a part of this specification, and which, in—

Figures 1 and 2 represent sections through the gun, showing the parts in two separate positions. Fig. 3 represents a main lever by which the plug is moved and locked; and Fig. 4 represents a plug partially in section, to illustrate the characteristics of this invention.

A plug or piston for a breech-loading gun must be tight enough, when the gun is discharged, to prevent the gas or force of the explosion from driving back between said plug and the bore of the gun; but when the plug is made to so tightly fit the bore it is apt, and, indeed, positively certain, to clog either by expansion of the plug or by the accumulation of dirt, gas, or gummy matter between it and the bore, so that a tight-fitting plug, though very desirable, cannot be used, and one loose enough to move independent of clogging and dirty matter that accumulates in the bore will allow the gas to drive back.

My object is to overcome the evils of both the tight and the loose plug, and to have a plug that will move freely through the bore of the gun, but which will, when the discharge takes place, pack itself perfectly tight in the bore, and thus prevent the backward escape of the gas; and my invention consists in making the forward part of the plug cup-shaped or hollow, splitting the sides thereof, and filling the cup or hollow with a copper plug or any other metal that is more ductile or has greater expansive properties than steel or iron, out of which the plug is ordinarily made.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents a plug or piston for a breech-loading gun. It is operated by a lever to

move it into and draw it from the bore of the gun. The plug is better made of steel, but may be made of iron. The forward end of the plug is bored, reamed, or hollowed out, so as to leave a thin rim of steel or iron at that end. This rim or shell is then sawed down or split, so that the sections or segments between the slits may be expanded outward. A copper plug, *a*, is then made, which neatly fills the hole in the end of the plug or plunger A. A very good way of putting in this copper plug is to cut a screw in the bottom part of the hole made in the piston, and to form a male screw on the copper plug to screw into it. By such an arrangement the copper plug may be removed, should it become battered, and another inserted in its place. When the gun is discharged, the recoil, as well as the action of the fire, suddenly expands the copper, it being particularly sensitive to both, and the copper, in expanding, drives the thinner portions of the piston, which, as above stated, are split for that purpose, tight up against the bore and packs the space between the piston and the bore. This expansion and packing takes place at the instant of firing the gun, and the next instant the copper contracts and steel or iron follows it, leaving the piston free to move back for another charge and another similar discharge.

The drawings illustrate the several parts or portions of the gun by which and with which the piston is more immediately operated, and need not be described in detail.

Having thus fully described the nature and object of this invention, what I claim therein as new, and desire to secure by Letters Patent, is—

Combining with the piston of a breech-loading gun a copper plug and split rim, for the purpose of causing the discharge through the more ready expansion of the copper to pack the joint between the piston and the bore of the gun, substantially as described.

JAMES H. MERRILL.

Witnesses:

DAVID CARSON,  
P. W. THOMAS.