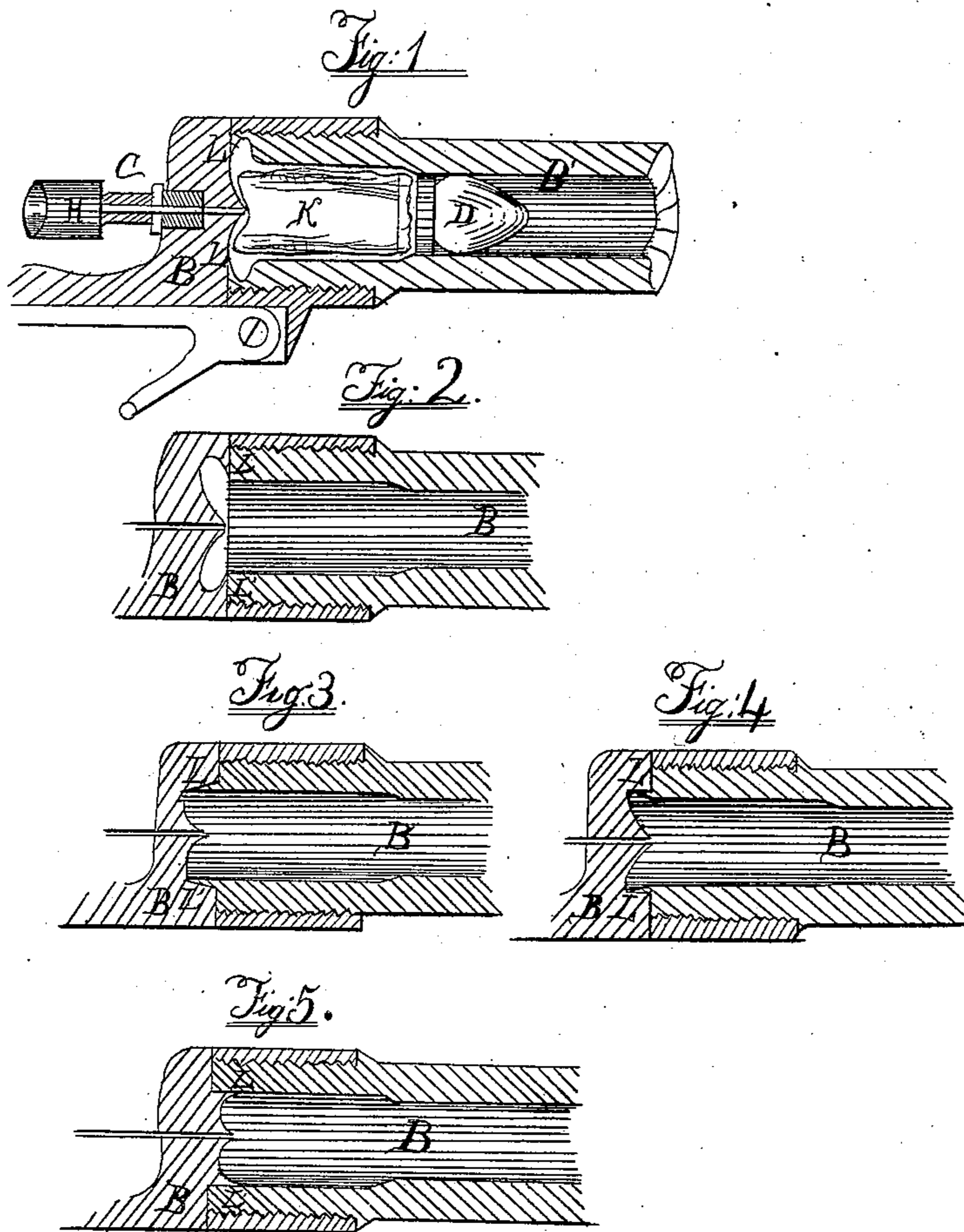


J. C. SYMMES.
Breech-Loading Fire-Arm.

No. 22,094.

Patented Nov. 16, 1858.



UNITED STATES PATENT OFFICE.

JOHN C. SYMMES, OF WATERTOWN ARSENAL, MASSACHUSETTS.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 22,094, dated November 16, 1858.

To all whom it may concern:

Be it known that I, JOHN CLEVES SYMMES, a lieutenant of the regular army, at present stationed at Watertown Arsenal, county of Middlesex, State of Massachusetts, have invented a new and Improved Method of Packing the Joints between the Breech and Barrel of Breech-Loading Guns; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, the like letters referring to like parts in all the different figures.

The nature of my invention consists in making the surfaces of either the breech or barrel, where they lie together, of such shape that the effort of the gas under compression shall be, in general, not to push those two surfaces apart so much as to push them the inner against the outer, and thus to close together against the passage of gas between them.

For the benefit of others I thus describe my invention. The gas of burning powder propelling a ball in a gun will penetrate between the breech and barrel, be they pressed however closely together by any means that may fit a portable arm. We are driven, therefore, to some means of making the explodent force pack its own joint with some arrangement resembling a valve. Others have accomplished this in different ways; but mine is delineated in the accompanying drawings.

Figure 1 is a central vertical section through a breech and barrel with my arrangement for packing the joint between them. B represents the breech hinged to the barrel at I. B' is the barrel with the cartridge; K D H, the hammer; C, the cone. L and L' are sections of the annular lip.

Now, if the cartridge K be exploded by the usual means, propelling the ball D through

the barrel, the powder-gas will pass equally all parts of the chamber, and the breech B will be forced appreciably backward. If the lips L and L' were rigidly connected with the barrel there must then be an escape for the gas between the breech B and the barrel B'; but the thinness of the lip L L' is such that it will partially yield to the pressure from within and will follow the slight recession of B, and remain in contact with it, both being equally pressed by the burning gas.

By reference to Figs. 2, 3, 3', and 4, various arrangements of the lip L L' are seen. In Fig. 2 the lip is a part of the breech B. In Figs. 3 and 3' it is upon the barrel and protruding into the breech, while in Fig. 4 it is upon the breech protruding into the barrel. Any two of these arrangements may be combined when suitable.

It is better to have as great an extent of distance between the inner edge of the lip and the outer surface of the barrel or breech as possible, as in Figs. 3, 3', and 4, for without the lip there would be very little escape in either Figs. 3 or 4; but with the lip the escape of gas is quite cut-off. The manner of hinging the breech as in Fig. 1 would not do with Figs. 3' and 4, for in those cases the breech and barrel should approach each other along a straight line. In Figs. 2 and 4 the lip is made upon the breech.

I claim—

The elastic flexible lip substantially described above, however it may be applied to checking the escape of gas from the breech of breech-loading guns.

JNO. CLEVES SYMMES.

Witnesses:

JOS. WATERS,
GEO. HILL.