

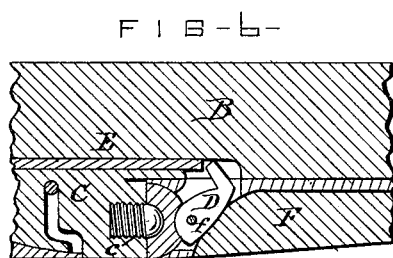
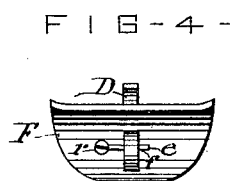
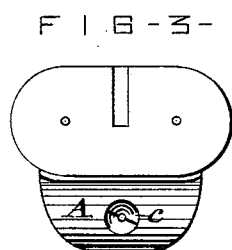
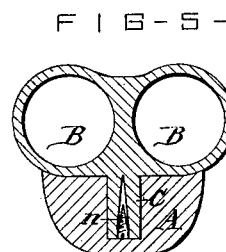
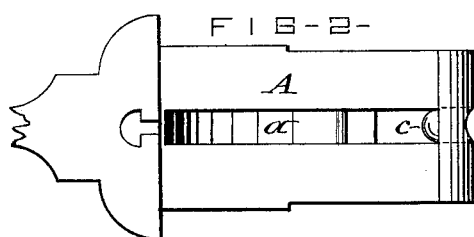
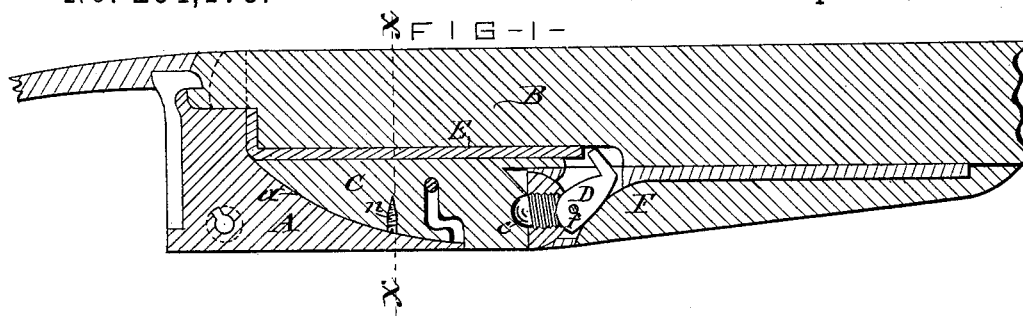
(No Model.)

2 Sheets—Sheet 1.

D. M. LEFEVER & F. R. SMITH.
BREECH LOADING FIRE ARM.

No. 264,173.

Patented Sept. 12, 1882.



Witnesses—
C. H. Raymond
C. H. Duell

Inventors—
Daniel M. Lelever
and Franklin R. Smith
per Duell, Laessle & Co.
Attorneys

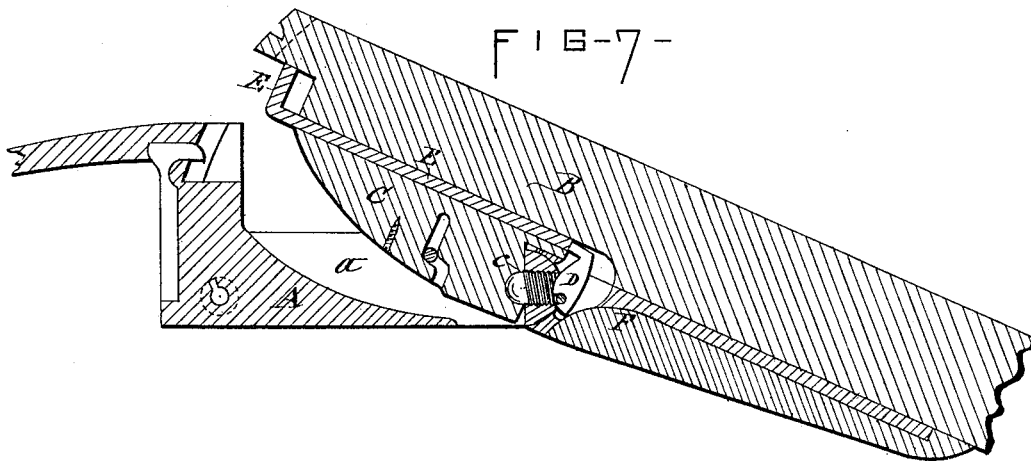
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WITNESSES =

Com^l L. Raymond
C. H. Duell

INVENTOR =

Daniel M. Lefever and
 Franklin R. Smith
 per Daniel Lefever & Co., atty.

UNITED STATES PATENT OFFICE.

DANIEL M. LEFEVER AND FRANKLIN R. SMITH, OF SYRACUSE, N. Y.

BREECH-LOADING FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 264,173, dated September 12, 1882.

Application filed December 5, 1881. (No model.)

To all whom it may concern:

Be it known that we, DANIEL M. LEFEVER and FRANKLIN R. SMITH, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Breech-Loading Fire-Arms, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The nature of this invention relates chiefly to the hinged connection of the barrels with the breech-extension of a breech-loading fire-arm; and it consists in a novel arrangement of a ball-and-socket joint interposed between the adjacent ends of the usual lug on the under side of the barrels, and of the mortise of the breech-extension receiving said lug, thereby dispensing with the hinge-pin heretofore inserted transversely through the breech-extension for the purpose of connecting the said parts.

The invention also consists in a novel construction and means of adjustably securing the said ball-joint in its position, so as to compensate for the wear of said joint; and it furthermore consists in a novel, simple, and effective means of connecting the ejector to the fore-end piece of the fire-arm, all as hereinafter more fully described, and set forth in the claims.

In the annexed drawings, Figure 1 is a longitudinal section of a breech-loading fire-arm provided with our improvements. Fig. 2 is a detached plan view of the breech-extension. Fig. 3 is an end view of the same. Fig. 4 is a rear end view of the fore-end piece. Fig. 5 is a transverse section on line *x x*, Fig. 1. Fig. 6 illustrates modifications in the arrangement of the ball-and-socket joint by which the barrel is hinged on the breech-extension; and Fig. 7 is a longitudinal section, showing the barrels in a tilted position and illustrating the operation of the extractor and its actuating mechanism.

Similar letters of reference indicate corresponding parts.

A denotes the usual extension of the breech running under the barrels B, and having a mortise, *a*, for the reception of the lug or projection C on the under side of the barrels, the

barrels being hinged to the forward end of the breech-extension A, so as to allow said barrels to tilt and swing with their rear end upward and away from the breech-block when required for loading the barrels or for extracting the cartridge or shell. The aforesaid hinged connection has hitherto been formed of transverse cylindrical bearings between the barrels and breech-extension. Such a construction, however, is expensive, and renders the said connection difficult to be maintained in perfect working order, inasmuch as the fitting of the parts requires the utmost accuracy to prevent looseness of the joint and lost motion. In order to overcome this difficulty, I employ between the barrels and breech-extension a ball-and-socket joint in the form of convex and concave semi-spherical bearings, secured respectively in the adjacent faces of the usual lug, C, on the barrels, and of the forward portion of the breech-extension, said bearings being arranged concentric with the center of motion of the swinging barrels. In order to render the aforesaid joint adjustable, so as to compensate for the wear and abrasion of same, I form said joint of a screw-threaded plug, *c*, having a convex or hemispherical end in the form of a half section of a ball. This plug is either inserted and adjustably secured in a screw-threaded socket in the forward end of the breech-extension and engages with a hemispherical recess or socket in the forward end of the lug C, as shown in Fig. 1 of the drawings, or may be in a similar manner applied to the end of the lug C, and by its protruding hemispherical or ball end engage a corresponding recess or socket in the end of the breech-extension facing the recess *a*, as illustrated in Fig. 6 of the drawings. In either case the ball-and-socket joint forms the hinged connection between the barrels and breech-extension and dispenses with the usual transverse hinge-pin. By turning the plug *c*, so as to cause its hemispherical end to project a greater distance the described ball-and-socket joint can be adjusted to a close and perfect fit, and the wear of the same can be compensated. The wear upon the sides of the lug C is compensated by a tapering screw, *n*, entering a vertical longitudinal slit in said lug, as best seen in Fig. 5 of the drawings.

D represents the ejector in the form of a lever, pivoted to the fore-end piece, F, and formed with an eccentric face in front of its pivot, said eccentric face protruding at the rear end of the fore-end piece and entering a segmental socket or recess in the forward end of the breech-extension. When the plug *c*, before described, is arranged in the position shown in Fig 1 of the drawings, I form the aforesaid recess in the forward end of the plug, and inasmuch as said plug is composed of steel, an excellent bearing is obtained for the free end of the pivoted ejector D. Since the axial center of the hinged connection between the barrels and breech is at the center of the semicircle described by the surface of the forward end of the breech-extension, the rear end of the fore-end piece, F, which abuts against said breech-extension, is caused to slide around the semicircular end of the latter when the barrels are tilted or swung off the breech-block, and this motion carries the pivot of the ejector below the plane of the axis upon which the barrels swing, and, by the resultant pressure of the lower portion of the eccentric face of the ejector against the lower portion of its bearing on the end of the breech-extension, causes the upper end of the ejector to swing rearward, and thus force the extractor E rearward in the usual manner.

To facilitate the attachment of the ejector D, we cut in the rear face of the fore-end piece a transverse open slot or recess, *e*, of proper

size and depth to receive the pivotal pin *f* of the ejector. A set-screw, *r*, inserted into the face of the fore-end piece at the end of the pin *f* serves to retain said pin in its position.

Having described our improvements, what we claim is—

1. The combination, with the breech-extension A, provided with the mortise *a*, and the barrels B, provided with the lug C, the screw-threaded plug *c*, inserted adjustably in the end of one of the parts *a* C, and having a hemispherical protruding end engaging a corresponding cavity in the adjacent end of the other of said parts, substantially as shown and described:

2. In combination with the breech-extension A and barrels B, hinged thereon and provided with the extractor E, the fore-end piece, F, provided with the open slot *e*, and the ejector D, having its pivotal pin *f* secured in said slot by the screw *r*, substantially in the manner described and shown.

In testimony whereof we have hereunto signed our names and affixed our seals, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga and State of New York, this 28th day of November, 1881.

DANIEL M. LEFEVER. [L. s.]
FRANKLIN R. SMITH. [L. s.]

Witnesses:

C. H. DUELL,
WM. C. RAYMOND.