

(No Model.)

2 Sheets—Sheet 1.

C. MARTIN.
GUN EMBRASURE JOINT.

No. 518,155.

Patented Apr. 10, 1894.

FIG. I.

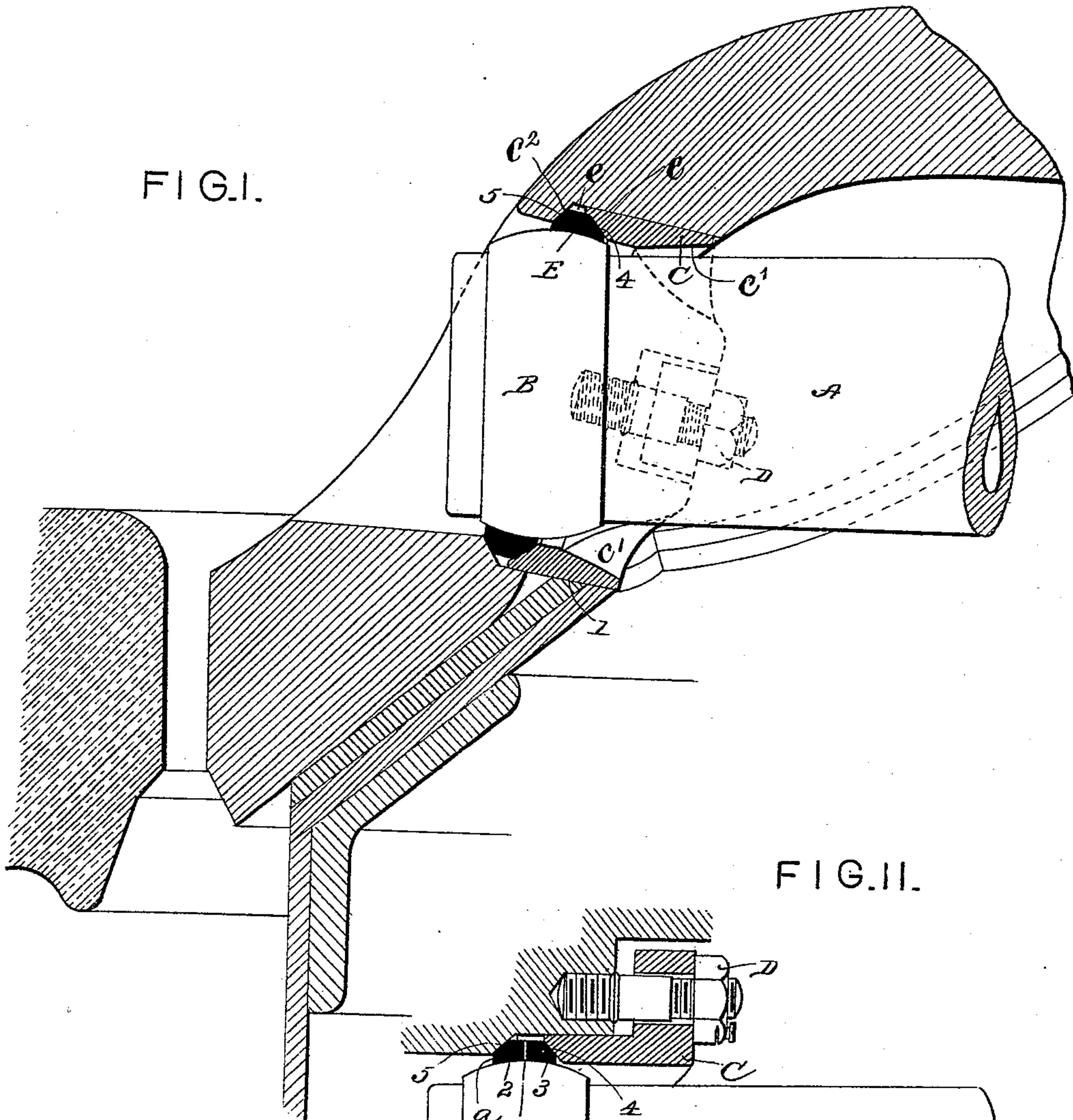
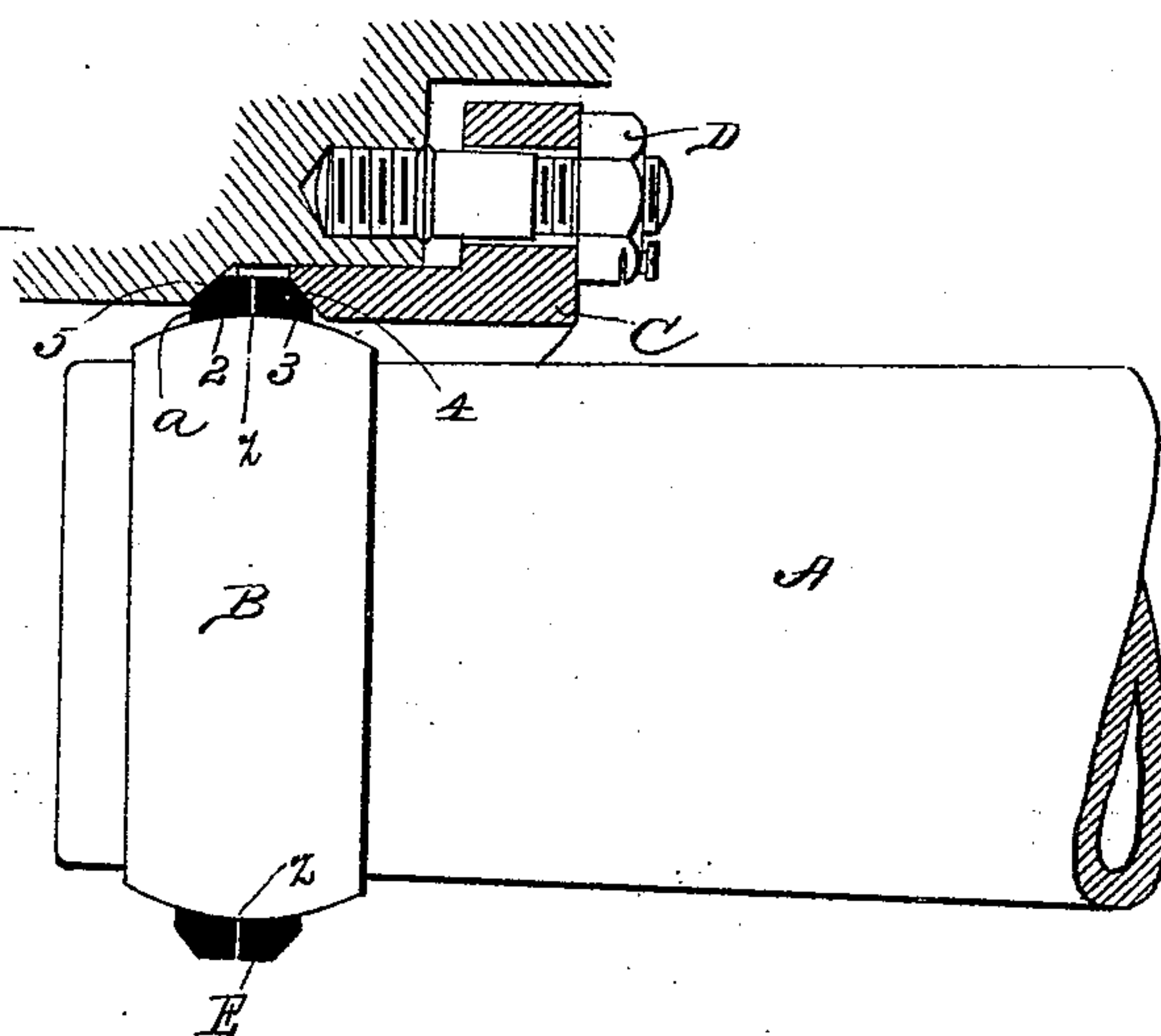


FIG. II.



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George E. Criss.

Inventor:
Carl Martin
By. Knight Bros.
Attorneys.

(No Model.)

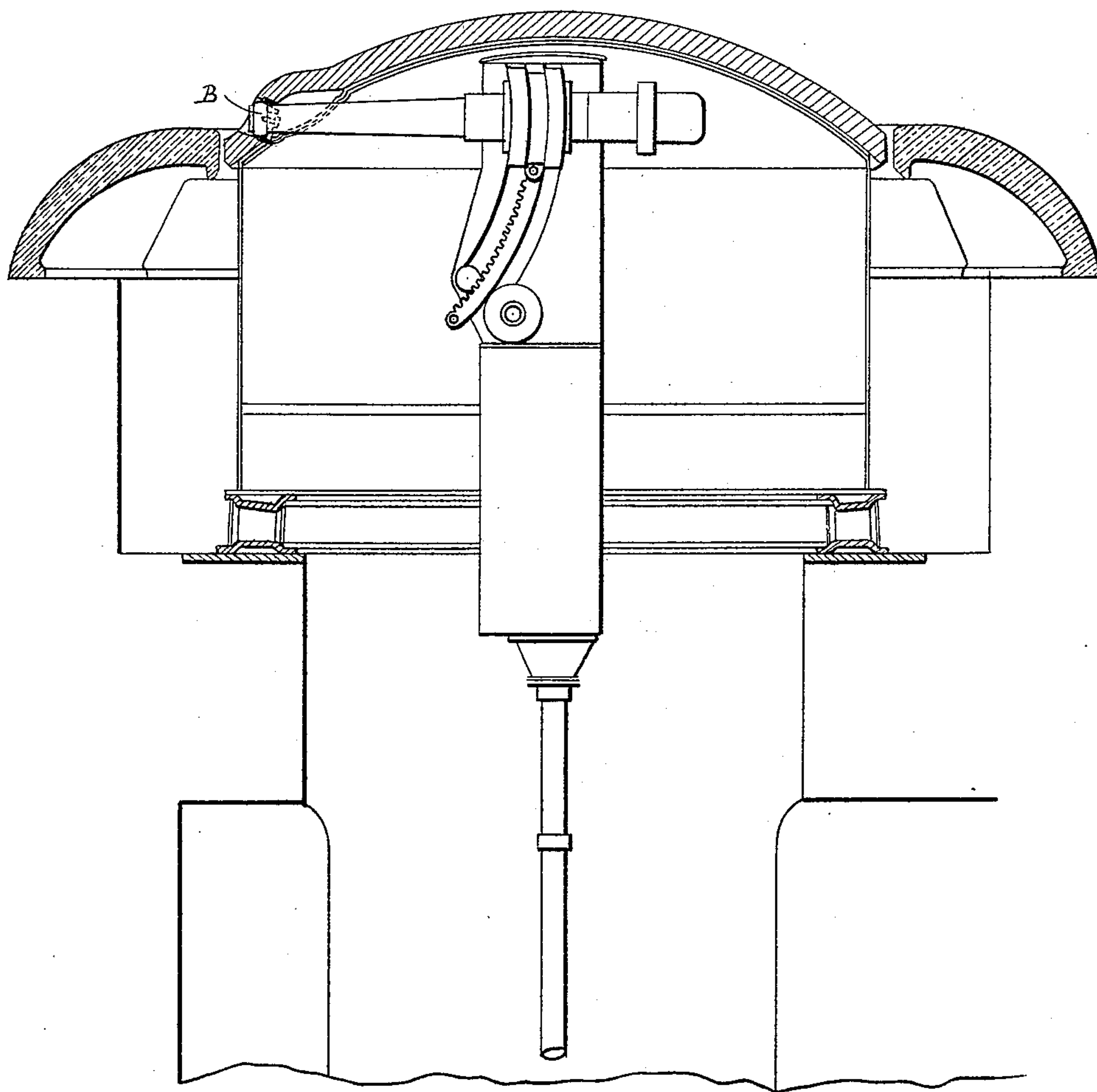
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FIG. III.



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UNITED STATES PATENT OFFICE.

CARL MARTIN, OF MAGDEBURG-BUCKAU, GERMANY, ASSIGNOR TO THE GRUSONWERK, OF SAME PLACE.

GUN-EMBRASURE JOINT.

SPECIFICATION forming part of Letters Patent No. 518,155, dated April 10, 1894.

Application filed February 3, 1891. Serial No. 380,057. (No model.)

To all whom it may concern:

Be it known that I, CARL MARTIN, a subject of the King of Prussia, residing at Magdeburg-Buckau, in the Kingdom of Prussia, German Empire, have invented an Improved Gun-Embrasure Joint, of which the following is a specification.

The invention hereinafter described relates to an improved joint for tightly closing the space between the gun and the embrasure in "minimum-embrasure" gun-carriages, which joint operates like a stuffing-box and entirely prevents the entrance through the embrasure of the powder-gases which leave the gun at a very high pressure.

It is well-known that, by the term, "minimum-embrasure," is understood an embrasure in an armor-plate or shield, in the center or approximately in the center of which are situated the imaginary or vertical pivots or axes about which the gun is turned for vertical pointing or elevation and training, or, in an armor-plated revolving turret, for vertical pointing or elevation only. By this means, as indicated by the term "minimum-embrasure" the smallest practicable embrasure is obtained, which bears somewhat tightly against the gun. Nevertheless these arrangements, even when the long chase of the gun protrudes from the armor-plate, have the defect that, on the firing of the gun, the powder-gases issuing at a very high pressure from the muzzle, find access through the embrasure-joint into the interior of the armor-plate shield and cause considerable inconvenience to the gunners. Numerous arrangements of embrasure-joints have been devised with the object of obviating this defect, but, up to the present time, none of these arrangements has fulfilled its purpose. The difficulty lies in the fact that simple metallic joints permit the passage of the powder-gases notwithstanding the greatest accuracy in the fitting of the parts, while hemp and asbestos joints, though they act well at first, become useless after a few shots have been fired from the gun.

Now the present invention has for its object to automatically form a hermetic joint during the firing, without interfering with the movableness of the gun.

In order that my invention may be fully understood I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a vertical section of my improved gun embrasure joint. Fig. II is a horizontal section thereof. Fig. III is a vertical section showing a modification.

Upon the gun A (Figs. I and II) is provided a collar B which is turned to a convex form. The center of the collar coincides with the point of intersection of the virtual pivots for the vertical pointing or elevation and the training of the gun. The embrasure is bored out cylindrically at the inner side to a certain depth to form a shoulder c^2 and also to form a kind of stuffing-box, in which a gland C having a recess c' is fitted, this gland being secured and adjusted by means of screws D. The packing itself consists of a ring E turned or bored out in concave convex form in cross section and made of soft metal, for instance, copper, which ring is fitted accurately upon the collar B. To enable the said ring to be placed upon the said collar, it is composed of two or more segments and to enable the collar to operate in the manner hereinafter set forth it is split or divided at z , (Fig. II) in a plane at right angles to its axis. The stuffing-box gland C is turned out conically at its forward end c and bears somewhat tightly against the ring E, which is turned to a corresponding form. If the nuts D were tightly screwed down, the ring E would, by means of the conical part of the gland C, be pressed so firmly against the convex surface of the ring B that the friction produced between these parts would not only render the pointing difficult, but would also cause much wear of the packing-ring. The said screws D, however, are not intended to be tightly screwed down, but the parts are so adjusted that the pressure which causes the hermetic closing of the embrasure will take place only upon the firing of the gun, and will be automatically effected by the powder-gases, that is to say; the stuffing-box gland C is accurately fitted into the bore of the embrasure (which may be provided with a leather packing) and is only tightened to such an extent that the ring E acts

as a bearing but not as a packing. When, however, a shot is fired, the powder-gases under a high pressure pass at 5 into the space *e* between the embrasure wall and the ring 5 E, and force the front or concave part of the said ring directly against the convex surface of the collar B, and also force the ring E into the hollow cone of the gland C, thereby effecting a further tightening between E, B 10 and C. The action of the arrangement represented in Figs. I and II, is in this respect the same.

In the firing, the tightness of the joint at 5 is somewhat diminished; but the powder- 15 gases penetrating at this point cannot pass through the embrasure either at 2 or at 3 or 4, and, therefore, they cannot enter the interior of the armor-plate. After the firing, as soon as the external pressure is diminished, 20 the copper ring E expands again, that is to say, the pressure between the parts of the same and the collar B is relaxed, and the gun can be easily pointed, without impairing the quality of the joint. This is the characteris- 25 tic feature and at the same time the chief advantage of the invention.

In the drawings, the embrasure-joint is adapted to a gun-carriage in which the gun is not moved backward by the recoil.

30 Fig. III shows a special arrangement for a revolving turret in which a horizontal turning of the gun about a virtual pivot in the embrasure is not necessary, as the training is effected by rotating the entire turret. In the 35 construction of the embrasure-joint, no change is necessary when the training must be effected by turning the gun, as the spherical joint permits motion in any desired direction. When the gun-carriage is so arranged 40 that the gun will move backward in the recoil, the collar B is held in any suitable man-

ner in the embrasure, and is provided with a stuffing-box or with a leather or other packing-ring which is fitted upon the long chase 45 of the gun, the latter being turned cylindrical for this purpose, so that the gun, during the recoil and running out thereof, can slide in the collar B.

I claim—

1. The combination of an embrasure hav- 50 ing a cylindrical bore at its inner side forming a shoulder, a collar surrounding the gun having a convex surface, a ring of concave-convex form in cross section fitting on the collar against the shoulder, and the adjust- 55 able gland located in the bore, having a conical recess in its forward end occupied by the rear side of the ring; the shoulder, embrasure, ring, and gland forming a space between them into which the powder-gases enter from 60 the front side of the ring and force the latter against the collar and into the recess of the gland; substantially as described.

2. The combination of an embrasure hav- 65 ing a cylindrical bore at its inner side forming a shoulder, a collar surrounding the gun having a convex surface, a ring of concave-convex form in cross-section, divided circumferentially and fitting on the collar against 70 the shoulder, and the adjustable gland located in the bore, having a conical recess in its forward end occupied by the rear side of the ring; the shoulder, embrasure, ring and gland forming a space between them into 75 which the powder-gases enter from the front side of the ring and force the latter against the collar and into the recess of the gland; substantially as described.

CARL MARTIN.

Witnesses:

HERMANN LUBOWSKI,
EMIL KALLNECKER.