

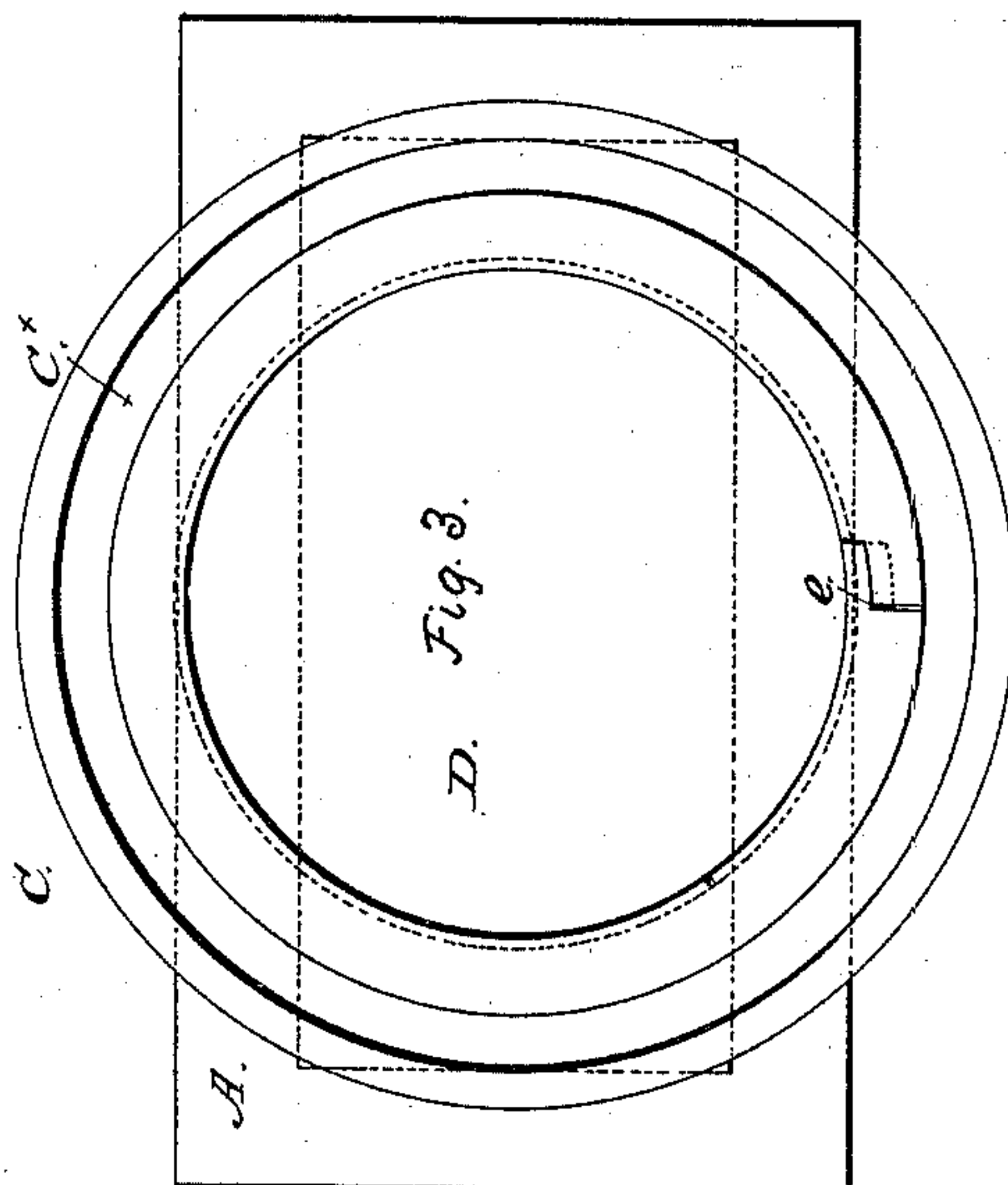
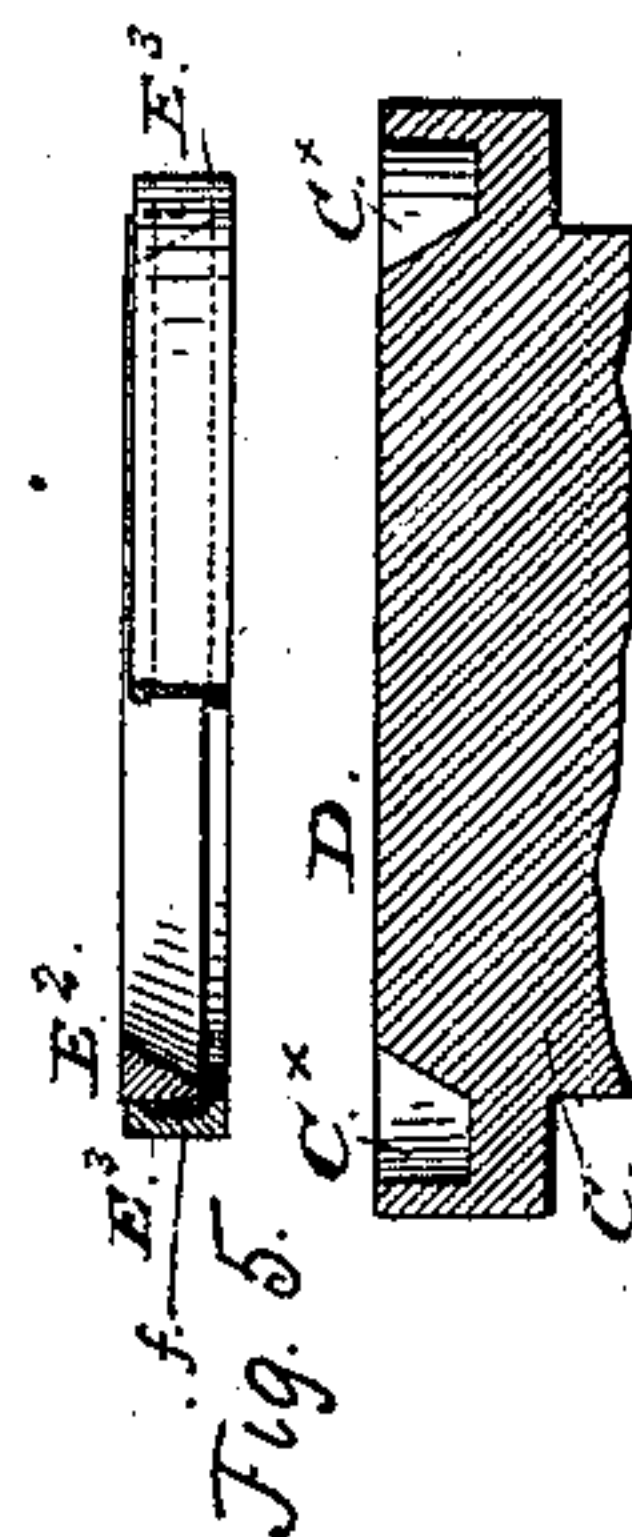
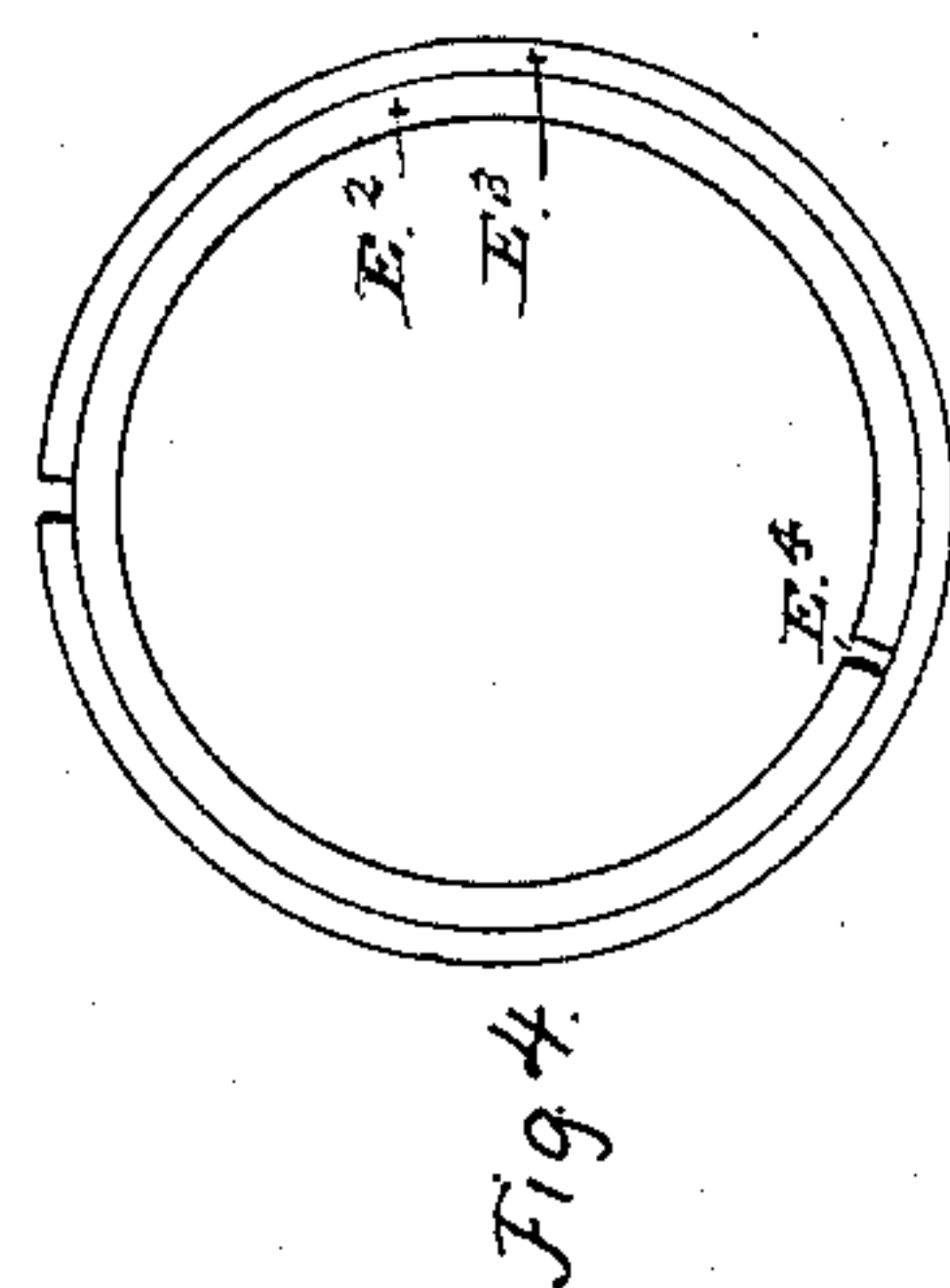
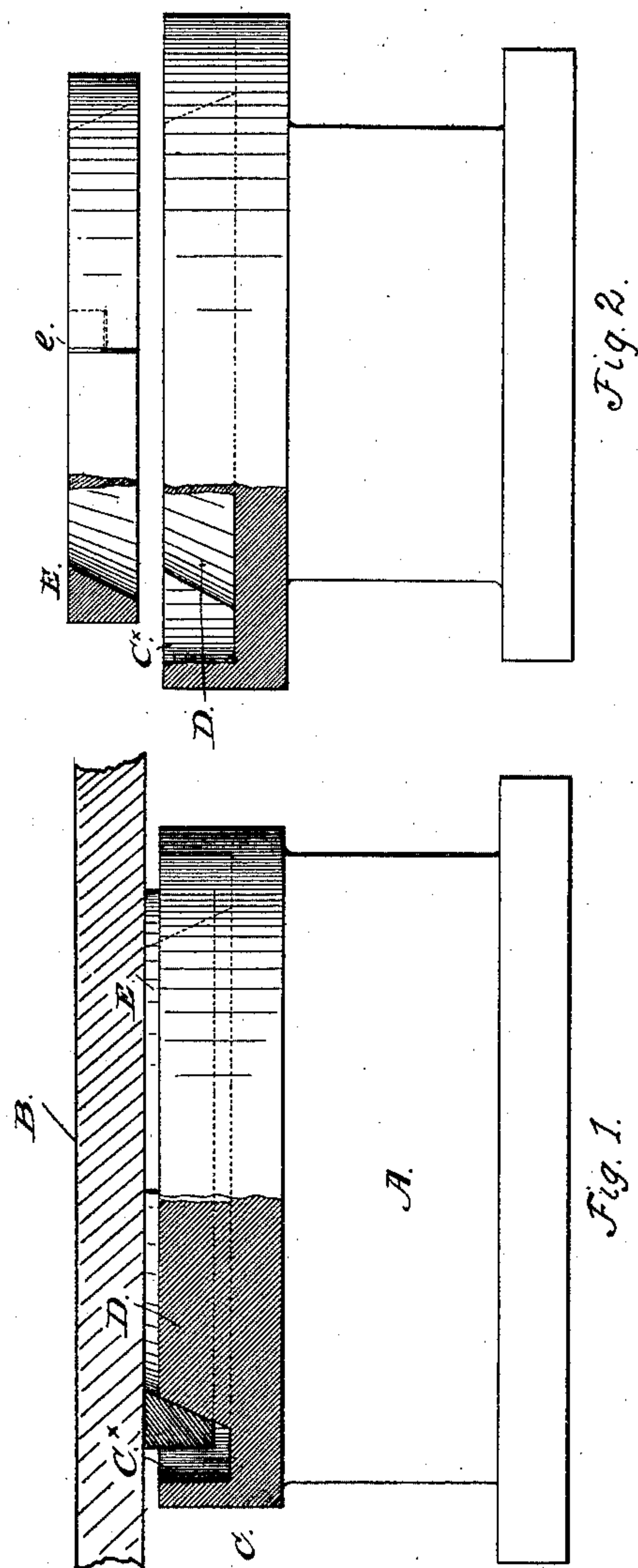
(No Model.)

W. J. THOMAS.

SLIDE VALVE.

No. 385,431.

Patented July 3, 1888.



Witnesses:

A. H. Peat.
E. Patten.

Inventor:

W. J. Thomas.

By *Smith & Brown*.

His Atty's.

UNITED STATES PATENT OFFICE.

WILLIAM J. THOMAS, OF SAUCELITO, CALIFORNIA.

SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 385,431, dated July 3, 1888.

Application filed January 5, 1888. Serial No. 259,911. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. THOMAS, a citizen of the United States, residing in Saucelito, in the county of Marin and State of California, have invented certain new and useful Improvements in Slide-Valves for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the drawings that accompany and form part of this specification.

The object of my invention is to convert an ordinary slide-valve into a balance slide-valve, and I accomplish this object by constructing and applying bearing-rings having conical surfaces between the back of the slide-valve and the steam-chest, substantially after the manner explained and set forth in the following description, in which the accompanying drawings are referred to by figures and letters.

Figure 1 of the said drawings is a vertical section taken longitudinally through a slide-valve and steam-chest to which my improvement is applied. Fig. 2 is a top view of the valve balance-cone and bearing-ring. Fig. 3 shows the parts in detail. Figs. 4 and 5 represent a modification in which two split rings breaking joints are used in place of the single ring.

A represents an ordinary slide-valve, and B the top or cover of its chamber.

C is a plate bolted on the back of the valve, or formed with the valve as a part of it, and having a circular groove, C^{*}, on the upper face surrounding a standing cone, D. The top of the cone is flat and the surface of the cone is the inner wall of the groove. Its height or thickness is also somewhat less than the space between the back of the valve and the cover B, so that when the valve is on its seat the top surface of the cone will clear the cover. A space of three-sixteenths of an inch is sufficient to be left between these surfaces.

E is an expansible ring with its internal face tapered to fit closely around and against the cone to form a steam-tight joint between them. Its exterior diameter is somewhat less

than that of the groove C, to leave a steam-space within the groove between the ring and the outer wall of the groove. The ring is split at *e*, and the ends are so formed that an overlap-joint is produced, which breaks both vertically and horizontally, as shown in Fig. 3. The top face of this ring should stand at least one-eighth of an inch above the top face of the cone, while its lower face should clear the bottom of the groove under the greatest pressure that will be brought upon the top of the ring. When the valve is seated and the cover bolted down, the top face of this ring forms the bearing-surface of the back of the valve and the top of the cone sets clear of the cover.

Instead of the single bearing-ring E, two split rings, E² E³, Fig. 4, can be used, the inner ring being tapered to fit the cone D, and the outer ring fitted closely around the taper ring to cover the joint E¹. The two rings are locked together by a rib or spline, *f*, on one and a corresponding groove in the other. In either construction the tapering surface of the expansible ring is held closely against the face of the cone by virtue of the elastic quality of the ring and its expansibility. As thus constructed and applied, it will be seen that the face of the cone on the valve and the conical surface of the ring constitute a bearing-surface that is self-adjusting in several directions. The steam-pressure serves to keep the bearing-ring up to its seat against the cover, as well as to hold the working-faces of the parts tightly together. The bearing-surface on the back of the valve is therefore universally adjustable in all directions horizontally, while the expansibility of the bearing-ring compensates for any vertical movement. The valve seats evenly, therefore, under all conditions.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a slide-valve, of a top plate having an annular groove in it, the inner wall of which groove is conical, as shown and described, and an expansive ring,

E, tapered to fit the conical wall and of a size to stand above the upper edge thereof, as set forth.

2. The combination, with a slide-valve, of
5 a top plate having an annular groove in it, the inner wall of which is conical, and an expansible ring, E, tapered to fit and stand above the face of the top plate and breaking joints

both vertically and horizontally at its point of division, as set forth. 10

In testimony that I claim the foregoing I have hereunto set my hand and seal.

WM. J. THOMAS. [L. S.]

Witnesses:

C. W. M. SMITH,
CHAS. E. KELLY.