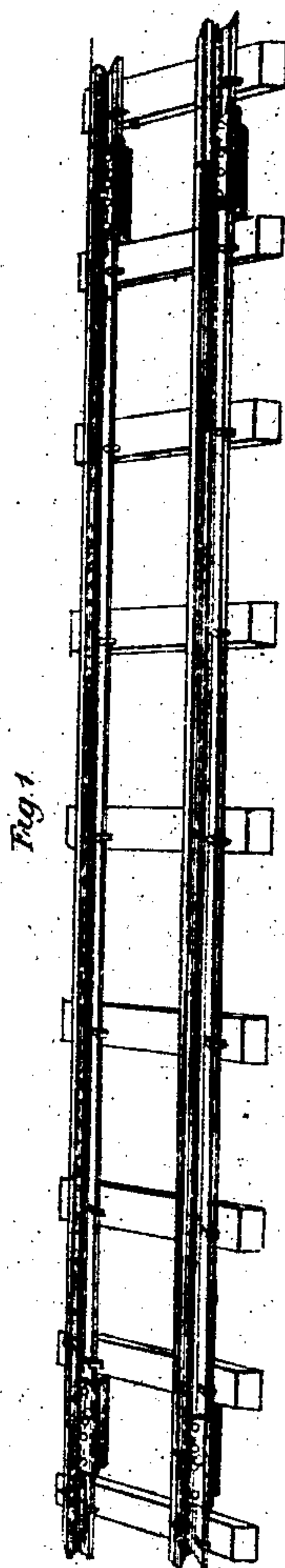
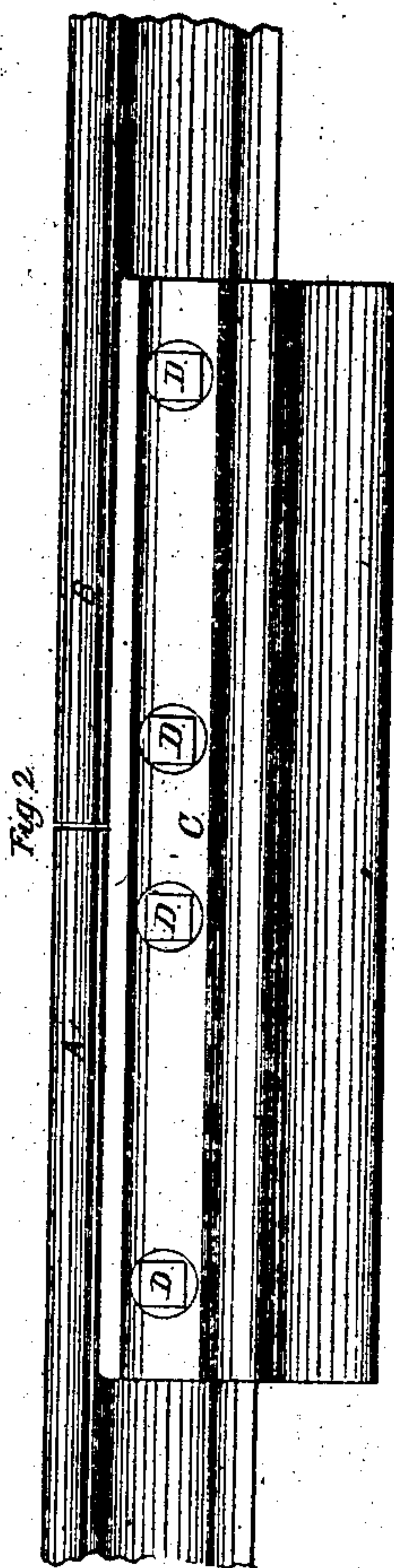
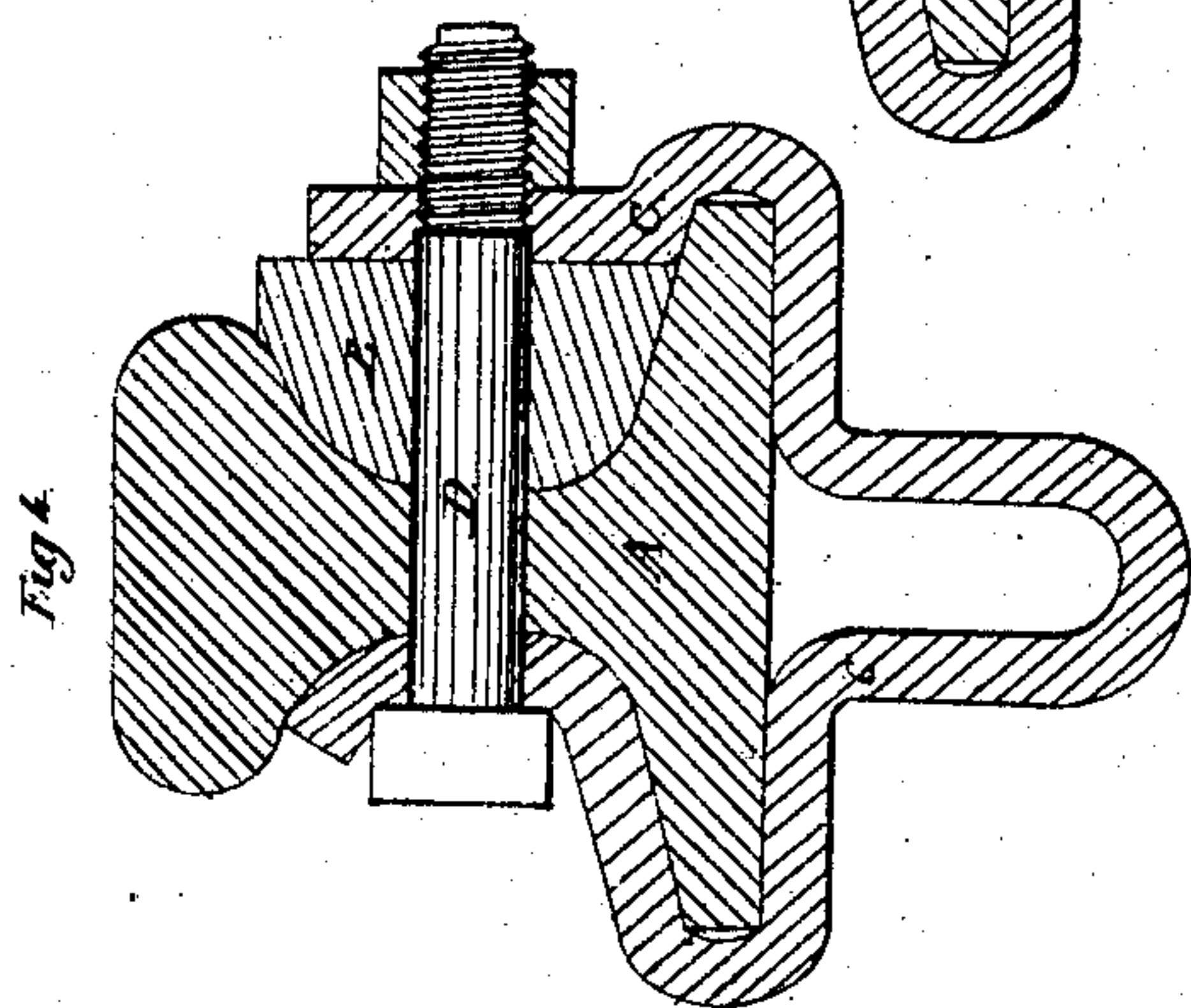
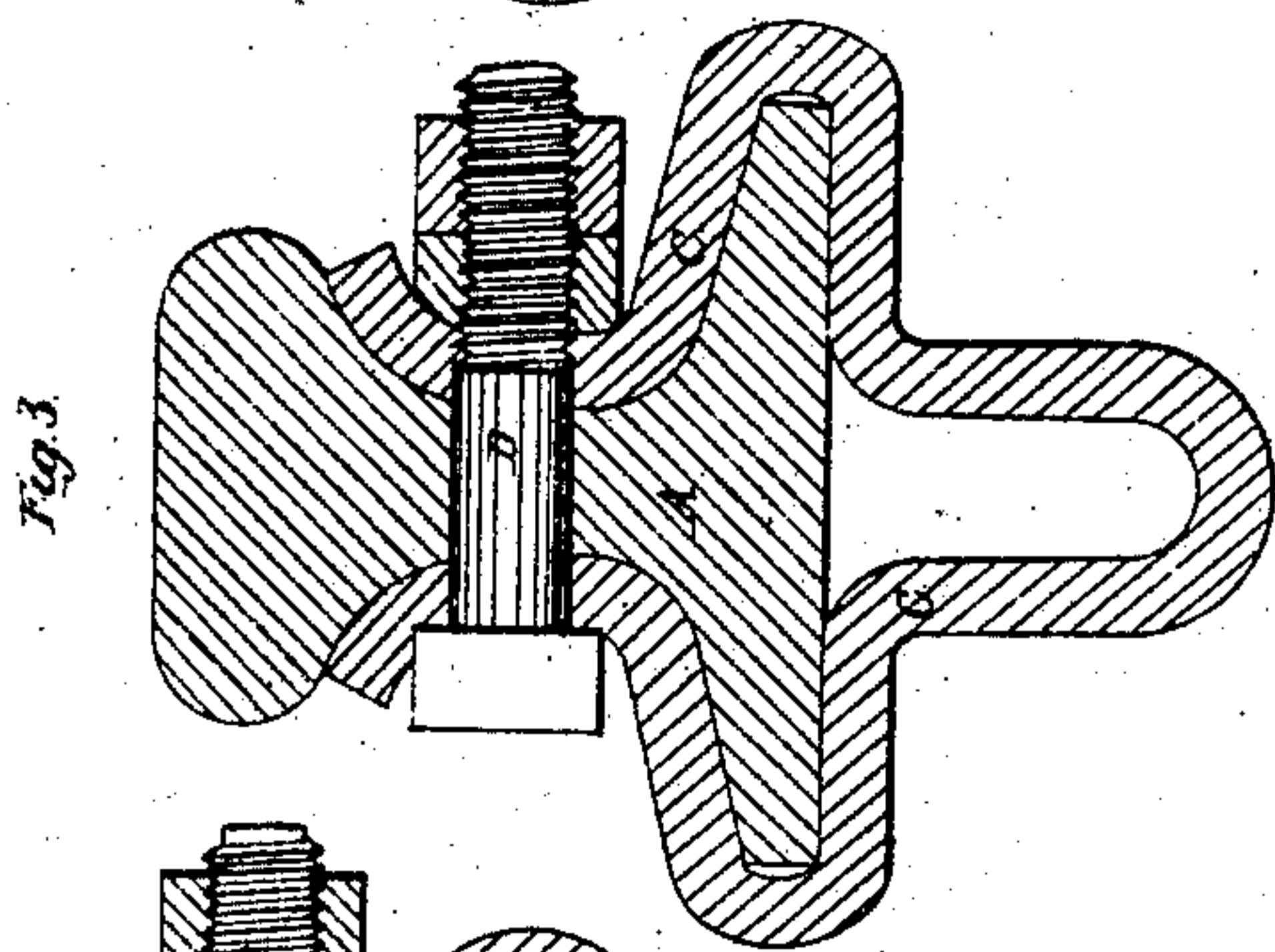
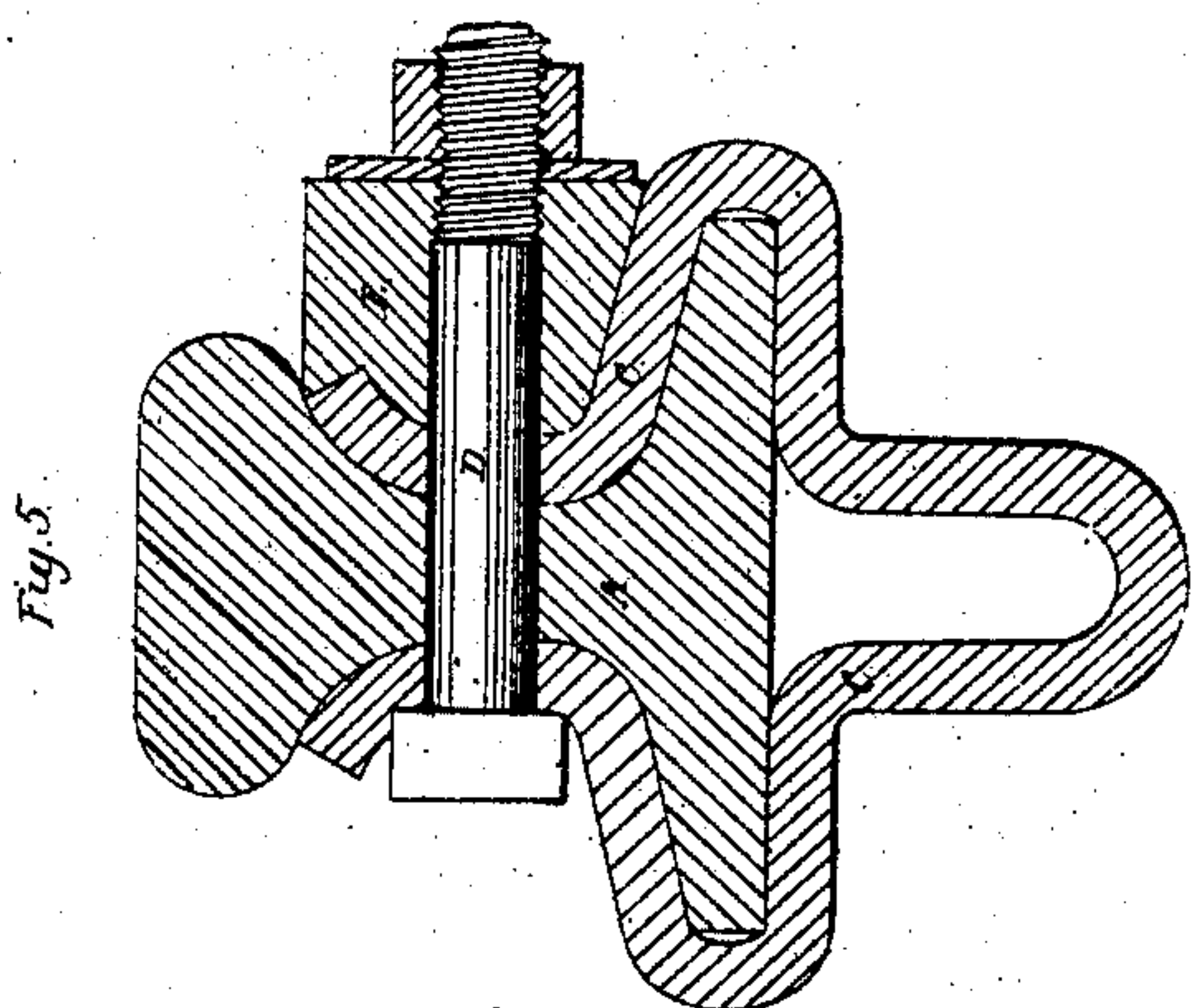


*I. Leonard,*  
*Railroad Chair,*

*N<sup>o</sup> 34,307.*

*Patented Feb. 4, 1862.*



*Witnesses*

*O. E. Bushong,*  
*W. B. Smith,*

*Inventor*

*Ira Leonard*



# UNITED STATES PATENT OFFICE.

IRA LEONARD, OF LOWELL, MASSACHUSETTS.

## IMPROVEMENT IN RAILROAD-CHAIRS.

Specification forming part of Letters Patent No. 34,307, dated February 4, 1862.

### *To all whom it may concern:*

Be it known that I, IRA LEONARD, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Suspension-Chairs which are Used to Connect the Ends of Rails on Railroad-Tracks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part thereof.

Similar letters on each of the several figures refer to like parts.

Figure 1 is a perspective view of a railway-track, showing the manner of attaching and using my improvement. Fig. 2 is a side elevation of the chair as attached to the ends of two rails. Figs. 3, 4, and 5 are cross-vertical sections of rail and chair.

The object of my invention is to furnish a perfect connection of the ends of the rails, so that the track shall be as strong at the joints as at any other part, so that there shall be no hammering or battering down of the ends of the rails, so that there shall be the same chance for the rails to expand by increase of temperature as in those now used, and, finally, so that it shall be capable of easy application, thus insuring a perfectly-uniform track, with no jolts or jars to the car consequent upon the wheels passing over the joints.

A and B are the two rails connected.

C is the chair.

D D D D are bolts which clamp the chair to the rails.

E is a wooden washer or cushion.

The chair C—eighteen inches long, more or less—is made of boiler or plate iron, in one piece. It is intended to be formed by machinery, so that it shall fit exactly to the sides and bottom of the rail, as seen in Fig. 3. Underneath the rail the plate is bent downward in a U shape to the depth of two and a half or three inches, more or less. This forms a strengthening-rib sufficient to sustain all weight that may come upon it, but not heavy enough to form a solid, on which the ends of the rails can be hammered or battered by the passing wheels, thus avoiding a very objectionable feature which exists in the common chairs now in use. This U-shaped rib also serves another important purpose. In putting the chair upon the rails it allows the sides of the chair a chance to yield or spread apart and thus accommodate itself

to such variation in the thickness of the rails as they are liable to. This elasticity is a very necessary consideration in the easy application of the chair to the rail, as it saves all fitting by cutting or filing. After the chair is in place the bolts D D D D are screwed up, and thus bring the sides of the chair into close-fitting contact with the sides of the rail. The bolts D D D D pass through slots in the rail, which slots are long enough to allow for all expansion of the rails by heat. On a hard rigid road-bed the nuts of the bolts D D D D are liable to loosen from the jarring produced by the rolling-stock, and to guard against such a contingency I have provided a wooden washer or cushion E, Figs. 1, 4, and 5, which will impart such elasticity as will almost entirely overcome this tendency. This I consider very important, as a great deal of labor and oversight is saved thereby.

In Fig. 4 the washer is introduced between the rail and the side of the chair, and is the form I prefer; but another way of having the washer outside of the chair is shown in Fig. 5.

Besides the strain occasioned by downward pressure or weight upon the rail there is another, and that is a lateral pressure occasioned by the cars going swiftly through a curve. The form of my chair is such as to effectually strengthen the joint against this pressure also, as those parts which fit around the bottom of the rail are formed into a rib in the proper position to resist all lateral pressure.

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

1. A rail-connecting chair composed of a continuous sheet of wrought-iron bent into such a shape that it is enabled to embrace the base and the sides of the abutting ends of two rails, while it is rendered laterally elastic and vertically stiff by means of a hollow rib or fin immediately beneath the embracing jaws of said chair, all substantially as represented in the accompanying drawings.

2. In connection with my said improved rail-connecting chair, the use of the wooden cushion E, or the equivalent thereof, in the manner and for the purpose herein set forth.

In witness whereof I have hereunto set my signature this 21st day of October, A. D. 1861.

IRA LEONARD.

In presence of—

O. E. CUSHING,  
H. B. SMITH.