

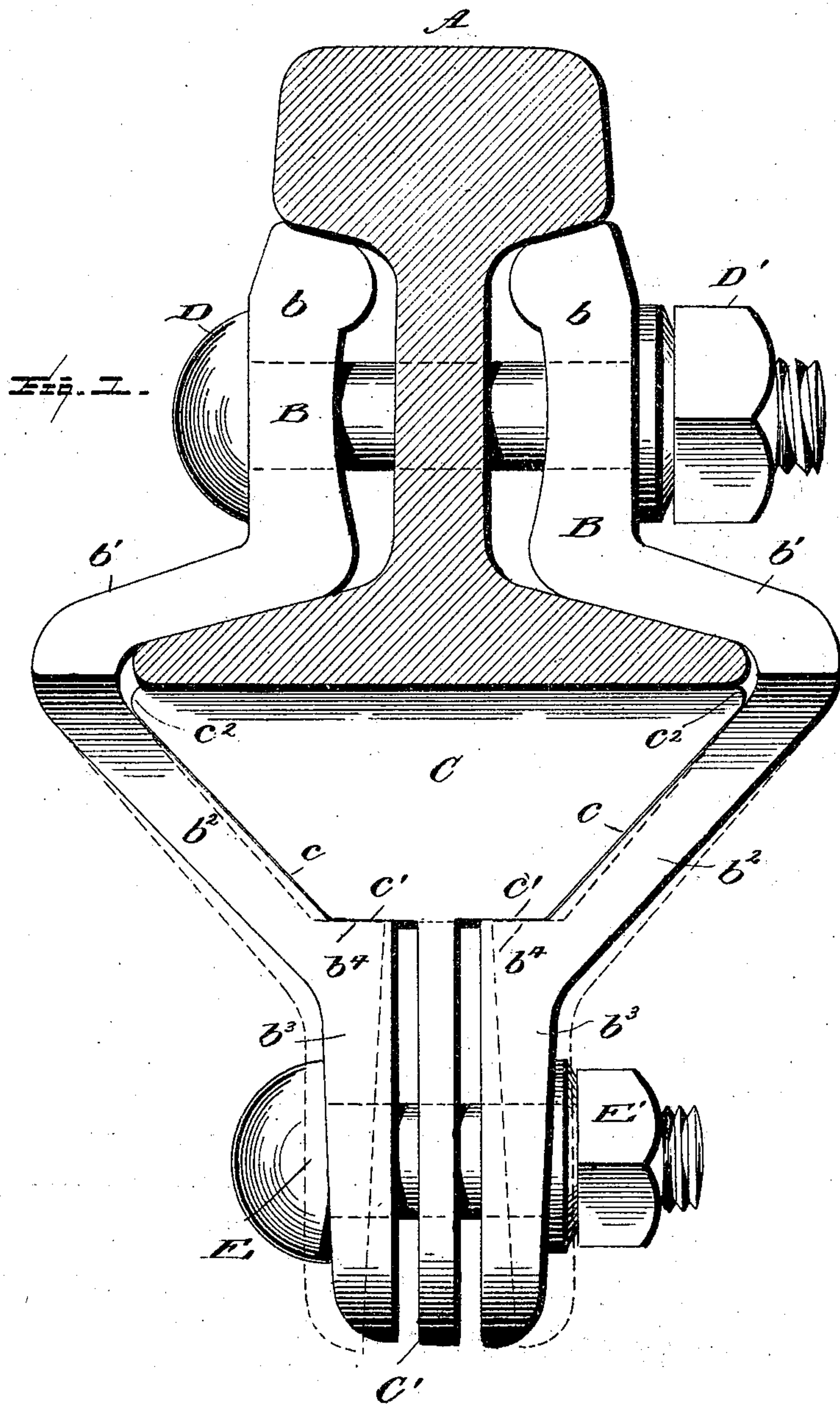
(No Model.)

2 Sheets—Sheet 1.

R. G. WARD.  
RAIL JOINT.

No. 502,153.

Patented July 25, 1893.



Witnesses:

*L. C. Mills.*  
*E. A. Bond*

Inventor:

*Randolph G. Ward.*  
*By E. B. Stocking*  
Attorney

(No Model.)

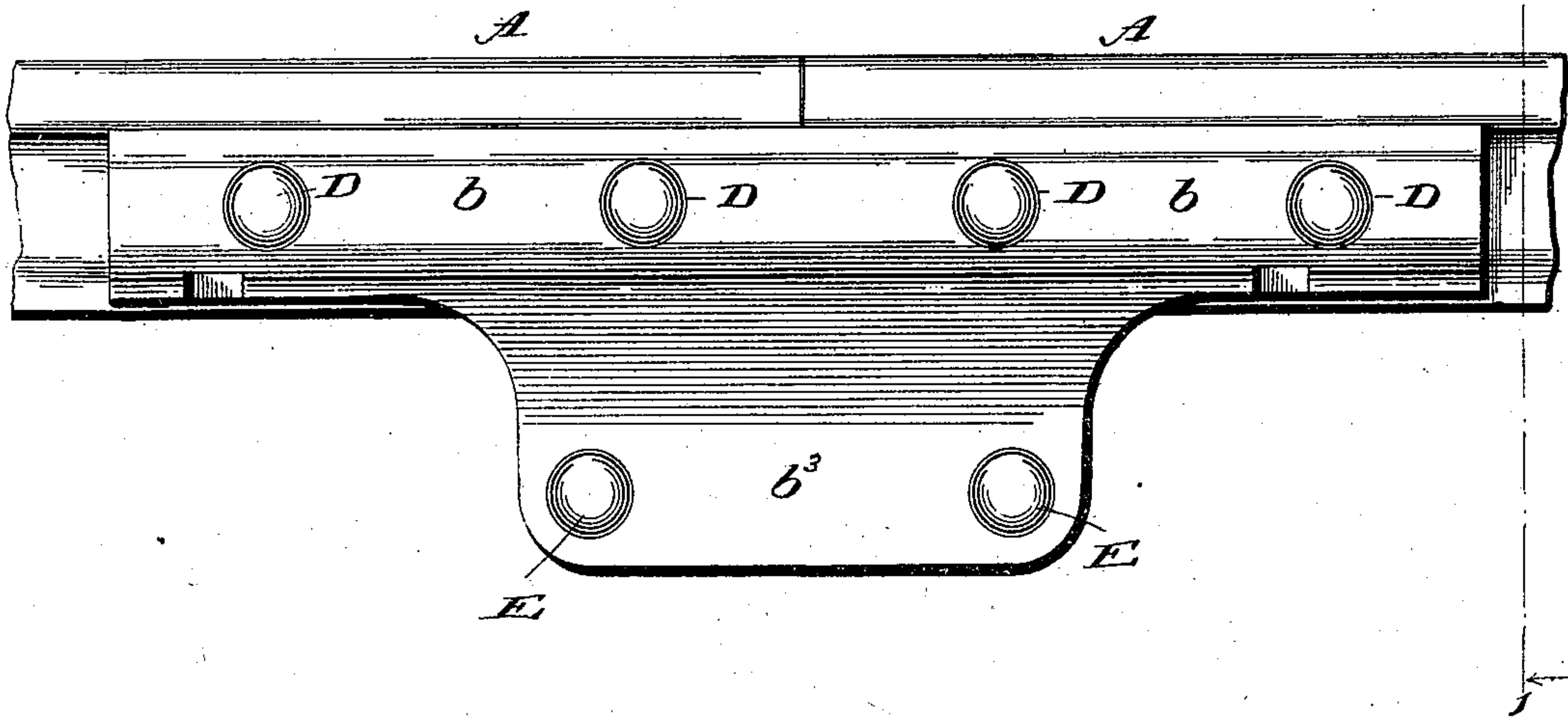
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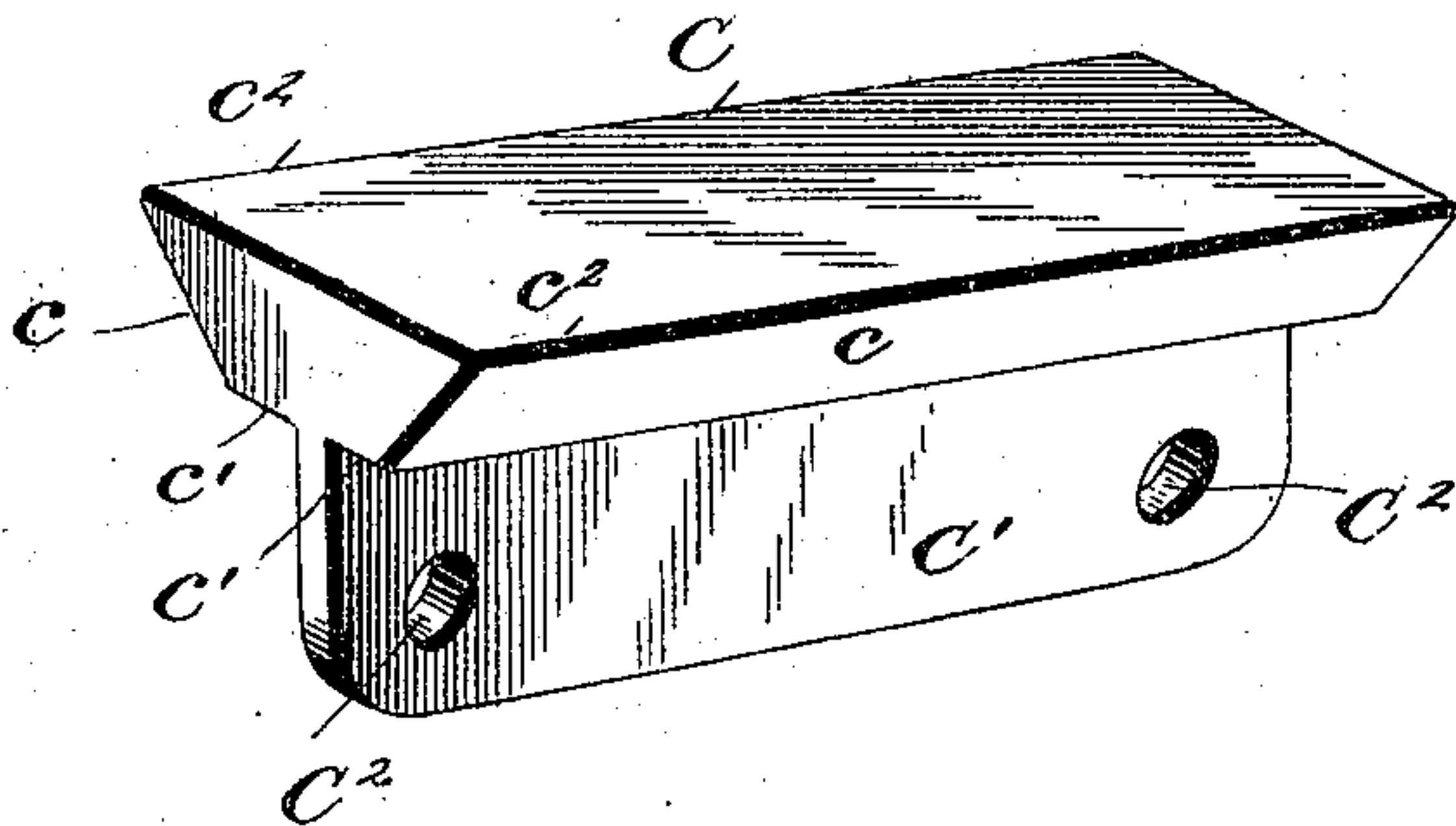
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*Fig. 1.*



*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

RANDOLPH G. WARD, OF CHARLESTON, SOUTH CAROLINA.

## RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 502,153, dated July 25, 1893.

Application filed March 16, 1893. Serial No. 466,319. (No model.)

*To all whom it may concern:*

Be it known that I, RANDOLPH G. WARD, a citizen of the United States, residing at Charleston, in the county of Charleston, State of South Carolina, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in railroad rail joints of that class in which are employed a bridge piece upon which the rail is designed to be supported, angle-bars or fish-plates embracing the rail and bridge-piece, and means for so connecting the same as to permit of ready adjustment for the purpose of taking up the wear and of providing the same elasticity under the load at the joints as it does at any other point in the length of the rail.

It has for its objects among others to provide an improved construction and arrangement of parts whereby better results are obtained and wherein the pressure upon the rail exerted by the load will not tend to force apart the fish-plates or angle-bars, but the reverse. I form the bridge-piece with a substantially horizontal portion or portions upon its under face which engage with horizontal shoulders or portions upon the fish-plates or angle-bars, the inclined sides of the bridge-piece being so arranged relatively to the inclined portions of the fish-plates as to have contact therewith only sufficient to prevent lateral movement of the bridge-piece and thus the natural tendency of the bridge-piece to be forced downward by the pressure of the load is overcome and as the fish-plates are brought toward each other at those portions below the base of the rail the bridge-piece is, if moved any way, forced upward. The bridge-piece may be provided with a depending fin to prevent tilting thereof or movement in the direction of its length. Any approved form of nut lock may be employed in connection with my improved joint.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the let-

ters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is an enlarged vertical cross section through a rail to which my improvements are applied, the section being taken on the line 1—1 of Fig. 2, looking in the direction of the arrow. Fig. 2 is a side elevation. Fig. 3 is a perspective view of the bridge-piece removed.

Like letters of reference indicate like parts throughout the several views in which they appear.

Referring now to the details of the drawings by letter, A designates the main rails which are of ordinary construction.

B are the fish-plates or angle bars, each of a material having sufficient elasticity or resiliency, and each formed with the substantially vertical portion *b* to rest against the under face of the tread of the rail as seen in Fig. 1, the inclined portion *b'* to bear against the upper face of the base of the rail, the oppositely-inclined portion *b<sup>2</sup>* terminating in a vertical portion *b<sup>3</sup>* and the horizontal portion or shoulder *b<sup>4</sup>* at the junction of the said vertical portion *b<sup>3</sup>* and the inclined portion *b<sup>2</sup>* as seen in Fig. 1, the vertical portions *b* and *b<sup>3</sup>* being provided with suitable holes for the passage of the bolts which secure the fish-plates or angle-bars in place.

C is the bridge-piece; it has inclined opposite sides as seen at *c* and upon its under face horizontal portions or shoulders *c'* as seen in Figs. 1 and 3. The horizontal portions or shoulders *c'* are adapted to rest upon the horizontal portions or shoulders *b<sup>4</sup>* of the fish-plates or angle-bars as seen in Fig. 1, while the inclined sides thereof are upon an incline or angle different from that of the inner faces of the inclines of the fish-plates or angle-bars as seen in Fig. 1 so as not to have a bearing thereon except at the upper outer points as seen in Fig. 1 just sufficiently to prevent lateral movement of the bridge-piece between the fish-plates or angle-bars. These points *c<sup>2</sup>* may or may not be rounded as seen in Fig. 1. The bridge-piece may be provided with a depending fin *C'* as seen in Figs. 1 and 3 to be held between the depending portions *b<sup>3</sup>* of the fish-plates or angle-bars as shown to prevent tilting of the bridge-piece by pressure upon the rail at one end thereof and also to pre-



vent working endwise thereof. The fin should be provided with suitable holes  $C^2$  for the passage of the bolts.

D are bolts passed through the upper vertical portions of the fish-plates or angle-bars and through the web of the rail, being provided with nuts  $D'$  which may be of any well-known or approved form.

E are bolts passed through the lower vertical portions of the fish-plates or angle-bars, and through the fin of the bridge-piece when one is employed, and provided with suitable nuts  $E'$ , any form of nut being employed.

In practice, the parts are so arranged that the lower portions of the fish-plates or angle-bars receive and embrace the bridge-piece which rests upon the shoulders or horizontal portions thereof; when it is required to draw the parts together the nuts on the lower bolts are screwed up which draws together the depending portions of the fish-plates and their inclined portions  $b^2$  without disturbing the portions above the line of the base of the rail, and as they are drawn together at their lower portions they will have a tendency to press upward against the under side of the bridge piece and the more firmly the parts are drawn together the more securely will the bridge-piece be held. It must be borne in mind that the parts are so arranged that there is practically no wedge action but a direct upward pressure upon the bridge-piece in a vertical plane. The action in this regard is the same whether the fin be present or not.

What I claim as new is—

1. In a rail joint, the combination with the rails, fish-plates having depending flanges provided with flat portions, of a bridge-piece having flat portion adapted to be supported by the flat portions of the flanges of the fish-

plates, the fish plates and bridge piece having adjacent walls on different angles substantially as specified.

2. The combination with fish-plates having depending portions, of a bridge-piece having inclined sides upon a different incline from the adjacent portions of the fish plates and adapted to be supported upon said fish-plates and to be forced upward in a vertical plane by flat portions on said fish-plates, as set forth.

3. The combination with fish-plates having depending portions with laterally-projecting shoulders, of a bridge-piece having horizontal portions supported by said shoulders, the adjacent inclined portions on the fish plates and bridge plates being upon different inclines as set forth.

4. The combination with fish plates having inclined portions, and inwardly-projecting horizontal shoulders, of a bridge-piece having a flat portion upon its under face and inclined sides upon a different incline from that of the sides of the fish-plates, as and for the purpose specified.

5. The combination with the rails and the fish plates having portions to engage the same and depending elastic portions with inclined portions and inwardly-extending horizontal portions, of the bridge-piece having horizontal portions upon its under face and inclined sides, the adjacent inclines of the fish plates and bridge piece being upon different inclines and securing bolts and nuts, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

RANDOLPH G. WARD.

Witnesses:

HEATH SUTHERLAND,  
LOUIS C. HILLS.