

No. 689,448.

Patented Dec. 24, 1901.

J. E. YORK.
RAILROAD TIE.

(Application filed Mar. 25, 1901.)

(No Model.)

5 Sheets—Sheet 1.

Fig. 1.

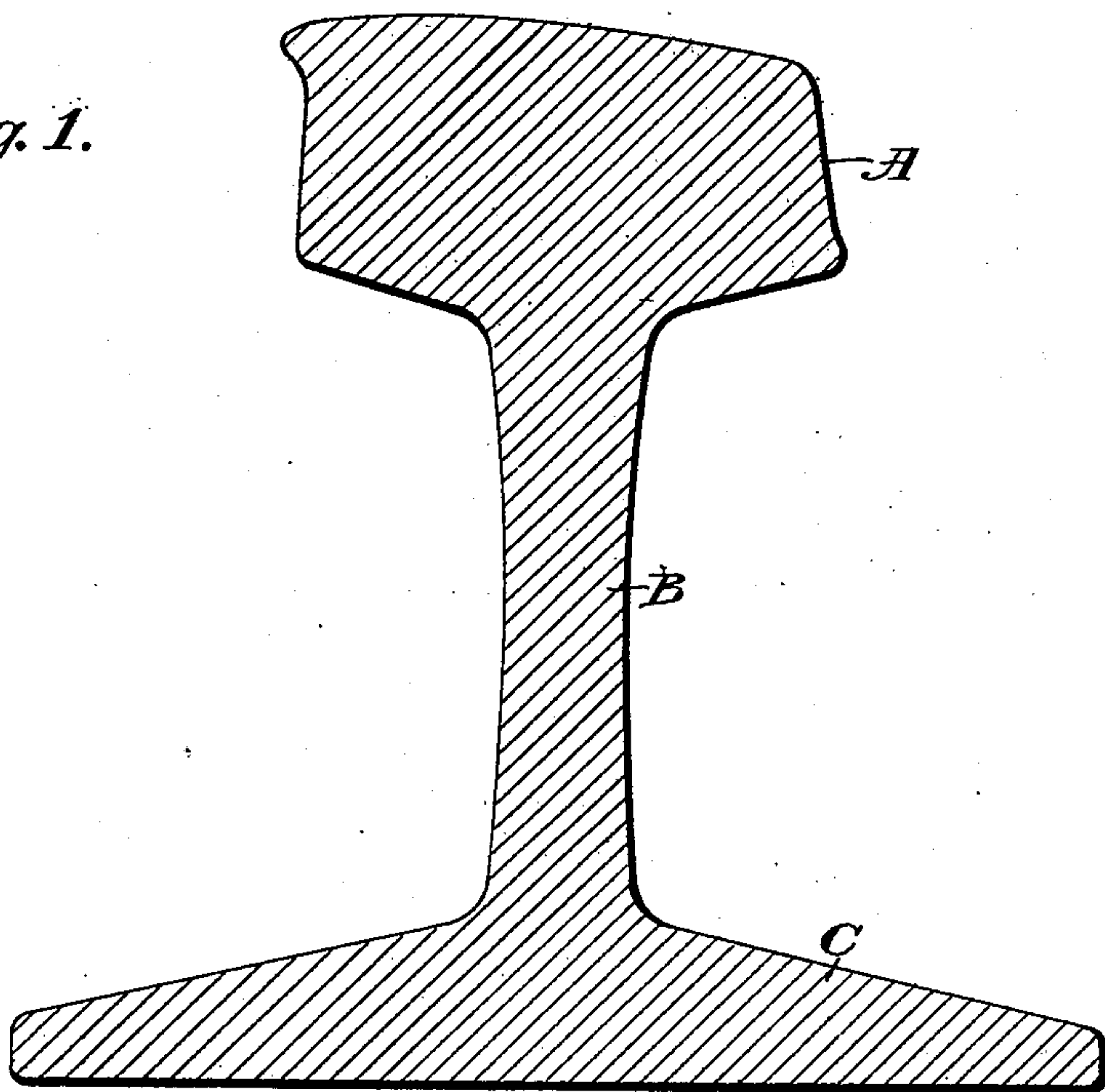
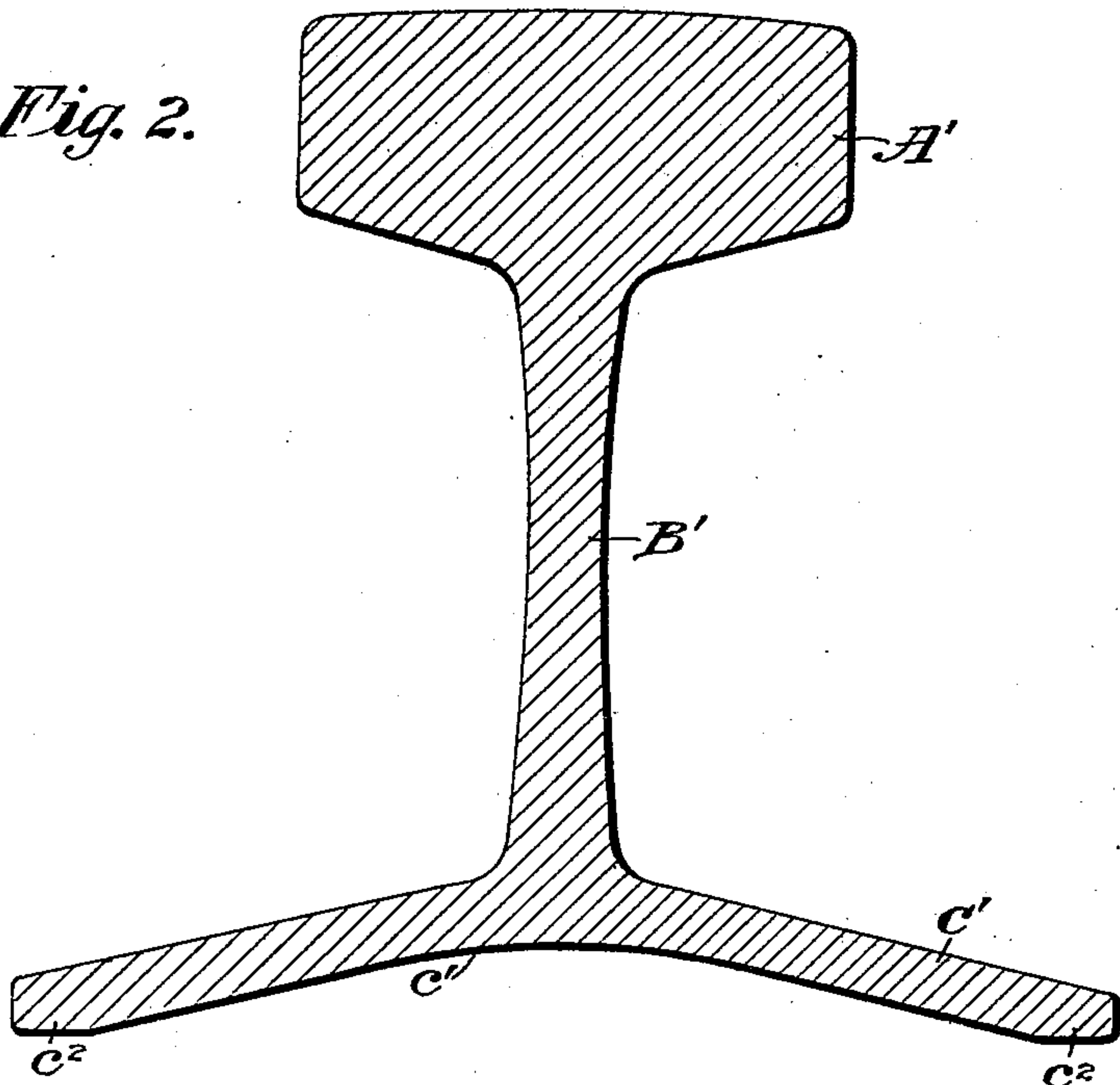


Fig. 2.



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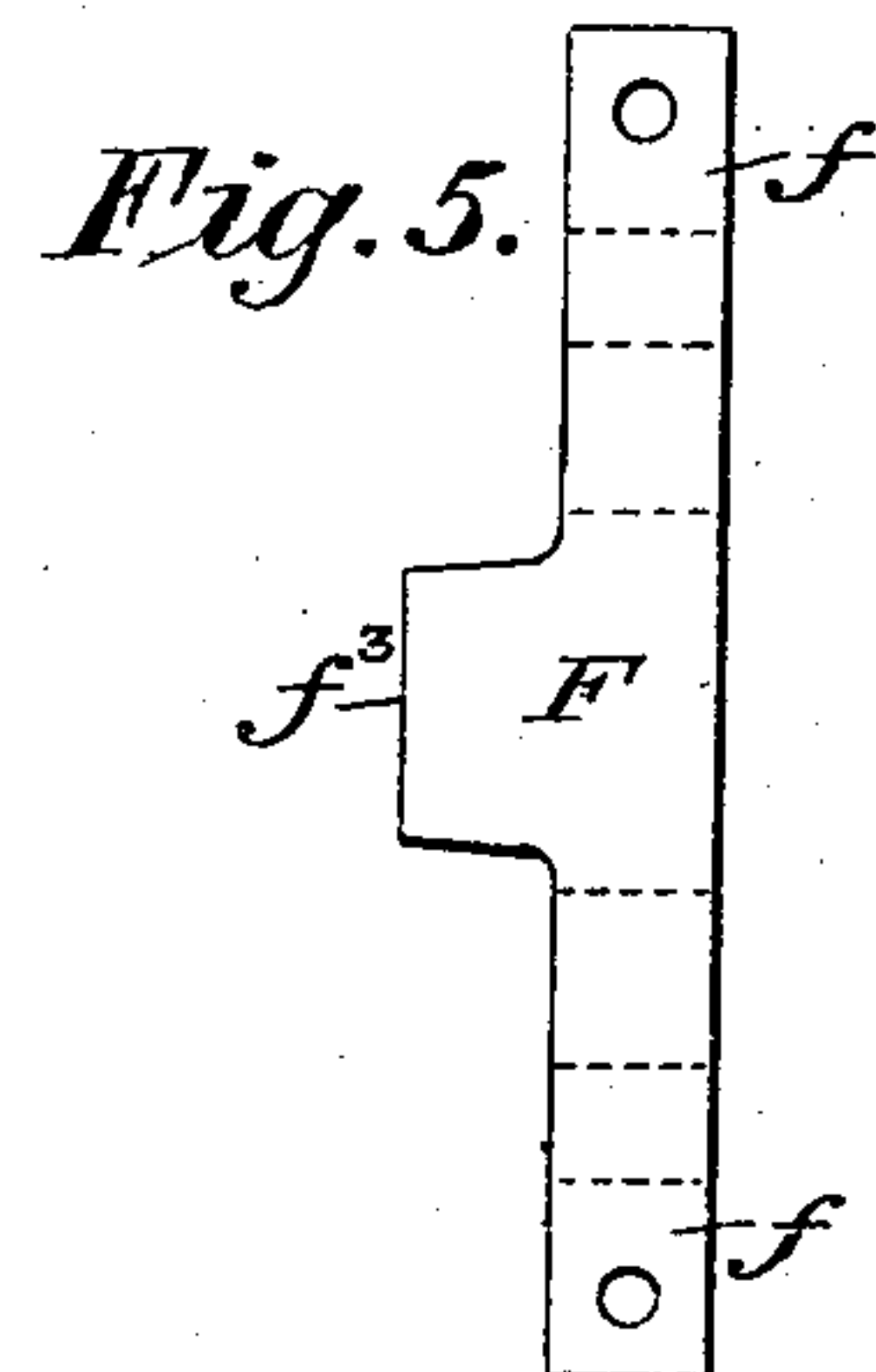
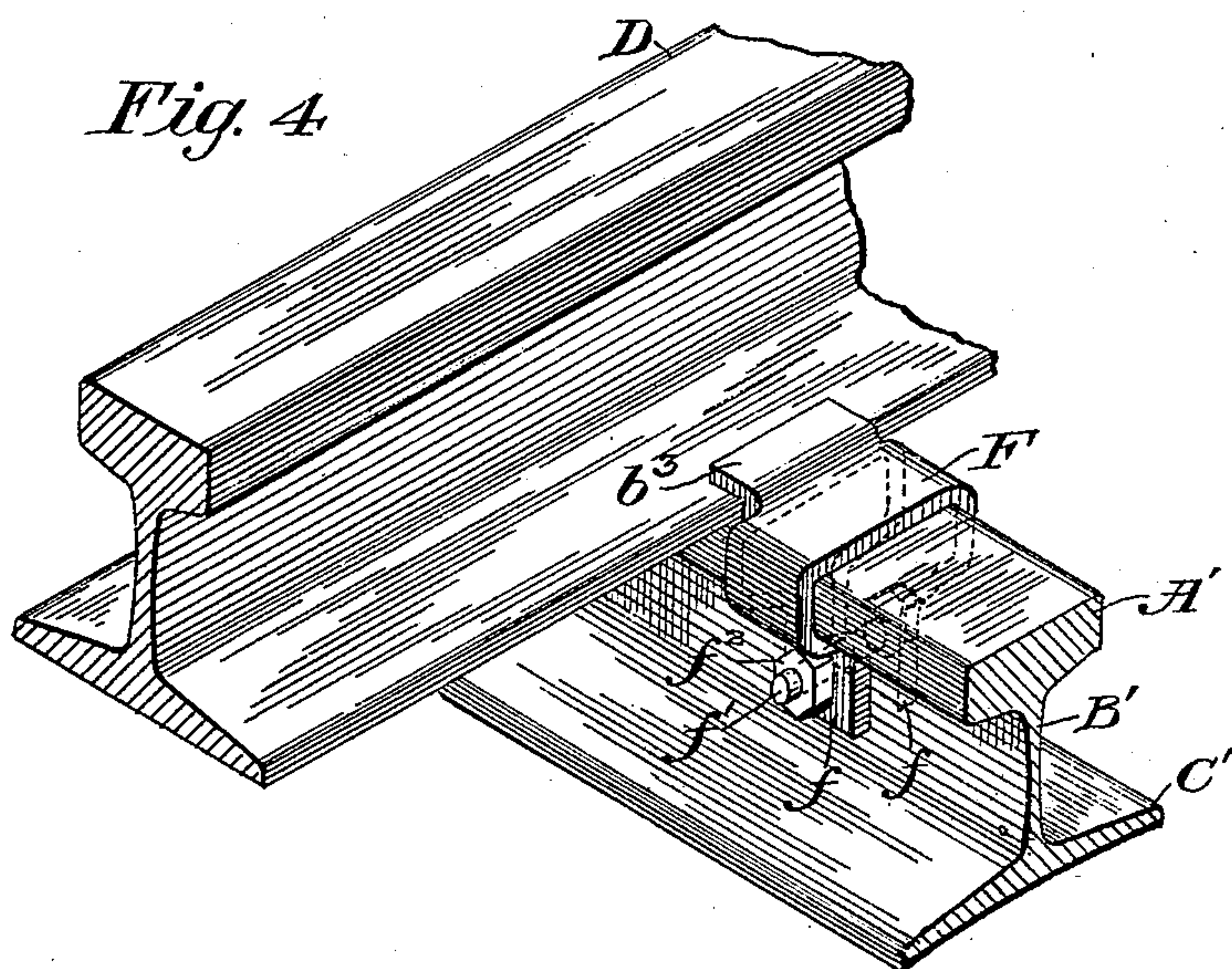
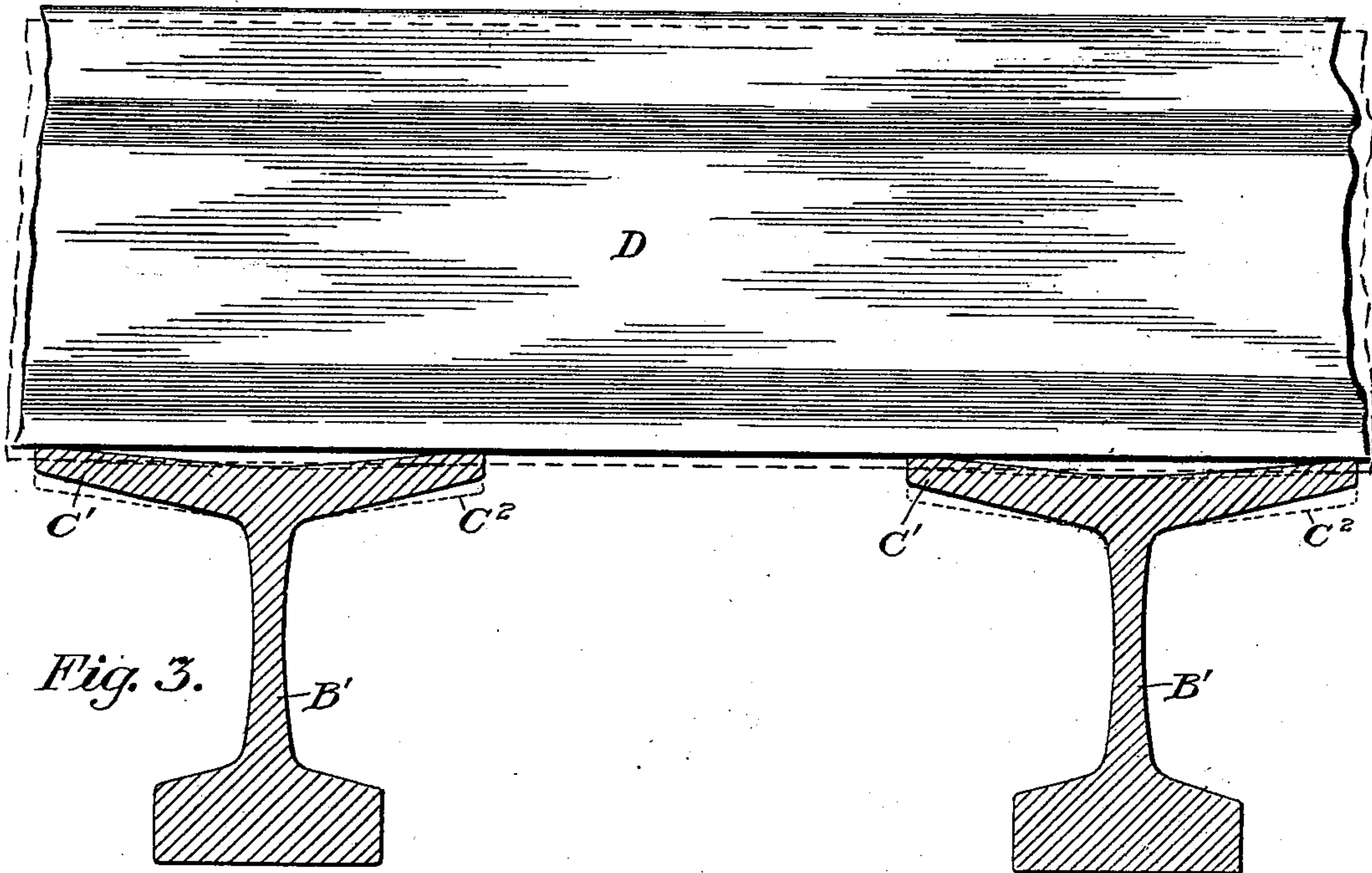
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Fig. 6.

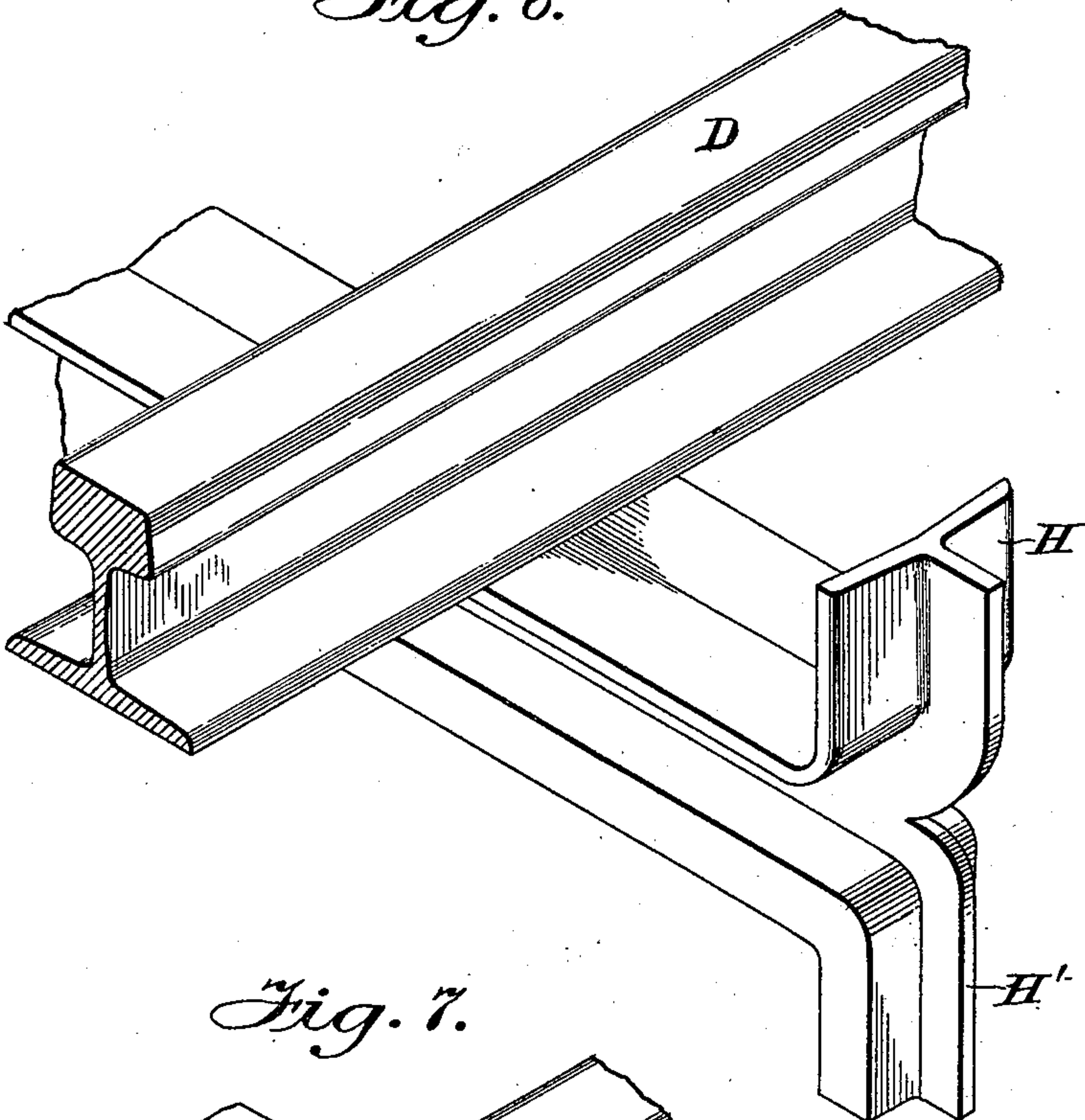
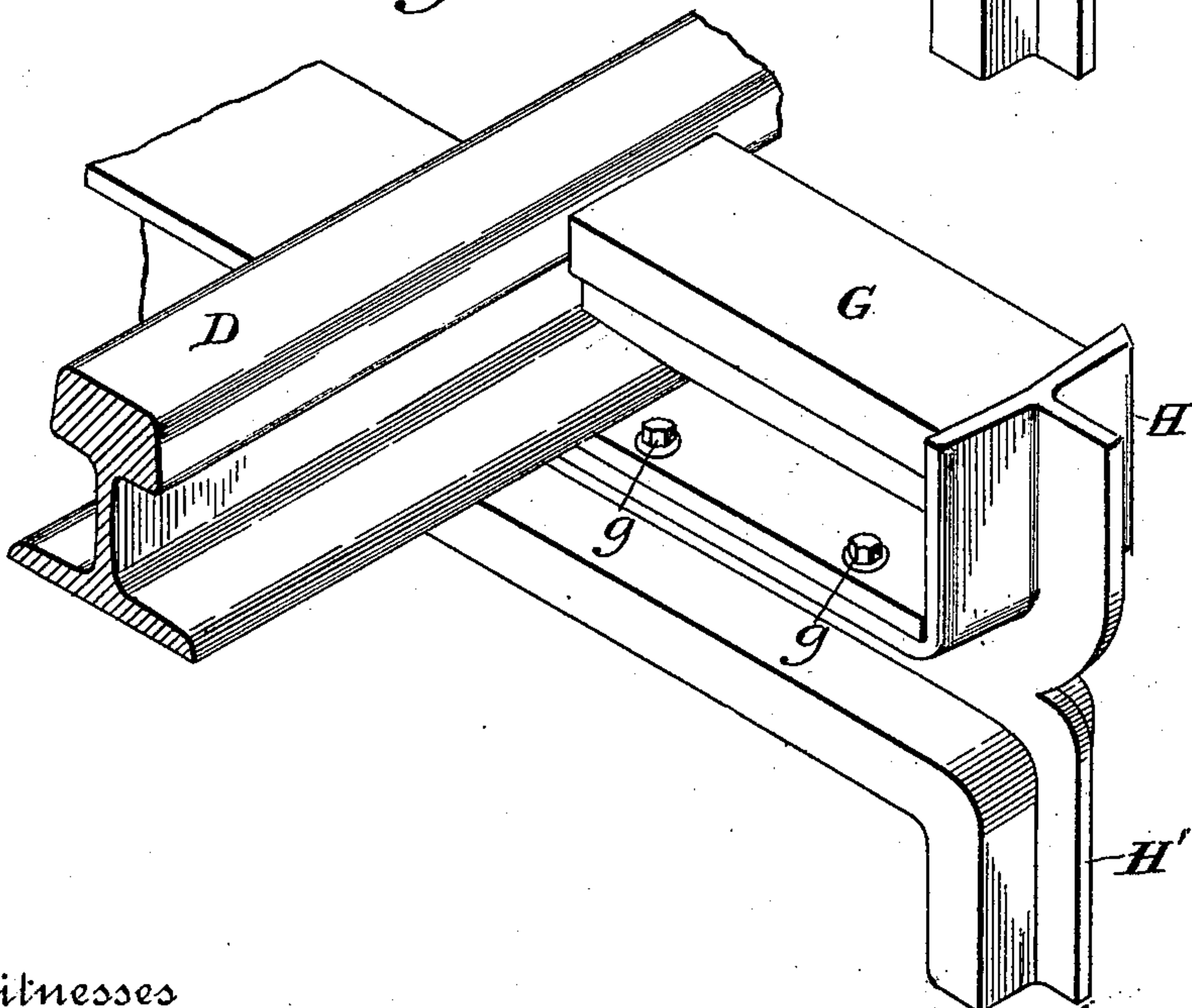


Fig. 7.



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Fig. 8.

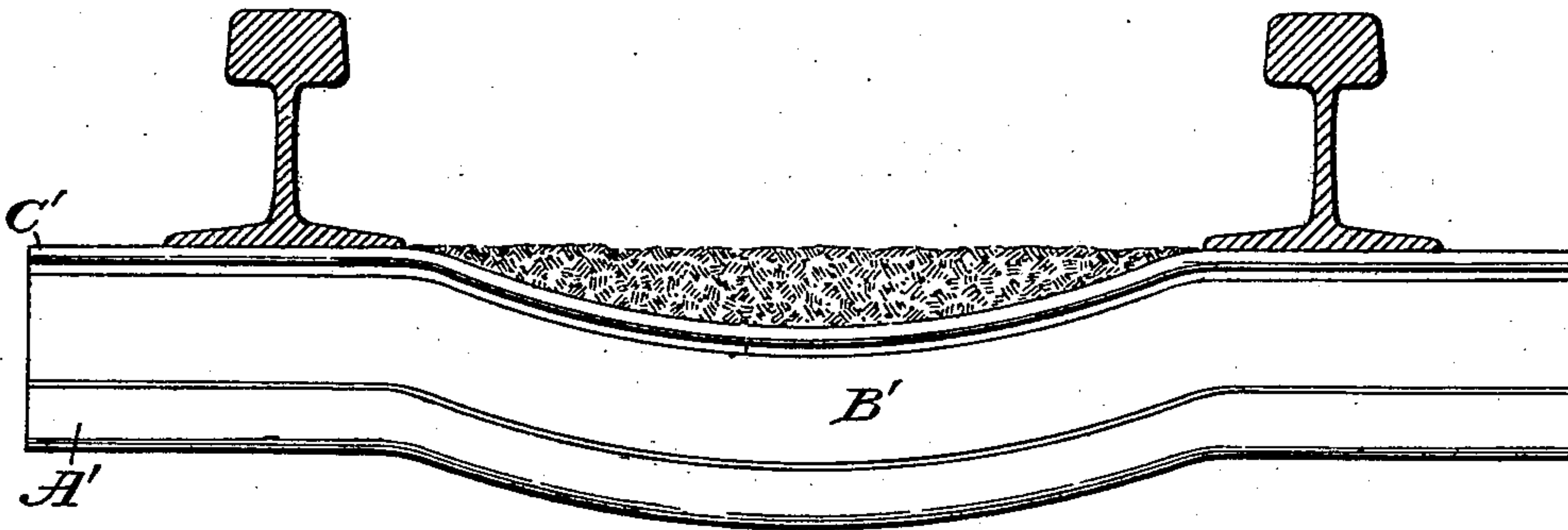


Fig. 9.

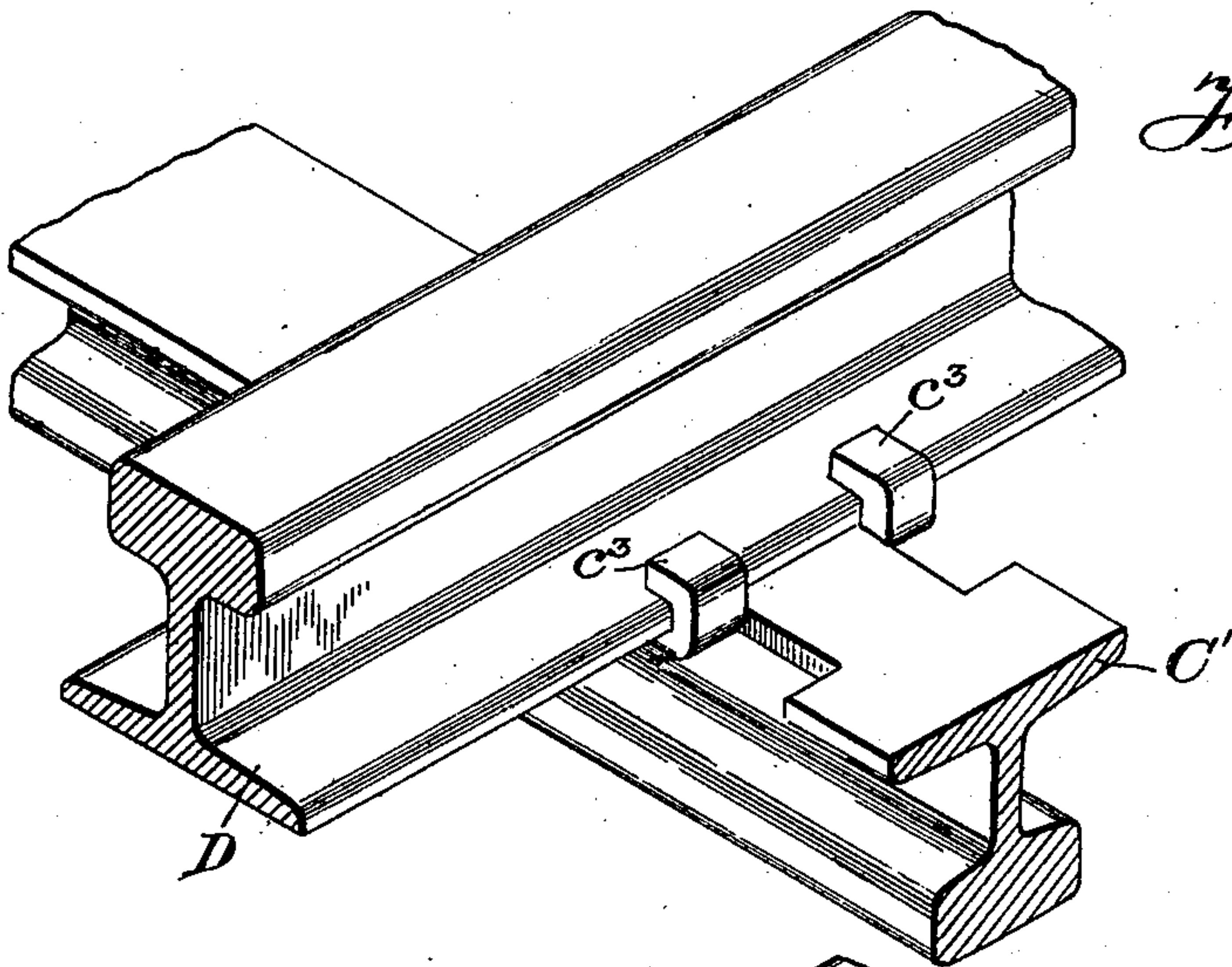
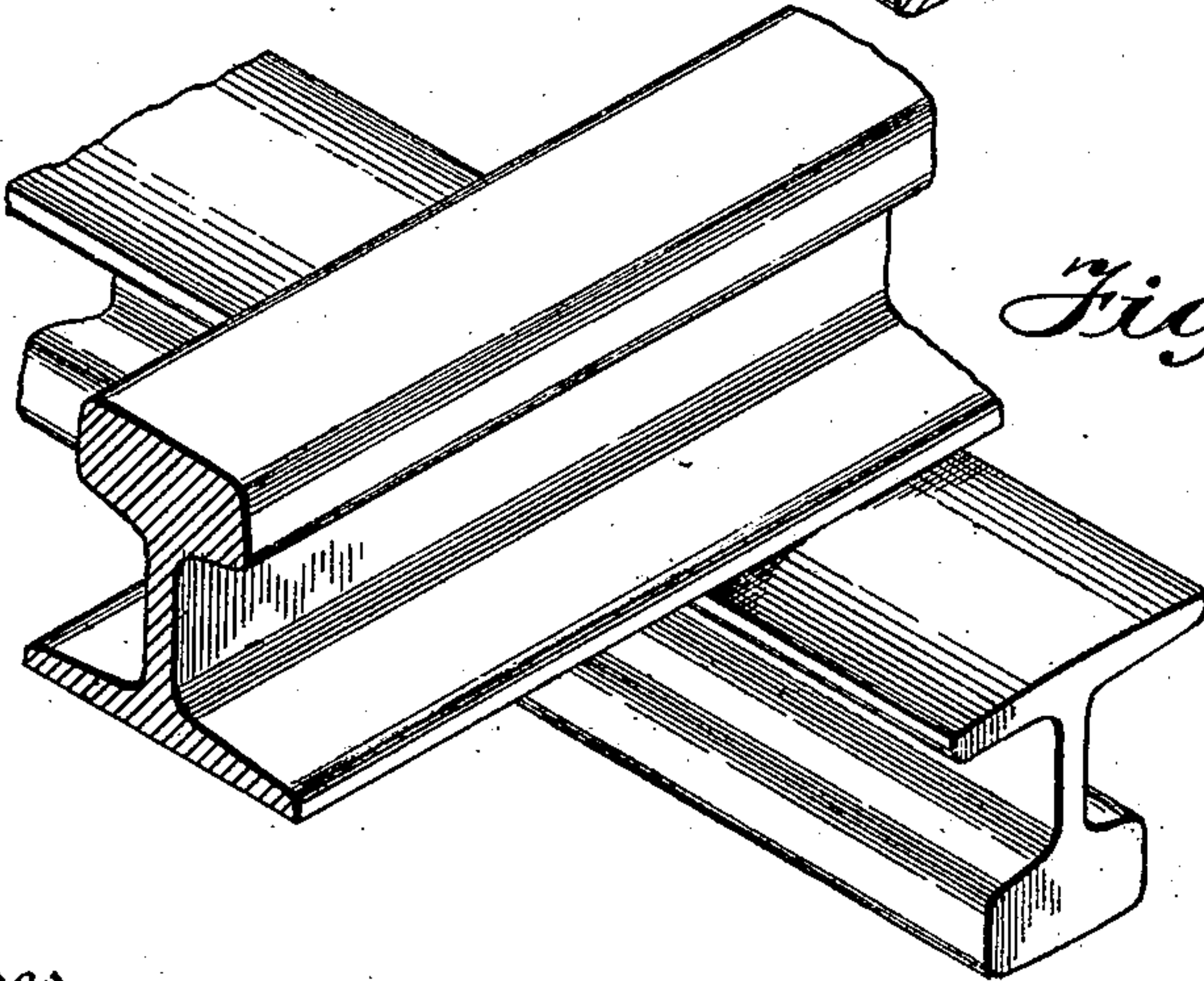


Fig. 10.



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Fig. 11.

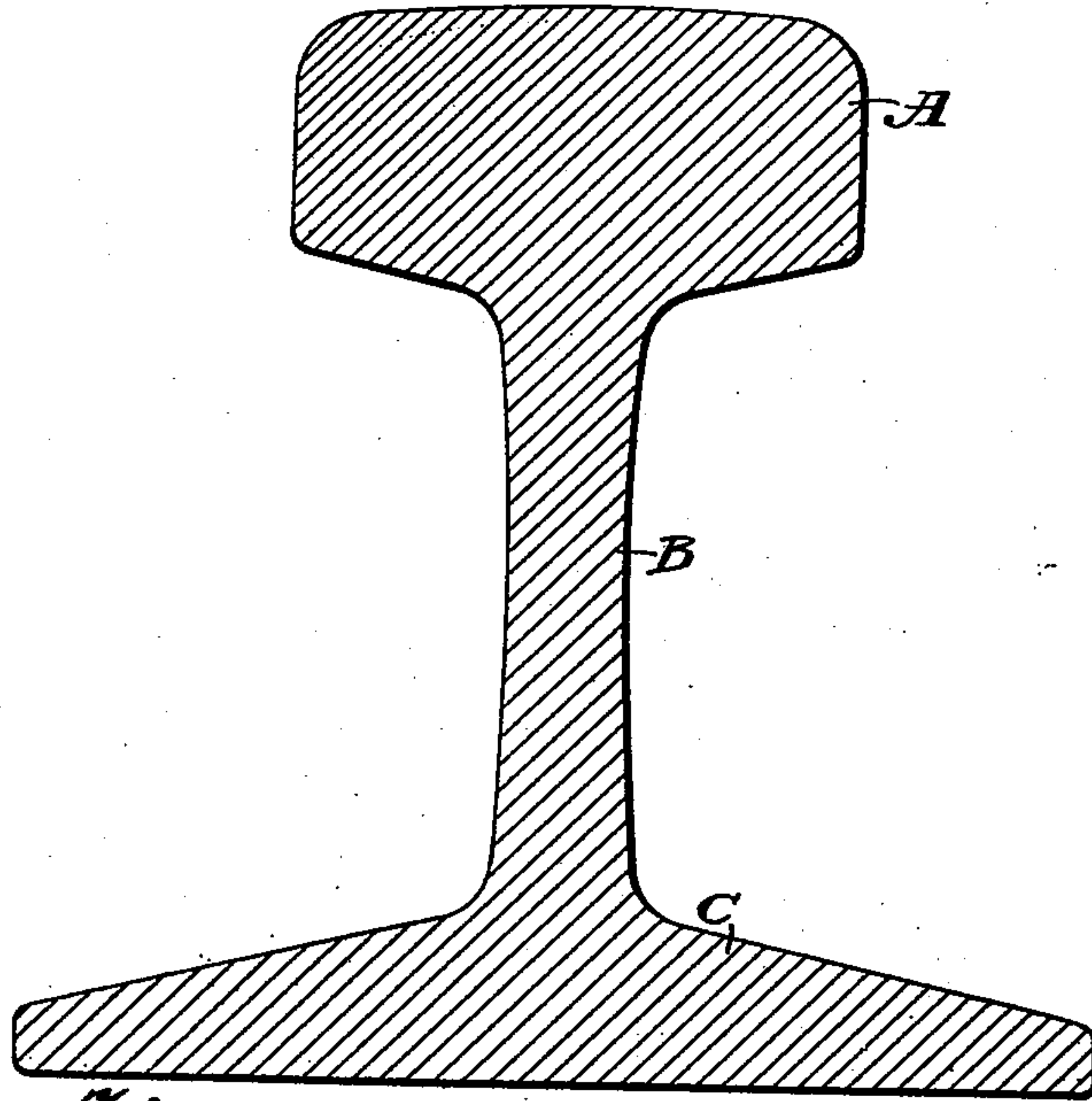


Fig. 12.

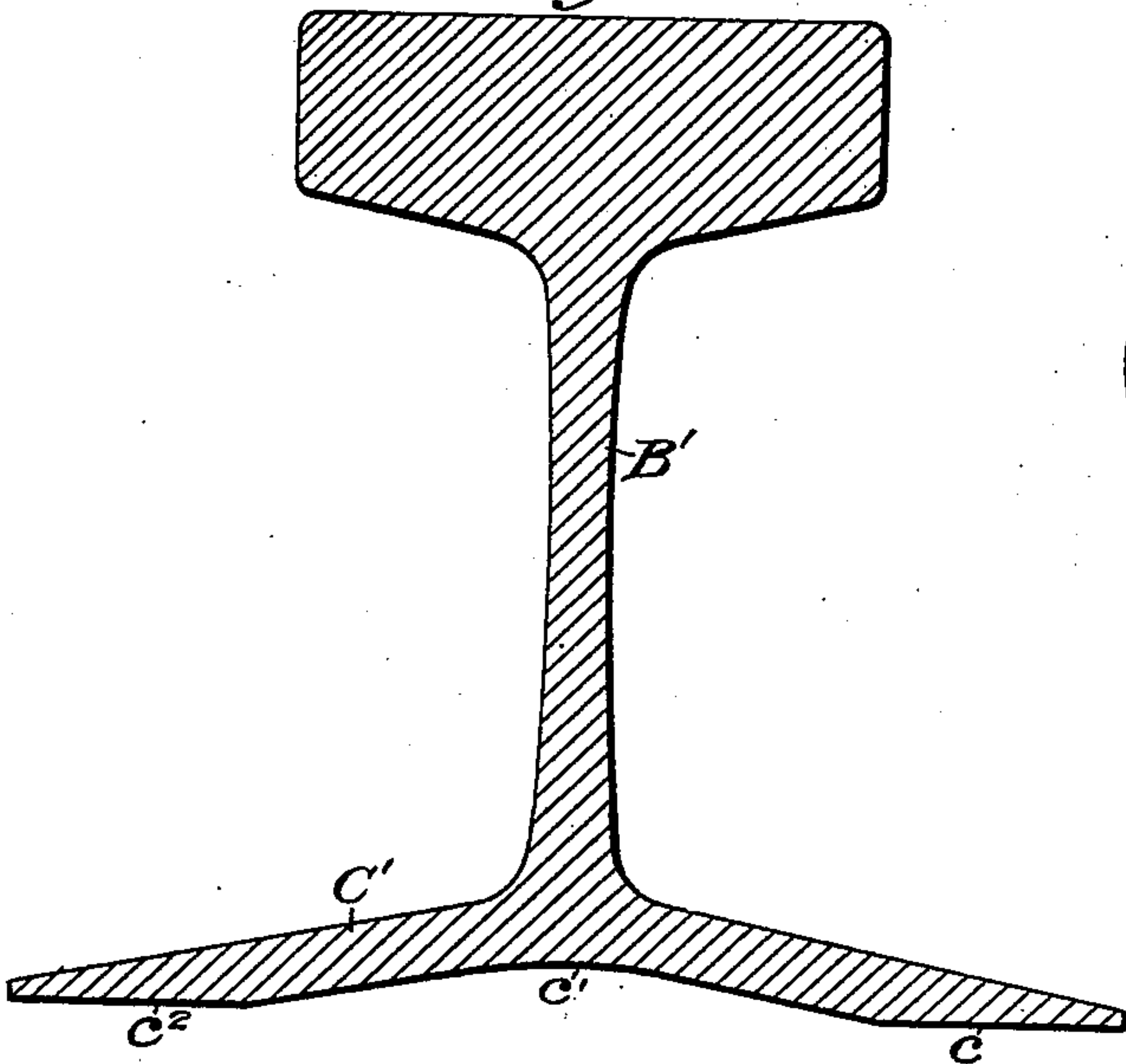
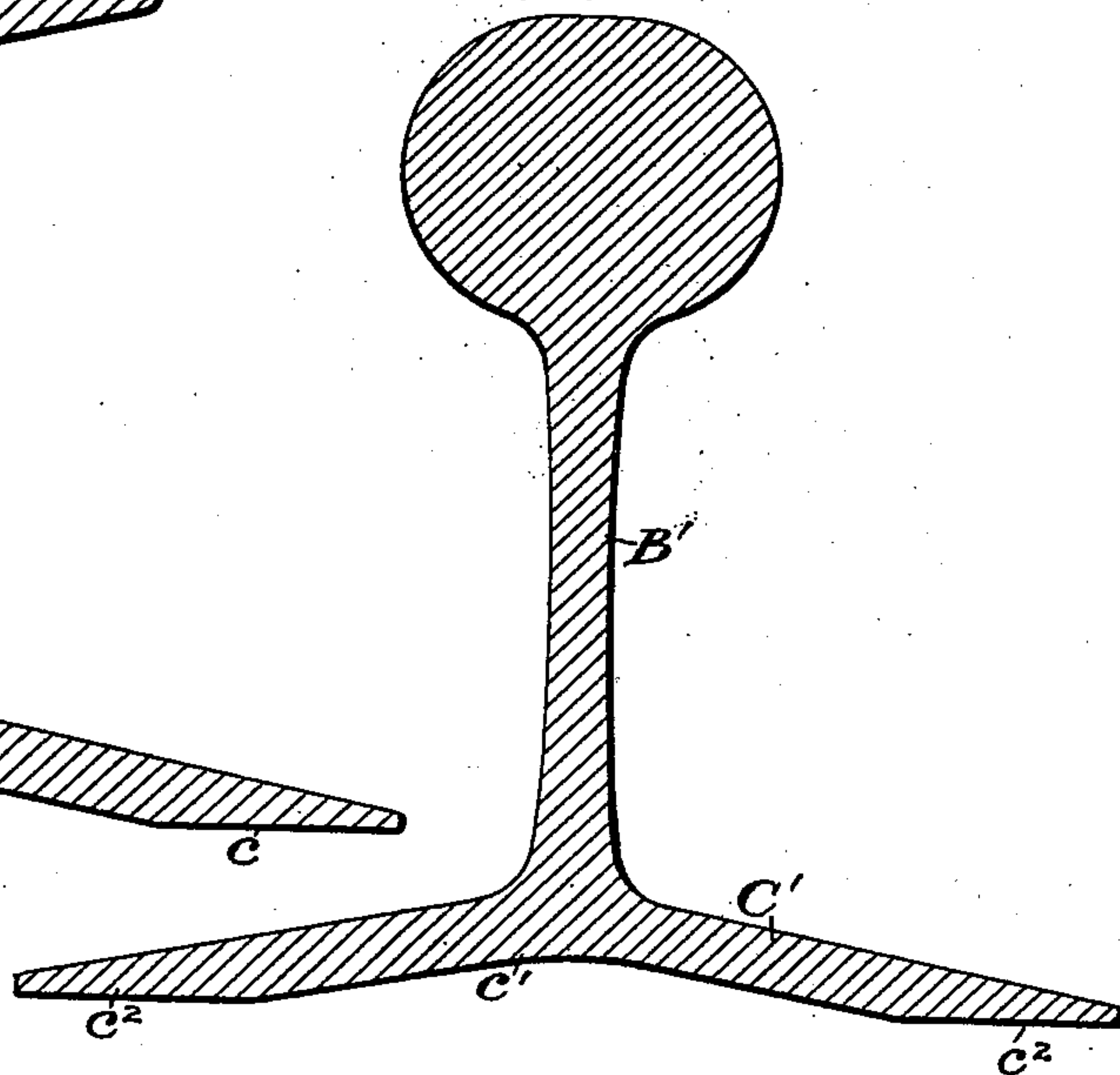


Fig. 13.



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UNITED STATES PATENT OFFICE.

JAMES E. YORK, OF BROOKLYN, NEW YORK.

RAILROAD-TIE.

SPECIFICATION forming part of Letters Patent No. 689,448, dated December 24, 1901.

• Application filed March 25, 1901. Serial No. 52,769. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. YORK, of the borough of Brooklyn, county of Kings, city and State of New York, (whose post-office address is 52 Broadway, New York city,) have invented a new and useful Railroad-Tie, of which the following is a specification.

My invention relates to the utilization of worn or scrap steel rails, and has for its object the rerolling of such rails to a form that will adapt them for use as railroad-ties for steam, electric, and surface roads.

The invention will be understood by reference to the accompanying drawings, in which—

Figure 1 is a section of a worn rail. Fig. 2 is a section of one of the forms to which the worn rail may be rolled. Fig. 3 shows two of the ties in section supporting a rail. Fig. 4 is a perspective view of the same form of tie reversed in position and a form of strap that may be employed. Fig. 5 is a blank for making the strap shown in Fig. 4. Figs. 6 and 7 are perspective views of my improved tie split at the ends for the purpose of securing the rails and of embedding the tie in the ballast. Fig. 8 is a side view of another form of tie. Fig. 9 shows a tie having portions of the flange sheared out to form clips to hold the rails in place. Fig. 10 shows still another form of tie with the flange slightly convexed. Fig. 11 is a section of an original rail, and Figs. 12 and 13 sections of forms to which the worn rail may be rolled.

The ties forming the subject of my invention may be rolled directly from the billet or ingot; but I have aimed to utilize in their production steel rails which have deteriorated by wear so as to unfit them for service as rails.

The various forms of ties shown in the drawings will be derived from rolling worn rails.

Fig. 1 shows a conventional form of worn rail, it being understood that any rail, however worn so as to impair its use as a rail, may be employed. Starting with a rail that has deteriorated to such a degree as to require its removal from the road-bed, I heat such rail in a suitable furnace to a temperature necessary for rerolling without impairing its qualities. After being so heated the rail is passed through a set of rolls having passes which re-

duce it to the desired section. After the rail is rolled to its section it is cut into suitable lengths to serve as ties.

One form to which the rail may be rolled is shown in Fig. 2. The reduction to this form has in view the rolling of a rail with a flat or slightly-convexed head A', a thin web B', and a flange C', having its under face arched or concaved at c' to any degree desired to meet the conditions under which the tie will be used. The extent of the rolling may be such that the arch will extend practically the entire width of the flange, or so as to leave flat portions c², consisting of a base for a tie, as shown in Fig. 2. No precise limit can be given as to the reduction of a given standard of rail adapted to the purpose of a tie, as the amount of reduction will be determined by the special weight of the rails to be used on the ties, the weight of rolling-stock, and the character of the road-bed. If necessary for strength, the rails may be reduced only five per cent. of the weight of the rail received for treatment, or it may be rolled down to fifty per cent. of such weight, according to the conditions of use.

Figs. 3 and 4 show two applications of the tie. In Fig. 3 the arched flange is uppermost and serves as a seat for the flange of the rail D. In Fig. 4 the rail D rests upon the head A' of the tie. In whichever position the tie is placed the section to which it is rolled not only gives the strength required, but the necessary elasticity, a property recognized as one of the essential conditions of a tie. During the passage of a train over a tie, such as shown in Fig. 3 the flange C' will be deflected in proportion to the weight of the passing load, (shown by dotted lines C²,) the inherent elasticity of the tie causing it to assume its normal section upon the removal of the load.

The road-bed will be laid as usual, and the ties will rest in the ballast, as is the usual practice. If necessary, the ties may be secured together by stay-rods passed through openings in the webs or otherwise secured together by any suitable means.

To meet the requirements of the varying conditions under which the tie will be used, the head or flange may be flat or slightly concaved or convexed, the essential condition being that there shall be present an elastic

seat. Thus in Figs. 2, 3, 4, 12, and 13 the flange is shown concaved. In Fig. 9 the flange is shown flat, and in Fig. 10 the flange is shown convex. If desired, similar forms may be given the head.

Fig. 13 shows a form where the worn rail has lost so much metal in the head that it could not be rolled with a head of the form shown, for example, in Figs. 11 and 12. When rolled to the form shown in Fig. 13, the flange will always serve as the seat for the rail, there not being sufficient metal in the head to make the bearing as wide as necessary.

Instead of a straight tie it may be found desirable to deflect the tie to give a greater and better bearing-surface in the ballast and also stiffen the tie and give it a form which will naturally resist compression under load and return it to its original shape. This deflection from a straight tie may be curved or polygonal or other form, as desired, given it during process of manufacture by well-known means. Fig. 8 illustrates a curved deflection in the length of the tie between the rails. The extent of this curvature from a straight line may be more or less of the length of the tie between the rails, it being necessary that the rails shall rest upon the straight portions of the tie. It will be found that this form of tie presents advantages in resisting the crushing and pounding action of the passing load. It also gives a deeper and firmer bearing in the ballast and also has a tendency to prevent the ballast from moving.

To secure the rail to the tie, I have devised several novel means, one being the strap shown in Figs. 4 and 5. This strap will preferably be cut out of scrap-plate and bent to shape and the necessary holes punched. This form of strap consists of a body portion F, adapted to fit about the head or flange of the tie, according to whichever may be used as the seat for the rail. The body F has depending sections f f , to rest against the under side of the head of the tie, and a lip f^3 , adapted to bear against the flange of the rail D. This strap when in use is secured by a bolt and nut through the web of the tie, the tightening of the nut securing the strap in a position to resist lifting or moving sidewise. This form of strap will preferably be used on the inside of the track.

A simple form of attachment is secured, as shown in Fig. 9, by cutting the flange C' of the tie and bending down the cut portions c^3 c^3 so that they will bear upon the flange of the rail D. This method of holding the rail to the tie will also preferably be used on the inside of the track.

In order to provide for extraordinary pressure put upon the rails on curved and gradients, the tie may be split longitudinally along

the web for a sufficient distance and the supported ends turned at right angles to the flange and head of the tie. Between the upturned end H and the side of the rail is secured a blank G, preferably of steel or iron rail scrap, cut to fit the side of the head, webs, and flange of the rail and fastened to the tie by bolts g . The end of the tie H' turned downward aids to firmly embed the tie in the ballast and in a measure prevents the ballast working from under the end of the tie.

As illustrated in Figs. 6 and 7, the bends may be substantially at right angles; but I do not limit myself to such, and it may be, if desired, more or less than a right angle, depending upon the conditions under which the tie is used. If the part H, whether the head or flange, is bent inwardly, such form would resist any tendency of the bracing G to work out, and the bend inward to the part H', whether this be the head or flange, will tend better to prevent ballast working out.

What I claim as new, and desire to secure by Letters Patent, is—

1. As an article of manufacture, a railroad-tie having a head, web and flange, the bearing-surface of which for the rail is concaved or arched.

2. As an article of manufacture, a railroad-tie formed by rerolling a worn rail to a form having a head, web and flange, the bearing-surface of said tie being concaved or arched.

3. As an article of manufacture a railroad-tie the bearing-surface of which for the rail is concaved or arched, and the portion of its length between rail-seats formed into an inverted arch.

4. As an article of manufacture a railroad-tie having straight end portions with bearing-surfaces for the rail concaved or arched, and the portion intermediate the rail-seats formed into an inverted arch.

5. As an article of manufacture, a railroad-tie comprising a head, web and flange, said tie having its end portions split longitudinally, and turned at an angle to the flange and head of the tie.

6. As an article of manufacture, a railroad-tie having a head, web and flange, the under side of the flange serving as a bearing-surface for the rail being concaved or arched.

7. As an article of manufacture, a railroad-tie having a head, web and flange, said tie having its end upset at an angle to the flange and head of the tie.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES E. YORK.

Witnesses:

GEO. E. CRUSE,
CHARLES S. JONES.