

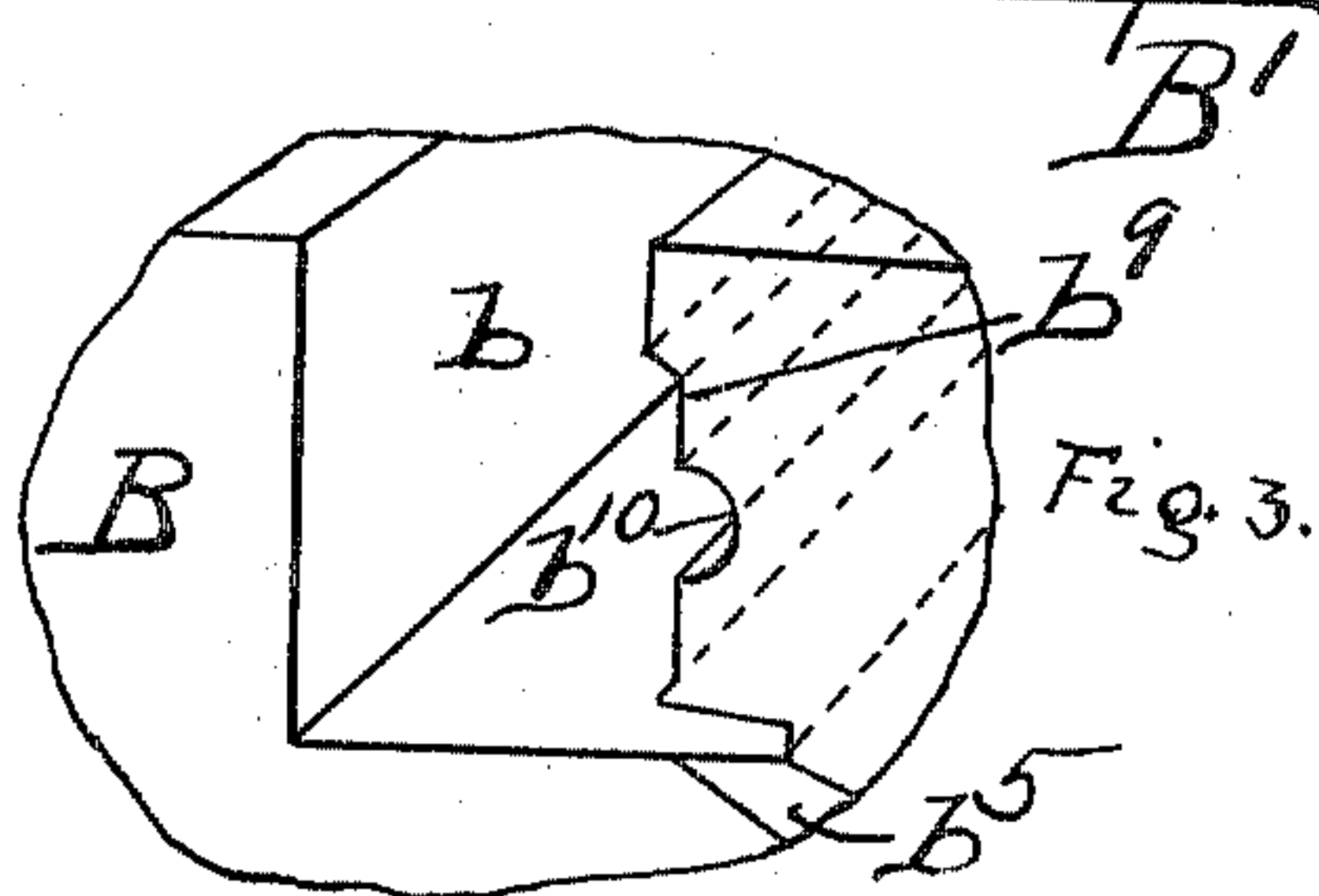
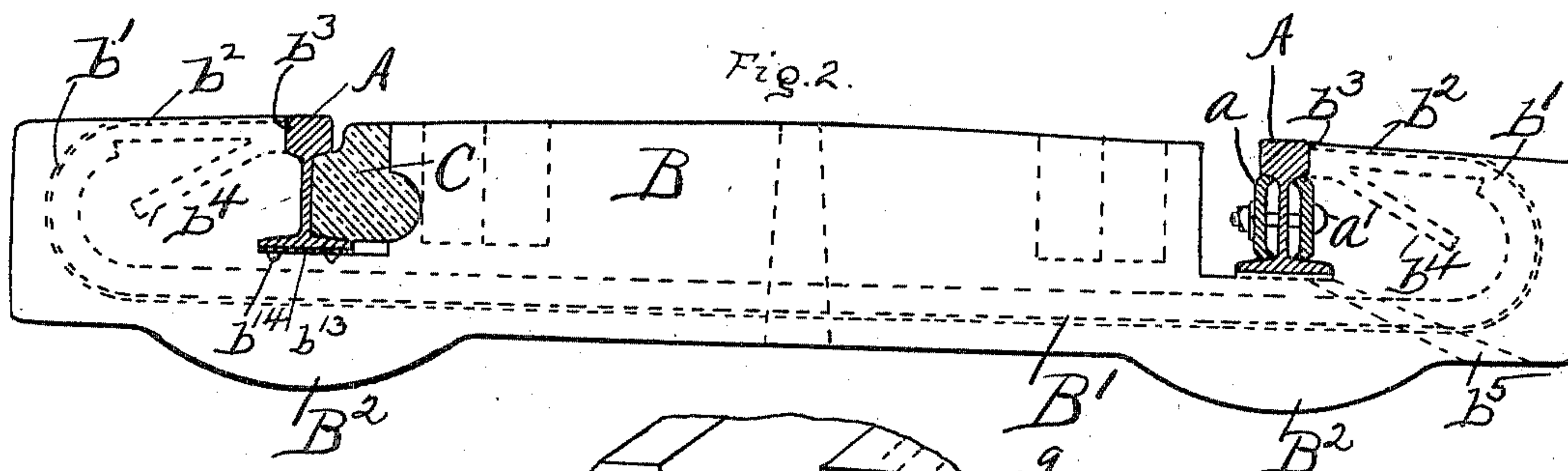
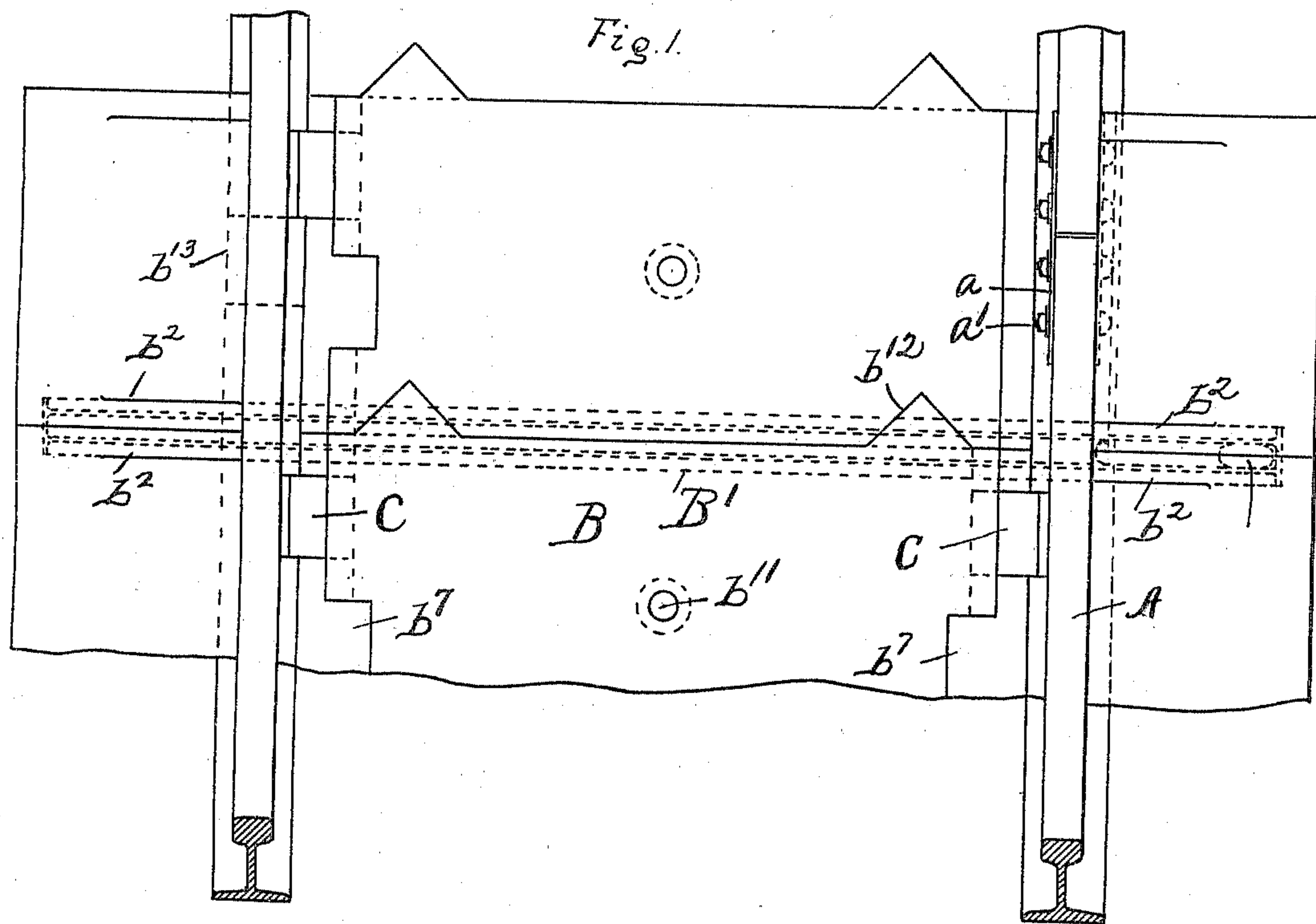
No. 817,169.

PATENTED APR. 10, 1906.

J. FREUND.  
RAILROAD TIE.

APPLICATION FILED AUG. 12, 1904.

2 SHEETS—SHEET 1.



Witnesses:  
Amy White  
M. C. Sullivan.

Inventor.  
Joseph Freund  
by N. C. Lord.  
Attorney.

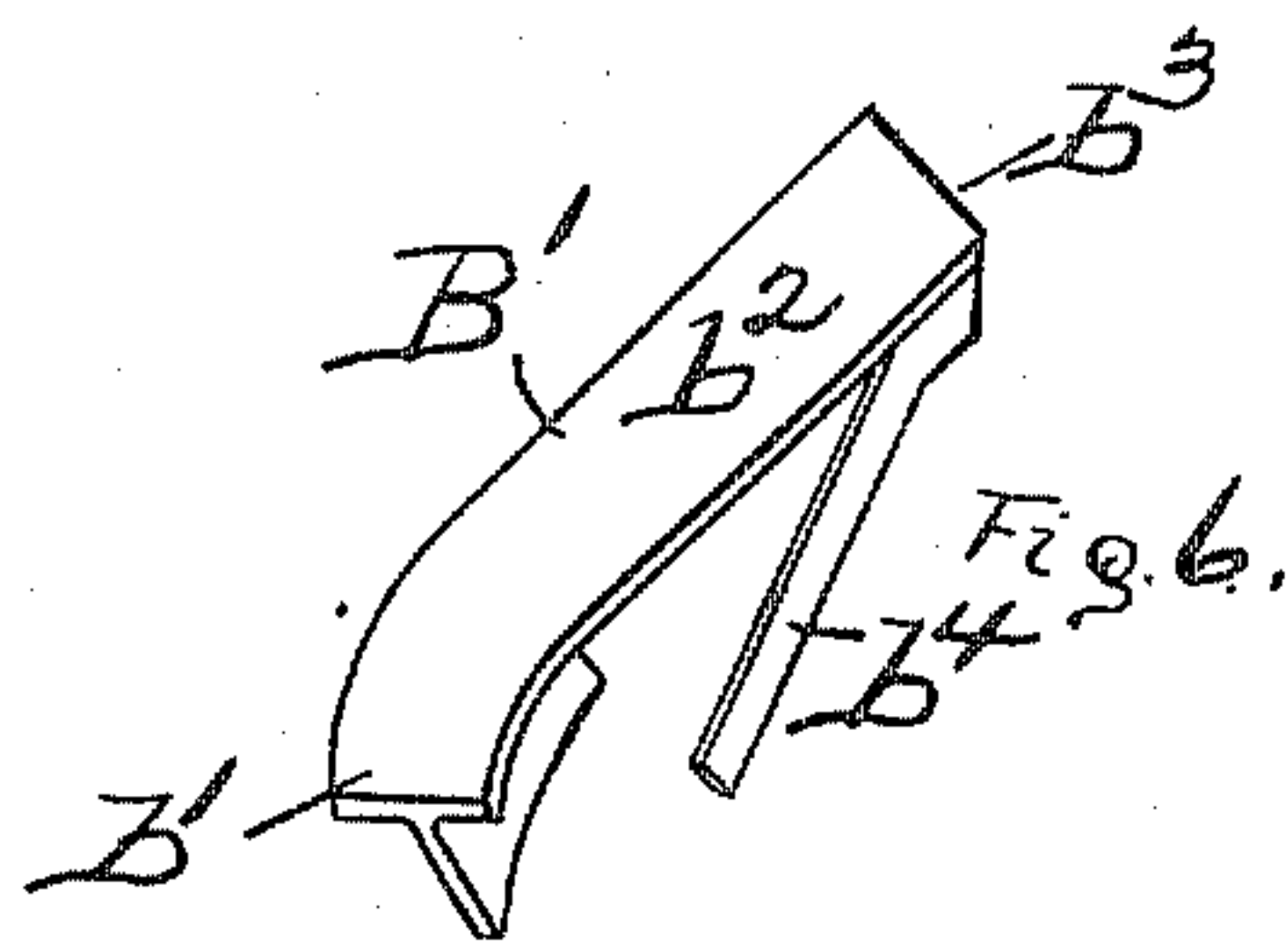
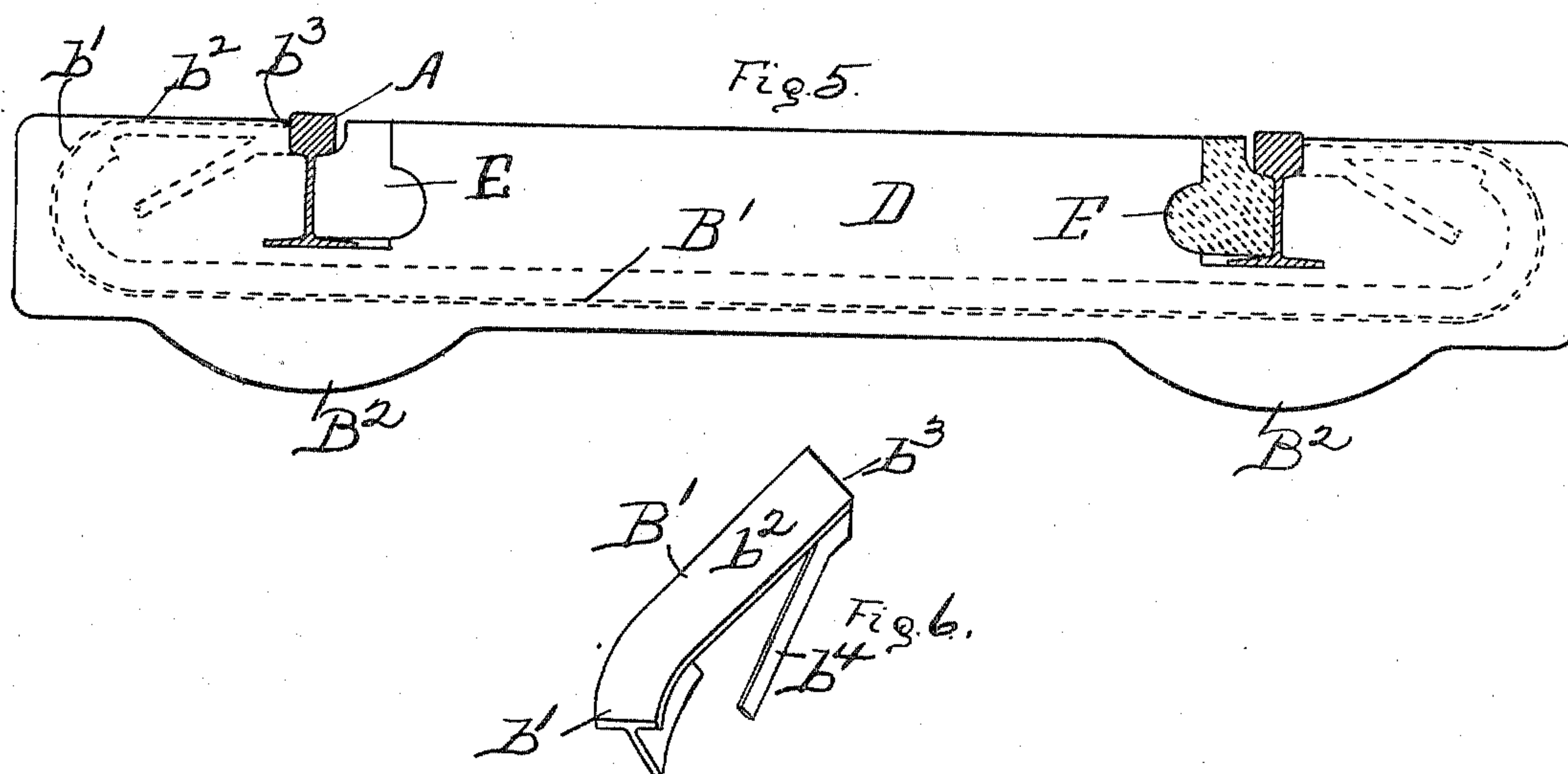
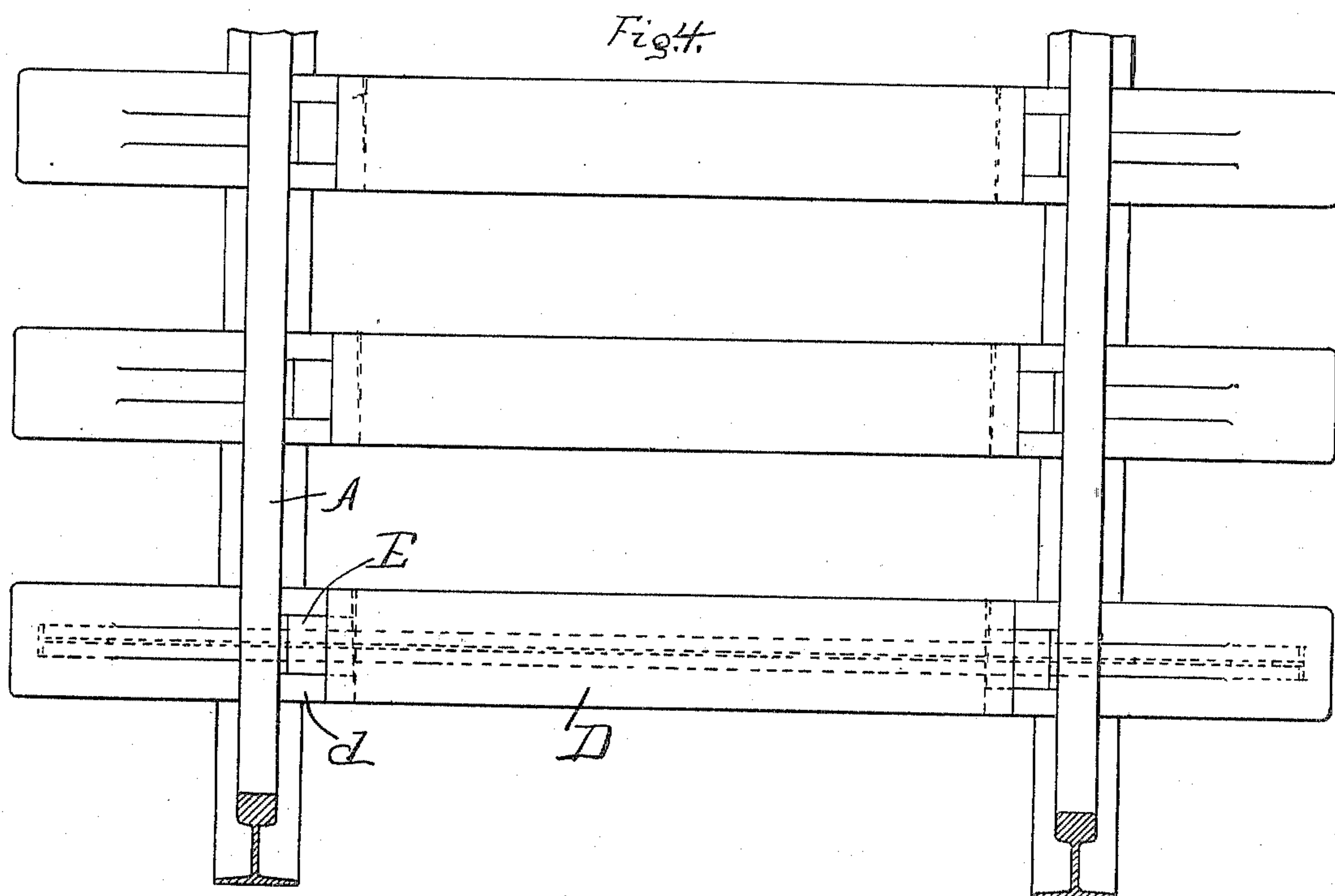
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# UNITED STATES PATENT OFFICE.

JOSEPH FREUND, OF BEAVER, PENNSYLVANIA, ASSIGNOR TO HENRY HOENIGSBERGER, OF BENSONHURST, LONG ISLAND, NEW YORK.

## RAILROAD-TIE.

No. 817,169.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed August 12, 1904. Serial No. 220,538.

*To all whom it may concern:*

Be it known that I, JOSEPH FREUND, a citizen of the United States, residing at Beaver, in the county of Beaver and State of Pennsylvania, have invented new and useful Improvements in Railroad-Ties, of which the following is a specification.

This invention relates to railroad-ties; and it consists in certain improvements in the construction thereof, as will be hereinafter fully described, and pointed out in the claims.

The invention is illustrated in the accompanying drawings, as follows:

Figure 1 shows a plan view of a railroad tie; Fig. 2, a side elevation of the tie, the rails being in section; Fig. 3, a perspective view of a fragment of the tie arranged for the fish-plate; Fig. 4, a plan view of an alternative construction; Fig. 5, a side elevation of the tie with the rails in section of this alternative construction; Fig. 6, a detailed view of a reinforcing-bar.

A marks the rail, which, as shown, is the ordinary T-rail. The rails are preferably secured together by the ordinary fish-plates *a*, the fish-plates being provided with the bolts *a'*.

The tie B is formed, preferably, of cement or similar material and preferably extends entirely across the railroad-bed from rail to rail. A groove *b* is arranged in the tie near each end, in which is placed the rail, the outer wall of the groove being formed to fit the rail and brace the same. A wedge C is placed in the inner portion of the groove against the rail and locks the rail in place. The wedges are inserted at the openings *b'*.

In order that the tie containing the fish-plate may give support to the rail, I provide the wall of the groove *b* with the offset *b''*, this groove being an offset in only the ties containing such fish-plates. The ties immediately next to this tie provide an end abutment to the fish-plates, and so prevent the creeping of the rails. I have provided in this offset a groove *b'''*, in which the heads of the bolts *a'* may be placed. This groove preferably extends the full width of the tie, so as to permit the heads of the bolts to come at any point along the fish-plate. It is also desirable to provide means of draining these grooves, especially where the rail-bed is of the preferred construction shown in Figs. 1 and 2—that is, when it is continuous in its

form. To accomplish this purpose, I have formed channels *b<sup>5</sup>*, leading from the grooves to the outer edge of the tie, for draining purposes. These drainage-channels are preferably formed part in each tie, so that when the ties are put together this channel is formed between them. I prefer to arrange the tie-plates *b<sup>13</sup>* in the bottom of the grooves *b*. These tie-plates have the projection *b<sup>14</sup>*, by means of which they are secured to the tie. The plate extends slightly above the bottom of the groove, so that the rail in between the tie-plates is held above the bottom of the groove, thus allowing the rail to spring along this intermediate portion. The tie-plate also protects the cement from the grinding action of the rail. These tie-plates are preferably put in place as the tie is being formed, so as to be secured to the tie by the setting of the cement.

The tie is braced and reinforced by the bars *B'*, which extend along the tie under the rail-base and have the turn *b'*, which extends forwardly, so that its end *b<sup>3</sup>* contacts the side of the rail and supplements the cement in bracing the rail, thus forming a metallic abutment. The upper edge *b<sup>2</sup>* of the bar *B'* is preferably brought flush with the surface of the cement and is preferably arranged at the edges of the tie, so as to protect the tie in case the train jumps the track. A brace *b<sup>4</sup>* is also preferably split from the upper portion of the bar *B'* and extends down into the turn *b'*, so as to make more effective the brace formed by the bar.

I form the projections *B<sup>2</sup>* in the under side of the tie preferably directly below the rail-base. This is particularly desirable where the groove *b* is used for the rail, in that it reinforces the tie at this point. This projection also assists in holding the ballast for the track in place, and when it projects from below the rail portion of the tie it naturally supports the greater part of the load carried by the tie, thus relieving the central portion of the tie and obviating the danger of breakage at that point.

In the continuous road-bed shown in Figs. 1 and 2 I prefer to provide a locking means, so as to prevent side movement of the ties. This is formed by the groove construction *b<sup>12</sup>*. In this construction also I prefer to provide the openings *b<sup>11</sup>*, through which openings grouting may be accomplished if desired.



In the alternative construction shown in Figs. 4 and 5 the tie D extends continuously from rail to rail and more nearly conforms to the ordinary wooden tie. It has, however, the groove  $d$ , in which the rail A is placed and the wedge E for fixing the rail in position. In this construction the reinforcing-bar B', with its different details, is used in the same manner as in the preferred construction, except, as shown, only one bar is provided, and this is preferably at the center of the tie. The tie is also provided with the projection B<sup>2</sup>.

What I claim as new is—

1. A railroad-tie having a reinforcing-bar embedded in the tie and extending under the rail-base and having the upturn outside said base the tie and upturn being arranged to extend up to the upper part of the rail.
2. A railroad-tie, having a reinforcing-bar embedded in the tie, and extending under the rail-base, and having an upturn outside said base, said bar including the upturn being arranged to contact the outside of the upper part of the rail for bracing the rail.
3. A railroad-tie having a reinforcing-bar embedded in the tie and extending under the rail-base, and having its outer end bent up in the tie to the level of the upper part of the rail and inwardly along the upper part of the tie toward the rail.
4. A railroad-tie having a reinforcing-bar embedded in the tie and extending under the rail-base and having its outer end bent up and inwardly toward the rail, the inturn being provided with a projection extending within the turn and forming a brace for the end of the bar.
5. A railroad-tie having a reinforcing-bar embedded in the tie and extending under the rail-base, and having its outer end bent up and inwardly toward the rail, the inturned portion having a part split from it and extending within the turn to form a brace.
6. A railroad-tie, having a reinforcing-bar embedded therein and arranged flush with the surface of the tie and extending from the edge of the rail.
7. A railroad-tie, having a bar embedded therein at the edges of the tie and extending from the rail flush with the surface of the tie.
8. A railroad-tie, having a reinforcing-bar embedded in the tie and extending under the rail-base, and having an upturn outside said base and an inturn extending toward the rail along the surface of the tie.
9. A railroad-tie having a reinforcing-bar B' embedded therein extending under the

rail-base, and having the upturned portion  $b'$  and inturned portion extending to the rail, the surface  $b^2$  coming flush with the upper surface of the tie.

10. A railroad-tie having a reinforcing-bar B' embedded therein extending under the rail-base, and having the upturned portion  $b'$  and inturned portion extending to the rail, the surface  $b^2$  coming flush with the upper surface of the tie, and having the brace  $b^4$  projecting from the under part of the inturned portion into the turn for bracing the end of the bar.

11. A railroad-tie having a reinforcing-bar extending under the rail-base and upwardly outside of said base, said tie being provided with a groove for the reception of the rail; and means for locking the rail in the groove.

12. A railroad-tie having the groove  $b$  for the reception of the rail, the offset  $b^9$  for the reception of the fish-plate, and a groove  $b^{10}$  in the offset for the reception of the heads of bolts in fish-plates.

13. A railroad-tie having the grooves  $b$  for the reception of the rail, the offset  $b^9$  for the reception of the fish-plate, and the groove  $b^{10}$  in the offset for the reception of the heads of the bolts in the fish-plate, said offset  $b^9$  extending entirely through the tie for the purposes described.

14. A railroad-tie having the grooves  $b$  for the reception of the rail, the offset  $b^9$  for the reception of the fish-plate, and the groove  $b^{10}$  in the offset for the reception of the heads of the bolts in the fish-plate, the offset  $b^9$  and groove  $b^{10}$  extending entirely through the tie.

15. A railroad-tie having a groove for the reception of the rail; and a channel extending from the groove to the outer surface of the tie for draining the groove.

16. A series of railroad-ties, forming a continuous bed, said ties being provided with a groove for the reception of the rails, and channels for draining said grooves.

17. A railroad-tie formed of artificial composition having a groove therein for the reception of the rail; a tie-plate secured to the tie in the process of formation, the surface of the tie-plate extending above the bottom of the groove.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEPH FREUND.

Witnesses:

B. L. MCGRATTY,  
ELMER E. BURNS.