

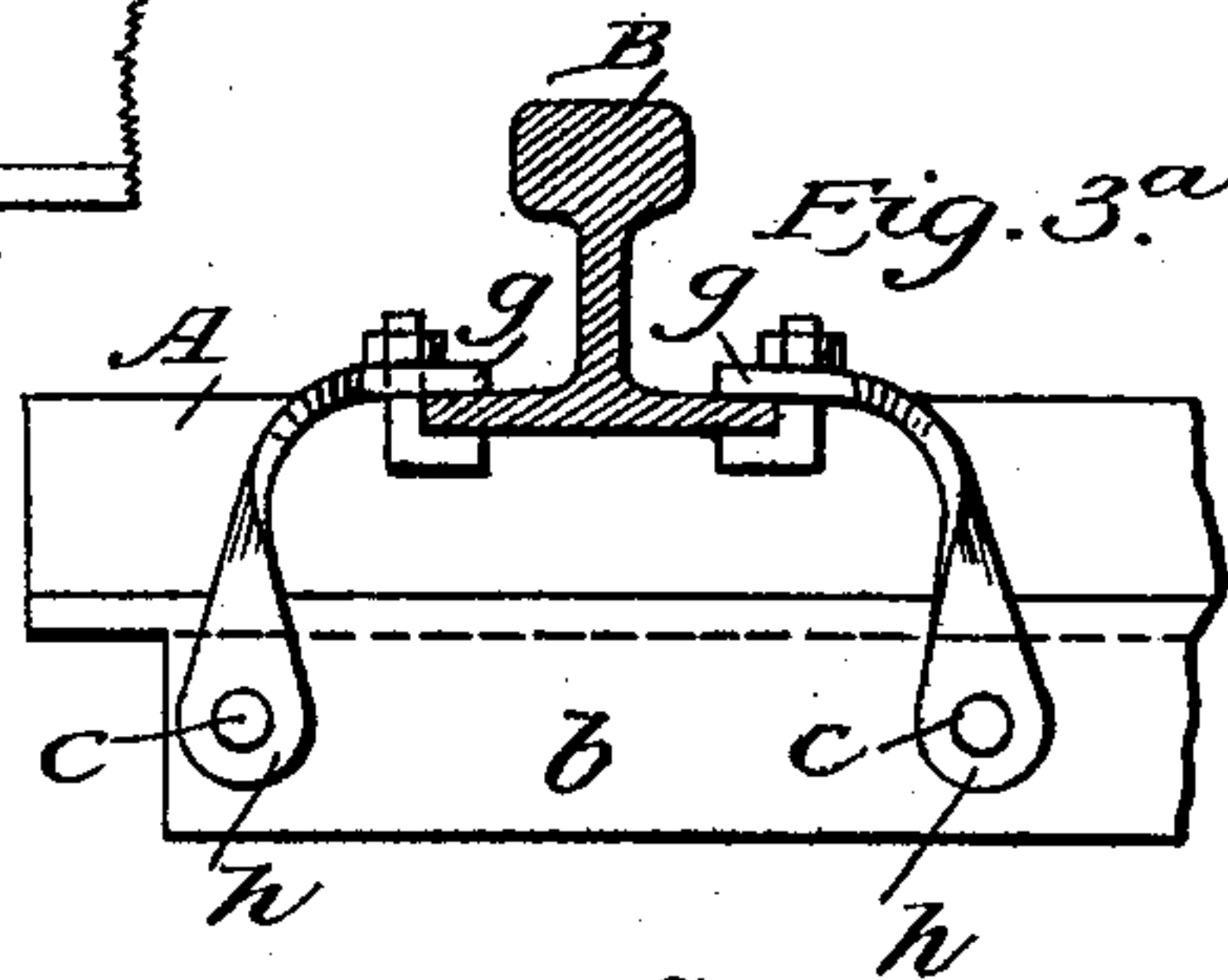
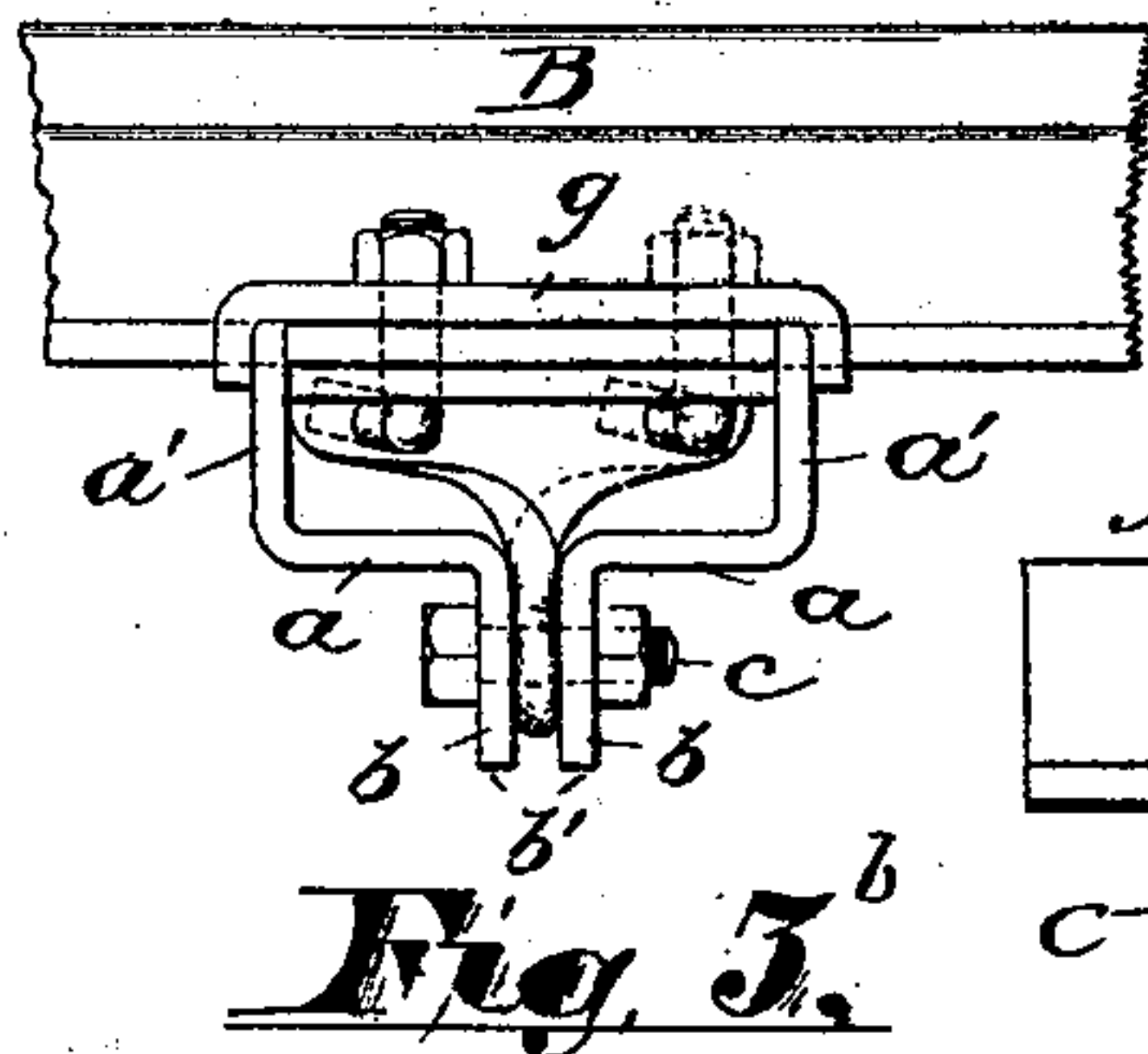
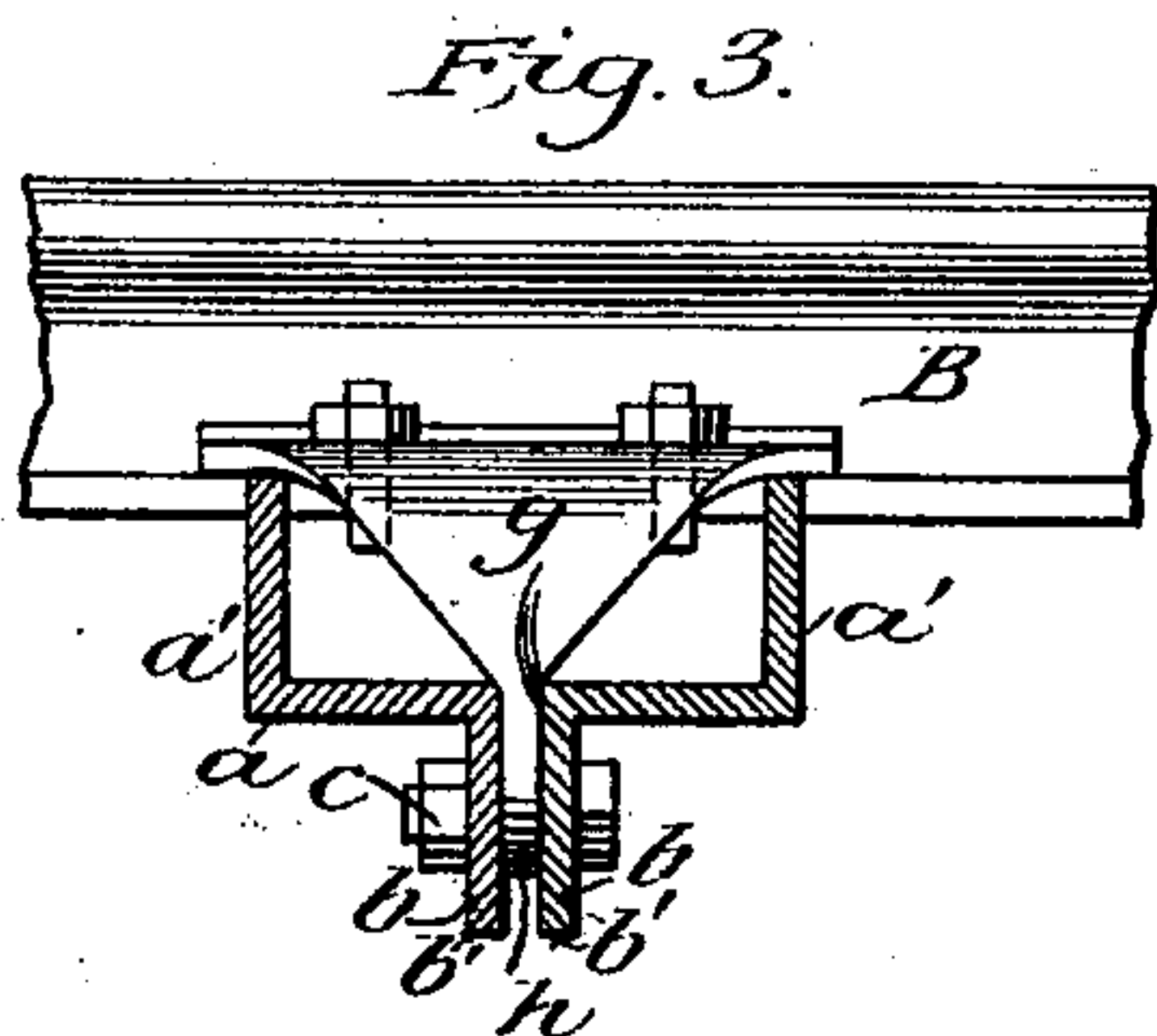
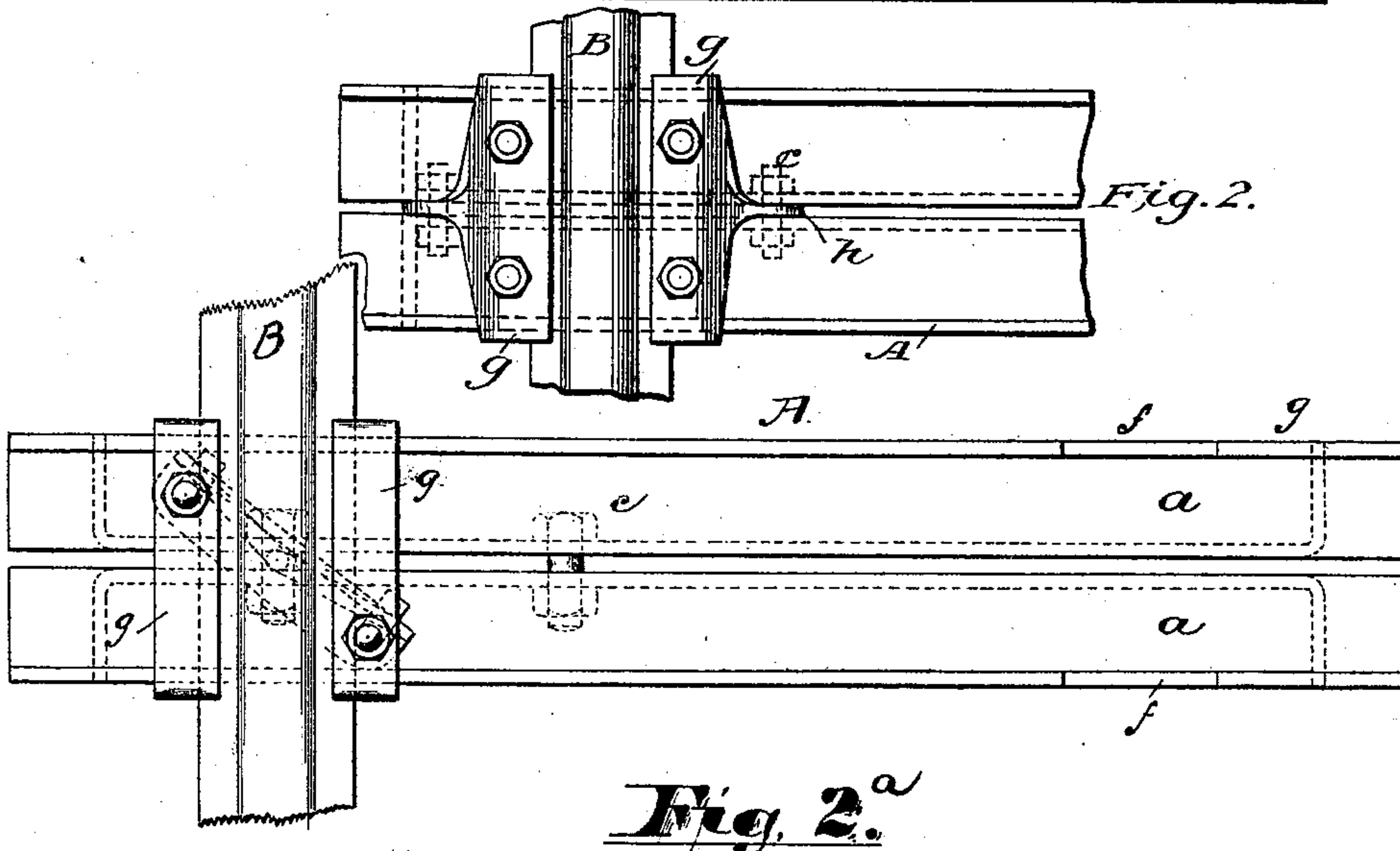
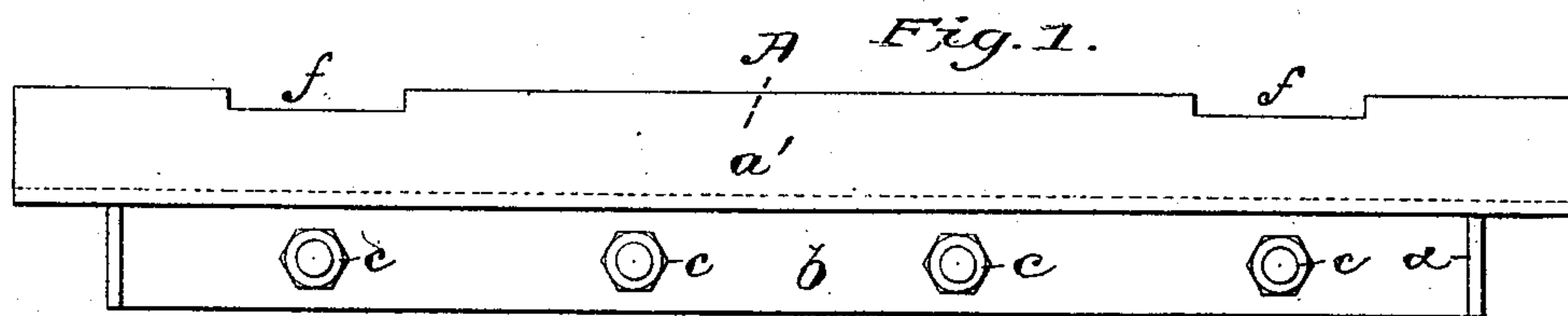
(No Model.)

2 Sheets—Sheet 1.

J. NEAFIE.  
RAILWAY TIE.

No. 517,585.

Patented Apr. 3, 1894.



Witnesses

Wm Smith  
Jesse H. Dixon

Inventor

James Neafie,

By Orake & Co. Attys.

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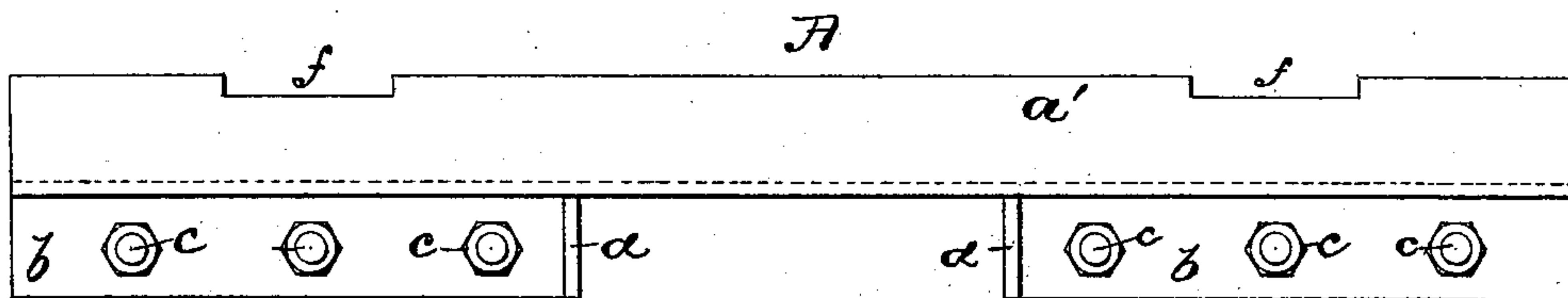


Fig. 4.

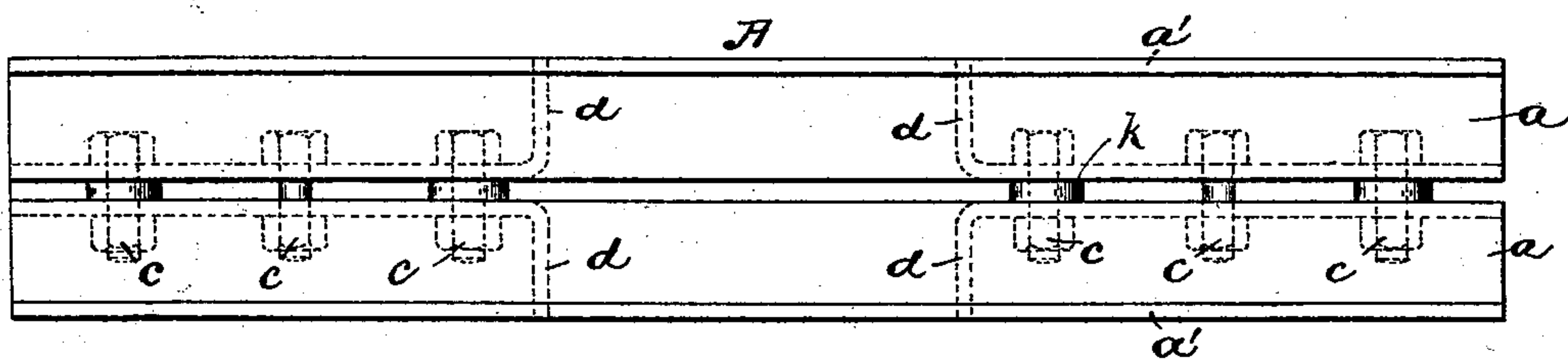


Fig. 5.

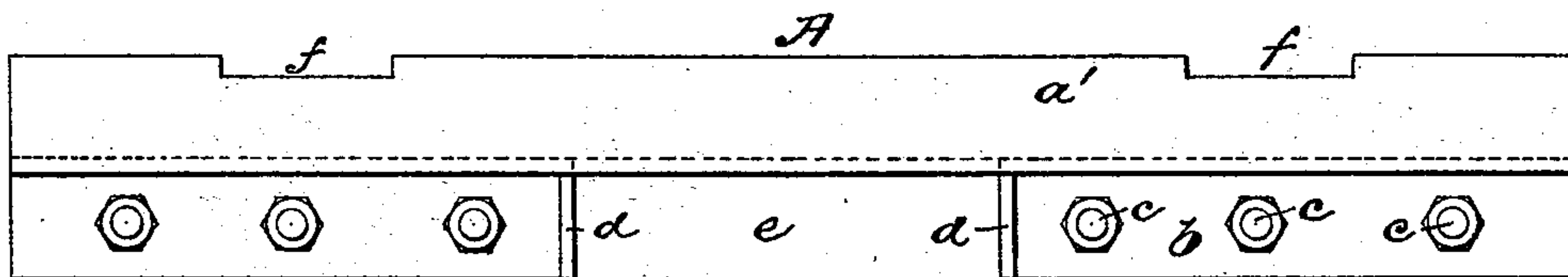


Fig. 6.

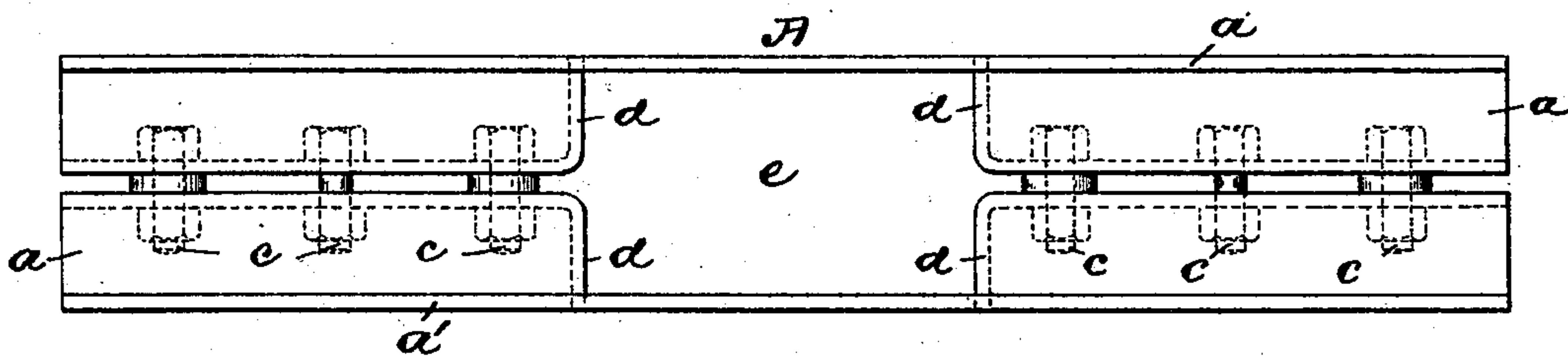


Fig. 7.

Witnesses

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By Draxel & Co., Attys.



# UNITED STATES PATENT OFFICE.

JAMES NEAFIE, OF BOONTON, NEW JERSEY.

## RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 517,585, dated April 3, 1894.

Application filed June 16, 1893. Serial No. 477,788. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES NEAFIE, a citizen of the United States, residing at Boonton, in the county of Morris and State of New Jersey, have invented certain new and useful Improvements in Railroad-Ties; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to secure economy in cost of construction, increased efficiency, stability and durability of the ties and also to facilitate the laying of the track rails and to secure other advantages hereinafter referred to.

Referring to the accompanying drawings, in which similar letters of reference indicate corresponding parts in each of the several views, Figure 1, represents, in side-elevation a railroad tie embodying my improvement. Fig. 2 is a top plan of the same and showing also a rail and fasteners in connection therewith. Fig. 2<sup>a</sup> is a similar view to that of Fig. 2, showing a modification of the fasteners. Fig. 3, is a side view of the fastening the tie being in section, and Fig. 3<sup>b</sup>, an end-view of the modification in Fig. 2<sup>a</sup> of the same. Fig. 3<sup>a</sup> is a view showing the fastener, in end elevation, in connection with a part of the tie in side elevation and the rail in cross-section. Figs. 4 and 5, show, in elevation and plan respectively, a modified form of the tie, and Figs. 6 and 7, another modification of the same.

In said drawings, A, designates the tie and B, the track-rails seated thereon in recesses formed to receive them.

In carrying out my invention I form the tie in two parts or sections *a, a*, each being composed of a plate of iron or steel having an upwardly projecting flange *a'* and a downwardly projecting flange *b*, which, when the two plates are united, by bolts or rivets, *c*, passing through said flanges *b*, form a box-shaped tie having, at the bottom, a central longitudinal tongue, flange or keel, *b'*, which, when the tie is laid in the road-bed or ballast, constitutes an anchor and effectually pre-

vents the said tie from moving longitudinally in the road bed, as will be obvious. I also provide means to prevent the tie from moving laterally in the road bed which consists in forming transverse flanges, *d*, either at the opposite ends of the tie or at the central portion thereof, as shown. These flanges are formed by severing a portion of the flanges *b*, from the body *a*, the required distance, at the ends of the tie, and returning the severed portions at right-angles to the main or body-portion of the flange, as indicated in Figs. 1 and 2 or at the central portion of the tie, in the same manner, as indicated in Figs. 4 to 7, as will be readily understood. I also provide an aperture, *e*, at the central portion of the bottom of the tie, Figs. 6 and 7, to admit the passage of the ballast therethrough, in order to prevent the buckling of the ties, which is sometimes occasioned by the difference in the degree of hardness or solidity of a road-bed at the center and at the outer edges.

It sometimes happens, owing to the nature of the soil in which a track is laid or owing to a track being laid near the edge of an embankment, that the edges of the road-bed are inclined to wash out and undermine the ends of the ties, which also tends to produce the buckling above referred to. The transverse flanges, at the ends of the ties, serve to reduce or prevent this undermining of the ends of the ties as well as to prevent the lateral displacement or movement of the ties in the road bed, as will be manifest. The top edges of the ties are provided with recesses, *f*, to receive the bottoms of the track-rails and effectually prevent any lateral movement or displacement of said rails. I also provide suitable fastenings to hold the rails down, in their seats, and effectually prevent any upward movement of said rails. Said fastenings, in this instance, consist in clamps, *g*, adapted to engage the flanges of the rail and having flattened shanks *h*, adapted to pass between the bottom flanges *b*, of the ties and be firmly secured in position by means of the bolts and nuts, *c*, as will be understood upon reference to Figs. 2 and 3; any other fastenings may however, be substituted for these if preferred. Ties thus constructed can be made much more readily and at less expense than



any metal tie of which I have any knowledge. The sections of the tie are so constructed, being both alike, as to be interchangeable and in the event of a derailment of a train the men are enabled to readily remove a tie, or a section of it, from the road bed, should it get bent and restore it to its proper shape and replace it or substitute a new one at but little loss of time or expense, as will be obvious. I have also provided for increasing or diminishing the width of the tie by the insertion of fillers, *k*, to adapt the tie for heavy or light traffic. By means of fillers the ties can be increased in width throughout their length, uniformly, or be made wider at one end than the other so as to afford a greater or lesser bearing for the rails as the circumstances of the case may require; the utility and importance of which will be obvious to railroad engineers.

Having thus described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. A metal railroad tie composed of two parts, each part being **L**-shaped in cross-section and the two parts being united longitudinally by means of bolts or rivets and forming an open trough or box-like structure with a central longitudinal flange or keel projecting at right angles from the bottom thereof and constituting an anchor to prevent the tie from moving longitudinally in the road-bed, as set forth.

2. A metal railroad tie composed of two sections, each being composed of a horizontal member and two other members projecting in opposite directions therefrom and at right-angles thereto, the said sections being united longitudinally by means of suitable fasteners, to form an open box-like structure or trough with a central longitudinal flange or keel projecting at right angles from the bottom thereof and transverse flanges intersecting with said central flange or keel, as described, and for the purposes set forth.

3. A metal railroad tie composed of two sections, each being composed of a horizontal member and two other members projecting in opposite directions therefrom and at right-angles therewith, the said sections being united longitudinally by suitable bolts or fasteners to form an open box-like structure or trough with a central longitudinal flange or keel projecting at right-angles from the bottom thereof and parted at the center, as shown, and for the purposes set forth.

4. A metal railroad tie composed of two sections, of the construction described and united longitudinally to form an open box-like structure having a central longitudinal flange or

keel projecting at right-angles from the bottom thereof and parted at the center, as shown, and transverse flanges intersecting with the aforesaid flange or keel at the extremities thereof, as described, and for the purposes set forth.

5. A metal railroad tie composed of two sections constructed as described and united longitudinally to form an open box-like structure having an opening in the bottom thereof and a central longitudinal flange or keel projecting at right-angles from the said bottom and extending from the opposite extremities of said opening to the end portions of the said structure, as described, and for the purposes set forth.

6. A metal railroad tie composed of two sections constructed and joined together at the bottom, as described, and forming an open or box-like structure or trough having an opening in the bottom thereof, a central longitudinal flange or keel projecting at right angles from the said bottom and extending from the opposite extremities of said opening to the end portions of the said structure, and transverse flanges intersecting with the said flange or keel, at the extremities thereof, as described, and for the purposes set forth.

7. A metal railroad tie composed of two sections, each having a horizontal member and two other members projecting in opposite directions and at right-angles therefrom, **L**-shaped in cross section the said sections being united longitudinally, as described, to form a box-like structure or trough, open at the top and with a central longitudinal flange or keel projecting at right angles from the bottom thereof, whereby the upper edges of the opposite sides of the tie serve as double bearings or seats for the rails.

8. In a metal railroad tie composed of two **L**-shaped sections adapted to be united at the bottom, longitudinally, as shown the combination of filling pieces or wideners interposed between the united parts, and means for securing the fillers and the said parts together, as and for the purposes set forth.

9. A metal railroad tie comprising therein two plates or bars **L**-shaped in cross-section and united longitudinally, as shown, and means for securing them to one another, as described, and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 10th day of June, 1893.

JAMES NEAFIE.

Witnesses:

OLIVER DRAKE,  
CHARLES H. PELL.