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Patented Feb. 21, 1899.

S. H. HARRINGTON.

CONSTRUCTING AND BONDING RAILS OF ELECTRIC RAILWAYS.

(Application filed June 17, 1897. Renewed July 18, 1898.)

(No Model.)

Fig. 1.

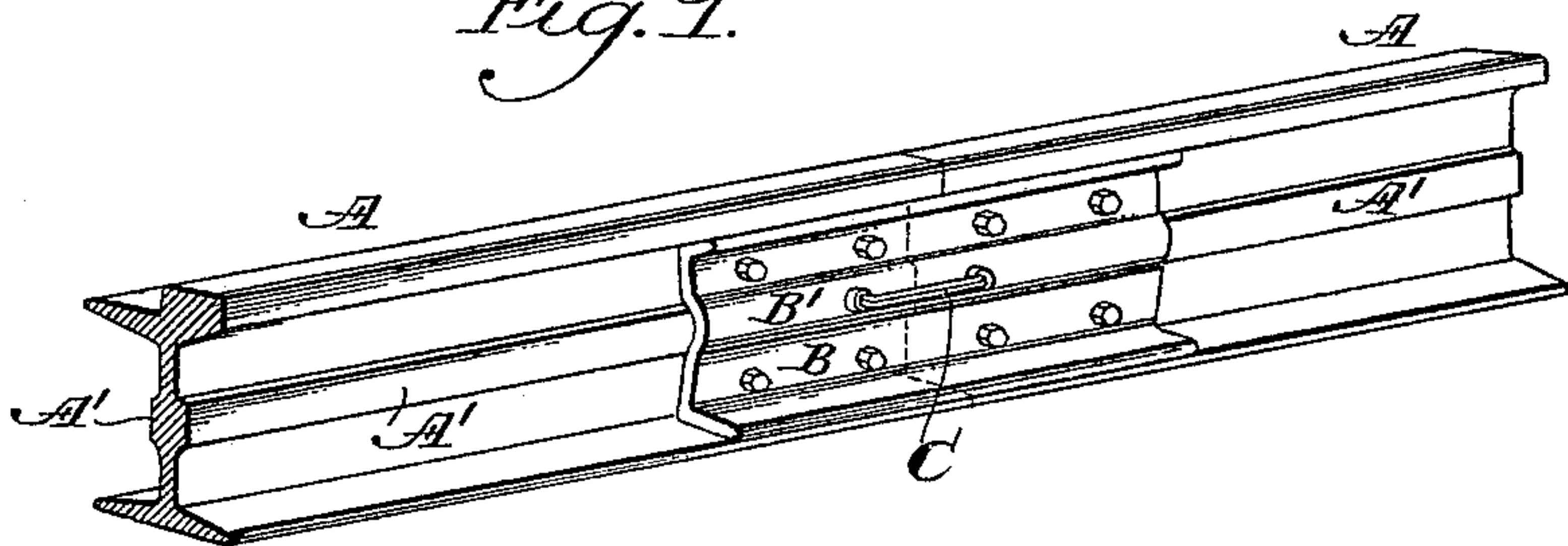


Fig. 2.

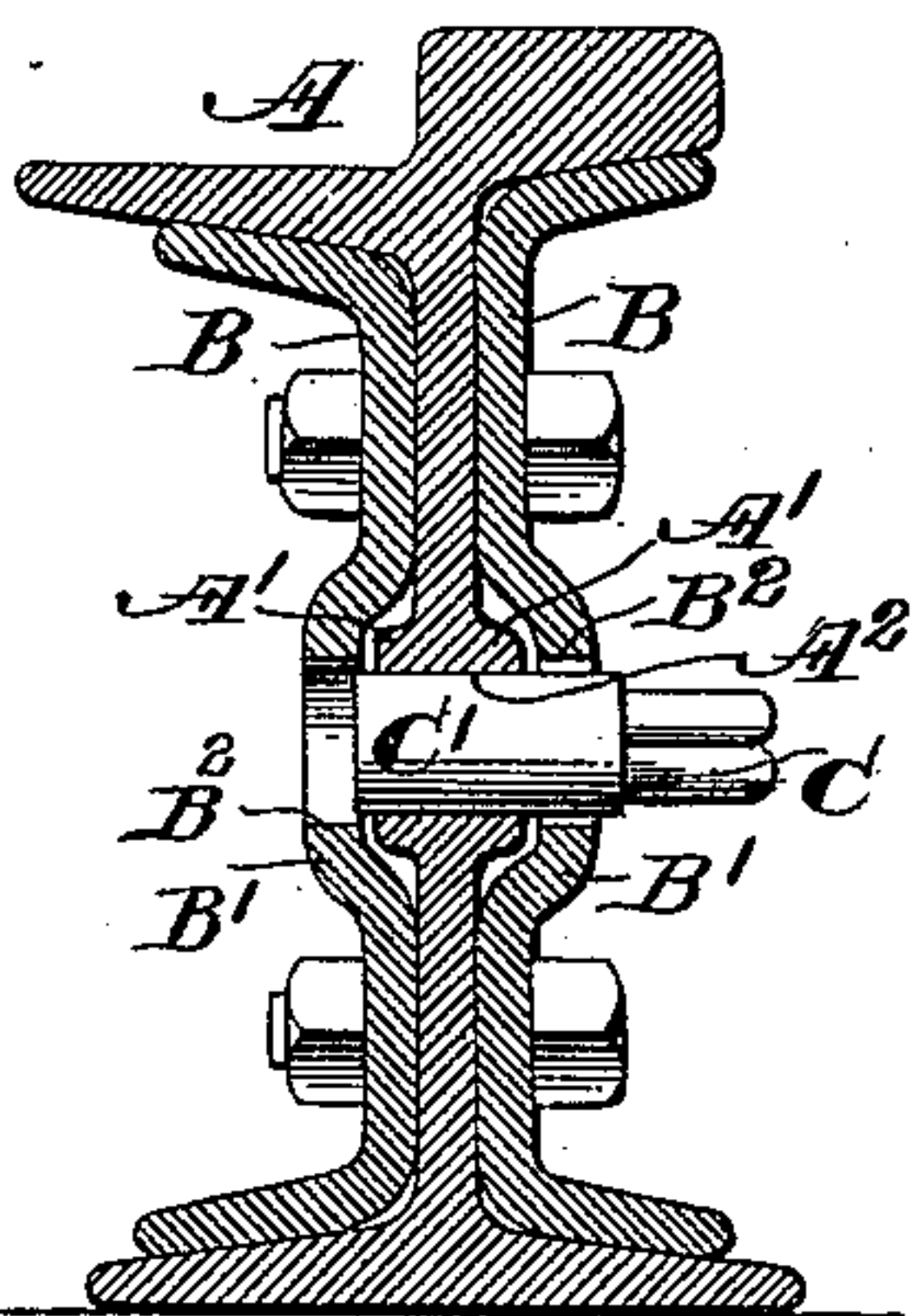


Fig. 3.

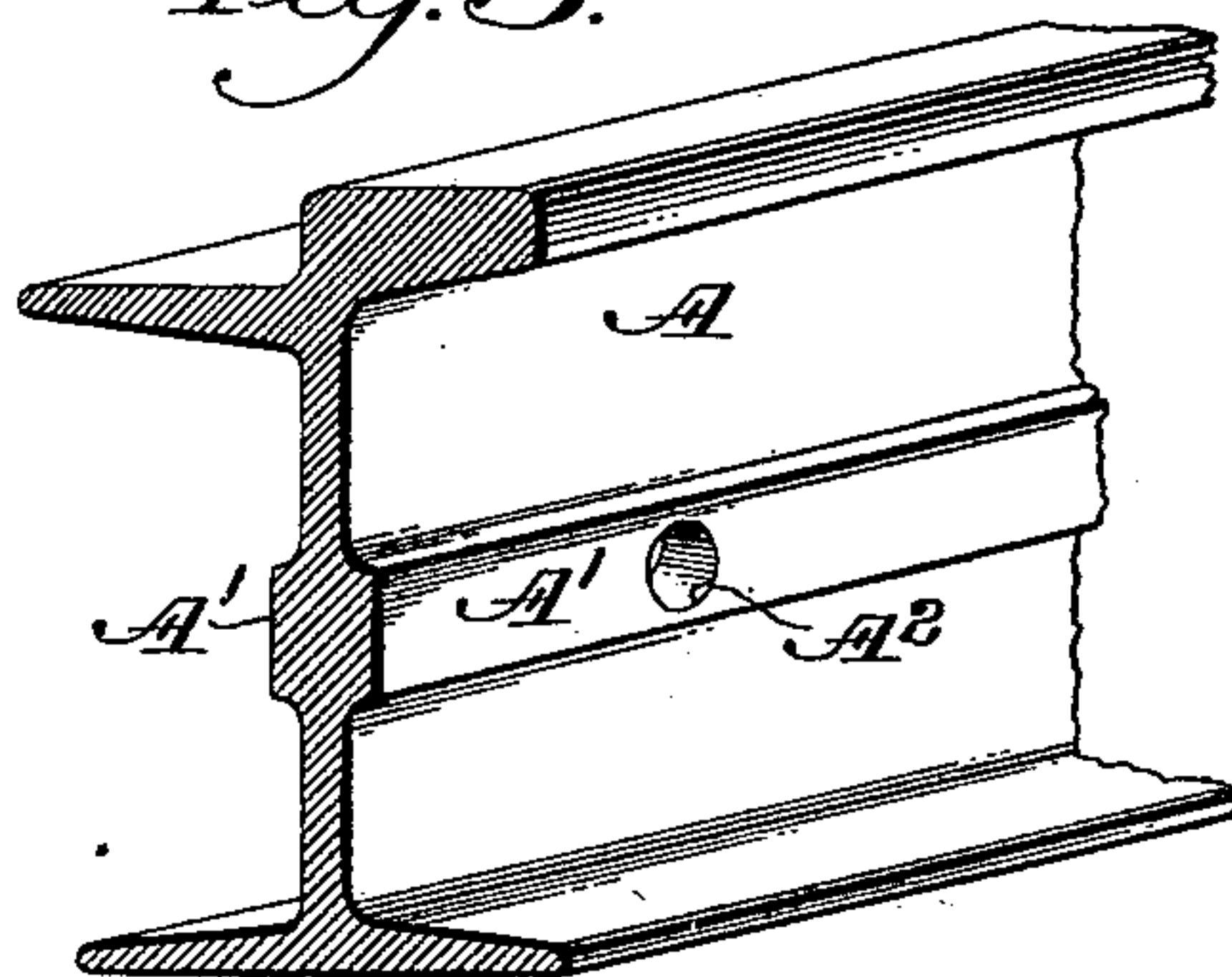


Fig. 5.

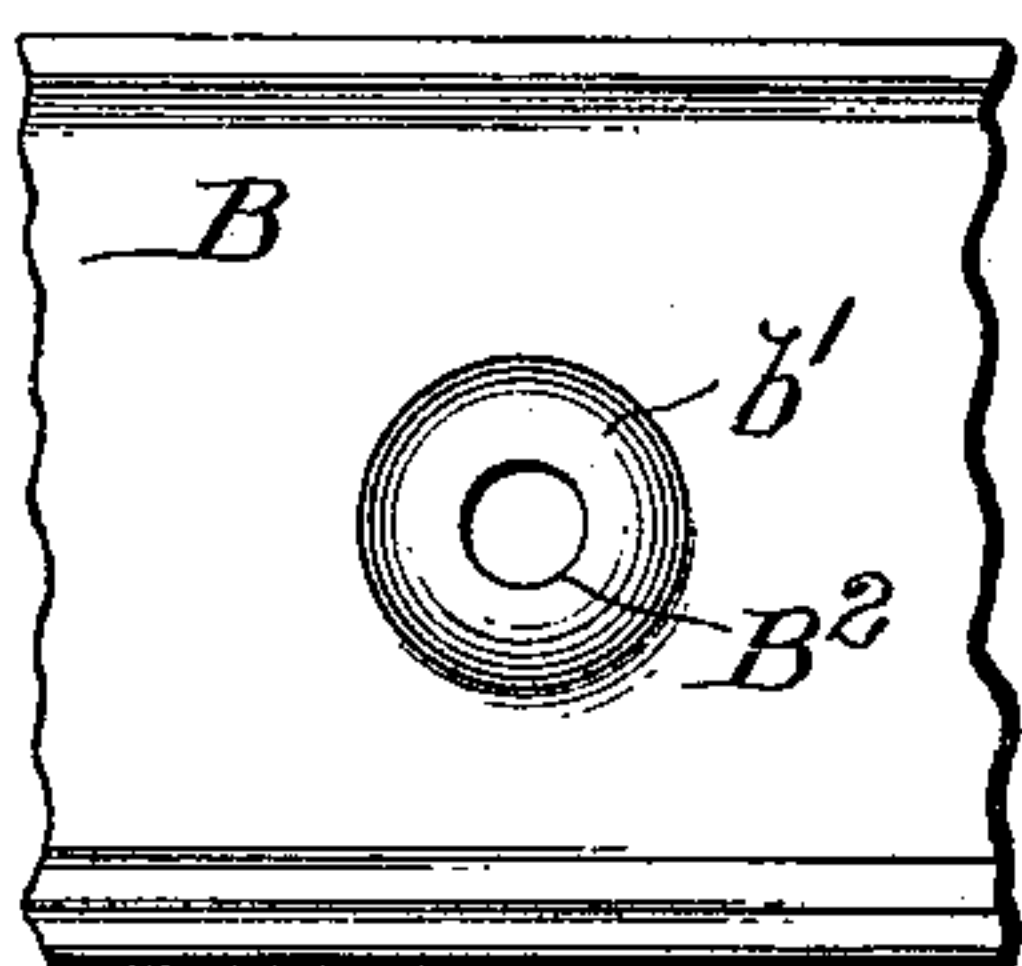


Fig. 4.

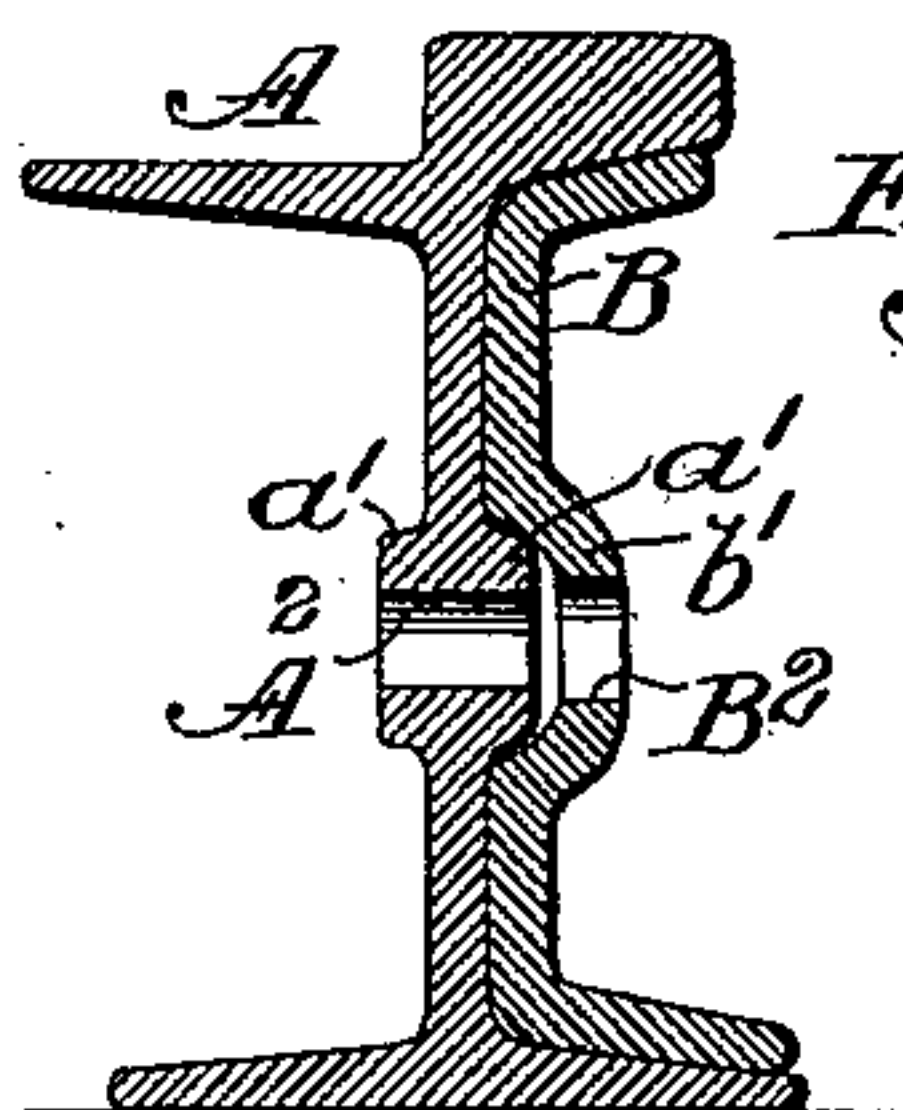
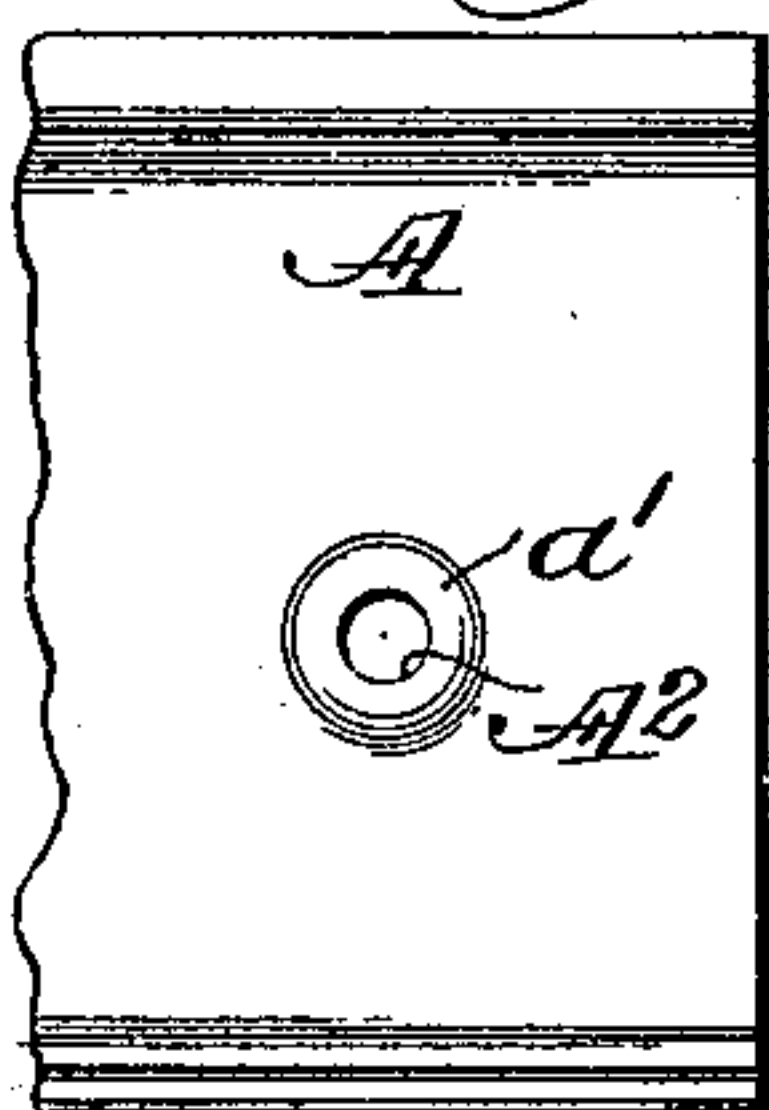
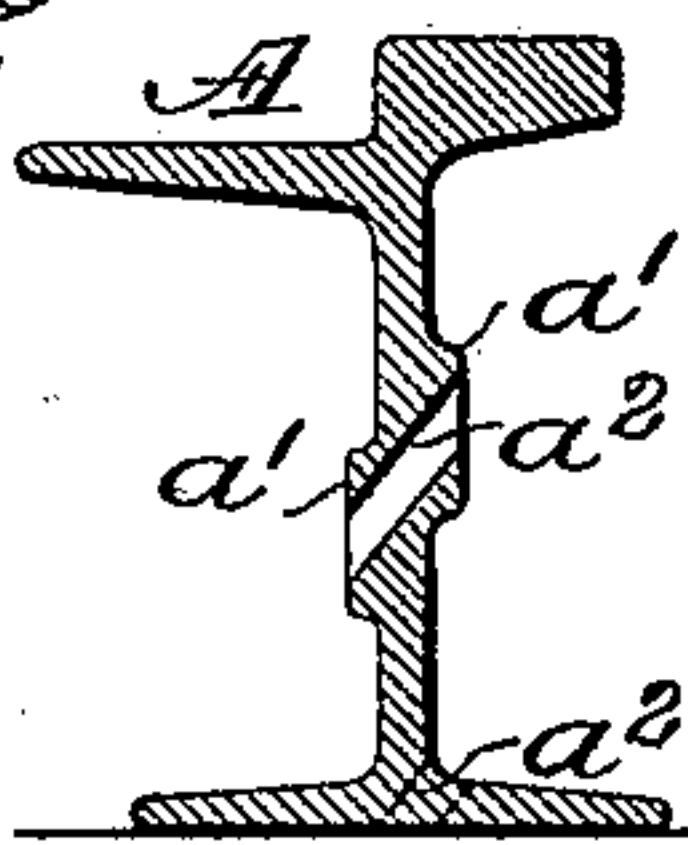


Fig. 6.

Fig. 7.



Witnesses.

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SAMUEL H. HARRINGTON, OF NEW YORK, N. Y.

CONSTRUCTING AND BONDING RAILS OF ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 620,031, dated February 21, 1899.

Application filed June 17, 1897. Renewed July 18, 1898. Serial No. 686,273. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. HARRINGTON, a citizen of the United States of America, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Constructing and Bonding the Rails of Electric Railways, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to electric railways in which the rails are used for conductors of electricity, and particularly it relates to the construction of the rail in such a way as to provide improved surface contact for the electric-rail bonds used in connecting abutting rails together for the passage of the electric current.

In a former application filed by me December 10, 1896, Serial No. 615,085, I have shown and described a construction by which an increased surface contact for the ends of the bonds are obtained by forming the perforations in which the bond ends are secured at an acute angle to the web of the rail, thereby enlarging the wall-surface of the perforation and providing for greater contact between the bond and rail than had previously been obtainable.

My present invention may be used in connection with my said former invention and also independently thereof; and it consists, primarily, in forming on the part of the rail, preferably its web, in which the bonds are to be inserted a "beading," so to speak, which increases the thickness of the rail at that point, and thus insures a wall-surface to the bond-receiving perforations of greater area than is obtainable by forming a perforation through any part of the rail proper. Preferably I form the perforations near the ends of the rail and use, in connection with the rails, fish-plates having recesses formed in them to receive the beading upon the rail and perforations formed through said recessed portions in position to register with the perforations in the beading and rail and give passage to the bond. In this way I am enabled to use a shorter rail-bond than in the ordinary construction, where the bond is inserted through perforations in the rails formed at such a distance from the ends thereof as to

be beyond the portion covered by the fish-plates.

Reference being now had to the drawings 55 which illustrate my invention, Figure 1 is a perspective of two rails secured and bonded together in accordance with my invention. Fig. 2 is a cross-section taken through a rail and fish-plates constructed in accordance 60 with my invention, said section being on a line which passes through the bond-receiving perforation. Fig. 3 is a perspective view of the end of a rail such as is shown in Fig. 2. Fig. 4 is a side elevation of the end of a rail 65 having the beading formed in a somewhat different way from that indicated in Figs. 1, 2, and 3. Fig. 5 is a side elevation of a portion of a fish-plate adapted to be used with the rail construction shown in Fig. 4. Fig. 70 6 is a sectional view of the rail and fish-plate of Figs. 4 and 5, showing their relative position when assembled together; and Fig. 7 is a sectional end elevation of a modification embodying, in addition to the invention of 75 my present application, that of my former application above mentioned.

A A indicate rails which may be of any ordinary construction adapted for use in electric railways. 80

A', Figs. 1, 2, and 3, indicates a beading extending laterally from the web of the rail and here shown as forming continuous ribs along the web, a form which will readily commend itself as being one which can be 85 readily formed in the rolling of the rails.

At a' , in Figs. 4, 6, and 7, I have shown the beading as in the form of a round boss secured to the web of the rail, a form which will most conveniently be made by welding 90 the boss to the web and which has the merit of requiring less metal than the construction shown in Figs. 1, 2, and 3. The bosses a' in Fig. 7 are shown as placed at unequal distances from the top and bottom of the rail, so 95 as to facilitate the formation of the inclined perforation through them. The bond-receiving perforation is indicated at A^2 , Figs. 2 to 6, and at a^2 in Fig. 7, those marked A^2 being perforations at right angles to the web of the 100 rail, while the perforation a^2 in Fig. 7 is at an acute angle to the plane of the web.

B B indicate fish-plates by which the rails are secured together in the usual way. In

my construction I form these fish-plates with recesses B', as indicated in Figs. 1 and 2, where the recess is made continuous to receive the rib a' , and at b' in Figs. 5 and 6, where the recess is of a boss-like form adapted to receive the boss-like beading a' . B² in all cases indicates the perforation formed through the walls of the recessed portion of the fish-plate in position to register with the perforations A² and to give passage to the rail-bond, which is indicated in Figs. 1 and 2 at C C', Fig. 2 indicating the end or portion of the bond which is driven into close contact with the walls of the perforation in the rail. I may mention that it is generally found desirable to provide some secure means for anchoring the bond in the perforation of the rail; but many such devices are common, and as my present invention has no relation to the form of bond or to the specific means for anchoring it in position I have shown no anchoring device in the drawings.

In my construction the rails being constructed with a bead at the point where the bond-receiving perforation is to be made the perforations A² are formed at the proper points, the rails secured together in the ordinary way, preferably by fish-plates, such as are indicated in the drawings, and the ends of the bonds are then inserted and driven into close contact with the walls of the perforations, which obviously passing, as they do, through both the beading and metal of the rail proper can be made to afford any desired and necessary surface contact. So far as I am aware the largest surface contact heretofore obtainable has been by forming, in accordance with my former application, a perforation, such as is indicated in dotted lines at a^2 , Fig. 7, through the metal of the rail where the web and boss flanges join.

It will readily be seen that my present invention provides for a greatly-increased contact, and, moreover, does not imperatively require that the perforation should be made at an acute angle to the web, as indicated in Fig. 7.

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

1. A rail for electric railways having a

beading of the same metal as the rail extending out from and incorporated with it and a bond-receiving perforation formed through said beading and the adjacent metal of the rail proper.

2. A rail for electric railways having a beading of the same metal as the rail extending laterally from and incorporated with its web as specified and so as to afford an enlarged surface area for a bond-receiving perforation.

3. A rail for electric railways having a longitudinal rib-beading of the same metal as the rail extending laterally from and incorporated with its web as specified and adapted to afford an enlarged surface area for a bond-receiving perforation.

4. In an electric bond for railway-rails the combination of an iron or steel rail having a beading of the same metal as the rail extending laterally from and incorporated with its web and a perforation formed through the web and beading, of a bond formed of metal having greater conductivity than the metal of the rail and beading, said bond being inserted in the perforation and brought into close contact with its walls.

5. In an electric bond for railway-rails the combination of an iron or steel rail having a beading extending laterally from its web and a perforation formed through the web and beading at an acute angle to the plane of the web, of a bond formed of metal having greater conductivity than the metal of the rail said bond being inserted in the perforation and brought into close contact with its walls.

6. The combination of two abutting rails for electric railways each having a beading extending laterally from its web and a perforation formed in said beading of a fish plate or plates adapted to secure said rails together having recesses adapted to clear the beading on the rails and perforations formed through said recesses to register with the perforations in the rail and give passage to an electric-rail bond.

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