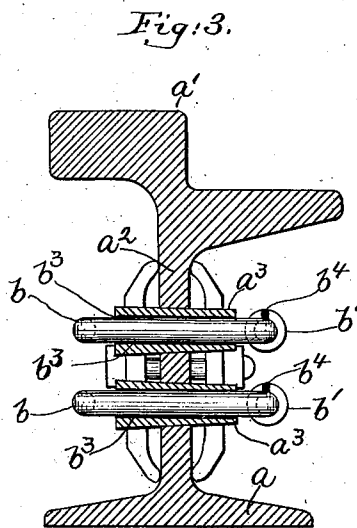
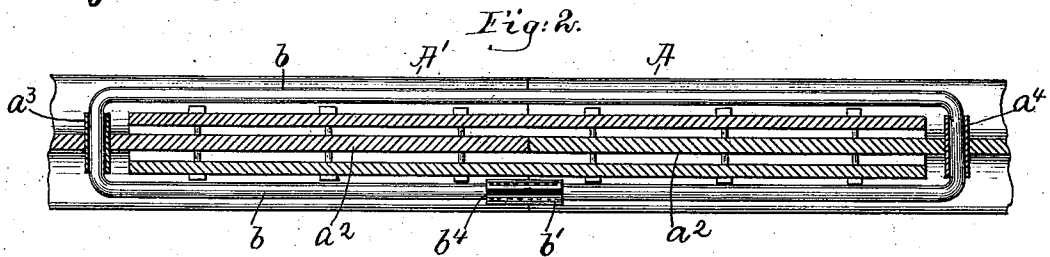
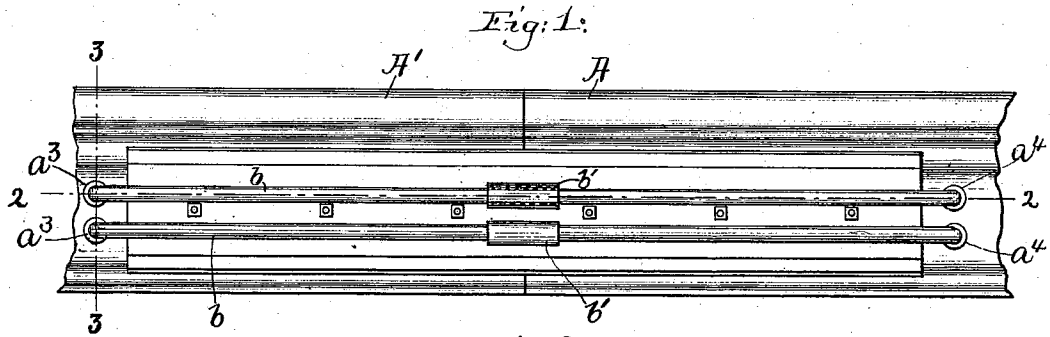


(No Model.)

R. C. BROWN.
RAIL BOND FOR ELECTRIC RAILWAYS.

No. 554,859.

Patented Feb. 18, 1896.



Witnesses.
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UNITED STATES PATENT OFFICE.

ROBERT C. BROWN, OF SOMERVILLE, MASSACHUSETTS.

RAIL-BOND FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 554,859, dated February 18, 1896.

Application filed March 21, 1894. Serial No. 504,529. (No model.)

To all whom it may concern:

Be it known that I, ROBERT C. BROWN, residing in Somerville, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Rail-Bonds for Electric Railways, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention is an improvement in electric-railway construction in which the rails of the track form part of the electric circuit, and relates more particularly to the rail-bond employed to effect an electrical connection between two contiguous rails or sections of the track.

The invention has for its object to provide an improved rail-bond by which a more efficient electrical connection or joint may be obtained between contiguous rails, so as to prevent the interposition of resistance due to a bad connection or joint and thereby maintain the use and benefit of the rail as a conductor at its normal carrying capacity.

The invention further consists in a novel construction by which electrolysis or local action is prevented or reduced to a minimum, thereby prolonging the life and efficiency of the bond and consequently maintaining the carrying capacity of the rail.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of two abutting or contiguous rails partially broken out and electrically connected by a rail-bond embodying this invention; Fig. 2, a section on the line 2 2, Fig. 1, to more clearly show the construction of the rail-bond; and Fig. 3, a vertical sectional detail to be referred to, on the line 3 3, Fig. 1, and on an enlarged scale.

The rails A A', forming part of an electric-railway system, may and preferably will be made substantially as shown in Fig. 3, each rail consisting of a base a , a tread a' , and a connecting vertical web a^2 .

In accordance with this invention the rails A A' are electrically joined or connected together by a bond consisting of preferably tapering hollow plugs $a^3 a^4$, of iron or steel, which are driven into and through suitable

holes in the webs a^2 of the said rails, the said hollow plugs being of such diameter with relation to the said holes, and vice versa, that the plugs will fit tight and be firmly secured to the rails.

The hollow plugs $a^3 a^4$ for the best results are made substantially long, so as to obtain a long bearing-surface for one or more tie-wires or bonds b , a single wire being herein shown, and of such size or diameter to fit somewhat snugly the hollow plug.

The bond or tie-wire b is preferably made of copper on account of its superior conductivity, and I prefer to employ a single or continuous wire for each joint, the ends of which are extended through the hollow plugs carried by the rails A A' and are preferably connected together by means of a sleeve or tube b' , into which the opposite ends of the tie-wire b are inserted, thereby forming a metallic loop by which the rails A A' are connected together.

In order to secure good electrical contact between the tie-wire b and the hollow plugs $a^3 a^4$, the tie-wires are soldered to the hollow plugs, and in the drawings this solder is represented by the heavy dark line b^3 , and for the best results the ends of the tie-wire b are soldered to the interior surface of the sleeve or tube b' , which may be effected by providing the said tube or sleeve with a hole or opening, preferably a longitudinal slot, through which the solder is poured, the said solder being represented by the heavy black line b^4 in Fig. 3.

The soldering of the tie-wire b to the hollow plugs $a^3 a^4$ and to the connecting-sleeve b' effects a most efficient electrical connection between the rails A A', and when the tie-wire is composed of copper this method of securing electrical contact between the copper tie-wire and the hollow steel or iron plugs prevents or reduces to a minimum electrolysis or local action between these dissimilar metals, and as a result the life and efficiency of the bond are prolonged and the carrying capacity of the rail as a conductor is maintained at its normal capacity.

The local action referred to, if established between the copper tie-wire and the steel plug, would form a decomposition of both metals,

and more particularly of the copper tie-wire, which would cause a wasting away of the copper wire, thereby interposing resistance in the rail-circuit, which would impair the usefulness of the rail as a conductor, and thereby diminish its carrying capacity, and after a sufficient length of time the copper wire would become eaten away and parted, thereby wholly destroying the circuit between the rails A A'.

I have herein shown the rail-bond as consisting of a single tie-wire, but I do not desire to limit my invention in this respect, as instead thereof I may use a plurality of smaller wires; so, also, I prefer to employ a copper tie-wire, on account of the superior conductivity, but the hollow plug, when used with a tie-wire of iron or steel or other metal affords a superior means of effecting an electrical joint or connection between the rails A A'.

I have herein shown the tie-wire as a single continuous wire having its opposite ends connected together by the sleeve b' , and while I prefer this construction it may be found desirable to employ a tie-wire for each hollow plug and joined at their ends on opposite sides of the rail by two sleeves b' or in any other desirable manner.

In Fig. 1 two rail-bonds are represented as

connecting the rails A A'; but any desired number may be employed.

In practice the hollow plugs a^3 a^4 may be coated with solder by dipping them into a bath of solder previous to driving the said plugs into and through the holes in the web of the rails.

I claim—

1. The combination with the rails of an electric railway, of a rail-bond comprising a hollow plug inserted through each of the rails to be connected, and a tie-wire extended through said hollow plugs and joined together at its ends, substantially as described.

2. The combination with the rails of an electric railway, of a rail-bond comprising hollow tapering plugs inserted through the rails to be connected, a tie-wire extended through said hollow plugs and soldered thereto, and a sleeve or tube into which the ends of the tie-wire are inserted and soldered thereto, substantially as described.

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

ROBERT C. BROWN.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.