

(No Model.)

J. MEYER.

RAIL JOINT AND BOND FOR ELECTRIC RAILWAYS.

No. 522,349.

Patented July 3, 1894.

Fig: 1.

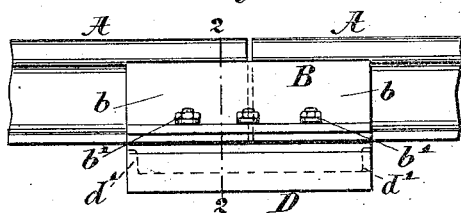


Fig: 3.

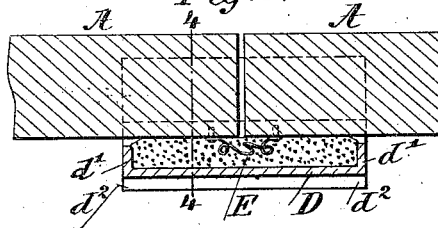


Fig: 2.

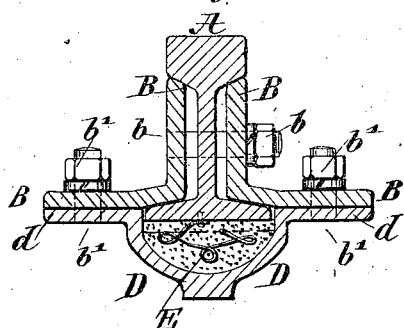


Fig: 4.

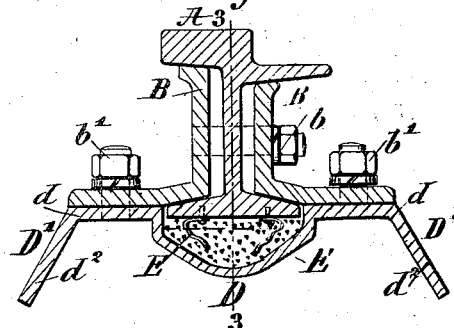
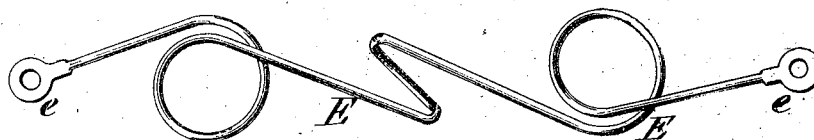


Fig: 5.



WITNESSES:

Charles Schroeder.  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

JULIUS MEYER, OF NEW YORK, N. Y.

## RAIL JOINT AND BOND FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 522,849, dated July 3, 1894.

Application filed October 21, 1893. Serial No. 488,783. (No model.)

*To all whom it may concern:*

Be it known that I, JULIUS MEYER, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Rail Joints and Bonds for Electric Railways, of which the following is a specification.

For the return current of electric railways it is customary to make use of the rails, which for this purpose are connected by so called "bonds," consisting of copper or iron wires or bands which are sometimes coated with tin. To further protect these bonds, they have also been covered with a coating of insulating paint, which in turn is protected by wood, leaving however the connection or bond and rail unprotected. In all the constructions heretofore known, the bonds are not an integral part of the construction, but only an adjunct to the same; they are left exposed to mechanical injury and if not insulated, also to corrosion and electrolysis.

The object of my invention is to improve the construction of the rail-bonds by making them a part of the rail-joint itself and arranging them in such a manner that they are protected against injury of any character. The bonds are so arranged that they, as well as their connections with the rails, are insulated so as to maintain thereby the conductivity of the rail-bonds as near as possible on an equality with the conductivity of the rail-sections, and to reduce the resistance of the rail-return to such a small amount that the current will follow the latter in preference to the earth-return. By this arrangement the electrolytic action of the current on the rails and rail-bonds and on gas or other pipes in the ground is done away with, as there will be no current leaking from the rails to the earth.

The invention consists of a rail-joint and bond for electric railways, in which the rail-ends, are connected by angle-plates which are bolted to the webs of the rails and to a base-plate having a center-trough, and by one or more yielding bonds that are attached to the base of the rails and inclosed by a body of a suitable plastic insulating material which is run into the trough so as to fill the space

below the rails, as will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, my improved rail-joint and bond is shown as applied to two different types of rails, though they are equally adapted to other types of rails, Figure 1 representing a side-elevation of a suspended rail-joint with which my improved rail-bonds are arranged; Fig. 2 a vertical transverse section of the same on line 2—2, Fig. 1, but drawn on a larger scale; Fig. 3 a vertical longitudinal section of a rail-joint and bond on line 3—3, Fig. 4; Fig. 4 a vertical transverse section, on line 4—4, Fig. 3, and Fig. 5 a detail perspective view of one of my rail-bonds, shown as detached from the rail, and drawn on a larger scale.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A A are the rail-ends, which are connected by angle-plates B B with the webs of the rails and with a supporting base-plate or trough-iron D, the upper flanges of the angle-plates being connected by bolts *b* with the webs of the rails, while the lower flanges of the angular plates are connected by bolts *b'* with the outwardly-extending flanges *d* of the trough-iron D.

One or more rail-bonds E that are formed of copper or iron wires or bands, which are preferably bent so as to form several convolutions, are attached by their flattened eye-shaped ends *e* to the under side of the base of the rail-ends, said bonds E being located in the central depression or trough of the trough-iron D, which is preferably provided at its ends below the rails with upwardly-bent flanges *d'*, as shown in Fig. 3.

The central depression or trough of the trough-iron D is filled up with asphaltum or other plastic insulating material, which is run in a liquid state into the trough-iron so as to fill up the space below the base of the rails and incloses entirely the connecting bonds located in the same. The bonds and their connection with the rails are therefore fully protected against injury by mechanical or electrolytic action.

In the construction, shown in Figs. 1 and 2, a rail-joint construction is shown which is located between the ties, so as to form a so

called suspended-joint, said construction being especially described and claimed in my pending application, Serial No. 450,006, filed October 26, 1892.

- 5 In place of the trough-iron shown in Figs. 1 and 2, the trough-iron D' shown in Figs. 3 and 4 can be used, which is provided at its outer edges with inclined and downwardly-extending flanges  $d^2$ ,  $d^2$  which extend below  
10 the bottom of the trough, so as to serve as a shoe for supporting the rail-joint on the ground, the earth being preferably tamped below and around the shoe, so as to give support to the joint. The angle-plates and their  
15 connections with the rail-ends are the same, as shown in Fig. 2, while the type of the rail is a different one from that shown in Fig. 2, having a head specially adapted for street railways. In Fig. 4 two bonds are shown,  
20 which connect the base of the rail-ends, said bonds being attached by their ends to the inner side of the rail, but embedded in asphaltum in the same manner as the single bonds shown in Fig. 2.
- 25 The advantages of my new construction of rail-joint and bonds are that they are fully insulated by the asphaltum filling run into the trough of the supporting base-plate, or trough-iron and that thereby the bonds are fully pro-  
30 tected against corrosion and injury by mechanical and electrolytic agencies, while a very reliable connection of the rail-ends is produced.

35 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the rail-ends, of a base-plate provided with a trough and out-

wardly extending flanges, angle-plates connected by bolts to the webs of the rail-ends and to the outwardly-extending flanges of the base-plate, a bond or bonds connecting the base of the rail-ends, and a filling of asphaltum or other plastic insulating material run into the trough of the base-plate, so as to fully  
45 inclose the bond or bonds and serve as a protection for the same, substantially as set forth.

2. The combination with the rail-ends, of a base-plate for same, said base-plate being provided with a central trough, outwardly extending side flanges and upwardly bent end-flanges, angle-plates connected by bolts to the webs of the rails and to the side-flanges of the base-plate, a yielding bond or bonds attached to the base of the rails, and a filling  
55 of plastic insulating material run into the trough of the base-plate, substantially as set forth.

3. The combination, with the rail-ends of a base-plate provided with a central depression or trough and with outwardly and downwardly extending flanges forming a shoe, angle-plates bolted to the webs of the rails and to the side-flanges of the base-plates, a yielding bond or bonds attached to the base of the  
65 rails, and a filling of plastic insulating material, run into the trough of the base-plate, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JULIUS MEYER.

Witnesses:

PAUL GOEPEL,  
CHARLES SCHROEDER.