

(No Model.)

F. T. NEWBERY.
BOND FOR ELECTRIC RAILWAYS.

No. 584,644.

Patented June 15, 1897.

Fig. 3.

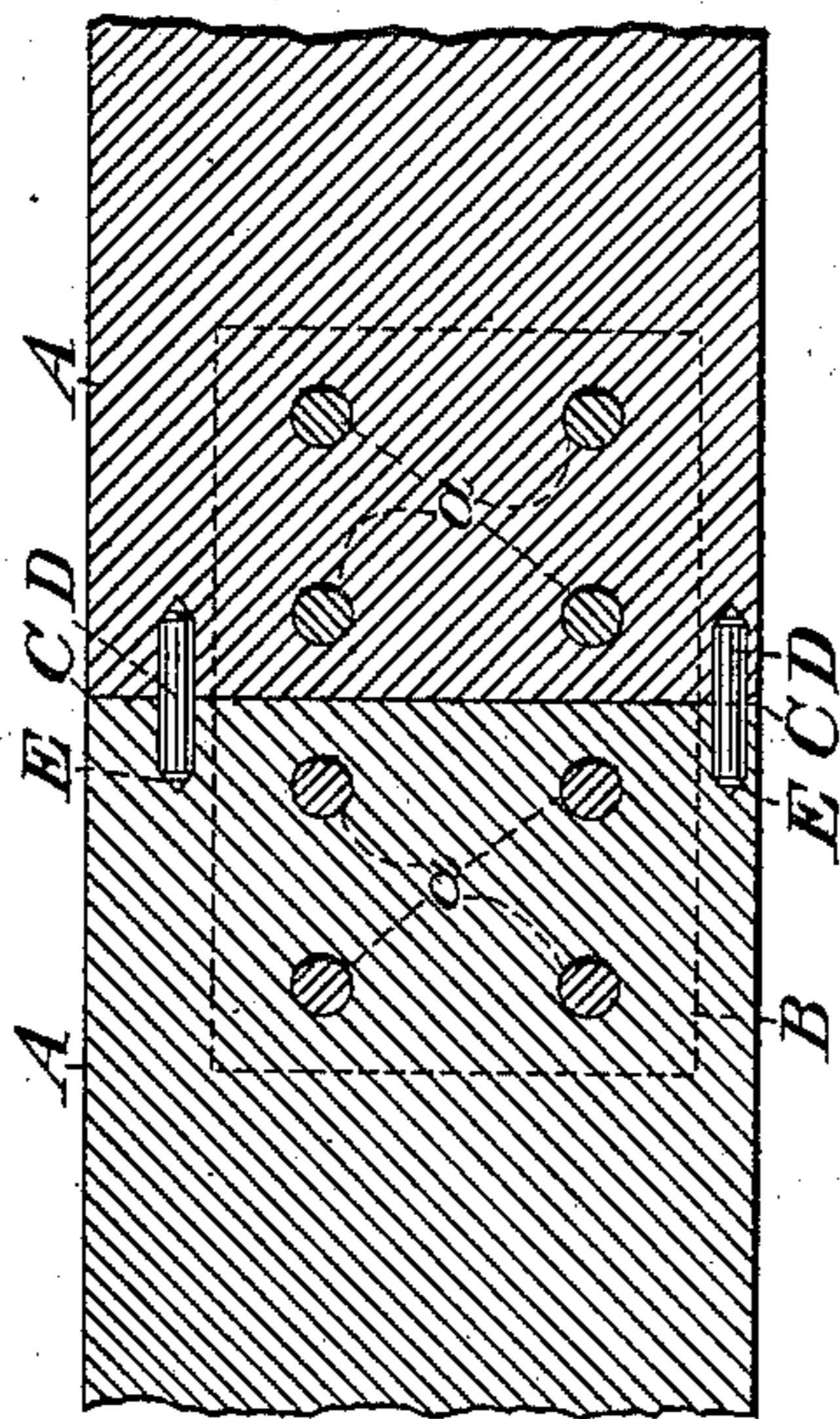


Fig. 2.

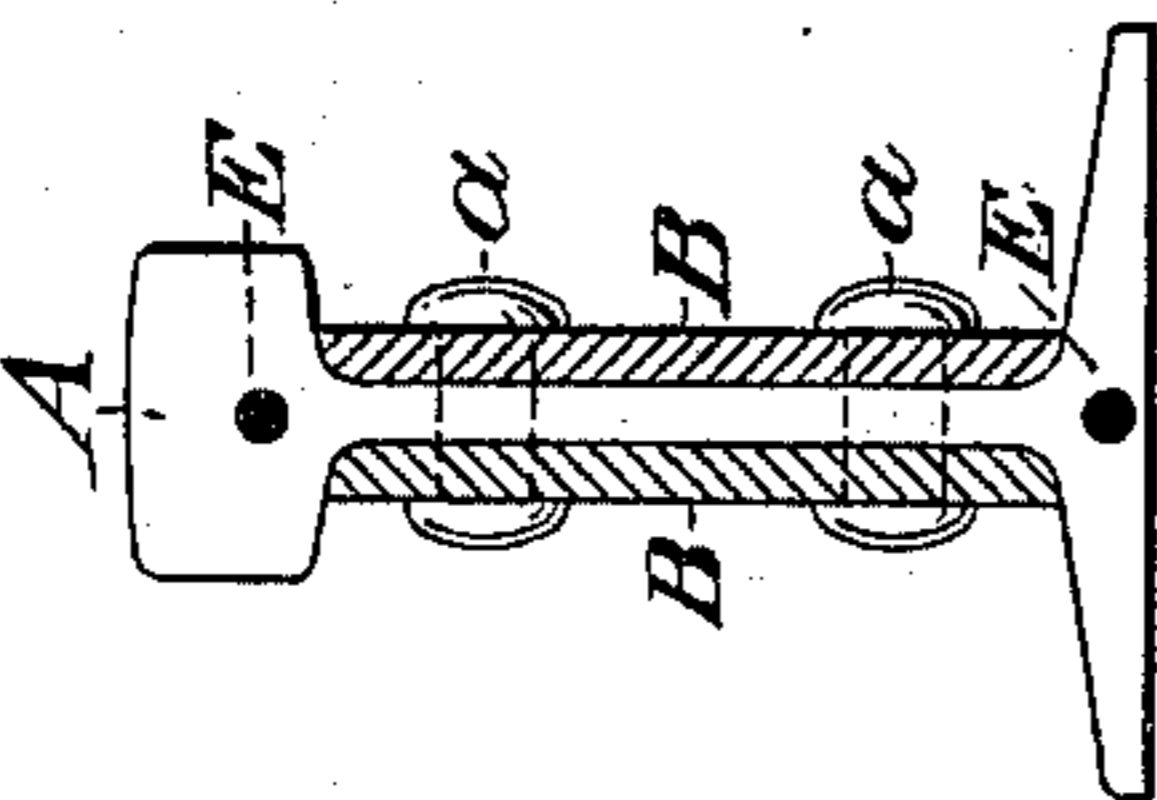


Fig. 1.

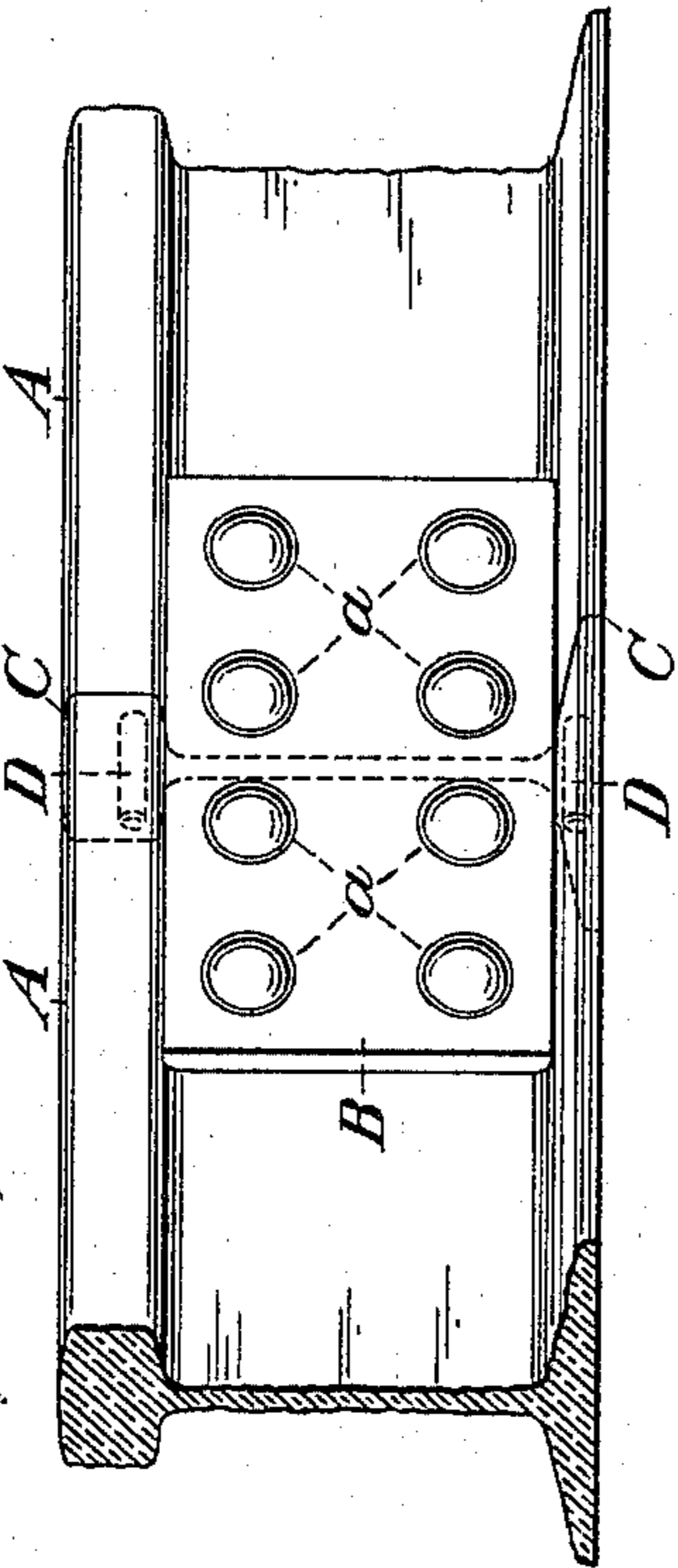
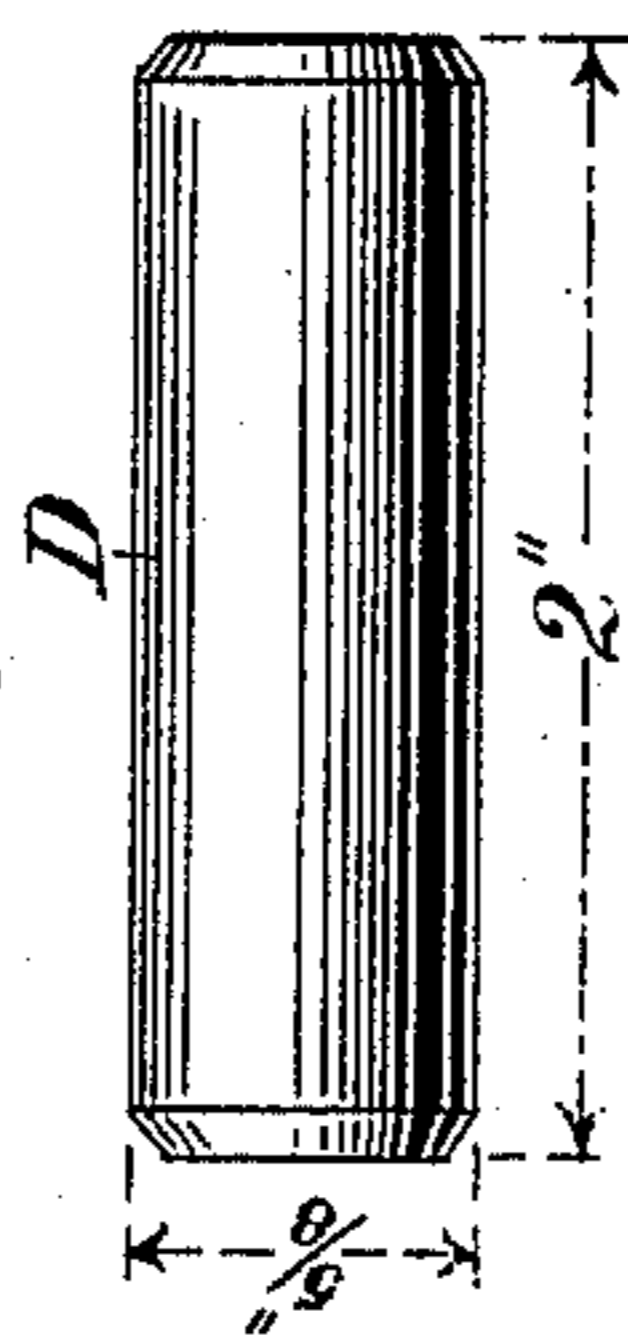


Fig. 4.



Witnesses:

Ed. Brandau.

Wilson D. Bent Jr.

Inventor:

Fredrick T. Newbery
by John Richards
Atty

UNITED STATES PATENT OFFICE.

FREDERICK T. NEWBERY, OF SAN FRANCISCO, CALIFORNIA.

BOND FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 584,644, dated June 15, 1897.

Application filed August 25, 1894. Serial No. 521,331. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK T. NEWBERY, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Bonds for Electrical Railways; and I hereby declare the following specification and the drawings herewith to be a complete description of my invention and the method of applying the same.

My invention relates to bonding or connecting the rails of electrical railways so they will form a continuous and direct conductor for the return-current from electric motors employed for propulsion.

My improvements consist in inserting a dowel or conductor in the rail-joints, preferably a short cylindrical section of copper fitting firmly the whole length in holes drilled in the ends of the rails, so proportioned and so inserted as to preserve the continuity of the rails and forming therewith a metallic mass as an electrical conductor through the coupled joints, and so this electric connection will be safe from injury or derangement and preserved from the atmosphere and moisture.

The object of my invention is to avoid ground-currents of electricity and the consequent electrolysis of pipes or other metal-work exposed to the action of return-currents on railways electrically operated and depending on the ways as a conductor for such return-currents.

Referring to the drawings, Figure 1 is a perspective view of a section of two rails joined according to my invention. Fig. 2 is an end view of one of the rails, showing the holes to receive the dowels or connecting-conductors forming the bond between the rails. Fig. 3 is a central vertical section parallel to the axis of the rails, showing the connecting-dowels in position. Fig. 4 is an enlarged side view of one of the connecting-dowels drawn, approximately, to the size suitable for rails of seventy pounds weight for each yard of their length.

The rails A A are shown of the common form employed, the ends being closely abutted at C, and fish-plates B, applied on each side, held by rivets or bolts *a* in the usual manner for giving stability at the joint and securing alinement of the rails A A.

In the ends of the rails A A are formed holes E, preferably two in number, in the thickest portions of the rail's section, as shown in Figs. 2 and 3. In these holes are inserted dowels D, preferably of copper or other metal of a high conducting power, upset or expanded so as to fit with clean surfaces metal to metal the whole length of the pin in each rail, as shown in Fig. 3.

As a close fit and perfect contact between the metal of the rails A and that of the conducting-dowels D is desirable, these dowels are made minutely larger in diameter than the holes they are to fill, and are forced in by pressure on the rail or in any suitable manner to insure absolute contact over the surfaces, and thus prevent oxidation, the admission of air or water, and to prevent movement.

The section of the dowels or connections D is dependent upon the conductivity of the metal employed and is made large enough so the potential of the electric current will not vary in passing the coupled joints. Two of these dowels are shown in the drawings, but it is evident that a single one, if of sufficient section, applied in the same manner, will accomplish a like result. Thus it will be seen that the bond or electrical connection between the rails is direct and complete, distance eliminated, and the medium of conduction concealed within the contour of the rails is protected from all agencies or causes that damage or destroy such connections. It will also be seen that in a line of rails arranged according to my invention the current is not impeded and the potential is uniform over the whole line, so that no extraneous effect by such current is possible.

I am aware that dowel-pins have been employed for mechanical support in connecting railway-bars, also widely for construction purposes in both wood and metals, but not as a means of electrical connection or in a manner to perform that function and as herein specified.

It will also be clearly understood that the dowels are placed closely and tightly within the coincident holes in the end of the rails, so as to be intimately bound therein. These dowels are forced into position under a strong pressure, so that they are thereby powerfully compressed. The surfaces, therefore, which

were bright and perfect when united, will remain in that condition under all circumstances as long as the structural integrity of the mass remains. Therefore, as a path for
5 the electric fluid or current, the bond will remain perfect, unaffected by the volume or character of the said current.

Having thus described the nature and objects of my invention, also the manner of constructing and applying the same, what I claim
10 as new, and desire to secure by Letters Patent, is—

In combination with railway-rails whose

abutting ends are provided with coincident holes, a bond or dowel compressed into said
15 holes so as to be intimately bound therein for the purpose of holding the rails together and making a continuous electrical conductor, substantially as described.

In testimony whereof I have hereunto af-
20 fixed my signature in the presence of two witnesses.

FREDERICK T. NEWBERY.

Witnesses:

ALFRED A. ENQUIST,
WILSON D. BENT, Jr.