

(No Model.)

2 Sheets—Sheet 1.

C. J. REED.
RAIL BOND OR CONNECTOR.

No. 530,651.

Patented Dec. 11, 1894.

Fig. 1,

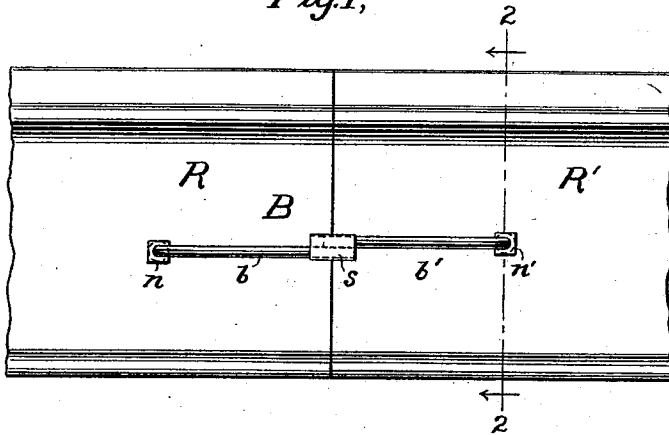


Fig. 2,

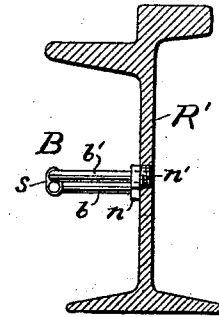


Fig. 3,

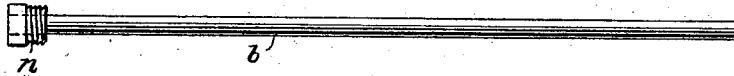


Fig. 4,

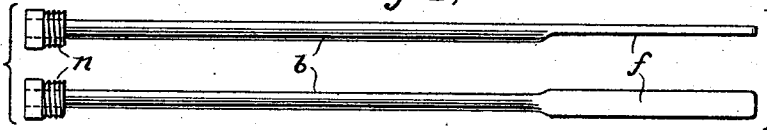


Fig. 5,

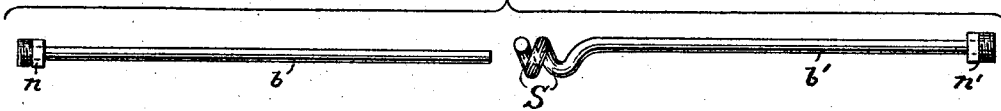
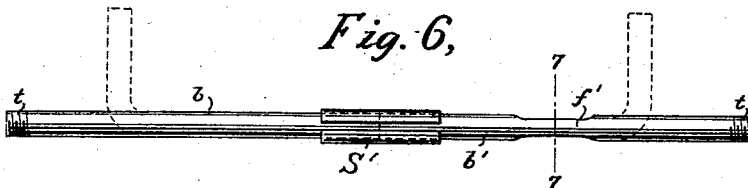


Fig. 6,



Witnesses
H. W. Lloyd. f'  f'
J. B. Portrich. b' b'

Fig. 7. By his

Inventor
Charles J. Reed
Attorney
Charles J. Kintner.

(No Model.)

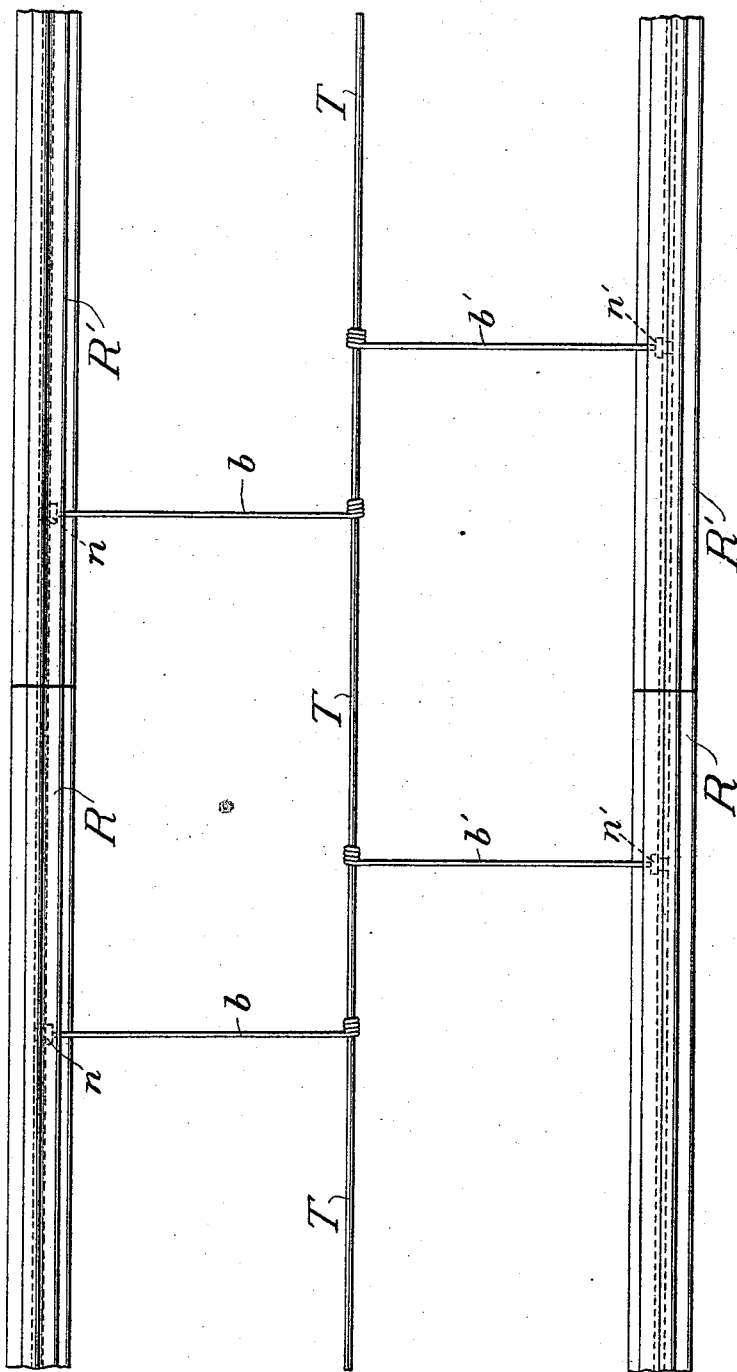
2 Sheets—Sheet 2.

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Patented Dec. 11, 1894.

Fig. 8.



Witnesses

Julius B. Armstrong
W. W. Lloyd.

Inventor

Charles J. Reed
By *his Attorney*
Charles J. Kirtner.

UNITED STATES PATENT OFFICE.

CHARLES J. REED, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
REED ELECTRIC COMPANY, OF SAME PLACE.

RAIL BOND OR CONNECTOR.

SPECIFICATION forming part of Letters Patent No. 530,651, dated December 11, 1894.

Application filed September 20, 1894. Serial No. 523,559. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. REED, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have made a new and useful invention in Rail Bonds or Connectors, of which the following is a specification.

My invention is directed to improvements in means for electrically connecting together successive pairs of rails in railways through the agency of conducting bonds or connectors, and its objects are, first, to provide a bond or connector which shall possess great mechanical strength and at all times offer a good conducting path between said rails for electrical currents, and, second, to provide a bond or connector which shall be cheap, simple of construction and readily put in place and detached from adjoining pairs of rails.

My invention will be fully understood by referring to the accompanying drawings, in which—

Figure 1 illustrates in side elevational view the ends of a pair of adjoining tramway rails connected together by one form of my improved bond or connector. Fig. 2 is a sectional view taken on line 2—2, Fig. 1, and as seen looking in the direction of the arrows at that figure from right to left, the bond or connector being shown in elevational view. Fig. 3 is an elevational view of a modified form of my improved bond or connector, and Fig. 4 is a similar elevational view of the same form shown in Fig. 3 with the adjoining ends flattened. Fig. 5 is an elevational view of the same form of connector shown in Figs. 1 and 2 with a modified means of connecting the adjoining ends of the two parts. Fig. 6 illustrates in elevational view still another modified form of my invention, one part of which is a simple rod while the other is flattened at its center, the dotted lines illustrating the contour of the parts when in position in the rails. Fig. 7 is an enlarged cross sectional view of the right hand portion of Fig. 6 taken on the line 7—7. Fig. 8 is a diagrammatic view illustrating the application of my improved bond with a return current main or conductor.

Numerous devices have heretofore been in-

vented for bonding or connecting together the adjoining rails of a tramway in street and analogous railways for the purpose of affording good electrical conductivity throughout such systems of rails. To this end it has been customary to drill holes through the ends of the rails and unite them by a single conductor or bond provided with shoulders and screw threads at its opposite ends, the screw threaded portions being inserted through the holes in the rails and nuts secured thereto bearing against the opposite faces of said rails. It has also been customary to drill holes in the T-portions of the rails and to insert the opposite ends of a single bond or connector in said holes and permanently secure the parts by solder, such connectors having been devised and used in the early stages of electrical railway signals.

With the first type of connectors it is found that the nuts are liable to become loosened and also that oxidation takes place at the joints, thereby greatly impairing the conductivity of the system.

With the second type of connectors above referred to there is the objection that when once in position it is not possible to remove it without either destroying the connector or applying heat to such an extent as to fuse the solder.

My improvement is designed to overcome the objections attributable to both forms of connectors above referred to.

Referring now to the drawings in detail in all of which like letters of reference represent like parts wherever used, R and R' represent the ends of a pair of adjoining tramway rails through which are drilled bolt holes. These bolt holes are then screw threaded.

B and B' represent short metallic rods, such as copper, and upon one end of each of which is secured by solder or otherwise a bushing *n* or *n'*, the outer and cylindrical ends of which are screw threaded so as to fit snugly in the screw threads of the drilled holes above referred to. A wrench is then used and the two bushings *n* and *n'* are screwed firmly into the ends of the rails. A two-part sleeve *s* is then slipped over one of the parts *b* or *b'* and the two parts bent into the position shown after

which the sleeve is slipped back upon the other part into the position shown in Fig. 1 and solder is applied at the ends of the sleeve.

Instead of uniting the bushings n and n' to the ends of the parts b and b' by solder, it is obvious that these parts might be struck up in their manufacture so as to be integral with the parts b and b' .

In the modified form shown in Figs. 3 and 4, the screw threaded portion of the bushing is on the inner side so that in putting the parts in place they are inserted through the holes and the wrench applied to the bushings, securing them firmly home after which their ends are bent and united together, either with a sleeve and solder or simply by soldering them together. For the purpose of facilitating a better union of the parts b b' I sometimes flatten the outer ends as shown at f , Fig. 4. Another manner of uniting these ends is shown in Fig. 5 where one of the parts, namely, b' is of spiral form S , the other part b being inserted therethrough and then soldered as before.

In the modified form shown in Fig. 6, I simply cut screw threads t and t' on the ends of the rods b and b' and then use a pipe wrench for securing the part b , or I flatten the part as at f f' and use a wrench thereon as shown in connection with the part b' . See Figs. 6 and 7.

In Fig. 8 I illustrate the application of my improved bonds or connectors in connection with an electrical railway system for bonding or connecting the tram rails thereof to a buried earth or return conductor T , the branch wires b and b' constituting the bonds or connectors which are secured to the rails R and R' through the agency of bushings n n' as before, the entire system being connected or bonded together as shown and the conductors b and b' secured to the main conductor T by twisting them about said conductor, and afterward soldering the joints or in any preferred manner.

I believe that it is new with me to bond or connect the ends of two adjoining rails together by a screw threaded connector, the screw-threaded ends of which are adapted to fit into corresponding screw threads in holes bored laterally through the ends of said adjoining rails and my claims are generic in this particular.

I wish it understood that my claims are of

the most generic nature as to screw threaded bonds or connectors consisting of parts adapted to be inserted separately and afterward united into a single bond, as and for the purpose hereinbefore described.

I am aware that it is old in the electrical art to join tubular electrical conductors together by a conductor or connector, the opposite ends of which are screw-threaded and adapted to fit into corresponding screw threads in the adjacent ends of tubular conductors, and I make no claims hereinafter broad enough to include such a structure.

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

1. A pair of rails having their ends abutting against each other in combination with a bond or conductor consisting of two separate parts secured by screw-threads in the lateral or bottom faces of the rails, said parts being afterward united together at their opposite ends so as to constitute a single bond or connector, substantially as described.

2. A rail bond or connector adapted to electrically connect a pair of abutting rails, said bond consisting of two separate parts screw-threaded into the lateral faces of the rails and afterward bent so that their opposite ends overlap each other, in combination with means for electrically uniting said ends together so as to constitute a single continuous bond.

3. A rail bond or connector consisting of two separate parts screw-threaded into the ends of the rails and then twisted together, and afterward united by solder.

4. A rail bond or connector consisting of two separate parts adapted to be screwed into the opposite ends of adjoining rails and afterward bent so as to overlap each other, in combination with means for holding the overlapping ends together, said holding means and the overlapping ends being united together by solder.

In testimony whereof I have hereunto subscribed my name this 14th day of September, 1894.

CHARLES J. REED.

Witnesses:

JOSHUA R. MORGAN,
EDWARD EVERETT.