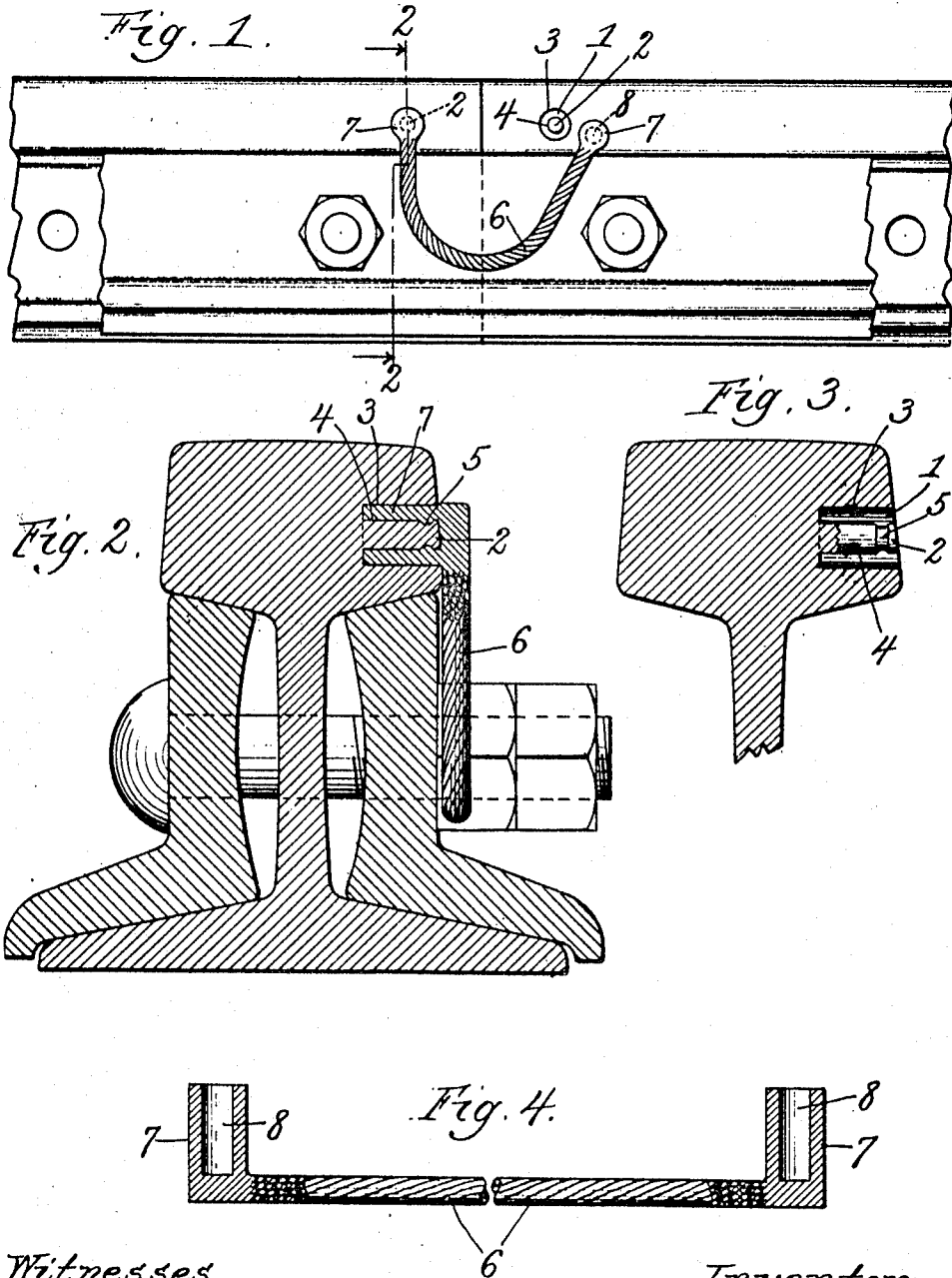


F. E. JOHNSON.
RAIL BOND.
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1,020,826.

Patented Mar. 19, 1912.



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RAIL-BOND.

1,020,826.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK E. JOHNSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Rail-Bonds, of which the following is a specification.

This invention relates to improvements in rail bonds and has for its object to provide a new improved device of this description.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a view of one form of bond embodying invention; Fig. 2 is an enlarged sectional view taken on line 2—2 of Fig. 1; Fig. 3 is a sectional view through the head of the rail before the connection between the rails is in place; Fig. 4 is a sectional view through the conductor for connecting the rails together.

Like numerals refer to like parts throughout the several figures.

This invention has, among other objects, to electrically connect the heads of rails which are to be part of an electric circuit.

In carrying out the invention, I form receiving openings in the heads of the rails. These receiving openings 1 are formed by cutting away a portion of the material and leaving a portion of the material intact so as to form the posts 2 integral with the rails. By this means there is provided two opposed engaging faces 3 and 4 on the rail. The post 2 is preferably indented or otherwise formed so as to receive a portion of the material of the conductor. As herein shown, this post is provided near its end with the groove 5. The connector 6 is provided with the terminals or contact pieces 7, said contact pieces provided with openings 8 for the posts 5. These contact pieces are of such size as to snugly fit into the receiving openings 1 in the heads of the rails, and the openings 8 are of such size as to receive the posts 4. The contact pieces 7 are made so that when forced into the receiving openings 1 the metal will be spread so as to make an intimate contact with both of the faces 3 and 4. This result may be secured in any desired manner, as for instance by making the contact pieces somewhat longer than the depths of the receiving spaces 1 so that when the contact pieces are hammered or forced into position, the ends thereof will engage the bottoms of the openings 1 so as to resist the force or blow

and thus cause the material to spread so as to make an intimate contact, some of the material entering the groove 5 as shown in Fig. 2. It will be noted that the posts 2 being in the middle of the contact pieces will insure the proper spreading of the material under compression so as to secure the desired intimate contact. This construction adds greatly to the conductivity because of the fact that there are two conducting areas 3 and 4 directly connected and integral with the rail itself, the material of the connector being in intimate contact with both of these conducting areas. This forms what may be called a double contact terminal. This construction also increases the mechanical strength of the connection. If desired, a suitable material such as tin or any kind of solder may be used, this solder being placed upon the outer and inner faces of the terminal or upon the faces 4 and 5. When the bond terminal is driven in place, heat may be applied sufficient to melt the solder so as to cause a more perfect union.

With the construction shown, it will be noted that one end of the opening 8 is closed so that when the parts are in position, the contact terminals are sealed so as to entirely cover and protect the posts 1. This prevents the contact with the post from becoming deteriorated by corrosion or the like. It will further be noted that there is here provided an electrical contact where the two parts each have two separate concentric contact faces, the contact faces of one piece making contact with the contact faces of the other piece.

It will be noted that by means of this construction and particularly because of the post 2 integral with the rail, there are certain advantages not found in other rail bonds, among which may be enumerated, the advantages due to the increase in the contact area and hence the greater carrying capacity, and the increase in the holding power of the copper due to the fact that the steel core or post is integral with the rail, this increased holding power being due to two factors, one being the increased surface area, the other being the separation of the gripping surfaces which gives two separate gripping surfaces in contact with the rail, one inside of the head and the other outside of the head, and both cooperating to grip and hold the bond against removal. A further advantage results from the fact that

one of the contact surfaces, namely the inner one, can not corrode for to have corrosion, the air and moisture must pass down the outside of the head across the bottom and up on the inside. This non-corrosive contact surface is obtained even when there is poor workmanship and carelessness in placing the bond in position.

I claim:

- 10 1. An electrical connection comprising two pieces to be connected, each provided with a receiving opening, a post surrounded by each receiving opening and integral with the piece with which it is associated, a conductor connecting said pieces and provided with contact terminals having openings for said posts, said terminals fitting into said receiving openings so as to surround said posts.
- 20 2. An electrical connection comprising two pieces to be connected, each provided with a receiving opening, posts integral with said pieces and surrounded by said receiving openings, a conductor connecting said pieces and provided with contact terminals having openings for said posts, said openings closed at their outer ends, said terminals fitting into said receiving openings in said pieces so as to surround said posts.
- 30 3. An electrical connection comprising two pieces to be connected, each provided with a receiving opening, a post integral with each of said pieces and surrounded by said receiving openings, a conductor connecting said pieces and provided with contact terminals having openings for said posts, said terminals fitting into said receiving openings so as to surround said posts, the portions of said contact terminals outside of said posts being sealed so as to entirely cover and protect said posts.
- 40 4. An electrical connection comprising two pieces to be connected each provided with a receiving opening, a post surrounded by each receiving opening and integral with the piece with which it is associated, a conductor connecting said pieces and provided with contact terminals having openings for said posts, said terminals fitting into said receiving openings, indentations in said posts and means for forcing the material of said terminals into said indentations.

5. An electrical contact comprising a piece provided with a receiving opening, a post integral with said piece and surrounded by said receiving opening, a contact terminal provided with an opening for said post, said contact terminal confined within said receiving opening so as to surround the post and making contact with the post and with the wall of the opening surrounding the post.

6. An electrical contact comprising two pieces to be electrically connected, both of said pieces having separated concentric contact faces integral with the pieces, the contact faces of one piece making contact with the contact faces of the other piece.

7. An electrical contact comprising a piece provided with a receiving opening, a post integral with said piece and surrounded by said receiving opening, a contact terminal provided with an opening for said post, said contact terminal confined within said opening so as to surround the post and make electrical contact with the post and with the wall of the opening surrounding the post, the outer end of said post being completely covered so as to be sealed and protected.

8. An electrical connection comprising a rail two separated cooperating gripping surfaces integral with said rail, one within the other, a contact terminal having two separated cooperating gripping surfaces integral therewith, one within the other, the gripping surfaces of the terminal engaging the gripping surfaces of the rail.

9. A rail bond device comprising a rail provided with a receiving opening, a post integral with said rail and surrounded by said receiving opening, a groove in said post, a contact terminal provided with an opening for said post and having a part which surrounds the post and fills the opening in the rail and the groove in the post, the contact terminal making electrical contact with said post and with the portion of the rail surrounding said post.

Signed at Chicago, Illinois, this 18th day of July 1911.

FRANK E. JOHNSON.

Witnesses:

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