

W. B. NOBLE & D. K. DABAGHIAN.
RAIL BOND.

APPLICATION FILED AUG. 24, 1910.

994,652.

Patented June 6, 1911.

Fig. 1.

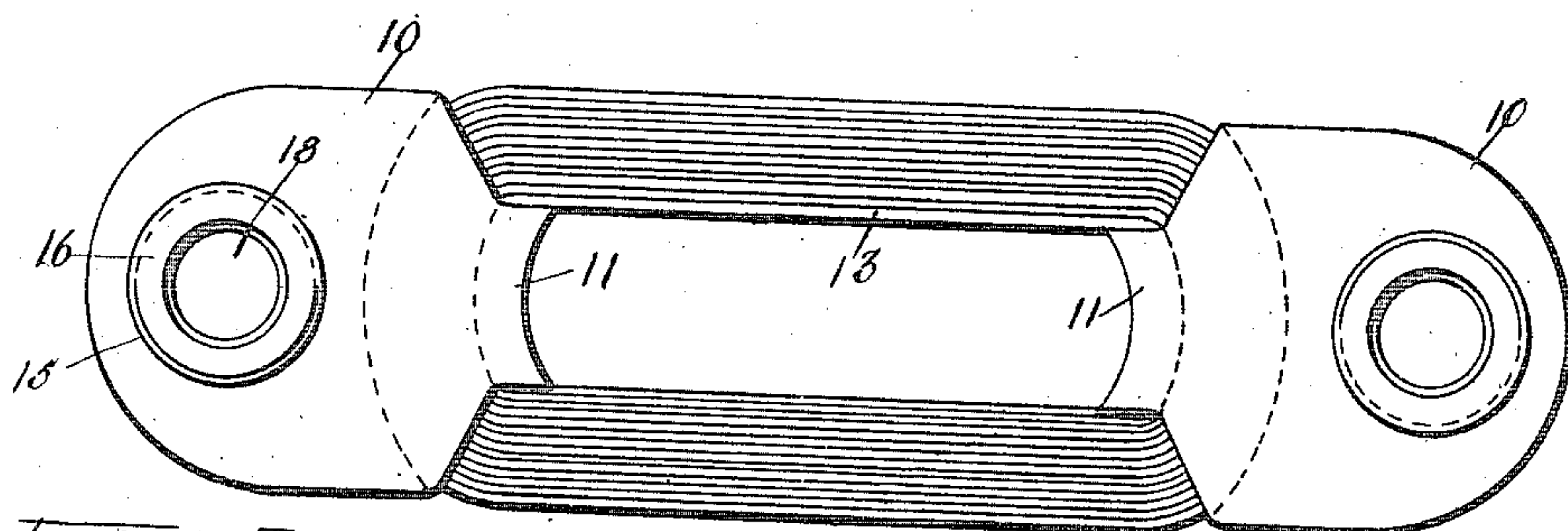


Fig. 2.

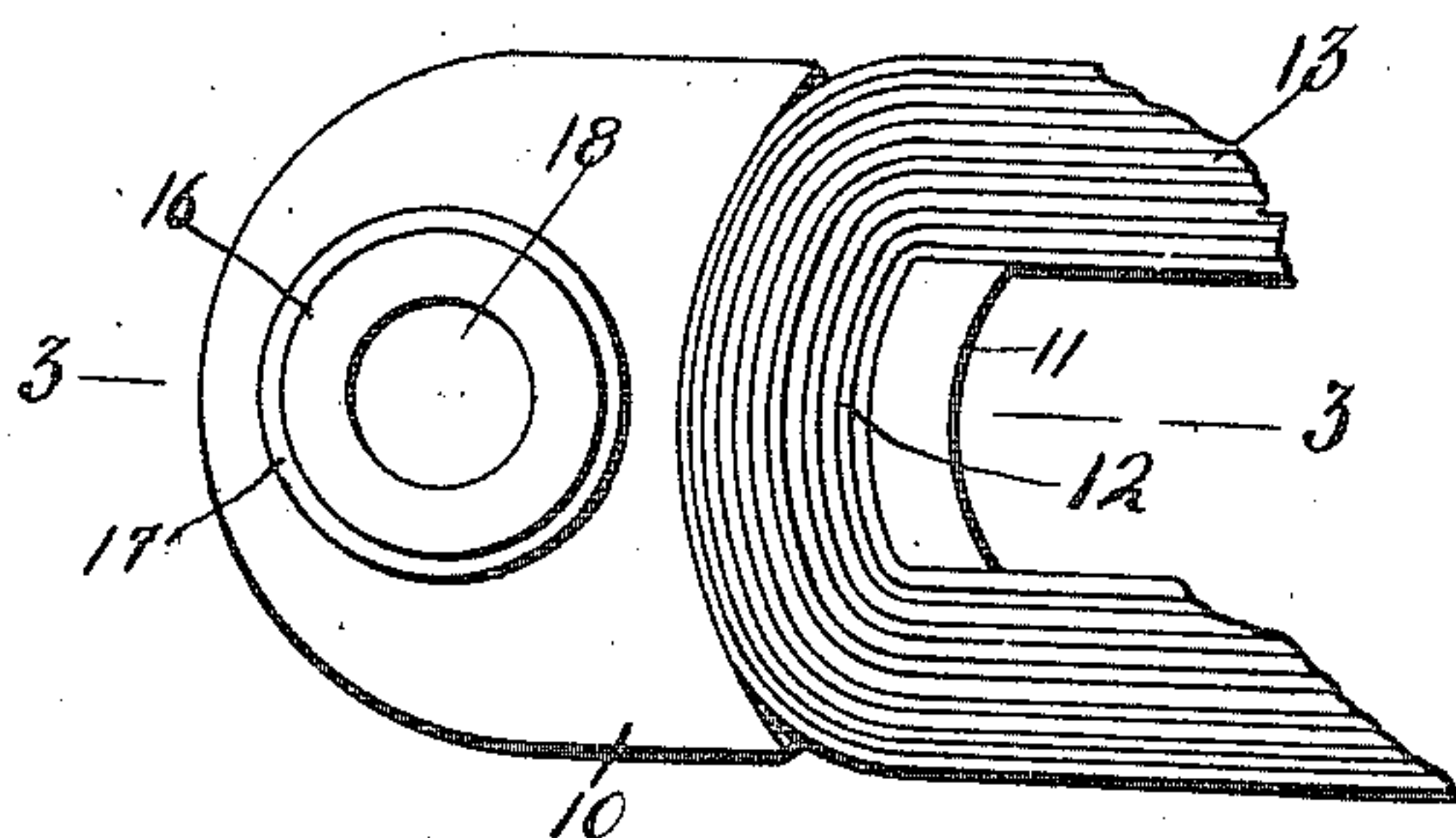


Fig. 3.

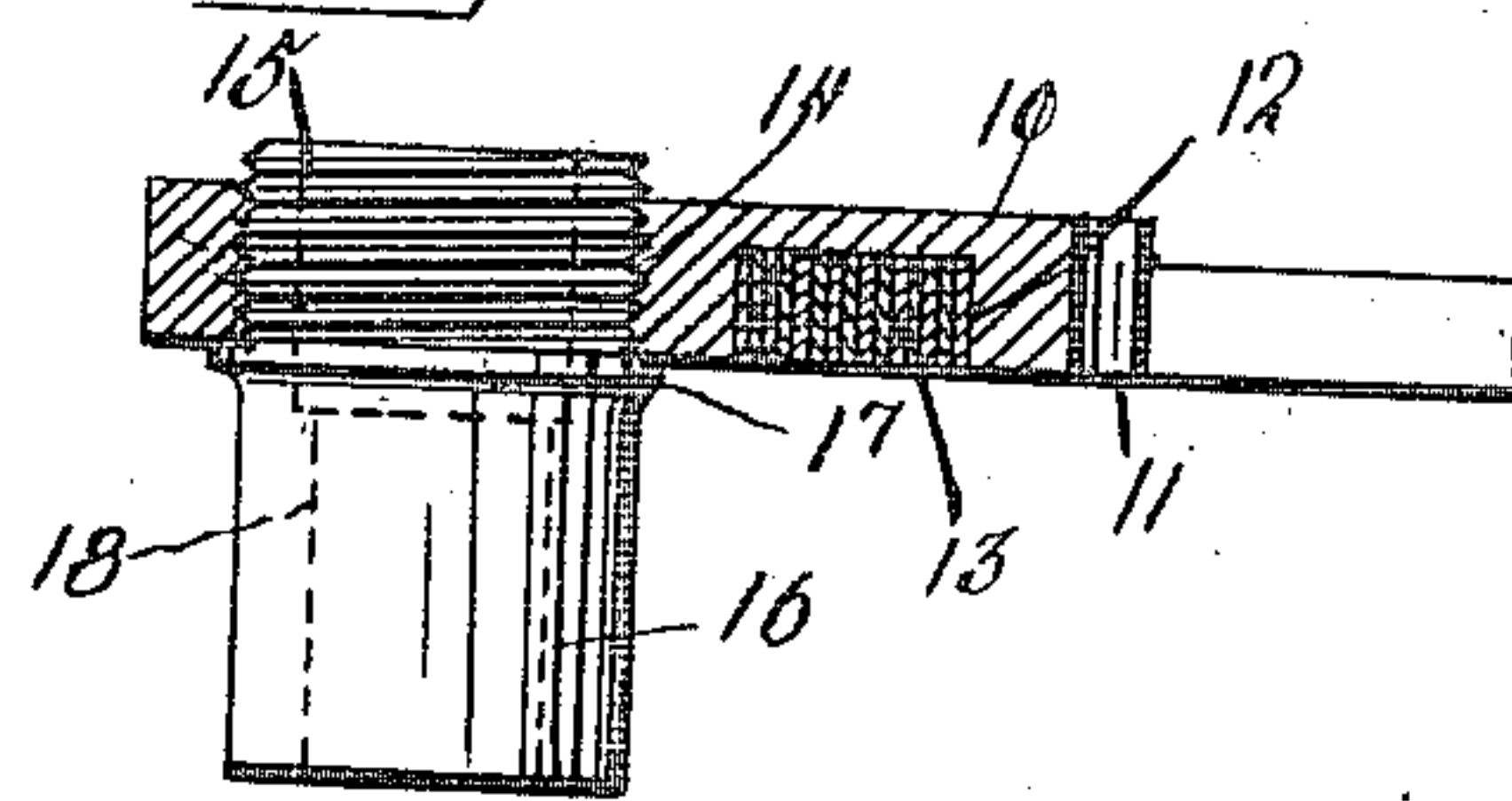


Fig. 4.

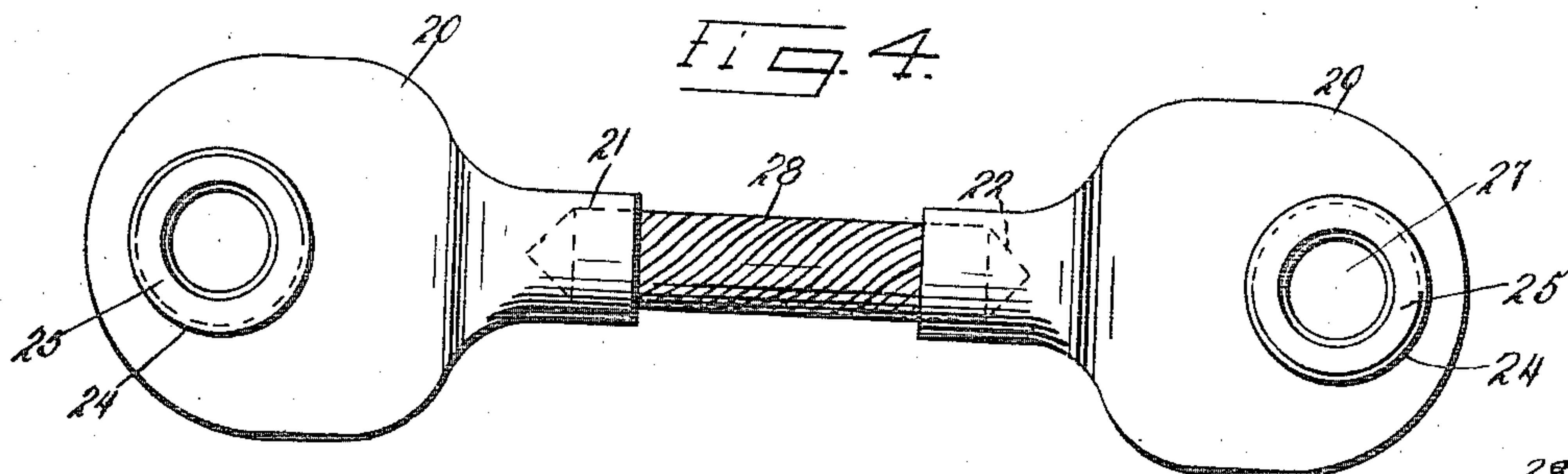


Fig. 5.

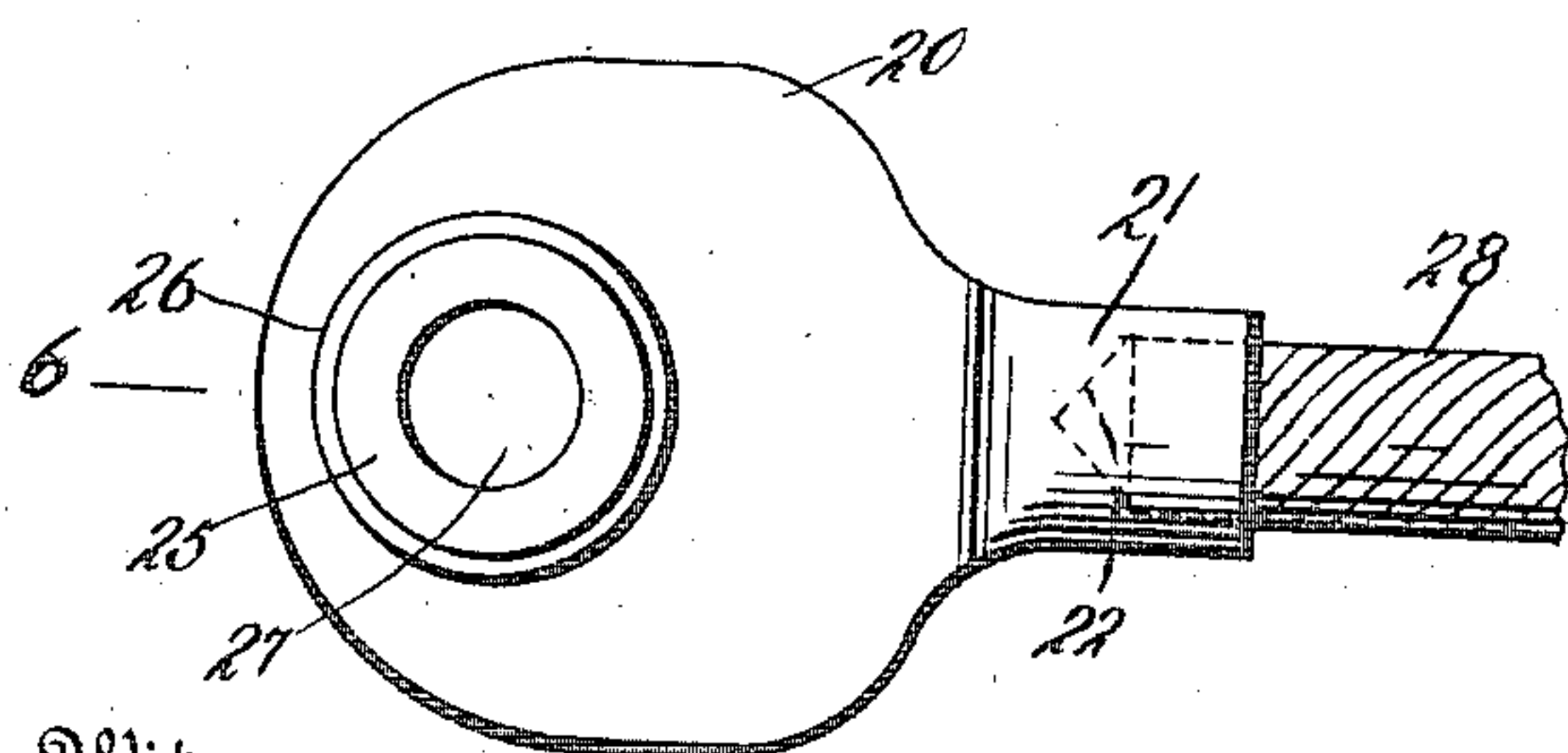
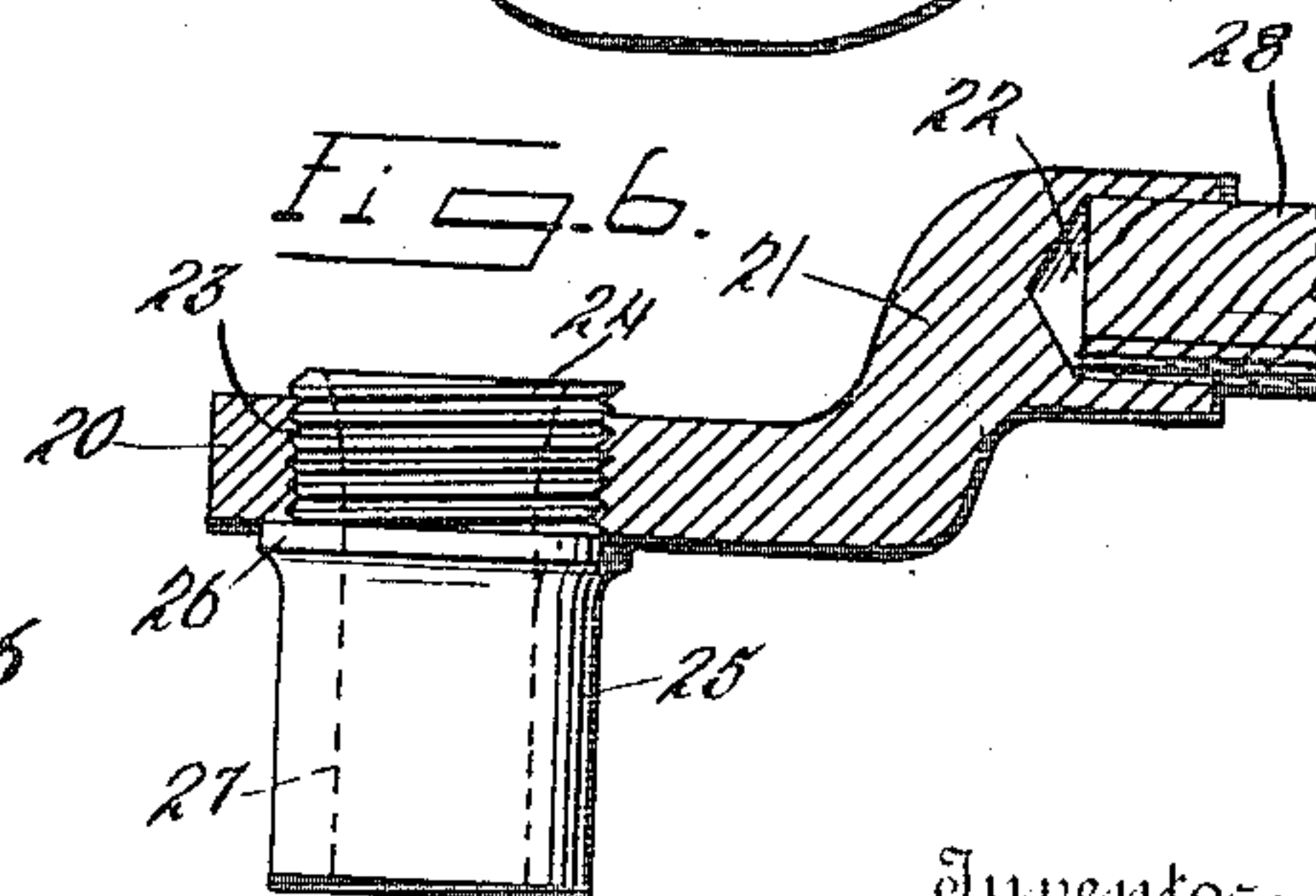


Fig. 6.



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UNITED STATES PATENT OFFICE.

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RAIL-BOND.

994,652.

Specification of Letters Patent.

Patented June 6, 1911.

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To all whom it may concern:

Be it known that we, WILLIAM B. NOBLE and DIKRAN K. DABAGHIAN, citizens of the United States, residing at Oakland, in the county of Alameda, State of California, have invented certain new and useful Improvements in Rail-Bonds; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to rail bonds such as are used for the purpose of establishing electrical connection between the ends of adjacent rails of electric railways and other systems wherein the rail is employed for the purpose of a conductor.

One object of the invention is to provide an improved form of rail bond in which the head may be repeatedly used, the plug used for connecting the bond to a rail being renewable.

With the above and other objects in view, the invention consists in general of a rail bond provided with a renewable plug and means to secure the connecting wires, the whole being of novel and improved construction.

The invention further consists in certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically set forth in the claims.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and Figure 1 is a face view of a rail bond as constructed under this invention. Fig. 2 is a back view of one of the ends of said bond. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a face view of a modified form of rail bond. Fig. 5 is a back view of one end of the modification. Fig. 6 is a section on the line 6—6 of Fig. 5.

In the form shown in Figs. 1, 2 and 3, this bond is provided with two heads of like form and these heads each comprises a plate of conducting metal 10, the outer face whereof presents a smooth and unbroken surface.

This plate is preferably shaped somewhat in the form of the heel of a shoe but is provided with a projection 11 at its forward end, this being the end directed toward the opposite

head. On the inner surface of the plate just behind this end 11 is formed an arcuate groove 12, the concave of the groove being directed toward the end 11. This groove is of sufficient depth to receive bonding wires 13 which are preferably of copper of high conductivity and which fit snugly in the groove so that their upper faces are flush with the inner surface of the plate 10. Adjacent the opposite end of the plate 10 there is provided a threaded opening 14 wherein is held the threaded end 15 of a plug 16 which is provided with a collar 17 adapted to bear against the inner face of the plate 10. The body of this plug 16 is of cylindrical form and extending through the plug is a centrally disposed opening 18. This plug is adapted to fit in the usual bonding hole made in the end of a rail and when so inserted is expanded by driving a drift pin into the opening 18 so that it is held firmly in connection with said rail. The plug is made of relatively soft conducting material, this material preferably being copper of a high grade of purity while the plate 10 is made of relatively hard conducting material, it being preferably of brass or bronze. The object in this is to permit renewals of the plug 16 without injury to the threads of the opening 14. It is to be understood that when the plug 16 is inserted and expanded as described it is generally impossible to remove it without so injuring it that it cannot be employed a second time. This, where the plug and head are made integral, makes it necessary to provide an entirely new head and to secure the bonding wires to that new head. With the present invention it is sufficient to provide a new plug and the wires may be left attached to the old head and used repeatedly.

It is to be noted that by means of the open slot herein described the wires may be soldered securely to the head so that there is no possibility of their becoming detached and that this soldering gives a joint between the wires and head of a high degree of conductivity.

In the preferred form wherein the plate 10 is of slightly lower conductivity than the plug 16 it is intended that said plate shall have sufficient cross sectional area to make up for the lower specific conductivity so

that the total conductivities of the plug, head and wires will equal each other.

In the form shown in Figs. 4, 5 and 6 there is provided two heads of like form and these heads each comprises a plate of conducting material 20 having a neck 21 bent upward and outward from the face of the plate and provided with a recess 22. This plate 20 is furthermore provided with a threaded opening 23 adjacent the end of the plate opposite the neck. In the threaded opening 23 is held the threaded end 24 of a plug 25 which is provided with a collar 26 adapted to bear against the inner face of the plate 20. The body of this plug 25 is of cylindrical form and extending through the plug is a centrally disposed opening 27. This plug, like that previously described, is adapted to fit in the usual bonding hole near the end of a rail and when so inserted is expanded by driving a drift pin into the opening 27 so that the plug is held firmly in connection with said rail. Connecting the two heads thus formed is a bonding cable 28 the ends of which are received into the recess 22 of the respective heads and are held in said recess by suitable solder. The plug 25 is made of relatively soft conducting material, this material preferably being like the other of copper of a high grade of purity while the plate 20 is made of relatively hard conducting material, it being preferably of brass, bronze or the like. The object of this construction is precisely that previously described.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

Having thus described the invention, what is claimed as new, is:—

1. In a rail bond, a head of relatively hard material of high conductivity, and an attaching plug of relatively soft material of high conductivity screwed into said head.
2. In a rail bond, a head of relatively hard material of high conductivity, and a hollow expansion plug of relatively soft material of high conductivity screwed into said head.
3. In a rail bond, a head comprising a flat oblong plate having an under surface adapted to bear against a rail, said plate having a threaded opening adjacent one end and a transverse wire receiving groove formed in its under surface adjacent the other end, and a hollow expansion plug having a threaded end screwed into said opening.
4. In a rail bond, a head comprising a body portion having a reduced end, said body having a threaded opening there-through and being provided with an under surface adapted to bear against a rail, said head having an arcuate transverse groove immediately adjacent the reduced end with the concave side of the groove facing the reduced end, a hollow expansion plug having a threaded end screwed into said opening, and a series of conductor wires secured in said groove.

In testimony whereof, we affix our signatures in presence of two witnesses.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."