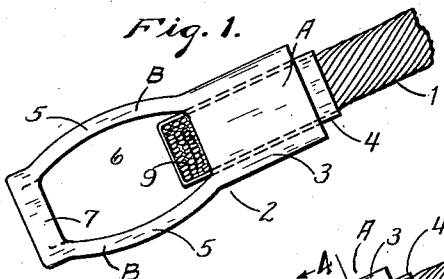
July 15, 1930. E. A. LARSSON 1,770,619

ELECTRIC CONNECTER

Filed April 8, 1924

Fig. 1.



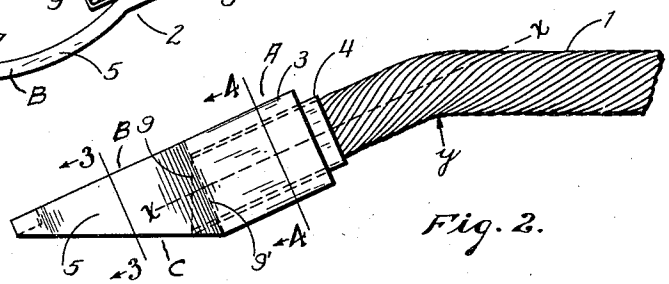


Fig. 2.

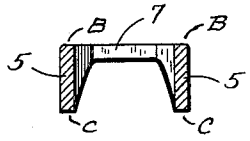


Fig. 3.

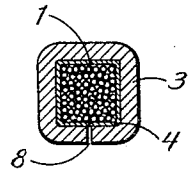


Fig. 4.

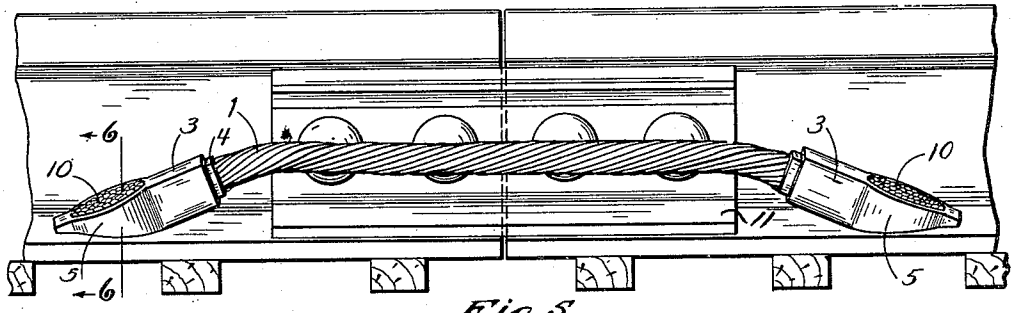


Fig. 5.

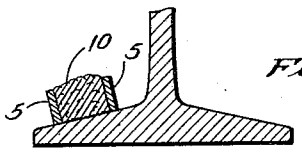


Fig. 6.

Inventor

ERNST A. LARSSON

Witness:

G. G. Allenbaugh

By

Attorney

Patented July 15, 1930 1,770,619

UNITED STATES PATENT OFFICE

ERNST A. LARSSON, OF MANSFIELD, OHIO, ASSIGNOR TO THE OHIO BRASS COMPANY, OF MANSFIELD, OHIO, A CORPORATION OF NEW JERSEY

ELECTRIC CONNECTER

Application filed April 8, 1924. Serial No. 705,087.

My invention relates to electrical connecters and particularly that type of connecters employed in connecting the adjacent ends of rails used for electric traction purposes.

The invention has been designed primarily for use on the upper face of the rail base and has for its object a bond which is simple in construction, economical in manufacture and easy of application and in which the electric arc or other high temperature flame, such as the oxyacetylene flame, may be used in securing the invention to the rail by the deposition of molten metal in such a manner as to unite each portion of the bond and the rail each to the other through a welded connection.

In the drawing accompanying this specification:

Fig. 1 is a top plan view of a terminal member secured to the bond body.

Fig. 2 is a side view in elevation of Fig. 1.

Fig 3 is a section of the terminal member on the line 3—3 of Fig 2.

Fig. 4 is a sectional view on the line 4—4 of Fig. 2.

Fig. 5 is a side view in elevation of two adjacent rails with their ends united by a bond embodying my invention.

Fig. 6 is a sectional view on the line 6—6 of Fig. 5.

In the preferred embodiment of my invention I employ a body member 1 preferably of a copper cable or a stranded conductor. Secured to each end of the cable, as shown in Fig. 5, is a terminal member 2 as shown in Figs. 1 and 2. The terminal member 2 is preferably formed up of sheet metal in any of the well known methods of stamping and forming. The terminal member may, however, be made from a drop forging or from a steel casting. I prefer to make the terminal 2 of steel or iron as I find that this metal is not only more economical than bronze or copper, but forms a stronger union with the attaching metal used in securing the bond to the rail. The member 2 after it is formed is provided with a sleeve portion 3 to receive the end of the body member 1 with an interposed collar 4 preferably of thin sheet copper which protects the body member 1 where it enters the sleeve 3. The terminal member 2 is also provided with two side walls 5 projecting from the outer end of the sleeve 3 and spaced apart to form the opening 6 and the extreme ends of the side walls 5 are united by a cross member 7 which stiffens and maintains the side walls in a predetermined shape, and also assists in retaining the molten attaching metal within bounds while in the molten condition.

The side walls 5 are preferably tapered, as shown in Fig. 2, having their maximum depth adjacent the extreme end of the body member 1 and having the minimum depth at the farthest point from the end of the cable. This construction provides the opening or pocket 6 in which the molten or attaching metal is applied and the whole construction offers a retaining means for the molten attaching metal. Having the side walls tapered, as described, the maximum amount of attaching metal is deposited at the extreme end of the body member 1 and from that point it tapers down in unison with the tapering of the side walls. This tapering of the molten attaching metal is very economical as this metal is usually of copper, bronze or other copper base alloys and therefore, is expensive and it is so deposited and in such quantities as to make the most of its electrical and physical properties in securing the bond to the rail. The collar portion 3 is split, as shown at 8, which permits the parts being assembled and formed without distortion, and I have shown the cross section of the finished bond on the line 4—4 as rectangular in shape. The face A of the sleeve portion 3 is co-extensive with the edge B of the side walls 5. The opposite edge C of the side walls 5 is angularly disposed to the edge B and the axis of the bond member 1 also coincides with the axis of the sleeve 3 and is angularly disposed to the edge C of the side walls, but parallel with the edge B of the side walls 5.

This construction permits the terminal to be applied to the rail base in two ways, one as shown in Fig. 5, in which the axis x—x of the bond body is disposed at an angle to the surface of the base of the rail. The other

way, in which the bond may be applied to the rail, is to remove the bight shown in the bond member 1 at the point *y* so that the body member 1 will be straight throughout its length between the terminals, or substantially so, and then applying the top surface A and edge B, as shown in Fig. 2, of the sleeve and walls to the surface of the rail in place of the lower edge C of the walls as shown in Fig. 5. In the latter case the bond body would lie quite close to the surface of the rail, while, as shown in Fig. 5, the construction provides for the bond body to be raised considerably above the surface of the rail. This latter construction is of benefit where it is desired that the bond body 1 pass over the portion 11 of a joint or fish-plate extending over the upper surface of the rail base. If the application of the bond terminal to the rail is reversed, it is intended for use where the fish-plate or joint merely extends between the head and the base of the rail and does not extend outwardly over the upper surface of the rail base.

In assembling the parts to form a complete bond, the terminal member and sleeve having been formed to shape the end of the body member 1 is placed in position within the sleeve 3 with the sleeve member 4 interposed and with the end of the bond body exposed within the opening 6 such that the heating flame may have access to the extreme end of the body member. Having assembled the parts as described, the collar member 4 is then compressed into strong engagement with the body member so as to form an inseparable mechanical union.

In applying a bond to a rail it is positioned on the surface of the rail in either one of the two positions described and then by means of the electric arc, either using a metallic or carbon pencil, the portions of the bond member 1 and the rail surface exposed within the opening 6 and also the inner surfaces of the side walls 5, are brought up to the welding heat, that is, a heat at which the metallic electrode will melt and the metal deposited within the opening 6 and in contact with the adjacent walls thereof where it will simultaneously unite with the surface of the rail, the bond body and walls which are simultaneously fused by the electric arc. The fusing of the metal electrode is continued and deposition made of the fused metal until the opening 6 is filled with the attaching metal, a sectional view of which is shown in Fig. 6. If the carbon arc is used the arc simultaneously melts an auxiliary metal rod and the parts of the bond terminal or rail surface upon which the metal is to be deposited. The same is true if a gaseous heating flame is employed, as in the case of the use of an electric arc with a carbon pencil. The use of the electric arc and gaseous heating flames in applying rail bonds is well known at the present day by those skilled in the art.

As constructed and secured to the rail, it will be noted that each part is united to each of the other parts through the welding or attaching metal 10 and this therefore, gives a high degree of electrical efficiency. The fact that the parts are united together by welding gives a high degree of mechanical efficiency and by making the terminal member 2 of a ferrous material adds still further to the mechanical efficiency without detracting from the electrical efficiency, as the contact area between the attaching metal 10, which is preferably of copper or a copper base metal, is equal to or greater than the cross section of the body member 1. It will be noted that the extreme end 9 of the body member 1 rests in a plane at right angles to the lower face of the bond terminal. This construction is advisable, but not necessary as it permits unobstructed access to the end of the bond body when the bond is applied to the rail, as shown in Fig. 5. If the bond is to be applied in the opposite position the face 9 may be made to rest in a plane at right angles to the upper face of the bond terminal, as shown by the dotted line 9′, although this is not necessary because the portion of the bond body projecting into the opening 6 and shown between the numerals 9—9′ may be melted down by means of the heating flame before the actual welding operation of securing the bond to the rail is started.

It will be evident to those skilled in the art that modifications may be made in my invention from that herein disclosed, as for instance, the shape of the opening 6 may be varied, the relative depth of the outer and inner end of the side walls may be varied to vary the depth of the opening or recess 6, the cross section of the sleeve portion may be varied and other variations all within the scope of my invention.

I claim:

1. An electric connecter comprising a body member and a separately formed terminal member secured thereto, the terminal member having a sleeve portion to receive the end of the body member and spaced side walls extending from the sleeve portion, each side wall having oppositely disposed edges arranged to be applied to a rail surface in two different ways, and the sleeve portion so related to the edges of the side walls that the longitudinal axis of the sleeve portion will be angularly disposed to the rail surface when one set of edges of the side walls are applied thereto and the axis will be parallel to the rail surface when the other set of side wall edges are applied to the rail.

2. A bond terminal comprising a sleeve portion having a passage therethrough to receive a body member, projecting means from

one end of the sleeve and enclosing one opening of the passage, means on the projecting means to engage a rail surface and hold the sleeve such that the axis of the passage will be at an angle to the rail surface and oppositely disposed means to the first said means to engage the rail surface and hold the axis of the passage parallel with the rail surface.

3. A bond terminal comprising a sleeve portion having a passage therethrough, a loop shaped portion secured to and projecting from one end of the sleeve portion and enclosing one end of the passage, the loop shaped portion adapted to engage a rail surface in two ways and forming with the rail surface a receptacle in each case and when applied in one way the axis of the passage will be parallel with the rail surface and when applied the other way the axis will be at an angle to the rail surface.

In testimony whereof I affix my signature.

ERNST A. LARSSON.