

1,387,548.

Fig. 1.

11, 10, 16, 36, 37, 26, 22a, 29, 28, 22, 20, 16, 15a, 23, 13, 15, 17, 18, 10, 13, 12.

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ELECTRICAL CONNECTOR DEVICE.

1,387,548.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HAROLD K. LOWRY, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electrical Connector Devices, of which the following is a specification.

My invention relates to devices for placing in electrical communication a track rail and a source of current supply carried by a conductor to a place adjacent to the rail. The principal objects of these improvements are to provide a device of the character described whereby the desired strong and effective connection and repairs from time to time may be readily made: whereby the wires and connection parts may be readily inspected: whereby, in the preferred construction, a relatively small part peculiarly subjected to breaking strains is of material well adapted to withstand such strains, and, in a still more preferred construction, whereby such strain-taking element may be readily separable from the rest of the device as a unit, to the end that such small unit may be replaced from time to time at a low cost; and, importantly to provide a device in which the several wires to be connected electrically are preserved from breakage by down-hanging parts of rolling stock, with a consequent increased safety to the system. Other objects and advantages will appear hereinafter.

In the accompanying drawings, which form a part of this specification, I have illustrated these improvements in what I consider their most advantageous form. In these drawings Figure 1 is a transverse section of my improved device in its operative relation to the rail and trunking box; Fig. 2 is a top view of the structures of Fig. 1 with the rail web shown in section; Fig. 3 is an end elevation of my improved device and a cross section of the trunking box; and Fig. 4 is a perspective of the readily removable connection block. It is common practice in connection with railroad signals to carry an insulated copper conductor 10 charged with electricity to a place adjacent to the track 11 in a wooden conduit 12 called a trunking box or boot leg, provided with a wooden cover 13. It is also common practice to secure galvanized iron or copper coated wires 14 (usually a pair of them) to the rails by means of wedging pins, com-

monly known as channel pins. An illustration of some prior practice in this regard may be found in the patent to W. W. Coleman, No. 1,241,497, of October 2, 1917, entitled Bond wire connector. As will be noted from that patent it is also old to form an electrical connection between the conductor 10 and the rail 11 through wires, as 14, by means of channel pins securing all the wires to a block of metal secured to the trunking box.

My improved device in its preferred and illustrated form comprises a base 15 having an extension 15^a provided with holes for the accommodation of the lag screws 16 entering the side walls of the trunking box or conduit 12. This plate 15, 15^a is rectangular in shape and continuous throughout its area except for the hole 17 provided for the conductor 10. It will be noted that when the base 15, 15^a is in position on the trunking box and the cover 13 of the box is secured in position, as by nailing, and with the ends of the cover parts abutting the base 15, 15^a, the interior of the box 12 is well closed against entrance thereinto of mice or insects which oftentimes prey upon the insulation of the conductor 10, build nests in the box and are otherwise objectionable. It will be noted further that the box cover 13 abutting the base 15, 15^a assists in anchoring the device so that it may be held by two comparatively small screws 16. From Fig. 3 it will be observed that the base is provided with depending flanges or lugs 18 adapted to engage side portions of the box 12, further assisting in maintaining it firmly against displacement by shocks upon its top and sides, some of which are severe.

Upon the base 15 I provide a pair of oppositely disposed sides 20, and upon these sides there is a top portion or table 22. In my practice the base, sides and top are made of cast gray iron, and these several parts are therefore integral. The sides 20 are reinforced with vertical flanges or vanes 23. The sides 20 and top 22 are materially wide, as viewed in Fig. 1, and they constitute an archlike structure upon the base, and also form a housing, defining a materially large space 24 between the sides 20 and between the top and base. The sides 20 and top 22 are given a rounded configuration so that passing train parts hanging down from the rolling stock and striking the sides or top will readily slide over this arch or housing

structure without developing too great uprooting force.

In my practice the base 15, 15^a is approximately three and one-fourth inches long 5 from left to right as viewed in Fig. 1, the sides 20 and the top 22 are about two inches wide in the same direction, the height of the device from the bottom of the base to the upper surface of the top 22 being about three 10 and one-fourth inches, and the opening 24 being about one and five-eighths inches high and about two and five eighths wide between the reinforcing flanges or ribs 23. These measurements are well suited for the 15 device where it is made applicable to present standard features of railroad construction in association with which it is to be used, but the invention is not limited to particular proportions or the exact relationship of parts or details of construction 20 shown.

The top or table 22 is provided with a recess of the rectangular shape shown by the removable element 26 in Fig. 4. This recess 25 is open in front for the insertion of the element 26 and is partly defined by a rear wall 22^a and by a pair of retaining ribs 27, well seen in Fig. 3, the wall and ribs being integral with the rest of the arch. The top 30 22 has a forward extension or lug 28 vertically apertured to receive the cotter pin 29, this cotter pin holding the connection element 26 against removal except when desired. The plate or block of metal 26, preferably of cold rolled steel, is provided with 35 several holes 30, 31 and 32 passing through the block, and the top 22 is provided with a substantially large hole 35 adapted to accommodate the projecting ends of the wedging 40 pins 36 and 37, as well as to provide access for the wires 10 and 14 from the open space 24 to the connector element 26.

When it is desired to connect the wires 10 and 14 electrically the wire 10 is first 45 passed upward into the hole 30 and the wedging pin 37 is driven down into that hole until the top of the pin is flush with the connector block 26 or at least so that it will not project objectionably above the top 50 surface of the wall 22^a and the ribs 27. It will be noted that the wire 10 enters the connector block 26 on a straight line, such straight line being secured by placing the hole 30 vertically above the hole 17. This 55 is an important improvement inasmuch as where this copper wire 10 is bent closely adjacent to the place where it is secured to holding means in a device of this kind the constant vibration of the parts due 60 to the passage of trains causes the wire to break in a comparatively short time. This feature therefore conduces to the permanency of the connection. In order to connect the wires 14 to the block 26 they are 65 first carried into the opening 24 where they

are turned upward and passed respectively into the holes 31 and 32 and wedging pins 36 are then driven downward into these holes, binding the wires tightly and in electrical connection with the block 26 and hence 70 also in such connection with the wire 10. It will be noted that the structure is such that the top 22 and the block 26 constitute an anvil-like device adapted well to receive the hammer blows for driving in these wedging 75 pins whereby the pins may be driven home very securely and a tight joint effected. Similarly also this construction facilitates the removal of the pins 36 and 37, which is ordinarily done by simply driving them through 80 the element 26. The several operations are thus made at the most convenient place for the operator to work and with space for manipulating the wires, etc., while doing the 85 work.

A feature of importance is in the fact that these several connections and the wires leading thereto may be very readily inspected and, should any repairs be required, they may be made then and there in a simple and 90 expeditious way. When the holes 30, 31 and 32 become enlarged at one end thereof the plate may be removed and turned around, with the other side up, whereby its effectiveness in point of time is substantially 95 doubled.

The block or plate 26 constitutes an insert in the device, and also a readily removable one. Where the base and arch of the device are made of cast iron, which is the cheapest 100 and most satisfactory material, if holes as 30, 31 and 32 were provided in the cast metal, while such construction would provide many advantages over the older practice, it is pointed out that the wedging force 105 of the pins would in time result in cracking the iron, rendering a new installation necessary. A rolled iron or steel insert in a device of this kind, whether of the particular type illustrated or of some other 110 type, and whether such insert be fixed or removable, will prevent all such breakage. It is plain, of course, that a single hole, as 30, and a single wedging pin would suffice for making the connection; but for purposes of 115 inspection, convenience of installation, etc., a hole and pin for each wire is preferred.

In some installations the device may be secured to a concrete or other suitable form of pedestal within or to which the conductor 120 10 may extend, and in other instances, where a pipe conduit contains the wire 10 the device may be secured, as by threading, directly upon such conduit, or otherwise, suitable modifications of a merely mechanical 125 nature being made to adapt the device to such or other similar applications.

What I contemplate as being included in the improvements herein set forth is not alone what is specifically illustrated and de- 130

scribed but is further set forth in the appended claims.

I claim:

1. An electrical connector device of the character described comprising a metallic base adapted to rest upon a trunking conduit adjacent to a track rail, said base having an opening therethrough for a wire leading out of said conduit, a pair of oppositely disposed protective sides integral with the base and extending upward therefrom, a top integral with the sides, said base, sides and top forming an arch defining an interior open space for wires, and means including a plurality of holes and wedging pins therefor in said arch for securing to the device and in electrical communication with each other a wire extending through said opening in the base and a second wire adapted to lead from the device to the track rail.

2. An electrical connector device of the character described comprising a metallic base adapted to rest upon a trunking conduit adjacent to a track rail, a pair of oppositely disposed protective sides integral with the base and extending upward therefrom, a top integral with the sides, said base, sides and top defining an interior open space for wires, and means including a plurality of holes extending downward through said top and wedging pins therefor for securing to the device and in electrical communication with each other a wire extending from said conduit and into said interior open space and a second wire extending from the track rail and between said sides to one of said pin holes.

3. An electrical connector device of the character described comprising a base adapt-

ed to be secured to a trunking conduit adjacent to a track rail, a strong and rigid housing on said base having an inspection opening therein, the housing being formed with upwardly slanting sides facing the directions of travel on the track rail to provide against its catching down-hanging parts upon a car on the rail, and readily removable unitary means carried by the device for securing in electrical communication with each other a plurality of wires entering said housing, one thereof being a wire from said conduit.

4. An electrical connector device of the character described comprising a cast metallic structure including a base and an arch thereon adapted to be secured to a trunking conduit, and a wrought metallic insert carried by the arch of said structure, said insert having a hole adapted to accommodate a wire and a wedging pin.

5. An electrical connector device of the character described comprising a cast metallic structure including a base and an arch thereon adapted to be secured to a trunking conduit and a readily removable wrought metallic insert carried by the arch of said structure, said insert having a hole adapted to accommodate a wire and wedging pin.

6. An electrical connector device of the character described comprising a metallic structure including a base and an arch thereon adapted to be secured to a trunking conduit, said arch having a recess for a metallic connector element, a metallic connector element in said recess, said connector element having a hole therein for a wire and a wedging pin.

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