No. 867,021. PATENTED SEPT. 24, 1907.

G. DRAWERT.

ELECTRIC CONTACT RAIL AND SHOE.

APPLICATION FILED MAY 14, 1906.

Fig. 2.

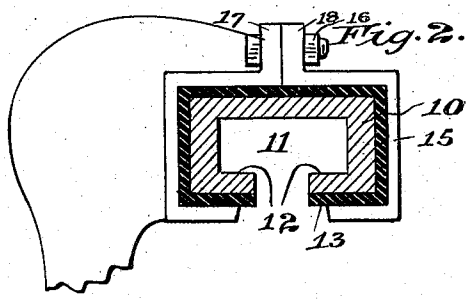


Fig. 1.

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ELECTRIC CONTACT RAIL AND SHOE.

No. 867,021. Specification of Letters Patent. Patented Sept. 24, 1907.

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To all whom it may concern:

Be it known that I, GEORGE DRAWERT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Contact Rails and Shoes, of which the following is a specification.

My invention relates to improvements in contact rails and coöperating shoes such as are at present employed in third-rail electric railway systems, but it is not necessarily limited to such use.

It is the aim of my invention to provide a contact rail which will not be detrimentally affected by rain, sleet, ice or the like and from which there will be but slight if any leakage; to secure a firm and efficient contact between the rail and co-acting traveling shoe at all times and in all kinds of weather; to eliminate springs in connection with the traveling contact; to cause the drag of the shoe on the rail to attain a better electrical connection between the two parts; and to do away with the arcing or flashing which frequently occurs in connection with the third rails and shoes now employed.

In my novel form of rail and moving contact the weight of the parts and the drag is depended upon to secure the desired electrical and conducting connection thereby doing away with the customary springs for forcing the shoe on to the rail.

In the accompanying drawings wherein I have illustrated the preferred embodiment of my invention; Figure 1 is a perspective view of a section of the contact rail, a fragment of one of the brackets for supporting the same, and the contact shoe which is carried by the electric car; and Fig. 2 is a section of the conducting rail adjacent to one of the supporting brackets.

The conducting or third rail 10 has along its lower surface a longitudinal undercut groove 11 providing the two cheeks or ledges 12 upon which the contact shoe, described hereinafter, is adapted to rest and make an efficient electrical connection. I preferably surround this contact rail or conductor on its exterior surface with a coating or layer of any suitable kind of insulating material 13. To support these rails I use a number of brackets or arms 14 which are formed so as to extend about half way around the contact rail, as shown at Fig. 2, and around substantially the remainder of the rail with its coating of insulation extends a clamp 15, bolts 16 fastening the clamps 15 to the supports 14 by passing through apertures in the upstanding flanges 17 and 18. On the lower side of the contact rail the supports 14 and clamps 15 do not quite reach to the margins of the undercut slot 11 so that there is no danger of grounding the circuit through the supports as the contact shoe travels along.

On a beam 19 attached to the car and preferably extended outwardly therefrom I mount a standard 20 which is hinged to a block 21, fastened to the beam 19 by lag screws or bolts 22, by means of a hinge pin 23 which passes through apertured lugs on the standard and block, as will be readily understood. This hinge pin is headed at one end and is prevented from becoming displaced by a cotter pin 24 passing therethrough near its other end.

In order to prevent the standard 20 from turning on the hinge under normal circumstances it is screwed down to the beam 20 by means of bolts 25 pivoted to beam 19 at 25^a and equipped at their upper ends with removable nuts 25^b each equipped with a handle 25^c which may be insulated with tape if desired. These bolts engage slots 26^a in the base of the standard as will be apparent from an inspection of the drawing. Projecting upwardly from the main body of standard 20 are two pairs of spaced ears 26, one pair at each end of the standard ends and extending transversely through apertures in each pair of ears is a pin 27 retained in position by a cotter 28. In order to support the contact shoe 29 when it is free from the rail and to drag it along when it is within the undercut groove of the rail I provide two links 30 each of which is pivoted at 31 to the lower portion of the contact shoe and has a slot 32 at its lower end engaging one of the pins 27, and it will be obvious that by this construction the shoe has a loose or pin and slot connection with the standard. The contacting parts or head of the shoe 29 is tapered at each end at 33 and is of such a size in cross-section as to substantially fill the undercut groove 11 of the contacting rail. The shoe's under surface is flat and is adapted to rest upon, ride along, and make contact with the upper surfaces of ledges 12. Within the body of shoe 29 and below its contacting and slot engaging portion is a block 34 [shown in dotted lines] of copper, brass or other good conducting material, the block being held in place by bolts 35 in a manner which will be readily apparent to those skilled in the art. Within the lower portion of standard 20 I also insert a similar conducting block [not shown] and retain the same in place by screws 36. Obviously a good and efficient electrical connection is not secured between the shoe 29 and the standard 20 because of the loose connection of links 30 with the latter and in order to overcome this defect and secure a suitable conducting connection I employ a copper wire 37 which is conductively fastened to and which connects the block 34 and the similar block which is retained in position by the screws 36.

The operation of this device is as follows: When the shoe is within the undercut groove 11 it rests upon the ledges 12 because of its own weight and that of the links 30, and as the car travels along it drags the shoe into still firmer contact with the ledges thereby securing a good electrical conducting connection. Ine-

qualities in the height of the rail, if any are present, are readily overcome and form no inconvenience since the shoe has a free up and down movement owing to its loose connection with the standard. In case it is desired to remove the shoe from the slot and turn the same away from the contacting rail this may be readily accomplished by removing the shoe from the rail at any of the places provided for that purpose along the contact rail [not shown], loosening nuts 25^b and swinging bolts 25 out of slots 26^a and turning the standard with the attached shoe on hinge pin 23 so as to move it to a position sufficiently distant from the contact rail to escape the same.

In the accompanying drawings and in the description above certain details of construction have been set forth, but it is obvious that my invention is not limited to these details since many minor mechanical changes may be made in the structure without departing from the substance of my invention as defined by the following claims.

I claim:

1. The combination of an electric contact rail having an undercut groove along its lower surface designed to accommodate a contact shoe, a standard pivotally mounted on a car below said rail, a contact shoe adapted to travel in said undercut groove and contact with the ledges of said rail provided by said groove, links connecting said shoe and standard, said links being pivoted to said shoe and having a pin and slot connection with said standard, means to maintain said standard in an upright position, and a wire connecting said shoe and standard, substantially as described.

2. In a device of the character described, the combination of an electric contact shoe, a standard pivoted or hinged to a car, one or more links connecting said standard and shoe, said link or links being pivoted to said shoe and having a pin and slot connection with said standard, means to maintain said standard in upright position, and a conducting wire electrically connecting said standard and shoe, substantially as described.

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