A. J. STEINWEG.

LATERAL TROLLEY FOR ELECTRIC RAILWAYS.

APPLICATION FILED APR. 1, 1907.

975,650. **Patented Nov. 15, 1910.**

FIG. 1

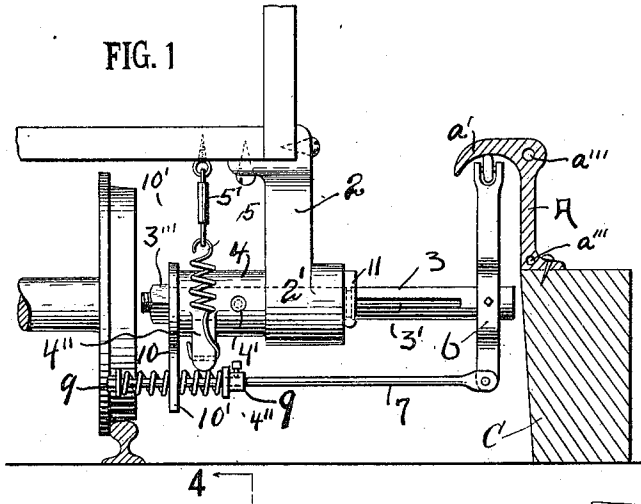


FIG. 5

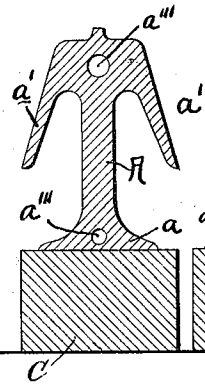


FIG. 6

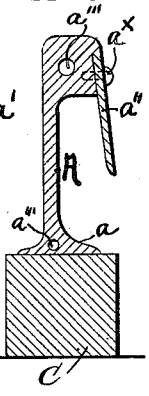


FIG. 2

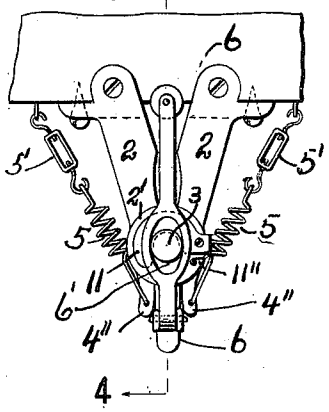


FIG. 3

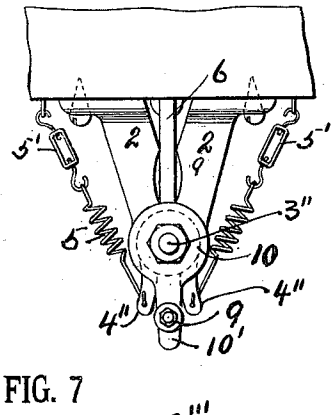


FIG. 4

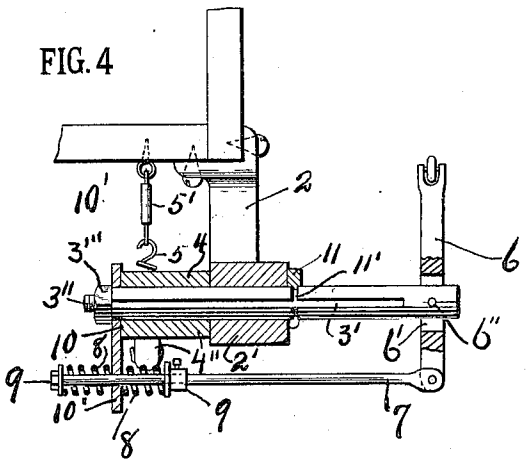


FIG. 7

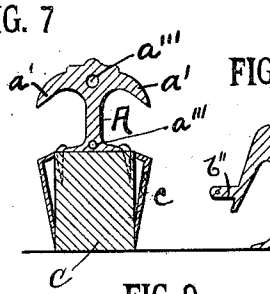


FIG. 8

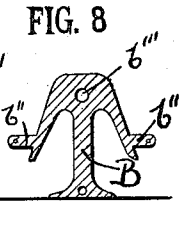
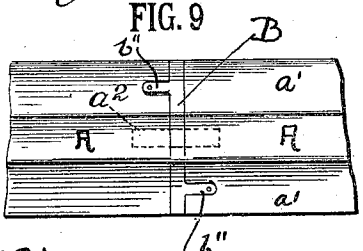


FIG. 9



Witnesses

Max B. A. Doring

George Calvert

Albert J. Steinweg Inventor

By his Attorneys

Howson & Gough

UNITED STATES PATENT OFFICE.

ALBERT J. STEINWEG, OF CHICAGO, ILLINOIS.

LATERAL TROLLEY FOR ELECTRIC RAILWAYS.

975,650. Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed April 1, 1907. Serial No. 365,714.

To all whom it may concern:

Be it known that I, ALBERT J. STEINWEG, 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 Lateral Trolleys for Electric Railways, of which the following is a specification.

My invention relates to electric railways using third rails as a means of transmitting power to the car, and particularly to a protected third rail and trolley therefor, the invention consisting in the arrangement of parts and details of construction as set forth in the appended claims.

The object of my invention is to provide a laterally shiftable trolley or contact shoe for third rail systems, particularly adapted for use with a third rail which has a projecting hood. The peculiar form of the third rail shown in the drawings does not form part of this application but is shown in order to illustrate fully the application of my trolley shoe support and the reasons for its peculiar construction.

I have illustrated my invention in the accompanying drawings, wherein,

Figure 1 is a longitudinal elevation of my shoe supporting means, the rail and its supporting base being shown in section. Fig. 2 is a front elevation of the shoe support. Fig. 3 is a rear end view of the same. Fig. 4 is a longitudinal vertical section on line 4—4 of Fig. 2. Figs. 5, 6 and 7 are sections of modified forms of rails. Fig. 8 is a section of the electrical bond used between the rails. Fig. 9 is a top view of the adjacent ends of two rails, the bond being in place.

Like reference characters in all the several views denote like parts.

In order that no water or snow may collect upon the contact face of the rail, I use a rail of an approximate T-shape, having a central vertical web A, a base a, the upper margins of the web either on one or both sides being provided with outwardly and downwardly extending flanges a' a'. In Figs. 5 and 7 these flanges are shown as extending down on both sides of the rail, while in Figs. 1 and 6 the rail has a flange on only one side. In Fig. 6 this flange a'' is separate from the rail itself and attached to it by screws a^x or bolts.

The ends of each rail are provided with longitudinal sockets a''' for the reception of a connecting pin a^2 shown in dotted lines Fig. 9.

Between each rail is a bonding piece B shown in Fig. 8. This is of the same shape as the cross section of the rail, has passages b''' for the connecting pins, and has on its arms b' the outwardly projecting lugs b''. In Fig. 8 these lugs are shown as standing out, that is, before they are bent downward to contact with the upper faces of the ends of adjacent rails. These lugs are bent in opposite directions as shown in Fig. 9, and contact with the upper faces of the flanges a' to which they are pinned, bolted, or otherwise suitably attached.

I intend my rail to be mounted on a suitable substructure, such as shown in Fig. 1, the rail itself resting on a stringer C, the stringer being provided with inclined flash boards c, to prevent any water from collecting in or around the rail. Inasmuch as the contact-tread of this rail is beneath the flanges a', it is necessary that a contact shoe or trolley be provided capable of projecting upward into the space between the web of the rail, and the flange, and against the contact tread, and that such shoe should have the usual freedom of play vertically and laterally. To this end I have devised the trolley construction shown in Figs. 1 to 4.

The trolley is supported on the side of the car by a depending V-shaped bracket 2, the arms of the bracket being bolted or otherwise attached to the sill of the car. At its lower end the bracket is provided with a bearing 2′ through which passes the shaft 3. This shaft is rotatable in the bearing though normally it is only intended to have a rocking motion therein. The shaft has also a longitudinal movement through the bearing when desired.

Rearward of the bracket and surrounding the shaft is a sleeve 4 to which the shaft is splined, the groove 3′ of said spline extending from the rear of the shaft nearly to the front end thereof, or a sufficient distance to allow the shaft to be shifted rearward until the trolley arm contacts with the bearing 2′. A pin 4′ (Fig. 1), engages with the spline groove.

The sleeve is provided with downwardly extending lugs 4″, one on either side, to which are attached the oppositely directed contractile springs 5 which extend upward

and which at their other ends are attached in any suitable manner to the car sill. These springs are provided with turnbuckles 5′ whereby their tension may be increased or decreased. The oppositely placed and directed springs counterbalance each other and act to hold the sleeve 4 from any movement of rotation except under stress, and this sleeve being splined to the shaft the shaft too is held from any rotative movement under ordinary conditions.

At the forward end of the shaft the trolley arm 6 is pivoted for movement in a vertical plane at right angles to the length of the car. The arm is formed with an elongated opening 6′ through which the shaft passes, the arm being pivoted to the shaft by a transverse bolt 6″. The elongated opening allows the arm to have considerable freedom of movement on its pivot and thus allows the arm to oscillate laterally to follow any turns or inequalities in the line of the third rail.

The arm 6 projects downward below the shaft 3 and on its lower end is pivoted to a rod 7 which extends inward and passes through the plate 10 which is fast on the inner end of the shaft 3 and rotates therewith. The end of the shaft 3 is formed with a bolt 3″, and a nut 3‴ holds the plate 10 in place snugly against the sleeve 4 in all positions of the shaft. On either side of the plate 10 the rod 7 is provided with nuts 9 and held between these nuts and the downwardly extending portion 10′ of the plate 10 are the springs 8, 8 which act to resiliently hold the trolley arm parallel with the axis of the car no matter at what angle the trolley arm may be held.

It will be seen from this description that the trolley arm 6 has a movement in vertical plane parallel to the rail by reason of the rotation of the shaft and that the arm with its trolley wheel or shoe is held normally upright or against the rail by reason of the springs 5 which tend to counteract any rotation of the sleeve 4.

Were it not that the trolley should be shiftable inward against the side of the car in order to get it out of the way, the springs 5 5 might be attached directly to the shaft 3.

As already explained, lateral movement of the trolley arm 6 is gotten by pivoting the trolley arm to the shaft 3 and the arm is held in a normally vertical position by the springs 8 8. It will thus be seen that the arm 6 is capable of movement in two directions and thus is perfectly free to follow all the curves, variations and differences of level in the line of the third rail. At the same time, it is capable of being shifted into and out of position against the side of the car.

In order that it may be held extended and in operative position, I provide the latch 11 which as shown in Fig. 2 is pivoted to the outer end of the bearing 2′. This latch is semi-circular in general form and partly surrounds the shaft 3. This shaft is provided with a circular groove 11′ surrounding it at about its middle and the latch engages in said groove being held therein by a spring 11″ shown in Fig. 2. This spring holds the latch either in its raised position when it is out of engagement with the shaft 3 or in its lowered position as in Fig. 4. When the latch is raised the shaft, its arms 10 and 6, and the spring 11″ may all be pushed back bodily until the arm 6 comes in contact with the bearing 2′. When the shaft 3, however, is pulled outward, the latch 11 snaps into place and holds the shaft rigidly though permitting of the rotative movement previously described.

The advantages of my invention are obvious. No snow or ice can gather or form upon the contact surface of the third rail. The contact surface is entirely protected from the weather and hence presents a clean face to the trolley wheel and thus good contact is assured. The trolley mechanism is peculiarly adapted to a rail of this character, may be easily drawn out into position, is adaptable to every variation in the line of the third rail, and is capable also of being pushed back out of position when desired.

While I have shown a trolley wheel connected to the trolley arm, it is to be understood that I may use any form of contact piece whether the same is rotatable or sliding. Neither do I wish to be limited to the exact details of construction shown in the drawing herewith described as the apparatus may be varied in many minor points without departing from the spirit of my invention, as defined in the appended claims.

Having described my invention what I claim is:

1. In a third-rail system, a car having a shaft-bearing attached thereto, a shaft rotatable in and laterally shiftable through said bearing, means on said bearing engaging with the shaft to hold it when shifted, and a trolley-arm supported on said shaft.

2. In a third-rail system, a car having a shaft-bearing attached thereto, a shaft rotatable in and laterally shiftable through said bearing, a latch on said bearing engaging with the shaft to hold it when shifted, a trolley-arm supported on said shaft, a sleeve through which the shaft passes and to which it is splined, and means acting on the sleeve to hold it and the shaft from rotating.

3. In a third-rail system, a car having a shaft-bearing attached thereto, a shaft rotatable in and laterally shiftable through said bearing, a latch on said bearing engaging with the shaft to hold it when shifted in one direction, a trolley-arm supported on said shaft, a sleeve through which the

shaft passes and to which it is splined, oppositely-disposed lugs projecting from the sleeve, and oppositely-acting contractile springs attached to said lugs, and acting to prevent the rotation of the sleeve in either direction.

4. In a third-rail system, a car having a depending bracket carrying a bearing, a shaft rotatable in and laterally shiftable through said bearing, a sleeve through which the shaft passes located rearward of the bearing and independent thereof, said sleeve being splined to the shaft, means acting to prevent the rotation of the sleeve in either direction, a trolley-arm pivoted to the forward end of the shaft for a movement parallel to the shaft, and means cooperating with said trolley-arm tending to hold it in a vertical position but permitting it to have lateral movement relatively to said shaft.

5. In a third-rail system, a car having a depending bracket carrying a bearing, a shaft rotatable in and laterally shiftable through said bearing, a sleeve through which the shaft passes located rearward of the bearing and independent thereof, said sleeve being splined to the shaft, oppositely-disposed lugs projecting from the sleeve, oppositely-acting contractile springs attached to said lugs and acting to prevent the rotation of the sleeve in either direction, a plate attached to the rear end of the shaft and having a downwardly-projecting arm, a trolley-arm pivoted to the forward end of the shaft for a movement parallel to the shaft, a rod pivoted to the trolley-arm and passing through said plate, and springs surrounding the said rod on either side of the plate and engaging therewith to restrain movement of the said rod in either direction.

6. In a third-rail system, a car having a depending V-shaped bracket carrying a bearing at its lower end, a shaft rotatable in and laterally shiftable through said bearing, a latch on said bearing engaging with the shaft to hold it set when shifted in one direction, a sleeve through which the shaft passes located rearward of the bearing and independent thereof, said sleeve being splined to the shaft, oppositely-disposed lugs projecting from the sleeve, oppositely-acting contractile springs attached to said lugs and at their other ends to the under side of the car and acting to prevent the rotation of the sleeves in either direction, a plate attached to the rear end of the shaft having a downwardly-projecting arm, a trolley-arm having an elongated opening therein fitting over the end of the shaft, said arm being pivoted to the shaft and projecting above and below the same, a rod pivoted to the lower end of the trolley-arm extending rearward and passing freely through the said plate, nuts on said rod on either side of the plate and springs surrounding the rod on either side of the plate and bearing against the latter and acting to restrain the movement of the trolley-arm in either direction.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 15th day of January 1907.

ALBERT J. STEINWEG.

Witnesses:
H. E. STEINWEG,
G. THIEME.