W. J. J. BURCH.

THIRD RAIL OR OTHER ELECTRICAL CONDUCTOR.

APPLICATION FILED JAN. 7, 1907.

929,284.

Patented July 27, 1909.

2 SHEETS—SHEET 1.

Fig. 1

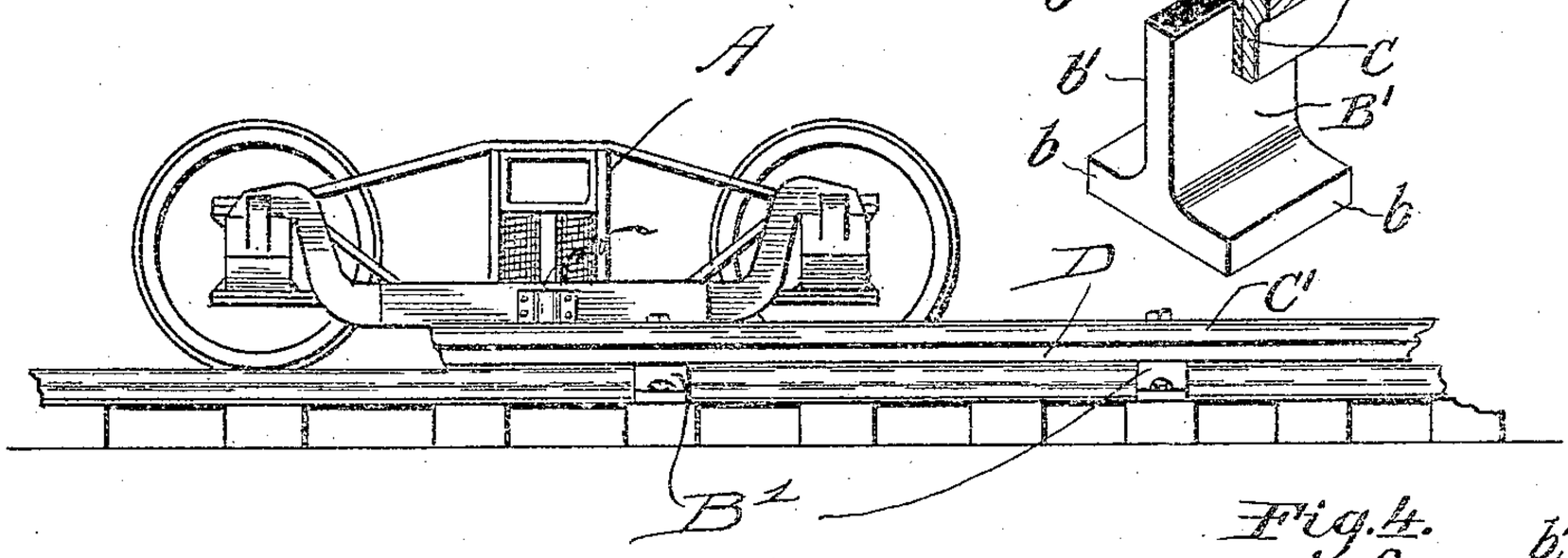

Fig. 3.

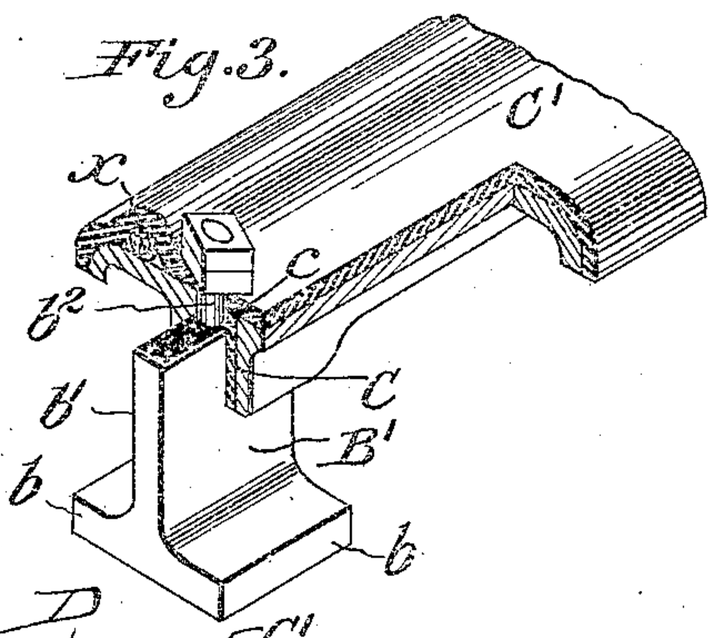

Fig. 2

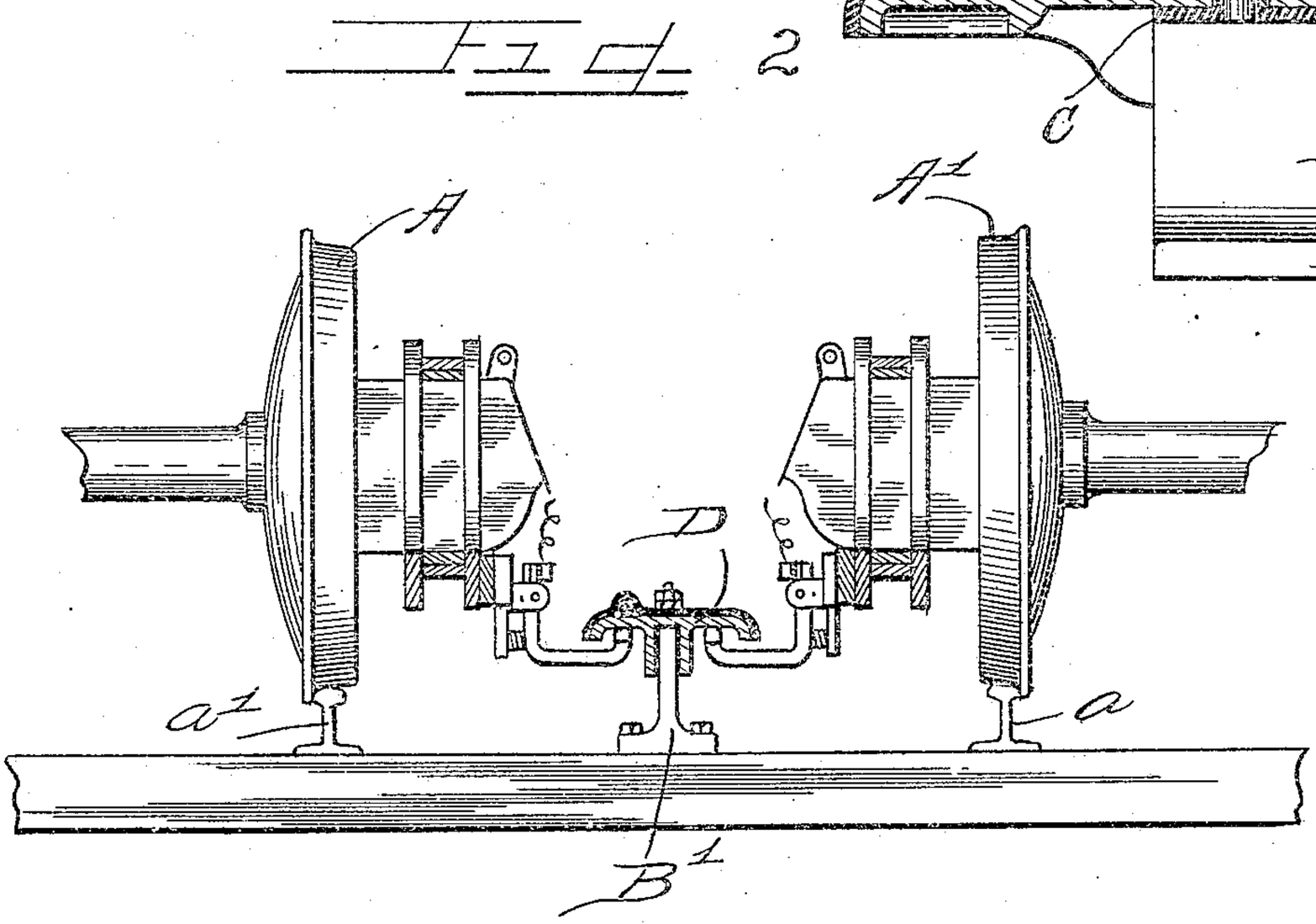

Fig. 4.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

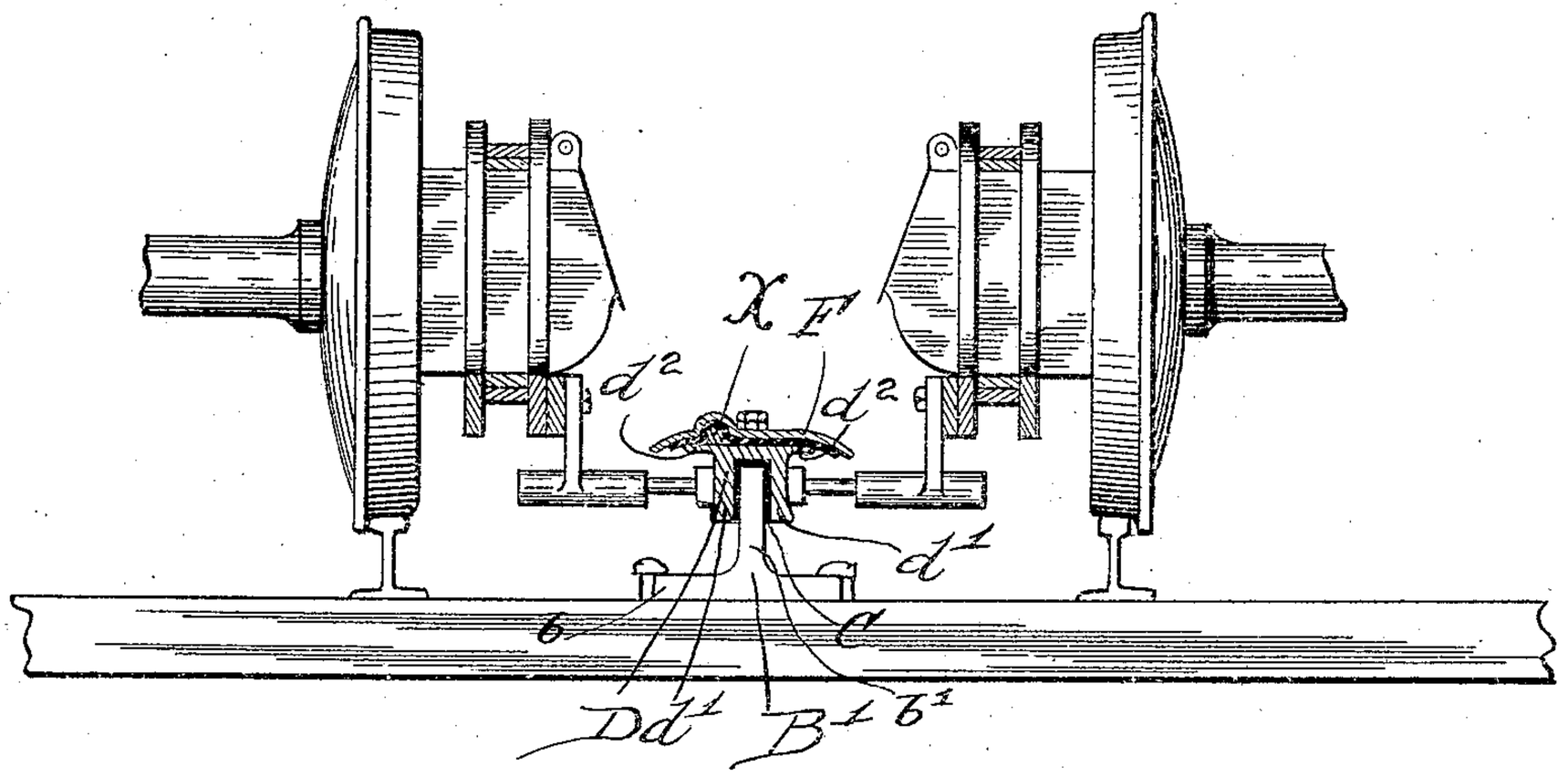


Fig. 6.

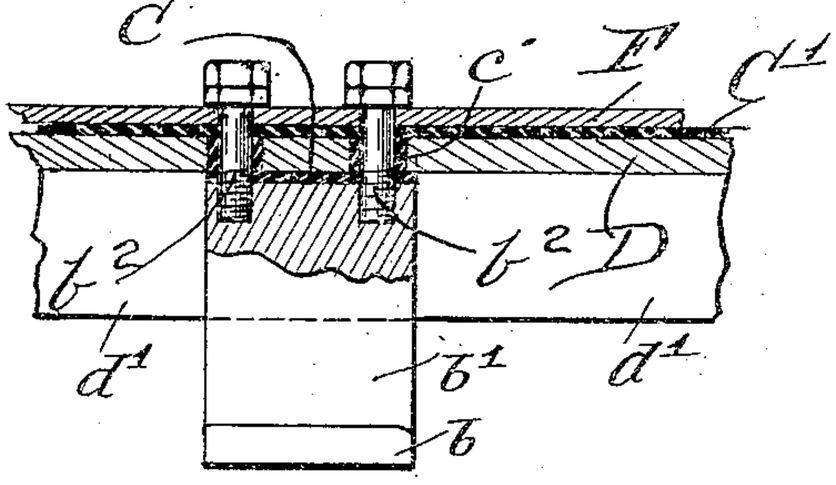


Fig. 7.

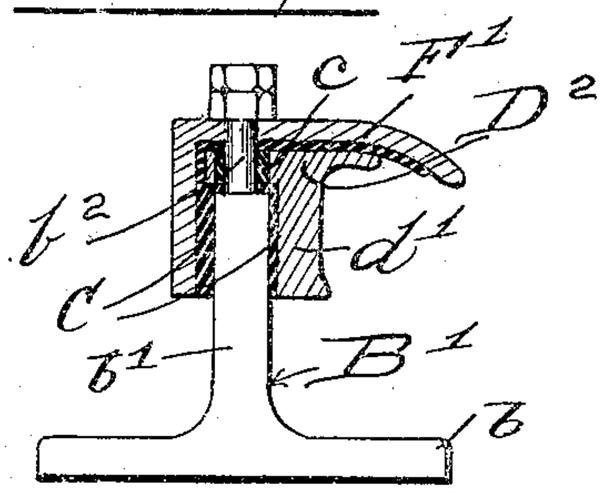
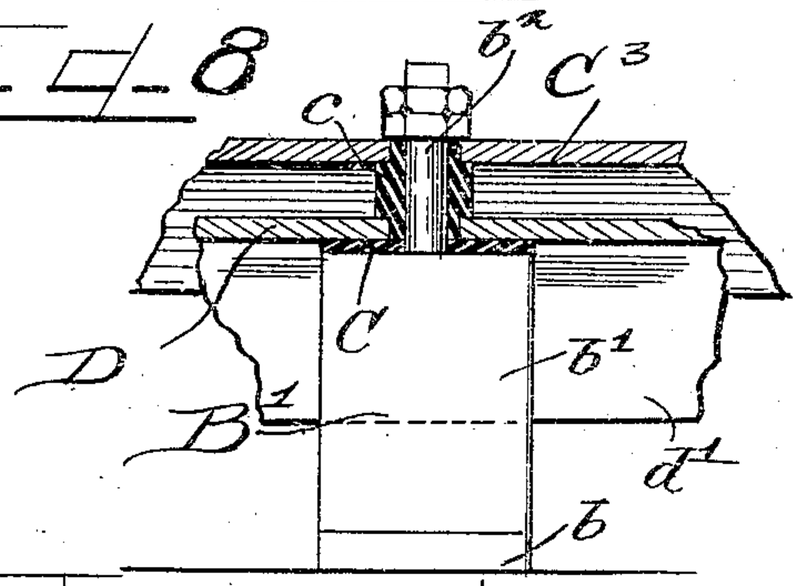


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM J. J. BURCH, OF CHICAGO, ILLINOIS.

THIRD-RAIL OR OTHER ELECTRICAL CONDUCTOR.

No. 929,284. Specification of Letters Patent. Patented July 27, 1909.

Application filed January 7, 1907. Serial No. 351,097.

To all whom it may concern:

Be it known that I, WILLIAM J. J. BURCH, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Third-Rail or other Electrical Conductors; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Heretofore for all practical purposes it has been usual when a third rail is used as the conductor for electrical traction purposes to set the rail to face upwardly for contact with a downwardly facing shoe supported upon the car. In some instances, third rails have been partly covered to protect the same from accumulation of sleet and snow and rain, which with unprotected conductors in some instances almost destroy the efficiency of the system. In some constructions heretofore where the rail is covered separate standards have been required for the cover and for the rail and the use of the cover is usually more or less dangerous, either because of possibility of injury to employees or the public who rely upon ineffective insulation of the protective covering. Usually with constructions of double track road heretofore, separate conductors or third rails are required, one for each track, doubling the expense for the conductors.

It is the object of this invention to provide a protective conductor of such cross sectional form as to afford maximum contact surface for the shoes which engage partly beneath the same.

It is a further object of the invention to afford a construction whereby a single conductor disposed between the tracks of a double track road at equal distances from each track supplies current for the cars of each.

It is also an object of the invention to provide means for thoroughly insulating, protecting the conductor and to afford a construction requiring but little greater height than the track rail and by the use of which all danger of injury to employees or others is obviated.

It is finally an object of my invention to afford a construction wherein the conducting cable, whereby the current is distributed along the third rail, may be carried in close proximity with or upon said conductor rail and inclosed in the insulating cover therefor, and branches taken therefrom as required.

The invention consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

On the drawings: Figure 1 is a fragmentary side elevation of a device embodying my invention and illustrates the relative height of the conductor rail relatively the track rails. Fig. 2 is an enlarged fragmentary transverse section showing the conductor installed for a double track. Fig. 3 is an enlarged perspective view of the conductor rail and its support. Fig. 4 is a partly oblique section taken on the track rail. Fig. 5 is a view similar to Fig. 2 and illustrates a modified form of the support for the shoe conductor. Fig. 6 is a fragmentary longitudinal section of the conductor shown in Fig. 5. Fig. 7 is a transverse section of the conductor when used for single tracks. Fig. 8 is a section showing the covering or guard elevated above the conductor affording an air space therebetween.

As shown in the drawings: A—A′, indicate the trucks as a whole which are supported upon tracks *a*—*a*′, the inner rail of each of which only is shown. Rigidly secured upon the appropriate ties of the tracks are standards B′, placed suitable distances apart. Each standard, as shown, comprises a flanged base *b*, and an upwardly directed web *b*′ having its greatest width longitudinally of the tracks on which is provided an upwardly directed externally threaded central bolt b^2. Secured on the top of each of said standards and extending downwardly on each side thereof is insulating material such as fiber or any other suitable material for that purpose indicated by C. As shown, also a washer *c* of insulating material is fitted around said bolt b^2.

The conductor rail, shown in Figs. 1 to 4 inclusive, is relatively broad and of suitable conducting material, and is provided on its under side with two central downwardly directed parallel flanges, between which said standards with the insulation thereon closely fit. Said flanges have their greatest width at said standards, and as shown, apertures are provided between said flanges to receive the bolts b^2, with their insulating sleeves *c*,

therethrough, as shown in Figs. 3 and 4. Beyond said flanges the rail is somewhat concaved on its under side to its edges and inclines downwardly at each edge, and is convex on its upper side. Secured on the top of said rail to fully cover the same is insulating material of any suitable kind. For this purpose asbestos, fiber or any suitable material may be used, and as shown the same is provided with apertures through which said bolts b^2 project. As shown, the conducting cable X, through which the current is supplied to the third rail is supported upon the rail, is thoroughly insulated and is also covered and further protected from the weather, by means of the insulating covering C′, as before described. Current is supplied to said cable from any suitable source.

In the construction illustrated in Figs. 5 to 8 inclusive, the rail D is provided with parallel flanges d' which straddle the standards B′, as before described. Said rail is provided at its top with laterally directed and relatively thin narrow flanges d^2, and the relative broad parallel flanges d', are concave on their outer side to receive a shoe. Two of said bolts b^2, are provided in each standard and are insulated from the rail D, as before described. As shown, also a covering plate of fiber or other suitable material covers the top of the rail and the cable X and a plate of metal F, of greater width than the rail, is engaged thereon by said bolts to protect the insulation.

In the construction shown in Fig. 7, but one side of the rail D^2, is intended for contact purposes. In this construction, but one flange d' is required which bears against the standards and is insulated therefrom, as shown in Fig. 7, and the insulation C and the covering plate F′, is then secured over the top of said rail on the side opposite the flange d', thus entirely covering and protecting the rail from the effects of atmospheric moisture and from other interference.

The operation is as follows: The standards are made relatively low and being rigidly secured on the ties to which the track rails are spiked, are maintained at all times in unvarying relation with the track whether used for one or more tracks and whether the contact be from the under side and upwardly on the rail or upon the downwardly extending side flanges. At all times the contact surface for the shoe is kept dry and free from accumulations of ice or snow thus insuring the best possible working conditions. Furthermore inasmuch as moisture can not reach the rail leakage of current due to wet weather, is obviated and the most effective application thereof is assured. The flange d' extending between the standards prevents the shoe ever projecting inwardly sufficiently to strike the standard and in any event, from the construction of the contact surface on the rail, the truck may shift considerably, transversely the track without in any way affecting the contact and invariably in either construction, the shoe is positively held in position to receive the current. In the construction shown in Figs. 5 and 7, directed lateral thrust is brought at all times against the rail by a shoe yieldingly supported thereagainst, and obviously variation of the truck on the track vertically can only result in lifting the shoe upwardly, engaging the flange d^2 or depressing it slightly when the shape of said flange d' of itself tends to resist the shoe slipping too low.

Of course, if desired the standard B may be insulated as before described to receive the third rail D′ and an air space may be utilized for insulation, as shown in Fig. 8, by securing at a suitable distance above the third rail a second metallic rail or plate or other suitable covering C^3, this, of course, need not be of insulating material as the distance will always be sufficiently great to prevent loss of current therefrom.

Obviously though I have described somewhat specifically a conductor or conductors embodying my invention, I do not purpose limiting this application for patent as to details, as obviously many variations of detail will be necessary at switches and in yards and it is obvious also that if desired, the conducting cables may be carried upon the conductor rail but may be otherwise disposed.

Any suitable insulating material may be employed and of course, the cross sectional form of the rail may vary as may also the specific contact. I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art.

I claim as my invention:

1. A device of the class described comprising standards adapted to be rigidly engaged to the track cross ties, an insulating cap fitting on said standard, a rail provided with downwardly extending contact flanges, outwardly directed flanges integral with the rail, an insulating covering supported by said outwardly directed flanges and extending outwardly beyond the same and a covering for said insulation.

2. In a device of the class described a third rail of structural form having parallel downwardly directed, longitudinal flanges on the under side, standards supported upon the track cross ties, each having a vertical web adapted to fit between said flanges, an insulating cap on said web, bolts extending from said standards upwardly through the rail and insulated therefrom and an insulating covering for said rail projecting laterally and downwardly therefrom.

3. In a device of the class described a third rail of structural form having central parallel, downwardly directed flanges, sup-

porting means engaged between the flanges, said flanges having concaved contact faces, outwardly directed supporting flanges integral with said rail and an insulating covering thereon.

4. In a device of the class described a third rail of structural form having longitudinal flanges on its under side, said rail having concaved contact faces to receive contact shoes, flanges integral with the rail convex on their upper sides, an insulating covering supported by said flanges having a longitudinal groove therein and a supply cable in said groove.

5. In a device of the class described a third rail having parallel flanges, a support engaged between the flanges, means insulating the flanges of the rail from the support, an insulating cover for the rail, attaching means extending through the cover and rail and threaded into the standard, means insulating the attaching means from the rail and a supply cable between the insulating cover and rail.

6. In a device of the class described a third rail of structural form having a concave contact surface and a convex upper surface, a convex insulating cover on said rail greater in width than the convex upper surface of the rail and a protecting covering for the insulation of greater width than the insulating cover.

7. In a device of the class described the combination with the third rail of standards insulated therefrom and supporting the same, said rail having laterally directed, thin flanges at the top thereof, an insulating covering for the third rail, extending outwardly beyond the edges of the flanges, an electrical cable supported on said third rail and insulated therefrom and covered by said insulating covering and a metallic covering for the insulating cover projecting outwardly beyond the edges thereof.

8. In a device of the class described standards, each having a base to fit on a tie, an insulating cap for the standard, a metallic rail fitting on said standards having a contact surface, an insulating cover for the rail, a protecting covering therefor and means extending through said covers and engaged to the standards for securing the covers and rail rigidly in place.

9. In a device of the class described supporting standards, an insulating cap on said standards, a third rail having parallel downwardly directed longitudinal flanges on the under side adapted to straddle the supporting standard, and the insulating caps on the standards, said rail being concaved on the sides, a relatively narrow flange on the top of said rail projecting beyond said longitudinal parallel flanges, an insulating covering for the top of the rail projecting beyond said upper flanges and a metal shield inclosing the same and projecting outwardly and downwardly beyond the insulating cover and an electrical cable partly inclosed in said insulating cover and beneath the shield.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

WILLIAM J. J. BURCH.

Witnesses:
C. W. Hills,
Wm. F. Fischer.