

(No Model.)

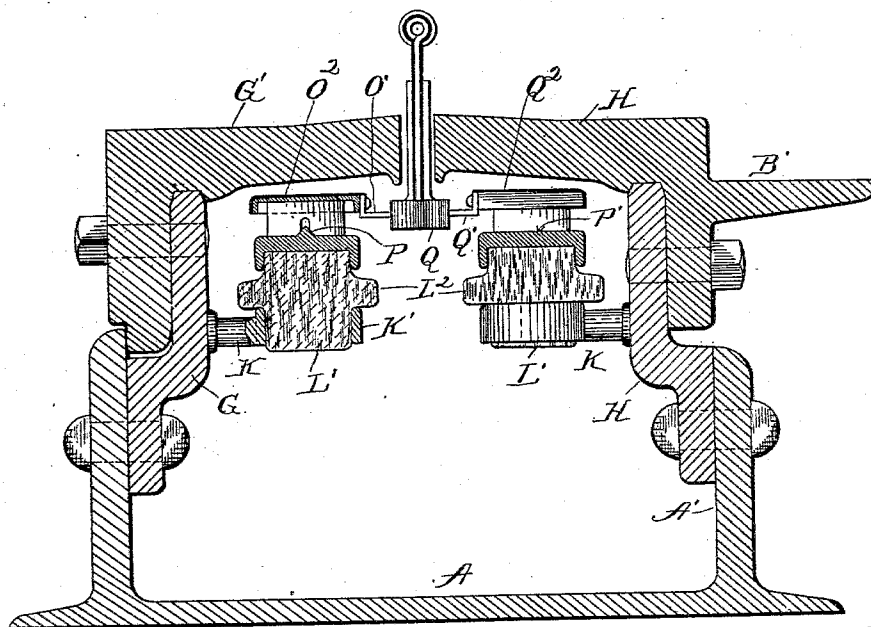
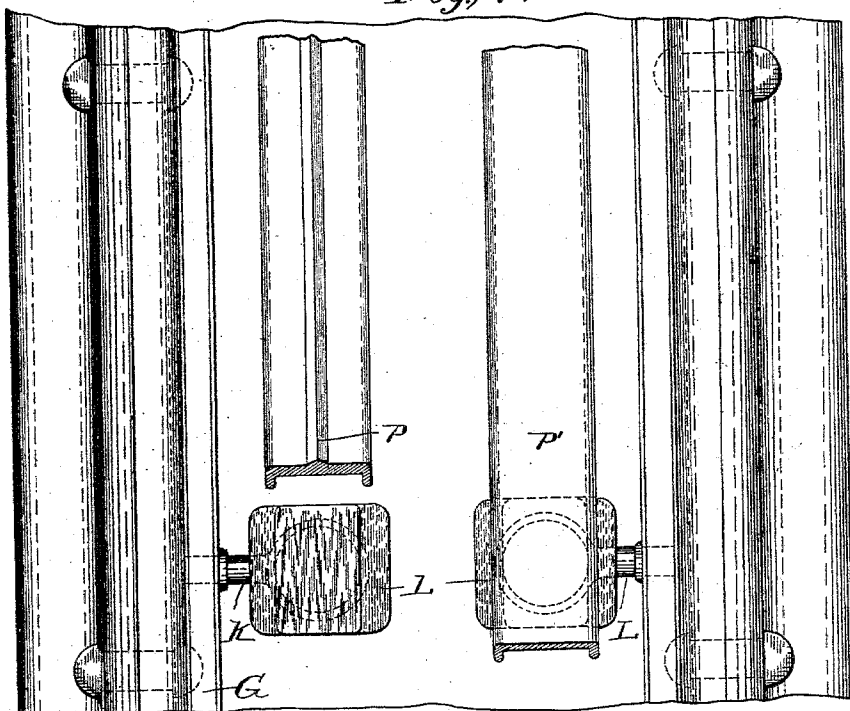
2 Sheets—Sheet 2.

H. BRANDENBURG.
ELECTRIC RAILWAY.

No. 565,102.

Patented Aug. 4, 1896.

Fig. 4.



Witnesses
H. Reis Edelen.
Geo. T. Smallwood.

Fig. 3. Inventor
Henry Brandenburg

UNITED STATES PATENT OFFICE.

HENRY BRANDENBURG, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES AUSTIN BATES.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 565,102, dated August 4, 1896.

Application filed May 18, 1895. Serial No. 549,575. (No model.)

To all whom it may concern:

Be it known that I, HENRY BRANDENBURG, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Railways; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in electric railways, the improvements being such as are more particularly applicable to underground conduits, although, as will be obvious to those skilled in the art, features of the invention may be used in connection with other systems.

The invention consists in certain novel details of construction and combinations and arrangements of the parts, all as will be now described, and pointed out particularly in the appended claims.

Referring to the accompanying drawings, Figure 1 is a section through a conduit embodying my invention and showing the trolley-conductors with a trolley partly in section. Fig. 2 is a top plan of the construction shown in Fig. 1. Figs. 3 and 4 are views similar to Figs. 1 and 2 of a slightly-modified form of conduit and trolley-conductor. Fig. 5 is a detail top plan view of one-half of a trolley-frame.

Like letters of reference in the several figures indicate the same parts.

The base A of the conduit is preferably rolled or formed with a flat bottom surface to rest on the ties and upwardly-extending webs A', forming the sides of the conduit. The webs A' are preferably integral with the bottom and serve to support the entire superstructure, including one of the rails for the wheels of the vehicle, if so desired. Where it is desired to form the conduit and wheel-rail together, I prefer to form the angle-iron B, constituting one of the slot-rails, with a wheel-seat and flange B', and to connect the downwardly-extending web B² of the slot-rail to the web A' by bolts or otherwise.

To resist the downward pressure on the angle-iron, I form a seat B³ for the edge of the web A'. This slot-rail would ordinarily be

permanently secured in place, and to provide for removing one of the slot-rails without the necessity of removing or breaking the surrounding paving I form at the top of the opposite web A' a horizontal seat with a vertically-arranged fastening device for securing the slot-rail in place. To simplify the construction of the conduit, I prefer to form this seat in a cheek-piece or supplemental web D, securely bolted to the web A'. This cheek-piece is formed with the flat or substantially horizontal and relatively wide seat D' at the top and with an upwardly-extending lip or flange D², forming a groove extending longitudinally of the conduit for the reception of the reduced edge E' of the slot-rail E. The two parts are secured by bolts F, preferably arranged vertically to facilitate removal without breaking the paving, as before stated.

The idea of bracing the removable slot-rail against being forced down at the edge of the slot, by securing its rear edge in a groove running the entire length of the conduit, it is obvious, may be carried out in connection with an angle-iron slot-rail, and in Figs. 3 and 4 such an arrangement is shown, the cheek-piece G in this instance being seated in the angle of the slot-rail G' and the groove being formed on the outside of the cheek-piece by the edge of the web A'. The slot-rails on both sides in this form are shown as secured to cheek-pieces, the right-hand slot-rail H being attached to a cheek-piece H', similar in cross-sectional shape to the cheek-piece G. Thus the webs A' may be made narrow and the cheek-pieces may be all rolled or formed alike and simply reversed for opposite sides of the conduit.

To the walls of the conduit I secure metallic insulator-brackets K, having horizontal rings or sockets K' at the ends for the insulator-shanks. These brackets in the preferred construction (see Fig. 1) are covered with porcelain k, which of itself constitutes a complete insulating-covering; but to absolutely guard against leakage of the current, through defective insulation or the accumulation of dirt, I mount in each of the rings or sockets K' a vitreous insulator L, having a downwardly-extending shank L', fitting in the ring or socket, and a top anvil or seat L² for sup-

porting the trolley-conductor M. The latter is relatively wide in cross-section and is provided at each side with depending flanges M' for embracing the insulator either directly, as in Figs. 3 and 4, or for embracing projections N on a cap N', which does embrace the anvil, as in Figs. 1 and 2. In every instance it is preferable to have the flanges M' extend the full length of the conductor, allowing for expansion or contraction and overcoming any difficulties incident to the location of the insulators longitudinally of the conduit.

The upper surface of the conductors are formed into longitudinal ways for the trolley, preferably as shown in Fig. 1, by forming V-shaped grooves O therein, terminating in a well or slot o at the bottom for holding oil and for insuring a proper wearing of the conductor to a central point, although it is obvious that a rib such as P, Fig. 3, may be employed, or if the trolley be suitably guided the conductor may be flat, as shown at P' in said figure, without departing from the invention.

The trolley which I employ in this structure for collecting the current consists of a suitable frame Q with electrical connections extending therefrom through the slot and laterally-extending arms Q', having housings or inclosing frames Q², surrounding loose contact-blocks R, which rest on the conductors. These contact-blocks being loose and there being preferably two of them (see Fig. 5) for each side, a perfect electrical connection is insured without creating appreciable friction and at the same time presenting a good wearing-body, which may be renewed instantly and at very slight cost.

The whole structure is simple, cheaply manufactured, and capable of being cheaply laid for practical work.

It will be understood when I have used or shall use in the claims the term "porcelain" insulator that I mean any vitreous insulator of a like nature, the term "porcelain" being used as a matter of convenience only.

I am aware that brackets for supporting conductors in a closed conduit have been heretofore covered with insulating compound, and I do not claim such construction broadly.

Having thus described my invention, what I claim as new is—

1. In an electric railway, the combination with the conduit having the continuous upwardly-extending side with a longitudinal groove therein outside of the conduit-chamber, of the slot-rail overlying the side of the conduit having its rear edge confined in said groove and fastening devices for retaining said slot-rail in place; substantially as described.

2. In an electric railway, the combination with the conduit having the upwardly-extending side with a longitudinal groove therein outside of the conduit-chamber and a bearing at the inner edge of the side, of the slot-rail overlying the side of the conduit seated on said bearing and having its rear edge reduced

and confined in said groove whereby the tilting of the slot-rail is prevented, and fastenings for the slot-rail; substantially as described.

3. In an electric railway, the combination with the conduit having the upwardly-extending side terminating in a substantially horizontal bearing and having a groove or recess outside of said bearing and outside of the conduit-chamber, of the substantially flat slot-rail overlying the side of the conduit and resting on said bearing and having its rear edge confined in said groove and fastening devices for the slot-rail; substantially as described.

4. In an electric railway, the combination with the conduit having the upwardly-extending side terminating in a relatively wide substantially horizontal bearing with an undercut or groove at the outer edge of the same above the level of the flat bearing, of a substantially flat slot-rail having the rear edge reduced and seated in said undercut or groove and vertically-arranged fastenings passing through the slot-rail into the bearing; substantially as described.

5. In an electric railway, the combination with the conduit having the upwardly-extending web, and the cheek-piece rigidly secured to said web and having the bearing for the slot-rail and a longitudinal groove or undercut, of the slot-rail having the rear edge seated in said groove or undercut and fastening devices uniting the cheek-piece and slot-rail; substantially as described.

6. In an electric railway, the combination with the conduit having the upwardly-extending web and the cheek-piece rigidly secured to said web and having the substantially horizontal bearing with the groove or undercut at the outer edge of the same, of the substantially flat slot-rail having its rear edge seated in the groove or undercut and vertically-arranged bolts passing through the slot-rail and into the cheek-piece; substantially as described.

7. In an electric railway, the combination with the conduit, of the metallic brackets mounted in said conduit and having the rings at the ends, the insulators having the enlarged top and reduced shanks seating in said rings and the trolley-conductors mounted on the insulators above the bracket; substantially as described.

8. In an electric railway the combination with the conduit and the supports for the conductor having upwardly-extending projections on each side of the center line, of the continuous conductor having longitudinal grooves at each side of the center into which said projections enter, the outer walls of said grooves forming downwardly-extending flanges to prevent the passage of moisture beneath the conductor; substantially as described.

9. In an electric railway, the combination with the conduit, of the trolley-conductor

having the longitudinal grooves on each side of the central line, forming downwardly-extending side flanges, the insulator having the central enlargement, and upwardly-extending anvil, and the cap fitting said anvil and having the upwardly-extending projections on each side of the central line for entering the grooves in the conductor to hold the conductor in place; substantially as described.

10 10. In an electric railway, the combination with the conduit, of the trolley-conductor having the downwardly-extending side flanges

the insulator having the central enlargement and upwardly-extending anvil and the cap fitting said anvil and coöperating with the conductor to hold the same in place and the supporting-bracket embracing the insulator below the enlargement; substantially as described. 15

HENRY BRANDENBURG.

Witnesses:

ALEX. S. STEUART,
A. M. KELLY.