

(No Model.)

2 Sheets—Sheet 2.

M. LOWD.
INTERSECTING ELECTRIC RAILWAY TRACKS.
No. 528,959. Patented Nov. 13, 1894.

Fig. 6.

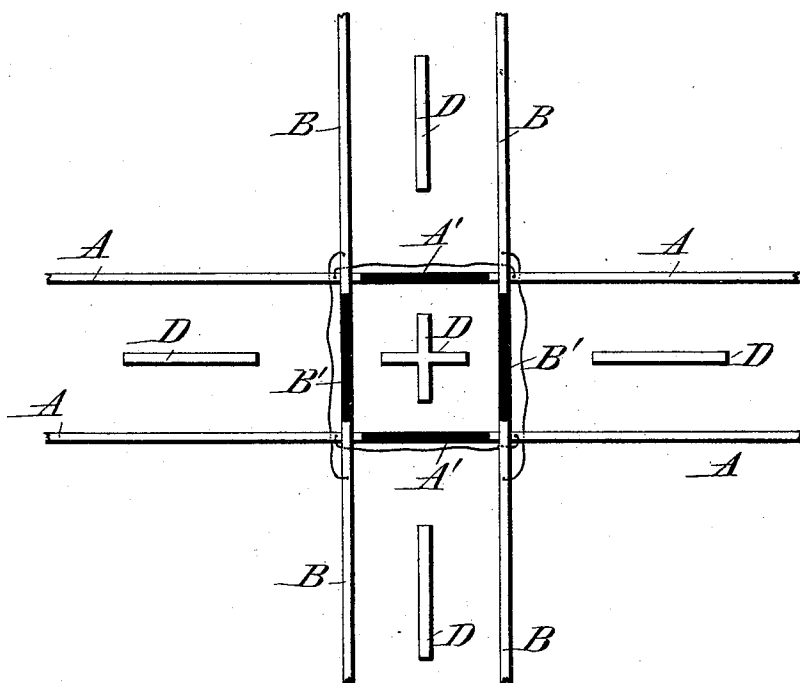
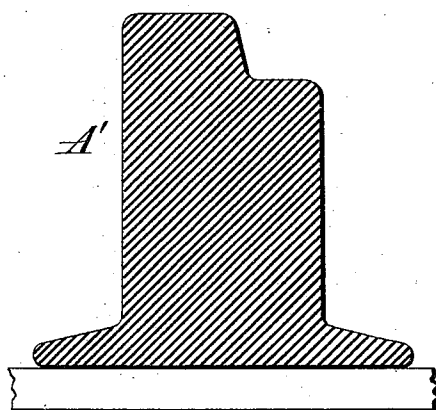


Fig. 7.



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INTERSECTING ELECTRIC-RAILWAY TRACKS.

SPECIFICATION forming part of Letters Patent No. 528,959, dated November 13, 1894.

Application filed February 10, 1894. Serial No. 499,825. (No model.)

To all whom it may concern:

Be it known that I, MARK LOWD, a citizen of the United States, residing at Salem, Essex county, Massachusetts, 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 invention, such as will enable others skilled in the art to which it appertains, to make and use the same.

My invention relates to improvements in electric railway systems.

The object of my invention is to produce a crossing, or turnout especially adapted for use on those electric railways in which the current is conveyed to the car by discontinuous conductor sections which are energized in succession by the movement of the car along the track, through the intervention of suitable mechanism, as will be fully understood by those skilled in the art.

In all the systems just described, it is customary to use the track as a return conductor, and, in such cases, when the car is moving over a crossing or turnout, the current collectors will come into contact with the lead rails of the turnout, or with the cross rails of the crossing, and, at such contact, will short-circuit the current, so that it will not pass through the motor on the car. In this way, the car is left without motive power and must depend upon momentum to carry it past the turnout or crossing. This is inconvenient, especially in cities where it is inadvisable to run cars near a crossing at such a speed as is necessary to acquire the requisite momentum. Moreover, when the current is short-circuited, as above described, every car on the line will be affected and the fuse-wires endangered, as will be fully understood by those skilled in the art. By my construction, these disadvantages are avoided, inasmuch as the lead rails or cross-over rails, &c., cannot short-circuit the power supply when a car is crossing.

My invention consists in providing a crossing or turnout with cross rails or lead rails of non-conducting material, either in whole or in part.

My invention consists, also, in such other features, details and combinations of parts, as will first be described in connection with

the accompanying drawings, and then particularly pointed out in the claims.

In the drawings—Figure 1 is a diagrammatical plan view of a portion of a street-railway track, showing a crossing, and a turnout, embodying my invention. Fig. 2 is a detail section, partly in elevation, on the line 2—2, Fig. 1. Fig. 3 is a transverse section of one form of rail constructed in accordance with my invention. Fig. 4 is a longitudinal section on the line 4—4, Fig. 3. Fig. 5 is a transverse section of another form of rail constructed in accordance with my invention. Fig. 6 is a diagrammatic plan view, illustrating the manner of completing the electrical circuits when intersecting rails composed wholly of insulating material, are used. Fig. 7 is a section of one form of intersecting rail constructed entirely of insulating material.

Referring to the drawings, A are the rails of an ordinary railway-track, which are crossed by the rails, B, extending at right angles thereto, and forming part of another track.

C are the rails of a turnout from the main-line rails, A.

D are disconnected surface-conductors, adapted to be successively and intermittently energized in any suitable way, by an electric current, when a car, E, passes over them, the car being provided with suitable current-collecting devices, *e, e'*, as shown in Fig. 2. These current-collectors bear on the conductors, D, the spaces, *d*, between the ends of the conductors and the distance between the current collectors, *e, e'*, being so proportioned that, when one collector, as *e*, is over a space, *d*, the other collector, *e'*, will be in contact with one of the conductors, D. As the car moves along the track, the forward collector will first come into engagement with the section of conductor, D, and then the rear brush will be engaged, so that, in this manner, there will always be a connection between one of the conductors, D, and the motor-terminal, *f*, on the car, the other terminal, *f'*, of the motor, F, being in connection with the rails, A, through the car-axles and wheels, the rails, A, forming the return-circuit, as is usual in constructions of this kind.

The construction thus far described is old

and well-known, and has been described for the purpose of rendering my invention, now to be described in detail, intelligible. My invention consists, broadly, in making such sections of the rails of the railway-track, onto which the current-collectors, or brushes, e, e' , contact in the progress of the car, such as, for example, the cross-rails, A', B' , entirely, or, in part, of insulating material, such as, for example, wood, papier-maché, indurated fiber, &c.

In my construction, the cross-rails, B' , for the track, B , and the cross-rails, A' , for the track, A , are preferably made as hereinafter described.

The web, g , and base, g' , of the rail, are of metal, as shown in Figs. 3, 4 and 5, and the tread, g^2 , is made of some suitable insulating material, which is secured to the rail-web, preferably by bolts.

In the form of rail shown in Figs. 3 and 4, the insulating material, g^2 , is extended downward, as at g^3 , on each side of the web, g , and is secured by bolts, g^4 , which pass through holes in the insulating material and through holes in the web. The bolts, g^4 , are surrounded by sleeves or bushings, g^5 , of insulating material, as an additional protection. The bolts are held in place by nuts, g^6 . By thus insulating the bolts, the danger of short-circuiting in wet-weather is greatly reduced, for, if the water should overflow the tracks, the distance from the top of the tread, where the current-collector contacts in crossing, to the base of the rail, is enough to greatly reduce the amount of current that would flow through the water, whereas, if the bolts were not insulated, the current would have a less distance to flow through the water, and hence a less resistance to overcome.

In the form shown in Fig. 5, the insulating material extends down on both sides of the tread, but is extended along the web on one side only, where it is secured by bolting. In this construction, the insulating sleeves or bushings may be employed, or not, as desired.

From what has been said, the construction of the turnout in Fig. 1 will be readily understood, the lead-rail, C' , being made of insulating material, in a manner similar to the cross-rails, A' and B' .

While I have mentioned a crossing and turnout as provided with my improvement, I will use the generic term, "intersecting rail," as embracing both the lead-rail of the turnout and the cross-rails of the crossing, as such rails intersect the main line.

In some instances, the entire intersecting rail sections may be made of insulating material, as shown in Fig. 7 the connection between the conducting rails on both sides of such insulating rails being established by suitable conducting-wires, running through or alongside such non-conducting rail-sections, as will be fully understood from Fig. 6. Furthermore, it is to be observed that, in my preferred construction, while the tread of the

rail is of insulating material, the base and web are of metal, so that the rail does not interrupt the electric circuit. In other words, the rails, B' , for instance, form an electrical connection between the rails, B , so that no bind-wires are needed.

In all forms of intersecting rails under my invention, it is to be understood, however, that the essence of the invention is that the tread is made of insulating material.

It is manifest that, in a track constructed under my present invention, the brushes or collectors, e, e' , when they contact with the intersecting rails, A', B' , or C' , cannot establish a circuit through such intersecting rails and hence short-circuit the motor-current. Under the former track-constructions, where such intersecting rails were not of insulating material, when a car was passing over a crossing on the track, A , if the forward brush should contact with the cross-rails, B' , the latter would short-circuit the current, that is to say, the current which would be flowing to the motor-circuit would have a return path offered to it, through the front brush, by way of the cross-rails, B' , and the track, A , which path would be of so much less resistance than the motor-circuit that, practically, the whole current would flow that way, leaving the motor without sufficient current to operate it. Moreover, in this way would arise the danger of burning out the fuse-wires along the line, when such wires are used, and other cars, receiving their power from the same source, would have their proportionate supply of current either greatly reduced, or altogether withdrawn. All these objections are avoided in a track-construction under my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric-railway crossing or turnout, the combination, with the main-line rails, of a rail at an angle to said main-line rails and provided with a tread of insulating material in the path of the current collector carried by the car on the main line, substantially as set forth.

2. In an electric-railway crossing or turnout, an intersecting rail having a tread of insulating material and a base of metal, said intersecting rail being in the path of the current collector on the car, substantially as set forth.

3. In an electric-railway crossing or turnout, an intersecting rail having a tread of insulating material and a web and base of metal, said intersecting rail being in the path of the current collector on the car, substantially as set forth.

4. In an electric-railway crossing or turnout, an intersecting rail having a web and base of metal and a tread of insulating material secured to the web, said intersecting rail being in the path of the current collector on the car, substantially as set forth.

5. In an electric-railway crossing or turn-

out, an intersecting rail consisting of a web
of metal provided with bolt-holes, a tread of
insulating material arranged to fit on the web
and provided with bolt-holes registering with
5 those in the web, a series of bolts passing
through the holes in the tread and through
the holes in the web, and a bushing of insu-
lating material surrounding each bolt where

it passes through the web, substantially as
set forth.

In testimony whereof I affix my signature in
presence of two witnesses.

MARK LOWD.

Witnesses:

E. A. PAUL,
M. C. MASSIE.