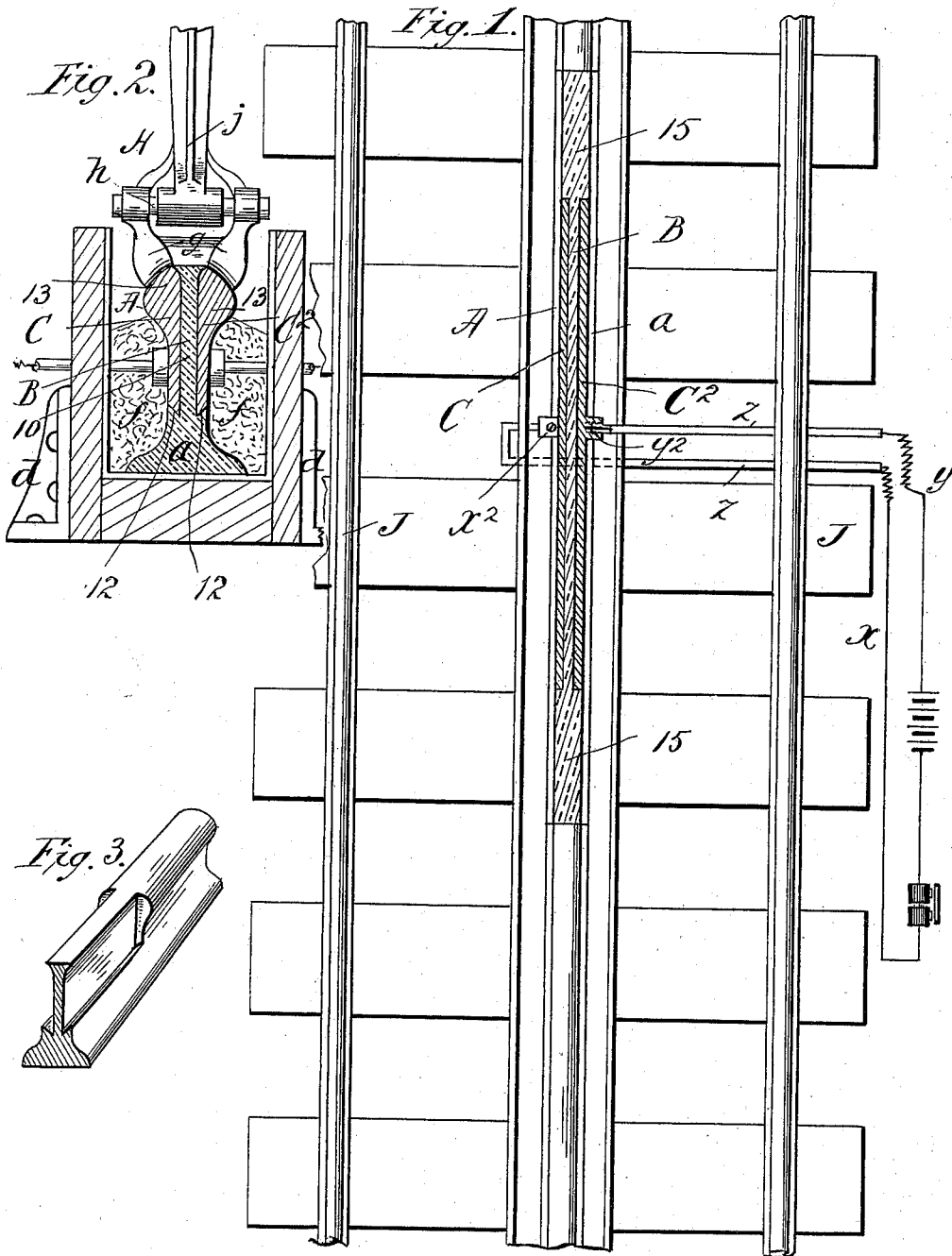


(No Model.)

L. E. WALKINS.  
RAIL CONDUCTOR FOR ELECTRIC SYSTEMS.

No. 604,098.

Patented May 17, 1898.



Witnesses:  
M. A. Campbell  
A. W. Smith.

Louis E. Walkins,  
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by M. S. Bellon,  
Attorney.

# UNITED STATES PATENT OFFICE.

LOUIS E. WALKINS, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO FRANCKE W. DICKINSON, OF SAME PLACE.

## RAIL CONDUCTOR FOR ELECTRIC SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 604,098, dated May 17, 1898.

Application filed August 18, 1897. Serial No. 648,737. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS E. WALKINS, a citizen of the United States, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Rail Conductors for Electric Systems, of which the following is a specification.

This invention relates to improved rail conductors for electric-railway systems and other electric systems, such as electric signaling systems, wherein a circuit is closed through that portion of the rail upon which the car may be running by a portion of or an attachment to the car—such, for instance, as a running shoe or trolley-wheel.

In carrying out my invention I provide an insulated or non-conducting rail-section and place along and against the opposite sides thereof two conducting rail-sections, the one separated from the other by the intermediate non-conducting rail-section of insulating material, and to each of the opposing conducting rail-sections or electrodes current-wires are connected or bonded, all so that when the shoe or like device of the trolley runs over the rail, constituted by the opposite electrodes and insulated intermediate section, said shoe is in contact on both of the electrodes, and the completed circuit may be established comprising both electrodes.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a portion of an electric railway comprising the improved sectional rail embodying the two electrodes and the intermediate separating insulating material, a portion of the sectional rail being in horizontal section. Fig. 2 is a cross-section through the improved rail and through the timber conduit or support therefor and also indicating a circuit-closing traveling shoe. Fig. 3 is a perspective and cross-sectional view of the insulated rail-section.

Similar letters and numerals of reference indicate corresponding parts in all of the views.

In the drawings, A indicates the sectional rail, of which B is the body or main section, composed of insulating material, such as vulcanite or other hard and durable material

which is a non-conductor of electricity, C C<sup>2</sup> being the longitudinally-extending rail-sections or electrodes, advantageously constituted by copper. The middle section B has the widened base *a* and the upstanding narrower portion 10, with the shoulders or rests 12 12 at either side where it meets the base.

The electrodes C C<sup>2</sup> have the flat inner faces to lie against the sides of the section B, their tops being widened, as seen at 13, while their narrow lower portions have their bottom edges downwardly beveled to engage in the undercut rests or shoulders 12. The end portions 15 15 of the middle section B are widened and have approximately the same cross-sectional form as the combined sections B and C C<sup>2</sup>, the sides of the section B intermediate between its widened end portions 15 being recessed or let in for the purpose of receiving the electrodes C C<sup>2</sup>, and it will be seen that the electrodes of one rail length are by the widened portions 15 of the intermediate insulating-section insulated end wise from the metal rails, which are shown as end wise joined to the sectional rail A.

The metallic and insulating sections C B C<sup>2</sup> are firmly united by bolting, riveting, or clamping, and are supported in the timber conduit D, which conduit has at its sides cast or wrought iron braces *d*, and in this conduit, between the trough sides thereof and the sectional rail, is a body of insulating substance or material—such, for instance, as concrete—in which the electrodes, except as to the tread portions thereof, are embedded, as is also the base of the sectional rail.

*x* and *y* represent current-conducting wires, the one *x* running to connection with the electrodes C, being in contact thereon or bonded thereto at *x*<sup>2</sup>, while the wire *y* extends to electrical contact with the electrode C<sup>2</sup>, as seen at *y*<sup>2</sup>. These electric wires in the vicinity of the railway are inclosed in tubes *z*, whereby their insulation is protected or insured.

H represents a traveling shoe having bearing portions *g g*, both secured by the joint *h*, which electrically connects them, one shoe to the other, to the supporting-arm *j*, which is understood as constituting an "underrunning trolley." It will therefore be seen that as the shoe comes upon the portion of the

sectional rail in which the three sections C B C<sup>2</sup> are located it, by its electrical contact on the outer opposing said sections, completes a circuit by connecting these two sections or

5 electrodes.

I will here state that a manner of utilizing a circuit through a third rail of a railway system such as here illustrated, located between the usual track-rails J J, may be various and  
10 for different specific purposes, and, as shown in Fig. 1, the wires *x y*, constituting an electric circuit to be closed by joining the electrodes C C<sup>2</sup> by a conductor, comprise a battery or generator *w*, and there is also indicated as comprised in this circuit an electro-  
15 magnet *v*, of which *v*<sup>2</sup> indicates the armature. It will therefore appear that when the circuit becomes active and the electromagnet energized the armature by its movement may be  
20 utilized for mechanically performing whatever work may be imposed upon it to do.

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

25 1. The combination of several rails in end-to-end arrangement, an intermediate one A thereof consisting of two opposite longitudinally-ranging metallic sections and an intermediate rail of non-conducting material sup-  
30 porting and insulating said sections, end portions of said intermediate rail overlying the

ends of said metallic sections and serving to insulate the respective metallic side sections at their ends from the rails adjoining the ends of said intermediate sectional rail A, substantially as described.

2. In a railway, the combination with the usual side track-rails J J, and the intermediate third rail comprising lengths of rail in endwise arrangement, an intermediate one A of these rails or sections consisting of two opposite longitudinally-ranging metallic sections, and an intervening length of non-conducting material supporting and insulating said opposite metallic sections, the ends of said latter sections being insulated from the rails which endwise adjoin the said rail-section A, and which are of metal, wires *x y* joined to said metallic sections and forming an electric circuit comprising therein a generator, and an electromagnet also comprised in said circuit having an armature, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 25th day of May, 1897.

LOUIS E. WALKINS.

Witnesses:

WM. S. BELLOWS,  
M. A. CAMPBELL.