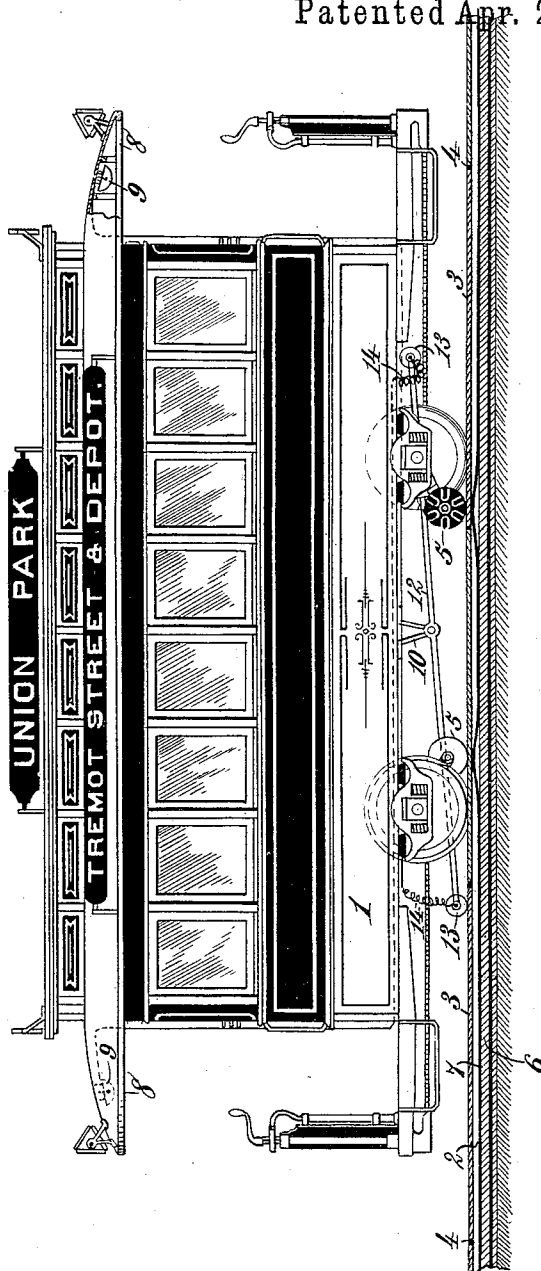


(No Model.)

L. DION.
SAFETY DEVICE FOR ELECTRIC RAILWAYS HAVING SECTIONAL
CONDUCTORS.

No. 536,923.

Patented Apr. 2, 1895.



WITNESSES.

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SAFETY DEVICE FOR ELECTRIC RAILWAYS HAVING SECTIONAL CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 536,923, dated April 2, 1895.

Application filed June 14, 1894. Serial No. 514,597. (No model.)

To all whom it may concern:

Be it known that I, LÉON DION, a citizen of the United States, residing at Natick, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Systems of Electrical Propulsion for Railway-Cars, of which the following is a specification.

My invention relates to systems of electrical propulsion for railway cars of the type shown and described in applications for Letters Patent of the United States filed concurrently herewith, and numbered in serial 514,596, 514,600 and 514,604, in which the car motor is supplied with current by an auxiliary conductor, or feeder, deriving current from a main feeder, on which it lies and from which it is lifted by magnetic attraction, to make contact with a conducting plate, or series of plates, covering the conduit, the current communicated to said plate, or plates, being taken off by a trolley, or other means suitable for such purpose. Practically, there is no danger, in operating these systems, from accidental short circuits, by which passengers on foot, or animals, can receive shocks. It is my purpose, nevertheless, to make ample provision for all contingencies, however remote, not only with the view of excluding improbabilities, but to remove, also, every possible objection which may be offered to the installation of such systems in large towns and cities, where the roadway follows streets that are constantly crowded.

It is the special purpose of my present invention, therefore, to provide an automatic signal, operated by electricity, which shall notify the motorman upon a car of the existence of a condition which would result in leaving one, or more, of the conducting plates through which the motor receives its current, in electrical communication with the high tension feeder, thereby causing such plate, or plates, to remain fully charged.

It is my purpose, also, to provide each car with an automatic electric alarm signal of this character, so arranged that the existence of the only condition from which danger can be apprehended shall be indicated to the motorman upon the car, before the latter has passed the point at which such condition exists.

My invention also comprises the provision of means whereby the automatic signals, located at both ends of the car, can be operated at the end where the motorman is posted, the device by means of which current passes to said signal being arranged to follow the trolley, or brush, by which the return circuit from the motor is completed.

The invention consists, to these ends, in the novel features of construction and new combinations of parts hereinafter fully described and then particularly pointed out and defined in the claims which make part of this specification.

To enable those skilled in the art to which my invention pertains to fully understand and to construct and use the same, I will proceed to describe said invention in detail, reference being had, for this purpose, to the accompanying drawing, in which the figure is a side elevation of a car equipped with my invention, the conduit, or sub-way, with one of the conductors, or feeders, being shown in vertical section in the line of the conduit.

The reference-numeral 1, in said drawing, indicates a railway-car of the type in common use upon lines employing electric energy as the means of propulsion. The motor mechanism used upon these cars is well understood and it is unnecessary to illustrate it in the drawing, or describe it in this specification. I have shown in the drawing only the means for taking current off the feeder, or conductor, and returning it to the return feeder, together with the parts constituting the present invention.

The conductors, or feeders, by which current is supplied to and returned from the motor, are laid in conduits, or sub-ways, between the rails, one of said conduits being indicated by the numeral 2. The conductor, or feeder arranged therein is entirely inclosed, the top of the conduit being formed of a series of contact-plates 3, having electric conductivity, but free from magnetic saturation. Each plate is isolated from the rest by insulating material 4, and being substantially flush with the surface of the road-bed, the series of plates forms a contact surface for the trolley 5, or other device for taking off, or returning the current. Each conduit contains a main conductor, or feeder 6, suitably insulated, and

a flexible, auxiliary conductor 7, composed wholly, or in part, of a metal capable of conducting electricity and susceptible, also, to magnetic attraction. Lying upon the main conductor, in suitable proximity to the contact-plates 3, it is lifted at, or near, the point where the trolley, or brush 5, rests upon the contact-plates as shown in the drawing, and is held in such engagement with said plates that a sufficient part of the current is taken off and supplied to the motor.

The specific forms in which the conduit and the main and auxiliary feeders may be used are shown and described in separate applications for Letters Patent filed by me of even date herewith, numbered in serial 514,596 and 514,600. With a system organized in this manner, it will be seen that the inclosed feeders are, normally, out of contact at all points save those beneath the contact-points of the trolleys or brushes. As the contact-plates 3 are non-magnetic, while the auxiliary conductors 7 are usually constructed in such manner that the soft iron filament in each is inclosed between non-magnetic filaments, there is no ground for apprehending that the auxiliary feeder will stick, or adhere to the plates 3 after the car has passed. Moreover, the interval through which the auxiliary is lifted is so small that it is practically impossible that a permanent contact can occur, due to mechanical conditions. In order, however, to enable such an occurrence to be instantly detected, before the car has moved far enough to expose the point where it takes place, I provide the following means: Mounted upon each end of the car, in any convenient position, as, for example, beneath the hood 8, is a signal, preferably of the audible type, such as an ordinary electric bell, or gong 9. Upon the body of the car, is a bracket 10, hanging from its bottom and giving pivotal support to a long bar or rod 12, which projects upon both sides of the point of support, its extremities being between the ends of the body of the car and the wheels. Upon each end of the bar is suitably mounted a device adapted to conduct an electric current through the medium of the contact-plates 3. This device may be of any preferred form such as a trolley 13, of somewhat less diameter than the trolley 5. A wire 14 leads from each of these devices to the bell-coil, and as the bar 12 swings upon its pivotal axis in the bracket 10, either end may be depressed and the other end simultaneously raised, so that the device which is in actual contact with the plates 3 may follow the rearmost trolley 5. Should the auxiliary feeder 7 remain in electrical contact with a contact-plate, at any point, the trolley 13 upon coming in contact with the same plate, will transmit current to the bell-

coil and the signal 9 will be sounded, thereby informing the motorman, who stands beneath, that a dangerous condition exists. This notification will take place before the car has gone far enough to expose the plate which remains charged.

I may use two of the trolleys 13, at each end of the bar 12, each being electrically isolated from the other and from the opposite end of the bar, the arrangement being such that one will travel upon each series of contact-plates.

The simplicity and utility of the invention require no comment.

What I claim is—

1. In an electric-railway, the combination with a car taking current from a series of contact-plates, of an electrically operated signal, and contact devices connected with said signal and adjustable toward and from the contact-plates, in order to follow the rearmost current collecting device, substantially as described.

2. In an electric-railway, the combination with a car taking current from a series of contact-plates, of electrically operated signals arranged at both ends of the car, a centrally supported bar, and devices mounted upon the ends thereof and electrically connected to said signals, substantially as described.

3. In an electric-railway, the combination with closed conduits, a main conductor and a flexible auxiliary conductor arranged in each of said conduits, of a car having current-collecting devices making electrical contact with insulated plates closing the tops of said conduits, a centrally supported bar, a current-collecting device on each end of said bar adapted to make contact with the insulated plates, an audible signal at each end of the car, and wires connecting said devices with the signals, substantially as described.

4. In an electric-railway, the combination with a car having current-collecting devices moving upon contact-plates of audible signals arranged at both ends of the car, a bar centrally pivoted on a bracket hanging from the bottom of the car, current-collecting devices mounted on the ends of the bar, between the trolleys and the car-platforms, and wires connecting said devices with the signals, said bar being adjustable on its support whereby one current-collecting device may be brought into contact with the contact-plates, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

LÉON DION. [L. S.]

Witnesses:

FRED JOY,
ALFRED C. SMITH.