

No. 627,475.

Patented June 27, 1899.

W. M. BROWN.
ELECTRIC RAILWAY.

(Application filed May 5, 1897.)

(No Model.)

Fig. 1.

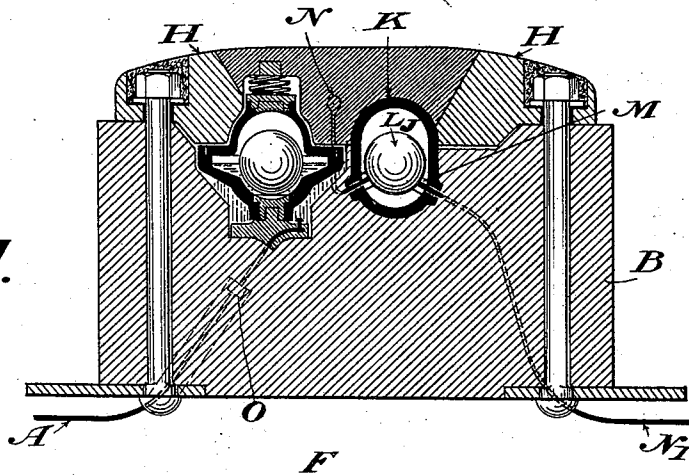


Fig. 2.

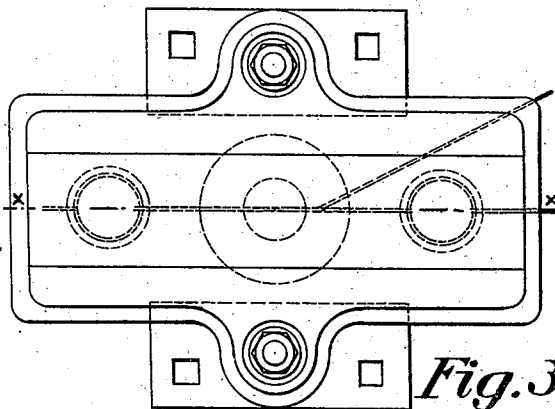
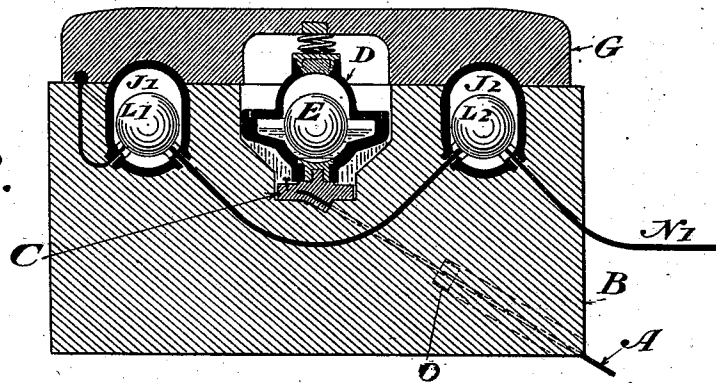


Fig. 3.

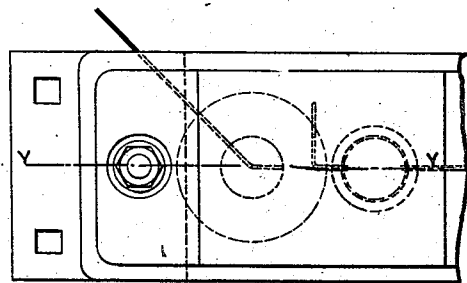


Fig. 4.

WITNESSES:

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ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 627,475, dated June 27, 1899.

Application filed May 5, 1897. Serial No. 635,234. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MILTON BROWN, of Johnstown, Cambria county, Pennsylvania, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

My invention relates to that class of railways in which non-continuous or isolated contacts are located at about the ground-level and are normally disconnected from the source of electric supply, but are adapted to be connected with said source of supply by a magnet which closes said circuit by the movement of an appropriate armature.

I show my invention in conjunction with a contact-box adapted for use with the electric-railway system invented by me and described in Letters Patent No. 558,151, issued April 14, 1896. I do not, however, limit myself to the use of my invention upon the particular type of structure or system shown. In all systems of this class there is danger that the armature may remain in circuit with the contact portions of the box by becoming welded to that portion of the switching mechanism against which the magnetic field has drawn it. In some cases this danger has been obviated by supplying a carbon contact against which the armature may be drawn; but this has sundry disadvantages.

It is the object of this invention to provide means for establishing a short circuit between the contact-box and the other side of the circuit whenever the armature welds fast, and thereby puts the contact portion of the box permanently in circuit with the source of supply. By short-circuiting the box in this manner a safety device, such as a fuse, which is provided to open the circuit in case of overload, will at once be opened, and notice would be at once given of the mishap.

Referring to the drawings, Figure 1 represents a transverse section, on the line Y Y of Fig. 4, of a contact-box embodying my invention; and Fig. 2 shows a longitudinal section, on the line X X of Fig. 3, of a box, showing a modification of my invention. Fig. 3 is a plan view of the box shown in Fig. 2, and Fig. 4 is a plan view of the box shown in Fig. 1.

The wire A, leading from the source of supply, enters the brick base B and is secured

to a pedestal C within a cavity in the base. The sealed cup D within this cavity contains mercury, which is in direct electrical connection with the pedestal C. Floating in this mercury is the ball E, made of magnetic conducting material, which is adapted to be drawn up against the contact F by means of a traveling magnet having parallel longitudinal poles adapted to straddle the contact portion G of the box. G is made of non-magnetic conducting material.

H H represent the sides of the box-cover, which are made of a magnetic conducting material.

Thus far there is nothing new in the apparatus described, as it has been either shown in the aforesaid Letters Patent or in pending applications for Letters Patent which have been filed prior to the present application.

Referring to Fig. 1, J is a second cavity formed by the base and cover of the box and surrounded with insulating material K. Within this cavity is a ball L, of iron or other similar material, resting upon two contacts M M, one of which is in direct connection with the cover of the box by means of the wire N and the other of which is in direct connection with the ground side of the circuit by means of the wire N'.

When the traveling magnet passes over the box, the balls E and L will be lifted simultaneously. When the magnet leaves the box, the balls should drop simultaneously; but in case ball E should become welded to contact F by an accidental leakage of current nothing will prevent ball L from dropping against the contact M M. The moment this has happened the current will pass through A, C, E, F, G, N, L, and N' to the ground side of the circuit, and the fuse, which is shown at O, will at once open the circuit.

It is not essential to provide a fuse, as the power-house circuit-breaker might be relied upon to open the circuit. It is, however, preferable, as by such provision only the faulty box would be cut out of circuit. It is of course clear that some other form of circuit-opener could be provided instead of the fuse, if desired.

The modification shown in Fig. 2 is one which I would use if I should prefer to length-

en the box rather than to use the necessary width to have two balls side by side. In this case there are two auxiliary balls L^1 and L^2 placed in separate cavities J^1 and J^2 , one of which is in advance of the main switch and one in the rear thereof. Two balls are provided so as to allow the car to pass over the box in either direction. If but one ball should be provided, it is clear that when the car is passing over the box in one direction ball E would be raised before the auxiliary ball, and a short circuit would be the result at a time when only harm would be caused thereby.

I do not limit myself to the exact details which I have shown and described, for it is clearly evident that my invention may be used upon railways which do not exactly resemble the one here described. It is also clear that the switch which I have shown to illustrate my invention specifically may be altered in many ways without departing outside the scope of my invention.

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

1. The combination of a contact, a circuit-closing armature below said contact in connection with one side of the electric circuit and normally disconnected from said contact, and a second armature below said contact normally in connection with the opposite side of the circuit and with the contact.

2. An electric contact-box containing a magnetically-actuated circuit-closer between the top of the box and the source of supply in combination with a magnetically-actuated,

and independently-movable, circuit-opener between the top of the box and the ground side of the circuit.

3. In an electric contact-box, a magnetically-actuated circuit-closer, in combination with a circuit-opener comprising an armature normally bridging two contacts, one of which is in direct electric connection with the contact portions of the box, and the other of which is in direct electric connection with the opposite side of the circuit.

4. In an electric contact-box, a cavity containing a circuit-closer adapted, in its movement, to connect the contact portions of the box with one side of the electric circuit, in combination with a second cavity lined with insulating material and containing an armature normally closing the circuit between a pair of contacts one of which is in connection with the contact portions of the box and the other of which is in connection with the opposite side of the circuit.

5. In an electric contact-box, in combination, a pair of cavities, an iron ball in each of said cavities, one of said balls normally opening the circuit between the contact portion of the box and one side of the circuit, the other of said balls normally closing the circuit between the contact portion of the box and the opposite side of the circuit.

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

WILLIAM MILTON BROWN.

Witnesses:

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F. G. AUKAM.