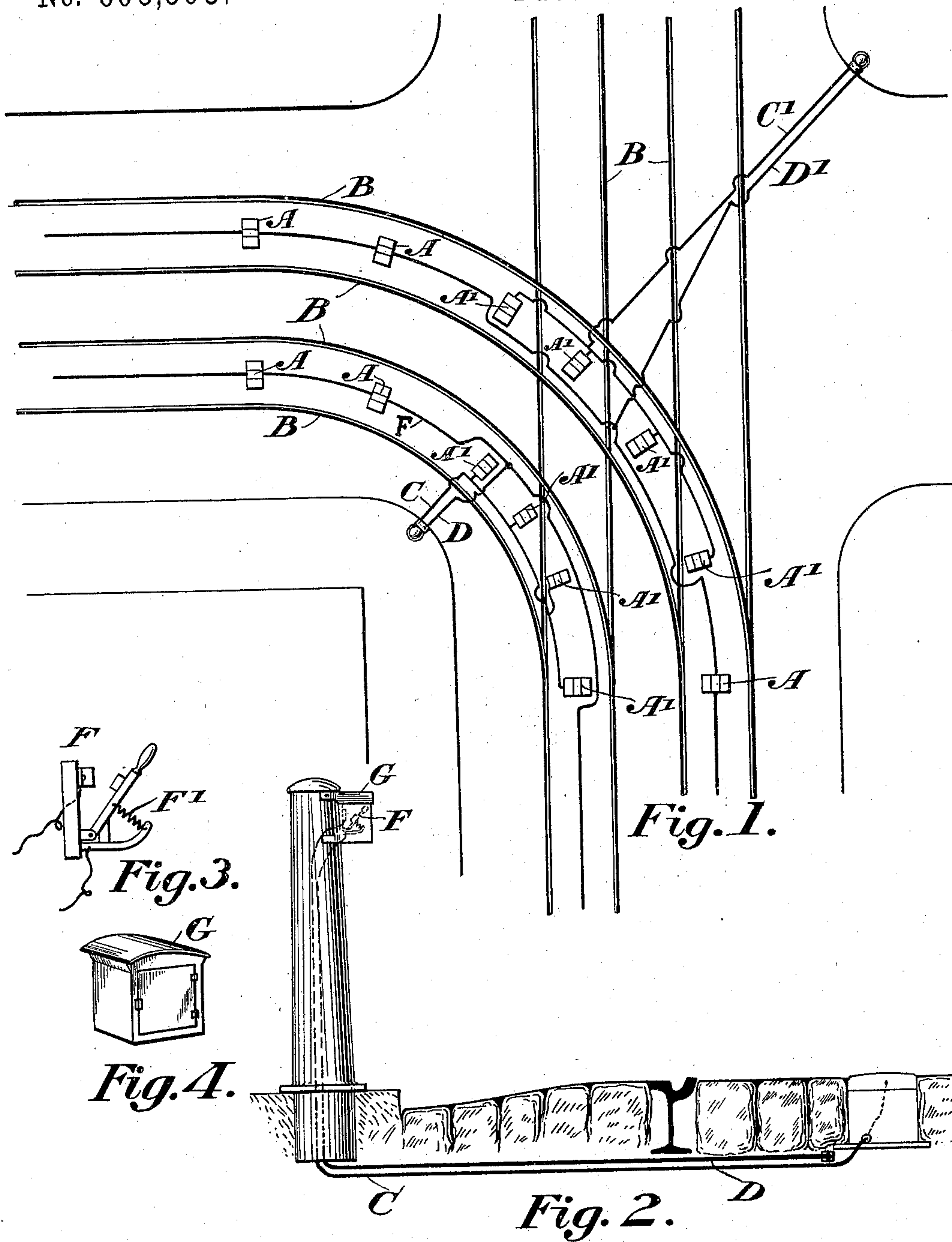


(No Model.)

A. J. MOXHAM.  
ELECTRIC RAILWAY.

No. 605,503.

Patented June 14, 1898.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

ARTHUR J. MOXHAM, OF LORAIN, OHIO, ASSIGNOR TO THE JOHNSON COMPANY, OF SAME PLACE.

## ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 605,503, dated June 14, 1898.

Application filed November 18, 1897. Serial No. 659,006. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR J. MOXHAM, of Lorain, Lorain county, Ohio, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

My invention relates to that class of electric railways in which disconnected contacts are placed at about the ground-level and are in series with the source of supply through a magnetically-operated switch which is normally open, but which is adapted to be closed when the propelled vehicle is directly over the contact. I have had special reference in devising this invention to that class of railways in which the said switch is actuated by a magnet carried beneath the car-body of the propelled vehicle; but I do not limit myself to such use of my invention. In this class of railways there is considerable difficulty experienced in crossing other tracks, for the rails of the track are nearly always used as the conductors for one side of the circuit. For this reason it is very easy to establish a short circuit between the two sides of the circuit, because the rails of one track cross the line of travel of the magnet and collecting-shoe. The most frequent cause for short-circuit under such conditions is apt to arise from small pieces of magnetic material being picked up by the poles of the magnet and engaging the contacts or crossing-rails. It is the object of my invention to avoid this danger, and I do so by providing special contacts at such locations, which, like the balance of the contacts, are normally cut out of circuit, but which, unlike them, are not in series with magnetically-operated switches, and therefore cannot be put in circuit with the source of supply by means of the traveling magnet. When the vehicle approaches these contacts, it loses all power and can only drift across the crossing-rails. In this way the magnet and collecting-shoe become dead before they reach the track-rails and no short circuit can be made.

Another part of my invention consists in providing means whereby, in case the vehicle should become stalled when over these special

contacts, power can be temporarily supplied to it in such a way that it can pull off to the regular contacts without requiring energy for the magnet while over the crossing-rails.

Referring now to the drawings accompanying this specification, Figure 1 is a plan view of branching tracks with contacts arranged in accordance with my invention. Fig. 2 is a sectional view of a part of the same. Fig. 3 is a view of a switch such as I prefer to use in circuit with the special contacts. Fig. 4 is a view of the box inclosing the switch.

A A represent the contacts which are in circuit with magnetically-operated tracks.

B B are the track-rails of both the main and diverging switches.

A' A' represent the special contacts, which, as shown in Fig. 1, are so arranged that they are distributed along the track on each side of where the track-rails B of the main track cross the line of travel of the magnet and collecting-shoe.

C is a conductor which is in direct electrical connection with the contacts A' of the track. The conductor C passes to one of the terminals of the spring-switch F within the box G, which I prefer to secure upon a post at one side of the street, as shown. The other terminal of the switch is connected by means of conductor D with the feeder F, which is in circuit with the source of supply. The switch F is normally kept open by means of the spring F', so that the contacts connected to the cable C are normally out of circuit. Similar connections are made by the conductors C' and D' between the contacts on the other track and another switch similar to F.

In operation the motorman would usually drift over the contacts A'; but in case he is obliged to stop on them the conductor of the car, who should be provided with a key for the box G, would open the box and would keep the switch F closed by hand until the vehicle had passed away from over the contacts A'. A switch may of course be provided on the vehicle to cut out the coils of the magnet from the circuit under such conditions, while allowing the contact devices to remain in circuit.



It is evident that my invention is broader than the mere details which I have shown and described for the purpose of illustrating my invention, and I wish, therefore, to be understood as not limiting myself thereto.

What I claim, and desire to protect by Letters Patent, is—

1. An electric railway having a source of supply and connections from the terminals thereof to conductors extending along the line of way, a series of contacts adapted to be placed in circuit with one of said conductors by the passing vehicle, in combination with a second series of contacts located adjacently to portions of the other of said conductors and having their circuit connections arranged so as to be unaffected by the passing vehicle.

2. An electric railway having a bared sectional conductor in series with one side of the circuit through a current-conveyer which is closed by the passing vehicle, and track-rails connected to the opposite side of the circuit, contacts placed adjacently to crossing track-rails and in circuit with the source of supply through a hand-operating device.

3. In an electric railway, the combination of the crossing track-rails, the contacts ad-

jacent thereto, and the hand-operating switch in series with said contacts.

4. In an electric railway, the combination of disconnected contacts connected to the high-potential side of the circuit, main track-rails connected to the low-potential side of the same, track-rails crossing the main track-rails, and a hand-operating device interposed between the high-potential side of the circuit and such of the disconnected contacts as are adjacent to the crossing-rails.

5. In an electric railway, in combination, disconnected contacts connected to one side of the main circuit through suitable current-conveyers, main track-rails and crossing track-rails in connection with the opposite side of the main circuit and a hand-operating switch, normally held open by a suitable spring device, in circuit with such of the contacts as are adjacent to the said crossing track-rails.

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

ARTHUR J. MOXHAM.

Witnesses:

MYRTLE E. SHARPE,

H. W. SMITH.