(No Model.) 2 Sheets—Sheet 1.

C. T. MASON.

ELECTRIC RAILWAY.

No. 378,259. Patented Feb. 21, 1888.

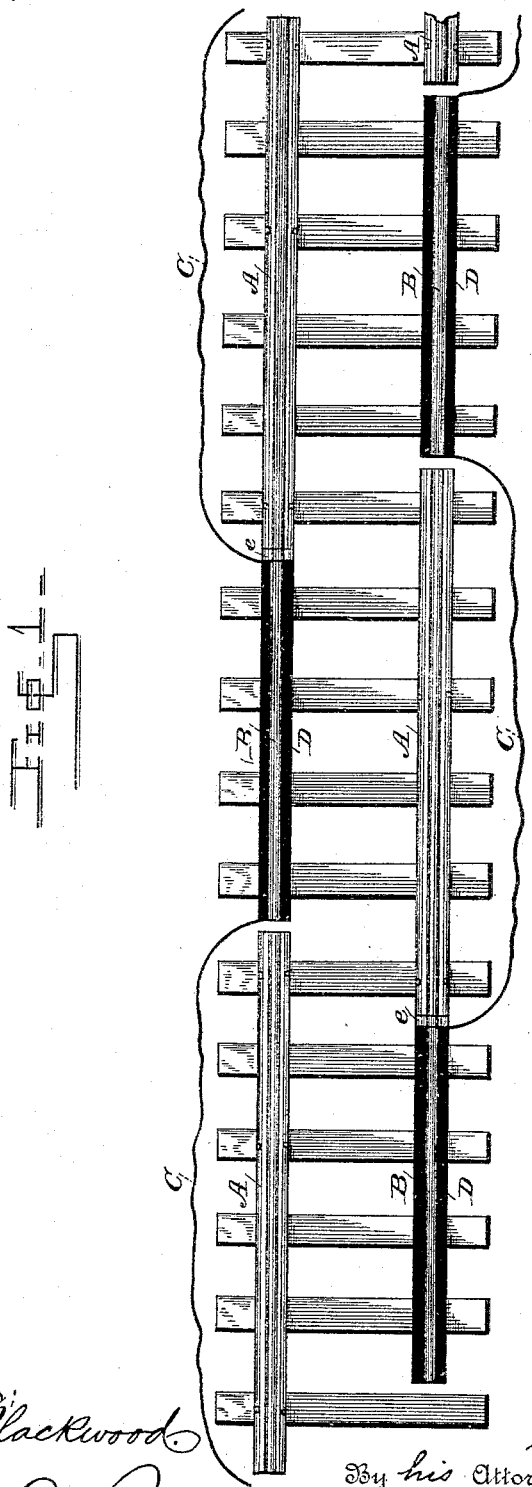

Fig. 1.

Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

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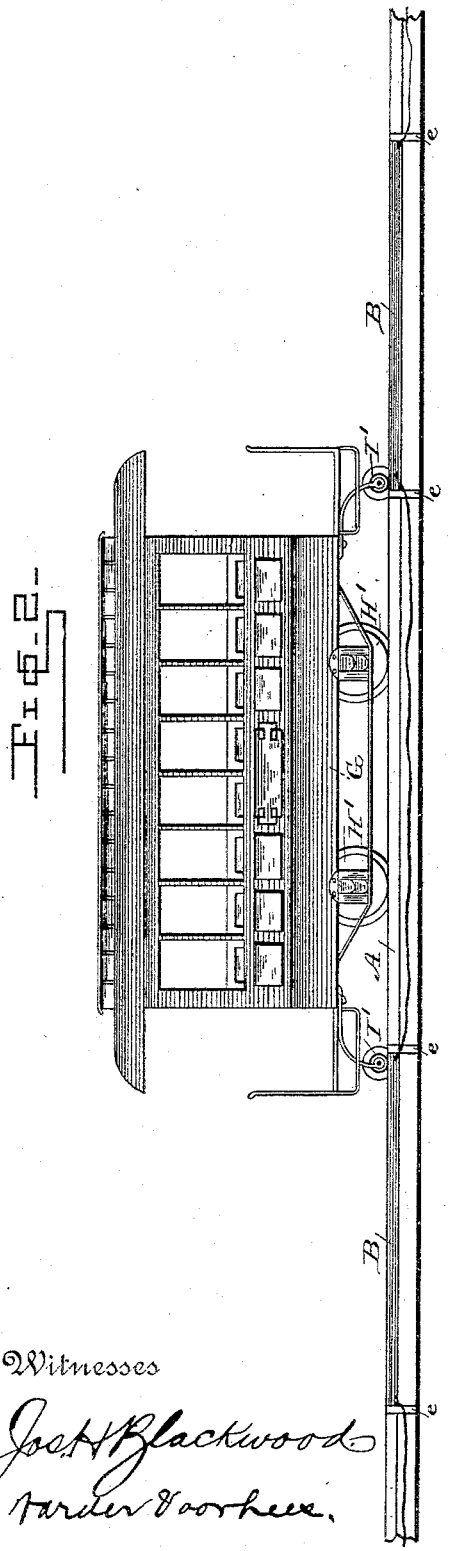

Fig. 2.

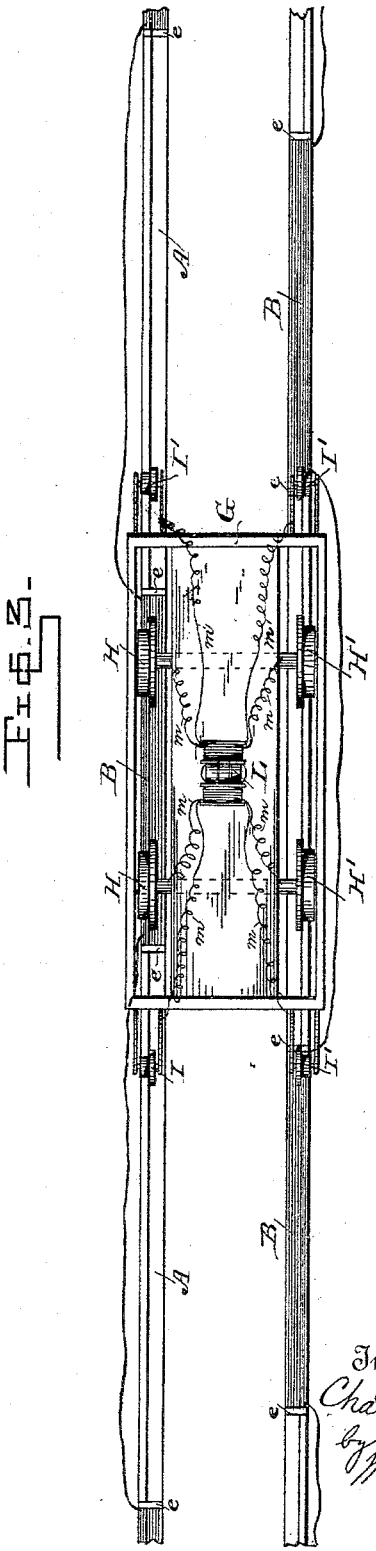

Fig. 1.

Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES T. MASON, OF SUMTER, SOUTH CAROLINA, ASSIGNOR TO THE MARYLAND ELECTRIC MOTOR MANUFACTURING COMPANY, OF BALTIMORE, MARYLAND.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 378,259, dated February 21, 1888.

Application filed January 22, 1887. Serial No. 225,182. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. MASON, a citizen of the United States, residing at Sumter, in the county of Sumter and State of South Carolina, 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 electric railways; and it has for its object the improvement of that system in which the wheels of a car or a train of cars, or other contrivances necessary as electrical connections or conductors of a motor-car, car, or train of cars are electrically connected with a motor or series of motors, and to which motor or motors electrical energy is transmitted by or along one rail or series of rails and returned by or along another rail or series of rails.

The chief purpose of my invention is to provide a track or tracks which shall be practically insulated at any point of crossing, substantially preventing all danger of injury or shock from the electrical current to any animal, person, or vehicle at any point of crossing over or passing along by or upon such track or tracks by any vehicle or animal, while at the same time permitting the employment of currents of any character or degree of strength.

To this end my invention consists of the improvements, as hereinafter described and particularly claimed.

My invention is illustrated in the accompanying drawings.

Figure 1 is a plan view of a section of railway; Fig. 2, a side elevation of car and track; and Fig. 3, a plan showing car-track with motor and their electrical connections with track.

One part of my invention consists in insulating alternate rails on each side of the track, and in the drawings these insulated rails are indicated by the letter A.

Another part of my invention consists in connecting the circuit with the remaining alternate rails, and these rails are indicated by the letter B and their electric connections by the letter C.

A third part of my invention consists in improving the conductivity of the connected rails of the circuit and decreasing the leakage of electricity therefrom by a copper plating, and this plating is indicated by the letter D. It may be here said that this plating may be deposited upon the rails B by the electroplating process, or in any other suitable manner, and that it may cover the whole or any one or more entire lengthwise portions thereof; but I prefer to plate the bottom of the rail only, as when plated on top or sides the plating is apt to be worn off.

A fourth part of my invention is to arrange each of the insulated rails A opposite the electrically-connected rails B, and to also make these opposing rails of unequal length, and also to make the insulated rails A longer than the opposite connected rails B, so that the ends of each rail A will extend beyond the ends of the opposite rail B, as shown in the accompanying drawings. The insulated rails may be insulated by their ends being simply separated from the others, or by placing insulating material *e* between their ends and the ends of the adjoining rails.

Still another part of my invention is to insulate the electric connections C (which may be copper or other wire or other suitable conductor) and place the same under ground or place them above ground and covering them with proper insulating material. The connecting-wires may be extended along by the rails on the ties or other supports; but I prefer to lay them outside of the ties or sleepers, as shown, in order to enable the track, rails, or ties to be repaired or replaced without disturbing them.

I fix no arbitrary length of either class of rails, only remarking that the insulated ones should be longer than the others. For this purpose rails already manufactured may be cut into unequal lengths. It is, however, necessary that the motor-car, car, or train carrying or connecting with the motor or motors should be of such length that the wheel, wheels,

or other contrivances necessary as electrial connections or conductors on each side of the car should be always on the connected or circuited rails. For this purpose my invention is further illustrated in Figs. 2 and 3.

G is a truck or car provided with four large wheels, H H′, and four small ones, I I′. Both sets of wheels may be employed as brushes for taking up the electricity from the contact sections or surfaces B, the incoming and return currents being carried from such wheels through conducting-wires *m* to a motor, L, onto the truck.

It will be seen, as illustrated in Fig. 3, that the arrangement of wheels is such that when one wheel or set of wheels, as H, is on a contact, B, on one side of the track, the opposite wheel or set of wheels, H′, will be on the directly-opposite insulated section A, and so with the respective wheels I and I′; but it will also be seen that in order that the incoming and return current shall always be continuous, connection is always maintained between the diagonally-opposite contact, B, as when one of the wheels H or H′ is on a contact a diagonally-opposite wheel, such as I or I′, is on a diagonally-opposite contact, the wheels on the same side being also so arranged that as one of the forward wheels leaves a contact, one of the succeeding wheels will strike the same contact.

It will be seen by my invention that there is no point on the track that a line can be drawn across at right angles which can make the electrical connection. Thus the distances between the contacts is so increased that all danger of circuiting by persons or vehicles with the exposed surfaces of the opposite contacts is avoided, and the contact-surfaces themselves are thus enabled to be exposed on the level of the ground. By the diagonal arrangement, too, a far less number of contacts need be employed than in those systems having directly-opposite contact-points, thus lessening the amount of leakage and cost of construction. My invention is also applicable to a double-track system.

What I claim is—

1. In an electric-railway system, contact-points of the conductors for the incoming and outgoing currents, arranged diagonally opposite each other at intervals along the track, whereby the distance between such contacts is increased, substantially as described.

2. In an electric-track system, alternate insulated rails in combination with alternate electrically-connected rails, substantially as described.

3. An electric-railway system having a double line of rails, each line made up of alternately-insulated and electrically-connected rails, the insulated rails in one line arranged opposite shorter electrically-connected rails in the other line, substantially as described.

4. In an electric-track system, the combination, with alternate insulated rails in combination with alternate electrically-connected rails, each insulated rail placed opposite a connected rail, and an electric conductor circuiting all the connected rails, substantially as described.

5. In an electric-track system, the combination of the alternate insulated rails and the alternate connected rails, the rails of the different sets being of unequal length, substantially as described.

6. In an electric-track system, the combination, with alternate connected and insulated rails, of the conductor insulated from the track and the track-crossings, substantially as described.

7. In an electric-track system, copper-plated rails electrically connected, in combination alternately with insulated rails of greater length, substantially as described.

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

CHARLES T. MASON.

Witnesses:
CHARLES W. DAVIS,
JULIUS MORRIS.