

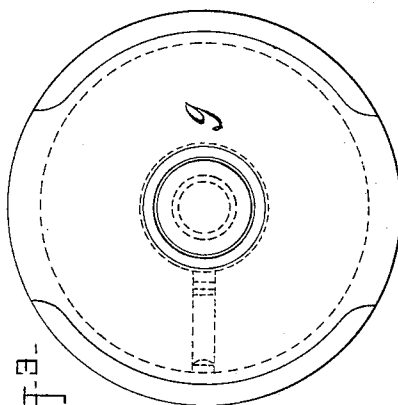
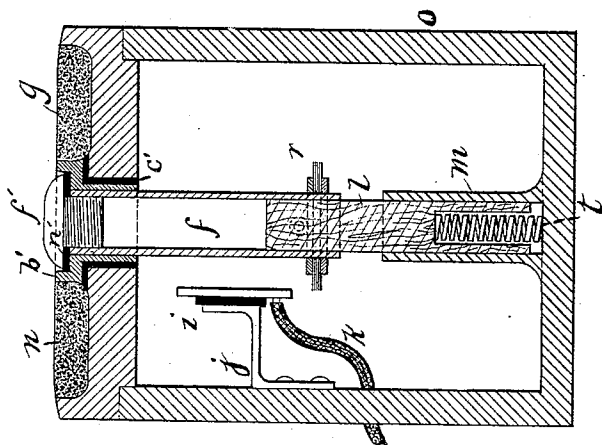
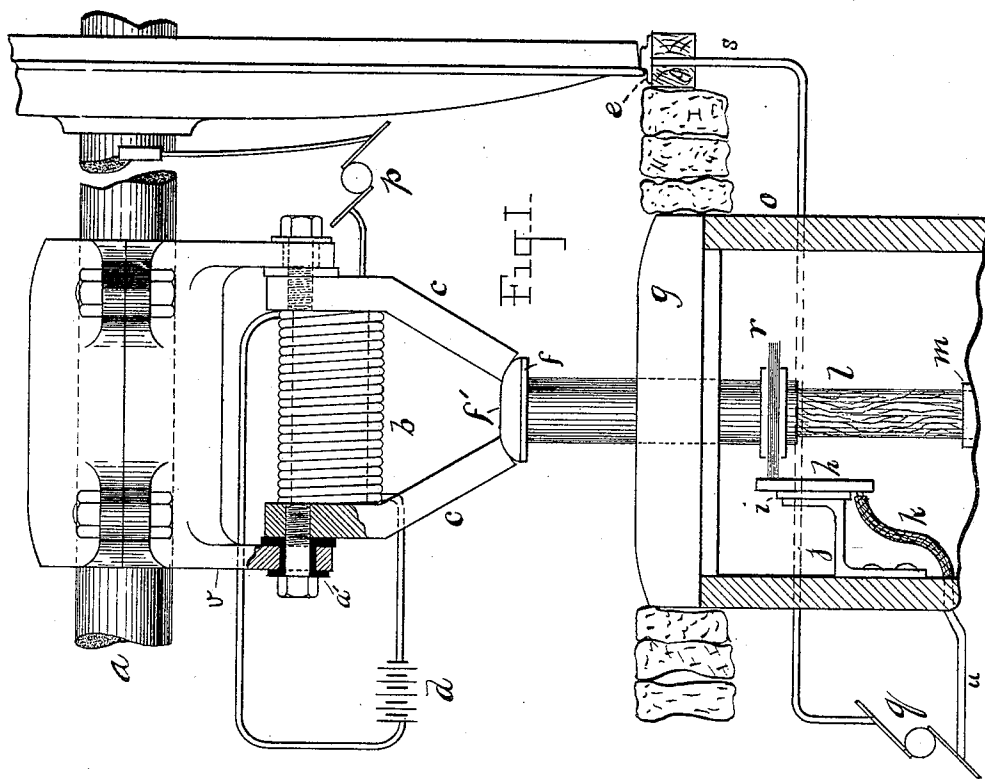
(No Model.)

J. C. HENRY.

CLOSED CONDUIT FOR ELECTRIC RAILWAYS.

No. 500,065.

Patented June 20, 1893.



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Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN C. HENRY, OF NEW YORK, N. Y.

CLOSED CONDUIT FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 500,065, dated June 20, 1893.

Application filed September 8, 1890. Serial No. 364,304. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. HENRY, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

The present invention has relation to that class of electric railways, the subject of my co-pending application, Serial No. 362,458, filed August 19, 1890, in which the electricity is supplied from a stationary source to a number of contact pieces located at intervals along the road-bed, and adapted to be brought in contact with an extended shoe or projection on a passing car, so as to transmit current to the driving motor thereof.

I will first describe my present improvements in connection with the accompanying drawings, and then point out in the claims the novel features and combinations.

In said drawings, Figure 1, is a partly diagrammatic, sectional elevation of a portion of an electric railway car track, and other portions of the system embracing my invention. Fig. 2, is a vertical, sectional view of the preferred form of contact box. Fig. 3, is a top view of the cover of the said box.

Under the present system, the dynamo *g*, which supplies the electricity to the line, is stationary at some point on the road, and has one pole connected by wire *s*, with the track rails *e*, while its other pole has connection by an insulated line wire *u*, preferably buried under ground, with a number of contact boxes *o*, spaced along the road-way at intervals, preferably between the tracks. The space between the contact boxes should be slightly less than the length of the car. A branch wire *k*, at each contact box is in electrical connection with the main wire *u*, and has as a terminal within the boxes a vertical plate *h*, which is supported and insulated from bracket *j*, by a hard rubber or other suitable plate *i*.

f, is a contact pin having an enlarged head *f'* and in the form of the invention shown in Fig. 1, all made of soft iron or other magnetic metal. This contact pin is supported in the removable cover *g*, of the contact box, and suitably insulated therefrom; it is hollow, and has freedom of vertical movement

on a guide stud *l*, of wood, which insulates it from the standard *m*, carrying said guiding stud.

Surrounding the bottom of the pin *f*, is a contact brush *r*, which when the pin is in its lowermost position is below the plate *h*, but which is brought into contact with the said plate when the contact pin *f*, is raised to the position illustrated in Fig. 1. This raising of the pin, and the consequent making of an electrical connection between the buried line wire and the car motor, is effected automatically on the passage of the car by the following means: *p*, represents diagrammatically a car motor having one pole connected to the axle *a*, and so to the track return, and having its other pole connected to the contact shoes *c*, *c*. In the present instance, the said contact shoes form also the poles of an electro magnet which serves to elevate the pin *f*, to contact position. Such magnet has one or more helices *b*, which are supported, together with the contact shoes *c*, from hangers *v*, carried by the car axle through the medium of insulation *a'*. These electro magnets are preferably energized from a separate battery or other source of electricity *d*, carried by the car. It will be seen, that as the car passes over a contact box, the polar extensions *c*, of magnets *b*, being arranged directly over the contact pins *f*, so that the latter shall lie in a strong magnetic field, the pin over which the car is passing will act as an armature to the electro magnet, and rise to the position shown in Fig. 1, making electrical contact between the head of the pin and the shoes *c*, and on their way up making a contact between the brushes *r*, and the plate *h*, thereby completing the circuit between the buried line wire and the car motor. When the car passes on, the contact pins *f* will drop and the circuit will be broken.

It will be seen that this invention, while allowing the contact pins to be placed normally completely out of the way, so as not to interfere with miscellaneous traffic on the road-way, are capable of being projected to a suitable height on the passage of the car, so that the contact shoes thereof may be placed at some little distance from the ground, and the contact will take place at a height from the surface which will insure a freedom from

interruption by reason of unevenness of road or the presence of bowlders or other obstructions in the path. The projection of the contact pins as shown, brings them above the harmful influence of slush, snow and ice, and insures the making of a perfect contact at all times.

The invention is carried somewhat nearer to completion in the form shown at Fig. 2. It is desirable that as small a portion as possible of the contact pins shall be acted on by the magnetic field of the polar extensions *c*. In the form shown in Fig. 2, therefore, I have the main body of the contact pins *f*, of non-magnetic metal such as brass, and only have the removable head *f'* thereof of iron. The socket *b'* is supported centrally in the contact box cover *g*, and separated from the latter by insulators *c'*; the top of the cover is also preferably made hollow, and filled with asphalt or other insulation *n*. For further protection and insulation, a washer *n'* is placed between the the contact head *f'* and the socket *b'*. The weight of the contact pin *f'* is partly taken by a spiral spring *t*, which enters the base of the wooden guide stud *l*.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In an electric railway, the combination of contact boxes at intervals along the road way, an armature projecting through each box and a temporary magnet carried by the car adapted to raise said armatures above the surface of the street and make magnetic and electric contact with them.

2. In an electric railway, the combination of contact boxes at intervals along the road way and a temporary magnet carried by the car having its polar projections magnetically and electrically connected with circuit completing armatures projecting through said contact boxes.

3. In an electric railway, the combination of contact boxes at intervals along the roadway, and a contact pin of circular shape having an enlarged head and projecting through said boxes and adapted to move freely therein for the purpose set forth.

4. In an electric railway, the combination of continuous insulated conductors below and parallel with the track, vertical movable contact pins at intervals along the road-way, adapted to move vertically and temporary magnets carried on the car and adapted to raise said contact points and complete the circuits.

5. In an electric railway, the combination of contact boxes at regular intervals along and on the surface of the road-way, circuit completing devices within said boxes, a magnet carried by the car and an armature in the form of vertical pins free to revolve or rise vertically through said boxes.

6. The combination of the vertically sliding contact pins, circular contact brushes, thereon and stationary contact plates in circuit with the line conductors, substantially as set forth.

JOHN C. HENRY.

Witnesses:

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