(No Model.) 2 Sheets—Sheet 1.

W. OSNER.

SUBWAY AND CONNECTION FOR ELECTRIC RAILWAYS.

No. 455,763. Patented July 14, 1891.

Fig. 1.

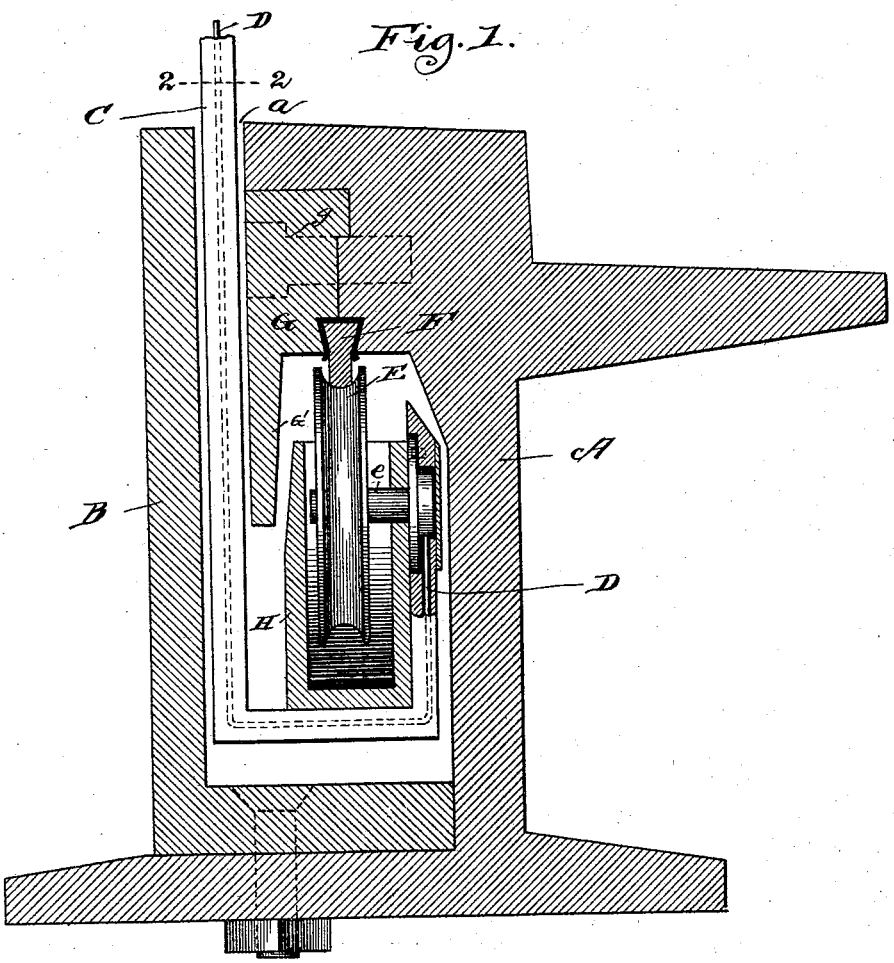
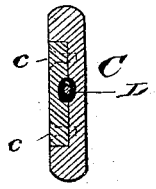


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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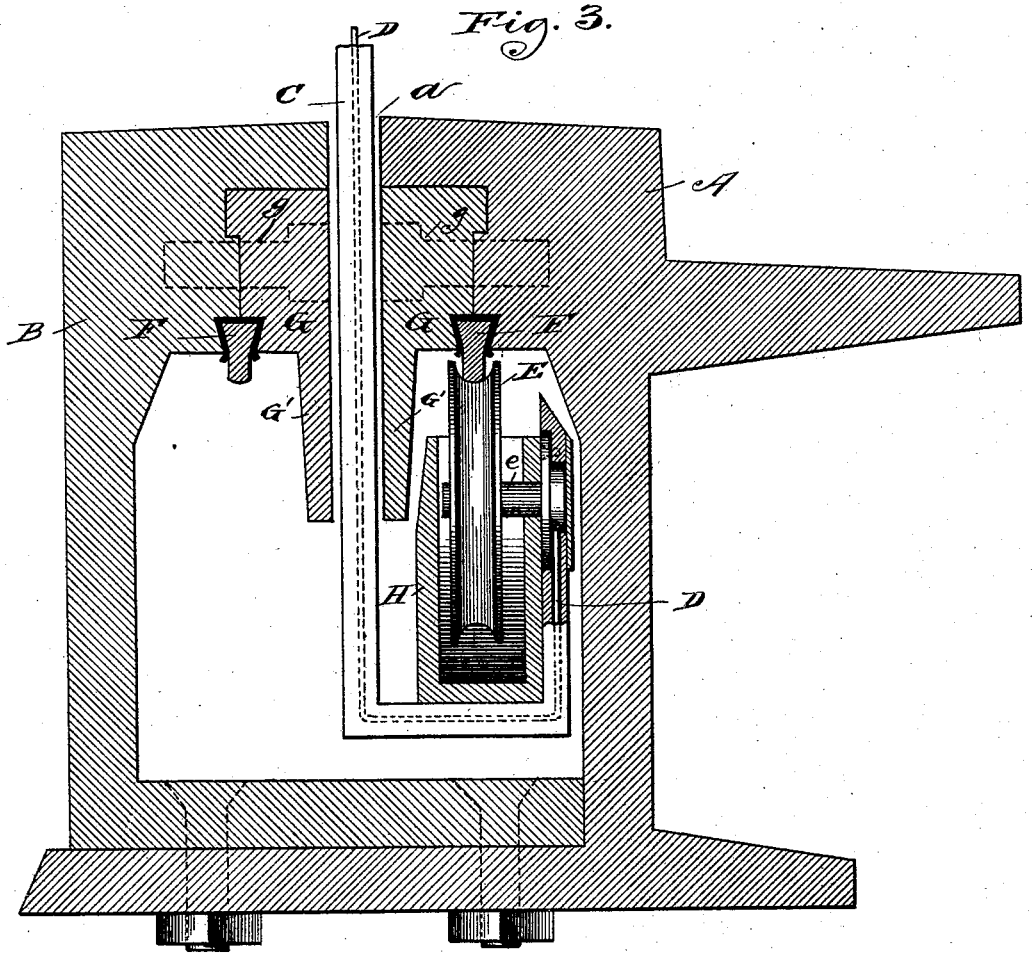
Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM OSNER, OF CHICAGO, ILLINOIS.

SUBWAY AND CONNECTION FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 455,763, dated July 14, 1891.

Application filed October 13, 1890. Serial No. 367,891. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM OSNER, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Subways and Connections for Electric Railways, of which the following is a specification.

My invention is intended to provide economically a subway for electric railways, wherein is conveniently supported and perfectly insulated an electrical conductor, and also to provide improved means for establishing connection between said conductor and the motor of the car.

In carrying out my invention I combine with the usual track-rail an L-shaped bar of iron whose foot is adapted to rest on top of the foot of the track-rail and whose upright portion is placed in such position with relation to the head of the rail as to provide a narrow slot or opening into the space inclosed by the web and head of the rail and said L-shaped bar. The lower side of the head of the rail is provided with a groove or niche, and the electrical conductor is clamped within said niche by means of a clamping-plate bolted at intervals to the head of the rail, the conductor being properly insulated and of such form as to project, so as to bear upon a trolley carried by an arm connected with the motor and projected through the slot, whereby the current is taken from the stationary conductor and transmitted through said trolley-arm to the motor on the car. The parts are of such form that they may be conveniently rolled or pressed into shape, and therefore the construction of the subway is inexpensive, while due provision is made for proper insulation and the certain contact of the moving trolley or brush with the conductor.

In the drawings, Figure 1 is a sectional elevation through a portion of a road-bed of a railway at the rail, and showing in elevation a trolley-arm projected into the subway and the trolley engaged with the conductor. Fig. 2 is a detail of the trolley-arm in cross-section on the line 2 2 of Fig. 1. Fig. 3 shows a subway having two conductor-rails, whereby the electric circuit may be made without making use of the track-rails.

In the drawings, Figs. 1 and 2, A indicates a rail such as commonly used for street-car tracks, and which will be supported by filling or upon stringers in the usual manner, and which may form one line of conductor for the electric current.

B is an L-shaped rail placed with its foot upon the foot of the rail A and with its upright portion at such distance back of the head of the rail as to provide a narrow slot or opening *a*, through which passes the trolley-arm C. Said trolley-arm may be of proper material to conduct the current from the conductor secured in the subway; but by preference it is made in two parts, as shown in Fig. 2, which parts may be clamped together by the securing-bolts *c* and made to inclose a wire D or other high conductor properly insulated from the arm. The lower end of the arm is U-shaped, and the upright portion thereof is apertured to receive the axle *e* of a trolley E, said axle being preferably insulated from the arm, while the wire D is projected through the arm, so as to contact with the axle.

F is a conductor, which in the present instance is a metal rail whose upper end is wedge-shaped in cross-section and adapted to fit into a niche or dovetail recess formed in the rail A and the clamping-plate G, each of which is grooved correspondingly, and said clamping-rail is secured to the track-rail by means of the lag bolts or screws *g*. The conductor is properly insulated from the rail and clamping-plate and its lower edge projects into contact with the trolley-wheel. The wedge-shaped form of the conductor-rail and the corresponding shaped grooves formed in the conductor-rail and clamping-plate furnish a superior form of connection.

The insulating material is readily applied by simply placing it over the head of the conductor, and the clamping-plates are secured to the track-rail by bolts which are not in contact with the conductor, and therefore do not need to be insulated. The insulating material is also held tightly packed about the head of the conductor-rail at all times.

In order to prevent the entrance of any foreign matter to the trolley and consequent loss of current by induction, a housing H may be secured with the arm D, so as to incase the lower portion of the trolley-wheel, and its up-

per portion may be partially inclosed by a depending flange G′ from the clamping-rail G. The upper end of the arm D will be connected with the motor on the street-car or other vehicle in any convenient way.

The subway is of such depth as to form a chamber for the reception of snow or dust, which will pass through the slot without interfering with the operation of the trolley-arm, and of course suitable provision may be made by man-holes at convenient distances for cleaning the subway.

The L-shaped plate and the clamping-rail may be rolled to form if not already found in the market, and the only change necessary in the usual street-railway rail is the niche or groove in the rear of its head and the provision for the taps or bolts.

In Fig. 3 I have shown a subway formed by the usual track-rail A and a modified form of the L-bar B. In this instance two conductor-rails F are employed instead of utilizing one of the track-rails in forming the circuit; but both conductors may be utilized to supply current by duplicating the trolley on the arm and using the track-rail or other conductor to complete the circuit.

I do not limit my invention to the precise forms or details nor to the relative location and arrangement of parts shown in the drawings. If desired, the subway or channel might be formed on the inside instead of upon the outside of the rail. Any suitable brush may be used instead of the trolley.

I claim—

1. A subway for electric railways, formed by the combination, with the track-rail, of a supplemental rail or bar having a bearing upon the foot of the track-rail and clamping-plates, whereby to secure conductors forming parts of an electrical circuit or circuits to one of said rails, said rails being so positioned as to provide between them a continuous slot for the passage of a connector between the motor and the conductors, substantially as described.

2. A subway for electric railways, comprising, in combination with a track-rail having a continuous groove in the rear side thereof beneath the head, a clamping-plate having a groove corresponding to that in the rail, an electrical conductor secured in the groove and a bar or rail secured in position with relation to the track-rail to provide therewith a slot for the passage of an arm and a chamber for a traveling brush or equivalent current-transferring device, substantially as described.

3. A subway for electric railways, comprising, in combination with the track-rail, a metal plate or bar having a bracing-foot adapted to be seated upon the foot of the track-rail and to form therewith a slot and channel, the track-rail having a continuous groove therein to receive a conductor and a clamping-plate having a corresponding groove, and means for clamping said plate and the conductor to the track-rail, substantially as described.

4. A subway for electric railways, comprising, in combination with a track-rail, an electrical conductor clamped thereto, a continuous bar or plate forming with the track-rail a slot for the passage of the shank of a current-transferring arm, and a rotating trolley connected with said arm and adapted to move in contact with the conductor, substantially as described.

5. A subway for electric railways, formed by the combination of the track-rail and a supplemental rail, positioned to provide between them a continuous slot for the passage of a connector, and a conductor consisting of a rail having a flaring head and secured with the track-rail by a clamping-plate, said clamping-plate and track-rail having in their opposing faces dovetail grooves, substantially as described.

6. A subway for electric railways, formed by the combination of the track-rail and a supplemental rail or bar having a bearing upon the foot of the track-rail and positioned to provide between them a continuous slot for the passage of a connector, and a conductor secured with the track-rail by a clamping-plate, substantially as described.

7. A subway for electric railways, comprising, in combination with the track-rail, a supplemental rail or bar having a bearing upon the foot of the track-rail and positioned to provide a chamber beneath the head of the track-rail, and a slot for the passage of a connector, a conductor secured to the track-rail in the upper portion of said chamber, a clamping-rail for securing said conductor, said clamping-rail having a depending flange dividing the upper portion of the chamber from the slot, an arm in electrical connection with the motor of a car and projected into the subway and bearing on an upturned portion thereof a brush, and an insulated conductor carried by said arm and having electrical connection with the brush, substantially as described.

8. A subway for electric railways, comprising a chamber and a slot leading to said chamber, a conductor secured within the upper portion of the chamber, an arm in electrical contact with the motor of a car and projected through the slot into the chamber and having an upturned end therein carrying a brush or equivalent current-transmitting device, and a housing for the brush, said housing having vertically-disposed walls arranged to inclose the brush, whereby the brush is protected from water entering through the slot, substantially as described.

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