(No Model.)

R. M. HUNTER.

ELECTRIC RAILWAY.

No. 384,909. Patented June 19, 1888.

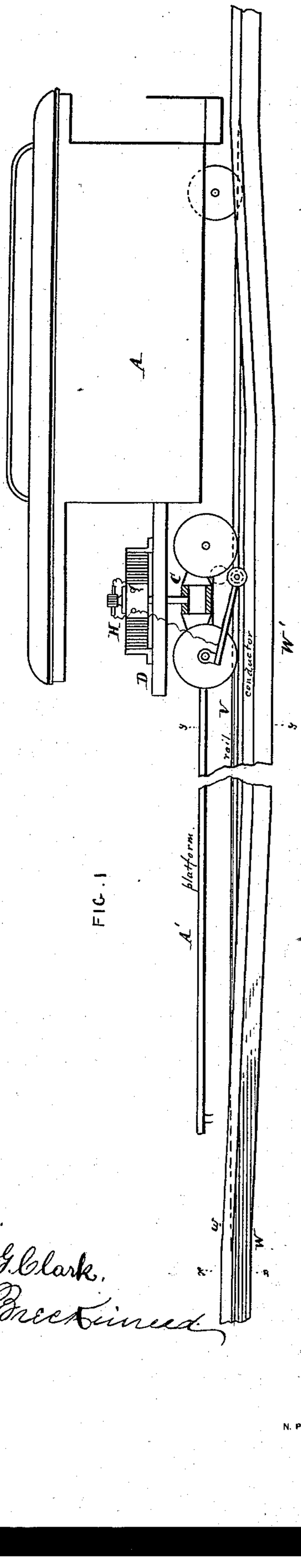

FIG. 1

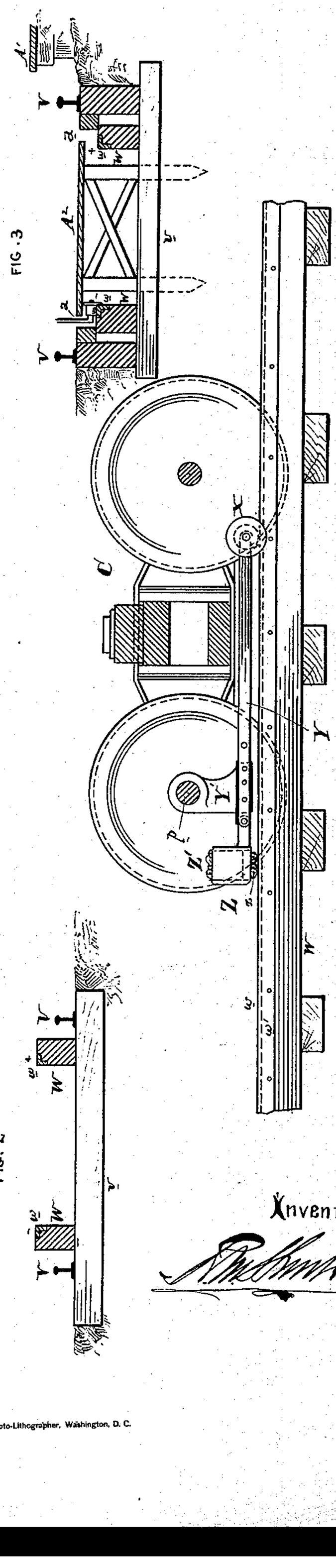

FIG. 3

FIG. 4

FIG. 2

Attest.
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UNITED STATES PATENT OFFICE.

RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE ELECTRIC CAR COMPANY OF AMERICA, OF SAME PLACE.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 384,909, dated June 19, 1888.

Original application filed October 19, 1886, Serial No. 216,643. Divided and this application filed August 27, 1887. Serial No. 248,021. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH M. HUNTER, of Philadelphia, Pennsylvania, have invented an Improvement in Electric Railways, which improvement is set forth in the following specification and shown in the accompanying drawings, which form part thereof.

For cheaply-constructed roads or those running through tunnels or districts protected in the most part the working-conductors would be exposed and preferably above the level of the rails. At crossings or stations I propose to cover the conductors with suitable protecting-shields, which will admit of the contact and travel of the collectors, but prevent careless persons from accidentally touching the conductors. This object may be attained also by depressing the conductors at these places or by such depression and shields. In tunnels the conductors would condense moisture, which would in time produce little streams down to the earth and cause leakage of the current. To prevent this I provide the vehicle with a suitable wiper which wipes the conductors and keeps them dry.

This is a division of my application filed October 19, 1886, Serial No. 216,643, and any matters herein set out but not claimed are not dedicated to the public, but form subject-matter of said application and my application No. 220,240, of 1886.

Figure 1 is a side elevation (part in section) showing the method of depressing the conductors at stations and crossings. Fig. 2 is a cross-section on line *x x* of same. Fig. 3 is a cross-section on line *y y* of same, and Fig. 4 is a sectional elevation of the car-truck, showing the collectors and wiper for the track-conductors.

V represents the rails, which are supported upon the usual cross-ties, *v*.

W represents longitudinal wooden stringers arranged upon the cross-ties and next to the inner face of the rails, and are provided on their upper and adjacent edges with angle-irons *w*, which form the electrical conductors for supplying the current to the motors on the cars. These stringers W may be saturated in paraffine, pitch, or other equivalent moisture-impervious material. The outer faces of these stringers also act as guards to prevent the cars jumping the track, and therefore preferably extend some distance above the top of the rails, as shown in Fig 2.

X represents the collector-wheels, which run in contact with said conductor W and are journaled on pins carried by the bars Y, and which bars are secured to brackets Y′, hinged upon the forward axle, *p*, whereby the collector-wheels X may rise and fall to follow the different elevations of the conductors.

Normally the conductors *w* are exposed and above the level of the rails; but at those portions of the track corresponding to the crossings or the stations the stringers W and their conductors are sunk below the level of the rails, as indicated in Figs. 1 and 3.

A′ represents the platform of the station.

A² represents the platform between the track and extending above the conductors *w*, leaving slots or longitudinal entrances *a* for the collectors, as indicated in Fig. 3.

It is advantageous, particularly in railways using a high electro-motive force, to raise the conductor sufficiently high above the road-bed to guard against leakage due to the damp earth; but in such a construction it is desirable to depress the said conductor to a depth sufficient to place it out of reach at stations or the crossings, so that careless persons would not be liable to injury therefrom. I do not limit myself to any particular construction for protecting these conductors, and it is not absolutely necessary that they be depressed, as at the place where they are to be protected a suitable slotted covering may be provided, as herein set out.

The advantage of depressing the conductors would be to allow the space between the rails forming the crossing to be unobstructed. The collector-wheels X are flanged and run upon these conductors *w*, the lower and vertical legs of which conductors are made of sufficient depth to allow spikes *w′* to be driven through the conductor to secure it to the conductor-stringer and yet be below the range of the flange on the collector-wheel, as shown in Fig. 4. This construction is cheap and durable. The collector-wheel X is journaled upon the free end of a trailing arm, Y, which is insulated from but secured to a bracket, Y′, journaled upon the forward axle, *p*. By this construc-

tion it is evident that the collector-wheel may rise and fall, following the variations in the level of the conductor. In place of a collector-wheel an ordinary contact-brush might be used.

In constructing underground roads a difficulty will arise due to the dampness which is necessarily found in all tunnels, and which dampness keeps the conductors wet, and by forming small streams down to the ground tends to produce excessive leakage and reduce the effective power of the current. To overcome this I provide a wiper, Z, which may be of any suitable construction and carried by the truck or some portion of the vehicle, and this wiper may be formed of any suitable material capable of absorbing moisture. Referring to Fig. 4, the wiper is shown as formed of a case loosely pivoted to the collector-arm Y and free to approach the conductor *w*. The lower portion of the wiper, or that part which comes in direct contact with the conductor, may be formed of cloth or a tightly-compressed sponge, or any durable substance capable of absorbing moisture. The upper portion of the wiper is made with a compartment into which a removable sponge or absorbing-pad, *Z'*, is placed, whereby from time to time the said sponge or pad *Z'* may be removed to express the collected moisture or water which has been absorbed. The wiper may be of any desired construction, that shown being merely illustrative of the invention. I do not limit myself to the details of construction herein set out, as it is evident that they may be modified in various ways, while keeping the essential features of the invention precisely the same.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric railway, the combination, with the rail-track, of an exposed working-conductor and a shield or guard to protect said working-conductor at portions of its length corresponding to stations or crossings, but allow access thereto by the collector on the vehicle.

2. In an electric railway, the combination, with the rail-track, of an exposed working-conductor and a shield or guard to protect said working-conductor at portions of its length corresponding to stations or crossings, said guard consisting of extended side walls projecting above the working-conductor.

3. In an electric railway, the combination, with the rail-tracks, of an exposed working-conductor having its surface depressed at portions of its length corresponding to stations or crossings to take it out of dangerous exposure at such places, and an open passage-way leading to the conductor at its depressed portions.

4. In an electric railway, the combination, with the rail-tracks, of an exposed working-conductor having its surface depressed at portions of its length corresponding to stations or crossings to place it out of dangerous exposure at such places, and projecting guards or shields extending above said conductor at its depressed portions.

5. In an electric railway, the combination, with the rail-tracks, of an exposed working-conductor having its surface depressed at portions of its length corresponding to stations or crossings to place it out of dangerous exposure at such places, an electrically-propelled vehicle, and vertically-movable current-collectors adapted to follow the surface of the working-conductors.

6. In an electric railway, a bared working-conductor, an electrically-propelled vehicle receiving electricity therefrom, and a soft moisture-absorbing wiper carried by said vehicle and adapted to wipe said working-conductor.

7. In an electric railway, a bared working-conductor, an electrically-propelled vehicle receiving electricity therefrom, a soft moisture-wiper carried by said vehicle, adapted to wipe said working-conductor, and current collectors arranged in the rear of said wiper.

8. In an electric railway, a bared working-conductor, an electrically-propelled vehicle receiving electricity therefrom, a pivoted truck supporting said vehicle, and a moisture-wiper carried by said truck and adapted to wipe said working-conductor.

9. In an electric railway, a bared working-conductor, an electrically-propelled vehicle receiving electricity therefrom, a moisture-wiper carried by said vehicle, adapted to wipe said working-conductor, current-collectors arranged in the rear of said wiper, and a removable moisture-absorbing sponge, pad, or equivalent device carried by the wiper, whereby said sponge or pad may be removed from time to time to press out the water collected.

10. In an electric railway, the railway-track, combined with a station platform or crossing, an exposed working-conductor parallel to the track, extending to or near each end of the platform or crossing, a section of the working-conductor connecting the two parts of the exposed working conductor, and a slotted conduit or casing inclosing the connecting-section of the working-conductor.

11. In a railway, the combination, with the rails of the track and a vehicle, of an exposed working-conductor having its exposed surface turned out of line at portions of its length corresponding to stations or crossings to take it out of dangerous exposure at such places, and a current-collector carried by the vehicle and making contact with the conductor.

12. In an electric railway, the combination of a working-conductor, a traveling vehicle, and a moisture-wiper carried thereby on a transverse axis and adapted to wipe the working-conductor.

In testimony of which invention I hereunto set my hand.

RUDOLPH M. HUNTER.

Witnesses:
RICHD. S. CHILD, Jr.,
E. M. BRECKINREED.