

2 Sheets—Sheet 1.

No. 419,309.

Patented Jan. 14, 1890.

Fig. 1.

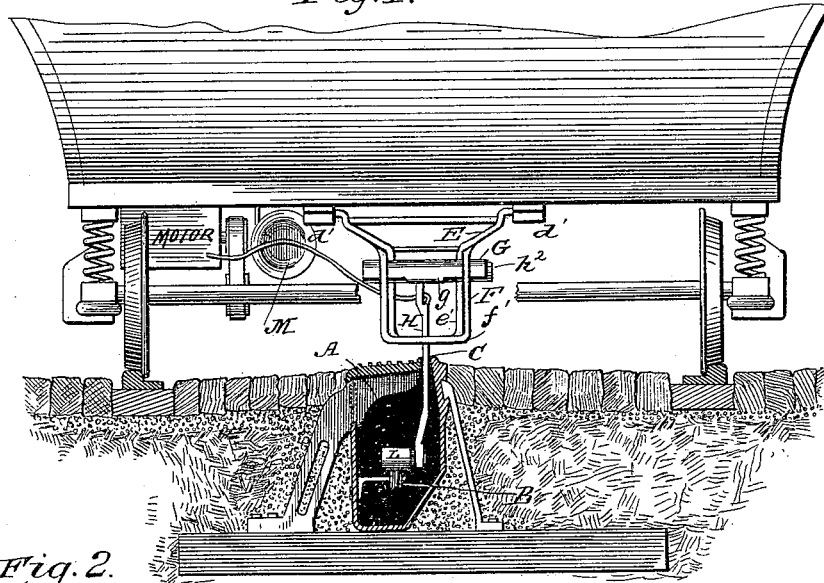
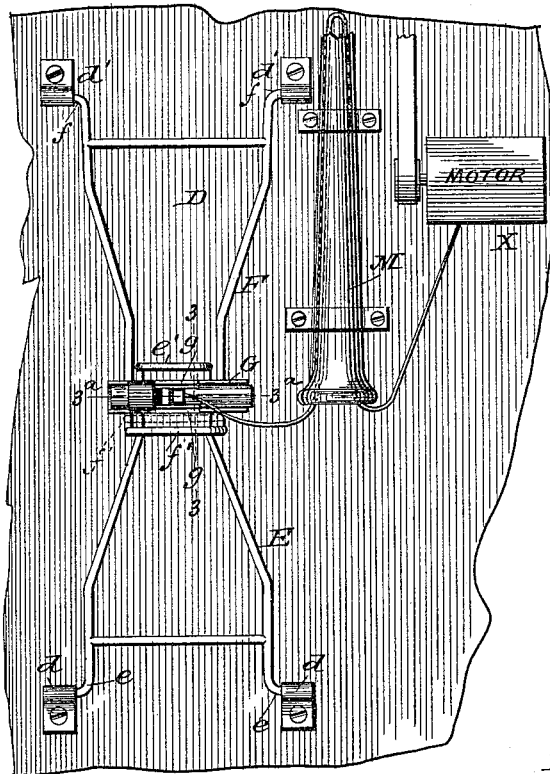


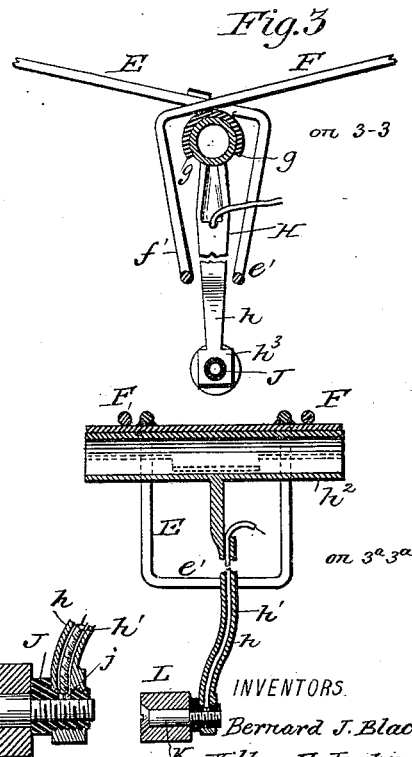
Fig. 2.



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(No Model.)

2 Sheets—Sheet 2.

B. J. BLACK & W. F. JENKINS.

ELECTRIC STREET RAILWAY.

No. 419,309.

Patented Jan. 14, 1890.

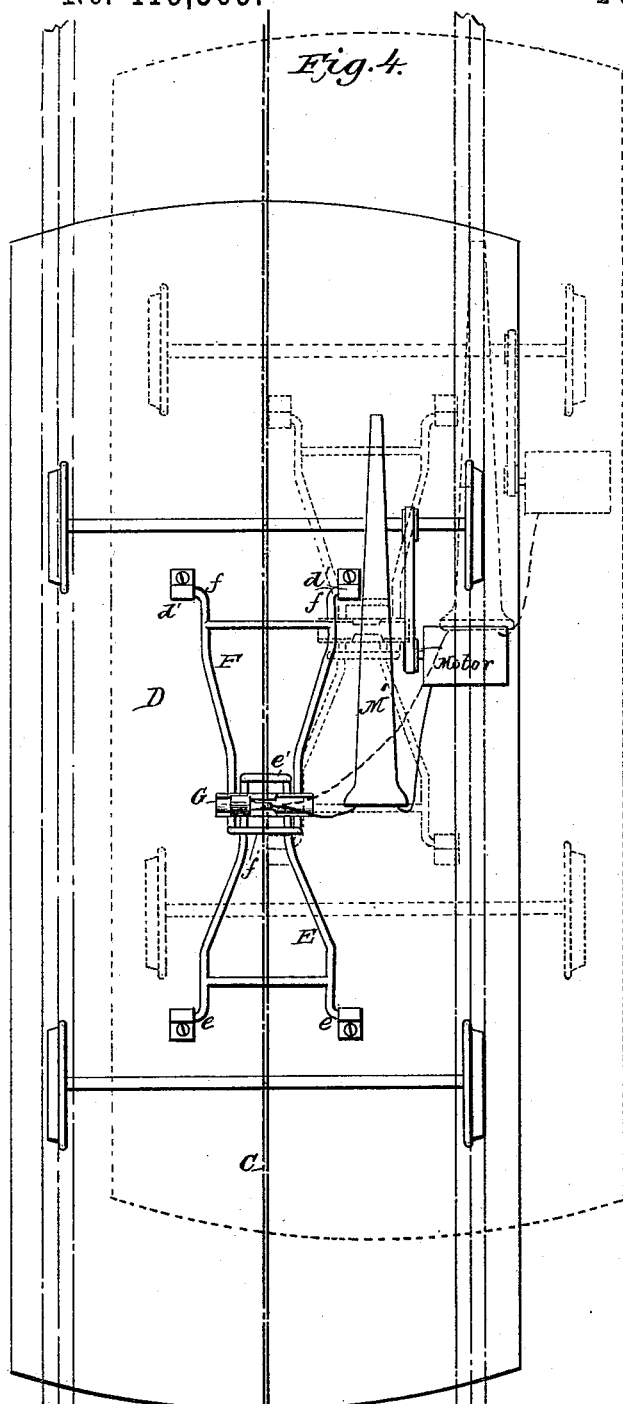
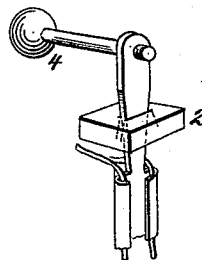
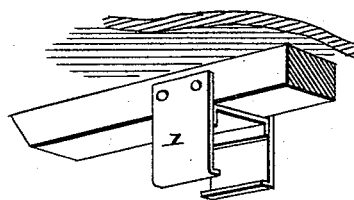


Fig. 5



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UNITED STATES PATENT OFFICE.

BERNARD J. BLACK AND WILTON F. JENKINS, OF RICHMOND, VIRGINIA.

ELECTRIC STREET-RAILWAY.

SPECIFICATION forming part of Letters Patent No. 419,309, dated January 14, 1890.

Application filed May 25, 1889. Serial No. 312,166. (No model.)

To all whom it may concern:

Be it known that we, BERNARD J. BLACK and WILTON F. JENKINS, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Electric Street-Railways, of which the following is a specification.

Our invention relates more particularly to a trolley detachably connected with the car-body, and which leads the current from the wire in the conduit to the motor on the car-body. The trolleys usually employed for this purpose are generally securely fastened to the car-body. This is very objectionable, because in case the car meets with an accident or leaves the track the trolley-shank or other portion thereof, as well as the wire leading from the conduit-wire to the car-motor, will become broken, thereby causing a great amount of damage and danger before the several parts can be properly readjusted. To overcome these objections we have provided a trolley, which is connected to the car-body in such a manner that in case the car should leave the track the trolley will become detached therefrom. In connecting said trolley with the motor on the car we provide a sufficient amount of slack wire (say thirty or forty feet) between it and the motor, which we arrange in any suitable manner below the car-body, so that in case the car leaves the track the motor and the detached trolley may become parted to the distance of at least thirty or forty feet before the electric current to drive the car is broken. Our trolley is more especially adapted for use in connection with a conduit where the current-wire is disposed to one side of the conduit-slot, and we have therefore shown it in connection with a conduit of this character; but it will be understood that the same may be readily adjusted for use in connection with conduits where the wire is disposed beneath the conduit-slot.

A further object of our invention is to provide means of supporting the trolley upon the car-body in such a manner as to admit of vertical, longitudinal, and transverse movement, so that the same may readily adapt itself to any unevenness of the conduit-wire in the conduit and any irregularities of the conduit-slot.

Our invention consists in the peculiar combination and novel arrangement of parts, all of which will hereinafter be fully described in the annexed specification, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical cross-section of a conduit and a portion of a car-body with our improvements attached thereto. Fig. 2 represents an inverted plan view of a portion of the car-body with our improvements applied. Fig. 3 is a vertical section on line 3 3, Fig. 2. Fig. 4 is a diagrammatic view hereinafter referred to, and Fig. 5 is a view of a somewhat modified means of supporting the trolley on the car-body.

In the accompanying drawings, A indicates the conduit, B the circuit-wire, and C the conduit-slot, which is disposed to one side of the center of the conduit, as shown.

D denotes a portion of the car-body provided with bearing-plates $d d' d'$, in which are journaled the ends of the trolley-supporting frame. This frame consists of two bails E F, formed, preferably, of metallic rods or heavy wire. The bail E is provided at its outer ends with lateral fingers $e e$, which are journaled in the bearings $d d'$, while its forward end is bent downward, as at e' , as shown, for a purpose presently described.

G denotes a semicircular bearing-box secured to the bail E near its inner end, with its open part at the bottom, and which is provided with inwardly-extending lugs $g g$, disposed on opposite sides of the open or slot portion of the box. These lugs are disposed so as to be about centrally of the bails E F, and serve to hold the trolley in place in the box G. The bail E is provided at its outer ends with lateral lugs $f f$, which are journaled in the bearings $d' d'$, while its forward or bent end, which overlaps the end of the bail E as clearly shown in Fig. 2, is bent down, as at f' . The downwardly-extending portions $e' f'$ of the bails E F are so disposed as to form a vertical frame or guideway projected a short distance to each side of and just below the bearing-box G. By this construction it will be seen that the ends of the bails swing on their journals $e e f f$, and thereby permit their inner ends to move vertically, the lowest movement of the same being limited

by the part f' of the bail F coming in contact with the box G, as shown in dotted lines, Fig. 2.

H indicates the trolley, which consists of a shank portion h , provided with a central vertical aperture h' for the passage of the insulated circuit-connection wire I, a transverse supporting-bar h^2 at its upper end, and an enlarged head h^3 at its lower end, in which is seated a bearing-block J, of insulated material, which is provided with a radial aperture j , aligning the aperture h' .

K indicates a stud-axle screwed into the block J and extending therefrom at a right angle, upon which is journaled the traveler or roller L, which engages the circuit-wire in the conduit and takes up the current therefrom. The wire I, which is insulated, passes down through the aperture h' in the shank h , and has its free end passed through the aperture j in the block J and engages the stud K, as clearly shown in the drawings.

The supporting-bar h^3 consists of a circular bar of about the same length as the bearing-box G. This bar, when put in position, is inserted from either end into the box G and held therein by means of the lug $g g$.

By reference to Fig. 3 of the drawings it will be seen that the upper end of the shank h passes down between the ends $e' f'$ of the bails EF, which form practically side guides for the trolley-shank and limit the forward and backward movement of the trolley. By this construction it will be readily understood that the trolley can swing in its bearing in the box G longitudinally or in direction of the length of the car, and that in case of any unevenness of the circuit-wire in the conduit or traveling over switches and the like the trolley will readily rise and fall, owing to the peculiar way the bails E and F are connected to the car-body.

By reference to Fig. 4 of the drawings it will be seen that in case the car leaves the track the box G will be pulled laterally, so that the lugs $g g$ would move from under the bar h^2 of the trolley, and thereby allow the said trolley to become detached from the car-body. As before stated, we provide a quantity of slack (insulated) wire between the trolley and the motor on the car. This amount of slack wire is supported upon the under side of the car-body in such a manner that it will gradually pull out when the car and trolley become detached.

In the drawings we have shown a tube or funnel M provided with a bell-mouth, in which the wire is inserted. This tube is located forward of the trolley-supports, as shown. The slack wire is looped and inserted into the funnel M and the free end connected to the motor X. It will thus be seen that in case the car leaves the track the wire will gradually pull out of the funnel. We do not confine ourselves, however, to this means of holding the slack wire, as any suitable way of holding the wire beneath the car-body in

such a manner that it will gradually unwind or pull out can be employed.

In Fig. 5 we have shown a somewhat modified manner of connecting the trolley to the car. In this construction we employ a fixed bearing 1, secured to the car-body and supporting a block 2 therein, which is provided with a vertical slot formed dovetail in elevation, through which extends the trolley-shank, which is provided at its upper end with a suitable counter-balance 4, as shown. By this construction it will be seen that the trolley-shank plays vertically in the slotted block, while by means of the shape of the said slot the trolley may swing laterally therein, and in case the car leaves the track the trolley-supporting block 2 will pull away from its bearing 1. The trolley can be quickly readjusted in position on the car-body after the same is again placed on the track and the slack wire again put in position beneath the car.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination, with a car-body and a depending bracket or keeper having vertical play secured thereto, of a trolley having a transverse head or bar detachably held within said keeper and having lateral play therein, said trolley adapted to be pulled away from its support by displacement of the car-body, substantially as and for the purpose described.

2. The combination, with the car-body provided with a depending bracket or keeper and an electric motor on said car, of a trolley detachably supported in said bracket and adapted for contact with the current-wire B at its lower end, and a slack-wire connection between said trolley and motor, whereby the motor-current will remain unbroken in case the car leaves the track and the trolley is pulled away from its support, substantially as and for the purpose described.

3. The combination, with a car-body and a keeper or bail supported therefrom having vertical play, of a trolley detachably adjusted in said keeper, substantially as shown and described.

4. The combination, with a car-body, a trolley-support secured to the bottom thereof, said support consisting of the bails E F, hinged at their outer ends to the car-body, their inner ends lapping each other and provided with downwardly-extended portions $e' f'$, and a keeper secured transversely to one of said bails and disposed between said extended portions $e' f'$, of a trolley provided with a transverse bar adapted to slide within said keeper and become detached therefrom when said keeper is moved laterally, substantially as and for the purpose described.

5. The combination, with a car-body and a vertically-yielding keeper or bracket secured to the bottom thereof, of a trolley consisting of a vertically-apertured shank portion, a

transverse bar at the upper end of said shank adapted to be detachably held in said bracket or keeper, an insulated disk secured to the lower end of said shank provided with a radial opening, a lateral axle secured to said insulated block, forming a bearing for the traveler or roller, and the circuit-connecting wire passed through the apertured shank and engaging the journal, substantially as and for the purpose described.

6. A trolley for electric railways, consisting of a hollow shank portion, a transverse bar on the upper end thereof for securing said trolley to the car, an insulated block in the lower end of said shank portion provided with

a radial slot aligning the lower open end of the shank, a laterally-extending stub-axle secured into said insulated block, and a roller mounted on said stub-axle, said parts arranged substantially as described, whereby the insulated circuit-connecting wire can be passed down through the hollow shank and through the insulated block and the free ends thereof brought in contact with the stub-axle, as and for the purpose set forth.

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