

No. 682,705.

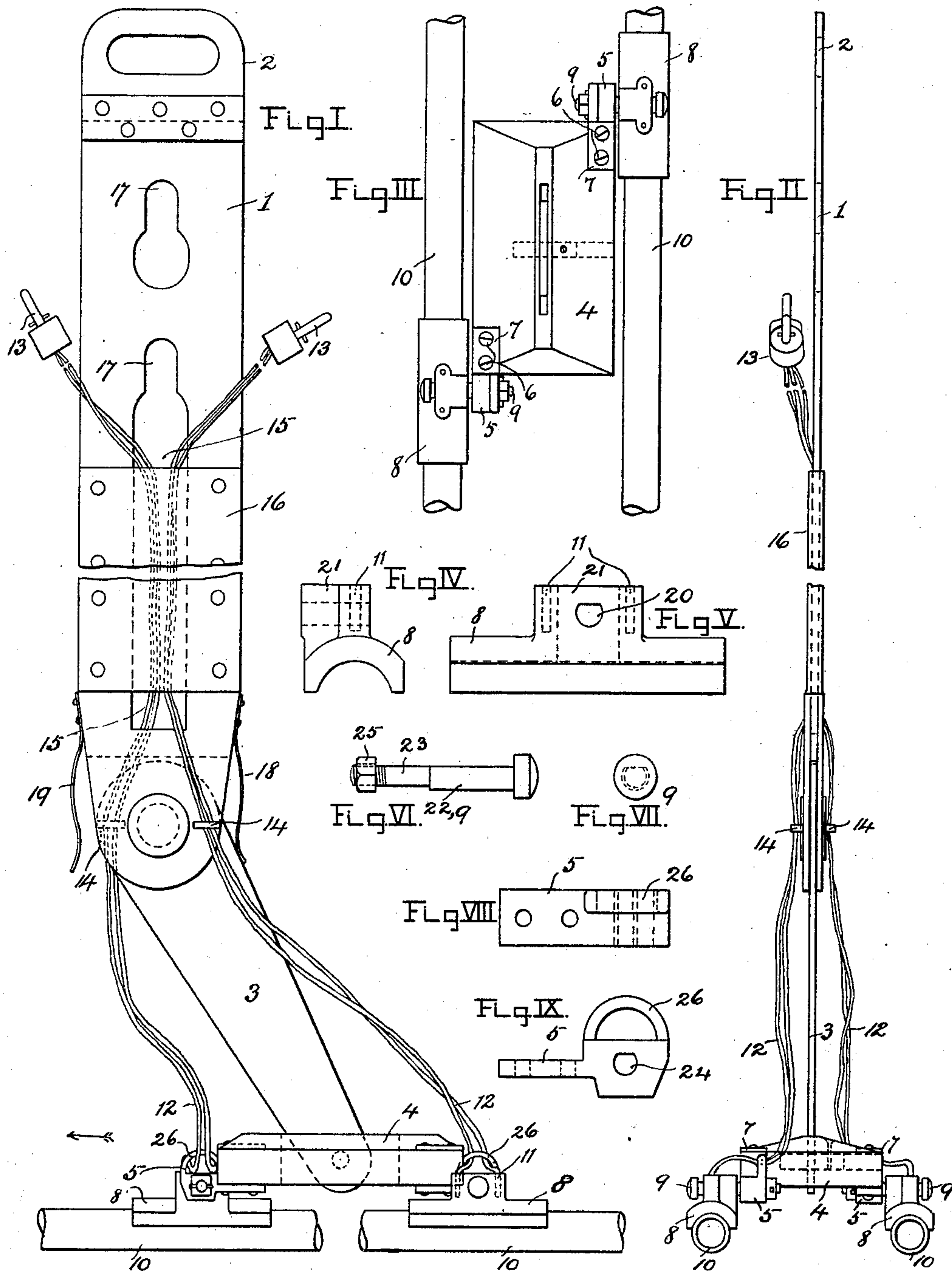
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W. F. JENKINS.

CONTACT DEVICE FOR CONDUIT ELECTRIC RAILWAYS.

(Application filed Feb. 7, 1901.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

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CONTACT DEVICE FOR CONDUIT ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 682,705, dated September 17, 1901.

Application filed February 7, 1901. Serial No. 46,401. (No model.)

To all whom it may concern:

Be it known that I, WILTON F. JENKINS, a citizen of the United States, and a resident of Richmond city, State of Virginia, have invented certain new and useful Improvements in Contact Devices for Conduit Electric Railways, of which the following is a specification.

My invention relates to contact devices for conduit electric railways; and it has for its object the provision of an improved form of contact device whereby electric connection may be made between the motors of a car and those forms of underground conductors from the upper surface of which the electric current is gathered by the contact-shoes.

In the drawings which accompany and form a part of this specification, and in which like numerals refer to like parts in the several views, Figure I is a broken view of the contact device in side elevation. Fig. II is a broken view of the contact device in end elevation. Fig. III is a view in plan of the contact device, insulating-block, and shoes. Figs. IV and V show in end and side elevation, respectively, a contact-shoe. Figs. VI and VII show in end and side elevation, respectively, a shoe-pin. Figs. VIII and IX show in plan and side elevation, respectively, a shoe-bracket.

In Figs. I and II 1 is a flat bar or plow, provided at its upper end with a head or handle 2, preferably, though not necessarily, formed of non-conducting material. At the lower end of the bar 1 there is pivoted a link 3, upon the lower end of which is pivoted the insulating-block 4. The object of this block is to carry the shoes, and it is therefore preferably made of some non-conducting material, such as hard rubber, though of course it could be made of other material, insulating-strips being inserted between it and the shoes. Attached to the block 4 are the shoe-brackets 5 5, which are shown in detail in Figs. VIII and IX. These brackets may be attached to the block 4 by means of screws 6 6, under the heads of which, to prevent them from sinking into the blocks and so loosening the brackets, are placed metal washers 7 7.

8 8 are the shoes. (Shown in detail in Figs. IV and V.) These shoes, which are pivoted on the brackets 5 5 by means of pins 9 9, (shown in detail in Figs. VI and VII,) and which are designed to run on the upper sur-

face of cylindrical conductors, which are indicated at 10 10 in Figs. I, II, and III, are hollowed out on their under side to fit the conductors and have in their upper portions sockets 11 11, in which the ends of the connecting-wires 12 12 12 12 may be secured. The wires 12 12 are provided at their other ends with terminals 13 13, adapted to connect the said wires with those leading from the motors. The manner in which the connection is preferably made is shown in an application for Suspensory Device, Serial No. 46,404, filed on the same day with this application. The wires 12 12 after leaving the shoes 8 8 are led through staples 26 26, which staples form part of the brackets 5 5. Thence they are led through the staples 14 14, attached to the bar 1, and thence into a channel or slot 15, formed in the bar 1, emerging at the upper end thereof. The staples 14 14 and 26 26 are simply for the purpose of keeping the wires 12 12 in position. The wires are kept in the slot 15 by means of a shield 16, which may consist of two metal plates, riveted one on either side of the bar 1, or it may consist of a continuous sheet of metal bent around the bar and held in place by suitable means. This shield also has another function. It is located on that part of the bar which runs between the slot-plates forming the slot in the street-surface of the conduit, and it therefore forms a protection to both the bar 1 and to the wires.

The bar 1, which stands in a vertical position when attached to the car, is preferably suspended at two points in order that its position may be maintained with certainty should any obstacle be encountered. In some cases this fixed vertical position of the bar is to be preferred to the inclined position which trailing contact devices of those forms in which the insulating-block is attached directly to the bar must necessarily take, (such a contact device being shown and described in an application filed on the same day with this application and bearing the Serial No. 46,403,) as, for instance, in suburban districts where car traffic is light and where in winter-time ice, snow, or small obstacles may collect on and perhaps obstruct the conduit-slot. In such cases the vertical fixed bar of the contact device will clear the slot of all obstacles

without affecting the contact between the shoes and the conductors, while the inclined trailing contact device of the form mentioned might on encountering such obstacles, unless
 5 it was made very heavy, be caused to swing on its point of suspension and break the contact between the shoes and the conductors.

The contact device may be attached to the suspensory device illustrated and described
 10 in the above-mentioned application, Serial No. 46,404, in any suitable manner. If the suspensory device be provided with pins having solid heads, the bar 1 of the contact device is provided with apertures 17 17, nar-
 15 rower at their upper than at their lower parts, the said lower parts being large enough to pass over the heads of the suspending pins, and when the contact device is dropped into place the edges of the upper parts engage
 20 behind the heads of the pins. In Fig. I it will be seen that the larger part of the lower aperture 17 may conveniently be formed by continuing the slot 15 upward. Where the suspensory device is provided with headless
 25 pins, the apertures 17 17 may have the form of circular holes, the contact device being held in place by means of cotter-pins. When the contact device is attached to the car and the car is in motion, any unevenness of the
 30 track or of the conductors is taken up by the pivoted link 3, any undue swinging of which is prevented by means of the spring 18. This spring comes into play when the car is running in the direction indicated by the arrow.
 35 If the car be running in the opposite direction, the position of the contact device will be reversed with regard to the link 3, and the spring 19 will then perform its part in limiting the swinging of the link. These springs
 40 also have another function—namely, to cause the shoes 8 8 to bear with an elastic pressure on the conductors, and so insure a good contact.

As hereinbefore stated, the shoes 8 8 are
 45 pivoted to the brackets 5 5 in order that any little unevenness of the surface of the conductors may be taken up; but supposing a very uneven piece of track were suddenly met
 50 with and the shoes were caused to jump on the conductors, the said shoes might turn on their pins 9 9 to a greater extent than is desirable. Therefore instead of the pins 9 9 being made cylindrical they are flattened on one
 55 side, as shown in Figs. VIII and IX, and the holes 20 in the shoes 8 8, in which they fit loosely, are correspondingly flattened, only enough play being allowed between the flat of the pin and the flat of the hole in which it
 60 engages to allow the shoe to have a small rotary movement on the pin when necessary. The boss 21 of the shoes, in which boss the hole 20 is cut, is shorter than the bearing 22 of the pin 9 in order to allow the shoe to have a little endwise play thereon. That part of
 65 the pin which is marked 23 and the hole 24 in the bracket 5, in which said part of the pin engages and in which it is held by means

of the nut 25, may be flattened, as shown, to prevent the pin from turning.

I prefer to mount the brackets 5 5, which
 70 carry the shoes 8 8, on opposite ends of the block 4 (see Fig. III) in order that I may obtain as great a distance between them as possible.

Having now described my invention, what
 75 I claim, and desire to protect by Letters Patent of the United States, is—

1. In a trailing contact for a conduit electric railway, the combination of a plow connected to the car and depending through the
 80 conduit-slot into the conduit, and provided with a link pivoted to its lower end within the conduit, a shoe-supporting block pivoted to the lower end of the link and having piv-
 85 oted to it one or more contact-shoes which rest and slide upon the line conductors within the conduit, and are by suitable electrical con-
 ductors connected to the motors.

2. In a trailing contact for a conduit electric railway, the combination of a plow con-
 90 nected to the car so as to permit a limited vertical motion and depending through the conduit-slot into the conduit, and provided with a link pivoted to its lower end within the
 conduit, a shoe-supporting block pivoted to
 95 the lower end of the link and having pivoted to it one or more contact-shoes which rest and slide upon the line conductors within the con-
 duct, and are by suitable electrical conductors
 100 connected to the motors.

3. In a trailing contact for a conduit electric railway, the combination of a plow connected to the car and depending through the
 conduit-slot into the conduit, and provided
 105 with a link pivoted to its lower end within the conduit, a shoe-supporting block of insulating material pivoted to the lower end of
 the link and having pivoted to it one or more
 110 contact-shoes which rest and slide upon the line conductors within the conduit, and are
 by suitable electrical conductors connected
 to the motors, the insulating-block insulating
 the shoes from one another.

4. In a trailing contact for a conduit electric railway, the combination of a plow con-
 115 nected to the car and depending through the conduit-slot into the conduit, and provided with a link pivoted to its lower end within the
 conduit, a pair of springs secured to the plow and adapted to bear upon the link to press it
 120 down as it trails forward or back, a shoe-supporting block pivoted to the lower end of the link and having pivoted to it one or more con-
 tact-shoes which rest and slide upon the line
 125 conductors within the conduit, and are by
 suitable electrical conductors connected to the motors.

5. In a trailing contact for a conduit electric railway, the combination of a plow con-
 130 nected to the car so as to permit a limited vertical motion and depending through the conduit-slot into the conduit, and provided with
 a link pivoted to its lower end within the con-
 duct, a pair of springs secured to the plow and

adapted to bear upon the link to press it down as it trails forward or back, a shoe-supporting block pivoted to the lower end of the link and having pivoted to it one or more contact-shoes
5 which rest and slide upon the line conductors within the conduit, and are by suitable electrical conductors connected to the motors.

6. In a trailing contact for a conduit electric railway, the combination of a plow connected to the car and depending through the conduit-slot into the conduit and provided with a link pivoted to its lower end within the conduit, a pair of springs secured to the plow and adapted to bear upon the link to press it
15 down as it trails forward or back, a shoe-sup-

porting block of insulating material pivoted to the lower end of the link and having pivoted to it one or more contact-shoes, which rest and slide upon the line conductor within the conduit and are by suitable electrical conductors connected to the motor, the insulating-block insulating the shoes from one another.

Signed at Richmond, in the county of Henrico and State of Virginia, this 24th day of
January, A. D. 1901.

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Witnesses:

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