

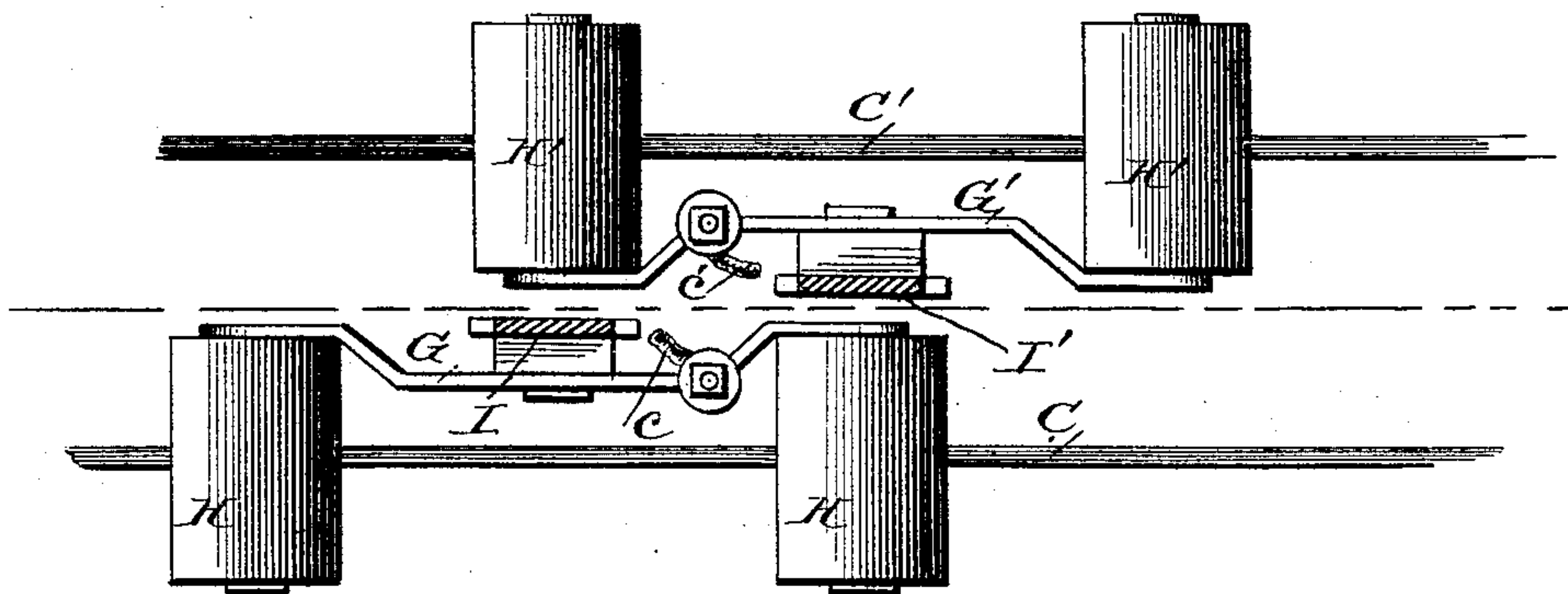
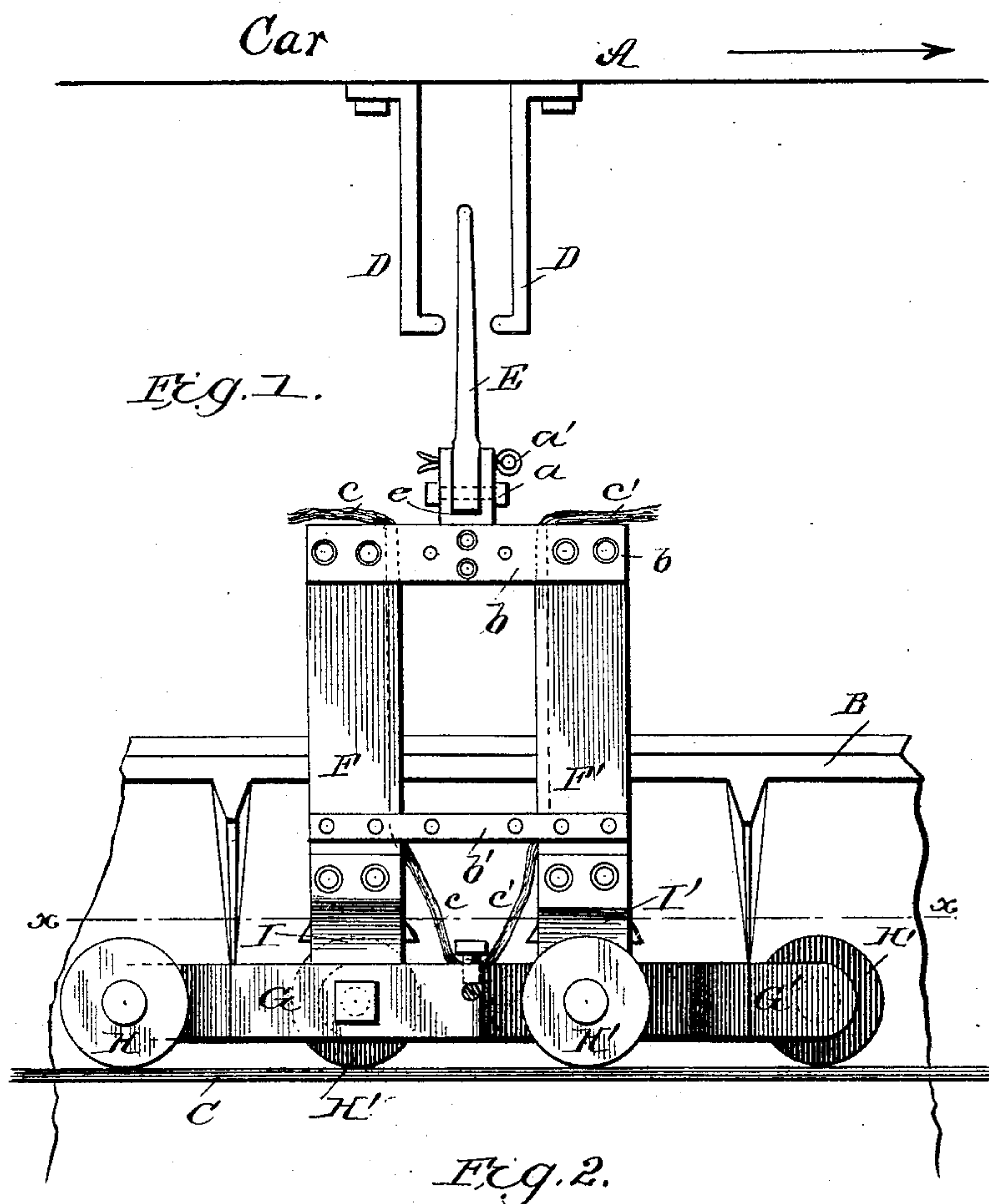
(No Model.)

2 Sheets—Sheet 1.

W. F. JENKINS.  
TROLLEY FOR ELECTRIC RAILWAYS.

No. 481,401.

Patented Aug. 23, 1892.



WITNESSES:

*Fred G. Dieterich*  
*Edw. A. Byrns.*

INVENTOR:

*Wilton F. Jenkins.*  
BY *Wm. L. [Signature]*

ATTORNEYS

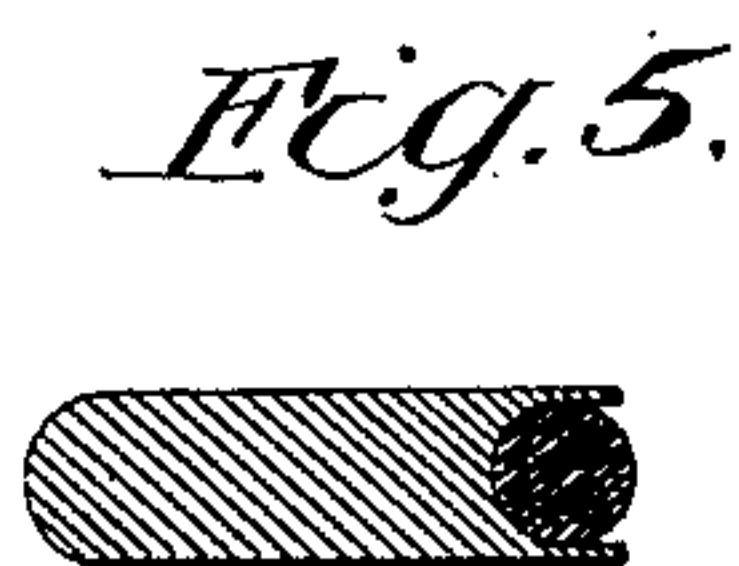
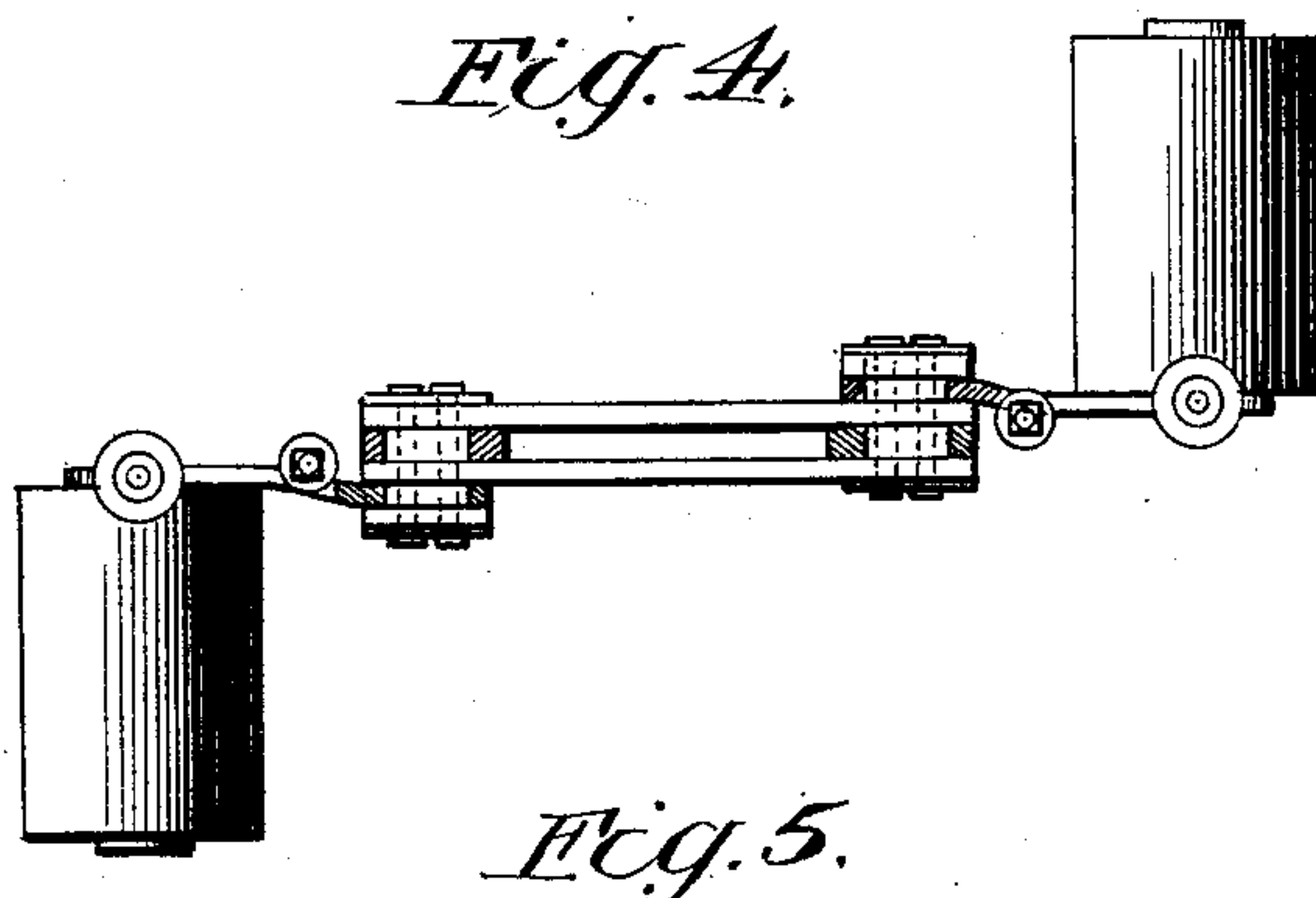
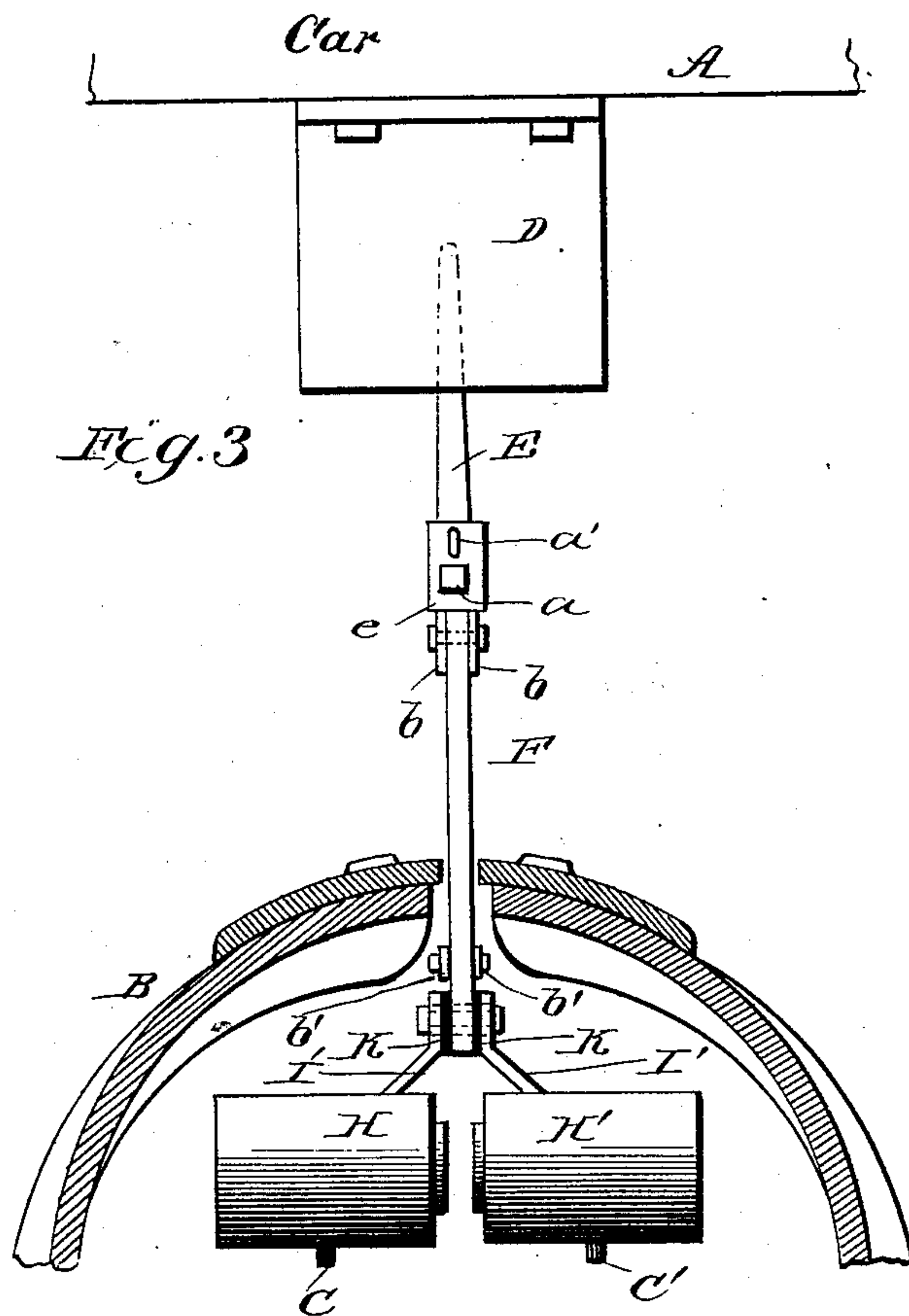
(No Model.)

2 Sheets—Sheet 2.

W. F. JENKINS.  
TROLLEY FOR ELECTRIC RAILWAYS.

No. 481,401.

Patented Aug. 23, 1892.



WITNESSES:  
*Fred G. Dietrich*  
*Edw. W. Byrne*

INVENTOR:  
*Wilton F. Jenkins*  
BY *Munn & Co*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

WILTON F. JENKINS, OF RICHMOND, VIRGINIA, ASSIGNOR OF FIVE-SIXTEENTHS TO LOUIS EUKER AND WILLIAM E. SHELLEY, OF SAME PLACE.

## TROLLEY FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 481,401, dated August 23, 1892.

Application filed September 5, 1891. Serial No. 404,810. (No model.)

*To all whom it may concern:*

Be it known that I, WILTON F. JENKINS, of Richmond, in the county of Henrico and State of Virginia, have invented a new and useful  
5 Improvement in Trolleys for Underground Electric Conduits, of which the following is a specification.

The object of this invention is to provide an improved trolley for underground electric  
10 conduits. It relates to that form of electric railway which employs within a conduit two conductors or circuit-wires, from one of which the current passes to the motor on the car and to the other of which conductors the current  
15 is returned from the motor.

My invention is designed to provide means for separating and insulating from each other the wheels or rollers that travel, respectively, upon the two conductors, means for insuring  
20 a steady and constant contact between the trolley-wheels and the conductor, and in means for loosely connecting the trolley to the car, as will be hereinafter fully described.

In the accompanying drawings, Figure 1 is  
25 a side view of the trolley arranged upon the conductor within the conduit and showing the connection with the car. Fig. 2 is a horizontal section of the same through line *xx* of Fig. 1. Fig. 3 is an end view with the conduit in  
30 transverse section. Fig. 4 is a sectional plan view showing a modification of my invention. Fig. 5 is a cross-section of one of the trolley-shanks.

In the drawings, A represents the car-body,  
35 which is arranged to travel in the direction of the arrow.

B is the conduit, and C C' the positive and negative conductors arranged therein.

From about the middle of the car there de-  
40 pend two parallel plates D D, arranged transversely to the car and bolted to it. These plates are separated about one and a half inches and are open at their ends and have at their lower edges intumed flanges.

FF are the shank-bars of the trolley, which  
45 shanks project upward from the conduit through the slot and are connected by a cross-bar *b* above. These shank-bars are concaved or provided on their inner edges with grooves,  
50 which receive and protect from abrasion the circuit-wires *c c* as they pass to the motor on

the car. Upon the cross-bar *b* is bolted a bifurcated lug *e*, to which is pivoted upon a pin  
*a* an arm E. This arm normally stands in an erect or perpendicular position, being held in  
55 that position by the split key *a'*. When in this position, it lies between the plates D D and forms a loose connection with the car, which causes the trolley to be dragged along with the car. This connection, it will be seen, per-  
60 mits lateral and vertical vibrations of the car to take place without being transmitted to the trolley, and when the trolley is to be disconnected from the car the split key *a'* is removed and the arm E is then turned out from  
65 between the plates D D upon its pivot *a*.

Inside the conduit the shanks F and F' are bolted to a cross-bar *b'*, and are also bolted to bent plates I and I', which at their lower ends are separated far enough to carry the positive  
70 and negative trolley-wheels.

To the lower ends of the plates I and I' are pivoted the rocking levers or frames G and G', each of which carries a pair of wheels or  
75 rollers turning on wrist-pins at opposite ends of the rocking frame or lever—i. e., on opposite sides of the fulcrum.

The two rollers H H of one lever rest upon and receive the current from one conductor C, and the two rollers H' H' of the other lever  
80 rest upon and transmit the current to the other conductor C'. The object in having two trolley-rollers for each conductor mounted upon opposite sides of the fulcrum is to insure a more perfect and certain contact with  
85 the conductor, so as to avoid the accidental breaking of contact, which at high speed is apt to occur from irregularity or variation in the position of the conductors. With the rollers at the opposite ends of a lever or rocking  
90 frame it will be seen that when one roller jumps out of contact with the conductor the other roller approaches and binds more closely and presses upon the conductor with a better electrical contact.

In arranging the trolley shanks and rollers  
95 it will be seen that the rollers of different polarity are arranged in an oblique or diagonal relation instead of directly opposite to each other. This enables me to place the two con-  
100 ductors C C' closer together without danger of short-circuiting the current from proximity



of the trolley-rollers of opposite polarity, and it also enables me to get a larger bearing for the trolley-carriage in longitudinal direction to prevent the tipping of the same on the conductors from the pull of the car.

The advantages secured by the open-sided grooves on the inside edge of the trolley-shanks are that it permits of the easy lateral insertion and removal of the wire, and while perfectly housing and protecting the same against abrasion does not materially diminish the cross-sectional solidity and strength of the shanks.

Having thus fully described my invention, what I claim is—

1. The combination of the shanks  $F F'$ , the cross-bar  $b b'$ , connecting their upper and lower ends in the same plane, the bent or offsetting bars  $I I'$ , bolted to the lower ends of the shanks and having each a fulcrumed horizontal lever  $G$  and  $G'$ , provided at their opposite ends with contact-wheels for the conductors, substantially as shown and described.

2. The combination of the trolley-shanks  $F$  and  $F'$ , connected as described and provided

each upon its inner edge with an open-sided groove, and the circuit-wires  $c c'$ , laid laterally in and protected by said open groove, substantially as shown and described.

3. The combination, with the car-body having forward and rearward bearing-surfaces for the trolley connection, of the trolley-carriage running upon conductors, a subjacent conduit, and a jointed arm  $E$ , connected to the trolley-carriage and arranged to move transversely to the car into or out of the space between the bearing-surfaces, substantially as shown and described.

4. The combination, with the car-body having the pendent parallel plates  $D D'$ , of the trolley-carriage having the bifurcated lug  $e$ , the arm  $E$ , pivoted in the lug upon pin  $a$ , and the spring locking-key  $a'$  for holding the arm in erect position between the said plates, substantially as shown and described.

WILTON F. JENKINS.

Witnesses:

EDW. W. BYRN,  
P. B. TURPIN.