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F. E. WARD.

TROLLEY POLE REVERSER FOR ELECTRIC TRAMWAYS.

APPLICATION FILED DEC. 22, 1902.

NO MODEL.

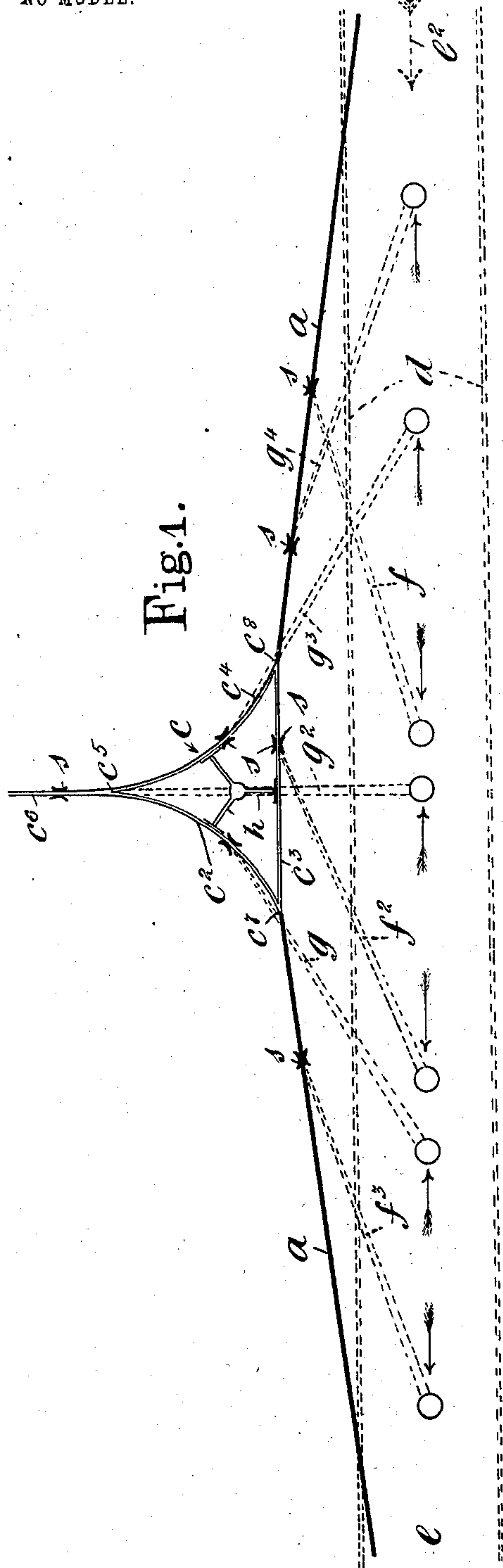
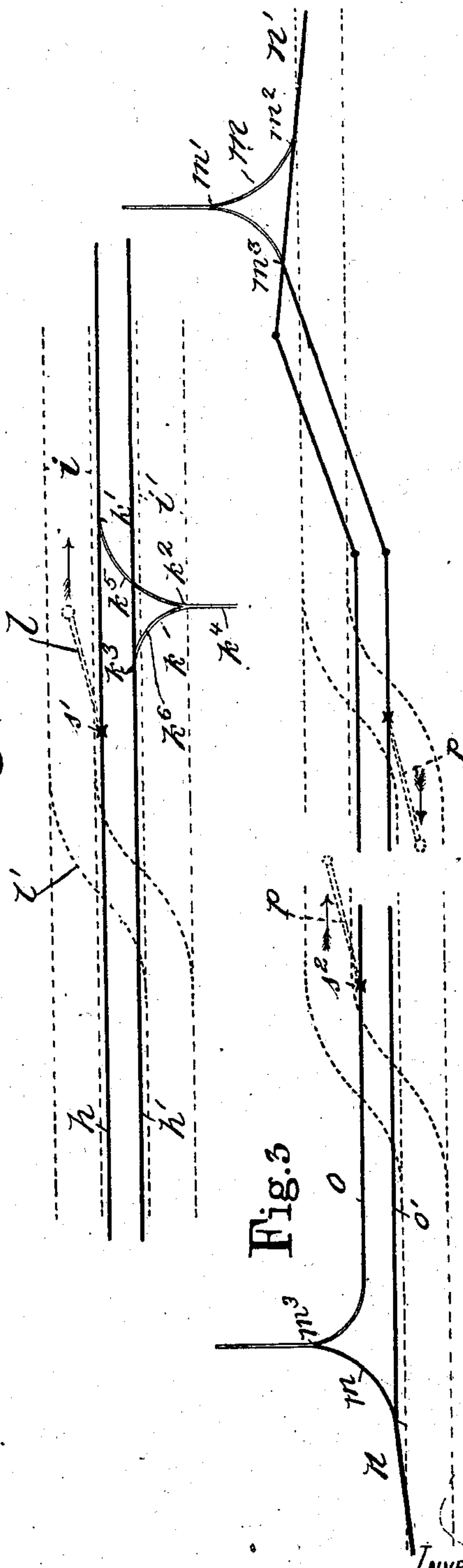


Fig. 2.



WITNESSES.

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TROLLEY-POLE REVERSER FOR ELECTRIC TRAMWAYS.

SPECIFICATION forming part of Letters Patent No. 721,529, dated February 24, 1903.

Application filed December 22, 1902. Serial No. 136,254. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS ERNEST WARD, bank accountant, a subject of the King of Great Britain, residing at 10 Royal Crescent, Cheltenham, in the county of Gloucester, England, have invented a certain new and useful Trolley-Pole Reverser for Electric Tramways, of which the following is a specification.

10 My invention consists of the simple and effective apparatus or appliance hereinafter set forth and claimed for automatically reversing a trolley-pole of an electric tram-car or the like without in any way disconnecting the said pole from the overhead current-conducting wires its trolley end transverses, the said apparatus or appliance being in electrical communication with and practically forming a part of the said wires.

20 A trolley-pole, as aforesaid, usually trails in contact with the overhead wires, and when required to be reversed for the car to make a return journey, or to be shunted off in another direction, as at termini and junctions, or for other purposes, it is usually disconnected from the current-conducting wires by hand and swung or thrown over to the other side of the car, where it is again made to engage the said wires. During the time the trolley-pole is disconnected from the current-conducting wires all current to the car is cut off, which means that at night the car's lights are for a time extinguished. Further, the connection of the trolley-pole to the wires again after it has been swung over from the one side of the car to the other requires some care and at night-time is particularly difficult to accomplish.

40 The apparatus or appliance according to the invention is shown applied in the accompanying sheet of drawings by three diagrammatic plans, Figures 1, 2, and 3, Fig. 1 being to a single overhead-wire system, and Figs. 2 and 3 to double overhead-wire systems.

45 The apparatus comprises in substance a current-carrying guide-wire branching off from the main wire (or from one of the main wires, if there are two) at an angle with said one main wire and again leading onto the said main wire (or onto the other main wire, if two are used) after branching off a certain

distance, such guide-wire being in electrical communication with the main wire or wires at all times and so forming part of it or them that the trolley or the trolley-pole wheel can travel therealong and be reversed thereby without electrical communication between the car and the main wires being stopped, such reversing being quite automatic.

The appliance or apparatus preferably comprises a triangle or similar wire frame applied to the main wire, so that one of the sides of the triangle forms a part of the main wire; but the said appliance or apparatus comprehends other modifications.

In the arrangement of the apparatus, Fig. 1, a is the main current-conducting wire, and c is the appliance or apparatus, which, as before set forth, is a triangular frame composed of sides c^2 c^3 c^4 . This frame is so applied to the wire a that the side c^3 of it practically forms part of the main wire a . From the outer point c^5 of the triangular frame extends a straight extension c^6 of the frame, this extension and the frame being in electrical communication with the main wire a . Suitable frogs are placed at the points c^5 , c^7 , and c^8 of the triangular frame c , the same allowing the traveling of the trolley or trolley-pole along the wire a and along the frame c in the manner hereinafter defined.

The dotted lines d represent the rails upon which the car travels. Now assuming e to be a terminus and that the car is traveling in the direction of the large arrow e^2 , the trolley-pole, which is trailed, travels the main wire a , as represented at f , travels the frame c , as represented at f^2 , and then assumes the position at f^3 , with the car stopped at the terminus. The direction of traveling of the car carrying the pole is now reversed, which causes the said pole to be pushed backward along the wire a until it arrives at the point c^7 of the triangular frame, when the frog at that point forces it to travel along the side c^2 of said frame in the manner indicated at g . After the said pole has traveled the said c^2 it comes into the position as indicated by g^2 and then by the compelling action of the frog at c^5 is made to travel the side c^4 of the frame c , as shown at g^3 , and again onto the main wire a on the other side of the appliance or

apparatus, as shown at g^4 , it being thus seen that during the return travel of the car past the apparatus or appliance the trolley-pole has been automatically swung over and reversed without any electrical disconnection. The parts h are simply stays to the sides of the frame c . The frog applied at the point c^8 of the frame compels the trolley-pole wheel to travel along the side c^3 of the frame when the car moves in the direction of the arrow e^2 . The frame c is suitably supported, so that it is more or less a rigid structure applied at the side of the main wire.

In the arrangement of the invention shown in Fig. 2 there are two main current-conducting wires h and h' and two sets of car-rails i and i' . k is the reversing-frame, applied between the wires h and h' , it having at the points k^1 , k^2 , and k^3 suitable frogs. k^4 is the straight extension of said frame k . Assuming frame k to be at an intermediate point in the car's route and that the car carrying the trolley-pole l is running on the rails i in the direction of the arrow and is required to make a return journey from this intermediate point, the said car after the trolley-pole wheel has passed the frog k^1 commences its return journey on the rails i , and the trolley-pole is thrown over and reversed by traveling the sides k^5 and k^6 of said frame k and is made to engage the return main wire h' , the car traveling the cross-rails l' onto the return-rails i' . The action of the frame k in throwing over the trolley-pole is the same as in the arrangement of the invention described in Fig. 1.

In the arrangement of the invention illustrated by Fig. 3 the reverser-frames m are provided at each terminus n and n' , the overhead main conducting-wires being in double order o and o' . The action of these frames m for throwing over the trolley-pole is just the same as the action of the ones previously described, the one on the left-hand side of the drawing reversing the pole at the junction n and transferring it from the wire o' to the wire o and the one on the right-hand side of the drawing reversing the pole at the junction n' and transferring it from the wire o to the wire o' , suitable frogs being placed at the points m^1 , m^2 , and m^3 . In this Fig. 3 the dotted lines p represent the trolley-poles, their positions being indicated while the car is traveling the rails in the direction of the respective arrows.

In Figs. 1, 2, and 3 the trolley-wheels are denoted, respectively, by s , s' , and s^2 .

Having now described and ascertained the nature of my said invention, what I claim, and desire to secure by Letters Patent, is—

1. For overhead electrical tramways and railways, an automatic reverser for a trolley or similar current-conducting pole, consisting of an apparatus or appliance in the form of a current-carrying guide-wire, applied to the main current-carrying wire so that it branches off from said main wire at an angle for a distance and then proceeds onto the said main wire again or onto another main wire, the said guide-wire being always in electrical communication with the said main wire or wires, and being traversed by the trolley-pole at the time the car is traveling in a reverse direction substantially as described.

2. An automatic reverser for trolley and other current-conducting poles for overhead electric tramways and railways, consisting of a guiding-frame along which a trolley-pole or trolley-pole wheel can travel during the movement of a car, and by which the said pole is automatically thrown or swung over and reversed during a short return movement of the car, and which is in electrical communication at all times with the straight current-conducting overhead main wire or wires, substantially as described and illustrated.

3. An automatic trolley-pole reverser for overhead electrical tramways and railways, consisting of a guiding-frame placed at the side of the ordinary main current-conducting wire or wires and along which the trolley-wheel of a trolley-pole can travel, the said frame having curved sides which are adapted during a short return movement of the car to guide the trolley-pole sidewise and outwardly from the main wire to its full length and to return it reversed onto the same or another main conducting-wire, the said guiding-frame being at all times in electrical communication with the main wire or wires.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANCIS ERNEST WARD.

Witnesses:

ERNEST FRANK LEWIS,
RICHARD ARTHUR GODMAN.