

1,043,532.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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CONTACT-SWITCH EQUIPMENT.

1,043,532.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN R. NESTOR, a citizen of the United States of America, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Contact-Switch Equipments, of which the following is a specification.

This invention pertains to electrical apparatus for connecting roadway and car circuits, and the primary aim thereof is to provide connecting equipment adjustable for different leads by reverse movements of the car.

The invention resides in certain novel features set forth in the following description and defined in the claims.

In the accompanying drawing, wherein similar reference numerals designate corresponding parts throughout: Figure 1 is a side elevation of a car and portions of roadway of a combined trolley and third rail system embodying the features of my invention. Fig. 2, is a section on line 2—2 of Fig. 1. Fig. 3 is a section on line 3—3 of Fig. 1 and Fig. 4 is a section on line 4—4 of Fig. 1.

The car 11 as shown, is provided with trolley mechanism 12 and a rail shoe 13 for taking current for the motor from a conducting wire 12' and rail 13' which conductors extend along different sections of the roadway.

Reference numerals 14, 15 designate electric leads or wires connected with terminals 17, 17' and 18, 18' respectively. The terminals 17, 18 are combined with the trolley mechanism and conveniently consist of rollers journaled on spring pressed binding posts slidably mounted one in advance of the other in insulating bushings 30'' seated in one arm of the trolley harp 30, while the terminals 17', 18' comprise segmental plates secured to an insulating hanger 35 of the car. The terminals 17, 18 are related to a switch arm comprising electrically connected annular contacts 32, 33 secured in concentric relation on an insulating side facing 31' of the trolley wheel 31, which wheel is journaled on bearings 30' provided in harp 30. These bearings are elongated to allow for play of the wheel to shift contact 32 from terminal 17 to terminal 18 or vice versa, as the case may be when the direction of travel of the wheel is reversed. In opposite arrangement of contact 33 I have shown a similar annu-

lus 33' which is secured to an insulating side facing of wheel 31. The peripheries of these annular parts, which, as will be observed, are of frusto-conical form are adapted for engagement with opposite roadway contacts, as 12^a, 12^b, provided in electrical connection with conductor 12' at opposite sides of the path of wheel 31. These roadway contacts are in the form of plates provided with angular contact surface, see Fig. 3, and slidably mounted for vertical movement in suitable recesses provided in a conducting block 39 in which bolts 39' are seated in screw threaded engagement with fastening clips 39^a of conductor 12'.

The terminals 17', 18' are related to a switch arm in the form of a bar 36 which has slotted connection with a pivot 36' on hanger 35 and is connected with the axle of a contact roller 37 journaled in elongated bearings 38' provided in an insulating cross bar 38 which is secured to vertically movable spring pressed guides 39'' mounted on said hanger.

13^a indicates a two way road bed contact for roller 37 conveniently in the form of a plate having oppositely inclined end portions and being supported at suitable elevation for riding engagement of roller 37 whereby when the car passes, traveling in either direction, the contact roller 37 is brought into engagement therewith and thereby adjusted rearwardly in bar 38. This adjustment swings arm 36 to terminal 17' or 18' depending upon the direction of travel of the car. Should the car be reversed when roller 37 is riding on the level portion of the contact plate, friction between these parts will tend to retard travel of the roller and thereby effect a reverse movement of arm 36 to its opposite terminal as allowed for in the slotted connection of the arm with pivot 36'.

The leads 14, 15 may be utilized in connection with electrical signaling apparatus for indicating progress of the car, as for example, a station indicator designated at 8 and including electro-magnets as 9, 9' for operating the indicating mechanism in reverse directions and connected, respectively, with the leads 14, 15 by conducting wires 14', 15'. In this use of my invention a block 39 with contacts 12^a, 12^b is provided for each interval between stations of the trolley section of

the railroad and supported in any convenient manner, as for example by means of a span wire, engaged with a suitable insulator, as 39'', secured to said block, while a contact 13^a is positioned in each interval between stations of the third rail section and electrically connected with conductor 13'. When the car, advancing in the direction indicated by the arrows in Fig. 1, passes a block 39 contacts 33, 33' engage the contacts 12^a, 12^b respectively, thereby insuring straight line movement of wheel 31 and positive engagement of contact 33 with contact 12^a, during which engagement current passes from contact 32 to terminal 17 thence along lead 14 and wire 14' to energize magnet 9. Should the car be backed wheel 31 will be adjusted, as heretofore described, and shift contact 32 from terminal 17 to terminal 18, thereby setting this contact for directing current to lead 15 to energize magnet 9' in the event that backward travel of the car is continued to a block 39. When the car, in advancing passes a contact 13^a roller 37 is adjusted by engagement with the contact to apply arm 36 to terminal 17' and thereby direct current to energize magnet 9. In backward movement of the car past a contact 13^a, adjustment of roller 37 is effected in a reverse direction to that just described thereby applying arm 36 to terminal 18'.

Having thus described my invention what I claim as new, and desire to secure by Letters Patent of the United States of America, is:

1. In mechanism of the character described, in combination with a car, and an electrical conductor on the roadway, of a roadway contact electrically connected with said conductor, a switch mechanism on said car including spaced lead terminals and a switch arm electrically connected for inclusion in circuit with said contact adjustable for alternative engagement with said lead terminals, a bodily adjustable means for adjusting said switch arm disposed to engage said contact and be shifted thereby in opposite directions by reverse movements of said car, and a slotted guide means for guid-

ing said last named means during its bodily movement.

2. In mechanism of the character described, in combination with a car, and an electrical conductor on the roadway, of a roadway contact electrically connected with said conductor, a switch mechanism on said car including spaced lead terminals and a switch arm electrically connected for inclusion in circuit with said contact, means supporting said switch arm for bodily and swinging movements, and yieldingly held means for adjusting said switch arm disposed to engage said contact and be shifted thereby in opposite directions by reverse movements of the car.

3. In mechanism of the character described, in combination with a car, and an electrical conductor on the roadway, of a roadway contact electrically connected with said conductor, a switch mechanism on said car including spaced lead terminals and a switch arm electrically connected for inclusion in circuit with said contact, means supporting said switch arm for bodily and swinging movements, and means yieldingly held for straight line movement disposed to engage said contact and be shifted thereby to operate said switch arm in opposite directions by reverse movements of the car.

4. In mechanism of the character described, in combination with a car, and an electrical conductor on the roadway, of a roadway contact electrically connected with said conductor, a support mounted on said car for vertical movement, means guided on said support for straight line movement in opposite directions by and during reverse movements of the car through engagement with said contact, and switch mechanism on said car comprising spaced lead terminals and a switch arm, said switch arm being electrically connected to said means to be included in circuit with said contact.

Signed at Seattle, Washington, this 21st day of February, 1910.

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Witnesses:

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