(No Model.)

E. M. HEWLETT.

SURFACE CONTACT RAILWAY.

No. 589,894. Patented Sept. 14, 1897.

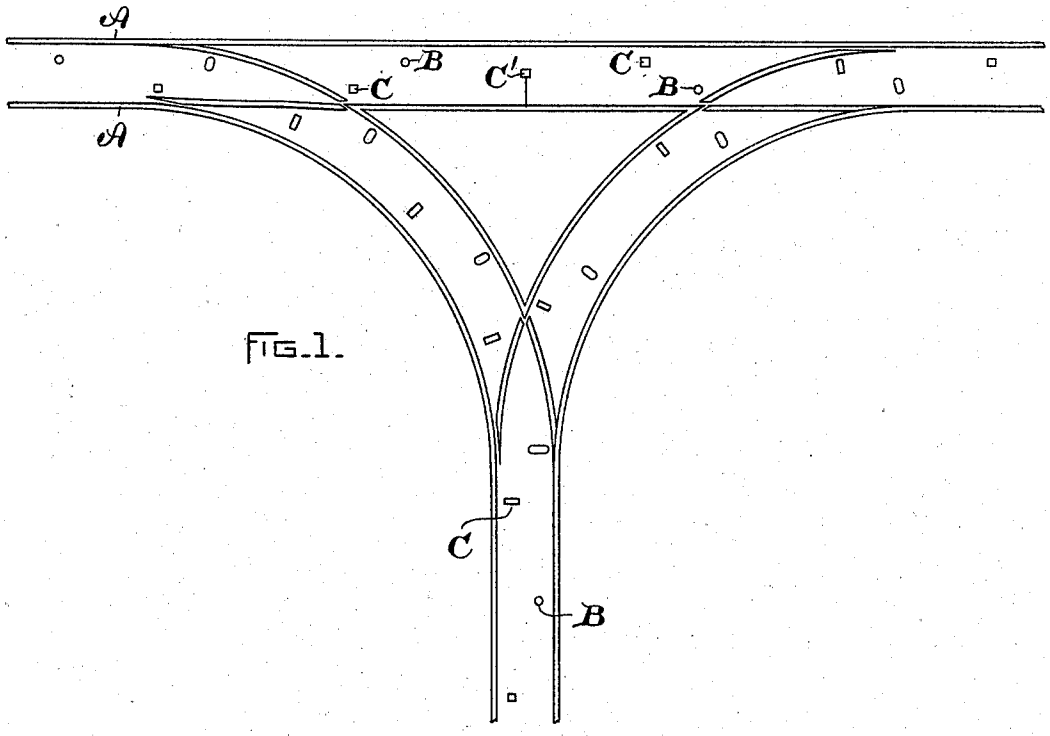


FIG. 1.

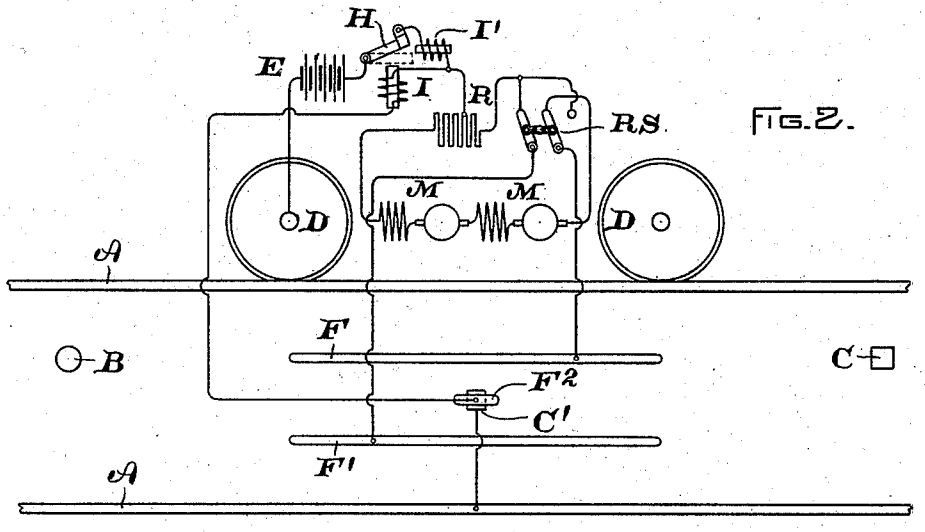


FIG. 2.

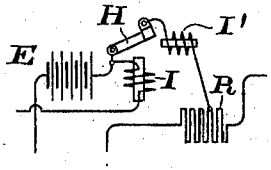


FIG. 3.

WITNESSES.

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SURFACE-CONTACT RAILWAY.

SPECIFICATION forming part of Letters Patent No. 589,894, dated September 14, 1897.

Application filed May 27, 1897. Serial No. 638,377. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. HEWLETT, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Surface-Contact Railways, (Case No. 500,) of which the following is a specification.

My invention relates to surface-contact railways, and has for its object to provide for the proper operation of such roads where the car is turned around at the end of the line.

In turning the car in such systems the contact-shoes are reversed in their relation to the road-contacts. In many cases two sets of contacts are provided, one furnishing motor-current, the other operating the switches, being respectively on the positive and negative sides of the system. In some of the systems with which I am familiar low-potential batteries are also used, being arranged in shunt to the pick-up magnets and being charged by the line-current working through suitable resistances. With this form of construction it is necessary that the relation of the battery and contact-shoes be changed when the contact-shoes are changed in their relation to the road-contacts, so that the line-current will not flow through the battery in the wrong direction.

One form of device commonly employed in turning the car is the well-known Y, and I have illustrated that in my application as a convenient conventional arrangement.

To effect the purposes of my invention, I provide an additional or auxiliary contact-shoe besides those commonly provided. In circuit with this shoe I arrange a magnet-coil operating a circuit breaker or switch (of any suitable form) in the battery-circuit. This is placed convenient to the motorman. In addition to it I provide a reversing-switch by which the relation of the contact-shoes to the battery and motors may be changed. The first switch, opening the battery-circuit, is automatically actuated whenever the auxiliary shoe, which forms for this purpose one terminal of the battery-circuit, is grounded. The other terminal of the battery is also grounded. In the dead space of the Y, which has no working contacts, is a grounded contact registering with the auxiliary shoe. Should the motorman for any reason omit to break the battery-circuit, this circuit will be opened when the auxiliary shoe strikes the grounded contact. The motorman may then, while the battery-circuit is broken, throw the reversing-switch above referred to, changing the relation of the contact-shoes, motors, and battery. When the switch in the battery-circuit is again closed, the car is ready to operate in the reverse direction and by this time will have passed off the dead space in the Y. The battery may then be operated to pick up the switches in the usual way well known in such systems and not necessary to here describe.

The accompanying drawings show diagrams of arrangements embodying my invention, Figure 1 being a plan view of a suitable Y, Fig. 2 a diagram of the circuits of a car equipped according to my invention, and Fig. 3 a diagram of a modified form of the circuits.

In Fig. 1, A A are the track-rails, B B are the motor-contacts, and C C are the usual switch-contacts. The particular form of the Y having the extended contacts insuring proper registration with the contact-shoes is not of my invention, and I simply employ it as a convenient illustration.

In Fig. 2, A A are, as before, the track-rails; B, a motor-contact; C, a switch-contact. C′ is an auxiliary or grounded contact for the auxiliary shoe before referred to. The part of the track represented is the dead space of the Y, across which the car is supposed to drift or pass by its own momentum, and for this reason the switch-contact C and the motor-contact B appear on the same side of the track, though normally they are upon opposite sides, and register, respectively, with the positive and negative sliding contacts. This will be understood from an examination of Fig. 1. D D are the track-wheels. E is the battery. F F′ are the main or ordinary contact-shoes. F^2 is the auxiliary contact-shoe. C′ is the grounding contact. M M are the motors. R is the motor-resistance. R S is the reversing-switch for reversing the contact-shoes F F′ with the motors and battery. The special switch for opening the battery-circuit is indicated at H and is actuated by the magnet-

coil I, indicated in circuit with the shoe F^2. At I′ is a blow-out magnet for extinguishing any arc which might form from opening the battery-circuit.

In Fig. 3 some of the same parts are shown as in Fig. 2, but in Fig. 2 the magnet-coil I is cut out of the battery-circuit by the opening of the switch H. In Fig. 3, however, an examination of the connections will show that this magnet-coil is always maintained in circuit even when the switch H is open.

The operation of the parts just described has been briefly indicated in the statement of invention. More particularly, however, it is as follows: Assume that the car is passing to the right in Fig. 2 and that the shoe F is on the positive side of the circuit and has been taking current from the motor-contact B. With the switch R S in its illustrated position this shoe would be grounded as soon as it strikes the contact C, and if the controller be on, the motors being run by momentum, would feed current directly into the battery, and as soon as the shoe F engaged with the motor-contact B toward the right of the figure (not illustrated) current would pass from that contact also directly through the battery, which would thus be in circuit with but small resistance directly between the two shoes. When, however, the auxiliary shoe F^2 strikes the grounded contact C′, the coil I is energized and pulls open the switch or circuit-breaker H, the blow-out coil I′ extinguishing any arc that may be formed. It is designed to arrange this switch in the motorman's cab, so that his attention will be attracted by the switch opening. The switch R S is thrown to its dotted-line position, thus reversing the relation of the motors and battery to the shoes F F′. The battery-circuit being opened it is immaterial whether this is done on the dead part of the Y or after the car has passed along farther, but as soon as it is done the switch H would be closed, establishing the battery-circuit again, and the car would be ready to operate in the opposite direction.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an electric car, the combination of motors, a battery, and contact-shoes connected thereto, with an auxiliary shoe, an automatic switch in circuit therewith acting to open the battery-circuit upon grounding the auxiliary shoe, and a switch for reversing the leads to the contact-shoes while the battery-circuit opens.

2. In a surface-contact railway provided with means for turning the car, an automatic switch for opening the lead from the battery to one of the contact-shoes, and a contact in the roadway for opening the switch.

3. The combination of an automatic switch actuated by a contact in the roadway to open the battery-circuit, with a switch acting to reverse the leads between the motors and battery and the contact-shoes.

4. In a surface-contact railway provided with a Y for turning the car, the Y having a dead space in which there are no working contacts, a battery one end of which is grounded, a switch in the battery-circuit, a coil acting to open the switch, an auxiliary shoe connected to the coil, and a contact in the dead space for grounding the auxiliary shoe.

In witness whereof I have hereunto set my hand this 25th day of May, 1897.

EDWARD M. HEWLETT.

Witnesses:

B. B. HULL,

M. H. EMERSON.