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1,647,172

L. CARUSO

TOY ELECTRIC RAILWAY

Filed Oct. 24. 1925

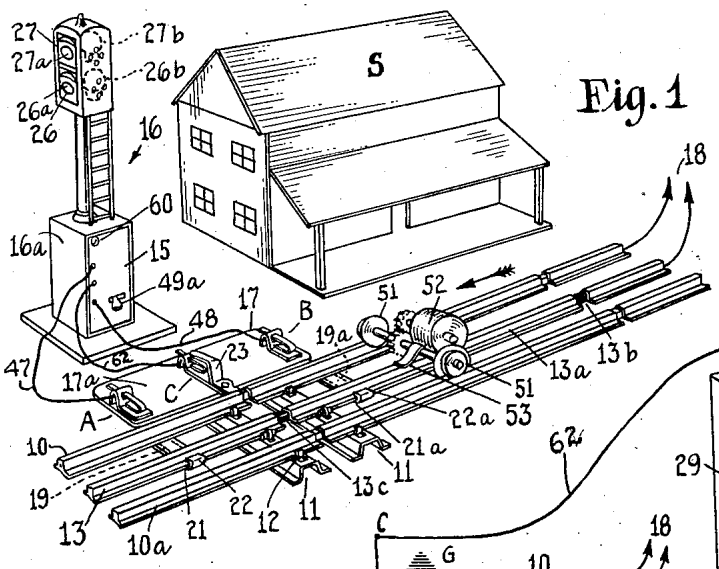

Fig. 1

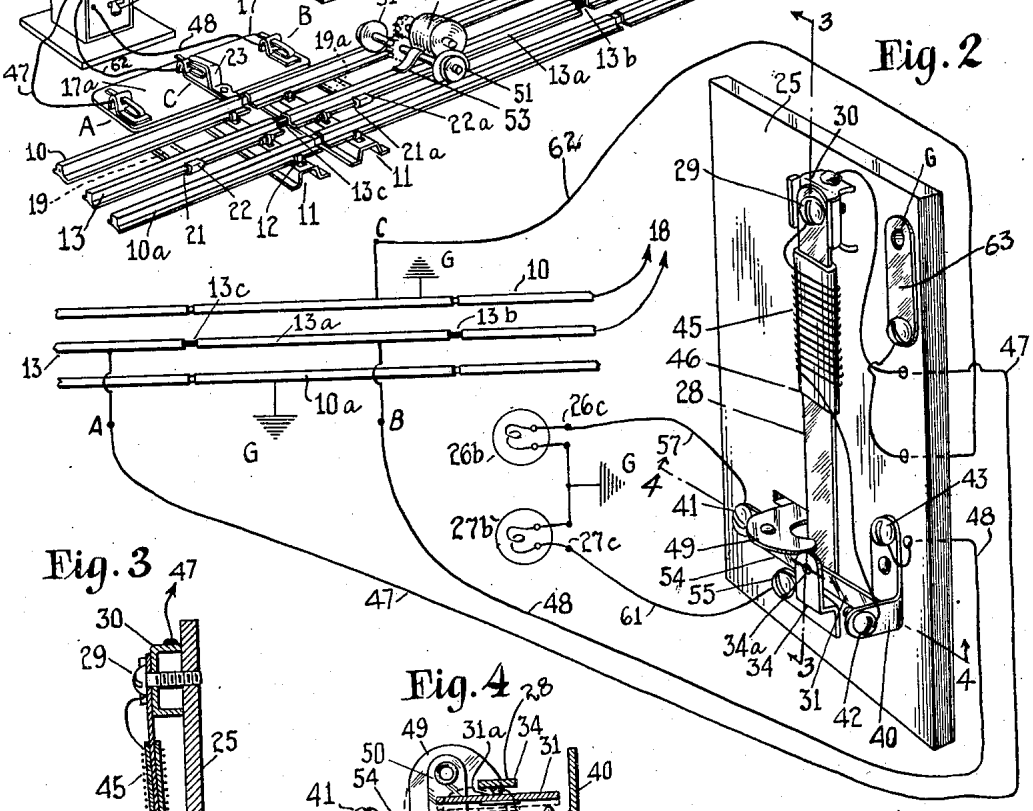

Fig. 2

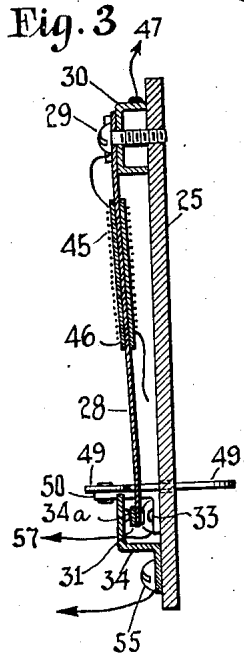

Fig. 3

Fig. 4

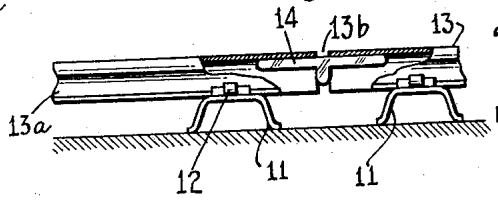

Fig. 5

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UNITED STATES PATENT OFFICE.

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TOY ELECTRIC RAILWAY.

Application filed October 24, 1925. Serial No. 64,645.

This invention relates to toy electric railways. Among the objects of the invention is to provide a device of the character described which shall comprise comparatively few and simple parts, shall be readily attachable directly to the toy track, and efficient in operation to a high degree.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

Certain features herein shown and described are shown, described, and claimed in my co-pending application Serial No. 28,763, filed May 8th, 1925.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts, which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawing, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is a perspective view of a toy railway installation equipped with an improved automatic train stopping and restarting control and signaling device embodying the invention;

Fig. 2 is a diagrammatic view of the wiring system and a perspective view of the rear side of the control device panel;

Figs. 3 and 4 are cross-sectional views taken on lines 3—3 and 4—4 in Fig. 2 showing the contacts in their normal position; and

Fig. 5 is a fragmentary view of a portion of the third rail showing parts broken away to show the pin connection.

Referring in detail to the drawing, the invention is there shown applied to a toy railway track system comprising two main rails 10, 10ª, usually attached in proper spaced relation to each other and at suitable lengths by means of cross ties 11, the connection between the rails and cross ties indicated at 12 being of any convenient or conventional type, and a "third" or power rail 13 extending between the main rails 10, 10ª, which is secured to the cross ties, said rails being constructed in the well known manner and supplied with power from any suitable source (not shown) through the conductor wires 18. The tracks are preferably made in standard sections joined together by means of a pin and socket connection in the well known manner.

At any desired point along the track, as for example, in the portion passing a station indicated at S in Fig. 1, a section 13ª is insulated from the remainder of the "third" rail as at 13ᵇ and 13ᶜ by replacing the usual metallic connector pins by a fibre pin 14 (see Fig. 5).

An automatic train stopping and restarting and signaling control device 15 embodying the invention is shown incorporated as a unit in a toy tower 16, and is preferably connected to the track system by a binding plate 17. Extending from the base portion 17ª of said plate are spaced arms 19 and 19ª which are of sufficient length to reach beneath the rail 10, and also beneath and beyond the "third" rail 13. Current carrying strips 21 and 21ª may be insulated from and secured to the under side of the arms 19 and 19ª respectively, each strip extending beyond the free end of the arms 19 and 19ª and being upturned to form contact clips 22 and 22ª respectively for engaging the rail 13. The other ends of said strips opposite said clips may be constructed to pass through the base portion 17ª and connect with quick detachable binding or terminal posts A and B. A grip lever 23 is pivoted to said base portion between the binding post for engaging with the outside flange of the rail 10, i. e. the side remote from the third rail to firmly and positively anchor the binding member 17 to the tracks, and suitable means such as binding or terminal post C for connecting the rail 10 to the control device 15 may be also provided. Thus, as will be seen from Fig. 1, the current carrying strips 21 and 21ª are brought into close contact with the third rail and with the insulated rail section 13ª in conjunction with which the device 15 operates, as will hereinafter appear.

The device 15 is seen to comprise a thermostatic control switching mechanism mounted on a panel 25 and two semaphores 26 and 27, said device being preferably constructed to form a unit by installing the mechanism and panel in the tower base 16^a, and the semaphores at the top of the tower as shown in Fig. 1. The tower and semaphores are preferably constructed and arranged to simulate in appearance like apparatus used in actual railway signal work, the semaphores comprising a green and red transparent window 26^a and 27^a in the top housing of the tower 16 through which lights 26^b and 27^b, respectively, are arranged to show for flashing signals controlled by the device 15.

The thermostatic switch control mechanism of the device 15 is seen to comprise a flexure member 28 which has one end anchored by a screw 29 on a raised support 30 so that the member 28 is spaced from the rear side of the panel. Carried on and extending transversely of the free end of the member 28 is a switch blade 31 which when flexed out of a normal position bridges spaced contacts 32 and 33, fixed to the rear side of the panel 25, the mid-portion 31^a of said blade being adapted to engage a contact 34^a when the member 28 is raised to its normal position, said contact 34^a being mounted to project down from an overhanging end of a Z-shaped support 34 secured to the panel 25 as shown in Figs. 2 and 3.

Any suitable heating means may be provided for effecting the flexure of member 28, as for example a plurality of turns of heater wire 45 wound over an asbestos or like insulating covering 46 on said member 28. One end of the wire 45 and the end of the member 28 at screw 29 may be connected with the terminal post A, by means of conductor wires 47.

A hook ended lever 49 for manually throwing the device 15 in and out of operation is provided, said lever having a handle 49^a extending out from the front of the panel 25 and pivoted to an angle piece 50 mounted on the rear side of the panel 25. The hook end of the lever is adapted in one extreme position thereof to engage the member 28 for depressing same and making the device ineffective.

The operation of the device will now be clear. The locomotive is represented in the drawing by wheels 51 which are driven by motor 52, the latter receiving power in the well known manner from the track 10 through a contact shoe 53 riding on the third rail and through the wheels 51.

Assume the train to be traveling in the direction indicated by the arrow shown in Fig. 1 and the lever 49 disengaged from the member 28. Before the locomotive reaches the insulated section 13^a of the third rail, the parts of the automatic train stopping restarting and signaling device are in their normal effective position shown in Fig. 3 and in full lines in Fig. 4, the current passing from the main line portion of the third rail 13 through the current carrying strip 21 to binding post A, and thence to the conductor wires 47. The current through wire 47 passes through the member 28 and blade 31 to the contacts 34^a on the support 34 and from a binding screw 55 on the latter connects through a conductor wire 61 with the terminal 27^c of the lamp 27^b positioned behind the red colored window 27^a in the tower 16. The other terminal of the lamp 27^b is permanently grounded as at G, to the structure of the tower 16 through the screw 60 as is also rail 10 through the lever 23 of the binding plate 17, terminal post C, and conductor wire 62 connecting with the jumper 63 secured to the rear side of the panel 25 and held to the tower structure by the screw 60, thus completing the circuit and causing the red light to show in the tower (see Figs. 1 and 2).

When the train reaches the portion of the track which includes the insulated section 13^a the direct power circuit to the shoe 53 and the motor 52 is interrupted. The current then flowing to the motor 52 is supplied through current carrying strip 21 to binding post A, and thence through conductor wire 47, heater coil 45, binding screw 42, on an upstanding side of an L-shaped member 40 which is secured on the rear side of the panel 25 and has mounted thereon the contact 32. From the member 40 the current passes through a conductor wire 48 having one end secured under a binding screw 43 on said member 40 to binding post B, current carrying strip 21^a to the insulated rail section 13^a which connects through the shoe 53 with the motor 52.

It is apparent that due to the resistance of the heater coil in series with the motor 52, the power to the latter is materially reduced and the train stops because of insufficient power supply. After a short interval of time the heater coil 45 due to the flow of current, heats the flexure member 28 sufficiently to cause it to flex from its normal position to that shown in dotted lines in Fig. 4.

The movement of member 28 swings the blade 31 and breaks the circuit at contact 34^a thus extinguishing the light 27^b behind the red colored window, causing the blade 31 to engage contact 32 and current to flow through a jumper 54 on which the contact 33 is mounted to a wire 57 secured thereto by means of binding screw 41, and connecting with one terminal 26^c of the lamp 26^b being positioned behind the green colored window 26^a in the tower 16. The other terminal of the lamp 26^b is permanently grounded as at G to the structure of the tower 16 from

which the circuit is completed through the grounded rail 10, thus causing the green light to show in the tower.

The flexing of the member 28 also causes the blade to engage the contacts 32 and thereby permit the direct flow of current from the third rail 13 to terminal post A through the wire 47, member 28, blade 31, L-shaped member 40, conductor wire 48, terminal B and strip 21^a to the rail section 13^a. Full voltage is now impressed on the locomotive motor 52 which automatically restarts the train. After the locomotive passes over the rail section 13^a, the current through the heater coil 45 is cut off and the member 28 is permitted to cool and to return to its initial position, thus automatically extinguishing the green and relighting the red signal.

To make the device 15 inoperative, the lever 49 is swung so that the hooked end thereof engages member 28, and is effective to retain said member and blade 31 out of their normal position. The third rail section 13^a is thereby directly connected to the third rail 13, and the green light then shows continuously.

From the foregoing description, the advantages of the device and apparatus above described will be at once apparent.

It will be noted that the signal lamp and the electrical control mechanism for the lamps and the stopping and restarting of the train are all assembled and embodied in a neat and compact signal and switch tower unit which may be sold separately and readily connected to a standard toy railway track system, it being simply necessary in some manner to insulate a section of the third rail. To this end small fibre pins may be furnished together with the tower unit for replacing the metallic pin connectors, thus making the matter of connecting the standard electric toy outfit into one having the interesting train and signaling control features above described so simple as to permit installation and operation by the average child.

It will be thus seen that there is provided a device in which the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a toy railroad having rails, a power supply means free from moving parts, an electrically operated thermostatic switch adapted to be connected to the circuit of the power supply means comprising a flexure member, a heater coil surrounding the same, a current carrying blade mounted on said member, and fixed contacts connected to the power supply means having a single section insulated therefrom, said contacts being normally spaced from each other and adapted to be connected by the blade on heating of the flexure member.

2. In a toy electric railroad having rails, a power supply means free from moving parts, an electrically operated thermostatic switch adapted to be connected into the power supply means circuit comprising a flexing member, a heater coil surrounding the same, a blade carried by said member, and fixed contacts for engaging with the blade, one fixed contact being connected to a section insulated therefrom, the other fixed contacts being adapted to connect with a semaphore for indicating the operation of the switch.

3. An automatic train stopping and restarting device for a toy electric railroad comprising an electrically operated thermostatic switch adapted to be connected in circuit with the power supply, said switch including a flexing member, a current carrying bar mounted on said member, a fixed contact normally held out of engagement with said bar adapted to reduce the power to a non-movable portion of the track system to stop the train along said portion, and a heating means arranged to flex said member for engaging the bar with said contact to connect said portion directly to the power supply on the passage of the train along said portion to automatically restart the train.

4. An automatic train stopping, restarting and signaling device for a toy electrical railroad comprising an electrically operated thermostatic switch adapted to be connected in circuit with the power supply, said switch including a single flexing member, a current-carrying bar mounted on said member, one fixed contact normally held out of engagement with said bar adapted to reduce the power to a non-movable portion of the track system to stop the train along said portion, a heating means arranged to flex said member for engaging the bar with said contact to connect said portion directly to the power supply on passage of the train along said portion to automatically restart the train, and another fixed contact spaced from the first mentioned contact simultaneously engaged by said bar adapted to control a semaphore to indicate the normal and flexed position of said member.

5. In a toy electric railroad having rails, a power rail free from moving parts, and an

electrically operated thermostatic switch connected with the power rail circuit comprising a flexing member, a heater coil surrounding the same, a current carrying bar movable with said member, spaced contacts on said bar, and fixed contacts for engaging with the contacts on said bar, one fixed contact being connected to an insulated section of the power rail, the other fixed contacts being adapted to connect with a semaphore for indicating the operation of the switch.

In testimony whereof I affix my signature.

LOUIS CARUSO.