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L. CARUSO

TOY ELECTRIC RAILWAY

Filed Oct. 24. 1925

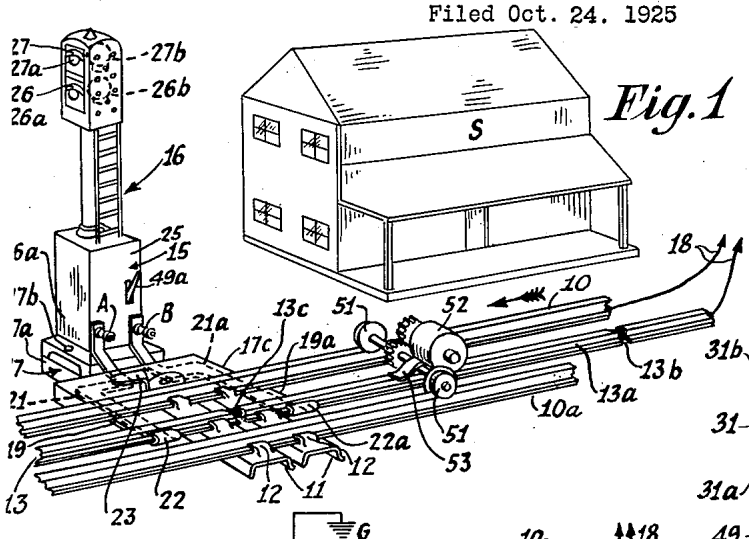

Fig. 1

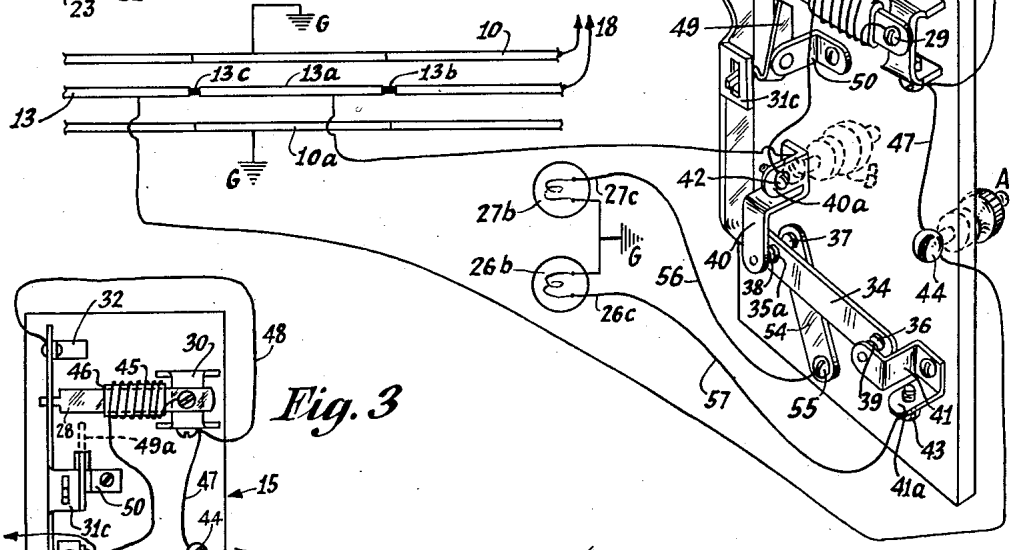

Fig. 2

Fig. 3

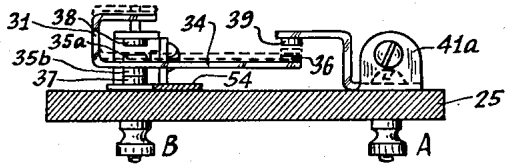

Fig. 4

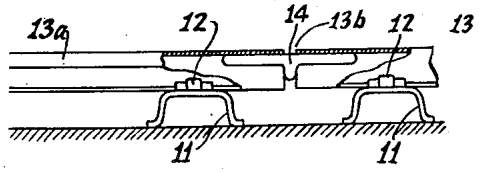

Fig. 5

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UNITED STATES PATENT OFFICE.

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TOY ELECTRIC RAILWAY.

Application filed October 24, 1925. Serial No. 64,647.

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;

Fig. 3 is a plan view showing the rear side of the control device panel;

Fig. 4 is an enlarged cross-sectional view taken on line 4—4 in Fig. 3 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, 10^a 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, 10^a 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 13^a is insulated from the remainder of the "third" rail as at 13^b and 13^c 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 member 17 which may be made integral with the base 16^a of the tower 16, or may have the latter firmly mounted on the base portion 17^a of said member by any suitable means, such as screws 17^b (see Fig. 1). Extending from said base portion 17^a is a yoke member 17^c having spaced arms 19 and 19^a 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 21^a may be insulated from and secured to the under side of the arms 19 and 19^a respectively, each strip extending beyond the free end of the arms 19 and 19^a and being upturned to form contact clips 22 and 22^a respectively for engaging the rail 13. The other ends of said strips opposite said clips may be constructed to pass through the yoke member 17^c and connect with the external binding or terminal posts A and B of the device 15. A grip lever 23 is pivoted to the yoke member 17^c 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. Thus, as will be seen from Fig. 1, the current carrying strips 21 and 21^a are brought into close contact with the third rail and with the insulated rail section 13^a in conjunction with which the device 15 operates, as will hereinafter appear. The connection with rail 10 serves as a grounded current carrying means to the structure of the tower 16.

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, the free ends of said member 28 projecting through an opening 31^a in a mid-portion of a carrying bar 31 extending transversely thereto. The bar 31 pivots at 31^b on an angle piece 32 and carries on its free end at right angles thereto an arm 34. Mounted on opposite sides of the arm 34 are contacts 35^a and 35^b, and spaced from the former is another contact 36. The contact 35^b is normally adjusted to connect with a contact terminal 37 fixed on the rear side of the panel 25; and the contacts 35^a and 36 are adapted to engage respectively contact terminals 38 and 38^a when the pivoted bar 31 is raised on flexing of the member 28 out of normal position; said contacts 35^a and 36 being mounted to project down from the overhanging ends of spaced Z-shaped supports 40 and 41 respectively. The Z-supports 40 and 41 may have ears or lugs 40^a and 41^a into which are threaded binding screws 42 and 43 respectively, and may each be secured to the panel in any suitable manner. The Z-support 40 has a portion thereof extending through the panel 21 to form a binding post B. A binding screw 44 likewise extends through said panel and is spaced therefrom to form part of the binding post A.

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 as shown in Figs. 2 and 3. One end of the wire 45 and the end of the pivoted bar 31 may be connected with the binding screw 44 and the terminal post A, by means of conductor wires 47 and 48, the other end of the wire 45 being connected to the binding screw 42 and terminal B.

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 free end of the lever is adapted in one extreme position to engage with a slotted lug 31^c projecting from the bar 31 for 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 pivoted bar 31. 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. 2 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 and 48. The current through wire 48 passes through the bar 31, the arm 34 to the contacts 35^b and 37, to a jumper 54 having one end connected to contact 37, and the other to a wire 56 secured thereto by means of a binding screw 55 which connects with one 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 as is also rail 10 through the lever 23 of the binding member 17, 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, Z-shaped member 40 and 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 bar 31 and the arm 34 and breaks the circuit

to contacts 35^b and 37, thus extinguishing the light 27^b behind the red colored window, while the contact 35^a on the other side of the arm 34 engages contact 38 causing the current to flow through arm 34, contacts 36 and 39, Z-shaped member 41 to a wire 57 secured thereto by means of binding screw 43, 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 contacts 35^a and 38 to engage and thereby permit the direct flow of current from the third rail 13 to the bar 31, 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 end engaging the slotted lug 31^c of the bar 31, is effective to retain said bar and arm 34 out of its 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, a track and "third" rail system formed of standard sections including an insulated "third rail" section, an electrically operated thermostatic switch for automatically reducing and increasing the power supplied to the insulated rail section, and means for rigidly connecting the switch to the said rails, said means including a pair of current carrying strips connecting the third rail system and insulated section to the switch.

2. In a toy railroad, a track and "third" rail system formed of standard sections including an insulated "third rail" section, an electrically operated thermostatic switch for automatically reducing and increasing the power supplied to the insulated rail section, and means for rigidly connecting the switch to the said rails, and a semaphore for indicating the switch operation, said switch, means and semaphore forming a unit independent of the track system.

3. In a toy railroad having rails, a power rail free from moving parts and an electrically operated thermostatic switch connected in circuit with the power rail comprising a flexure member, a heater coil surrounding the same, a pivoted current carrying bar operated by said member, a contact moved by said bar, and a fixed contact connected to an insulated section of the power rail, said contacts being normally spaced from each other and adapted to engage on heating of the flexure member.

4. 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 single flexing member, a pivoted one-piece current carrying bar actuated by said member, contacts normally held out of engagement by said bar adapted to reduce the power from a portion of the track system to stop the train along said portion, and a heating means arranged to flex said member for engaging said contacts to connect said portion directly to the power supply, on the passage of the train along said portion to automatically restart the train.

5. An automatic train stopping, restarting and signaling 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 single flexing member, a pivoted

one-piece current carrying bar actuated by said member, contacts normally held out of engagement by said bar adapted to reduce the power from a portion of the track system to stop the train along said portion, a heating means arranged to flex said member for engaging said contacts to connect said portion directly to the power supply on passage of the train along said portion to automatically restart the train, and other contacts operated by said bar adapted to control a semaphore to indicate the normal and flexed position of said member.

In testimony whereof I affix my signature.

LOUIS CARUSO.