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A. N. HOFFMANN

TOY ELECTRIC RAILWAY CONSTRUCTION

Filed April 30, 1924

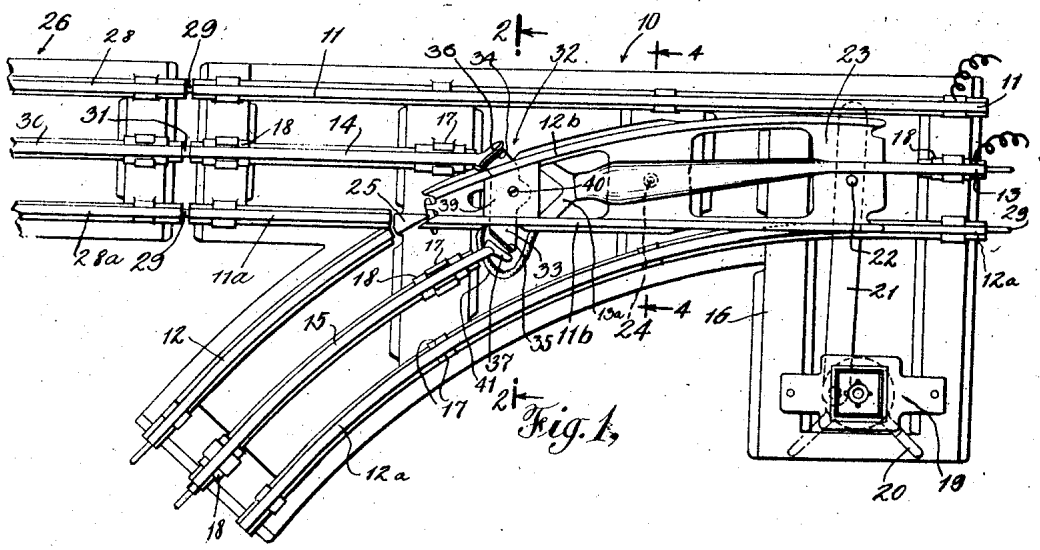



Fig. 1,

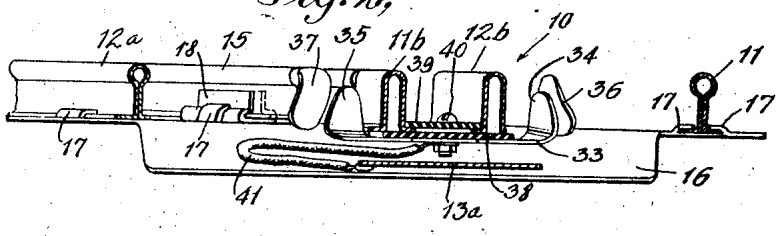



Fig. 2,

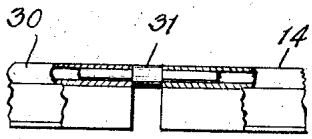
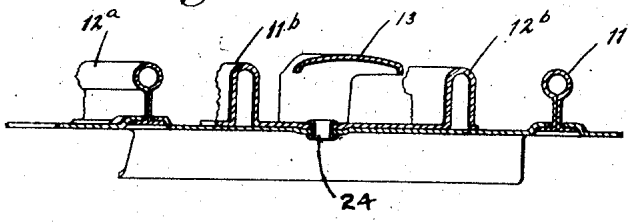



Fig. 3,

Fig. 4,




Inventor
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By his Attorney

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# UNITED STATES PATENT OFFICE.

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## TOY ELECTRIC-RAILWAY CONSTRUCTION.

Application filed April 30, 1924. Serial No. 709,956.

*To all whom it may concern:*

Be it known that ARTHUR N. HOFFMANN, citizen of the United States, residing at New York city, in the county of Kings and State of New York, has invented certain new and useful Improvements in Toy Electric-Railway Constructions, of which the following is a specification.

This invention relates to toy electric railways and more particularly to an improved construction of track junction switch therefor.

The object of the invention is to provide an improved construction in a track switching section whereby the portions of the live or "third" rail adjacent the switch are arranged to be cut in and out of the electrical circuit in operative relation to the switch position.

Another object of the invention is to provide means for elimination of possible derailment at switching points by automatically disconnecting the power from the portion of the rail leading to the switch on the exit side thereof on setting the latter closed against said rails.

A further object of the invention is to provide an electrical and mechanical toy railway switch which shall be simple and rugged in construction and efficient in operation to a high degree.

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

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 plan view of a toy track junction switch construction embodying the invention;

Fig. 2 is a sectional view in side elevation taken on line 2—2 of Fig. 1; and

Fig. 3 is a fragmentary view in side elevation partly in section of the insulated third rail joint; and

Fig. 4 is a sectional view in side elevation taken along line 4—4 of Fig. 1.

Referring to the drawing, 10 denotes a railway track switching section comprising a junction of a pair of straight tracks 11 and $11^a$ with a pair of curved spur tracks 12 and $12^a$, and of a third or live rail 13 with similar rail portions 14 and 15. Rails 13, 14, and 15 may be situated in any suitable relation to the tracks 11, $11^a$, 12, and $12^a$, and to the present instance are shown to extend lengthwise and midway between each pair of said tracks.

All the above described tracks and rails forming track section 10 may be firmly secured to a sheet metal base 16 by clips 17. Rails 13, 14, and 15, in addition may be insulated from said base frame 16 and clips 17 by means of strips 18 of insulating material in well known manner and as shown in Figs. 1 and 2.

To one side and at one end of base frame 16, a switch control 19 is mounted and comprises a lever 20 pivoted to oscillate a flat bar 21 which extends transversely of the tracks 11, $12^a$, and rail 13 as shown in Fig. 1. Bar 21 is pivotally secured at 22 to a plate member 23 which in turn is pivoted at 24 (shown in dotted lines in Fig. 1) to be swingably supported on base frame 16. The longitudinal edge of plate member 23 may be upturned and shaped to form the movable track portions $12^b$ and $11^b$ which form the continuation of track 12 and $11^a$ respectively. A fixed frog 25 positioned at the junction of rail 12 and $11^a$ permits proper alignment with the movable tracks $12^b$ and $11^b$ in the usual manner.

Track section 10 may be joined to other sections at its free ends, a fragmentary portion of joining section being shown at 26 in Fig. 1, which has its tracks 28 and $28^a$ joined to tracks 11 and $11^a$ respectively by means of a metallic pin 29, and rail 14 to rail 30 by an insulating pin 31. The purpose of the latter will hereinafter appear.

The electrical circuit through the tracks and rails is formed by connecting one con-

ductor thereof to track 11 and the other to insulated rail 13 as shown in Fig. 1. Track 12 of the curved spur is also normally connected to the same side of the circuit as is track 11.

The current may be carried from track 11 and rail 13 of section 10 to the tracks and rails of other sections through the pins 29 except to rails 14 and 15. These, as will be plainly seen from Fig. 1, are cut in and out of circuit through an electrical contact switch 32. Thus, contact switch 32 comprises a metallic strip 33 having upturned ends or blades 34 and 35 securely mounted on the under side of plate member 23 to move therewith, and fixed blades 36 and 37 formed on the ends of rails 14 and 15 respectively. Blades 34 and 35 are arranged to make contact with fixed blades 36 and 37 respectively. Strip 33 is insulated from plate member 23 by means of insulating pieces 38 and 39 as shown in Fig. 2, and may be secured to said member 23 by a screw 40 to which is fastened a flexible lead 41. Rail 13, as it passes over and beyond the pivot point 24 may have its end portion $13^a$ bent downwardly through an opening in member 23 to pass under strip 33. Conductor lead 41 may have one end thereof soldered thereto thus connecting strip 33 with portion $13^a$.

The operation of the improved switching device is as follows: With the parts in position as shown in Fig. 1, it will be seen that the switch is open to the straight tracks 28, 11, and $11^a$, and that electric switch 32 has its blades 34 and 36 in contact connecting rail section 14 into circuit with live rail 13. Rail 14, otherwise being insulated from the power at one end by the pin 31 and at the other open circuited blade 36, the electric locomotive passing over the tracks 11 and $11^a$ toward the switch, that is, from the exit side (left to right as shown in the drawing), will safely pass over the switch and receive power throughout its travel. Now, if the locomotive attempted to advance from the exit over tracks 12 and $12^a$ toward the switch which is shown closed against it, it would be stopped because of the failure of power since rail 15 is insulated from the power end by pin 31 and at the other end disconnected from the circuit at blade 37.

By swinging lever 20 of the switch control 19 to the left, (as shown in dotted lines in Fig. 1), the switch would be opened to tracks 12 and $12^a$ and closed against tracks 11 and $11^a$. Simultaneously, electric switch 32 would disconnect rail 14 from the circuit with live rail 13 and connect rail 15 therewith.

With the switch in the last mentioned position, the locomotive would be able to advance along tracks 12 and $12^a$ toward the switch from the exit side but its approach on tracks 28 and 11 and $11^a$ would be stopped before reaching the switch. The most common accidental derailment is thus prevented.

It will thus be 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 drawings 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 electric railway having a switching section, the combination of a track switch, a power rail running lengthwise the said section and means including an interconnection with the said switch for disconnecting the power from the portion of the rail at the exit end of the said section against which the switch is closed.

2. In a toy electric railway having a switching section, the combination of a track switch, a power rail running lengthwise the said section having insulated power rail portions at the exits to said switch section, and means including an interconnection with the said switch for disconnecting the power from the rail portion at the exit end of the said section against which the switch is closed, and for connecting the power to the rail portion at the exit which is open to the switch.

3. In a toy electric railway having a switching section, the combination of a track switch, means to control said switch, a power rail running lengthwise the said section and means simultaneously operated by the switch control means on closing the switch against an exit of the said section to disconnect the power from the portion of the rail along the said exit section.

4. In a toy electric railway having a switching section, the combination of a track switch, means to control said switch, a power rail running lengthwise the said section having insulated power rail portions at the exits to the said switch section, and means operated by the switch control means on closing a switch against an exit to simultaneously disconnect the power from the rail portions along that section-exit, and for connecting the power to the rail portion at the section-exit which is open to the switch.

5. In a toy electric railway, a switching section including a power rail and insulated power rail portions at the exit sides of said

section, and means mechanically operated by the section to connect said portions to the power rail one at a time.

6. In a toy electric railway, a switching section including an electric switch, and a power rail and an insulated power rail portion at each exit side of said section, said switch being mechanically controlled by the section to connect one of said portions to the power rail and simultaneously disconnect the others.

7. In a toy electric railway, a track section comprising branch tracks joined at one end to form a switching junction, a track switch at said junction in combination with a power rail extending lengthwise each branch and means carried by the switch for disconnecting the power from the portion of the rail along the tracks of the branch against which the switch is set closed.

8. In a toy electric railway, a track section comprising branch tracks joined at one end to form a switching junction, a track switch at said junction in combination with a power rail extending lengthwise each branch having insulating portions therein, and means carried by the switch for disconnecting the power from the rail portion of the branch against which the switch is set closed, and for connecting the power to the rail portion of the branches that the switch is open to.

9. In a toy electric railway, a track section comprising branch tracks joined at one end to form a switching junction, a track-switch at said junction and means to control said track switch in combination with a power rail extending lengthwise each branch, and an electric switch positioned between the branch power rails and arranged to be simultaneously operated by the track switch control means on closing the switch against a branch to disconnect the power from the portion of the rail along the tracks of that branch.

10. In a toy electric railway, a track section comprising branch tracks joined at one end to form a switching junction, a track-switch at said junction, and means to control said track switch in combination with a power rail extending lengthwise each branch having insulating portions therein, and an electric switch positioned for cutting said insulated rail portions in and out of circuit with the power rail and arranged to be simultaneously operated by the track-switch control means on closing the switch against a branch to disconnect the power from the insulated portion of the rail along the tracks of that branch and to connect the power to the insulated rail portion of the branch opened to the switch.

11. In a toy electric railway having a switch section, the combination of a track switch comprising a pivoted plate member carrying thereon track portions to move therewith, a power rail running lengthwise the said section, an electric switch having blades secured to move with the plate member, and means co-acting with said blades on the operation of said track switch to disconnect the power from the portion of the rail at the exit of the section against which the switch is closed, and for connecting the power to the rail portion at the exit which is open to the switch.

12. In a toy electric railway having a switch section, the combination of a track switch comprising a pivoted plate member carrying thereon track portions to move therewith, a power rail running lengthwise the said section, an electric switch having blades secured to move with the plate member, and means co-acting with said blades on the operation of said track switch to disconnect the power from the portion of the rail at the exit of the section against which the switch is closed, and for connecting the power to the rail portion at the exit which is open to the switch, said means including insulated portions in said power rail at each exit to said switch.

13. In a toy electric railway, a track section comprising branch tracks joined at one end to form a switching junction, a track-switch at said junction comprising a pivoted plate member having its longitudinal edges shaped to form track portions thereof, a power rail extending lengthwise each branch having insulated portions therein, an electric switch positioned between the branch power rails including blades firmly secured to the underside of the plate member, and control means for the track switch arranged to simultaneously disconnect the power from the insulated rail portion along the tracks of the branch against which the switch is closed, and to connect the power to the insulated rail portion of the branch opened to the switch.

In testimony whereof I affix my signature.

ARTHUR N. HOFFMANN.