Aug. 9, 1932. F. OTTENSTEIN 1,870,526

ELECTRIC TOY RAILWAY

Filed June 5, 1931

Fig.1

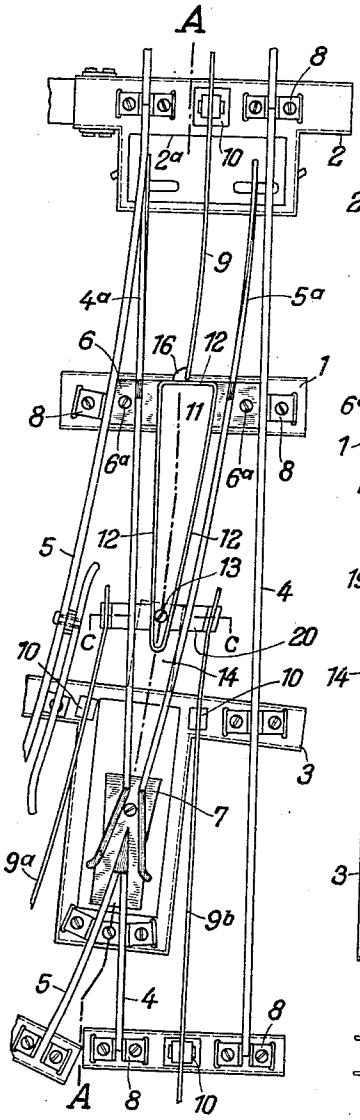


Fig.2

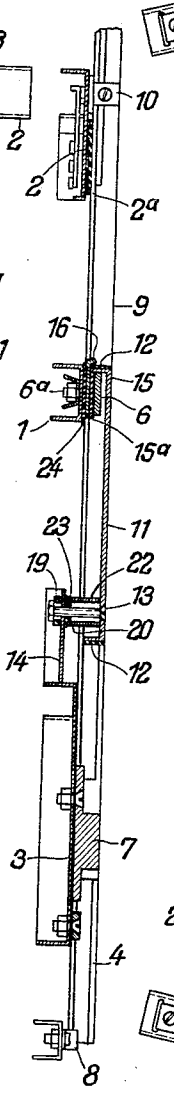


Fig.3

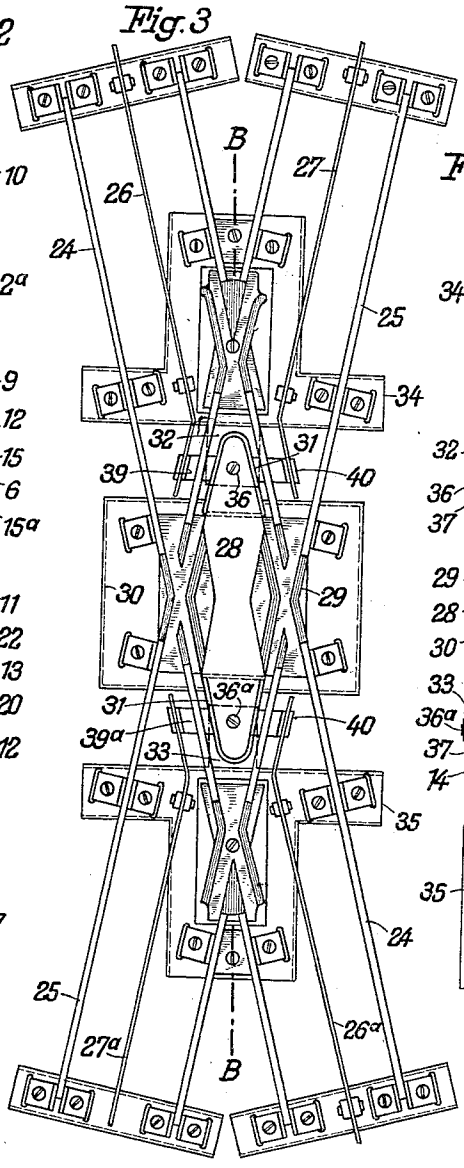


Fig.4

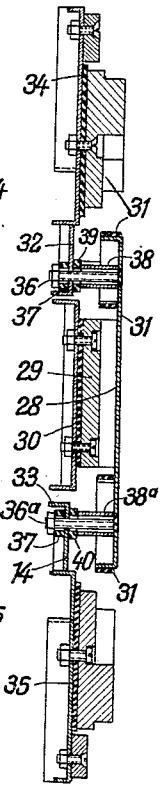


Fig.5

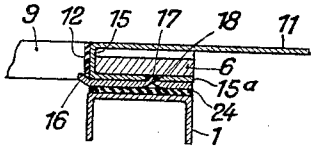
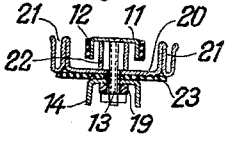


Fig.6



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UNITED STATES PATENT OFFICE

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ELECTRIC TOY RAILWAY

Application filed June 5, 1931, Serial No. 542,438, and in Germany June 19, 1930.

This invention relates to the construction of switches and crossings for electric toy railway tracks which are provided with a central live rail. It is known to lead off the branches of the central live rail, required at a switch or crossing, from branches of a metal tongue which is inserted in the said switch or crossing and is insulated from the rails of the track. The object of the invention is to provide means whereby children playing with the toy can build up such switches and crossings from separate parts in the manner of a constructional toy. In building up these parts the metal tongue with the central live rails issuing therefrom must quite automatically be completely insulated from the track in a perfectly reliable manner.

According to the invention this is effected with the aid of metal bows which are adapted to be screwed to the said metal tongues and are provided with slots in which the ends of the central live rails to be connected up are inserted. The screw connection between the metal tongue and the metal bows is so constructed that it at the same time connects the tongue with the part of the substructure lying below it in such a manner, however, that the substructure is electrically insulated from the tongue and from the metal bows holding the central rails.

In the accompanying drawing two constructional examples of the invention are shown,

Figs. 1 and 2 showing the invention as applied to a switch for electric toy railways, seen from above and in longitudinal section along line A—A,

Figs. 3 and 4 the invention as applied to a crossing seen from above and in longitudinal section along line B—B,

Fig. 5 the connecting place of one live rail with the broad part of the wedge-shaped current supplying tongue in the switch to an enlarged scale and in longitudinally section, and

Fig. 6 a cross-section through the connecting bow between the live rail and the current supplying tongue in the switch along line C—C of Fig. 1.

In the example shown in Figs. 1 and 2, above the substructure which consists substantially of a middle sleeper 1 and two T-shaped supports 2, 3 which are of U-shaped cross-section, a curved piece of rail 5 branches off from a straight piece of rail 4. The switch blades 4*a*, 5*a* are held by solid fitting pieces 6 and 7 of insulating material which are fixed to the sleeper 1 and to one of the T-pieces 3. The rails 4 and 5 are held by screw clips 8 on the pieces 1, 2, 3. The current conductors are constituted by the rails 4, 5 of the track and the central live rails 9, 9*a*, 9*b* are held between the track rails by clamping pieces 10 of insulating material.

The current conveying means within the switch consists of a wedge-shaped tongue 11, in the form of a box-shaped casing which is open at the bottom and the side walls of which are surrounded by a covering 12 of rubber or the like insulating material for preventing electric contact between the tongue 11 and the wheels of the vehicle rolling over the switch, since, as is well known, the insulating coating on the wheels does not last very long. The tongue 11 is held in position by a screw connection 13 which connects a bridge member 14 (Fig. 2) projecting from the T-piece 3 with the tongue 11 and also by a channel fish-plate 15 of the tongue 11 (Fig. 5), the part 15*a* of which extending parallel to the surface of the tongue embraces the fitting piece 6 by which it is forced towards the sleeper 1. Under this part 15*a* of the fish-plate there engages a horizontal end fish-plate 16 on the live rail 9. The fish plate 16 has a boss 17 which, on the fitting piece 6 being pressed home by screws 6*a*, engages in a small hole 18 in the fish plate 15*a*, thereby securing the live rail fish-plate 16 in position. The screw connection 13 at the connecting bridge 14 and at the tongue 11 unites the sleeper 1 and the T-piece 13 to form a single unit.

The passage of current from the tongue 11 to the T-piece 3 is prevented by an insulating ring 19 disposed between the web of the bridge 14 and of the nut (Figs. 2 and 6). Electric connection between the tongue 11 and the live rails 9*a*, 9*b* behind the place where the track branches away is established

by a transverse bow 20 which is screwed to the end of the tongue. The upwardly extending limbs of the said bow 20 are provided with slots 21 (Fig. 6) into which the ends of the live rails 9*a*, 9*b* are inserted. The electric connection between the bow 20 and the tongue 11 is established by a sleeve 22 interposed between the two parts. The bow 20 is electrically divided from the bridge 14 by an interposed layer 23 of insulating material. A similar insulation 24 is also provided on the sleeper 1 opposite the tongue 11 (Figs. 2 and 5). The ends 4*a*, 5*a* of the switch blades slide over an insulating plate 2*a* which lies on the T-piece 2 and are completely insulated from one another.

In operating the electric toy railway the rails 4, 5 of the track act as the means for leading in and the live rails 9, 9*a*, 9*b* as the means for leading out the current or vice versa, a closed conductor being formed by: the live rail 9, the fish-plate 16 of the same. the fish-plate 15*a* of the tongue 11, the tongue 11 itself, the sleeve 22, the bow 20 and the live rails inserted in the slots 21.

The current supply for crossings is carried out in a similar manner, as illustrated in Figs. 3 and 4. Assuming that a crossing of two tracks 24, 25 with two central live rails 26, 26*a* and 27, 27*a* forms two branches starting from one point, the current distributing means provided at this point is constituted by a double wedge-shaped metal tongue 28 which with its box-like and wedge-shaped ends which are open at the bottom extends beyond the broad sides of a fitting piece 29 of a central bridge-like support 30 for the track. The ends of the double tongue 28 are secured by insulation in the form of rubber bands 31 placed around the side walls of the box-shaped ends from coming in contact with the vehicle wheels rolling over the crossing. The tongue 28 is held on each of two connecting bridges 32, 33 (Figs. 3 and 4), which extend from T-pieces 34, 35 which are disposed symmetrically to the bridge 30, by screw connections 36 and 36*a*. The screw connections 36 and 36*a* are provided, as in the case of the screw connection 13 for the switch, with an insulating ring 37, and each clamp between the tongue ends and the connecting bridges 32, 33 a current conducting sleeve 38 and 38*a*. Furthermore the screw connections 36, 36*a* hold transverse bows 39, 39*a* having their limb ends 40 slotted, as in the case of the switch according to Fig. 6, in which slots the ends of the suitably bent live rails 26, 26*a*, 27, 27*a* are inserted. The screw connections 36, 36*a* reinforce the substructure consisting of the parts 30, 34 and 35 so as to form a unit. The central current conductor is composed of the following parts: live rails 26, 27, bow 39, sleeve 38, tongue 28, sleeve 38*a*, bow 39*a*, live rails 26*a*, 27*a*.

What I claim is:

1. In an electric toy railway track central live rails, a metal tongue at the switches and crossings disposed between the rails of the track for forming a continuation of the said live rails, metal bows having slots for the insertion of the central rail ends and a screw connection for connecting the said metal bows to the metal tongue and for fixing the metal tongue to the part of the track support disposed under it, as and for the purpose set forth.

2. In an electric toy railway track central live rails, a box-shaped metal tongue at the switches and crossings disposed between the rails of the track for forming a continuation of the said live rails, metal bows having slots for the insertion of the central rail ends, a screw connection for connecting the said metal bows to the metal tongue and for fixing the metal tongue to the part of the track support disposed under it, and a rubber covering on the walls of the box-shaped metal tongue for preventing a short-circuit through the vehicle wheels, as and for the purpose set forth.

3. In an electric toy railway track as claimed in claim 1, and comprising a U-shaped fish-plate disposed at the end of the metal tongue where, in the case of switches, only a single central live rail branches away from the tongue, for fixing the same and the live rail to the part of the track support under the same, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification.

FRIEDRICH OTTENSTEIN.