Nov. 12, 1935. E. D. BOISSELIER 2,021,045

CROSSOVER FOR TOY RAILWAYS

Filed Nov. 23, 1934 3 Sheets-Sheet 1

Fig. 1.

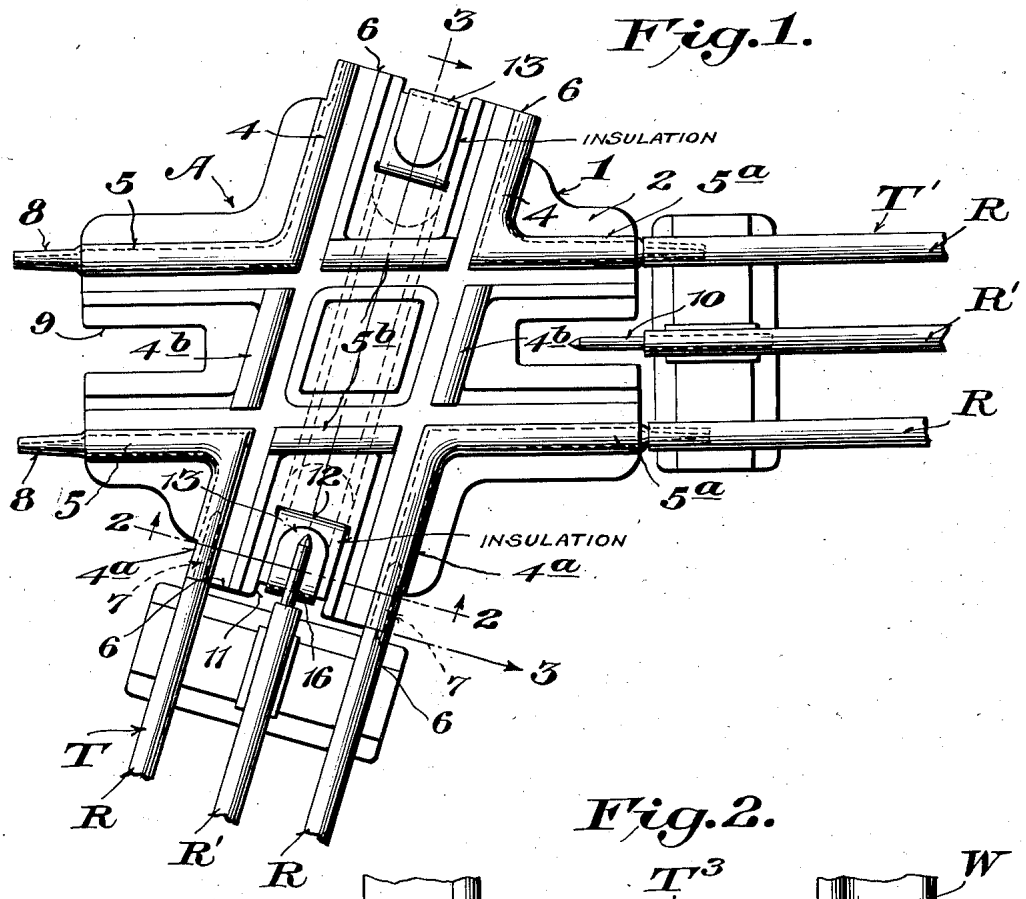
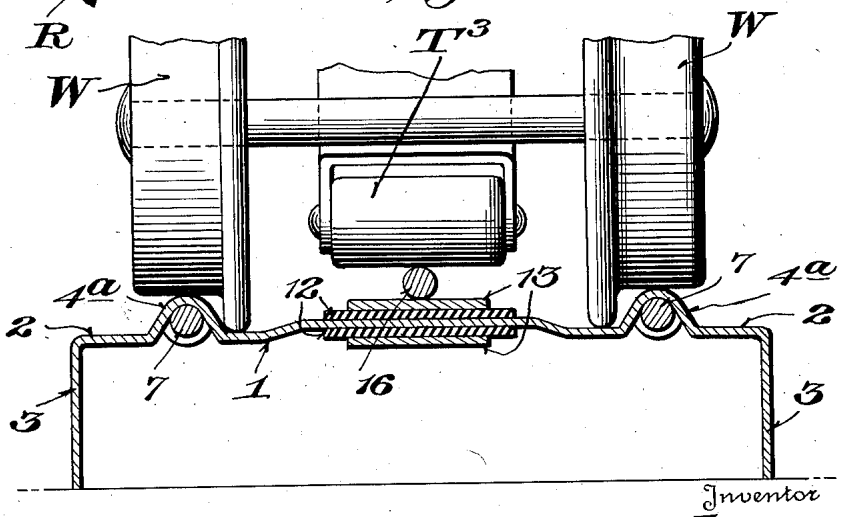


Fig. 2.



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Nov. 12, 1935. E. D. BOISSELIER 2,021,045

CROSSOVER FOR TOY RAILWAYS

Filed Nov. 23, 1934 3 Sheets-Sheet 2

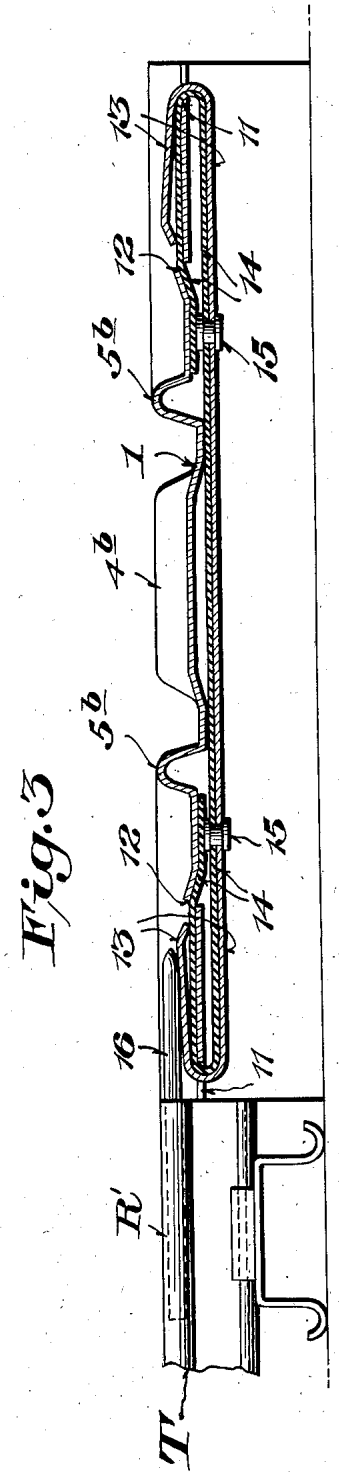

Fig. 3

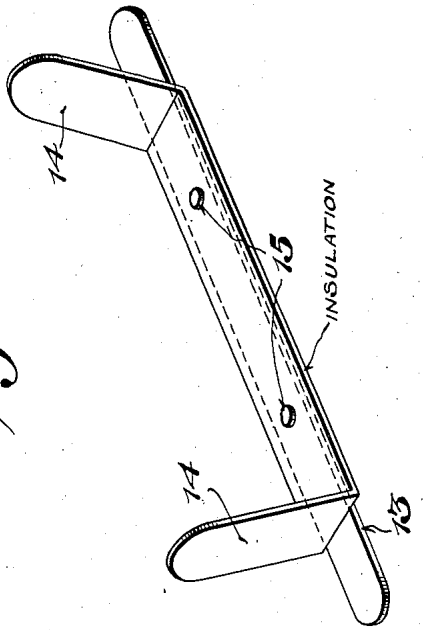

Fig. 5.

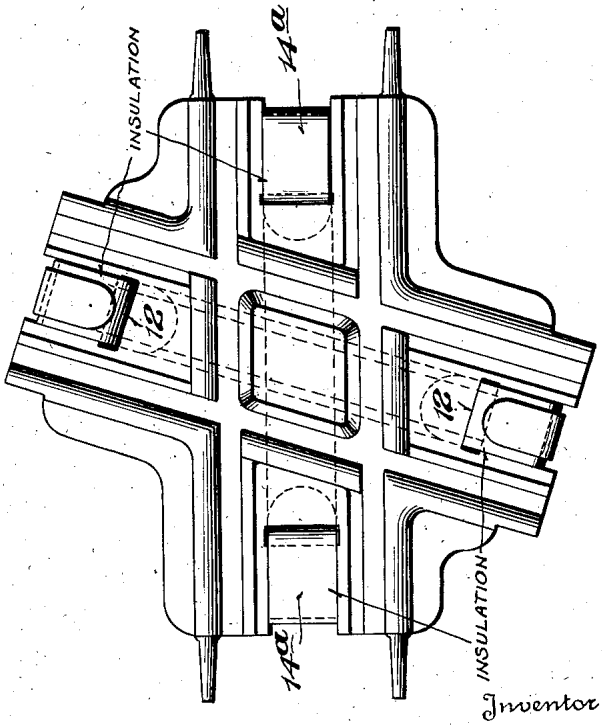

Fig. 4.

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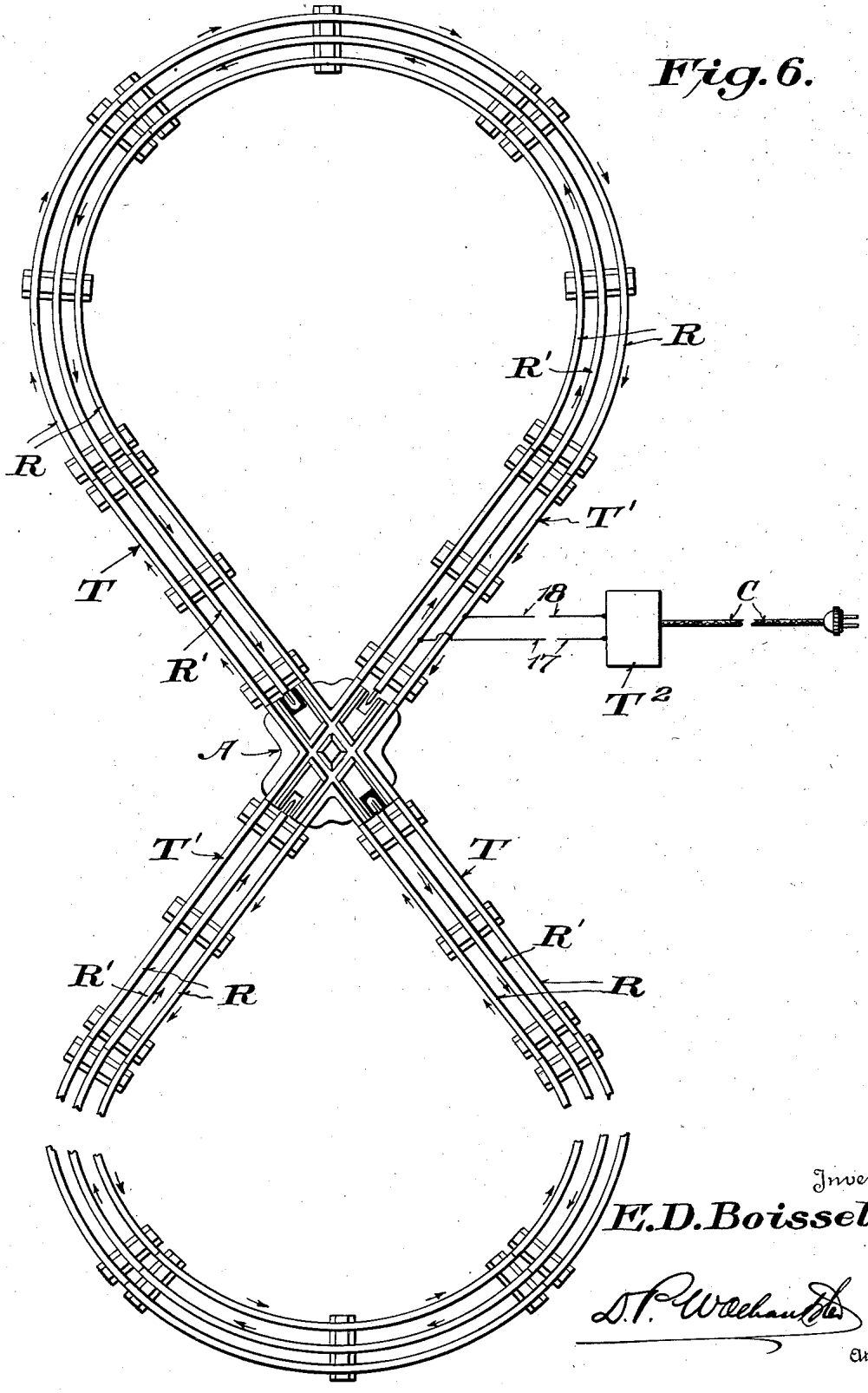
CROSSOVER FOR TOY RAILWAYS

Filed Nov. 23, 1934 3 Sheets-Sheet 3

Fig. 6.



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Patented Nov. 12, 1935

2,021,045

UNITED STATES PATENT OFFICE

2,021,045

CROSSOVER FOR TOY RAILWAYS

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Application November 23, 1934, Serial No. 754,495

6 Claims. (Cl. 246—454)

This invention relates to crossovers for toy electric railways, and more particularly to a crossover which, because of its simple and inexpensive construction, may be economically made and sold to meet the demand for a reasonably priced article that may be added to the line of accessories of toy train outfits to enlarge the field of play at a minimum expense.

A general object of the invention is to simplify and modernize the type of crossover shown in the patent to Frohne #1,390,119 dated September 6, 1921 to render it adaptable to current manufacturing expedients and practice as well as present day toy tracks.

Another object of the invention is to provide a crossover having means for bridging or carrying the current from the end of one third rail of a standard track section to the third rail of an opposite standard track section while the pins of the third rails of the other pair of standard track sections are insulated from the crossover either by an air gap or special insulation. Thus, the invention proposes to eliminate the expense of making and assembling two bridge pieces while at the same time adequately providing for electrifying both loops of a figure 8 type of track.

A still further object of the invention is to provide a crossover including a jumper unit comprising a conductor piece assembled to an insulating strip before the unit is attached to the crossover proper, and which, when in position, will insulate the conductor from the crossover and also permit of automatically making electrical contact with the third rail or current carrying rail of an adjoining track section, when the crossover is placed in use.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

A preferred and practical embodiment of the invention is shown in the accompanying drawings, in which:—

Figure 1 is a plan view of a crossover assembled with two sections of track, the two remaining sections being omitted to illustrate the structure at points where the crossover otherwise connects with the removed sections.

Figure 2 is a transverse sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a longitudinal sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a plan view of a modification of the crossover shown in Figure 1.

Figure 5 is a perspective view of one of the pre-formed conductor units.

Figure 6 is a diagrammatic view illustrating the manner of installing and using the crossover.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

As will be observed from Figure 1, the crossover is designated generally as A and includes a body 1 preferably in the form of a plate or sheet, such as sheet metal, formed at its outer edge portions 2 with the downturned supporting flanges 3, and formed inwardly of said edges 2 with the upstanding aligned pairs of wheel bearing rail portions 4—4 and 4^a—4^a, and a pair of similarly formed aligned rail portions 5—5 and 5^a—5^a. It will thus be apparent that the rail portions 4 and 4^a are in track alignment, and likewise the portions 5 and 5^a are in track alignment, and the medial portion of the body 1 between the rail portions 4 and 4^a is provided with the intermediate cross-rail members 4^b while the space between the rails 5 and 5^a has the cross-rail members 5^b located therebetween, suitable clearance in each instance being provided for the flanges of the wheels.

The rail portions 4—4, 4^a—4^a, 5—5, and 5^a—5^a are preferably hollow ribs, and the outer ends of the rail portions 4—4 and 4^a—4^a provide hollow sockets 6—6 for receiving the connecting pins 7—7 carried by the standard three-rail track sections T, one of which is shown in Fig. 1, and which includes the wheel bearing rails R—R in metallic contact with the metal ties and the third rail R′ which is insulated therefrom. The rail forming portions 5—5 and 5^a—5^a are reduced in diameter at their outer ends to provide integral offset hollow connecting pins 8—8 adapted to enter the hollow head portions of the rails of the standard track sections T′, one of which is also shown in Fig. 1, and includes the wheel bearing and third rails as referred to above.

The web of the body 1 between the rail forming portions 5 and 5^a may be cut away as indicated at 9 to provide a clearance slot or air gap for the pin 10 of the insulated third rail of the sections T′. Thus, it will be apparent that while the track sections T′ may be attached to the crossover by pushing the hollow heads of the wheel bearing rails thereof onto the pins 8 of the crossover,

nevertheless, the pin 10 of the third or current carrying rail R' of the track section T' which overlaps the body of the crossover is insulated therefrom.

The parts of the body 1 between the rails 4—4 and 4a—4a may be provided with the shallow notches 11 in the edge thereof and with the slots 12 for the purpose of receiving the ends of an insulated conductor unit B of the type shown in Figure 5. This unit preferably consists of a flat metallic conductor strip 13 having an insulating piece 14 secured thereto by the fastenings 15 or their equivalent. The insulation 14 is preferably longer than the metallic conductor strip thereby to permit of the unit being assembled beneath the body 1 of the crossover and between the rail portions 4—4 and 4a—4a so that the ends of the insulating piece 14 may be threaded in the slots 12 to hold the previously assembled conductor and insulation strip to the under side of the crossover. The ends of the conductor strip 13 may be then bent over the top or upper surface of the body 1 lying between the rails referred to, but will be entirely insulated from the metallic body 1 of the crossover. The resilient ends of the conductor 13 which are exposed at the top of the crossover provide for engaging and making electrical contact with the connecting pins 16 of the third rail R' of the track section T. The wheel bearing rails R—R of the track section T have the pins 7—7 fitting in the sockets 6—6 as previously set forth. Therefore, when the track sections T are assembled to the crossover, it will be apparent that current from the third rail may be conducted across the body 1 of the crossover, due to the fact that the pins 16 of the leaving and receiving track sections are in contact with the conductor 13.

As an alternative method of insulating the ends of opposite third rails leading to the crossover, the arrangement shown in Figure 4 may be used. Instead of providing the air gap as shown in Figure 1 between each pair of aligned third rails, an insulating strip 14a may be applied to the crossover in the same manner as the strip 14, leaving the ends of the strip uppermost on the crossover exposed for engagement with the connecting pins of opposite third rails. In this way, opposite third rails will be insulated just as effectively as with the air gap.

By reference to Figure 6 it may be observed how the third rail of both loops of the track layout may be energized with the use of only a single insulated conductor for electrically connecting opposite third rail ends while the ends of the opposing third rail sections are disconnected. The track intended to be used with the present crossover is, as previously indicated, of the conventional three-rail type consisting of metallic ties and a pair of spaced wheel bearing rails directly engaging the metallic ties while the third or central conductor rail is insulated from the ties. The rails of the track sections T—T and T'—T' are connected in the manner previously referred to so that the wheel bearing rails and the metallic body of the crossover are in a common circuit (ground circuit), while the third rail is in an insulated circuit.

Current is supplied to the wheel bearing and third rails by a transformer T^2 coupled with a source of electrical current by the coupling C and having the feed wires 17 and 18 respectively connected with the third rails of one loop and the outer wheel bearing rails of the track layout. When the current is turned on to the transformer, the wheel bearing rails and crossover will be in one side of the circuit and the third rail of both loops of the track layout will be in the other side of the circuit, but the circuit is only completed when the wheel bearing rails and the third rail are engaged by the wheels W of a car which are connected by a metallic axle, and the trolley T^3 which feeds the motor of the toy train. Thus, assuming that an electrically propelled locomotive or car is in position on the tracks when the current is turned on through the transformer, the said electric motor propelled car will travel through both loops of the track layout, relying on the momentum of the car or vehicle to carry the trolley across the dead ends of the third rail which are located in the air gaps 9 or on the insulation 14a of the crossover body.

With further reference to the rail sections 4 and 4a and 5 and 5a which cooperate to form the trackway through the crossover it may be pointed out that the integral intersecting rails 4—5; 4—5a and 5a—4a provide integral intersecting frog points formed from the body of the crossover. As previously pointed out the rail sections are formed inwardly of an edge of the body and therefore are of unbroken substantially transversely arched or inverted U-shape formation thereby presenting smooth surfaces at opposite sides of the rails. The cross rails 4b and 5b are of similar formation so that all of the rail portions are integral with the body and no openings or gaps occur in the metallic body itself thereby providing a smooth imperforate crossover body. The depending flanges 3 at the sides of the body maintain the treads of the rail sections in the proper plane for alignment with the treads of the rails of adjoining track sections so as to provide in effect continuous rail portions throughout the track layout with which the crossover is used.

From the foregoing it will be apparent that the present crossover provides for effectively connecting track sections leading thereto, and contemplates the use of a single bridging conductor between the third rails of adjacent loops, thereby eliminating the necessity of two conductors with a consequent saving in expense, and at the same time, providing a simple rugged article that is easy to install for use.

I claim:—

1. A crossover for toy railways, comprising, a metallic body bent inwardly of its edges to form a plurality of pairs of intersecting integral rails, and a portion cut away from an outer edge of the body between aligned pairs of rails to clear an overlapping center rail of a third conductor rail when the crossover and a track section are joined, and conductor means extending between other aligned pairs of rails.

2. A crossover for toy railways, including a body having two pairs of intersecting integral rail portions, and said body having cut out portions at opposite sides thereof and between one pair of rail portions thereby to clear the center rail end of adjoining track sections, and a conductor strip mounted on an insulating piece adapted to lie next to the body of the crossover, said conductor strip passing under the crossover between the other pair of rail portions and having its free ends bent back toward itself and providing contact surfaces for the center rails of adjoining track sections thereby to conduct electric current past the crossover.

3. A crossover for toy railways comprising a

body including a plurality of pairs of intersecting integral rails formed inwardly from the edge of the crossover body, and portions cut away from the outer edges of the said body at opposite sides thereof and between opposite pairs of integral rails to provide clearance for the center rail of connected track sections, and conductor means between other opposite pairs of rails to bridge current across said body.

4. A crossover for toy railways including a metallic body formed at its edges with downturned supporting flanges and formed inwardly of said edges with opposite pairs of intersecting rail sections having cross-rail portions therebetween, the medial portions of the body between one of the opposite pairs of rail sections being cut away to clear conductor third rails of a track section connected thereto, and conductor means insulated from the body and having end portions lying between the other pair of opposite rail sections and at the top of the body to thereby engage with the conductor third rails of connected track sections.

5. A crossover for toy railways including a metallic body having opposite pairs of intersecting rail sections having cross-rail portions therebetween, the medial portions of the body between one of the opposite pairs of rail sections being cut away to clear conductor third rails of a track section connected thereto, the portions of the body between the other opposite pairs of alined rail sections being formed with a slot, and a conductor unit consisting of an insulation piece and a conductor piece secured together, the insulation piece lying adjacent and beneath the body of the crossover and having the end portions thereof extending over the top of the body and through said slots thereby to hold the unit to the crossover, and said conductor strip having the ends thereof bent inwardly over the ends of the insulation piece thereby to provide conductor means for engaging with the third rails of connected track sections.

6. A crossover for toy railways including a metal body having a plurality of pairs of opposite intersecting rail members formed to connect with standard third rail track sections, means between the rail members of one oppositely aligned pair of such members for insulating the third rail pins of one pair of opposite standard track sections from the crossover, and insulated conductor means between the rail members of the other opposite aligned pair of such members, said latter means including a conductor strip and an insulation strip lying next to the underside of the crossover body and both having their end portions bent back over opposite edge portions of the body of the crossover to expose the conductor strip for direct engagement with the third rail pins of the other pair of opposite standard track sections.

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