

July 3, 1934.

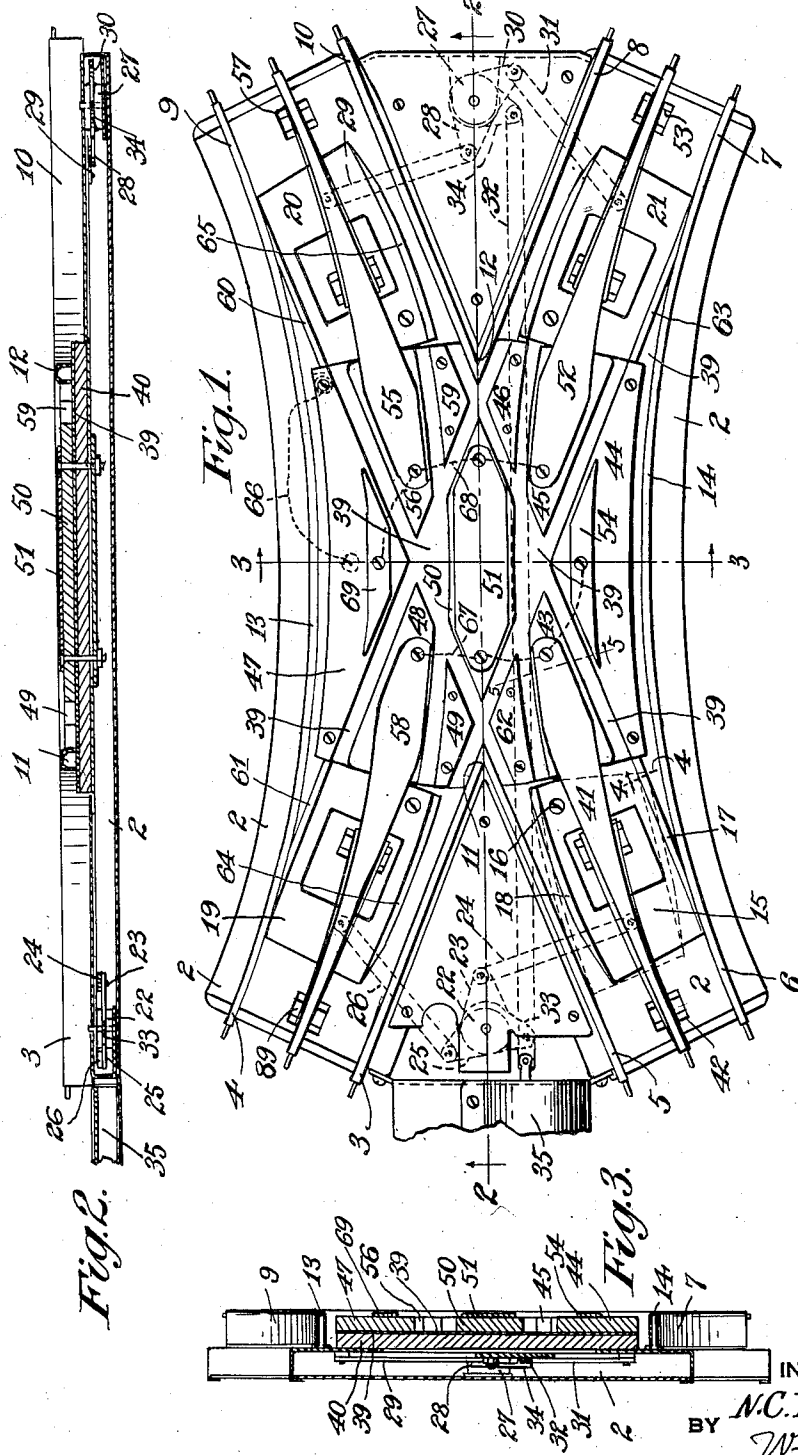
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1,964,804

RAILWAY TRACK CROSSOVER

Filed Sept. 24, 1932

2 Sheets-Sheet 1



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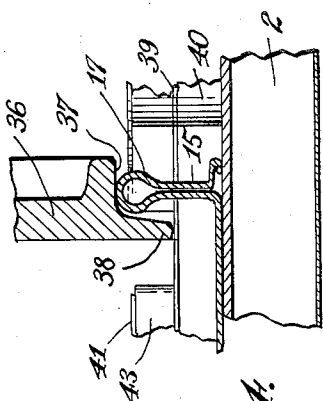


Fig. 4.

Fig. 5.

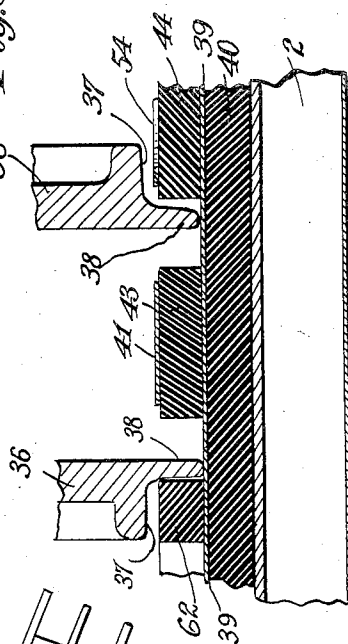
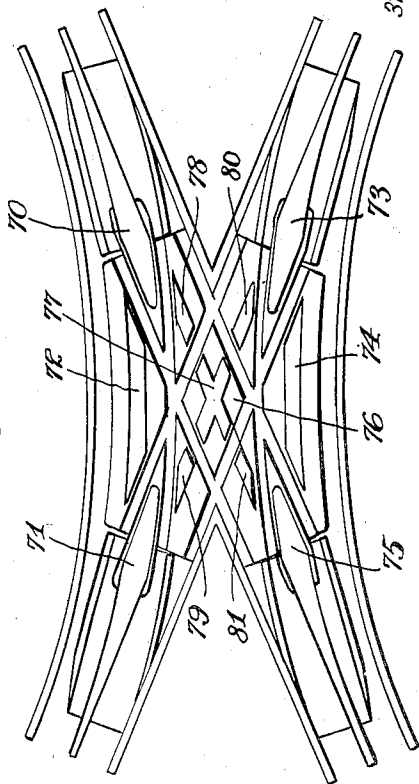


Fig. 6.



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1,964,804

RAILWAY TRACK CROSSOVER

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Application September 24, 1932, Serial No. 634,663

4 Claims. (Cl. 246—454)

The present invention has reference to what are termed toy or miniature railroads, that are formed of detachable sections of straight and curved tracks, with switch sections, and track intersections, which can be fitted together according to the design of the user. Miniature trains of cars run on this railroad, and usually carry an electric motor to drive the train, and one or more contact shoes are arranged on the cars, that engage a third rail usually in the middle between the two main tracks.

The object of the present invention is to provide an improved form of the intersection, where two straight tracks intersect at an angle of about forty-five degrees, and in which I provide rather long curved connections or track of about one-eighth of a circle at each of the two obtuse angle sides, which curved tracks have their inner rails located a considerable distance apart; and in connection with such an arrangement I provide a switch at each end of each curved track, to direct the cars onto the straight track, or onto the curved track, with suitable means being provided for the operation of these switches in unison. In connection with the same I provide a middle rail between the straight tracks and also between the curved tracks at the intersection and between the switch portions; all of which arrangement is designed for use for the standard miniature railroads and cars.

In the accompanying drawings showing embodiments of my invention;

Fig. 1 is a plan view of the device.

Fig. 2 is a section of the line 2—2 of Fig. 1.

Fig. 3 is a cross section on the line 3—3 of Fig. 1.

Fig. 4 is a section on the line 4—4 of Fig. 1.

Fig. 5 is a section on the line 5—5 of Fig. 1.

Fig. 6 shows a modified form of the track arrangement.

As shown, on a base plate 2 are mounted one straight track formed partly by rails 3 and 4 and another straight track formed partly by rails 5 and 6, at one end of the device; and at the other end similar rails 7 and 8 are in line with the rail parts 3 and 4; also rails 9 and 10 are in line with the rails 5 and 6. The inner rails 3 and 5 meet at 11, and the inner rails 8 and 10 meet at 12. But the outer rails 4 and 9 practically merge into, or form a single curved rail 13 on one side; and on the other side the outer rails 6 and 7 merge into a single curved rail 14.

At each end of the tracks is arranged a switch frame one frame 15 being pivoted at 16 on the base 2, that is formed of a metal plate, and the frame 15 might be a metal plate, that carries on

one side a straight rail section 17, that is shown adjacent the rail 14; while on the other side of this frame is a curved rail section 18, that as shown is shifted away from the inner rail 5. But when frame 15 is swung on pivot 16, curved rail 18 is brought against rail 5, and straight rail 17 is moved away from the rail 6, part of the curved rail 14, as indicated in broken lines in Fig. 1. In the position in which the switch is shown, the train will pass on the straight track across the intersection, while in the switch shifted position, the train would run on the curved rail 14, and the curved rail section 18 of the switch. At the adjacent end of the device is a similar switch frame 19, co-operating with the rails 3 and 4 or 13. At the other end of the device are similar switch plates 20 and 21, that swing on pivots on the base. These are all shown in the straight line position, but if all plates are swung to the broken line position, the trains will run on the curved tracks.

Means are shown for swinging all these switches in unison, comprising at each end a crank 22 pivoted on the base 2, with an arm 23 that connects with switch frame 15 by link 24, and another arm 25 that connects with switch frame 19 by a link 26. At the other end of the device, a similar crank 27 has an arm 28 that connects by link 29 with switch frame 20, and another arm 30 that connects by link 31 with switch frame 21. A long bar 32 connects arms 33 on crank 22 with an arm 34 on crank 27, by which means this bar will swing all switch frames to either straight track position or to curved track position. This may be done by a solenoid in a casing 35, or any other means.

Devices of this character usually provide a feed rail for the electric current that is mounted between the two track rails, and insulated from the tracks that are connected to act as a return for the electric current. But at the intersection the middle feed rail would cross the track rails, and special provision must be made to prevent a short circuit. This I accomplish by causing the flange of the wheel to run on a metal plate, while the tread edge of the wheel will be above the feed rail portion at such location. In the drawings, Fig. 4, the rail 17 is shown supporting the wheel 36 by its tread face 37. In Fig. 5, the flange 38 of the wheel is shown as riding on a metal plate 39. The latter is shown supported on a base 40, and extends across between the four switch frames, and is in circuit with the rails for the tracks. Between the rail 5 and the opposite rail 6, 14, is a feed rail 41 that rests on an insulated support at 42, 110

and also on a plate 43 of insulation; with rail 41 passing over the switch frame 15 free therefrom. In alignment with the rails 10 and 17 are insulation plates 44, 45, and 46, whose upper face 5 lies below the tread face 37 of the wheel, but will guide the wheel by the side of its flange 38. Similar plates are arranged between the rails 5 and 9, as 47, 48 and 49, which are also lower than the tread face of the wheel. When a car has its wheels running on the curved rail 14, the opposite wheels will have the flange inner face ride adjacent insulated plates 43, 54, while opposite these two plates are plates 62, 50 and 46 that can engage the side of the flange, but are lower 15 than the tread face of the wheel.

With the switch plate 15 in the position shown, the wheels will run on track 5 and opposite track end 6, and then pass to the switch track 17, these rails serving to engage the tread of the wheel. 20 But passing beyond the switch plate, one wheel would run between plate 44 and plate 43, and the edge of the wheel flange now runs on the plate 39, that will bring its tread face above the feed rail plate 54, and no short circuit will be made, 25 the car shoe now engaging feed rail plate 41, and the return circuit being made by the plate 39. The other wheel runs between plate 62 and plate 49 and middle plate 50, which latter carries a contact plate 51 of metal. The wheels will 30 then run between plates 46 and 50 and a guide plate 59, and then onto the track 10. A contact plate 52 is mounted on plate 45 and a support 53; a similar contact plate 55 is mounted above the switch plate 20 on plate 56 and support 57; 35 and a similar contact plate 58 is mounted on plate 48 and a support 89, above the switch 19. The wheels will run between plates 56 and 47 until they strike the rail 60 of the switch 20.

On the opposite side, with the switch plates as 40 shown, a car that enters on rails 3, 4, and 61 of switch 19 will run on switch rail 61 until it reaches the plates 47 and 48, when the flange edge will run on the bottom plate 39, and the wheels on this side will run between plates 56 45 and 50 and then 59 and 46, until they reach the rail 8 at the switch 41. On the opposite side the wheels will run between the plates 62 and 49 after leaving the rail 18; then between plates 62 and 50, still running on the plate 39 by its 50 edge; then between plates 44 and 45, until it strikes the rail 63 of the switch 21 and passes to the outer rail 7. Upon this switch 19 and switch 20 being shifted for the curve, the wheels on one side will run on the curved rail 13; and 55 the opposite wheels will run from track 3 to the curved rail 64 of switch 19, and then pass between plates 49 and 48, then between plates 48 and 50 and then between plates 56 and 59, until these wheels engage the switch rail 65 of the 60 switch 20, that will carry them to the outer rail 10.

It has been stated that various contact plates for the shoe are mounted on the said insulated plates, but all of these are arranged as shown 65 in Fig. 5, where the contact plate 54 mounted on insulation plate 44, is below the tread face 37 of the wheel, because the flange 38 of the wheel is riding on the large contact plate 39, the latter being connected for the return circuit by a conductor 66. All of the other contact plates on 70 the insulation plates are in circuit with the four contact plates 41, 52, 55, 58, by wires 67, 68. When a car enters on the track 5 and 6 for the straight track, its shoe will engage contact plate 75 41, then middle contact plate 51, and then

contact plate 55. For the other straight track the shoe will engage contact plates 58, 51 and 52.

In both of these movements the tread face of the wheels will ride above these contact plates 54, 52, 58 and 69 on one side; and the plates 69, 55, 41 and 54 on the other side, and no short circuit will be made. In both cases the inner side face of the flange of the wheels will not strike the contact plate 51, because the edges are brought inside the edges of the supporting plate 50. With the 85 switches shifted, a car running on the side rail 14 and cooperating track plates, will ride on plate 41, then on plate 54, then on plate 52 but the inner side face of the wheel flange will not strike plates 52 or 41 because the edges of them are brought inside the side edges of the supporting insulated plates 43 and 45. On the opposite side when the car runs on the curve whose outer rail is 13, the shoe will engage plates 58, 69 and 55, but the inner side of the wheel flange will not strike the plates 58 and 55 because the edges of them are brought inside of the side edge of the supporting insulated plates 48 and 56. In both cases the tread face of the wheels is held above 90 the contact plate 51 by the wheel flange 38 riding on the bottom plate 39. 95 100

In Fig. 6 a slightly modified arrangement is shown in the form of contact plates for the car shoes, in which one curve track has contact plates 70 and 71 at the ends with a middle contact piece plate 72 similar to the contact plates 41, 54 and 52 of Fig. 1. On the opposite side are similar contact plates for the curve rail track at 73, 74 and 75. But at the middle section 76 the contact plate 77 is shown in the form of a 110 cross, and between this cross and the plates 70 and 71 on one side are arranged contact plates 78 and 79; and on the other side between the cross at 77 and the contact plates 73 and 75 are arranged contact plates 80 and 81 corresponding 115 to the plates 78 and 79. Otherwise the arrangement of the details and of the switch plates will be the same as shown in Fig. 1.

What I claim is:—

1. In a railway track system, an intersection 120 between a pair of straight tracks that cross at an acute angle, which intersection includes a curved connecting track between one said straight track and the other said straight track that is located at one obtuse angle of the intersection, 125 and a similar curved connecting track between said two straight tracks located at the opposite obtuse angle side of the intersection, and which two connecting track portions have the separate outer rails of each curved track spaced apart a considerable distance at the intersection middle portion, each main track being provided with a middle electric feed rail for engagement with the train contact shoe with the track rails arranged to form a return circuit, train shoe contact plates 135 at the intersection between the track rail portions which plates are insulated from the track rails and are in circuit with the feed rails, the wheel track rails at the intersection being formed of insulation on the side face where contacting 140 with the wheel and which rails are provided with a top contact conductor plate in circuit with the feed rails and arranged for engagement with the contact shoe, and a contact plate at the bottom of said latter track rails in circuit with 145 the tracks and arranged for engagement with the wheel flange periphery and which said top and bottom contact plates are relatively located whereby to bring the wheel tread face above and out of contact with said top plate. 150

2. In a railway track system, an intersection between a pair of straight tracks that cross at an acute angle, which intersection includes a curved connecting track between one said straight track and the other said straight track that is located at one obtuse angle side of the intersection, and a similar curved connecting track between said two straight tracks located at the opposite obtuse angle side of the intersection, and which two connecting track portions have the separate outer rails of each curved track spaced apart a considerable distance at the intersection middle portion, each main track being provided with a middle electric feed rail for engagement with the train contact shoe with the track rails arranged to form a return circuit, train shoe contact plates at the intersection between the track rail section portions which plates are insulated from the track rails and are in circuit with the feed rails, the track rails at the intersection being formed of insulation on the side face where contacting with the wheel and which rails are provided with a top contact conductor plate in circuit with the feed rails and arranged for engagement with the contact shoe, and a contact plate at the bottom of said latter track rails in circuit with the tracks and arranged for engagement with the wheel flange periphery and which top and bottom contact plates are relatively located to bring the wheel tread face above and out of contact with said top plate, a plurality of said track and feed rails with top and bottom plates as set forth located between each pair of curved track rails on each side.

3. In a railway track system, an intersection between a pair of straight tracks that cross at an acute angle, which intersection includes a curved connecting track between one said straight track and the other said straight track that is located at one obtuse angle side of the intersection, and a similar curved connecting track between said two straight tracks located at the opposite obtuse angle side of the intersection, and which two connecting track portions have the separate outer rails of each curved track spaced apart a considerable distance at the intersection middle portion, each main track being provided with a middle electric feed rail for engagement with the train contact shoe with the track rails arranged to form a return circuit, train shoe contact plates at the intersection be-

tween the track rail portions which plates are insulated from the track rails and are in circuit with the feed rails, the track rails at the intersection being formed of insulation on the side face where contacting with the wheel and which rails are provided with a top contact conductor plate in circuit with the feed rails and arranged for engagement with the contact shoe, and a contact plate at the bottom of said latter track rails in circuit with the tracks and arranged for engagement with the wheel flange periphery and which top and bottom contact plates are relatively located to bring the wheel tread face above and out of contact with said top plate, a plurality of said track and feed rails with top and bottom plates as set forth located between each pair of curved track rails on each side, and another track and shoe rail with top and bottom plates as set forth located in each curve track portion outside of the straight track rails at such portion.

4. In a railway track system, an intersection between a pair of straight tracks that cross at an acute angle, which intersection includes a curved connecting track between one straight track and the other said straight track that is located at one obtuse angle side of the intersection, and a similar curved connecting track between said two straight tracks located at the opposite obtuse angle side of the intersection, and which said two connecting track portions have the separate outer rails of each curve track spaced apart a considerable distance at the intersection middle portion, each terminal portion of each said curved track connection with the main track being provided with a switch to direct the traffic onto the main track or onto the curved connecting track, each said switch consisting of a frame with a tapered rail section on each side to alternately engage one said rail or the other, a crank member pivoted on the base or ground at each end of the device between said switch frames, each crank member having two crank arms one pivoted to each switch frame at that end, a third arm on each crank member, and a bar extending along the middle line of the device and connecting said third crank arms whereby to shift the crank members and said switch frames in unison all to said straight line position or to the curved track transit position.

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