

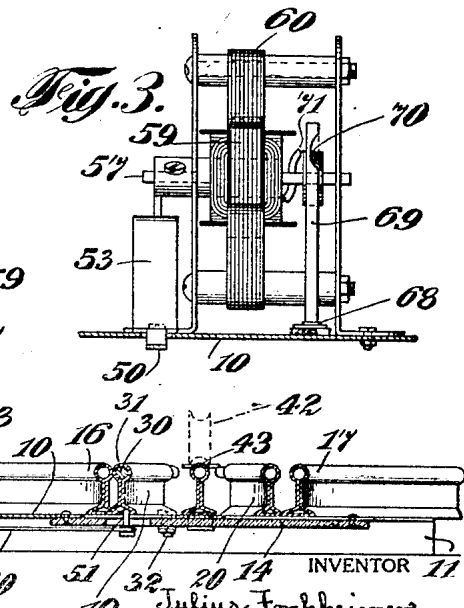
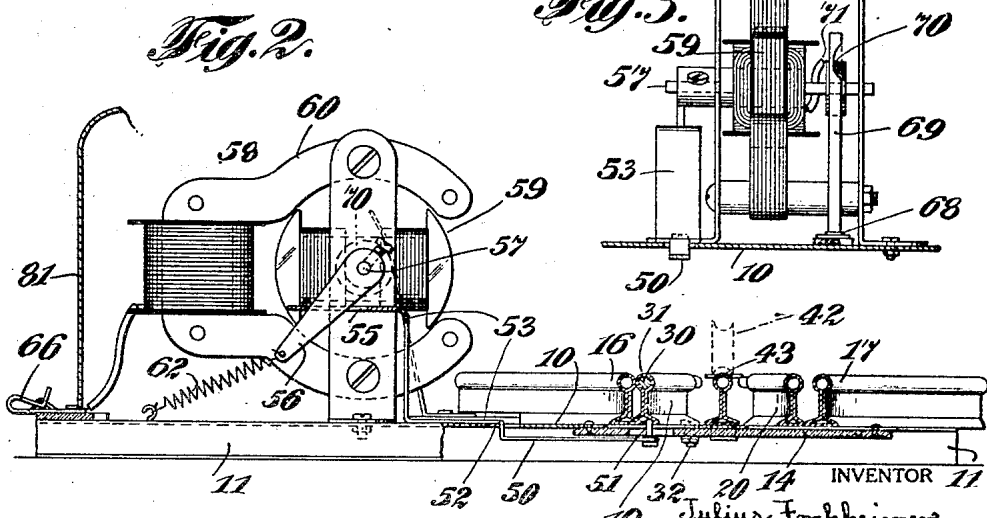
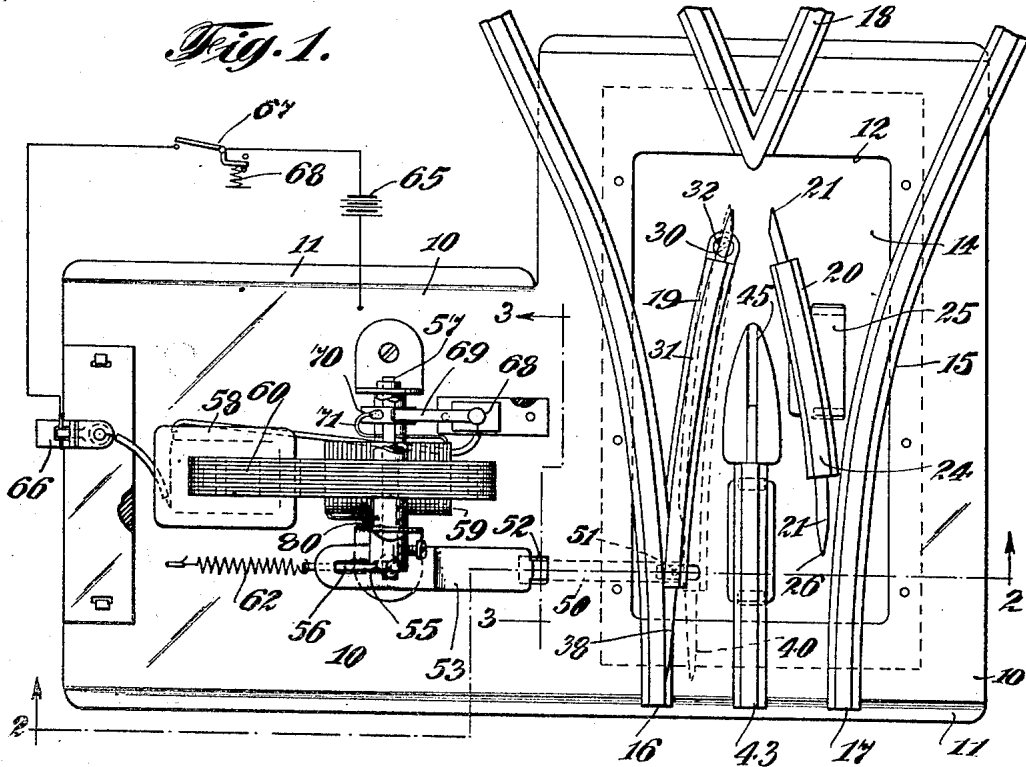
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TOY TRACK SWITCH

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# UNITED STATES PATENT OFFICE.

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## TOY TRACK SWITCH.

Application filed January 21, 1925. Serial No. 3,713.

*To all whom it may concern:*

Be it known that I, JULIUS FORCHHEIMER, a citizen of Germany, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Toy Track Switches, of which the following is a specification.

This invention relates to track switches for toy railroads and among its objects are to provide an improved track switch and an improved means whereby the same may be operated either manually or automatically from a distance. The switch constructed in accordance with my invention is simple and economical in construction and effective and durable in use.

Other objects and advantages will appear from the following description taken in connection with the accompanying drawing, wherein Fig. 1 is a plan view of a track switch and operating means constructed in accordance with one embodiment of my invention; Fig. 2 is a section taken on the line 2—2 of Fig. 1, certain of the parts being shown in elevation, and Fig. 3 is a section taken on the line 3—3 of Fig. 1, certain of the parts being broken away.

In the drawing, 10 represents a base of sheet metal of the form shown and which is turned over at the edges to form supporting flanges 11. The base 10 is formed with a rectangular opening 12 beneath which is secured a supporting plate 14 of suitable insulating material. The switch 15 comprises diverging tracks 16 and 17, a frog 18, and switch points 19 and 20. Switch point 20 comprises a wire or metal bar 21, tapered at each end as shown and rigidly held in a sheet metal member 24 which in turn is secured to the plate 14 by means of a clip 25. The rear end 26 of the bar 21 is spaced somewhat from the rail 17 so as to permit the flange of the car wheel to enter between the point 21 and the rail. Switch point 19 is movable and comprises a rod or wire 30 secured in the metal member 31 which is pivoted to the plate 14 at 32. The switch point 19 is adapted to occupy either one of two positions as shown in full and dotted lines on Fig. 1 of the drawing. In the position shown in full

lines, the switch is in such position that a train approaching from the lower part of the figure will be directed toward the right by engagement of the flanges of the left hand wheels of the train with the inclined surface 38 of the switch point 19. This engagement will result in forcing the flanges of the right hand wheels of the train into such position that they will pass between the switch point 21 and the rail 17. When the switch point 19 is in the position shown in dotted lines in Fig. 1, the train will be directed toward the left and in this case, the flanges of the left hand wheels will engage the inclined surface 40 of the switch point 19 which will move the train in such a way that the flanges of the right hand wheels will engage the left hand surface of the switch point 20. From this construction, it will be evident that by forming the switch points in the manner shown and with the switch point 19 extending some distance to the rear of the switch point 20, the switching of the train may be effected by the movement of but one of the two switch points.

43 indicates the end of a third rail which is suitably supported and insulated from the other parts of the apparatus and is adapted to be supplied from a source of current not shown and to supply such current to the vehicle to propel the same. The extreme end of the rail 43 is provided with a fin 45, which is adapted to raise the grooved wheel current collector 42 that is carried by the vehicle to the top of the third rail as the train is turning at the switch so as to facilitate the disengagement of the collector from the third rail and its passage over one or other of the switch points.

As a means for operating the switch point 19, I provide a member 50 which is secured to the switch point 19 at 51 and extends beneath the track, thence upwardly through an opening 52 in the plate 10 and along the top of the plate 10, thence upwardly to a point 53 and horizontally to its end. The horizontal end portion of the member 50 is formed with a slot 55 through which is adapted to extend an arm 56 secured to the shaft 57 of an electric torque motor 58 having an armature 59 and field

60. When the motor is deenergized, the armature 59 occupies the position shown in full lines in Fig. 2 and is held in this position by means of a spring 62 which is secured at one end to the end of the arm 56 and at its other end to the base plate 10. When the motor is energized, the armature rotates in a counter-clockwise direction as indicated by the arrow in Fig. 2 to a position at approximately right angles to the position shown in Fig. 2. In so moving, the arm 56 engages the right hand end of the slot 55 and moves the member 50 so as to swing the switch point 19 to the position shown in dotted lines in Fig. 1. The opening 55 is made somewhat larger than is necessary to accommodate the arm 56 so that upon movement in one or the other direction, the arm 56 will strike the member 50 a blow so as to insure the positive movement of the switch point to its other operative position and avoid danger of its sticking or stopping at an intermediate position. A further advantage of employing this lost motion connection between the arm 56 and the member 50 is that it permits the employment of a motor of smaller capacity than would otherwise be needed. When the motor is energized, considerable momentum is stored in the arm 56 and armature and shaft before the arm 56 engages the member 50. The switch point is then moved by the combined effect of the torque on the motor 58 and the momentum of the parts which have previously been set in motion. Similarly, when the motor is deenergized, the spring 62 stores momentum in these movable parts of the motor which assists in moving the switch point. Current is supplied to the motor from a battery 65, one terminal of which is connected to the base plate 10 and the other terminal connected to a terminal 66 through a switch 67 which in order to prevent a waste of current by being accidentally left closed, is biased to open position by spring 68. From the terminal 66, a conductor leads to the field 60 of the motor, thence to the insulated terminal 68, brush 69 and conducting ring 70, which is mounted upon but insulated from the shaft 57 of the motor. From ring 70, a conductor 71 leads to the armature winding, the other terminal of which is grounded at 80, as shown, on the shaft 57. The motor is preferably enclosed in a suitable housing 81 shown broken away in Fig. 2. This housing may be removably secured to the base plate 10 by any suitable means.

I claim:

1. A toy switch formed of a sheet metal base member having a rectangular opening therein, diverging tracks secured to said members, a supporting plate secured beneath said opening and a fixed switch point

and a movable switch point carried by said supporting plate.

2. In a device of the class described, a metal support and switch tracks mounted upon said support, an electrical third rail between said tracks insulated from said support, said support being formed with an opening beneath said tracks, an insulating plate secured beneath said opening, and a switch comprising insulated switch points mounted upon said plate.

3. In a toy electric railroad, a pair of diverging tracks, a conductor between said tracks adapted to supply current to a moving vehicle thereon, a stationary switch point for one of said tracks insulated therefrom, a switch point for the other of said tracks movable into and out of contact with the other of said tracks and a mounting for said switch point whereby the said switch is insulated from said tracks when in a position out of contact therewith.

4. In a toy railway, a switch comprising a movable switch point, an electric motor having a shaft, means biasing the shaft to one position and a lost motion connection between said shaft and said switch point whereby upon energizing of said motor said switch point is moved by a blow.

5. In a toy railway, a switch comprising a movable switch point, an electric motor having a shaft, means biasing the shaft to one position and a lost motion connection between said shaft and said switch point whereby upon energizing and deenergizing of the motor the movement of the switch point is facilitated by the blow incident to the taking up of the lost motion.

6. In a toy switch, a supporting plate, a movable switch point mounted thereon, means for moving said point comprising an electric motor having a shaft, a member secured to said point and having a slot therein, an arm secured to the shaft of said motor and extending through said slot.

7. In a toy switch, a support, a movable switch point mounted thereon, means for moving said point comprising an electric motor having a shaft, a member secured to said point and having a slot therein, an arm secured to the shaft of said motor and extending through said slot, and a spring for biasing said motor and switch to one position comprising a spring secured at one end to said arm and at its other end to said support.

8. In a toy switch, a supporting plate, a movable switch point mounted thereon, means for moving said point comprising an electric motor having a shaft, a member secured to said point and having a slot therein, an arm secured to the shaft of said motor and extending through said slot, and a spring for biasing said motor and switch

to one position comprising a spring secured at one end to said arm and at its other end to said supporting plate, an operating circuit for said motor comprising a source of 5 current and a manually operative switch, said switch being biased to open position.

9. A device of the class described, a pair of diverging tracks, a pair of switch points

between said tracks, a third rail between said tracks and terminating between said switch points, said third rail being adapted to be engaged by a grooved wheel collector, said third rail terminating in an enlarged flat upper surface so as to facilitate the disengagement of said roller from said rail.

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