This invention relates to an improvement in electric switches for toy electric railways and has for one of its objects the provision of a simple and convenient switch adapted to be readily shifted from one portion of the track to another as may be desired.

A further object of my invention is to provide an electric switch for toy electric railways which is adapted to operate to close a circuit when engaged by a toy train moving in one direction and which will not affect the said circuit when engaged by a train moving in the opposite direction.

With the above objects in view my invention consists in an electric switch for toy electric railways having certain details of construction and combinations of parts as will be hereinafter described and particularly recited in the claims.

In the accompanying drawings:

Fig. 1 is a top or plan view of one form in which an electric switch for toy electric railways constructed in accordance with my invention may assume, the parts being shown in their normal positions;

Fig. 2 is a view thereof in side elevation with a portion of the side wall of the saddle-member broken away;

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a view corresponding to Fig. 2 but showing the switch moved into one of its circuit-closing positions by the engagement with 16 of the shoe of the electric locomotive;

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a top or plan view of another form which my invention may assume;

Fig. 7 is a view thereof in side elevation;

Fig. 8 is a view thereof in transverse section on the line 8—8 of Fig. 7.

In the embodiment of my invention shown in Figs. 1 to 5 inclusive I employ a long sheet-metal saddle or supporting-member generally designated by the numeral 10 and folded to form an inverted U-shaped portion 11 adapted to set over the center or third-rail 12 of a toy electric railway track-unit between the track-rails proper 13—13, as clearly shown in Figs. 3 and 5 of the drawings. The leg 14 of the inverted U-shaped portion 11 is considerably longer than the complementary leg 15 thereof and is folded outward to provide a short horizontal reach 16 which, in turn, is folded upward to form a guide-flange 17 for the purpose as will hereinafter appear.

The lower end of the leg 15 of the saddle-member is folded outward to form a horizontal reach 18 and upward to form a vertical reach 19 and finally folded inward over the top of a bar 20 of insulating material to form a contact-plate 21. The said bar 20 is firmly held within the reaches 15, 18, 19 and 21 of the saddle-member and has its respective opposite ends sloped downward as at 22 so as to be more readily engaged by the shoe 23 (indicated by broken lines in Figs. 4 and 5) when the same is moved into engagement with it by the passage of a toy electric train.

Resting upon the horizontal reach 18 of the saddle between the arm 14 and the guide-flange 17 thereof I position a bar 24 of insulating material, the upper face of which is provided at its respective opposite ends with corresponding but reversely-turned contact plates 25 and 26, the inner ends of which are sloped downward as at 27 to more readily be engaged by sliding contact-shoe 28 having spring-arms 29 and 30 respectively adapted to engage with the said contact-plates 25 and 26, as will hereinafter appear. The outer end of each of the contact-plates 25 and 26 is bent downward as at 21 and has secured to it a binding-post 32 by means of which conductors may be respectively connected with the respective contact-plates.

The contact-shoe 28 above referred to is secured by means of a screw 33 to the under face of a longitudinally-movable bar 34 composed of insulating material and having its upper face provided with a contact-strap 35 folded around its sloping respective opposite ends. One of the ends 36 of the said contact-strap 35 is folded inward along the under face of the bar 25 and is interposed between the under face thereof and the contact-shoe 28 so as to provide an electrical connection between the said strip and the said shoe.

The tension of the spring-arms 29 and 30 of
the contact-shoe 28 bearing against the central portion of the insulating-bar 24 normally serves to maintain the bar 34 in its central and elevated position, as shown in Fig. 2 of the drawings.

A pair of corresponding U-shaped links 37 serve to connect the movable bar 34 with the fixed bar 24 in such manner as to permit the former to move endwise in either direction and also to move slightly in a vertical plane. The lower arm 35 of each of the U-shaped links 37 is entered into a socket 39 formed in the bar 24, while the corresponding upper arm 40 is entered into a socket 41 in the bar 34. Normally the movable bar 34 on one side of the third-rail 12 stands slightly above the fixed bar 20 on the opposite side thereof. Let it be supposed that the switch-unit above described is positioned astride the third-rail of the main-line track, just ahead of a turn-out track-switch leading to a spur-track, and that the contact-plate 26 is connected to an electric track-switch control-mechanism controlling the said track-switch, and further that a train is approaching my improved electric switch in the direction of the arrow A, Fig. 5, with its shoe or brush 23 bearing upon the said third-rail, the said brush will act to engage and electrically connect the contact-strip 51 of the fixed bar 20 (which is electrically connected to the third-rail 12) and the contact-strip 35 on the movable bar 34 and move the latter from left to right, as viewed in Figs. 2 and 4, until the arm 30 of the contact-shoe 28 is caused to ride upon the contact-plate 26 so as to close a circuit from the third-rail to the right-hand binding-post and thence to the electric track-switch control-mechanism so as to throw the said track-switch and cause the train to be switched off of the main line.

As soon as the shoe 23 has ridden beyond my improved electric switch structure, the tension of the arms 29 and 30 will serve to restore the parts to the positions shown in Fig. 2 and break the electrical circuit just previously formed.

However, when a train moving upon the main-line in a direction reverse to the direction in which the train just above described was traveling, its shoe or brush 23 will force the movable bar 34 in the opposite direction from right to left and complete a circuit if desired through the opposite contact-plate 26 to a semaphore signal or other apparatus, but it will be noted that the circuit through the contact-plate 26 and the track-switch control-mechanism to which it may be connected, will remain open and unaffected, so that as the train rides past on the main line the track-switch controlled through the contact-plate 26 will not be thrown nor in any way affected by the passage of the train in this direction. It will be understood that should the track-switch be thrown while the train is only partially past it, a derailment would result.

The electric switch shown in Figs. 6 to 8 inclusive corresponds in general characteristics to that shown in my co-pending application, Serial No. 132,535, filed July 14, 1926, patented December 26, 1928, No. 1,696,534, of which the present case is a continuation in part, and while it is not a directional switch, like the switch just above described, it is adapted to be readily shifted about upon the track from place to place as desired and comprises a saddle-member generally designated by the numeral 42 formed of sheet-metal folded to form an inverted U-shaped portion 43 adapted to set over and straddle a center or third-rail 12. One of the downwardly-extending outwardly-sloping legs 44 of the U-shaped portion has folded outward from it a short horizontal reach 45, the outer end of which is upturned to form a clamping-flange 46, as clearly shown in Figs. 7 and 8 of the drawings. The opposite depending leg 47 of the inverted-U shaped portion is also folded to form an outwardly-extending horizontal reach 48 which latter, in turn, is upwardly folded as at 49 and again downwardly folded toward the said U-shaped portion to envelope a bar 50 of insulating material and to form a contact-plate 51 adapted to be engaged by the shoe or brush of a toy train which electrically connects it to a contact-strip 52 mounted upon the upper face of a complementary insulating bar 53 located upon the opposite side of the U-shaped portion 43 and resting upon the reach 45 and clamped between the leg 44 and the clamping-flange 46 aforesaid.

One end of the contact-strip 52 is bent downward as at 54 over the end of the insulating bar 53 and is provided with a binding-post 55 adapting a wire to be connected to it for the energization of such electrical devices as may be desired.

When the brush 23 of a toy electric train reaches the switch, it will ride upon the contact-strips 51 and 52 and electrically connect them and since the contact-plate 51 is electrically connected to the third-rail 12 by the reaches 49 and 48 and the leg 47, current will flow to the binding-post 55 and thence to the device to be operated.

I claim:

1. An electric switch for toy electric railways comprising a saddle-member adapted to rest upon and straddle a charged rail; two plates respectively located upon the opposite sides of the longitudinal center of the said saddle-member and supported thereby in position to be engaged by the shoe of a toy electric train, one of the said plates being insulated from the said saddle-member and adapted to be electrically connected to the third-rail by the engagement with it of the said shoe.
2. An electric switch for toy electric railways comprising a sheet-metal saddle-member folded to form an inverted U-shaped portion adapted to rest upon and straddle a charged rail; two plates respectively located upon the opposite sides of the longitudinal center of the said saddle-member and supported thereby in position to be engaged by the shoe of a toy electric train, one of the said plates being insulated from the said saddle-member and adapted to be electrically connected to the third-rail by the engagement with it of the said shoe.

3. An electric switch for toy electric railways comprising a saddle-member adapted to rest upon and straddle a charged rail; two plates respectively located upon the opposite sides of the longitudinal center of the said saddle-member and supported thereby in position to be engaged by the shoe of a toy electric train, one of the said plates being connected normally to the said third-rail and the other of the said plates being insulated from the said saddle-member and from the said third rail and adapted to be electrically connected with the said third-rail by the engagement with it of the said shoe.

4. An electric switch for toy electric railways comprising a mounting-member; a movable switch-member carried by the said mounting-member and positioned so as to be engaged and moved by a projecting part of a toy electric train; a movable spring-contact carried by the said movable switch-member and exerting a yielding effort to return the latter to its normal position; and a stationary contact carried by the said mounting-member in position to be engaged by the said movable contact; whereby the said movable contact may be moved into engagement with the said stationary contact to close a circuit by the passage of a toy electric train in one direction and whereby the said circuit will be unaffected by the passage of a toy train in the opposite direction.

5. An electric switch for toy electric railways comprising a mounting-member; a switch-member carried by the said mounting-member and movable in opposite directions from a neutral position and positioned to be engaged and moved by a projecting part of a toy electric train; a two-armed movable spring-contact carried by the said switch-member and exerting a yielding effort to return the latter to its normal position; a pair of stationary contacts respectively located on the opposite sides of the said movable contact in position to be alternately engaged thereby; whereby the said movable contact may be moved into engagement with one of the said stationary contacts to close a circuit by the passage of a toy electric train in one direction and whereby the said circuit will be unaffected by the passage of a toy train in the opposite direction.

6. An electric switch for toy electric railways comprising a mounting-member; an insulating-bar carried thereby; a movable switch-member mounted over the said insulating-bar and connected thereto by a pair of pivotal links; a movable contact carried by the said movable switch-member and yieldingly held in its open-circuit position; and a stationary contact mounted upon the said insulating-bar in position to be engaged by the said movable contact; whereby the said movable contact may be moved into engagement with the said stationary contact to close a circuit by the passage of a toy electric train in one direction and whereby the said circuit will be unaffected by the passage of a toy train in the opposite direction.

In testimony whereof, I have signed this specification.

AARON H. GILL.