Nov. 25, 1930. H. S. BECKER 1,783,069

TRACK SWITCH FOR TOY ELECTRIC RAILROADS

Filed Feb. 23, 1929 3 Sheets-Sheet 1

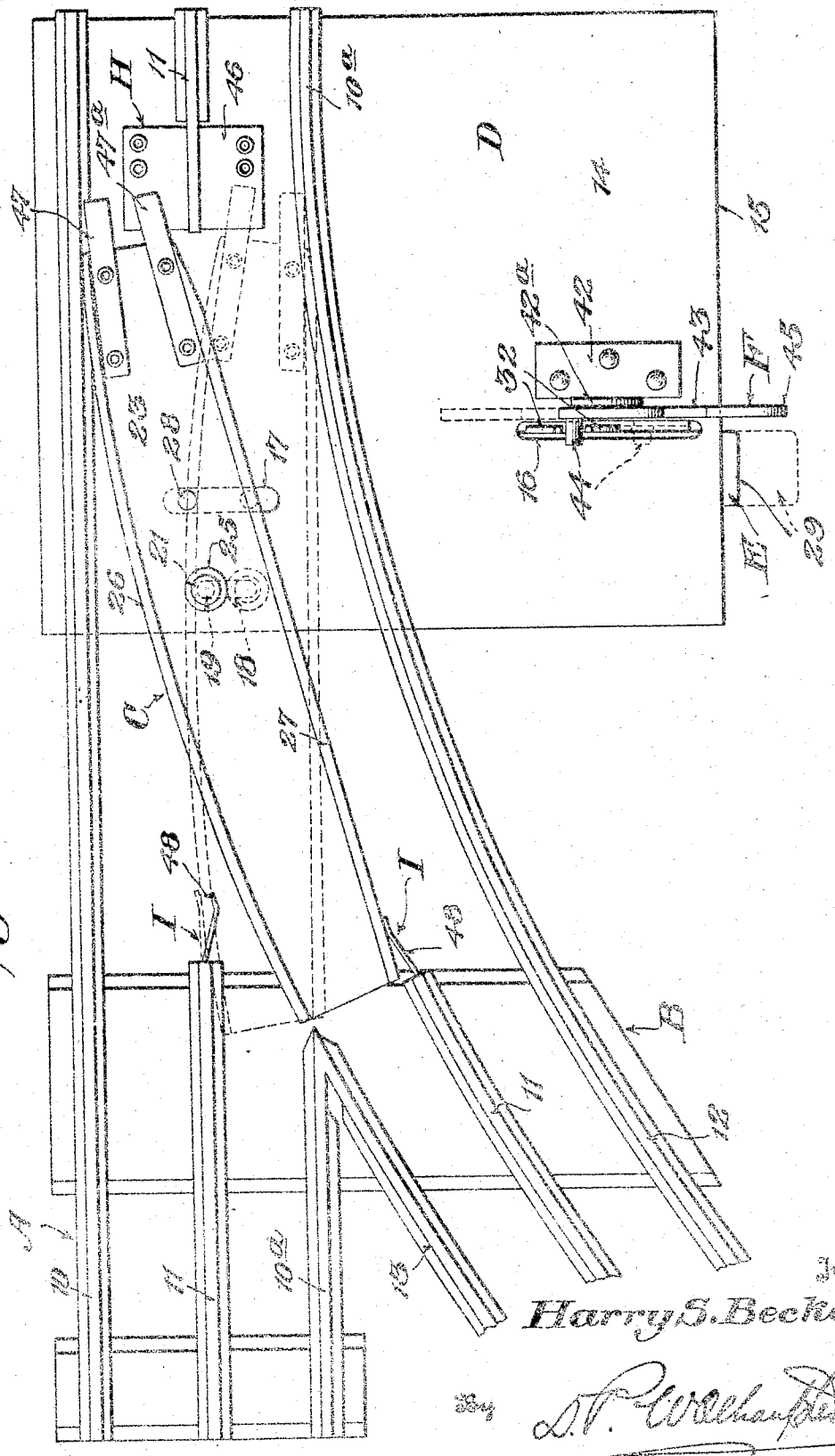

Fig. 1.

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TRACK SWITCH FOR TOY ELECTRIC RAILROADS

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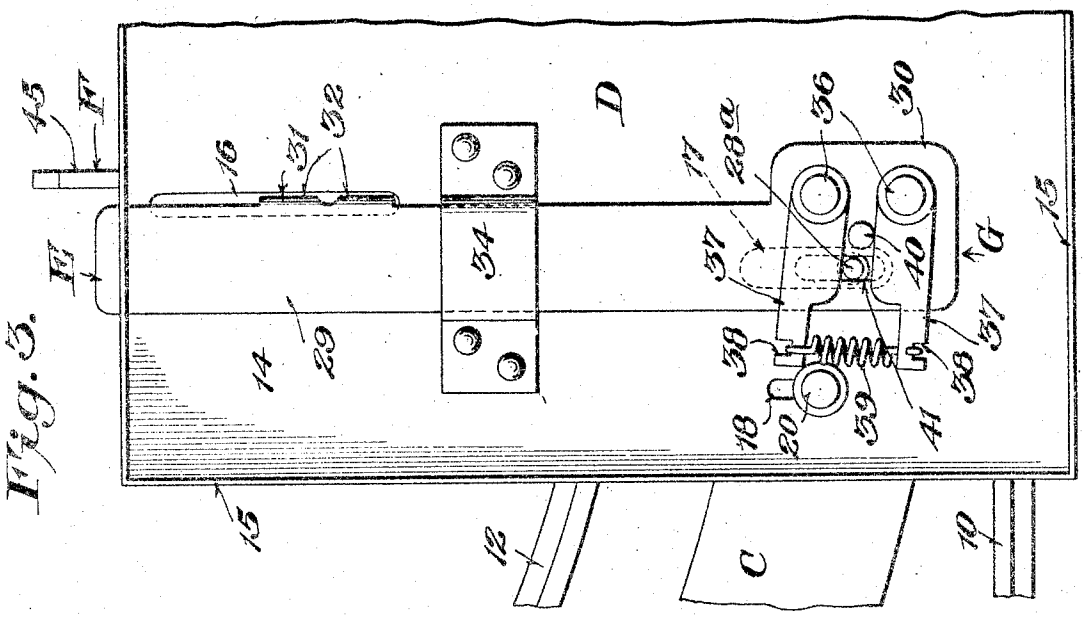

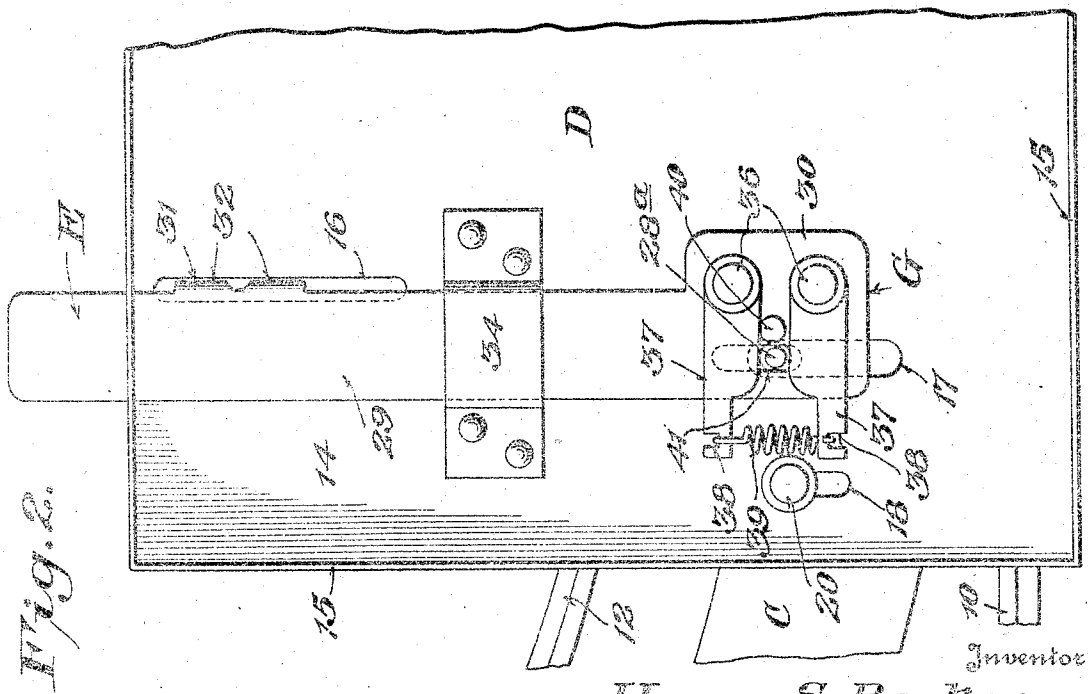

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TRACK SWITCH FOR TOY ELECTRIC RAILROADS

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Fig. 4.

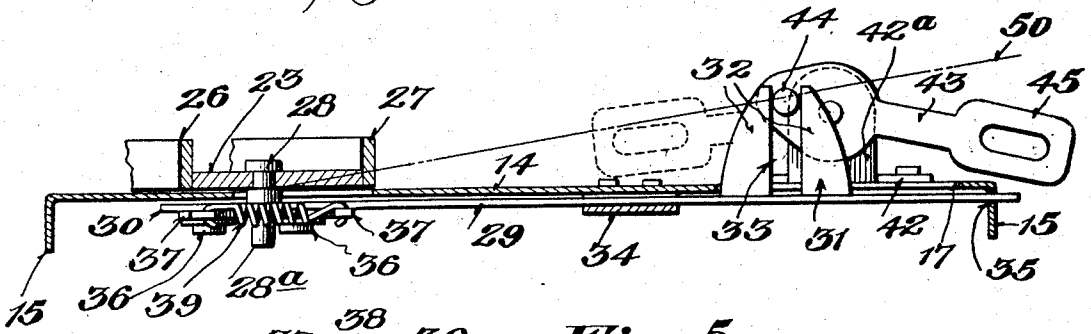


Fig. 5.

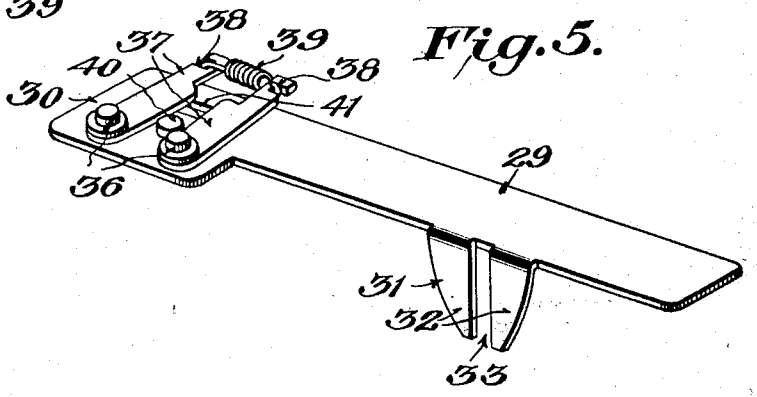


Fig. 6.

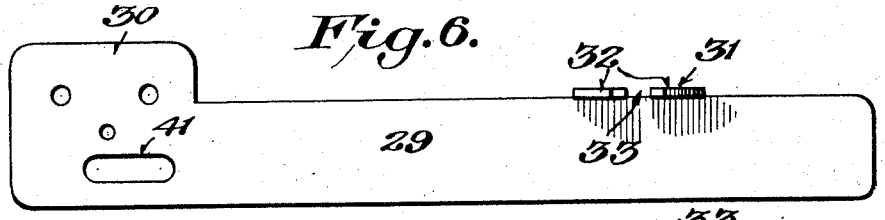


Fig. 7.

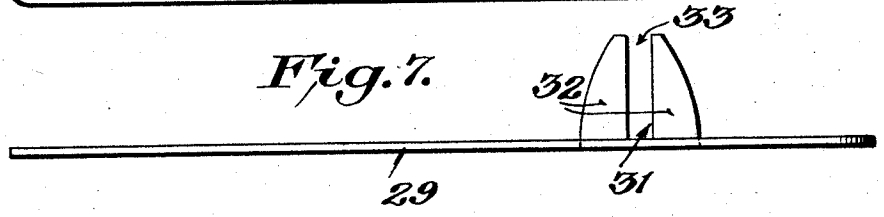
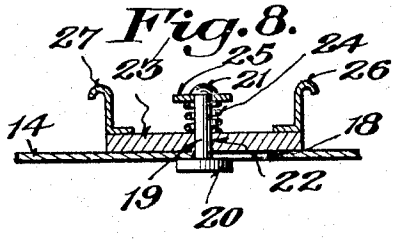


Fig. 8.



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UNITED STATES PATENT OFFICE

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TRACK SWITCH FOR TOY ELECTRIC RAILROADS

Application filed February 23, 1929. Serial No. 342,152.

This invention relates to track switches and is more particularly directed to a track switch for use on toy electric trains.

The primary object of the invention is to provide a track switch including a movable frog adapted, when arranged in one operative position, to conduct a train along the main line of wheel bearing rails, and when in its second operative position, to conduct a train from the said main line onto a diverging or branch line of wheel bearing rails.

A further object of the invention is to provide a movable frog of the above mentioned type which is so constructed and assembled that its use will eliminate the necessity of an electrically continuous power supply rail, as has been the custom in previously constructed toy switches.

A still further object of the invention is to provide a pivoted frog with novel means for retaining the said frog in proper pivotal relation with respect to its supporting structure. This feature is very desirable in toy track switches inasmuch as that in previously designed toy track switches the frog under manipulation often became loose and was a source of derailment to the trains traversing the track.

Another object of the invention is to provide novel frog operating devices which will retain the frog in either of its operative positions, the said devices entirely eliminating the possibility of derailment during the travel of a train over the switch.

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 construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

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

Figure 1 is a top plan view of the track switch for toy electric railways embodying this invention.

Fig. 2 is a fragmentary bottom plan view of the switch and more specifically illustrates operating mechanism for actuating the movable frog.

Fig. 3 is a similar view to Fig. 2 but illustrates the said operating mechanism when the parts of the same occupy different positions than those illustrated in Fig. 2.

Fig. 4 is a vertical sectional view taken through the frog operating mechanism of the switch.

Fig. 5 is a perspective view of a portion of the frog operating mechanism.

Fig. 6 is a top plan view of a frog operating arm which forms a part of the frog operating mechanism illustrated in detail in Figs. 2 to 5, inclusive.

Fig. 7 is a side elevational view of the frog operating arm illustrated in Fig. 6.

Figure 8 is a fragmentary vertical sectional view of the pivotal connection for the movable frog.

The device embodying this invention, when briefly described, includes a main line track system A and a diverging or branch line track system B. For controlling the movement of a train, not shown, over either one of these lines, a pivoted frog C is provided. This frog is supported by a base D which also carries a frog operating arm E actuated by an operating lever F, the said lever being conveniently mounted upon the base D. A novel form of tensioning means G acts as a connection between the frog operating arm E and the frog C. The main and branch line rail systems A and B are provided with third rails, or electric power supplying rails and the rails of the frog C act to complete the circuit for the said third rails in accordance with the positioning of the frog. Circuit controlling devices H and I are employed for this purpose.

It is believed that the above description will enable anyone skilled in the art to quickly comprehend the general mode of operation of the device and the manner in which it is constructed. For the purpose of disclosing the invention in all its details, a more complete description now will be given.

The main line system of track rails includes the wheel bearing rails 10 and 10ª and the third or electric power supplying rail 11 po-

sitioned therebetween. The diverging or branch line includes the wheel bearing rails 12 and 13 which are joined to the rail 10ª of the main line track system in a manner common to such devices. The main line rail 10ª is interrupted to permit of the connection therewith of the rails 12 and 13, as best illustrated in Fig. 1.

The base D for the track switch may be made of any desired material but it is believed that sheet steel or tinplate is the most practical. The base includes a top 14 and the marginal flanges 15 which support the top in an elevated position with respect to the surface upon which the switch is located. The base has secured to the upper surface of the top 14 the rail 10 and the portion of the rail 10ª which joins with the branch line rail 12. The third or electric power supplying rail 11 also is suitably secured to the upper surface of the top 14. The said top further is provided with elongated slots 16, 17 and 18 which accommodate relatively movable portions of the frog and frog operating mechanism to be described at a later point.

Pivotally movable with respect to the base D is the frog C. This frog is directly connected to the base by means of the pivot pin 19 disclosed in Fig. 8 as including an enlarged head 20 lying underneath the top 14 of the base D, and a riveted head 21 projecting above the said top 14. This pin 19 passes through the slot 18 in the base D and through an aperture 22 formed in the base 23 of the frog C. A spring 24 and a washer 25 are interposed between the riveted head 21 of the pin 17 and the upper face of the base 22 of the frog C. This spring maintains the frog in contact with the base D at all times and prevents undesired shifting of the frog whereby derailment of a train will be prevented. The insulating base 23 has suitably mounted thereon the longitudinally extending rails 26 and 27 which are located at the longitudinal edges of the said base. An operating pin 28 is connected to the base 23 and has a depending end portion 28ª located in the slot 17 formed in the base D.

In Figs. 2 to 7, inclusive, the frog operating arm E is disclosed as including an elongated body portion 29 having an enlarged head 30 formed at one end thereof and an actuating fork 31 formed thereon at a point spaced from the remaining end, the said fork including the right angularly arranged fingers 32 which are spaced to provide a slot 33. The fork 31 projects through the slot 16 formed in the top 14 of the base D and is operatively associated with the actuating lever F, which will be described at a later point. The body portion 29 of the operating arm E is supported and guided by means of a strip 34 secured to the underside of the base D. The outer end of the arm 29 is further supported and guided by being passed through a slot 35 formed in one marginal flange 15 of the base D.

The enlarged head portion 30 of the arm 29 has pivotally secured thereto, as by means of the pins 36, fingers 37 which have notches 38 in their outer ends. A spring 39 has its ends hooked around the reduced portions of the fingers 37 formed by the notches 38. The enlarged head 30 is provided with a pin 40 positioned between the fingers 37 and acting as a stop for the said fingers. Extending longitudinally of the enlarged head 30 is a slot 41 which accommodates the end portion 28ª of the pin 28 carried by the frog C.

Figs. 1 and 4 disclose an angle bracket 42 mounted on the top 14 of the base D. The upstanding branch 42ª of this bracket has pivoted thereto the frog operating lever 43 which includes a crank pin 44 and a handle 45. The crank pin 44 is located so as to be positioned within the slot 33 formed between the fingers 32 of the fork 31.

By referring to Fig. 1, it will be seen that one end of the interrupted third rail or power supplying rail 11 of the main line A has electrically connected thereto a contact plate 46 which forms a part of the circuit controlling device H. This said device also includes contact blades 47 and 47ª. During the movement of the frog C, over into either of its operative positions, one or the other of these contact blades 47 or 47ª will always be in engagement with the contact plate 46 for connecting either the rail 26 or 27 in circuit with the third rail 11. The sections of the third rail 11 associated with the main line A and the branch line B beyond the frog are each provided with a spring contact blade 48.

The operation of this track switch for use on toy electric railways may be described as follows: Fig. 1 discloses the frog as being arranged in its operative position for directing a train onto the branch line B. It will be noted that the rail 26 of the frog C transfers the outer wheels of the train from the main line rail 10 to the branch line rail 13. The remaining rail 27, through its connection with the contact blade 47ª, carries the electric power supply from the third rail 11 and its associated contact plate 46 of the main line to the third rail 11 of the branch line B. The spring contact finger 48 associated with this latter third rail completes the circuit between the frog rail 27 and the third rail of the branch line.

For the purpose of retaining the train on the main line and not permitting it to diverge on the branch line, the frog C must be moved into its dotted line position, as shown in Fig. 1. To bring about this movement of the frog, the operating lever 43 is pivoted on the bracket 42 and is swung into its dotted line position, see Figs. 1 and 4. Movement of the lever causes the crank pin 44 to longitudinally move the operating arm 29. Fig. 3 discloses

the arm 29 in the position occupied by the same when the frog C is in its full line position as illustrated in Fig. 1. The arm 29 is moved toward the position it occupies in Fig. 2 for moving the frog into the dotted line position shown in Fig. 1. During this movement of the arm, the pin 40 bears against one of the fingers 37 and tends to pivot the same. Due to the connection of the spring 39 with this finger 37 and the remaining similar finger, the force applied by the pin 40 will be conveyed to the finger 37 out of contact with said pin. This latter finger will bear against the end portion 28^a of the pin 28 and will cause movement of this latter pin through the slot 17 of the base D. This movement of the pin 28 will cause the frog to pivot upon the pin 19 until the rail 26 engages the spring contact 48 of the main line. This engagement of the frog rail with the contact 48 will prevent further pivotal movement of the frog without first bodily shifting the pivot pin 19 with respect to the slot 18 formed in the base D. It will be noted that movement of the pin 19 through the slot 18 is not brought about until an external force acts to prevent pivotal movement of the frog. The spring 24 acts as a drag to prevent undesired movement of the pin 19 through the slot 18. By moving the pin 19 through the slot 18, the frog is moved into the dotted line position. The tension of the spring contact 48 and the tension on the fingers 37 produced by the spring 39 will retain the frog rails in their new positions in contact with the main line rail 10^a and the third rail 11 for the main line A. The frog will be prevented from shifting out of this new position because of the fact that the handle end 45 of the lever 43 has been moved below the line of stress indicated by the dot and dash line 50, shown in Fig. 4.

By reversing the movements of the various parts just referred to, the frog C may be shifted from its dotted line position into its full line position, as shown in Fig. 1.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art and it will of course be understood that changes in form, proportion and minor details of construction may be resorted to without departing from the spirit of the invention and scope of the appended claims.

I claim:—

1. A track switch for toy electric railways comprising fixed wheel bearing rails for main and branch lines, a pivotally movable switch frog for controlling the movement of a train through the main line or onto the branch lines, a base for supporting the frog, and tensioning means for holding the frog against the base.

2. A track switch for toy electric railways comprising fixed wheel bearing rails for main and branch lines, a pivotally movable switch frog for controlling the movement of a train through the main line or onto the branch line, a base for supporting the frog, and tensioning means associated with the pivot for the frog to hold the latter against the base.

3. A track switch for toy electric railways comprising fixed wheel bearing rails for main and branch lines, a pivotally movable switch frog for controlling the movement of a train through the main line or onto the branch line, a base for supporting the frog, tensioning means for holding the frog against the base, a power rail for each of said lines interrupted at the switch, and means associated with said frog for completing the power supply through the power rail only in the direction of travel of the train.

4. A track switch for toy electric railways comprising fixed wheel bearing rails for main and branch lines, a pivotally movable switch frog for controlling the movement of a train through the main line or onto the branch line, a base for supporting the frog, tensioning means associated with the pivot for the frog to hold the latter against the base, a power rail for each of said lines interrupted at the switch, and means associated with said frog for completing the power supply through the power rail only in the direction of travel of the train.

5. A track switch for toy electric railways comprising fixed wheel bearing rails for main and branch lines, a pivotally movable switch frog for controlling the movement of a train through the main line or onto the branch line, a base for supporting the frog, tensioning means for holding the frog against the base, a power rail for each of said lines interrupted at the switch, and contact means carried by the frog for completing the power supply through the power rail only in the direction of travel of the train.

6. A track switch for toy electric railways comprising fixed wheel bearing rails for main and branch lines, a pivotally movable switch frog for controlling the movement of a train through the main line or onto the branch line, a base for supporting the frog, tensioning means associated with the pivot for the frog to hold the latter against the base, a power rail for each of said lines interrupted at the switch, and contact means carried by the frog for completing the power supply through the power rail only in the direction of travel of the train.

7. A track switch for toy electric railways including a movable frog, and operating mechanism for the frog, said mechanism including a longitudinally movable arm, a pair of spring connected members pivoted in spaced relation with each other upon the arm, and means carried by the frog and interposed between said members, whereby movement of the arm will operate the frog.

8. In a toy switch, a base, a frog, a pivot pin for the frog, means for connecting the pin to the base to permit the frog to pivot with respect to the base and to permit the pin to move laterally of the base, and means for operating the frog.

9. In a toy switch, a base, a frog, a pivot pin for the frog, means for connecting the pin to the base to permit the frog to pivot with respect to the base and to permit the pin to move laterally of the base, a manually operable member pivoted on the base, and a tensioned connection between said member and the frog.

10. In a toy railway track switch, a base, a frog slidably and pivotally connected to the base under tension, and means for shifting the frog comprising a pin carried by the frog and engaging a slot in the base, and an operating member for the frog carrying a pair of pivoted fingers adapted to engage with said pin on the frog, and a spring connecting said fingers.

11. In a toy railway track switch, a base, a frog, a pivot pin carried by the frog and engaging a slot in the base, a spring carried by the pivot pin for frictionally forcing the frog into engagement with the base, a pin carried by the frog, an operator for the frog, said operator including a pair of spring tensioned fingers adapted to alternately engage with the pin on the frog to cause the movement of the frog when the operator is shifted.

12. In a toy railway track switch, a supporting base, a frog mounted on the supporting base and including a web connecting the frog rails, a pin carried by the web and engaging a slot in the base, a spring confined between a portion of the pin and the upper side of the web of the frog to force the under-side of said web into frictional engagement with the supporting base, and means for causing both the pivotal and sliding movement of the frog.

13. In a toy railway track switch, a supporting base, a frog mounted on the supporting base and including a web connecting the frog rails, a pin carried by the web and engaging a slot in the base, a spring confined between a portion of the pin and the upper side of the web of the frog to force the under-side of said web into frictional engagement with the supporting base, and means for causing both the pivotal and sliding movement of the frog, said means comprising a slidable arm, and resilient means carried by said arm for engaging a portion of the frog.

14. In a toy railway track, main and branch line rails, a support fixed with respect to said rails, a frog mounted on said support for movement to direct traffic over either the main or branch line rails, and yieldable means for maintaining said frog at all times in firm engagement with said support.

15. In a toy railway track, main and branch line rails, and a frog pivotally and bodily laterally movable to positions to direct traffic over either the main or branch line rails.

In testimony whereof I hereunto affix my signature.

HARRY S. BECKER.