May 12, 1931. J. C. KOERBER 1,804,783

CLIP FOR TOY ELECTRIC RAILWAY TRACKS

Filed Feb. 17, 1928

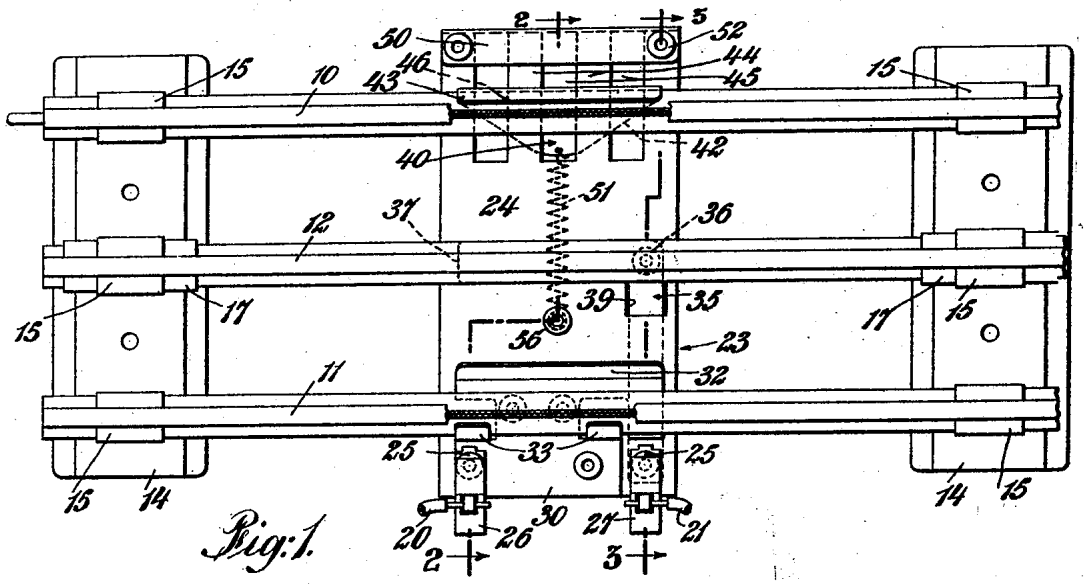



Fig. 1.

Fig. 2.

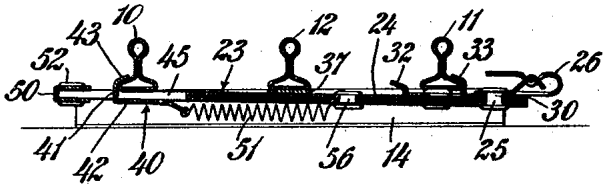



Fig. 3.

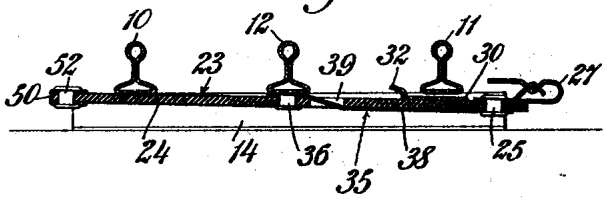
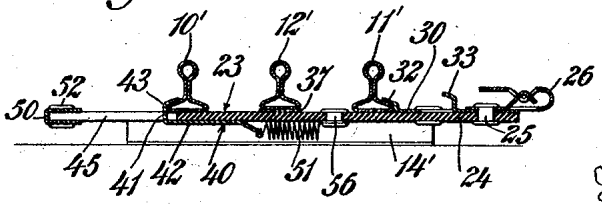



Fig. 4.

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# UNITED STATES PATENT OFFICE

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## CLIP FOR TOY ELECTRIC RAILWAY TRACKS

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This invention relates to connectors or clips for forming electrical connections with the rails of toy railway tracks.

Toy electric railway tracks are customarily formed of two wheel bearing rails and a third rail which is generally located between the wheel bearing rails. Current is supplied to the toy car through the rails the third rail serving as one terminal and one or both of the wheel bearing rails serving as the other terminal of the supply circuit. To connect these rails with supply conductors as well, in certain cases, as to connect the rails with auxiliary circuits, such as circuits employed for energizing wayside signals, it is customary to employ conducting clips which may be attached to and removed from the track. The principal object of this invention is to provide an improved clip of this character.

A further object of the invention is to provide a clip which is constructed so as to facilitate its attachment to and removal from the track.

Toy railway track clips at present in use consist of an insulated base upon which are mounted stationary terminal or binding members to which the outside circuit conductors are attached, and, in electrical connection with the binding members, are rail engaging contacts. To provide means for clamping the clip to the track it is the practice to make one of the rail engaging contacts movable relative to the rail so that it can be brought into clamping engagement with the rail. To maintain this movable rail engaging contact electrically connected to a stationary binding member it has been the practice to connect these parts by conductors which have a sliding or rubbing engagement with one another. Difficulty is experienced in constructing a clip in this fashion so that a good contact will be maintained at all times between these parts, and, even when the clip is properly made, wear or bending of these parts through continued use often results in a poor contact between the rubbing surfaces. In one form of clip constructed in accordance with the present invention I overcome these disadvantages by providing stationary rail engaging contacts which are permanently connected to their respective binding members, and for the purpose of securing the clip to the track I provide, in addition, a movable means for clamping the clip to the rail. A further object of my invention therefore is to provide a clip comprising a supporting base with rail engaging contacts mounted on the base and wherein means is provided for clamping the clip to the track in a way which does not require movement of the rail engaging contacts. A further object of my invention is to provide a clip of this character which when attached to the track will serve to make a firm and secure electrical contact with the track rails.

A further object of my invention is to provide an improved clip of this character which is adapted for attachment to tracks of different gauge, as will be more fully explained hereafter.

Further objects of my invention include economy and simplicity of construction and durability in use.

Further objects and advantages will appear from the following description taken in connection with the accompanying drawing which shows, by way of example, one embodiment of my invention and wherein:

Figure 1 is a plan view of my improved clip, showing the clip attached to a section of standard wide gauge toy track;

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

Figure 3 is a sectional view taken on the line 3—3 of Figure 1, and

Figure 4 is a view similar to Figure 2, but showing a clip attached to a narrow gauge track.

In Figures 1 to 3 the track section, which is of wide gauge, comprises two outside wheel-bearing rails 10 and 11 and an inner third rail 12. The rails are supported by sheet metal ties 14 to which they are secured by ears 15 struck up from the sheet metal of the tie. The third rail is shown as insulated from the ties 14 by strips of insulating material 17 interposed between the third rail and tie.

The narrow gauge track shown in Figure 4 is of similar construction of the wide gauge track shown in Figures 1 to 3, except that the corresponding parts are of somewhat smaller size and the rails 10′, 11′ and 12′ are located somewhat nearer together than are the corresponding rails 10, 11 and 12 of the wide gauge track.

Reference characters 20 and 21 represent wire terminals which may lead from a source of current supply for the track or which may form part of an auxiliary circuit designed to be supplied with current from the energized rails of the track, and reference character 23 represents a clip which is employed to connect electrically the wire terminals 20 and 21 with the outside rail 11 and third rail 12, respectively.

The clip 23 comprises a base 24 which may be formed of a plate or strip of insulating material. Mounted on the base 24 near one end thereof and suitably secured thereto, as by eyelets 25, are insulated terminal or binding members 26 and 27 to which the wire terminals 20 and 21 respectively are secured.

Secured to the upper face of the base 24 and electrically connected to binding member 26 is a metal contact member or plate 30 which is bent upwardly and inwardly along its inner edge to form a rail engaging portion or abutment 32. Portion 32 is designed to extend over and engage a flange of the outer rail 11′ of the narrow gauge track, as shown in Figure 4. Between the inner and outer edges of the plate 30 the metal of the plate is struck up to form other rail engaging portions or abutments 33. Portions 33 are of similar form in cross section to the portions 32 and the portions 33 are designed to extend over and engage a flange of the outer rail 11 of the wide gauge track shown as in Figures 1 to 3. With the clip in the positions shown in the drawing, it will be seen that the rail 10 or rail 10′ is electrically connected with the terminal 26 through the medium of the plate 30.

Electrical contact with the third rail is made by an L-shaped member 35 formed preferably of resilient metal and secured to the base 24 by any suitable means, such as an eyelet 36. The L-shaped member 35 comprises a portion or strip 37 which, when the clip is attached to the track, is in contact with the third rail, extending along the third rail between the rail and base 24. The strip 37, as shown in the drawing, is dimensioned that it does not extend any substantial distance at either side of the third rail. Strip 37 when free of the rail 12 preferably bows or curves upward slightly so that when the clip is attached to the track the strip 37 will be somewhat deformed and as a consequence will be pressed into firm electrical contact with the bottom of the third rail. The L-shaped member 35 also comprises a strip 38 which joins the strip 37 at one end thereof, extends thence down through an opening 39 in the base 24 and along the underside of the base and is secured to the base and to binding member 27 by an eyelet 25.

Cooperating with abutments 32 or 33 on the plate 30 is a clamping means 40 which serves to secure the clip to the track in such a position that rail 11 or 11′, as the case may be, is connected through plate 30 with terminal 26 and third rail 12 or 12′ is connected through L-shaped member 35 to the terminal 27. Clamping means 40 comprises a movable member or abutment 41 preferably formed of bent sheet metal. Member 41 comprises a portion 42 which lies beneath the base 24 and a portion 43 which is bent upwardly and formed at its upper end to embrace a flange of the outside rail 10 or 10′. Portion 43 of abutment 42 is formed with openings 46 through which extend strips 44 formed by slots 45 extending inwardly from an outer end of the base 24. The strips 44 engaging the walls of the openings in the portion 43 of the abutment 41 serve to guide the abutment in its movement along the base 24. The outer ends of the slots 45 in the base 24 are closed by a U-shaped metal piece 50 secured by eyelets 52 to the outer end of the base.

In the particular embodiment of the invention shown in the drawings I employ, for the purpose of moving the abutment to its rail engaging position, a spring 51 which is located beneath the base 24 and is connected at one end to the portion 42 of the abutment and at its other end to the base 24 by means of eyelet 56. It will be seen that the spring 51 serves not only to move the abutment 41 into engagement with the outside rail 10 or 10′, in this manner clamping the track between the movable abutments 41 and the stationary abutments 32 or 33, but also this spring serves to maintain the clamping relation between the clip and track, such that good electrical contacts are maintained between the third rail and outside rail and their respective abutments. While I have employed a spring for this purpose it is obvious that in certain cases other means may be employed which will accomplish the dual function of moving the abutment 41 into engagement with an outer rail and of maintaining a close and tight engagement. Thus a screw might be employed as a means for causing the required engaging movement and also in certain cases a cam or wedge may be employed. In any of these cases the cam, wedge or screw should preferably be so constructed as to insure good electrical contact with the rail, or prevent any accidental backward movement of the abutments away from the outer rail, while the clip is in use.

It will be seen that the abutment 41 has a considerable range of movement, sufficient to permit this abutment to engage the rail 10 of the wide gauge track and also to engage the rail 10′ of the narrow gauge track. In the particular form of invention shown in the drawing the inside or third rails 12 and 12′ each occupy the same position on the base 24. In the case of the wide gauge track where both outside rails are located at a greater distance from the third rail than are the outside rails of the narrow gauge track, the outside rail 11 of the wide gauge track, engages the abutment 33, and, in the case of the narrow gauge track, the outside rail 11′ engages the abutments 32. In certain cases, either abutment 32 or abutments 33 may be eliminated by extending the contact strip 37 laterally and providing for a somewhat greater range of movement of the abutment 41. In the use of the clip modified in this way one of the outside rails of both wide and narrow gauge tracks would engage the single abutment of the plate 30 and the middle rails of the tracks would engage the center contact at different points longitudinally of the base 24.

It will be noted that the movable abutment 41 is electrically insulated from either of the terminals 26 and 27. In case the clip is to be used with a track wherein each of the three rails is insulated from the others my improved clip may be employed to form separate electrical connections with the three rails. A third terminal member would, in such case, be mounted on the base and suitable means employed for connecting this added terminal member with the eyelet 56 or other part of the clamping means 40.

Having now described my invention, what I claim and desire to secure by Letters Patent is:

1. A universal toy track clip comprising a base, a rail engaging contact mounted on said base and means for attaching the clip to toy railway tracks of different gauge, one of said contacts comprising a strip of metal mounted on said base and arranged to extend along and engage the bottom of the third rail of said tracks.

2. A universal toy track clip comprising a base, a rail engaging contact mounted on said base and means for attaching the clip to toy railway tracks of different gauge, one of said contacts comprising a stationary strip of metal mounted on said base and arranged to extend along and engage the bottom of the third rail of said tracks.

3. A clip adapted for attachment to tracks having outside wheel bearing rails and an inside third rail, said clip comprising an insulating base, a stationary third rail engaging contact mounted on said base and means operable at different distances at opposite sides of said stationary contact for clamping said clip to the outside wheel bearing rails of tracks of different gauge.

4. A universal clip for toy railway tracks, comprising a base, a stationary contact mounted on said base and adapted for clamping engagement with corresponding rails of tracks of different gauge and a movable clamping member adapted to engage other corresponding rails of said tracks of different gauge and to cooperate with said contact to clamp the clip to the track, said clamping member having a sufficient range of movement to engage said other corresponding rails of tracks of different gauge and said clamping means being biased throughout its range of movement to positions to engage said other rails.

5. A universal clip for toy railway tracks comprising a base, a stationary contact mounted on said base and adapted to clamping engagement with corresponding rails of tracks of different gauge, a movable clamping member carried by said base and adapted to cooperate with said contact to clamp the clip to the track, said member being movable into clamping engagement with other corresponding rails of tracks of different gauge, means for moving said clamping member, said means serving to clamp said contact against said first named rail and to hold said contact in secure electrical connection therewith.

6. A universal clip for toy railway tracks comprising a base, a stationary contact mounted on said base and adapted for clamping engagement with corresponding rails of tracks of different gauge, a movable clamping member carried by said base and adapted to cooperate with said contact to clamp the clip to the track, said member being movable into clamping engagement with other corresponding rails of tracks of different gauge, a spring for moving said clamping member, said spring serving to clamp said contact against said first named rail and to hold said contact in secure electrical connection therewith.

7. A universal clip for toy railway tracks, comprising a base, a stationary contact mounted on said base and adapted for clamping engagement with corresponding rails of tracks of different gauge, a movable clamping member carried by said base and adapted to cooperate with said contact to clamp the clip to the tracks, said member being movable into clamping engagement with other corresponding rails of tracks of different gauge, and means for moving said clamping member, said member, contact and means being so constructed and arranged that said means serves to clamp said contact to said first mentioned rail, and when so clamped contact is held in secure electrical connection with said first mentioned rail.

8. A universal clip for toy railway tracks,

comprising a base, a stationary contact mounted on said base and adapted for clamping engagement with corresponding rails of tracks of different gauge, a movable clamping member carried by said base and movable into clamping engagement with other corresponding rails of said tracks of different gauge, a spring for moving said clamping member, said member, contact and spring being so constructed and arranged that said spring serves to clamp said contact to said first mentioned rails and to hold said contact in secure electrical connection therewith.

9. A universal clip for toy electric railway tracks comprising two wheel bearing rails and a third rail, said clip comprising an insulating base, an abutment formed of conducting material and movable into engagement with a wheel bearing rail, and a stationary abutment mounted on said base and adapted to engage another of said rails, said clip being secured to said track by the cooperating engagement of said two abutments with their respective rails, said former abutment being movable over a sufficient range to permit said former abutment to engage corresponding rails of tracks of different gauge, spaced differently from the rails engaged by said latter abutment.

10. A universal clip for toy electric railway tracks comprising two wheel bearing rails and a third rail, said clip comprising an insulating base, a stationary abutment mounted on said base and adapted to engage one of said rails, an abutment formed of conducting material and movable on said base into engagement with another of said rails, said clip being secured to said track by the cooperating engagement of said two abutments with their respective rails, said latter abutment being movable over a sufficient range to permit said latter abutment to engage corresponding rails of tracks of different gauge, spaced differently from the rails engaged by said first named abutment, and a stationary contact on said base, said contact being adapted to engage the remaining rail.

11. A universal clip for toy electric railway tracks comprising two wheel bearing rails and a third rail, said clip comprising an insulating base, a stationary abutment mounted on said base and adapted to engage one of said rails, an abutment formed of conducting material and movable on said base into engagement with another of said rails, said clip being secured to said track by the cooperating engagement of said two abutments with their respective rails, said latter abutment being movable over a sufficient range to permit said latter abutment to engage corresponding rails of tracks of different gauge, spaced differently from the rails engaged by said first named abutment, and a spring for moving said latter abutment.

12. A clip for toy electric tracks comprising two outside wheel bearing rails and an inside third rail, said clip comprising an insulating base, a stationary abutment on said base and adapted to engage the outside of one of said wheel bearing rails, a second abutment carried by said base and movable to engage the outside of the other wheel bearing rail, a spring for moving said second abutment binding members mounted on said base and insulated conducting means connected to said binding members and forming an electrical connection between each of said binding members and a different rail.

13. A clip for toy electric tracks comprising two outside wheel bearing rails and an inside third rail, said clip comprising an insulating base, a stationary abutment on said base and adapted to engage the outside of one of said wheel bearing rails, a second abutment carried by said base and movable to engage the outside of the other wheel bearing rail, a spring for moving said secsecond named abutment, binding members mounted on said base and insulated conducting means connected to said binding members and forming an electrical connection between each of said binding members and a different rail.

14. A clip for toy electric railway tracks comprising two outside-wheel-bearing rails and an inside third rail, said clip comprising an insulating base, a stationary abutment mounted on said base and adapted to engage the outside of one of said wheel bearing rails, a second abutment carried by said base and movable to engage the outside of the other wheel bearing rail, binding members mounted on said base, a spring for moving said latter abutment, said spring being mounted beneath said base and connected to said base and to said latter abutment, insulated conducting means connected to said binding members and forming an electrical connection between each of said binding members and a different rail.

15. A clip for toy tracks having wheel-bearing rails and a third rail, said clip comprising an insulating base, terminal members mounted on said base, a contact mounted on said base and adapted to engage one of said rails, connections between one of said members and said contact, a second contact mounted on said base, said second contact comprising a strip of resilient metal of normal curved form, connections between said second contact and another of said terminal members and means for clamping said clip to the track with said second contact beneath another rail and with said second contact deformed by, and in firm contact with, said other rail.

16. A self-adjusting track connector for toy railroads comprising an insulating base, a pair of stationary wire receiving terminals, a fixed rail engaging member fastened to the upper side of the base adjacent the terminals and electrically connected to one of the terminals, a slidable rail engaging member guided in slots in the base, a spring disposed underneath the base and attached to the slidable member for urging it toward the fixed member, the members having inclined fingers adapted to overhang the bases of the rails for supporting the connector from the rails.

17. A track connector for toy railways, comprising a fixed rail engaging member, a movable rail engaging member, a spring for moving the latter member relative to the former member to clamp the connector to the track and a wire receiving terminal connected to the fixed member.

18. A toy railway track clip comprising a base, a third rail engaging contact carried by said base and a second contact slidably carried by said base, and movable toward and away from said track, said contact being adapted for engagement with the outside of an outside rail and resilient means tending to move said second contact toward said outside rail.

19. A toy railway track clip comprising a base, a third rail engaging contact carried by said base and a second contact slidably mounted on said base and movable toward and away from said track, said second contact being adapted for engagement with the outside of an outside rail on motion of said second contact toward said track, and said second contact having a sufficient range of movement to permit of its engaging the outside rails of tracks of different gage.

20. A toy railway track clip comprising a base, a third rail engaging contact carried by said base, a second contact slidably mounted on said base and movable toward said track, said contact being adapted for engagement with the outside of an outside rail of said track, said second contact having a sufficient range of movement to permit of its engaging the outside rail of tracks of different gage, and a spring for moving said second named contact throughout said range.

21. A toy railway track clip comprising an insulating base, a contact secured to said base and having a rail engaging portion located at one end of said base, a second rail engaging contact slidably carried on said base, and movable toward and away from said first named rail engaging portion, and a spring for moving said second named contact toward said rail engaging portion.

22. A toy railway track clip comprising a base, a third rail engaging contact carried by said base, and a second contact mounted on said base and bodily movable toward and away from said track, said second contact having a projecting edge adapted for engagement with the outside of an outside rail of said track, and said second contact having a sufficient range of movement to permit of said edge engaging the outside rails of tracks of different gage.

23. A toy railway track clip comprising a base, a third rail engaging contact carried by said base and a second contact slidably carried by said base and movable toward and away from said track, said second contact being adapted for engagement with the outside and not the inside of an outside rail and said second contact having sufficient range of movement to permit its engaging the outside rail of tracks of different gage.

24. A toy railway track clip comprising a base of insulating material having guiding slots therein, a rail engaging contact carried by said base, and formed with projections located and movable in said slots, said rail engaging contact being adapted by said movement to engage a rail to form electrical contact therewith.

25. A toy railway track clip comprising an insulating base, having a slot therein, a sheet metal rail engaging contact slidable on said base into circuit making contact with a rail, and means for guiding the movement of said contact on said base, said means comprising a lug formed on said contact and projecting into said slot.

Signed at New York in the county of New York and State of New York this 9th day of February A. D. 1928.

JOHN C. KOERBER.