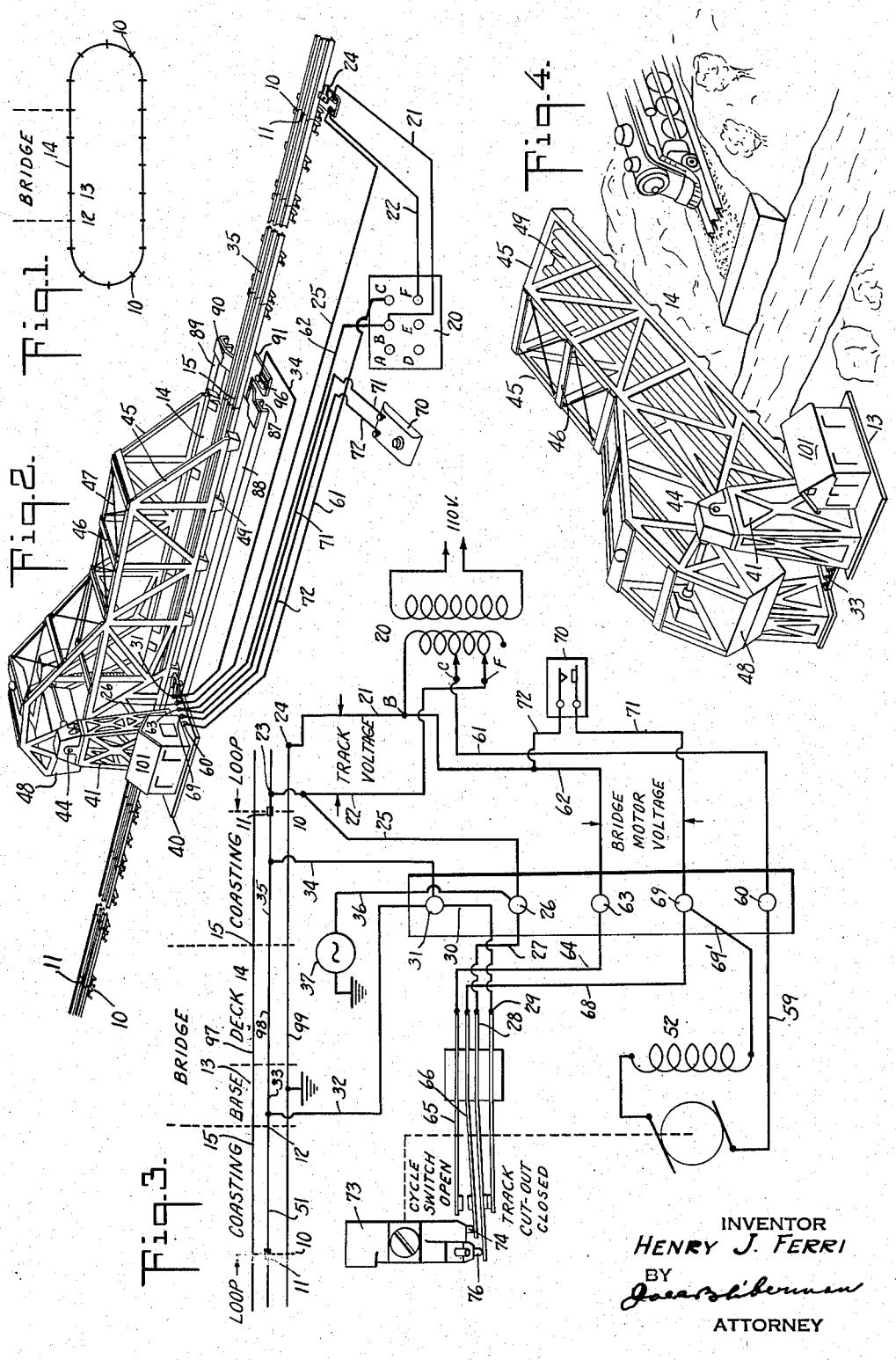
Jan. 9, 1945. H. J. FERRI 2,366,848

TOY TRACK LAYOUT

Filed May 7, 1941 3 Sheets-Sheet 1



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TOY TRACK LAYOUT

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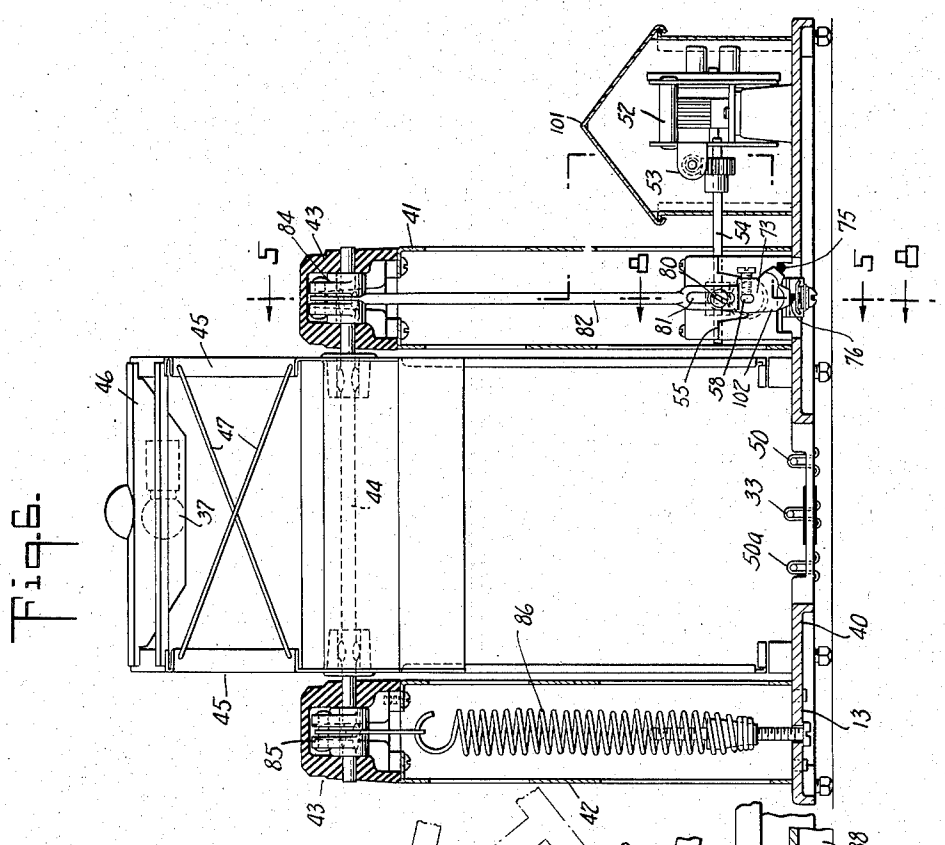

Fig. 6.

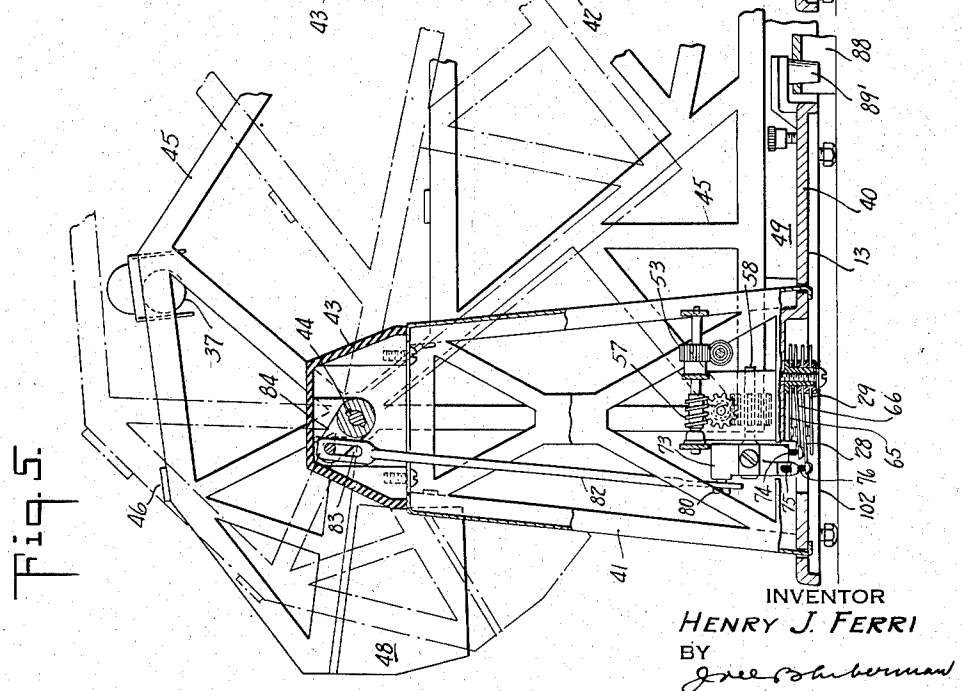

Fig. 5.

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Fig. 9

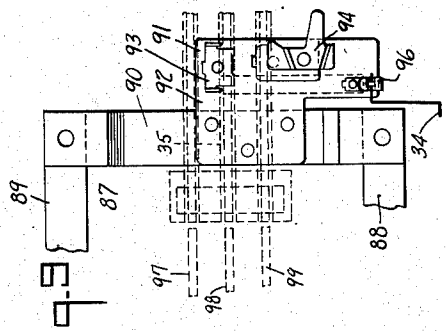


Fig. 11.

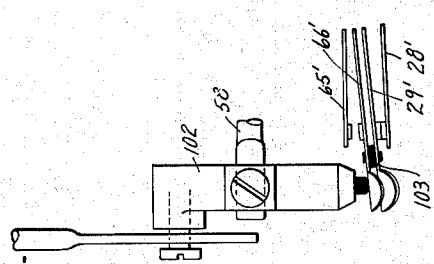


Fig. 8.

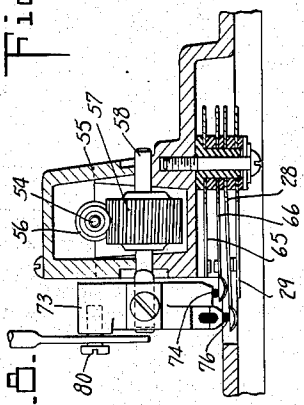


Fig. 10.

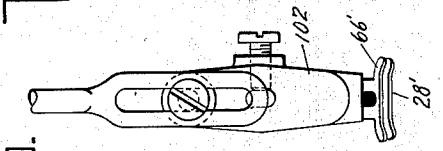
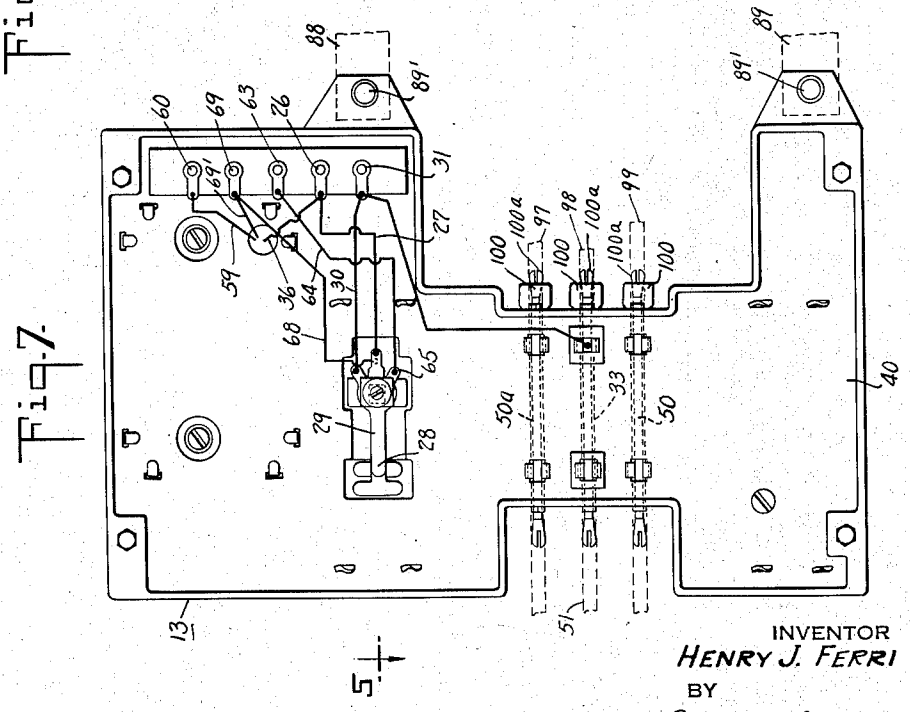


Fig. 7



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Patented Jan. 9, 1945 2,366,848

UNITED STATES PATENT OFFICE

2,366,848

TOY TRACK LAYOUT

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Application May 7, 1941, Serial No. 392,283

16 Claims. (Cl. 104—149)

The present invention relates to toy track layouts, and is more particularly directed toward toy track layouts having an accessory forming part of the track system and adapted to be moved into and out of position with respect to the fixed part of the track system.

The present invention contemplates a toy track layout having a piece of movable equipment such as a bridge interposed in the layout and provided with means for moving the bridge into and out of normal position.

According to the present invention train operation may be carried on as usual when the bridge is in its normal position and means is provided whereby when the bridge is to be moved out of normal position the supply of current to the train is cut off at a distance sufficiently remote to permit the train to coast to a stop before it reaches the bridge, and means is also provided so that when the bridge is restored to normal position train operation is automatically reestablished.

Other and further objects will hereinafter appear as the description proceeds.

The accompanying drawings show, for purposes of illustrating the present invention, one of the many embodiments in which the invention may take form, together with modifications of certain parts, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a diagram illustrating a toy track layout including a bridge;

Figure 2 is a perspective view of a track layout with bascule bridge in closed position and showing the external wiring;

Figure 3 is a wiring diagram;

Figure 4 is a perspective view of the bridge showing it open;

Figure 5 is a fragmentary side elevational view with parts in section on the line 5—5 of Figures 6 and 7;

Figure 6 is a transverse sectional view of the bridge;

Figure 7 is an inverted plan view of the fixed base for the bridge;

Figure 8 is an enlarged sectional view on the line 8—8 of Figure 6;

Figure 9 is a fragmentary view illustrating the outer end of an anchor frame used to secure track in position at the outer end of the bridge; and

Figures 10 and 11 are fragmentary views similar to Figures 6 and 8, respectively, showing a modified form of construction.

Figure 1 shows a simple track loop having a portion between the points 10, 10 around the lower part of the figure wherein the power and return rails are energized in the usual manner. This portion of the track layout may be in any form or configuration desired, and may include various forms of trackage over which the train is adapted to run.

The points 10, 10 are spaced ends of continuously energized track and between these two ends is a gap which is not continuously energized. This gap is narrowed at each end by several "dead" sections of toy railroad track provided for coasting the train to a stop. These sections are connected to the other track in the usual way, except that the power rail is insulated as indicated at 11, 11 of Figures 2 and 3. The end 12 of the length of coasting track to the left of the bridge is connected to the base 13 of the bridge. The deck of the bridge, designated generally by the reference character 14, extends over to the end 15 of the other coasting section. In the drawings three rail toy railroad track is shown, but this may be replaced, if desired, by two rail track wherein the rails are insulated.

When the bridge is lowered as in Figure 2, the trackage is continuous so that a train may be operated over it and the circuit control is such that this may be accomplished. When the bridge is raised as indicated in Figure 4, it is obvious that the trackage is interrupted so that the train cannot operate through the bridge. The bridge including base and deck is a complete article of manufacture adapted to be inserted into the toy track layout and will be described in detail later.

Referring to Figures 2 and 3 it will be seen that the power is taken from a transformer 20, preferably of the type having two or more separately controllable output voltages. Two wires 21 and 22 are taken from the terminals of the transformer 20 (usually marked "B" and "F"), the wire 22 being connected to the power rail 23 of the continuously energized track and the wire 21 being connected to the wheel bearing or return rails as indicated at 24.

When the bridge is lowered all the track is energized and train operation may be had as usual. The lead 22 supplying power to the third or power rail is connected by a wire 25 with a terminal binding post 26 insulatedly carried by the bridge base, and this binding post is connected to a wire 27, a contact 28, contact 29, wire 30 to

binding post 31. The binding post is connected by wires 32 with the third or power rail 33 carried by the bridge. The binding post 31 is also connected by a wire 34 with the power rail 35 of the coasting section at the right of Figures 2 and 3. The binding post 26 is connected by a wire 36 to a signal lamp 37 whose other contact is grounded to the structure.

The relatively fixed base or support for the bridge, designated generally by the reference character 13, includes a substantially flat die casting 40 and two sheet metal lattice towers or uprights 41 and 42 surmounted by molded caps 43. These caps support a rod or shaft 44 to which the bridge "deck," designated generally by the reference character 14, is secured.

The movable part, or deck, of the bridge may take various forms and configurations depending upon the ornamental appearance and style desired. It is here shown as made up to simulate a bascule bridge, and has two side stampings 45, suitable cross members at the top indicated at 46 and 47, a weight simulating portion 48 and a track carrier 49 preferably made of a piece of molded insulating material.

The casting 40 carries the short length of insulated power rail indicated at 33, two wheel bearing rails indicated at 50 and 50a. At the left end these three rails are provided with split pins similar to those usually found in toy railroad track, so as to fit the track sections to the left of the toy bridge as shown in Figures 2 and 3. As the track rail of this coasting section is grounded to the other return rails it is obvious that the base of the bridge is grounded so that a return is provided for the signal lamp 37. At the same time no current is fed from the power rail to the left of Figure 3 through the power rail 51 which is electrically connected with the rail 33 on the base of the bridge.

The base casting 40 supports a motor 52 which through reduction gearing 53 drives a shaft 54 at a low rate of speed. The housing and gearing are housed in a shanty-like structure 101. The shaft enters a gear box 55 formed in the casting 40 and carries a worm 56 adapted to drive a worm wheel 57 carried on a horizontal shaft 58. This shaft is placed above the contacts 28 and 29 above referred to.

One side of the motor 52 is connected by a wire 59 with a binding post 60 which in turn is connected to an external wire 61 with a transformer terminal, generally marked by the letter "C" on the transformer. The terminal marked "B" on the transformer is connected by a wire 62 to a binding post 63 carried on the base of the bridge. As indicated diagrammatically in Figure 3 different voltages may be impressed on the track and to the bridge motor and either circuit may be opened or closed without affecting the other.

The binding post 63 is connected by a wire 64 with a contact 65 spaced above and normally out of contact with a contact 66. The contact 66 is biased toward contact 65 above the contact 28 and is connected by a wire 68 with the binding post 69 and by a wire 69' with the other side of the motor 52. A motor starting switch 70 is connected by wires 71 and 72 with the binding posts 69 and 26, respectively.

When one desires to operate the bridge to raise it the switch 70 is closed and held closed for a moment. This will cause the motor 52 to operate the reduction gearing and turn the shaft 58. The shaft carries a rotatable member 73 having insulating pin 74 engageable with the contact 66 to open the circuit at the end of the cycle and two spaced pins 75 and 76 engageable with the contact 28. The pin 75 presses 28 against 29 momentarily and sends a pulse of current to the track circuit so as to operate the locomotive reversing switch one step. The pin 76 holds the track circuit closed until the bridge motor is again energized.

The rotatable member 73 is provided with a screw 80 which enters a slot 81 in the lower end of a connecting rod 82. The upper end of this rod is slotted as indicated at 83 and connected to a crank arm 84 carried by the shaft 44. The slots 81 and 83 in the connecting rod 82 make it possible for one to manually lift the bridge deck without injuring the mechanism. Such manual lifting will not affect any of the electrical switch connections. The other end of the shaft 44 carries a crank 85 connected with a counterbalancing spring 86.

When the parts are in the normal running position, as shown in Figures 1, 3, and 8, the contacts 28 and 29 are in closed position as above described and the contacts 65, 66 are open. The closing of the manual switch 70 starts the motor in operation and this brings about an opening of the track circuit between the contacts 28 and 29 and the closing of the motor running circuit between the contacts 65 and 66. On the opening of the track circuit the power rails of the coasting sections and the bridge are deenergized so that the locomotive of the train will no longer operate to propel the train and the train will coast to a stop as indicated at the right of Figure 4. The motor running switch will permit the motor to continue operation to raise the bridge and then lower it.

During operation of the bridge motor, pin 75 will cause the lost motion reversing switch to be advanced one step as set forth hereinabove. When the bridge is fully lowered contact 76 will open the bridge motor circuit, the bridge will come to rest and current will again be supplied to the track circuit through contacts 28 and 29, the reversing switch being advanced another step and the propulsion motor started again in the original direction.

Where the toy bridge is to be used on a level floor or other support the tracks of the coasting section to the right of the bridge will be secured to this floor in the usual manner, and the base of the bridge fixedly secured in place. Where it is desired to have the coasting section to the right of the bridge held in definite relation to the bridge structure itself, the device is provided with an anchor frame 87 which comprises two inverted channel shaped members 88 and 89, each having holes to receive lugs 89' formed in the casting 40, a cross strap 90 and a track clamping device indicated at 91. This device may include an insulating plate 92, a fixed metal plate 93 having the proper configuration to engage the third rail of the coasting portion of the track, and a swingable clamping member 94 to engage the wheel bearing rail. The fixed member 93 may be connected by a strap 95 with a clip 96 to facilitate securing the wire 34 in place and conducting current to the otherwise insulated power rail 35.

In order to insure good contact the rails 97, 98 and 99 on the bridge deck extend beyond the support 49 and engage springs and pins 100 and 100a secured to the rails 33, 50 and 50a, and the other ends of the rails on the deck are open so

as to pass down about the usual pins which project out of the left end of the coasting section to the right of the bridge.

Where the bridge is to be used with a non-reversible electric locomotive, or with a locomotive in which the reversing mechanism has been disconnected or disabled, the track cutout switch formed by the contacts 28' and 29' and the motor running switch formed by the contacts 65' and 66' may be under the control of a simple arm 102 carried on the shaft 58, as shown in Figures 10 and 11, and acting to close the track cutout switch contacts 28', 29' but once each cycle. The contacts 66' and 28' are secured together by an insulating spacer 103.

It is obvious that the invention may be embodied in many forms and constructions within the scope of the claims and I wish it to be understood that the particular form shown is but one of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. A toy track layout comprising continuously energized track having spaced ends to form a gap and provided with a power rail and a return rail, a length of track forming a physical extension at one end of the energized track to narrow the gap and having the power rail thereof insulated from the power rail of the continuously energized track and the return rail thereof connected with the return rail of the continuously energized track, a second length of track forming a physical extension at the other end of the energized track to further narrow the gap and having a power rail insulated from the power rail of the continuously energized track and a return rail connected to the return rail thereof, a bridge base having power and return rails physically and electrically connected with the corresponding rails of one of the said lengths of track, a movable bridge deck having power and return rails aligned with the corresponding rails on the base and electrically connected with them when the deck is lowered, and a switch for interconnecting the energized power rail and the aligned power rails of said lengths of track, of the base and of the deck so that when the deck is lowered continuous train operation may be had through the layout.

2. A layout such as claimed in claim 1, having a motor for opening the switch to deenergize the power rails supplied thereby and for shifting the bridge deck to open and then to closed position after which it recloses the switch.

3. A layout such as claimed in claim 1, having a motor for opening the switch to deenergize the power rails supplied thereby and for shifting the bridge deck to open and then to closed position after which it recloses the switch, a manually closable motor starting switch, and a normally open motor running switch adapted to be closed by the motor and held closed until after the first switch is reclosed.

4. A layout such as claimed in claim 1, having a motor for opening the switch to deenergize the power rails supplied thereby and for shifting the bridge deck to open and then to closed position after which it momentarily closes the switch to send an impulse to the power rail, then opens it and recloses it.

5. A layout such as claimed in claim 1, having wired connections to both the power rail of the base and to the power rail adjacent the deck.

6. A layout such as claimed in claim 1, having a signal connected between the continuously energized power rail and the return rail of the base.

7. A toy track layout having a portion provided with continuously energized power and return rails and a portion in which the power rail is insulated from the corresponding rail of the first portion as well as the return rail and the return rail is connected to the return rail of the first portion and including a movable length of track and two fixed lengths of track on opposite sides of the movable length and over which the train may coast after its locomotive has passed from the first portion and been deprived of propulsion current, a normally closed track cutout switch extraneous of the rails, wiring connecting the power rail of the second portion to the track cutout switch and said switch to the source so that an electrically propelled train may operate over both portions of the layout, a motor, a manually operable motor starting switch, a normally open motor running switch, a motor operated rotor, and rotor operated means for closing the running switch after the motor has been started by the manual switch, for opening the track cutout switch to deenergize the power rail of the second section and discontinue train propulsion on the second portion of the track and for subsequently closing the track cutout switch to reenergize the same and for opening the motor running switch at the end of the cycle to restore the track layout circuits to normal.

8. A layout such as claimed in claim 7, wherein the movable length of track shifted from an aligned position to a disaligned position and returned to the aligned position by the motor during its cycle of operation.

9. As an article of manufacture, a toy bridge for a toy electric railroad, comprising a relatively fixed base having rails connectible at one side to the corresponding rails of the usual toy railroad trackage, fixed uprights carried by the base on opposite sides of the rails, a bridge deck extending from the other side of the base and secured to a shaft pivoted in the uprights to swing up and down and provided with rails aligned with the corresponding rails of the base and electrically connected to the same when the bridge deck is lowered, and a bridge deck lifting mechanism including a crank arm connected to the shaft, a motor operated shaft having a crank arm, and a connecting rod between the crank arms.

10. A bridge such as claimed in claim 9, wherein the rod is slotted so that the bridge deck may be manually raised.

11. A bridge such as claimed in claim 9, having a motor running and stopping switch under the control of the motor operated crank arm, and a manual switch for starting the motor.

12. A bridge such as claimed in claim 9, having a switch for controlling the circuit to the rails of the bridge and under the control of the motor operated crank arm to open the circuit when the bridge deck is raised and close it when the bridge deck is in the lowermost position.

13. A bridge such as claimed in claim 9, having a switch for controlling the circuit to the rails of the bridge and under the control of the motor operated crank arm to open the circuit when the bridge deck is raised and close it when the bridge deck is in the lowermost position, a manually controlled motor starting switch and a motor operated crank arm controlled running and stopping switch for the motor to stop it

when the bridge deck is in the lowermost position.

14. As an article of manufacture, a toy bridge for toy electric railroads, comprising a relatively fixed base having rails connectible at one side to the corresponding rails of the usual toy railroad trackage, fixed uprights carried by the base on opposite sides of the rails, a bridge deck extending from the other side of the base and secured to a shaft pivoted in the uprights to swing up and down and provided with rails aligned with the corresponding rails of the base and electrically connected to the same when the bridge deck is lowered, an anchor frame secured to the base and extending alongside the bridge deck, and means carried by the anchor frame at the end remote from the base to secure a section of track in alignment with the track on the lowered bridge deck.

15. As an article of manufacture, a toy bascule bridge, comprising a relatively fixed base carrying power and return rails, uprights on opposite sides of the return rails, a cross shaft pivotally carried by the top of the uprights and provided with a crank arm, a shaft supported structure simulating the movable parts of a bascule bridge and having power and return rails which, when lowered are in line with the corresponding rails of the base, a motor carried by the base, a rod connected to the crank arm, motor and gearing operated reduction gearing operably connected to the rod to lift and lower the said structure, and a housing about the motor.

16. A toy track layout comprising continuously energized track having spaced ends to form a gap and provided with a power rail and a return rail, a length of track forming a physical extension at one end of the energized track to narrow the gap and having the power rail thereof insulated from the power rail of the continuously energized track and the return rail thereof connected with the return rail of the continuously energized track, a second length of track forming a physical extension at the other end of the energized track to further narrow the gap and having a power rail insulated from the power rail of the continuously energized track and a return rail connected to the return rail thereof, an accessory having a relatively fixed base having power and return rails physically and electrically connected with the corresponding rails of one of the said lengths of track, a movable member carried on the base and having power and return rails aligned with the corresponding rails on the base and electrically connected with them when the movable member is positioned to align the fixed and movable rails, and a switch for interconnecting the energized power rail and the aligned power rails of said lengths of track, of the base and of the movable member so that when the latter is in the rail aligning position continuous train operation may be had through the layout.

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