

Nov. 19, 1929.

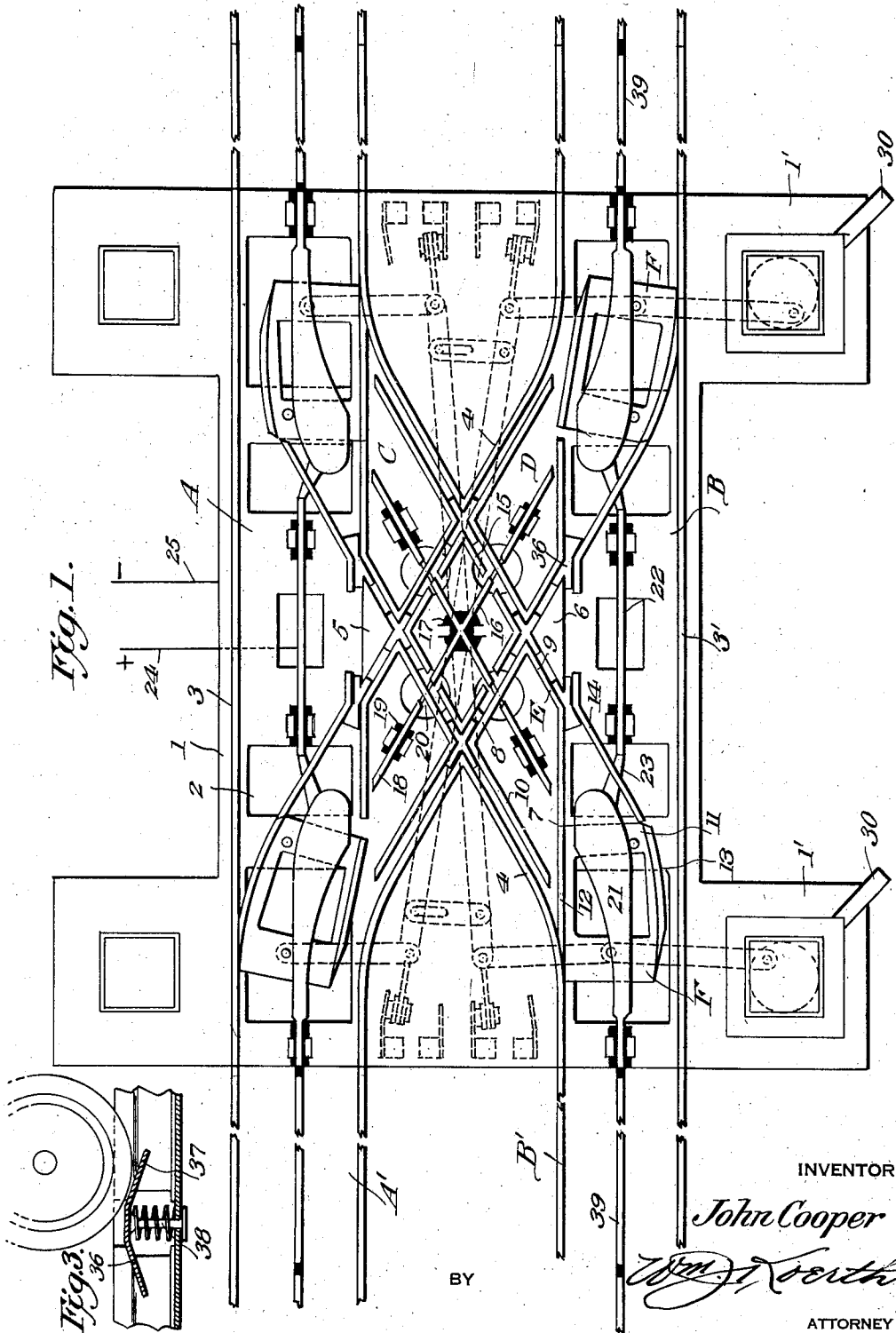
J. COOPER

1,736,487

TOY RAILROAD TRACK

Filed March 7, 1927

2 Sheets-Sheet 1



Nov. 19, 1929.

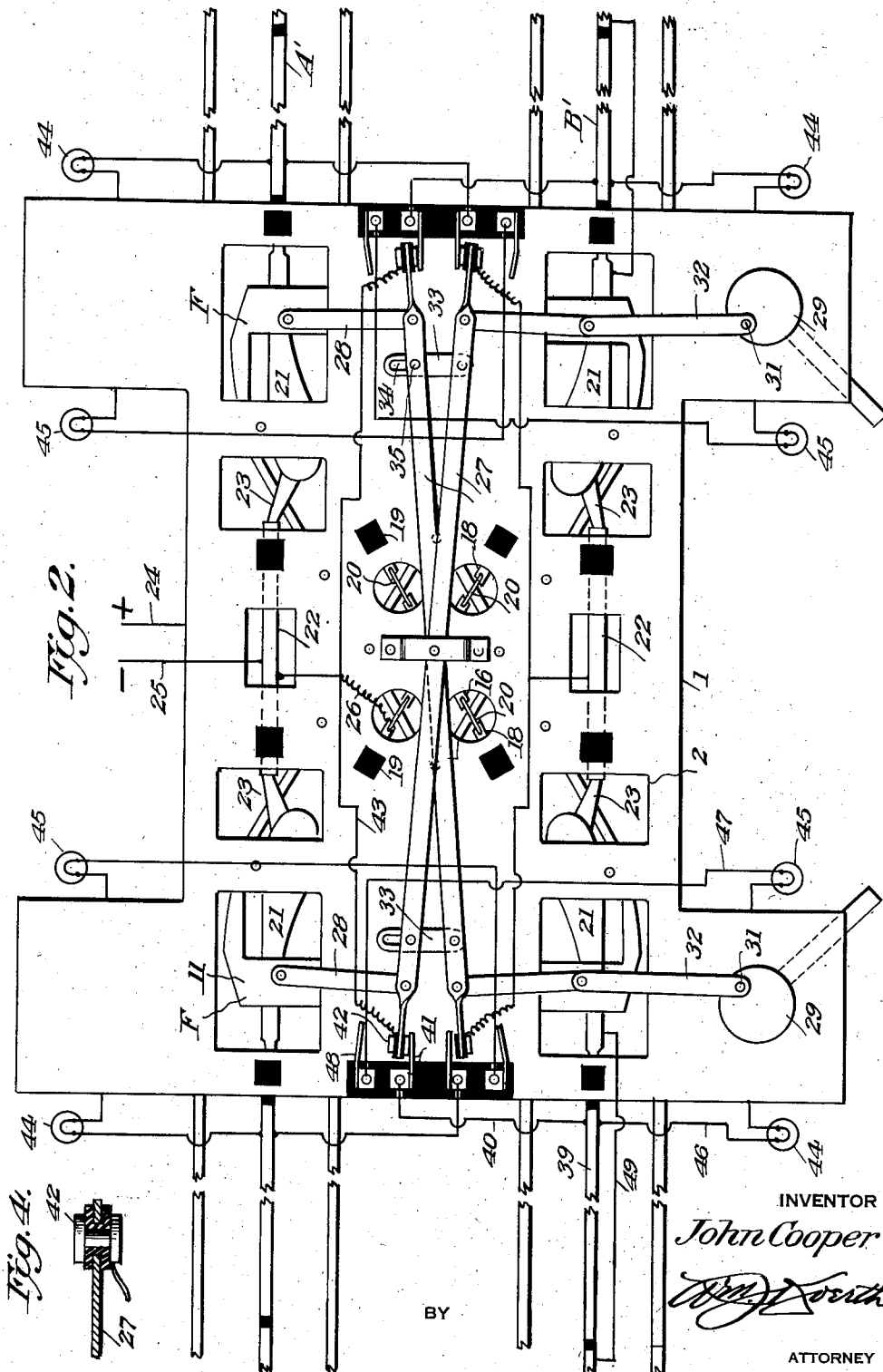
J. COOPER

1,736,487

TOY RAILROAD TRACK

Filed March 7, 1927

2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

JOHN COOPER, OF EVANSTON, ILLINOIS

TOY RAILROAD TRACK

Application filed March 7, 1927. Serial No. 173,481.

This invention relates to improvements in track systems of toy railroads, the general object of the invention being to provide a switch whereby a train can pass from one track to a second track when going in either direction, so as to provide an eight-way switch, the major portions of which are stationary so that the switch can be manufactured to sell at low cost and is not likely to get out of order.

Another object of the invention is to provide means whereby, when one switch has been moved, the other switches are locked against movement so that there is no danger of two trains coming together on one track.

A still further object of the invention is to provide means for deenergizing a part of the third rail of one track when the switch means have been set for a train to cross from one track to another and also to provide means for operating signals whereby danger signals will be set by the operation of the switch means against trains approaching the switch and clear signals will be set for the train which is intended to take the switch.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a plan view of the improved system.

Figure 2 is a bottom plan view thereof.

Figure 3 is a sectional detail view showing the spring frog.

Figure 4 is a sectional view through one end of one of the switch operating levers, showing the insulated contact thereon.

In these views, 1 indicates a base which is formed with the usual flanges which are adapted to rest upon a floor or other support to hold the base spaced from said support. The base is formed with the openings 2 for preventing contact of the various current

carrying means with the base. The base is adapted to be placed between portions of the track supporting means of the railroad at a point where the switch or crossing is desired to be located.

The main tracks are shown at A and B and the cross tracks at C and D, the rails of the main tracks of the switch abutting the rails of the tracks A' and B'. The outer rail of the track A is shown at 3 and the outer rail of track B is shown at 3', these rails being suitably connected to the base. A pair of convergent rails 4 is carried by the base at each end thereof, the inner ends of the rails being connected together and these rails form portions of the inner rails of the main tracks and portions of the cross tracks. A pair of triangular shaped parts 5 and 6 are carried by the base and the base of each part forms a part of the inner rail of each track while its sides form parts of the cross tracks C and D. Four substantially U-shaped members E are carried by the base, each member having an extension 7 on one limb thereof which forms a portion of the inner rail of a main track with its bight 8 forming a portion of a cross track and its limbs 9 and 10 forming guard rails for a cross track, the limb 9 being adjacent a side of a triangular member and the limb 10 being adjacent the cross track forming portion of each rail 4.

A switch member F is placed adjacent each end of each of the main tracks of the switch and each member comprises a base 11, a straight rail 12 and a curved rail 13. Each member F is pivoted to the base adjacent its inner end with its straight rail forming a portion of the inner rail of each main track when the switch is closed and its curved rail forming a portion of a cross track when the switch is open, the straight rail abutting the extension 7 of the member E when the train is to continue along the main track.

A cross rail 14 is placed adjacent the inner end of each switch member between the rails of the main track and at an angle thereto for filling the gap between the curved rail 13 of each switch member and the triangular shaped member so that the wheels of a train will pass from the curved rail of each switch

member upon each rail 14 and then pass onto the triangular shaped member.

From the foregoing it will be seen that when the switch is closed, the wheels of a train passing along a main switch, will pass over the straight rail 12 of a switch member, then the extension 7 of the member E, then the base of a triangular member and then over the part 7 of the other member E and the straight rail of the other switch member. When the train is to be switched from one track to the other, the wheels of the train will engage the curved rail 13 of the first switch member and be directed on to the rail 14 and the curved portion of the rail 4 and then will pass over a side of one of the triangular members and then it passes over the bights 8 of two of the members E and then passes off the switch by engaging the side of the other triangular member, a curved portion of one of the rails 4 and the rail 14 of the other main track and the curved rail of the switch member of the said main track, the guard rails keeping the wheels on the cross track rails, as will be understood. At the center of the cross tracks angle-shaped rails 15 are provided for forming the guard rails.

A cross-shaped member 16 is arranged at the center of the cross tracks to form the third rails of said tracks and this member is insulated from the base, as shown at 17. A short rail 18 is placed in each end of each cross track to form a continuation of the third rail and these parts 18 are insulated from the base, as shown at 19. The ends of the parts 16 and 18 are spaced from the bights 8 and are located over openings 2 and these parts 16 and 18 are electrically connected together, as shown at 20, the electric connections passing under the bights 8. Each third rail of each main track of the switch comprises an enlarged part 21 which is located over each switch member and these enlarged portions of each track are connected by the insulated section 22 which is arranged at the center of the main track and the depending parts 23 which connect the ends of the part 22 with the parts 21 and these parts 23 pass under the rails 14 and the inner ends of the enlargements 21. By providing these enlargements 21, the brush of a train can pass therefrom either upon the parts 23 and 22 or upon the sections 18 of the cross tracks. Each section 22 is connected by a conductor 24 with a source of supply and the base is grounded, as at 25. The third rails of the cross tracks are connected to one of the sections 22 by the conductor 26.

A pair of levers 27 is pivoted at the center of the base underneath the same and each end of each lever is connected by a link 28 with a switch member 11, each lever being connected with a switch member of the two tracks so that the switch members at both ends of

a cross track will be operated when the lever is moved.

A pair of disks 29 is provided for operating the switch members, each disk being pivoted in an extension 1' of the base and being manipulated by a handle 30 and an eccentric pin 31 on each disk is connected with a switch member nearest to the disk by a link 32. Thus when the disk is given a rotary movement by its handle, one of the levers will be moved to move the two switch members with which it is connected.

Each lever has pivoted thereto a link 33 which has a slot 34 therein for engaging a pin 35 carried by the other lever so that when one lever has been moved to open a switch, the other lever is locked against movement so that the second switch cannot be opened.

At each crossing of each cross track with the other track and where one rail of each cross track crosses a rail of each main track, I provide spring frogs 36, each of which consists of a plate 37 having its ends sloping downwardly and outwardly and supported on a spring plunger 38 so that when a wheel strikes the plate, it will yield downwardly and thus take the shock and ease the crossing of the wheel over the gap between two rails and prevent noise.

I also provide means for deenergizing a section of each main track at a distance from the switch, each of these sections having its third rail section 39 insulated from the rest of the third rail and each section 39 is connected by a conductor 40 with a contact 41 insulated from the under side of the base and adapted to be engaged by a contact 42 insulated from a lever 27 and each contact 42 is connected by a conductor 43 with a conductor 26. Thus when the switch members of one crossing are set to direct a train from one track to the other, two of the third rail sections 39 will be deenergized so that a train cannot enter the switch section of a track to interfere with the passage of the other train through the open switch.

I also provide signal lamps 44 and 45, the lamp 44 being green and the lamp 45 red, for signalling trains approaching each switch system from either direction on its track. Each lamp 44 is connected by a conductor 46 with a rail section 39, while each lamp 45 is connected by a conductor 47 with a contact 48 insulated from the under side of the base and adapted to be engaged by a contact 42 on each lever 27 when the lever is moved from one position to another. These parts are so arranged that a red lamp will be supplied with current when the switch members are in a position to permit a train to cross from one track to another so as to signal other trains that the crossing is to be made and then when the crossing is clear and the switches have been readjusted, current is supplied to the green lamps to indicate a clear passage.

The insulated sections of the third rails are bridged by the conductors 49 and these conductors may be supported in any desired manner, such as by being carried by portions of the third rails and insulated therefrom and provided with means whereby the ends of the conductors can be easily and quickly attached to the live portions of the third rail when the track sections are connected together.

From the above it will be seen that I have provided a switch system, the major portions of the main tracks and the cross tracks of which are stationary, the only movable portions being the switch members F, with means for deenergizing portions of the third rails when a switch is opened to prevent other trains from interfering with the train which is to take the switch and with means for signalling when the tracks are clear and when the switches are open.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

I desire it to be understood that I may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:—

1. A switch system for a double track railroad for electric trains comprising a support, a pair of main tracks thereon, a pair of cross tracks thereon, the rails of all the tracks being stationary, four switch members pivoted to the support between the rails of the main tracks, means for shifting the members to permit trains to pass over the main tracks or to pass from one track to the other in either direction and means operated by the movement of the switch members for deenergizing sections of the third rails to prevent other trains from passing over the switch system when a train is to take a cross track and for electrically connecting a third rail section of one tracks at one end of the switch with a third rail section of the track at the opposite end of the switch, so that the train can pass from one track to the other.

2. A switch system for a double track railroad for electric trains comprising a support, a pair of main tracks thereon, a pair of cross tracks thereon, the rails of all the tracks being stationary, four switch members pivoted to the support between the rails of the main tracks, means for shifting the members to permit trains to pass over the main tracks or to pass from one track to the other in either direction and means operated by the movement of the switch members for operating danger and clear signals which indicate when the main tracks are clear or when a train is to be switched from one track to the other.

3. A switch system for a double track rail-

road for electric trains comprising a support, a pair of main tracks thereon, a pair of cross tracks thereon, the rails of all the tracks being stationary, four switch members pivoted to the support between the rails of the main tracks, means for shifting the members to permit trains to pass over the main tracks or to pass from one track to the other in either direction, means operated by the movement of the switch members for deenergizing sections of the third rails to prevent other trains from passing over the switch system when a train is to take a cross track and for electrically connecting a third rail section of one track at one end of the switch with a third rail section of the track at the opposite end of the switch, so that the train can pass from one track to the other and means operated by the movement of the switch members for operating danger and clear signals which indicate when the main tracks are clear or when a train is to be switched from one track to the other.

4. A switch system for a double track railroad for electric trains comprising a support, two pairs of main track forming members, two pairs of cross track forming members, a pair of switch members pivoted to the base at each end thereof and each comprising a base, a straight rail at one side thereof and a curved rail at the other side thereof, a pair of levers pivoted to the under face of the central part of the base, a link connecting each end of each lever to a switch member, operating means for each lever and means for preventing the operation of one lever when the other lever has been moved to move its switch members to open the switch.

5. A switch system for a double track railroad for electric trains comprising a support, two pairs of main track forming members, two pairs of cross track forming members, a pair of switch members pivoted to the base at each end thereof and each comprising a base, a straight rail at one side thereof and a curved rail at the other side thereof, a pair of levers pivoted to the under face of the central part of the base, a link connecting each end of each lever to a switch member, operating means for each lever, means for preventing the operation of one lever when the other lever has been moved to move its switch members to open the switch, such means comprising a slotted link pivoted to each lever and a pin on the other lever engaging the slot therein.

6. A switch system for a double track railroad for electric trains comprising a support, two pairs of main track forming members, two pairs of cross track forming members, a pair of switch members pivoted to the base at each end thereof and each comprising a base, a straight rail at one side thereof and a curved rail at the other side thereof, a pair of levers pivoted to the under

face of the central part of the base, a link connecting each end of each lever to a switch member, operating means for each lever, means for preventing the operation of one lever when the other lever has been moved to move the switch members to open the switch, a set of signal lamps at each corner of the base, circuits for the lamps and means carried by the levers for closing the circuits of some of the lamps and breaking the circuits of the other lamps.

7. A switch system for a double track railroad for electric trains comprising a support, two pairs of main track forming members, a pair of cross track forming members, a pair of switch members pivoted to the base at each end thereof and each comprising a base, a straight rail at one side thereof and a curved rail at the other side thereof, a pair of levers pivoted to the under face of the central part of the base, a link connecting each end of each lever to a switch member, operating means for each lever, means for preventing the operation of one lever when the other lever has been moved to move the switch members to open the switch, third rails for the tracks, the third rails of the main tracks including insulated sections spaced from the switch system, circuits for the insulated sections and means associated with the levers for closing the circuits as the levers are moved to close the switch members and for breaking the circuits of the insulated sections of the other track.

8. A switch system for a double track railroad for electric cars comprising a base, a pair of rails thereon, each rail being arranged adjacent the side of the base and forming the outer rail of a main track, a pair of convergent rails at each end of the base, a pair of triangular shaped parts on the base, the base of each of which forms a portion of the inner rail of each main track and the sides of which form portions of the rails of two cross tracks, four U-shaped track forming members on the base, each member having an extension on one leg thereof forming a portion of the inner rail of a main track with its bight forming a portion of a cross track and its legs forming portions of guard rails, four angle shaped rail members at the center of the base forming portions of guard rails for the cross tracks, a pair of stationary rail members on the base diagonally arranged between the rails of each main track and forming portions of the cross tracks, a switch member adjacent each corner of the base and pivoted thereto and consisting of a base, a straight rail and a curved rail, the curved rail abutting the diagonal rail member when the switch member is in a position to permit a train to pass from one main track to the other, and means for operating the switch members in pairs.

9. A switch system for a double track railroad for electric cars comprising a base, a

pair of rails thereon, each rail being arranged adjacent the side of the base and forming the outer rail of a main track, a pair of convergent rails at each end of the base, a pair of triangular shaped parts on the base, the base of each of which forms a portion of the inner rail of each main track and the sides of which form portions of the rails of two cross tracks, four U-shaped track forming members on the base, each member having an extension on one leg thereof forming a portion of the inner rail of a main track with its bight forming a portion of a cross track and its legs forming portions of guard rails, four angle-shaped rail members at the center of the base forming portions of guard rails for the cross tracks, a pair of rail members on the base arranged between the rails of each main track and forming portions of the cross tracks, a switch member adjacent each corner of the base and pivoted thereto and consisting of a base, a straight rail, a curved rail, means for operating the switch members in pairs and third rail forming sections for the cross and main tracks insulated from the base and including enlarged sections arranged adjacent the switch sections for enabling a shoe on a train to pass either upon the third rail parts of the main track or upon the third rail parts of the cross tracks.

10. A switch system for a double track railroad for electric cars comprising a base, a pair of rails thereon, each rail being arranged adjacent the side of the base and forming the outer rail of a main track, a pair of convergent rails at each end of the base, a pair of triangular shaped parts on the base, the base of each of which forms a portion of the inner rail of each main track and the sides of which form portions of the rails of two cross tracks, four U-shaped track forming members on the base, each member having an extension on one leg thereof forming a portion of the inner rail of a main track with its bight forming a portion of a cross track and its legs forming portions of guard rails, four angle-shaped rail members at the center of the base forming portions of guard rails for the cross tracks, a pair of rail members on the base arranged between the rails of each main track and forming portions of the cross tracks, a switch member adjacent each corner of the base and pivoted thereto and consisting of a base, a straight rail and a curved rail, means for operating the switch members in pairs and bridges placed at each point where one track crosses another, each bridge comprising a plate having its ends sloping downwardly and outwardly and a spring plunger for holding the plate in raised position.

In testimony whereof I affix my signature.
JOHN COOPER.