March 11, 1930. J. C. KOERBER 1,750,322

TOY RAILWAY SIGNALING SYSTEM

Filed Aug. 22, 1928

Fig. 1

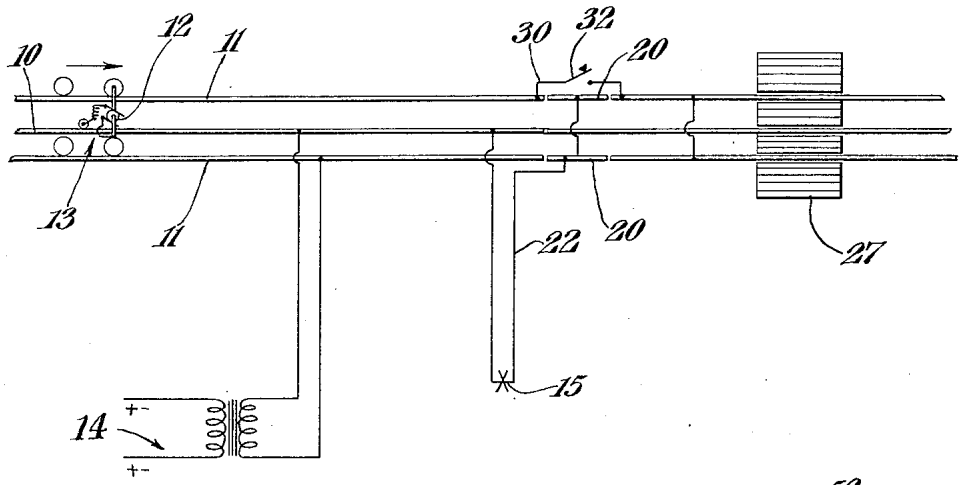
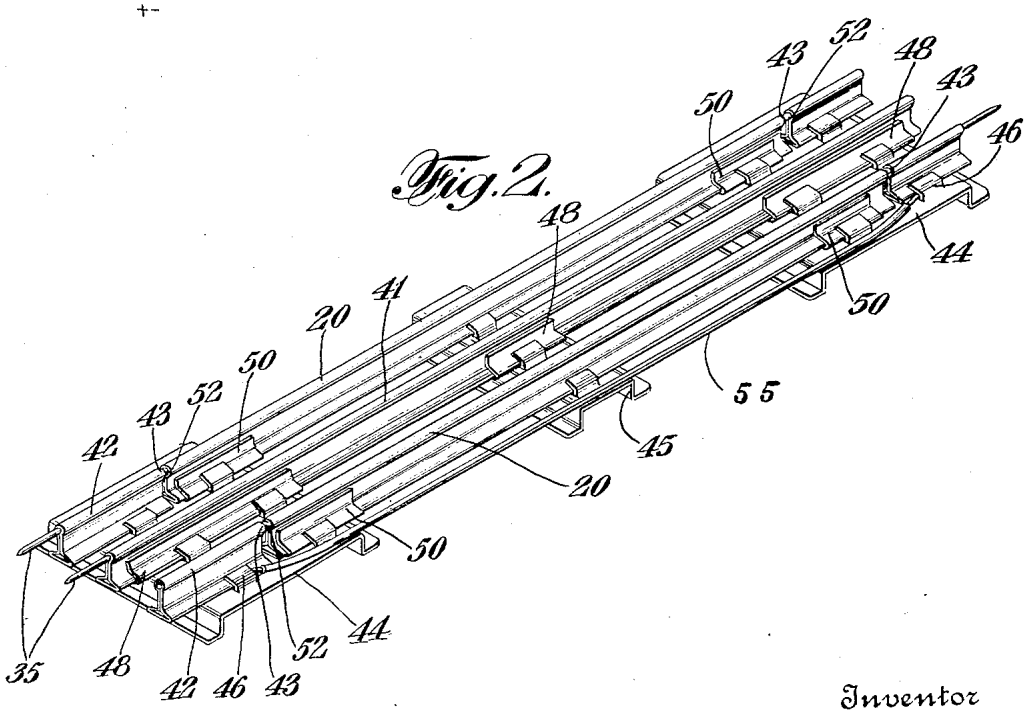


Fig. 2.



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UNITED STATES PATENT OFFICE

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TOY RAILWAY SIGNALING SYSTEM

Application filed August 22, 1928. Serial No. 301,182.

This invention relates to toy electric railways and particularly to signal systems and apparatus for use in such railways, and the principal object of my invention is to provide an improved means for electrically actuating a signal or equivalent device by the passage of a car over a predetermined point of the railway track.

Toy electric railways, now in use, comprise a track formed of sections which are joined together end to end, each section comprising two wheel bearing rails and a third rail which is insulated from the wheel bearing rails. The third rail which is connected to one terminal of a source of current supply furnishes current to the car motor and wheel bearing rails which are connected to the other terminal of the source, form a ground or return circuit from the motor. In applying my invention to toy railway systems of this character, I provide each of the wheel bearing rails, at the point of the track at which it is desired to operate the signal, with a short rail section, the section of one wheel bearing rail being electrically connected with the section of the other wheel bearing rail and each of these sections being insulated from the wheel bearing rails at opposite ends of the sections. The track on which the locomotive runs, that is, the two wheel bearing rails, is thus formed with a short insulated section, and the signal or other device to be actuated by the passing train is electrically connected between this insulated section and the third rail, which is continuous and is connected throughout its length with the source of current supply. In operation as the wheels of the train move on to the short insulated section of the track, the wheels and body of the car serve to connect electrically the insulated section with the wheel bearing rails at one or the other end of the section. This connection through the body of the car serves to complete a circuit to the signal, current flowing from the third rail through the signal to the insulated section, thence through the wheels and car body to the wheel bearing rails at one or the other end of the insulated section.

As I make use of insulated sections which are relatively short I find it desirable to employ two of these sections, one in each wheel bearing rail, and to connect the signal with both of the sections so as to insure contact between the car wheels and at least one of the sections, thus insuring operation of the signal whenever the car passes over the sections. If the track is uneven or if for some other cause the car sways or lurches to one side as it passes over the sections, the wheels of the car may not form a good electrical contact with one of the sections. However, by providing insulated sections in each wheel bearing rail a good contact with at least one section is insured.

The use of insulated sections which are short results in economy of construction of the track and permits the insulated sections to be incorporated into one of the separable track sections which go to make up the extended track, and a further object of my invention is to provide an improved track of this character.

Other objects and advantages of my invention will appear from the following description taken in connection with the accompanying drawing, wherein:

Figure 1 is a diagrammatic view of a toy railway showing one embodiment of my invention, and

Figure 2 is a perspective view of an improved track section adapted for use in the system shown in Figure 1.

Referring to Figure 1, the toy railway track consists of a continuous third rail 10 and two wheel bearing rails 11. Current for operation of the motor 12 of a toy car or locomotive 13 is supplied by a transformer 14 or other source of current, one terminal of which is connected to the continuous rail 10 and the other terminal to the wheel bearing rails 11, the normal circuit for operation of the vehicle being from the third rail 10, to a current collector mounted on the car, through the car motor 12, to the frame or casing of the car, thence through the car wheels to the wheel bearing rails.

At one or more points of the track the wheel bearing rails are interrupted by two short rail sections 20 which are insulated at

their ends from the remainder of the wheel bearing rails. The two sections 20 are electrically connected together and are connected by means of a conductor 22 to one terminal of a signal or similar device 15. The other terminal of the signal is connected to the continuous third rail 10. It will be understood that the signal 15 may be placed at any convenient location, such as near a track crossing 27. I may employ as a signaling device a lamp or bell connected directly in circuit with the insulated sections 20 or I may, if desired, employ a relay which serves to close an auxiliary circuit to a bell, lamp or other device.

In operation the car 13 may be assumed to be traveling in the direction of the arrow in Figure 1 the car motor receiving current from the third rail through the current collector and the return circuit from the motor including the body and the wheels of the car and the wheel bearing rails 11. When the car has reached an insulated rail section 20 and the front wheels of the car passed on to these sections a circuit is completed from one terminal of the transformer 14 through the third rail 10, thence through the signal 15 to the insulated sections 20, thence through the car wheels and body of the car to the wheels which are still in contact with the wheel bearing rails to the left of the insulated sections and thence to the other terminal of the transformer. Current through this circuit operates the signal 15. It is obvious that as long as wheels of the train remain in contact both with the insulated section and with the remainder of the wheel bearing rails the current will continue to flow through the circuit just mentioned.

I preferably connect the wheel bearing rails at opposite ends of the insulated sections by a conductor 30 so that all portions of the wheel bearing rails, except the insulated sections, will be connected electrically with the source of current supply. The car motor will thus continue to receive current after it has passed the insulated sections. If in addition to the operation of the signal it is desired to stop the train automatically suitable means may be provided for disconnecting that portion of the rails beyond or to the left of the insulated sections from the source of supply. Such a means is shown in Figure 1, this means consisting of a switch 32 located in the connection 30. With the switch 32 open, the car, after it has passed the insulated sections, will no longer be supplied with current from the transformer and will consequently stop. If then it is desired to start the car the switch 32 is closed, thus connecting the transformer with the parts of the wheel bearing rails lying beyond the insulated sections. In Figure 2 I have shown a track section which comprises the two insulated wheel bearing rail sections 20, which track section is adapted to be joined to the usual track sections by the ordinary means customarily employed for this purpose, namely, by conducting pins 35 which project from the ends of the rails of the track section and are adapted to enter openings in the ends of corresponding rails of adjacent sections.

The track section shown in Figure 2 comprises three rails, a continuous third rail 41 and two wheel bearing rails 42, each of which is divided between its ends at the points 43 so as to form the separate rail sections 20. The rails of the track section are supported and permanently held together by end ties 44 and an intermediate tie 45. The ties are formed of sheet metal and are provided with lugs 46 which are bent over the lower flanges of the rails and serve to secure the rails to the ties. The end ties 44 are wider than the middle tie and serve to support the ends of the sections 20 and also parts of the wheel bearing rails beyond the ends of the sections. These parts are electrically connected with the corresponding wheel bearing rails of adjacent sections when the sections are mounted together to form an extended track. The third rail 41 is insulated from all the ties by insulating material 48 interposed between the third rail and the tie. The sections 20 are electrically connected to one another by the metal tie 45 with which they are in contact. These sections are, however, insulated from the end ties 44 by insulating material 50. The remaining parts of the wheel bearing rails located beyond the ends of the sections 20 are in direct contact with the end ties 44 and the two parts at each end of the track section consequently connected electrically to one another. If desired to strengthen the mechanical connections between the rail sections 20 and the remaining parts of the wheel bearing rails I may employ pins or rods 52 of insulating material which extend into openings in the adjacent rail ends.

The parts of the wheel bearing rails at opposite ends of the sections 20 are electrically connected by a jumper or wire 55, each end of which is held between the rail flange and a rail securing lug 46.

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

1. In a toy electric railway system a track having a continuous third rail and two wheel bearing rails insulated from said third rail, a source of current connected to a wheel bearing rail and to said third rail, said wheel bearing rails being each formed with a short insulated section, the two sections being located at approximately the same point in the track and being electrically connected to one another and a device adapted to be electrically operated by the passage of the car over said point of the track, said device being con-

nected to said insulated sections and to said source.

2. In a toy electric railway system a track having a continuous third rail and two wheel bearing rails insulated from said third rail, a source of current connected to a wheel bearing rail and to said third rail, said wheel bearing rails being each formed with an insulated section, the two sections being located at approximately the same point in the track and being electrically connected to one another and a device adapted to be electrically operated by the passage of the car over said point of the track, said device being connected to said insulated sections and to said source.

3. In a toy electric railway system a track having a continuous third rail and two wheel bearing rails insulated from said third rail, a source of current connected to a wheel bearing rail and to said third rail, said wheel bearing rails being each formed with a short insulated section, the two sections being located at approximately the same point in the track and being electrically connected to one another and an electrical device adapted to be actuated by the passage of the car over said point of the track, said device being connected to said insulated sections and to said third rail.

4. In a toy electric railway, a track section having a continuous third rail and two wheel bearing rails insulated from said third rail, said wheel bearing rails each being formed with an insulated section, means for electrically connecting the two sections permanently to one another and means for electrically connecting together the parts of the wheel bearing rails at opposite ends of the insulated sections.

5. A toy electric railway comprising a track having two wheel bearing rails and a third rail, said wheel bearing rails being each provided with a short section located at approximately the same point in the track, said sections being insulated from the remaining parts of the wheel bearing rails and being electrically connected permanently to one another.

6. In a toy electric railway a track section having a third rail and two wheel bearing rails, said wheel bearing rails being each formed with a rail section insulated from the remainder of the wheel bearing rails and a relatively wide rail connecting tie at one end of the section for supporting an end of the third rail and of the insulated sections and for supporting parts of the wheel bearing rails beyond one end of the section.

7. In a toy electric railway a track section having a third rail and two wheel bearing rails, said wheel bearing rails being each formed with a section insulated from the remainder of the wheel bearing rails and relatively wide rail connecting ties at the ends of the section for supporting the ends of the third rail and of the insulated sections and for supporting the remainder of the wheel bearing rails.

8. In a toy electric railway a track section having a third rail and two wheel bearing rails, said wheel bearing rails being each formed with a section insulated from the remainder of the wheel bearing rails, relatively wide rail connecting ties at the ends of the section for supporting the ends of the third rail and of the insulated sections and for supporting the remainder of the wheel bearing rails and an intermediate tie electrically connecting the insulated sections.

9. A toy electric railway track section having wheel bearing rails and a third rail, said wheel bearing rails being each provided with a short section insulated from the remaining portions of the wheel bearing rails and ties for supporting said rails, one of said ties serving to connect electrically said sections directly with one another.

10. A toy electric railway track section having wheel bearing rails and a third rail, said wheel bearing rails being each provided with a short section insulated from the remaining portions of the wheel bearing rails, ties for supporting said rails, one of said ties serving to connect electrically said sections with one another and means electrically connecting together the remaining portions of said wheel bearing rails.

Signed at New York, in the county of New York and State of New York, this 16th day of August A. D. 1928.

JOHN C. KOERBER.