

Nov. 20, 1928.

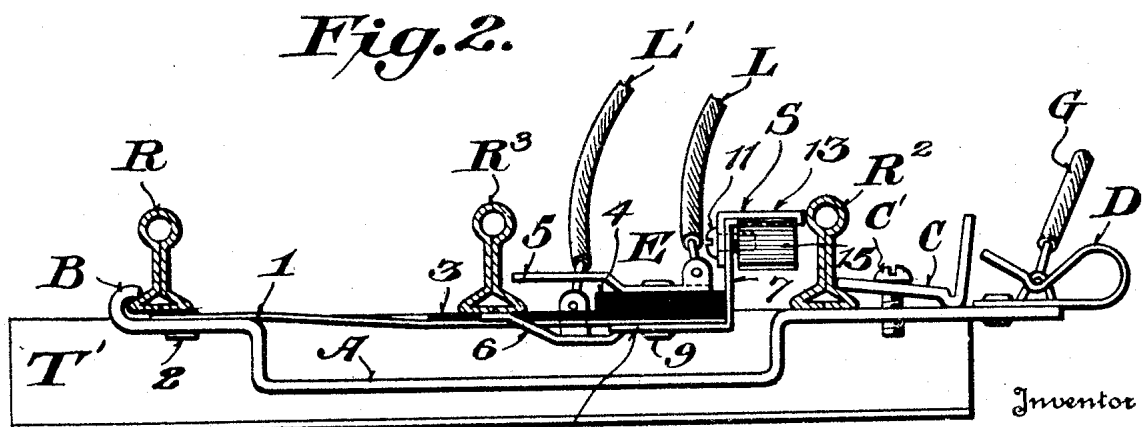
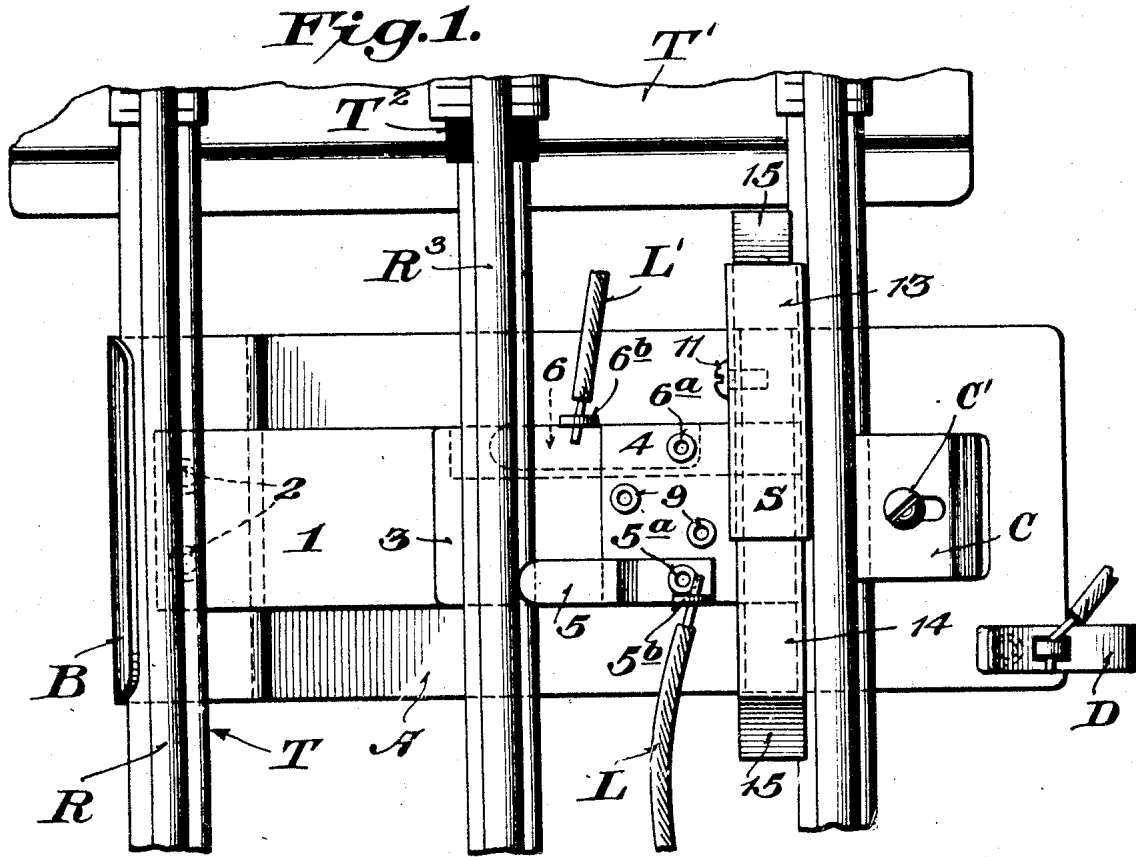
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AUTOMATIC SIGNALING MEANS FOR TOY TRACKS

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3 Sheets-Sheet 1



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3 Sheets-Sheet 2

Fig. 3.

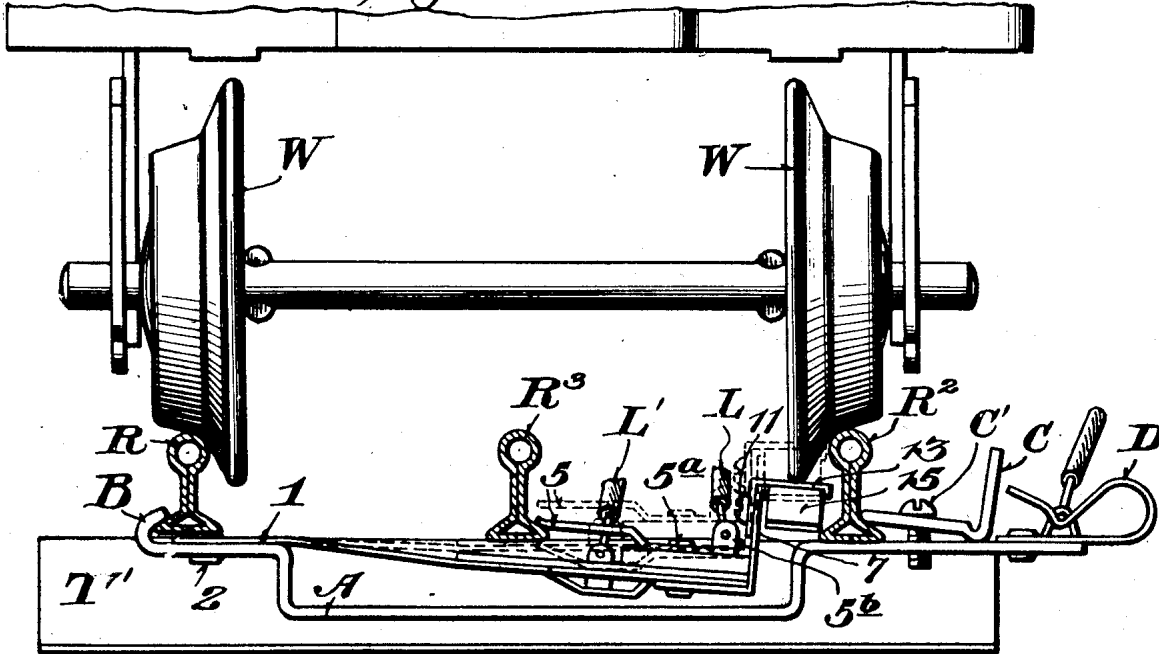


Fig. 4.

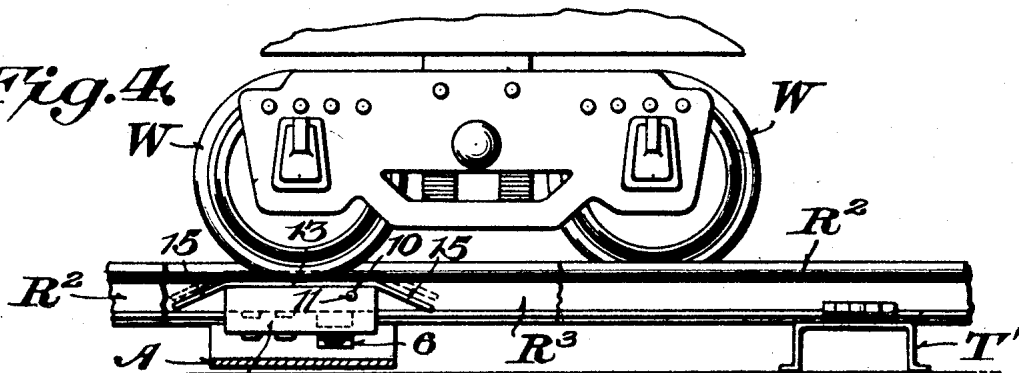
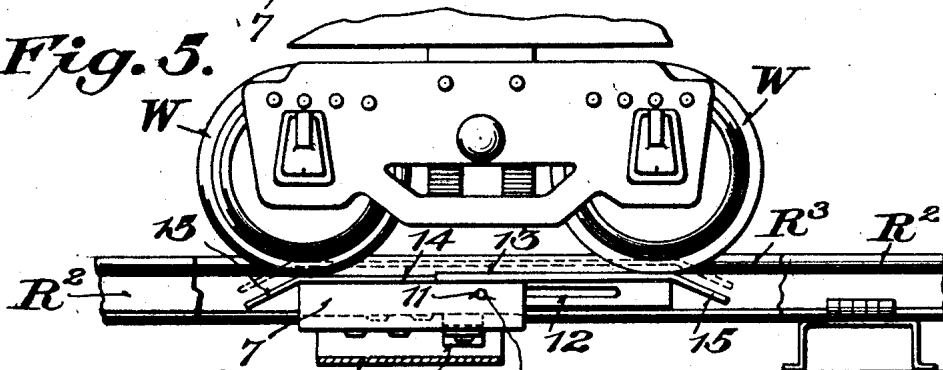


Fig. 5.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC SIGNALING MEANS FOR TOY TRACKS.

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This invention relates to toy railways and more particularly to a novel means for controlling an electrical circuit to a signaling device or other accessory, and having a wide range of adjustment and application to permit a steady or flashing light in the case of a signal, or continuous and intermittent operation of an electro-mechanical accessory.

To that end the invention contemplates a novel device in the form of a track attachment which may be fitted to any of the standard track sections generally used in connection with miniature track layouts, and which is controlled automatically by the passing of the wheels of the cars or train thereover to produce the novel use desired, in accordance with the particular or selected setting of the device to give either a continuous, intermittent, or temporary operation or signal while the car or train is passing through the section of track to which the device is applied.

Heretofore, it has been the practice to employ a track section wherein one of the wheel bearing rails is insulated at each end from the adjoining connected rail of adjacent sections by the use of fibre joint pins or the like, so that a signal or other electro-mechanical accessory included in circuit with such insulated rail would be actuated by the closing of the circuit through the insulated rail when the car or train passes over the specially provided insulated rail of the signal track section. This arrangement, however, not only requires the use of a special track section, but permits of the circuit being only continuously closed while the car or train is passing over the special track section, and in the case of a signal light, the same is maintained illuminated the entire time the car or train is passing through the special section. Also, where a crossing gate, semaphore, or other electro-mechanical accessory is employed the circuit through the motor or solenoid thereof will remain continuously energized while the train is going through the special track section. In all cases, however, the accessory is continuously operated due to the fact that one or more wheels of the car or train are always on the insulated rail to maintain the circuit closed. Therefore, there is no opportunity for changing the character of accessory where a special track section is used which in-

cludes a wheel bearing rail insulated from the tie and from adjoining wheel bearing rails, by insulated fibre joint pins.

Accordingly, the present invention has primarily in view a simple, practical and reliable device in the form of an attachment for a standard track section wherein both of the wheel bearing rails are grounded to the metal ties and only the third rail is insulated, and which possesses novel structural features and characteristics which permit of the operator producing a flashing crossing signal, employing one or more lamps, or to give a continuously illuminated warning signal while no car or train is passing over the attachment; or, on the other hand, permit of giving a flashing lamp signal only when a car or train is passing over the attachment.

A further object of the invention is to provide a device that is self-contained, simple in construction; easily and readily installed by an inexperienced person; which can be conveniently handled and packed for shipment; and can be readily installed at any point in the track system without taking apart any of the track sections or in any way disturbing any of the operating factors of the system. In that connection, the invention also contemplates a device which will operate on one or more signaling devices at either high or low voltage.

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 plan view of a portion of a standard track section having the present novel attachment applied thereto.

Figure 2 is a side elevation of the attachment shown in Fig. 1, the track rails being shown in section.

Figure 3 is a view similar to Figure 2 showing the wheels of a car passing over the track section and depressing the circuit controller of the attachment.

Figure 4 is a detail side elevation of the construction shown in Fig. 3 illustrating the

depression of the circuit controller as viewed from one end.

Figure 5 is a view similar to Fig. 4 illustrating the extension of the wheel contacting shoe to produce a prolonged closing of the circuit to the signal due to the fact that the circuit controller is held and depressed by both of the wheels of the truck.

Figure 6 is a detail plan view of the yielding support for the circuit closing contacts and showing the manner in which the contacts may be moved into and out of operative position.

Figure 7 is a detail perspective view of the extensible contact shoe.

Figures 8 and 9 are perspective views respectively of the top and bottom electrical contact fingers.

Figure 10 is a diagrammatic view illustrating the circuits involved.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

In carrying the invention into effect, it is proposed to provide a track attachment including a base A having a fixed abutment B for engaging the rail R of a standard track section T, and an adjustable clip C for engaging the rail R², the said clip being made fast to the base by means of a fastening C' or its equivalent.

The rails R and R' are carried by the usual metal cross ties T' and may be in electrical contact therewith as shown in Fig. 1 while the third rail R³ is insulated from the tie T' as indicated at T². It will thus be clear that the present device is adapted to be used in connection with a track section having only the usual insulated third rail which has the advantage of permitting the device to be easily and quickly connected to any part of a track railway already set up without the necessity of taking the track apart and inserting a special section having an insulated wheel bearing rail. Therefore, the base A is grounded to the wheel bearing rails and carries at one end thereof a terminal clip D to which the ground wire of the signal device may be attached.

As will be seen from Fig. 2, the base A is preferably depressed at its medial portion beneath the third rail R³ thereby to permit of the free swinging movement of a novel circuit controller designated generally as E and having a plurality of circuit closing brush contacts or fingers which may be selectively positioned for contact with the electrically charged third rail to produce or control the desired type of signal.

Referring more particularly to the novel circuit controlling device E it will be observed that the same essentially includes in its organization, a yieldable supporting member 1 preferably in the form of a flat spring which is rigidly connected as indicated at 2 to a portion of the base A adjacent the wheel bearing

rail R. This spring support projects transversely across the depressed portion of the base A and is adapted to be placed beneath the third rail R³ when the attachment is applied to the track. Therefore, in order to prevent a grounding of the third rail circuit, the upper surface of the spring 1 is covered with an insulating sheath 3. In addition to being provided with the insulation 3 for protecting the upper face of the spring, a block 4 of insulation is employed for supporting, on opposite sides thereof, the top and bottom circuit closing brushes 5 and 6, the former being adapted to overlie the base flange of the third rail R³ and the latter being adapted to underlie the base of the third rail in such a manner that only one of the contact fingers engages the third rail at a time, providing of course that both of the contact fingers are set in a position for rail engagement. That it to say, the contact fingers 5 and 6 are secured to the insulation 4 by the eyelet members 5^a and 6^a which permit of the same being pivotally swung from the position shown in Fig. 1 for example, to the position shown in Fig. 6, so that either one or both of the contact fingers may be moved to a position to avoid third rail engagement. In that way, the attachment may be left in the track and rendered totally inoperative as to both contact fingers, or either one or the other of the said contact fingers may be selectively set to an operative or inoperative position, if desired. The contact fingers 5 and 6 are also provided with the terminal ears 5^b and 6^b thereby to receive the live current carrying wires L and L' which may lead over to the signal or accessory to be operated, the said signal accessory being of course, included in a ground circuit by the wire G connected with the grounded terminal D previously referred to.

For the purpose of actuating the yieldable support or spring 1 to move the contact fingers 5 and 6 into and out of engagement with the third rail R³, a novel wheel controlled actuator is employed. This actuator is preferably in the form of a shoe designated generally as S and carried by the bracket 7 whose lower arm 8 is secured to the free end of the yieldable support or spring by suitable fastenings 9. The upright wall of the bracket is provided with an opening 10 for receiving a fastening 11 which cooperates with a slot 12 in an extensible member 13 which forms the upper side of the shoe S and is slidable on the stationary bottom part of the shoe 14 which is preferably a part of the bracket 7. To avoid derailment of the train, the opposite ends of the members 13 and 14 constituting the depressible shoe are inclined downwardly as indicated at 15.

Clearly, the wheel bearing length of the shoe S may be varied by adjusting the extensible part with reference to the fixed part, and in fact the extension of the shoe to the

full length of a track section would be merely a matter of degree so that when a train was passing over a track section, it would be continuously depressed for the full length of the train to thereby hold the upper contact finger 5, for example, in engagement with the electrically charged third rail R³ to produce a continuous flow of current to the signal device. On the other hand, by shortening up the shoe the yieldable support or spring 1 will be caused to move more rapidly or oscillate under the alternate depressing and releasing thereof by the wheels of the moving train to produce an intermittently flashing signal due to the alternate engagement of the contact fingers 5 and 6 with the third rail, resulting in the simulation of a flashing crossing signal of the type used at standard railway crossings.

Figure 10 of the drawings illustrates diagrammatically the manner of connecting a flashing light signal to the attachment, the said signal including the lamps F and F' which are electrically connected with the third rail R³ by the electrical connections L and L' which lead to the contact fingers 5 and 6 respectively. The frame of the signal is connected by the ground wire G with the ground terminal D of the attachment and with the ground terminal D' on the frame of the signal. The lamps F and F' are of the usual single contact type, the other contact for the lamps being the grounded frame of the signal.

Assuming that the attachment is applied to a track section as shown in Figs. 1 and 2 and that the third rail R³ is electrically charged, the lamp F' of the signal will be illuminated due to the contact finger 6 engaging the underside of the rail. If it is desired to utilize a single lamp to produce a flashing signal when the train passes over the point of installation of the attachment, the upper contact finger 5 may be swung out of the way to avoid striking the third rail when the member 1 is depressed by the wheels of the car which will carry the contact finger 6 away from the base of the rail and temporarily darken the lamp. On the other hand, if a double lamp flasher signal is desired, the contact fingers 5 and 6 may remain in the position shown in Figs. 1 and 2 so that as the wheels W of the car alternately depress and release the shoe S, first one signal lamp and then the other will be illuminated. If it is desired to illuminate the lamp F for longer intervals or continuously while a car or train is passing over the attachment, it is only necessary to lengthen the extensible shoe S to such a degree that the shoe will be depressed by the wheels of one of the car trucks at all times thereby holding the finger 5 in engagement with the third rail.

If it is desired to leave the attachment in track and yet render it inoperative, both of

the contact fingers 5 and 6 may be moved to the position shown in Fig. 6, thereby to clear the third rail R³.

Many novel lighting and signaling effects can be obtained through the use of the double lamp type of flashing signal shown in Fig. 10. For instance, the lamp F' which is in circuit with the bottom contact 6 may be green so as to indicate that the crossing is clear while no train is approaching the location of the attachment, then when the train comes into the signal zone it will automatically give a red and green flash by automatically closing the circuits to lamps F and F' through the contact fingers 5 and 6. Or, on the other hand both lamps may be red to produce alternating red flashes. These combinations are, however, only given by way of example.

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 the 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. In a toy railway, a device adapted to be attached to a track section having a pair of wheel bearing rails and an insulated electrically charged rail, said device including a ground terminal electrically connected with a wheel bearing rail, and a contact finger adapted to engage with said charged rail and insulated from said wheel bearing rails.

2. In a toy railway, a device adapted to be attached to a track section having a pair of wheel bearing rails and an insulated third rail, said device having a ground terminal electrically connected with the wheel bearing rails, and a plurality of brush contacts insulated from said wheel bearing rails, and adapted to engage alternately with said third rail.

3. A track attachment including a base adapted to be fitted to the wheel bearing rails of a track section, and a movable circuit closer carried by said base and adapted to contact with an electrically charged rail of the track section.

4. An attachment for three rail tracks, comprising a base adapted to be connected to the track, and a wheel actuated circuit closer carried by the base and adapted to engage and disengage with the electrically charged rail.

5. An attachment for toy electrical track sections comprising a base, means for connecting the base with the wheel bearing rails, a movable support carried by the base and adapted to be actuated by car wheels passing over the wheel bearing rails, and electrical contacts carried by said support and adapted to engage with the electrically charged rail.

6. An attachment for toy electrical track

sections comprising a base, a yielding support carried by the base, insulation on said support, brush contacts carried by said insulation and arranged to alternately engage with the electrically charged rail when the support is actuated by car wheels passing over the wheel bearing rails.

7. An attachment for toy electrical track sections comprising a metallic base having a wire terminal connection, means for fitting said base to the wheel bearing rails, a yielding support carried by the base and extending beneath the current carrying rail, a plurality of electrical contact elements carried by said yielding support and insulated therefrom, wire connections for said contacts, and means carried by the support and located in the path of a car wheel passing over the wheel bearing rails to actuate the support.

8. An attachment for toy electrical third rail track sections comprising a metallic base having a wire terminal connection, means for fitting said base to the wheel bearing rails, a yielding support carried by the base and extending beneath the third rail, a plurality of electrical contact elements carried by said yielding support and insulated therefrom, wire connections for said contacts, and means carried by the support and located in the path of a car wheel passing over the wheel bearing rails to actuate the support, said means comprising a shoe extensible in the direction of the wheel bearing rail.

9. An attachment for toy electrical third

rail track sections comprising a base adapted to be connected to the track section, a car wheel actuated circuit closer carried by the base and including upper and lower brush contacts adapted to alternately engage with the electrically charged third rail upon the depression and release of the circuit closer by the car wheel.

10. An attachment for toy electrical third rail track sections comprising a base, a circuit closer comprising a spring support carried by the base, insulation carried by the spring support, a pair of electrical brush contacts carried by the upper and lower sides of the insulation and adapted to alternately contact with the top and bottom of the base of the electrically charged third rail, a wheel contact shoe carried by the support and comprising a pair of telescopically interfitting extensible members.

11. Signaling means for toy railways comprising in combination, signal means adapted to be located away from the track, and a train actuated track attachment electrically connected with the signal and having a part continuously in electrical contact with the grounded wheel bearing rails of the track, and means insulated from the wheel bearing rails and adapted to be actuated by a wheel passing over said rails to intermittently engage the third rail.

In testimony whereof I hereunto affix my signature.

HARRY S. BECKER.