Oct. 15, 1940. W. R. SMITH 2,218,074

ELECTRIC SIGNAL DEVICE FOR TOY RAILWAYS

Filed Aug. 27, 1938 2 Sheets-Sheet 1

Fig. 1.

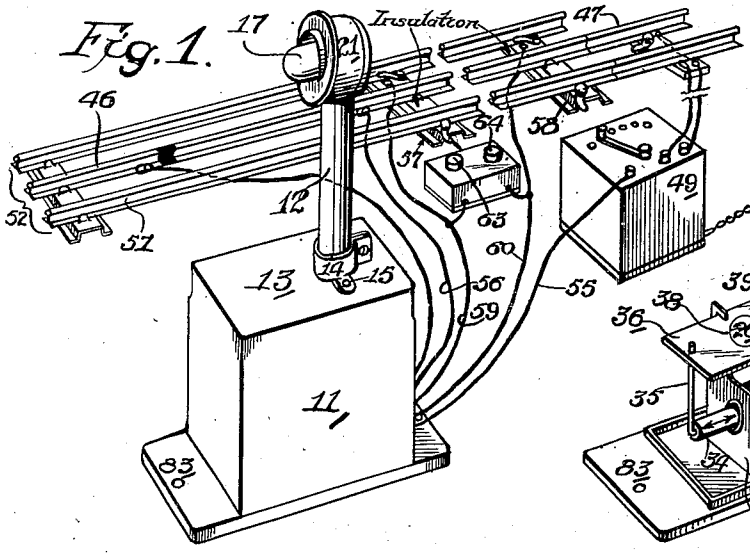


Fig. 2.

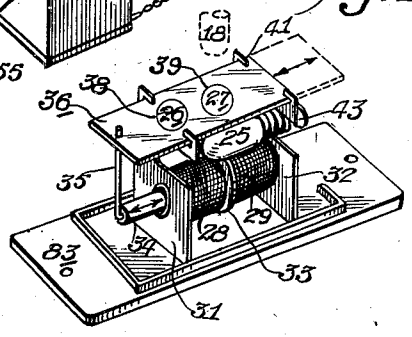


Fig. 3.

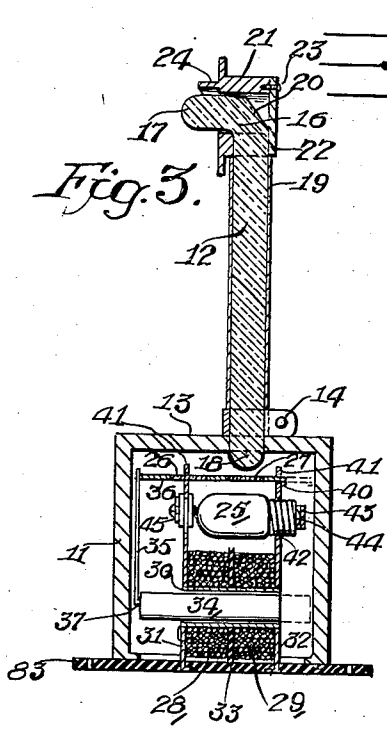
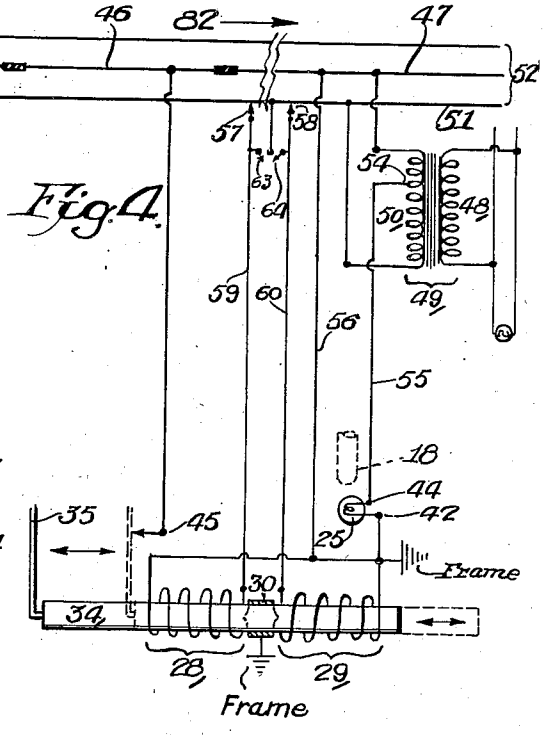


Fig. 4.



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ELECTRIC SIGNAL DEVICE FOR TOY RAILWAYS

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Fig. 5.

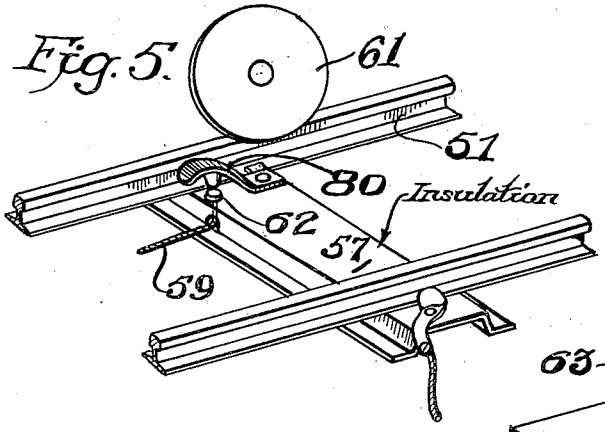


Fig. 6.

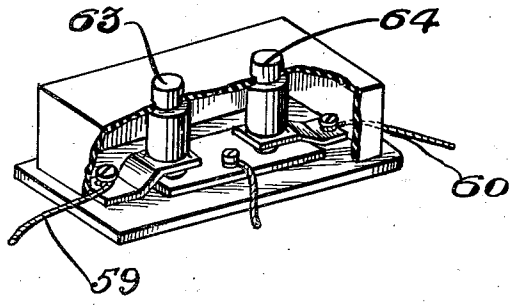


Fig. 7.

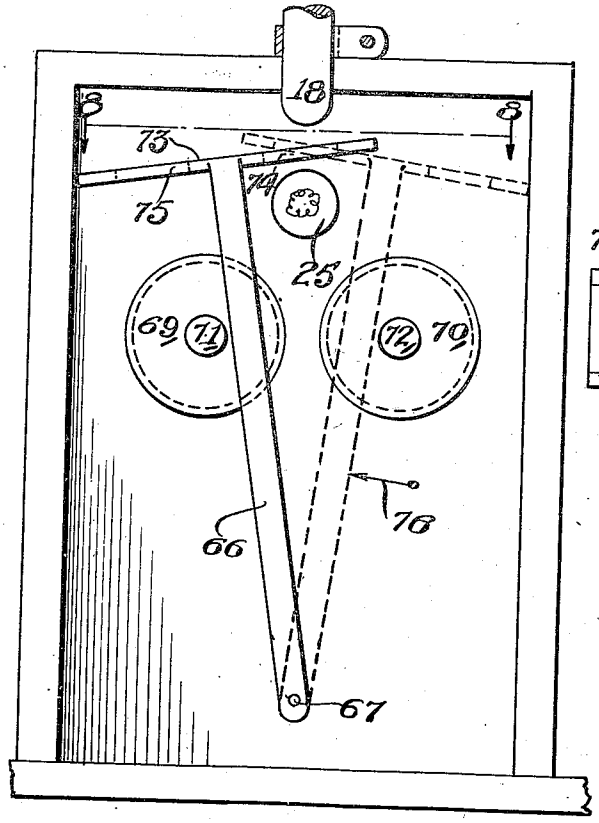
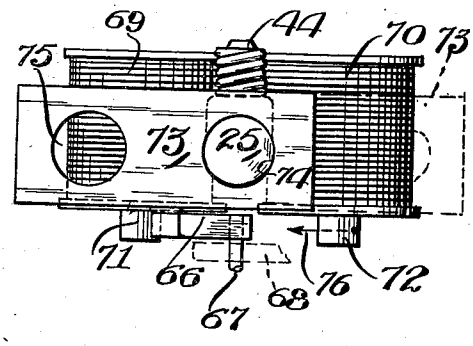


Fig. 8.



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UNITED STATES PATENT OFFICE

2,218,074

ELECTRIC SIGNAL DEVICE FOR TOY RAILWAYS

William Russell Smith, Philadelphia, Pa.

Application August 27, 1938, Serial No. 227,194

15 Claims. (Cl. 246—31)

The present invention relates to toy electric signal and control apparatus for toy or model railways.

An object of the present invention is to provide a compact, and comparatively inexpensive automatically or manually operable toy electric signal and control device.

Another object of the present invention is to provide a signal device applicable to toy train outfits where the trains and other parts are quite small although nevertheless made accurately to scale.

For the purpose of illustrating the invention, there are shown in the accompanying drawings forms thereof which are at present preferred, since the same have been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized and that the invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

Referring to the drawings in which like reference characters indicate like parts,

Figure 1 is a perspective view of a toy signal device, constituting one embodiment of the present invention, operatively associated with the track of a toy or model electric railroad.

Figure 2 is a perspective view of the mechanism which is disposed inside of the housing of the signal device shown in Figure 1.

Figure 3 is a vertical sectional view taken through the signal device illustrated in the preceding figures.

Figure 4 is a wiring diagram showing one manner in which the signal device may be operatively associated with, and control a toy electric railway system.

Figure 5 is a perspective view of one of the train-operated electrical circuit closers which may automatically control the signal device.

Figure 6 is a perspective view of a twin-button electric switch which may afford means for manually controlling the signal device.

Figure 7 is a simplified elevational view of the interior of a modified signal device.

Figure 8 is a view taken on line 8—8 of Figure 7, looking in the direction of the arrows.

The particular signal device illustrated in Figures 1 to 3, inclusive, preferably includes a lower housing 11 which may encase the internal mechanism illustrated in Figures 2 and 3. A preferably solid rod 12, which may be constructed from glass or synthetic transparent or translucent material, preferably "Lucite" or the like, may be mounted on the housing 11 with one end 18 thereof projecting through the top housing wall 13 and extending into the chamber bounded by said housing. The rod 12 may be operatively clamped to the wall 13 by any suitable means, as for instance, by an encircling adjustable strap 14, which may be generally permanently secured to the housing wall 13 by screws 15—15 or the like.

The upper portion of rod 12 may be perpendicularly bent as at 16, to provide the generally horizontally projecting signal-indicating end 17, which is preferably rounded, as indicated in the drawings to simulate a light bulb or a lamp. The opposite end 18 of the rod 12 is preferably clear, to permit light rays to pass readily into the rod 12, although this end, as well as visible end 17, may be merely translucent. The exposed portion of rod 12, lying intermediate the strap 14 and the hood 21, is preferably covered or shielded so that its transparent or translucent character will not be apparent to an observer, and for this purpose it may for example be coated with an opaque substance 19, such as paint or the like. Any light rays which may shine on the lower clear end 18 of the rod 12 will be conducted longitudinally through the rod, without an light being lost through the sides thereof, and these rays will be transmitted through, and illuminate the upper visible end 17 of the rod 12.

The rays of light may be carried around the perpendicular bend 16 by providing a plane reflecting surface 20 preferably disposed at an angle of approximately 55° to the horizontal so as to reflect the light ray upwardly toward the eyes of the observers. The bend 16 need not be as abrupt as illustrated, but may assume a gradual curve, in which case the reflecting surface 20 may be dispensed with.

The upper bend 16 of the rod 12 is preferably encased within a generally cylindrical hood or shell 21, which may be slipped over the free projecting rod end 17, and closed at the rear by affixing thereto a disc 22, by any suitable means, such as the screws 23, 23 or the like. A vizor 24 may be provided on the front end of the hood 21, to enhance the appearance of the toy signal device.

Electrically-operated means for changing the color of the light entering the lower rod-end 18 may be mounted on a "Bakelite" base 83 and may be encased by the housing 11.

The mechanism may assume various arrangements, two of which have been illustrated in the drawings. Essentially, this mechanism includes

a source of illumination, such as the electric bulb 25, differently (preferably green and red) colored transparent screens 26 and 27, and electro-magnetic means for selectively positioning one or the other of these differently colored transparent screens between the electric bulb 25 and the juxtaposed rod end 18.

In the arrangement illustrated in Figures 2 and 3, a pair of separate cylindrical windings 28 and 29 may be wound about a common sleeve 30 anchored at opposite ends to the spaced vertical panels 31 and 32. An external annular flange 33 is preferably provided midway along the sleeve 30, and separates the two electrical windings 28 and 29. Each of these electrical windings 28 and 29 preferably comprises a continuous wire helically wound around the exterior surface of the sleeve 30, to provide the plurality of layers illustrated in the drawings.

An iron plunger 34 disposed within the sleeve 30 slides longitudinally therein in response to the magnetic forces created by the passage of an electrical current through the winding 28 or the winding 29. This plunger 34 is preferably longer than the sleeve 30, the length of this plunger 34 preferably being equal to approximately three times the axial length of either winding 28 or winding 29, which are equal in length. The passage of an electric current through winding 28 will magnetically attract and position plunger 34 so that its opposite ends project equally beyond the axial limits of winding 28, all as illustrated in Figure 3. Thus, plunger 34 will assume a position of rest when the reluctance of the magnetic circuit, created by the passage of current through winding 28, reaches its minimum value. If winding 28 now be de-energized, and winding 29 be energized, the plunger 34 will be moved to the right and will assume an alternate position of rest, with its opposite ends projecting equally beyond the axial limits of winding 29. In this fashion, the alternate passage of current through windings 28 and 29 will cause plunger 34 to slide to and fro within the sleeve 30. This combination of windings 28 and 29 and their common plunger 34, constitute a pair of axially spaced electric solenoids controlling a common movable plunger.

The reciprocating movements of plunger 34 responsive to the passage of electric current through the windings 28 and 29 may be mechanically transmitted, by an arm 35, to a twin-apertured slide 36, positioned between the electric bulb 25 and the lower rod-end 18, and supported by the spaced side panels 31 and 32. This arm 35 is preferably welded or otherwise fixedly secured to an end of plunger 34, as at 37, the opposite upper end of arm 35 preferably projecting through a juxtaposed opening provided at one end of slide 36.

The twin apertures 38 and 39 of slide 36 are preferably so located therealong as to insure that these apertures will be alternately aligned with the lower rod-end 18 and the juxtaposed electric bulb 25, when plunger 34 comes to rest at opposite ends of its stroke. Aperture 38 may be covered by a green colored glass or "Cellophane" sheet 26, and aperture 39 may be covered by a red colored glass or "Cellophane" sheet 27. The movement of slide 36 will thus control the color of the light entering the lower end 18 of rod 12, and therefore the color of the signal emitted by the upper visible rod-end 17.

If desired, horizontal disarrangement of slide 36 may be prevented by providing it with the downwardly bent stops such as stop 40, adapted to operatively contact the panel 32. The slide 36 may also be confined against vertical displacement by providing the overhanging side-panel portions 41, 41, which may be struck from the side panels 31 and 32.

The single electric bulb 25 may be operatively positioned in proximity to the lower rod-end 18 by slipping the coarse screw-threaded end thereof into slot 42, thereby establishing electrical contact between one end of the bulb filament and the side panel 32. A resilient contact arm 43, mounted on and insulated from side wall 32, may contact the other filament terminal 44.

If desired, the metallic arm 35 may control an electrical circuit coupling an insulated section of third-rail 46 to the main constantly energized third-rail section 47. This control may be effected by providing a stationary leaf 45 which is insulated from panel 31 and which contacts arm 35 at only one end of its stroke. In this fashion, the passage of an electric train, which automatically causes the visible signal to change from green to red, or a manually effected change of signals, interrupts the electric circuit leading from the energized third-rail 47, through arm 35 and insulated leaf 45, to the insulated section of third-rail 46, thereby de-energizing said section 46 and preventing the passage of a following train into the occupied or red-signal track area. When the signal subsequently changes from red to green, the insulated third-rail section 46 is re-energized, thus permitting the resumption of traffic thereover. In this fashion, train collisions between trains on the same tracks may be avoided.

If desired, this arrangement may be used for track cross-over or switching areas to prevent collisions between trains travelling on meeting tracks. Thus, the passage of a train over a predetermined portion of one track may operate the hereinabove described signal device and simultaneously de-energize sections of other tracks adjacent the cross-over or switching points.

It is to be understood that this control feature may be used equally well with electric railroad systems wherein one of the outside track rails replaces the third-rail 47 illustrated in the accompanying drawings; the outside track rails being insulated from each other. Such systems have no third-rail, and instead one of the outside rails serves as the "live" or feeder conductor, the other outside rail serving as the return conductor.

The hereinabove described embodiment of the present invention may be operatively connected to a toy electric railway system in the manner more particularly illustrated in Figure 4. The primary winding 48 of a step-down power transformer 49 may be connected to any suitable alternating current source. The opposite ends of the secondary transformer winding 50 may be respectively connected in detachable fashion to the third-rail 47 and outside rail 51 of the railroad track unit 52, by any suitable means, as for instance, a snap-clamp arrangement or the like. The secondary transformer winding 50 would ordinarily be designed to deliver electrical energy to the track unit 52 at about 18 volts.

This secondary winding 50 may be tapped at an intermediate point, as at 54, to provide a low voltage source of power of approximately six volts, for lighting the electric bulb 25. Lead 55 interconnects tap 54 with the resilient electrical contact arm 43.

Lead 56 interconnects the energized third-rail 47 with the metallic "frame" of the inner signal mechanism, said frame being preferably insulated

from the signal housing 11. The "frame" may include the spaced side panels 31 and 32, the sleeve or hollow cylinder 30, the movable plunger 34 and its associated arm and slide 35 and 36. The single electric bulb 25 will glow constantly when operatively positioned within slot 42, the complete circuit including tap 54, lead 55, resilient leaf 43, filament terminal 44, bulb filament, screw-threaded filament terminal, side panel 32, lead 56, third-rail 47 and a six-volt portion of the secondary winding 50.

One end of each of the windings 28 and 29 may be soldered to the frame walls 31 and 32. The other ends of these separate windings may each be respectively connected to terminals 62 (Fig. 5) on each of tracks switches 57 and 58, through the leads 59 and 60. The passage of a train over these electric switches 57 or 58 (illustrated more particularly in Figure 5) completes a circuit between their respective leads 59 or 60 and the outside track rail 51 by momentarily depressing the bronze-spring 80. Thus, an approaching train wheel 61 (Fig. 5) will ride up on the bronze-spring 80 thereby completing the circuit between the lead 59 or 60 and the rail 51. In this fashion, a train progressing in the direction of arrow 82 (Fig. 4) will first energize winding 28 by completing an electrical circuit including the elements numbered 51, 80, 62, 59, 28, 31, 56, 47 and 50. Armature 34 accordingly assumes the extreme left-hand position shown in Figure 3, changing the visible signal from green to red. At the same time, the electrical connection between elements 35 and 45 is broken, thereby de-energizing the insulated third-rail track section 46. As the wheels of the signal-actuating train, continuing in the direction of arrow 82, pass beyond track switch 57, the bronze-spring 80 automatically breaks the circuit through winding 28 thereby de-energizing the same. Armature 34, however, will remain at rest in the left-hand position. As the train advances further, the circuit controlled by track switch 58 is completed, thereby energizing winding 29 and pulling armature 34 to the right. The visible signal is thus changed from red back to green and the third-rail section 46 behind the train is simultaneously re-energized. When the train wheels have passed beyond track switch 58, the bronze-spring 80 lifts and breaks the circuit through coil 29. The signal light will then remain in the "go" or green position, without the expenditure of any further energy in either coil 28 or 29. It will thus be seen that the electro-magnets are operated intermittently, and only when a change in signals is being effected.

If desired, a manual control unit connected with the outside rail 51 may be associated with leads 59 and 60, to enable the operator to avoid train collisions at track cross-over points, etc. The signal device may be solely manually controlled, or it may be both manually and automatically controlled.

As illustrated in Figures 4 and 6, a two-button switch may by-pass electrical current around the track switches or circuit closers 57 and 58. Thus, by manually depressing the red button 63, the operator may complete an electrical circuit between lead 59 and rail 51, just as if a train rolled over track switch 57. The signal light changes to red. After button 63 is released, the signal remains red until green button 64 is depressed, completing an electrical circuit between lead 60 and rail 51. The signal accordingly changes to green, just as if a train rolled over track switch 58, and stays green after button 64 is released, and until winding 28 is energized.

In the alternative, and preferred embodiment of the present invention illustrated, in part, in Figures 7 and 8, a tiltable and magnetically attractable signal-changing arm 66 is pivotally associated at 67 with a frame member 68. The tilting movement of this tiltable arm 66 may be physically limited and magnetically controlled by the transversely spaced parallel electro-magnetic coil units 69 and 70, which may be mounted on and secured to a common support. In this embodiment of the present invention, the coils 69 and 70 resemble coils 28 and 29 but differ therefrom in the omission of the common movable plunger core, and in the substitution therefor of two fixed magnetizable core elements 71 and 72. When coil 69 is energized (in the same fashion as coil 28) core 71 becomes magnetized thereby magnetically attracting and tilting element 66 from the position indicated in dotted lines in Figure 7 to that illustrated in solid lines. When coil 69 is de-energized, arm 66 remains in the new tilted position, under the influence of gravity. When coil 70 is subsequently energized (in the same fashion as coil 29) arm 66 is magnetically attracted by magnetized core 72, and is accordingly tilted back to the position shown in dotted lines in Figure 7.

A twin-apertured cross-arm 73, corresponding to the slide 36, may be secured to the upper end of the tilting arm 66. The twin apertures in element 73 may be similarly provided with green and red colored glass "Cellophane" sheets 74 and 75. The cross-arm 73 is so constructed as to alternately and selectively position the red colored, or the green colored material, between the electric bulb 25 and the lower rod-end 18. The periodic and alternate energization of coils 69 and 70 will thus control the visible signal, changing it from green to red and back again, all as hereinabove described.

The application of electrical energy to the insulated third-rail section 46 may be periodically interrupted, each time the signal turns red, by the coaction between the stationary electrical switch contact point 76, which is preferably insulated from the frame member 68, and corresponds to leaf 45 of the foregoing embodiment, and the movable electrical switch contact arm 66.

In the preferred embodiment of the present invention, tiltable arm 66 preferably comes to rest near, but not directly against, the spaced magnet cores 71 and 72. This may be effected by constructing the cross arm 73 of sufficient length to contact the spaced inner side walls of housing 11 just before the tilting arm 66 would otherwise contact the magnet cores 71 or 72, or by providing independent arm stops. In this fashion, the tilting arm 66 may be attracted by either one of the spaced magnet cores 71 and 72, but will not contact these magnet cores at either end of its stroke. This feature is deemed desirable, because otherwise the tiltable arm 66 might tend to vibrate or chatter just after reaching its extreme position due to the continued closing of the track switch contacts by the successive train wheels, and indeed the arm 66 might even be restrained from return movement.

An advantageous feature of the present invention resides in the fact that a realistic glowing signal may be provided at any desired location, as for instance, projecting beyond the hood 21, without having to destroy the relative proportions and symmetry of the signal device by making

room for the original illuminating source (such as the six volt electric bulb 25) at the chosen point. Moreover, the necessity of leading electric wires right up to the signal-emitting point, and of hiding such wires within a suitable member, is avoided. In the present invention, the light source may be encased within a housing remote from the signal-emitting point, and the light transmitted to said point through the longitudinally translucent rod 12.

While the rod or pencil 12 may be of ordinary glass, rock crystal material is better for transmitting light, and I prefer to employ a synthetic rock crystal material, comprising a thermoplastic synthetic resin known as methyl methacrylate (marketed as "Lucite"), because this material transmits light very satisfactorily for the purpose in view and does not require beveling at the bend where the upper end portion of the pencil is turned laterally, nor is etching of the surface of the pencil required. Furthermore, as such synthetic rock crystal material is much less brittle than glass and can withstand rough usage it is admirably adapted for my purposes. Nevertheless, it is not essential that this material be employed, for so far as I am aware, I am the first to use for a signal in a miniature railway system a pencil of light transmitting material so as to obviate difficulties hitherto inherent in the making of the parts to scale, and I desire my claims to have a correspondingly broad construction.

In building miniature railroads to quite a small scale it has hitherto been impossible or practically impossible to provide realistic light signals, owing to the fact that electric light bulbs which were sufficiently small were not obtainable, and owing to the difficulties, as well as the expenses of wiring minute bulbs into the system. With my improved signal, the signal light can be transmitted through a sufficiently small area and as the rod or pencil 12 can readily be made of any desired diameter, the signal mechanism for the railway can be made accurately to scale. At the same time, the appearance of the device is very satisfactory because the end of the pencil well simulates a minute bulb and the body of the pencil well simulates a signal post or pole. The simple hood device provided also very well simulates a signal light housing such as commonly employed on full size railways. These desirable features furthermore reduce the expense of the outfit to a notable degree.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiments be considered in all respects as illustrative, and not restrictive, reference being had to the appended claims rather than to the foregoing description, to indicate the scope of the invention.

Having thus described the invention, what is hereby claimed as new and desired to be secured by Letters Patent is:

1. In a wayside signal device for toy railroads, the combination of a housing defining a generally enclosed chamber and acting as a portable base to be positioned alongside the right of way, a bulb in said chamber, angular light-conducting means including a member projecting upwardly from said housing and having its lower end in light-receiving relation to said bulb, said member being made of such material and so bent as to transmit light from said bulb upwardly and then approximately horizontally toward an approaching train, and means within the housing for changing the color of the light to give an appropriate signal.

2. In a wayside signal device for toy railroads, the combination of a housing defining a generally enclosed chamber and acting as a portable base to be positioned alongside the right of way, a bulb within said chamber, angular light-conducting means including a pencil mounted on said housing, said pencil being of such material and so bent as to transmit light from said bulb upwardly and then in another direction toward an approaching train, a movable panel device in said housing comprising transparent green and red portions adapted to be interposed between said bulb and the lower end of said pencil, and electrically-operated means in said housing controlled from a distance for shifting said panel device so as to change the signal.

3. An electric signal device for use in connection with toy railways, comprising a housing adapted to be positioned along the right of way and containing an electric bulb, a pencil of light-conducting material extending upwardly from and supported by said housing, with the lower end of the pencil in light-receiving relation to said bulb, said pencil being of such material and so bent as to transmit light from said bulb upwardly and then in another direction for signaling purposes, the upper extremity of said pencil being shaped and shrouded so as to simulate a minute electric bulb.

4. In a wayside signal device for toy railroads, the combination of a housing defining a generally enclosed chamber, a bulb in said chamber, a pencil of light-conducting material supported by and extending upwardly from said housing and having its lower extremity in light-receiving relation to said bulb, said pencil being of such material and so bent as to transmit light from said bulb upwardly and then in another direction toward an approaching train, a colored screen movable by approximately horizontal movement into position between said bulb and the lower end of said pencil, said screen being supported at the upper portion of a magnetically attractable arm having a lower pivot and tiltable to either side of a vertical line passing through the pivot of said arm, a pair of horizontally spaced electromagnets operatively positioned so that they are at the respective sides of said tiltable arm, each of said electromagnets being provided with a fixed core, and means for selectively energizing said electromagnets to shift the arm and the screen.

5. An electric signal device for toy railways comprising a housing adapted to be positioned along the right of way and containing an electric bulb, a pencil of light-conducting material extending upwardly from and supported by said housing, with the lower end of the pencil in light-receiving relation to said bulb, said pencil being of such material and so bent as to transmit light from said bulb upwardly and then in another direction toward an approaching train, the upper extremity of said pencil being shaped and shrouded so as to simulate a minute electric bulb, the shrouding of the upper extremity of the pencil being effected by a hood supported on and by the pencil at the bent portion thereof.

6. In a wayside signal device for toy railroads, the combination of a housing defining a generally enclosed chamber and acting as a portable base to be positioned alongside the railroad, a source of illumination within said chamber, angular light-conducting means including a pencil mounted on said housing and projecting upwardly

therefrom and having its lower end positioned to receive light rays from said source of illumination, the upper end portion of said pencil being bent from the vertical in a direction to have its extremity face an oncoming train, said pencil being of such material and so bent as to transmit light from said source upwardly and then in another direction toward such train, a coloring screen movably mounted for placement in and out of operative position above the source of illumination and between it and the lower end of said pencil, and electromagnetic means in said housing controlled from a distance for shifting said screen.

7. In a wayside signal device for toy railroads, the combination of a housing defining a generally enclosed chamber and acting as a portable base to be positioned alongside the railroad, a source of illumination within said chamber, angular light-conducting means including a pencil mounted on said housing and projecting upwardly therefrom and having its lower end positioned to receive light rays from said source of illumination, the upper end portion of said pencil being bent from the vertical in a direction to have its extremity face an oncoming train, said pencil being of such material and so bent as to transmit light from said source upwardly and then in another direction toward such train, a coloring screen movably mounted for placement in and out of operative position above the source of illumination and between it and the lower end of said pencil, electromagnetic means in said housing controlled from a distance for shifting said screen, and a shrouding member carried on and by said pencil adjacent the laterally bent portion thereof and from which the upper extremity of the pencil projects in simulation of a minute electric bulb.

8. In a wayside signal device for toy railroads, the combination of a housing defining a generally enclosed chamber and acting as a portable base to be positioned alongside the railroad, a source of illumination within said chamber, angular light-conducting means including a pencil mounted on said housing and projecting upwardly therefrom and having its lower end positioned to receive light rays from said source of illumination, the upper end portion of said pencil being bent from the vertical in a direction to have its extremity face an oncoming train, said pencil being of such material and so bent as to transmit light from said source upwardly and then in another direction toward such train, a coloring screen movably mounted for placement in and out of operative position above the source of illumination and between it and the lower end of said pencil, electromagnetic means in said housing controlled from a distance for shifting said screen, and a shrouding member carried on and by said pencil adjacent the laterally bent portion thereof and from which the upper extremity of the pencil projects in simulation of a minute electric bulb, said shrouding member having a closed rear portion and an open under portion by way of which an upright portion of the pencil below the bend or turn extends into the same.

9. A wayside electric signal device for signalling an approaching train, including a housing defining a generally enclosed chamber, a light bulb disposed within said chamber, angular light-conducting means including a solid light-conducting pencil having its lower end extending into an opening in the upper wall of said housing and adapted to receive light rays from said bulb, said pencil having its upper end turned to face an approaching train, said pencil being of such material and so bent as to transmit light from said bulb upwardly and then in another direction toward such train, a hood carried on and by the upper end portion of said pencil and from which the upper extremity projects in simulation of a minute electric bulb, a color screen lying in an approximately horizontal plane and movable to be interposed in an approximately horizontal direction between said bulb and the lower end of said pencil, and electrically operated means in said housing for shifting said screen.

10. A wayside electric signal device for signalling an approaching train, including a housing defining a generally enclosed chamber, a light bulb disposed within said chamber, angular light-conducting means including a solid light-conducting pencil having its lower end extending into an opening in the upper wall of said housing and adapted to receive light rays from said bulb, said pencil having its upper end turned to face an approaching train, said pencil being of such material and so bent as to transmit light from said bulb upwardly and then in another direction toward such train, a hood carried on and by the upper end portion of said pencil and from which the upper extremity projects in simulation of a minute electric bulb, a color screen lying in an approximately horizontal plane and movable to be interposed in an approximately horizontal direction between said bulb and the lower end of said pencil, and electrically operated means in said housing for shifting said screen, said electrically operated means comprising an electromagnetically operated arm pivoted at its lower end in said housing and carrying said screen at its upper end.

11. A wayside electric signal device for signalling an approaching train, including a housing defining a generally enclosed chamber, a light bulb disposed within said chamber, angular light-conducting means including a solid light-conducting pencil having its lower end extending into an opening in the upper wall of said housing and adapted to receive light rays from said bulb, said pencil having its upper end turned to face an approaching train, said pencil being of such material and so bent as to transmit light from said bulb upwardly and then in another direction toward such train, a hood carried on and by the upper end portion of said pencil and from which the upper extremity projects in simulation of a minute electric bulb, a color screen lying in an approximately horizontal plane and movable to be interposed in an approximately horizontal direction between said bulb and the lower end of said pencil, and electrically operated means in said housing for shifting said screen, said electrically operated means comprising an electromagnetically operated arm pivoted at its lower end in said housing and carrying said screen at its upper end, said arm arranged to make and break a contact for controlling the cutting in and out of a section of charged rail.

12. A railway electric signal device comprising a housing adapted to act as a portable base to be positioned along the right of way, said housing having a top wall with a small opening therein, light-conducting means comprising a pencil supported on said housing and projecting upwardly therefrom with its upper end visible from an approaching train, the lower end of said pencil extending into said small opening, a separate frame within said housing, a bulb carried by the frame in line with said opening, said pencil being of

such material and so bent as to transmit light from said bulb upwardly and then in another direction toward such train, and a movable color screen and remotely controlled shifting means therefor carried by the frame, said screen being movable by said shifting means to be interposed between said bulb and the lower end of said pencil for transmitting a signal.

13. A railway electric signal device comprising a housing adapted to act as a portable base to be positioned along the right of way, said housing being open at the bottom and having a small opening in the upper wall thereof, light-conducting means comprising a pencil supported on said housing and projecting upwardly therefrom in simulation of a signal post, the lower end of said pencil extending into said small opening, a frame insertable in said housing from the bottom and having associated therewith a bottom plate closing the lower end of the housing, a bulb carried by said frame within the housing, said pencil being made of such material and so bent as to transmit light from said bulb upwardly and then in another direction toward an approaching train, and a movable color screen and electromagnetic shifting means therefor carried by the frame within the housing, said screen being movable by said shifting means to be interposed between said bulb and the lower end of said pencil for transmitting a signal.

14. A signal and control system for toy electric railroads wherein the trains run on tracks and draw their operating current from a feeder conductor, comprising a signal device including a housing defining a generally enclosed chamber, a source of illumination disposed within said chamber, means including a light-conducting pencil for conducting rays of light emitted by said source from within said chamber to a visible signal point outside and above said housing, said pencil being made of such material and so bent as to transmit light in an upward direction from said source and then in another direction toward an approaching train, a pair of red and green light filters disposed within said housing and adapted to be individually and selectively interposed between said source of illumination and said light-conducting means, an electrical switch inside said housing arranged to open and close in synchronism with the movements of said light filters, and electromagnetic means disposed inside said housing for selectively operatively positioning either one of said filters, and a pair of spaced train-responsive electric track switches each controlling flow of electric current through said electromagnetic means, and a pair of manually operable electrical switches each controlling flow of electric current through said electromagnetic means independently of said track switches, said feeder conductor including an insulated section electrically energized through a circuit including the electrical switch disposed within the housing of said signal device.

15. An electric signal device for use in connection with toy railways, comprising a housing adapted to be positioned along the right of way, an electric bulb in said housing having external electrical connections, a light-conducting pencil supported by and extending upwardly from said housing with the lower end of the pencil in light-receiving relation to said bulb, said pencil being of a material which permits the light rays to pass therethrough at any angle and being provided with an upper angular portion so that its upper end throws in a lateral direction for signalling purposes rays which pass upwardly from said bulb, and a hood in embracing relation to the pencil adjacent the upper end thereof.

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