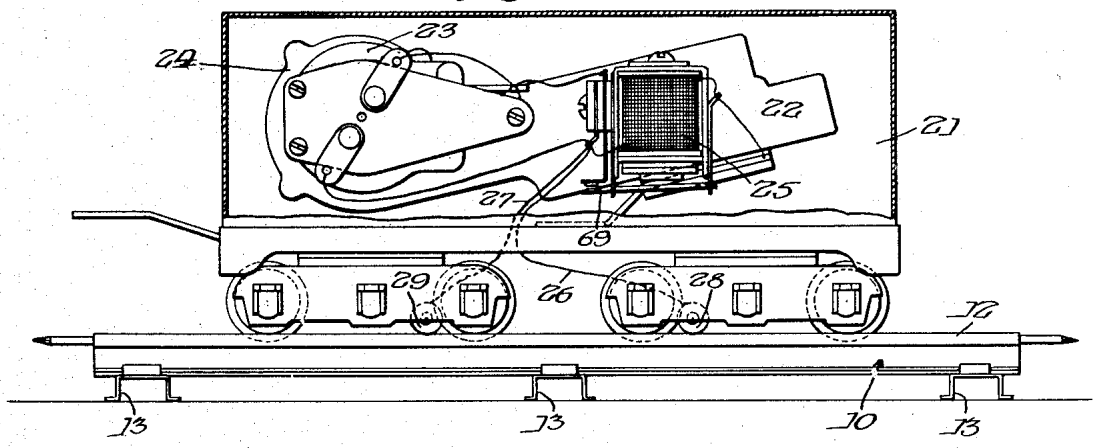
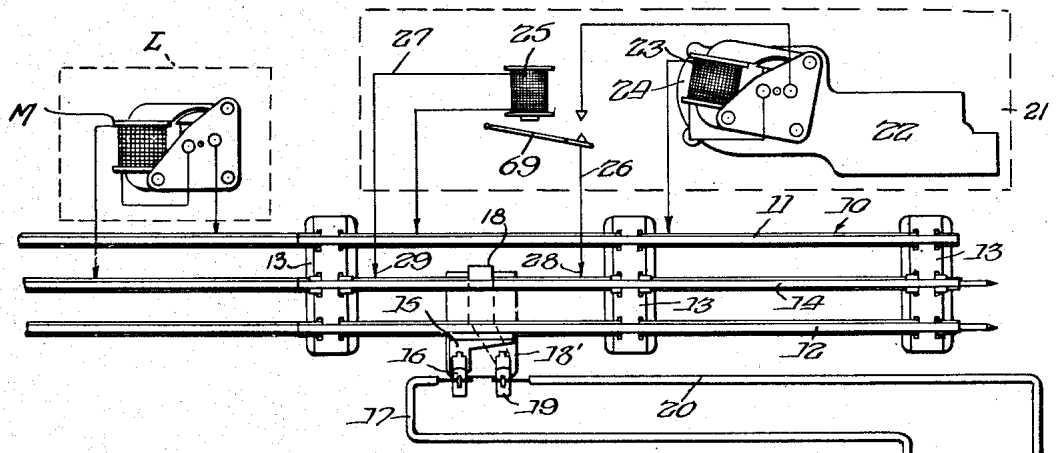
Oct. 17, 1939. E. G. GODDARD 2,176,458.

WHISTLE ACTUATING AND CONTROL MEANS

Filed June 19, 1936

Fig. 1.





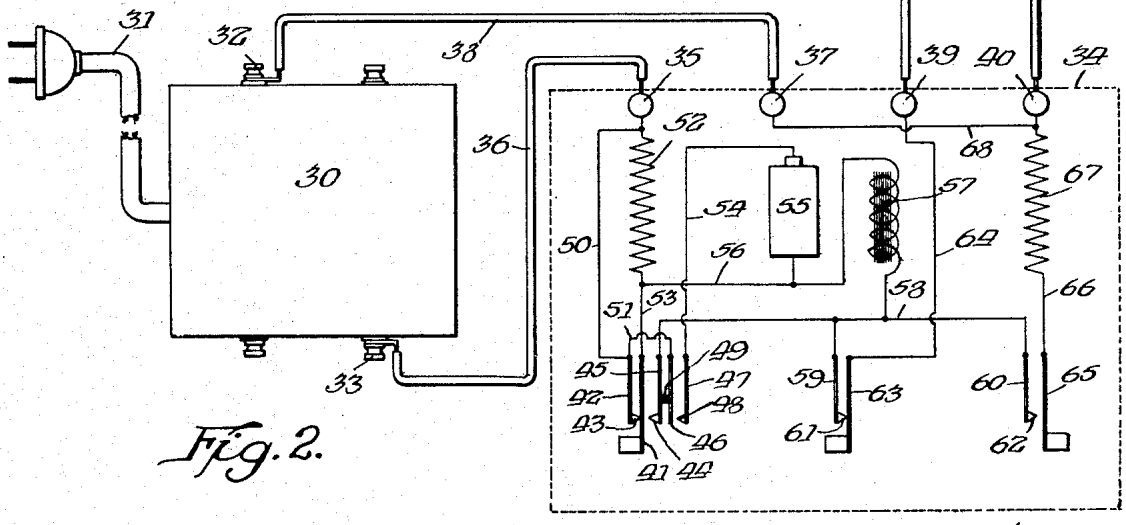


Fig. 2.

Inventor:
Edwin George Goddard:
By Dickinson Hurley Byron & Knight
Attys

Patented Oct. 17, 1939 2,176,458

UNITED STATES PATENT OFFICE

2,176,458

WHISTLE ACTUATING AND CONTROL MEANS

Edwin George Goddard, Lombard, Ill., assignor to American Flyer Mfg. Co., Chicago, Ill., a corporation of Illinois

Application June 19, 1936, Serial No. 86,058

2 Claims. (Cl. 104—149)

My invention relates to whistle actuating and control means for toy electric locomotives, and has for its primary object the provision of an ordinary dry cell battery included in a circuit which acts to supply D. C. current and which is conducted through the same electrical circuits as the alternating current used for operating the train, with means therefor whereby the whistle actuating means is controlled.

Another and further object of my invention is the provision of a simple and efficient means whereby direct current is supplied and transmitted through the same circuit as the alternating current passes in operating the train, thereby reducing materially the number of parts, circuits, and control means for the operation of the whistle on an electric locomotive.

Another and further object of my invention is the provision of a simple means for supplying direct current, which can be easily replaced should occasion require, without any great amount of difficulty or trouble and at a very small cost.

These and other objects of my invention will be more fully and better understood by reference to the accompanying sheet of drawings, and in which—

Figure 1 is an elevational view of a toy electric locomotive tender and tracks therefor, with a whistle and control apparatus mounted thereon; and

Figure 2 is a diagrammatic view, including the various electrical parts necessary for the operation of the train, together with a wiring diagram illustrating the wiring and switches necessary for the control of the apparatus.

Referring now specifically to the drawing, in which like reference characters refer to like parts throughout, a track section 10 is shown comprising outer wheel bearing rails 11 and 12 connected together by metallic sleepers 13, and a power rail 14 which is insulated from the sleepers 13. Rail 12 has secured thereto a clip 15 having a terminal 16 at one side thereof by means of which the usual lead wire 17 is connected thereto. A plate 18 is provided which is connected to the rail 14 and which has the usual wire attaching clip 19 thereon to which a lead wire 20 is secured, the sleepers connecting the wheel bearing rails being conductors through which current may flow. 18' is the usual insulating plate.

A tender 21 is shown upon which the usual whistle assembly is mounted, and which comprises an air chamber 22 through which the air passes in making the sound, a motor 23 directly connected to a fan 24, and a relay coil 25 permanently connected between a power rail shoe 29 and the tender body. One side of said motor being permanently connected to the tender body and the other side being connected by an armature of said relay coil, when energized, to a power rail shoe 28, all of these parts being the usual types of devices used commercially and well known in the art. The relay coil 25 is adapted to be energized by direct current only.

For the purpose of controlling electric current for the operation of the train and for blowing a whistle, I provide a transformer 30 having a usual lead-in wire 31, a ground post 32, and an outlet post 33 thereon, the transformer being of the ordinary commercial form and adapted to reduce the usual 110 volt A. C. electric house current to a voltage of from 12 to 25 volts alternating current.

I also provide a whistle and train control member 34 located at the wayside, preferably adjacent the track and having the necessary switches, resistances, coils and wiring connections therein, and having a power input post 35 thereon to which is connected a lead wire 36 from the power post 33 on the transformer. A ground post 37 is also provided on the whistle control member 34 having a lead wire 38 connected thereto, which in turn is connected to the ground post 32 on the transformer 30. Also mounted in the control 34 are posts 39 and 40 to which the track leads 17 and 20 respectively are connected.

Mounted in the member 34 is a switch 41 adjacent a spring member 42, having a contact member 43 thereon adapted to normally engage the switch member 41. This is a double throw member adapted to alternately engage a contact member 44 on a spring member 45, and a contact member on a spring member 46 which is provided and which extends alongside another spring member 47 having a contact member 48 thereon, with an insulating member 49 being introduced between the spring members 45 and 46. A lead wire 50 is provided which leads from the input post 35 to the spring member 42, with another lead 51 being provided from the spring member 42 to the spring member 46. A resistance coil 52 to stabilize the load is provided having a connection 53 leading therefrom to the spring member 41. Attached to the spring member 47 is a lead 54 which is connected to one side of an ordinary one volt dry cell battery 55, and which supplies direct current for the pur-

pose of operating the solenoid 25 as hereinafter described.

A lead 56 is provided which is connected to the other side of the dry cell and to the lead 53 extending partially across the member 34 to a choke coil 57 for assisting introduction of the direct current into the track, and is connected to another lead 58 which is connected at one of its ends to the spring member 45 and has a pair of spring members 59 and 60 connected thereto, these spring members having contact members 61 and 62 thereon. Adjacent the spring member 59 is a switch member 63 having a lead 64 connected thereto and leading to the outlet post 39 on the control member 34. The spring member 60 has a switch member 65 located adjacent thereto, with a lead 66 extending therefrom to a resistance coil 67, which in turn is connected to the post 40 on the whistle and train control member 34. A lead 68 is provided which is connected to post 40 and outlet post 37.

In Fig. 2 the locomotive is indicated at L and its driving motor at M.

In operation, the connections as illustrated show the toy train in operation with the current passing through the transformer 30, lines 36 and 38, through the lead 50, switch 41, lead lines 53 and 56, coil 57 to lead 58, through the switch 63 and lead 64 to the outlet post 39 and into the wheel bearing rails 11, 12 and which completes the circuit through the power rail 14 and the motor of the locomotive back through the lead 20, lead 68 to the outlet post 37 on the whistle control member 34. When it is desired to blow the whistle while the train is in operation, the switch 41 is thrown into a position opposite to that shown in the drawing, into contact with the member 45, thereby closing the train operating circuit through the coil 52, switch member 45 and lead 58, through the switch 63, in the same manner as heretofore described. At the same time the circuit through the battery 55 is closed through the lead 54 out to the lead 56, through the reactance 57, through the switch 63, through the leads 17 and 20 and through the transformer windings and leads therefrom to the switch member 46 thereby energizing the coil 25, thereby attracting the pivotally mounted contact member 69 and closing the circuit 26 to the motor 23 operating the air whistle, thus causing the whistle to operate as long as this circuit is kept closed. If this switch 41 is pushed intermittently, the whistle will be sounded in blasts to simulate that of a real locomotive. The switch 41 being a double throw switch, the train continues to operate regardless of the position of this switch. During its normal operation the switch 63 is kept in closed position, the switch being used for the purpose of opening and closing the motor operating circuit for the train and in connection with certain types of commercially and well known train control systems can be used to cause the train to back up and the like, which devices form no part of my present invention.

If the train is not in motion, it may be found desirable to sound the whistle, in which case the switches 41 and 65 are operated. In operating switch 41, connection is broken between contacts 43 and 41 and connection is made between contacts 41 and 44 and between contacts 46 and 48. This action creates a circuit through resistance coil 52, switch 41, and switch 63 to post 39. When the switches 65 and 41 are closed the battery circuit extends from the positive battery terminal through lead 54, spring 47, contact 48, spring 46, wire 51, wire 50, terminal 35, wire 36, terminal 33, the secondary or transformer 30, terminal 32, wire 38, terminal 37, wire 68, terminal 40, wire 20, clip 19, center rail 14, connection 27 to the solenoid coil 25. The return from the solenoid 25 goes through outer rails 11 and 12, clip 16, wire 17, terminal 39, wire 64, spring 63, contact 61, spring 59, part of wire 58, and choke coil 57 to the negative side of the battery 55. The resistance coil 67, which is placed in the alternating current circuit by the closing of the switch 65, lowers the voltage to a point below the operating voltage of the engine motor, but still leaving sufficient voltage to operate the whistle motor.

The alternating current then runs from terminal 33, through wire 36, terminal 35, wire 50, resistance 52, wire 53, spring 47, contact 48, spring 45, wire 58, spring 59, contact 61, spring 63, wire 64, terminal 39, wire 17 and clip 16 to the side rails 11 and 12. From the other side of the transformer the current runs from terminal 32, through wire 38, terminal 37 and wire 68 to terminal 40. Here the current divides, part going to the center rail 14 through wire 20 and clip 19, while part passes through resistance 67, wire 66, spring 65, contact 62, spring 60 to wire 58 which, as stated above, is connected to the opposite side of the transformer. Due to this current division the engine is not driven but the whistle motor 23 is driven.

It will thus be understood that by placing in the circuit an ordinary one volt dry cell battery a current is supplied to a suitable solenoid operating mechanism by means of which current flowing to the whistle motor is opened and closed at the will of the operator, this current passing through the same transmission lines as those provided for the regular motor circuit by providing an entirely independent circuit by means of which the whistle and the locomotive can be operated at will.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form and the proportion of parts and the substitution of equivalents as circumstanes may suggest or render expedient without departing from the spirit or scope of my invention.

I claim:

1. Control apparatus for electric toy trains comprising in combination a toy electric locomotive having a driving motor, a conducting track therefor, an audible signal on one of the vehicles of the train having an actuating motor, a direct-current relay for closing the circuit of the signal-actuating motor, a source of alternating current for supplying current to the track for operating said motors, and a control device located adjacent to the track comprising a resistor in series with said alternating current supply, a dry cell battery for supplying direct current, and switching means for selectively connecting said dry cell battery across said resistor to energize said direct current relay, and connections from said resistor through said switching means permanently connecting said resistor in said alternating current supply and normally providing a short-circuit therefor in one position of said switching means for operation of the driving motor, and for removing the short-circuit from said resistor and imposing the potential of said battery thereacross for the ener-

gization of the direct current relay in the other position of said switching means for the operation of the driving motor and the signal-actuating motor.

2. The combination set forth in claim 1 wherein the control device is provided with additional switching means for selectively introducing resistance into the circuit to decrease the alternating current potential therein to a level sufficient to operate said signal-actuating motor but insufficient to operate said driving motor.

EDWIN GEORGE GODDARD.