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APPARATUS FOR SELECTIVELY AND AUTOMATICALLY ANNOUNCING THE APPROACH AND DESTINATION OF TRAINS TO A JUNCTION POINT.

APPLICATION FILED JAN. 6, 1909.

920,435.

Patented May 4, 1909.

2 SHEETS—SHEET 1.

Fig. 2

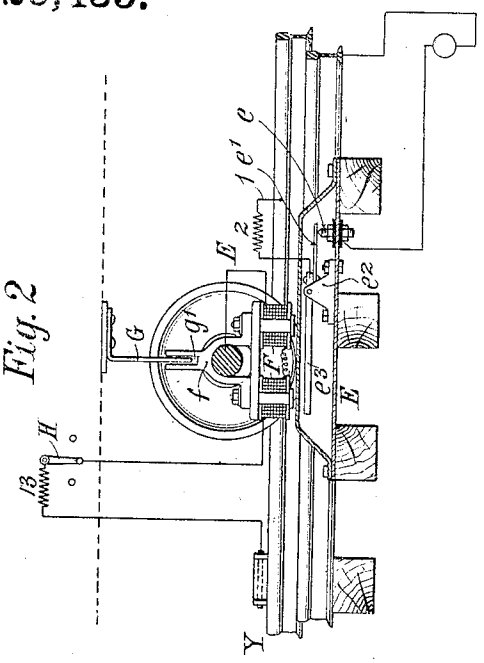


Fig. 3

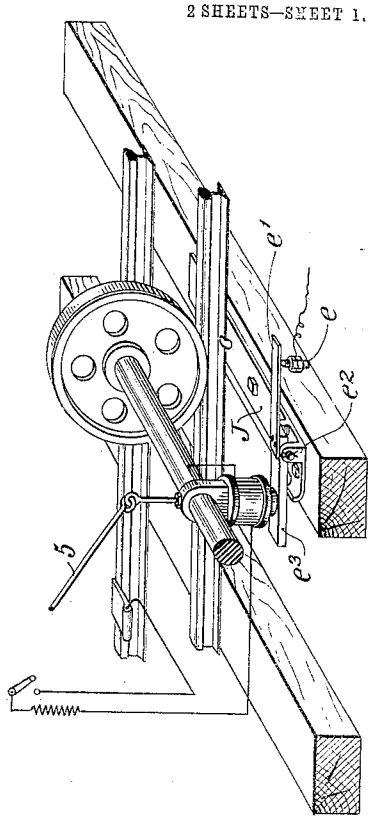
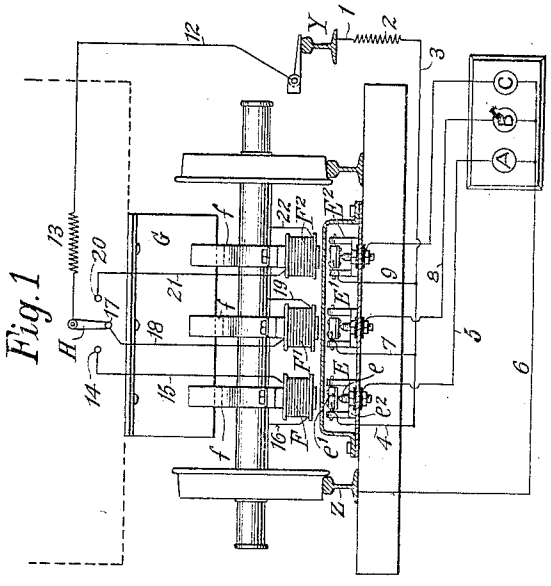


Fig. 1



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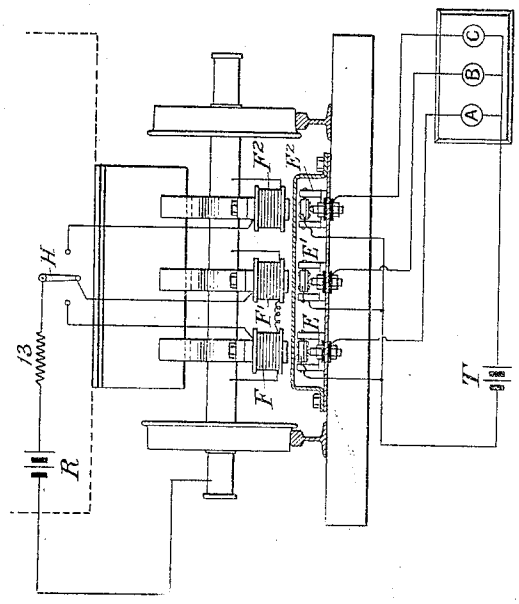

Fig. 4

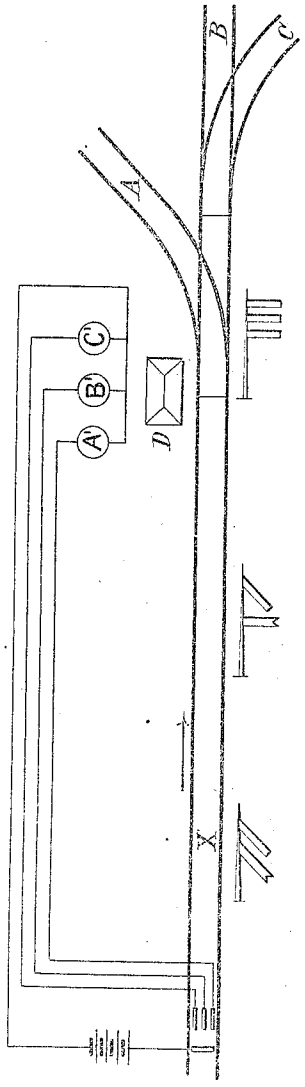

Fig. 5

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR SELECTIVELY AND AUTOMATICALLY ANNOUNCING THE APPROACH AND DESTINATION OF TRAINS TO A JUNCTION-POINT.

No. 920,435. Specification of Letters Patent. Patented May 4, 1909.

Application filed January 6, 1909. Serial No. 470,903.

To all whom it may concern:

Be it known that I, JOHN P. COLEMAN, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful improvements in apparatus for selectively and automatically announcing the approach and destination of trains to a junction-point, of which the following is a specification.

My invention relates to apparatus by means of which a train automatically and selectively announces its approach to a junction point where its route is to be controlled past that point.

Heretofore it has been the usual practice for a train to announce its approach and destination to the towerman at the junction point by means of its whistle or other signal or for a trainman, after the train has been brought to a stop, to announce the train's approach and destination by telephone, bell taps or like means. Both of these methods are more or less objectionable from an operating point of view in that in the first place confusion of the signals might result and therefore accident or delay, and in the second case, the delay incident to stopping the train so that the trainman may signal, to say nothing of the wear and tear upon the roadbed and equipment.

It is an object of the present invention to avoid these objections by providing apparatus located upon a car or cars of the train and in the trackway for announcing the approach of the train, as well as its destination, thereby enabling the operator at the junction point to set up the proper route for the car or train before its arrival at the junction point.

I will describe a form of apparatus embodying my invention, and then point out the novel features in claims.

In the accompanying drawing, Figure 1 is a view partly in elevation, partly in vertical transverse section, and partly in diagram of apparatus for carrying out my invention. Fig. 2 is a view partly in elevation, partly in vertical longitudinal section and partly in diagram of certain of the apparatus shown in Fig. 1. Fig. 3 is detail perspective view of a modification embodying my invention. Fig. 4 is a view similar to Fig. 1, but showing a modification. Fig. 5 is a diagrammatical view showing an application of my invention to one set of conditions arising in practice.

Similar characters of reference designate corresponding parts in all the figures.

Referring now more particularly to Fig. 5, it will be seen that a train traveling along the track X in the direction of the arrow can, on arriving at the junction, take one of three routes A, B, C. Which route it takes depends upon the position of the switches at the junction which are controlled in their movements by machines or devices located in the tower D at the junction. Also located in the tower are a number of indicators, of any desired construction or arrangement, A′, B′, C′, one being provided for each route over which a train may travel toward its destination. The purpose of these indicators is to announce to the operator in the tower which route an approaching train is to take, and the indicator in the present invention is caused to operate through suitable apparatus under the control of the driver of the car or train.

Referring now more particularly to Figs. 1 to 3, my invention is shown applied to an electric railway, employing a third rail or trolley and the track rails in the power circuit, it being understood that the generator for the car propulsion current has one pole connected with the third rail and the other pole with the track rails. Current for the electric circuits employed in connection with the apparatus of my invention may therefore be obtained from the power circuit, suitable resistances being employed in such circuits wherever necessary. Each indicator is provided with an electric circuit which extends from the indicator to a determined point in advance of the junction. At this point, a suitable form of circuit controller E is included by means of which the circuit is opened and closed. Preferably the circuit controller will in its usual, or what may be termed its normal position, have the circuit open and will always tend to open the circuit. The form of circuit controller shown in the drawings comprises a fixed contact e and a movable non-magnetic contact e', the latter being suitably pivoted on a support e^2 and having connected with it a plate e^3 or other part which, in the present case, acts as a counterweight and armature. Acting as a

counterweight, the plate e^3 holds the contact e' away from the contact e and thus keeps the circuit open, acting as an armature, when it is lifted through being attracted by a magnet it moves the contact e' into engagement with the contact e and thus closes the circuit. For each indicator there will be a circuit and a circuit controller and of course in the case of a plurality of indicators the circuits therefor may have wires in common. Also each circuit controller may be in a separate casing or there may be one casing I for a plurality of circuit controllers, as shown in the drawing, and the circuit controllers and their casings or casing will preferably be located on a tie between the track rails. The cover or top of the casing will, preferably, be of some non-magnetic material.

The circuit for the indicator A may be traced as follows: Starting from the third rail Y, wire 1, resistance 2, wires 3, 4, contact e', contact e (when the contacts are in engagement) wire 5, indicator A and wire 6 to the track rail or rails Z. The circuit for indicator B includes the circuit controller E', and continues from wire 3 through wire 7 contacts e' and e of the circuit controller E' wire 8 indicator B, and wire 6 to the track. The circuit for indicator C includes the circuit controller E^2 and continues from wire 3 through wire 9, contacts e' and e of the circuit controller E^2, wire 9, indicator C, and wire 6 to the track. It will be seen from the foregoing that each circuit for each indicator is open and is closed by the circuit controller included therein.

The circuit controllers E, E', etc. are operated from the car or cars traveling along the railway, and in accordance with my invention they are selectively operated. In carrying out this feature of my invention I provide an electro magnet carried by the car, and preferably I provide an electro magnet for each circuit controller, though it will be obvious to those skilled in the art that one electro-magnet may do for a plurality of circuit controllers, the selective action being obtained by moving the electro-magnet over the circuit controller which it is desired to operate.

F, F', F^2, designate the electro-magnets, and as shown, they are double pole and suspended from an axle of the car by a non-magnetic yoke piece f. The yoke pieces are held against rotary movement from the axle by a plate or other device G, carried by the car body. The plate or device G permits of relative movement between the axle and car body, this being accomplished by having the plate extend into a vertical slot or cut g' in each yoke f. As shown, the circuit for each electro-magnet is independent, but each circuit is shown as being controlled from a single switch arm H, though a switch arm may be used for each magnet. The circuit for the electro-magnet F may be traced as follows: Contact shoe traveling along the rail Y, wire 12, resistance 13 to switch arm H, contact 14, wire 15 electro-magnet F, wire 16 to car axle and wheels to track Z. The circuit for the electro-magnet F' would be from switch arm H, contact 17, wire 18, electro-magnet F', and wire 19 to the car axle. The circuit for the electro-magnet F^2 would be from switch arm H, contact 20, wire 21, electro-magnet F^2, and wire 22 to the car axle. Thus it will be seen that by moving the switch arm H any of the electro magnets can be energized and when so energized and in passing over its circuit controller the plate e^3 will be attracted to close that indicator circuit.

In Fig. 3, a single coil is used instead of the double coils in Figs. 1 and 2, and in which the axle rail and a tie-plate J extending under the rail and support e^2 are included in the magnetic circuit employed to lift the plate e^3 to close the circuit. A link 5 connected at one end to the car body and at its other end to an extension of the magnet core resists the tendency of the magnet to turn with the axle.

Fig. 4 shows the same form of apparatus as that used in Figs. 1 and 2, but adapted for steam railroad conditions. In this form of the invention a battery R is employed for the circuits of the electro-magnets and a battery T is employed for the circuits of the indicators. Otherwise the circuits are the same.

Many modifications may be made without departing from the spirit of my invention. For example, alternating currents may be used to energize the magnets carried by the car, as in Fig. 3, and a corresponding magnet substituted for the circuit controller beneath it having its lower pole-piece secured in this iron tie plate J and its upper pole-piece in the plane occupied by the armature of the circuit controller while the winding of the magnet would be included in the circuit of the indicator. Thus an alternating current would be induced in the circuit of the indicator when the car with its energized magnet passed over the magnet in the track.

It will be seen that at speed, trains may announce their destination automatically, yet without resorting to means involving actual contact (and, consequently, destructive blows) between parts carried by the train and parts carried by the track.

Having thus described my invention, what I claim as new is—

1. In combination, an indicator in a tower, a plurality of circuits for said indicator, each of which comprises a circuit controller normally open and located in or alongside a trackway, a plurality of electro-magnets carried by a car traveling along the trackway, an electro-magnet being provided for each circuit controller, and means for causing any

one of said electro-magnets to be energized to operate its circuit controller.

2. In combination, an indicator in a tower; a plurality of circuits for said indicator; a circuit controller for each circuit, normally open and located in or alongside a trackway; a casing for said circuit controllers having a non-magnetic top or cover; a plurality of electro-magnets carried by a car traveling along the trackway, an electro-magnet being provided for each circuit controller, and means for causing any one of said electro-magnets to be energized to operate its circuit controller.

3. In combination, an indicator in a tower; a plurality of circuits for said indicator; a circuit controller for each circuit normally open and located in or alongside a trackway, each of which comprises a pivoted and counterweighted part; a plurality of electro-magnets carried by a car traveling along the trackway, an electro-magnet being provided for each circuit controller; and means for causing any one of said electro-magnets to be energized to operate its circuit controller.

4. In combination, an indicator in a tower, a plurality of circuits for said indicator; a circuit controller for each circuit normally open and located in or alongside a trackway; a plurality of electro-magnets mounted upon an axle of the car, one electro-magnet being provided for each circuit controller; and means for causing any one of said electro-magnets to be energized to operate its circuit controller.

5. In combination, an indicator in a tower, a plurality of circuits for said indicator; a circuit controller for each circuit normally open and located in or alongside a trackway; a plurality of electro-magnets mounted upon an axle of the car, one electro-magnet being provided for each circuit controller; means for holding the electro-magnets against displacement due to rotation of the axle; and means for causing any one of said electro-magnets to be energized to operate its circuit controller.

6. In combination, an indicator in a tower, a plurality of circuits for said indicator; a circuit controller for each circuit normally open and located in or alongside a trackway; a plurality of electro-magnets mounted upon an axle of the car, one electro-magnet being provided for each circuit controller; means for permitting relative movement between the car axle and electro-magnets; and means for causing any one of said electro-magnets to be energized to operate its circuit controller.

7. In combination, an indicator in a tower, a plurality of circuits for said indicator; a circuit controller for each circuit; a casing for containing the circuit controllers; a plurality of electro-magnets suspended from the axle of a car, one electro-magnet being provided for each circuit controller; and means for causing any one of said electro-magnets to be energized to operate its circuit controller.

8. In combination, an indicator in a tower; a plurality of circuits for said indicator; a circuit controller for each circuit; a plurality of electro-magnets carried by a car traveling along the railway, one electro-magnet being provided for each circuit controller, and means for causing any one of said electro-magnets to be energized to operate its circuit controller.

In testimony whereof, I have signed my name to this specification in the presence of two subscribed witnesses.

JOHN P. COLEMAN.

Witnesses:
M. S. KIRTLAND,
W. F. WOOD.