

April 21, 1936.

S. N. WIGHT

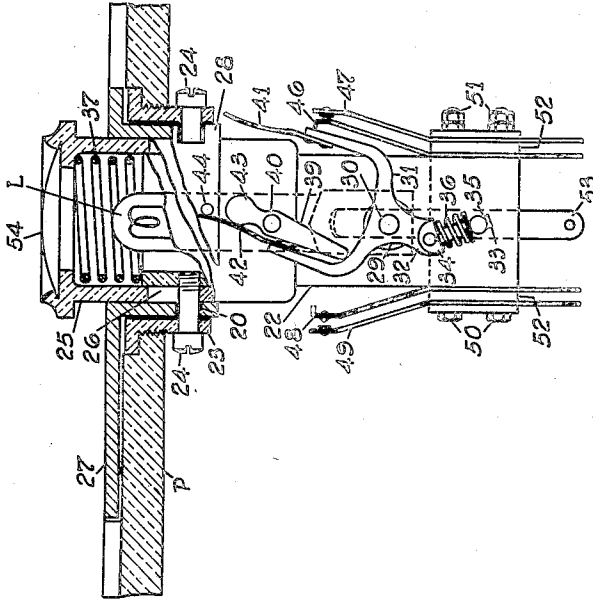
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CONTROL DEVICE FOR RAILWAY TRAFFIC CONTROLLING SYSTEMS

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2 Sheets-Sheet 1

FIG. 1.



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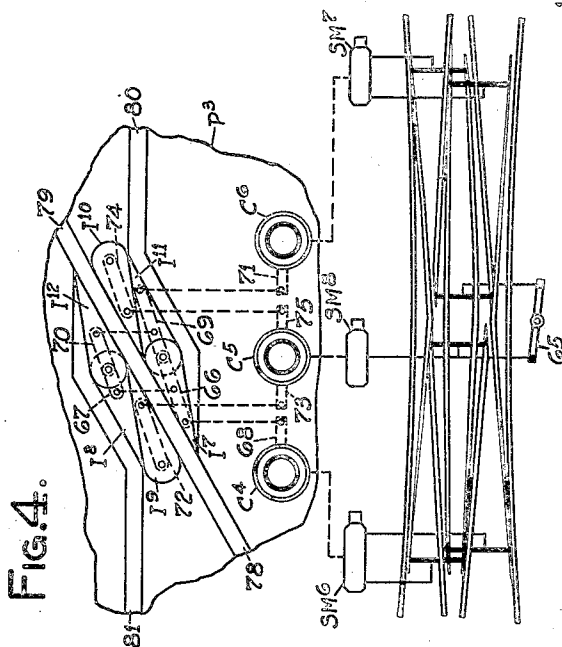
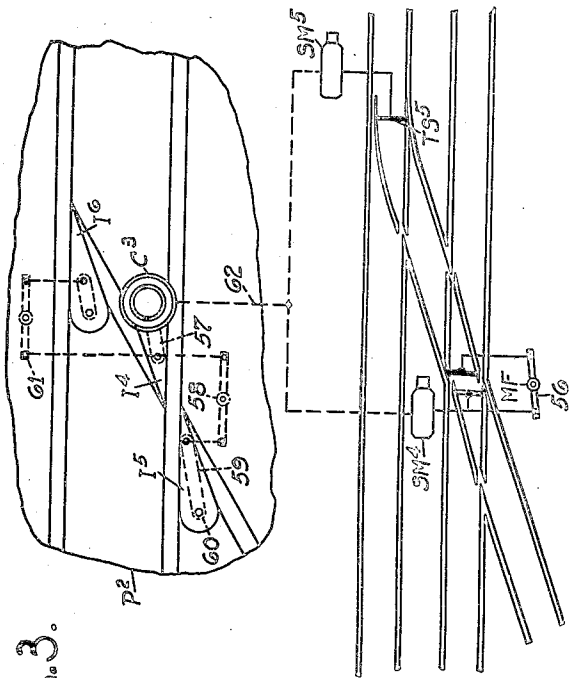
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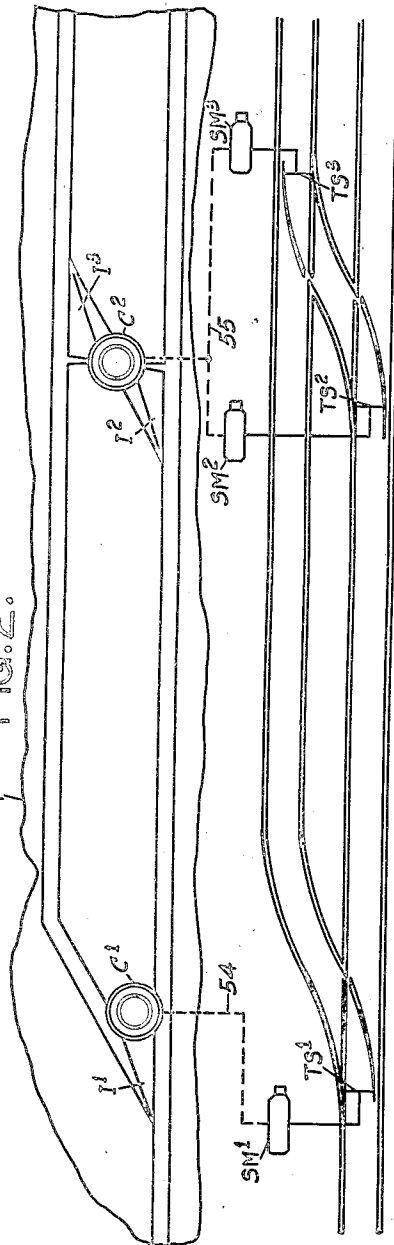
CONTROL DEVICE FOR RAILWAY TRAFFIC CONTROLLING SYSTEMS

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UNITED STATES PATENT OFFICE

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CONTROL DEVICE FOR RAILWAY TRAFFIC
CONTROLLING SYSTEMSSedgwick N. Wight, Rochester, N. Y., assignor to
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Application January 30, 1933, Serial No. 654,204

2 Claims. (Cl. 246—3)

This invention relates to control devices for railway traffic controlling systems and more particularly to a miniature device for controlling the operation of a traffic controlling device and for displaying an indication of the operated position thereof.

It has been found particularly efficient in directing traffic from a central point through sections of a railway system to employ a miniature track diagram at the control point which simulates the actual layout of the particular section of the railway system, from which track diagram the operator may plan the various movements, and in which the progress of traffic and the position of the various traffic controlling devices may be indicated. However, in the present control systems of this type, the means for controlling the operation of the various traffic controlling devices do not directly convey to the operator their association with the corresponding parts of the miniature track diagram, nor does the operated position thereof directly display the effect that the resulting operation of the associated traffic controlling device is to have on the condition of the railway system.

In view of the above and other considerations, it is proposed in accordance with the present invention to provide a miniature control means for a railway traffic controlling device which may be mounted directly upon a miniature representation of the traffic controlling device controlled thereby, and which is arranged to actuate miniature indicating means typifying operated positions of the actual traffic controlling device. It is further proposed to incorporate an indicator within the control means which is arranged to inform that the control device is actually assuming a position corresponding to that displayed by the control means.

Other objects, purposes and characteristic features of the present invention will appear as the description thereof progresses, during which, references will be made to the accompanying drawings which show the invention in a manner to make it easily understood rather than with the view of showing the particular construction preferably employed in practice, and in which:—

Fig. 1 is a plan view of a form of a control device constructed in accordance with the present invention with parts thereof broken away and sectioned to more clearly show the construction thereof.

Fig. 2 is a diagrammatic showing of simple applications of the control device.

Fig. 3 diagrammatically illustrates the man-

ner in which the control device may be employed in a different arrangement of a railway track.

Fig. 4 diagrammatically illustrates the application of the control device in still another arrangement of a railway track.

As one form of the present invention, it is proposed to construct a push button control device, or that is, a device which sets up one control when pushed a first time and when pushed a second time sets up the opposite control. A point indicator is also essential in this type of control device to indicate the route or the particular control set up by the last actuation thereof.

A simple arrangement of this push button type control device is shown in Fig. 1, and is constructed about a tubular insulating member 22 fixed to a shoulder bushing 23 by screws 24, which bushing 28 may be threaded into the panel P. A tubular actuating member 25 is slidably retained on the tubular member 22 and the operating motion thereof is limited by longitudinal slots 26 therein receiving the screws 24. The actuating member 25 is biased outwardly by a spring 37 retained between an inside annular shoulder in the member 25 and the top of the tubular member 22. A point indicator 27 is also provided having an integral collar 28 rotatable between the actuating member 25 and the bushing 23. Likewise, this point indicator 27 is retained and a slight rotation thereof is permitted by transverse slots 20 therein which receive the screws 24.

The lower end of the insulating member 22 has an integral boss 29 carrying a pivot pin 30, which pin in turn rotatably holds a fork 31. The movable fork 31 is biased from a center position by a toggle arrangement operating on an arm 32 thereof which toggle arrangement comprises a rod 33 having a bifurcated head pivotally attached to the arm 32 by a pin 34, and the lower end is slidable through a pin 35 rotatably attached to the member 22. A compression spring 36 is placed on the rod 33 between the bifurcated head thereof and the pin 35 fixed to the member 22, and obviously is effective to force the lower end of the arm 32 from its center position to effect snap actuation of the fork 31 when operated as later described.

As previously mentioned, an operating mechanism must be provided which will effect the operation of one contact arrangement when the actuating member 25 or push button is depressed a first time, and which will effect the releasing of this contact arrangement and the operation of a different contact arrangement when the same push button is depressed a second time, or

in other words, each actuation of a single push button is to change the condition of control contacts to alternately close first one control circuit and then another.

5 In order to thus operate contact means, the fork 31 is alternately operated to the left and right by successive actuations of the push button or member 25. To effect operation of the fork 31, an arm 39 is pivotally fixed to the actuated member 25 by a pin 40 so that its extreme end rests against the inside surface of the fork 31. The right and left bifurcations of the fork 31 carry flat springs 41 and 42, and with the fork 31 in a position as shown in Fig. 3, the spring 42 engages a rounded extension 43 of the arm 39 in a manner effective to retain the arm 39 in the position shown, or with its extreme end engaging the inside of the fork 31 at a point on the left of the pivot pin 30. The springs 41 and 42 extend beyond, and bear on, the rounded extension 43 of the arm 39 to engage a pin 44 extending from the periphery of the point indicator bushing 28, and with the fork 31 operated to the right as shown, the left spring 42 forces the pin 44 to the right thereby rotating the point indicator 27 attached to the bushing 28 in a counter-clockwise direction as viewed from the front of the panel P.

10 It is now obvious that pressing the actuating member 25 will act through the arm 39 bearing on the left of the fork 31 to effect rotation thereof in a counter-clockwise direction, and when the fork has thus rotated to a point slightly beyond center, the previously described toggle arrangement will act on the arm 32 in a manner tending to cause the fork 31 to move to an extreme left hand position. When the actuating member 25 is released from its depressed position, the spring 37 is effective to return the actuating member 25 to its extreme outer position which obviously allows the fork 31 to complete its movement, or in other words allows the fork to assume a position which is to the left of the center line of the push button on an angle similar to that shown in Fig. 1 but obviously to the left instead of right which will be considered reverse operated position. During rotation of the fork 31 to this left hand position, the spring 41 operates to engage the rounded extension 43 of the arm 39 in a manner to produce counter-clockwise rotation thereof to a position wherein the extreme end of the arm 39 engages the inside surface of the fork 31 at a point to the right of center, or in opposite position to that shown in Fig. 1. The upper portion of the spring 41 is also effective to engage the pin 44 during the reverse operation of the fork 31 in a manner to rotate the point indicator sleeve 28 in a clockwise direction as viewed from the front of the panel thereby changing the position of the point indicator 27 to show that a change in the route over the track switch has been set up by the miniature control device.

65 It will now be obvious that, with the fork 31 thus operated to a left hand position, and with the end of the arm 39 resting against the right hand inside surface of the fork 31, a second depression of the member 25 will operate the fork 31 as well as the arm 39 back to their position as shown in Fig. 1 and likewise the point indicator 27 will be operative counterclockwise to its original position.

70 A simple contact arrangement is shown in Fig. 1 as a spring contact 46 forced into engagement

with an associated spring contact 47 when the fork 31 is in the right hand position shown, and a similar opposite pair of contacts 48 and 49 are engaged by the fork 31 when operated to its left extreme position. The spring contacts are held in line with the fork 31 by through bolts 50 passing through a boss extending from the side of the tubular member 22 and held by nuts 51. The spring contacts are separated from each other by insulating spacers 52 and from the body of the bolts 50 by any conventional means, such as tubular bushings not shown.

A miniature lamp L is held within the tubular insulating member 22 by a spring clip 53 and a similar opposite clip not shown, of any usual construction, which clips are in turn retained within the tubular member 22 by an insulating plug or any other means to rigidly hold the outer ends of the clips 53. The top of the actuating member 25 is closed by a lens 54 which may be moulded therein thus obviously permitting the emission of light from the lamp L when energized.

A miniature control device suitable for mounting directly on a panel having thereon a miniature representation of the layout of the railway system has thus been provided which may be of the push button type, and is arranged to shift the arrangement of routes on the miniature track layout in a manner to make the existing conditions of the railway system always visible to the operator. An indicator light is provided within the miniature control device which may be controlled to inform the operator concerning the correspondence between the operated position of the actual track switch and the position displayed by the indicator operated by the miniature control device associated with the switch. Having thus described a miniature control device it is believed expedient to lend further description to the applications of the device to a few typical arrangements of track switches which it may control.

In Fig. 2, a section of an actual railway system is shown which includes a track switch TS¹ power operated by a switch machine SM¹ to route traffic either on a straight through main track or onto a diverging route which may be an entrance to a passing siding, and also includes track switches TS² and TS³ which may be aligned by operation of the respective switch machines SM² and SM³ to route traffic on a cross-over movement between the main track and the passing siding. A control panel P¹ is marked in any convenient manner to simulate in miniature this section of the railway system and a miniature control device C¹ is arranged at the junction of the two tracks to electrically control the switch machine SM¹ by any of the conventional control circuits which are well known and consequently have herein been merely indicated by the dotted line 54. A point indicator I¹ is shifted by operation of the miniature control device C¹ in the manner previously described to indicate the routes set up by the operation of the control device C¹, and the indicating lamp described as being within the control device C¹ is effective by any well known correspondence control circuit to indicate when the position of the track switch TS¹ corresponds to the position of the point indicator I¹.

A second miniature control device C² is arranged in the cross over between the passing siding and the main track and governs the operation of both switch machines SM² and SM³ as indicated by the dotted line 55. A double point indicator I² and I³ is provided on the control de-

vice C², and obviously when the control device is operated to reverse the track switches TS² and TS³, the point indicators I² and I³ are rotated counter-clockwise to indicate that the cross-over route is aligned.

In Fig. 3, a means is shown for governing the alinement of a route diverging from one track and crossing a second track, which route includes a movable point frog MF¹ and a track switch TS⁵, the movable point frog MF¹ being operated in a conventional manner by one switch machine SM⁴ through a center pivoted lever 56 with a second switch machine SM⁵ arranged to operate the track switch TS⁵. Both switch machines SM⁴ and SM⁵ are controlled by a single miniature control device C³ as designated by the dotted line 62, and this control device is arranged on a panel P² having a miniature representation of the track layout marked thereon with a concentric point indicator I⁴ operated in the manner previously described directly from the control device C³.

Two auxiliary point indicators I⁵ and I⁶ must be provided in this case which are not concentric with the control device C³. These auxiliary indicator points I⁵ and I⁶ are operated by connections behind the panel P² and consequently the means for effecting this operation have been shown dotted in the accompanying drawings. An arm 57 is to be attached to the control device C³ so as to rotate with the point indicator I⁴ and this arm 57 is connected to one end of the center pivoted lever 58 with the other end of the lever 58 connected to an arm 59 arranged to rotate the indicator point I⁵ about a pivot shaft 60. It is obvious that the point indicator I⁶ is rotated in a similar manner from the arm 57 through the medium of an associated center pivoted lever 61 so that when the point indicator I⁴ is rotated counter-clockwise by reversing the control device C³ both the point indicators I⁵ and I⁶ are likewise to be rotated in a counter-clockwise direction to thereby indicate the alinement of a crossing route.

A means for controlling a conventionally arranged double slip switch having movable point frogs has been diagrammatically shown in Fig. 4. In this arrangement a switch machine SM⁶ is employed to operate the left hand switch points, a second switch machine SM⁷ is employed to operate the right hand points, and a third switch machine SM⁸ operates the movable point frogs through a center pivoted lever 65. The track layout of this switch arrangement is marked on a miniature control panel P³, but because of the complex layout of this arrangement, it is considered advisable to mount the miniature control devices C⁴, C⁵ and C⁶ beneath the track layout instead of directly in the track itself.

Six point indicators are necessary to indicate the alinement of the various routes, and these may be operably connected to their associated miniature control devices by suitable means in the rear of the panel which have herein been diagrammatically indicated by dotted lines. The point indicators I⁷ and I⁸ may be operably connected through their respective arms 66 and 67 to the arm 68 of the miniature control device C⁴, and the point indicators I¹¹ and I¹² may be operated in a similar manner through their respective arms 69 and 70 which are interconnected with an arm 71 of the control device C⁶. The point indicator I⁹ may be operated by connecting its arm 72 to an arm 73 of the control device C⁵, and relatively reverse operation of the point in-

dicator I¹⁰ is obtained by connecting its arm 74 to an opposite arm 75 on the same control device C⁵.

It is obvious that, with the control devices in the position shown in Fig. 4, a route is set up on the panel P³ connecting the miniature track 78 with track 79, and it may be seen that a movement of the control device C⁴ in a counter-clockwise direction will operate the point indicator I⁷ to a position aligning a route from track 78 to track 80, and in a similar manner a movement of the control device C⁵ in a counter-clockwise direction will actuate the point indicator I¹² to align a route from track 79 to track 81. In a similar manner it will be obvious that a counter-clockwise movement of the control devices C⁴ and C⁶ and a counter-clockwise movement of the control device C⁵ will align a route on the miniature track diagram of the control panel from track 80 to track 81.

It will be obvious from the above typical arrangements of tracks and switches that substantially any layout of a railway system may be completely controlled by miniature control devices arranged to govern each switch or associated switches. The complete layout of such a system may be marked a single control panel of comparatively small dimensions with the miniature control devices mounted thereon so as to be easily manipulated by an operator and yet which may be readily associated with the function which they perform.

The above rather specific description of one form of the present invention is given solely by the way of example, and is not intended, in any manner whatsoever, in a limiting sense. It is also to be understood that various modifications, adaptations, and alterations may be applied to meet the requirements of practice, without in any manner departing from the spirit or scope of the present invention, except as limited by the appended claims.

Having thus described my invention, what I claim is:—

1. In combination, a railway track switch, a control panel having a miniature representation of said track switch marked thereon, a miniature switch point pivotably arranged on said control panel to indicate the alinement of routes over the representation of the track switch, a push button operable in concentric relation to said miniature switch point, a contact operating member operable to two distinct positions, means for changing the position of said contact operating member upon each actuation of said push button, and means operating said miniature switch point in accordance with the position of said contact operating member.

2. In combination, a railway track switch, a control panel having a miniature representation of said track switch marked thereon, a miniature switch point pivotably arranged on said control panel to indicate the alinement of routes over the representation of the track switch, a hollow push button operable in concentric relation to said miniature switch point, an indicating lamp within said push button, a contact operating member operable to two distinct positions, means for changing the position of said contact operating member upon each actuation of said push button, and means operating said miniature switch point in accordance with the position of said contact operating member.