

June 15, 1937.

S. N. WIGHT

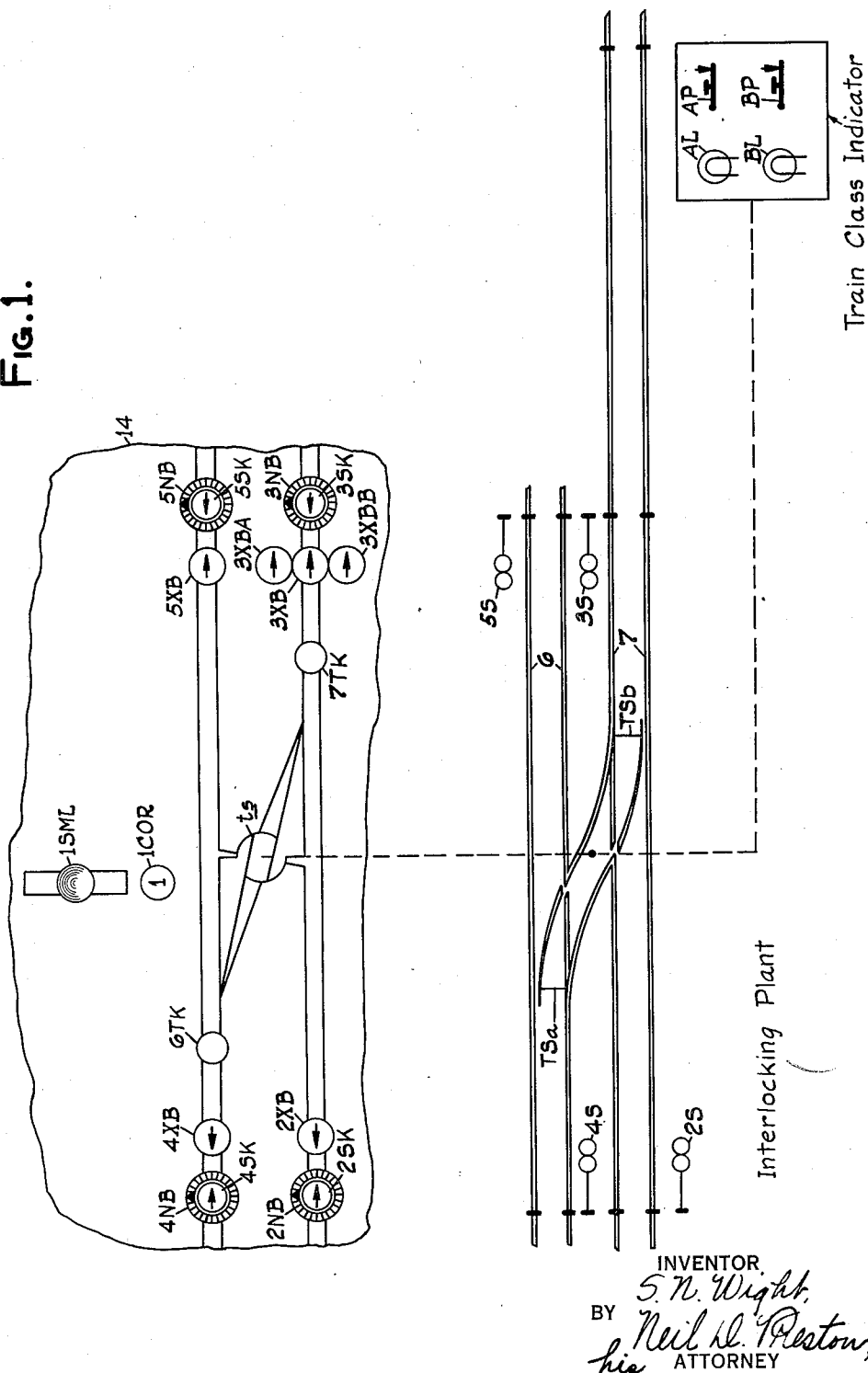
2,084,302

TRAIN DESCRIBER SYSTEM

Filed Oct. 15, 1936

3 Sheets-Sheet 1

FIG. 1.



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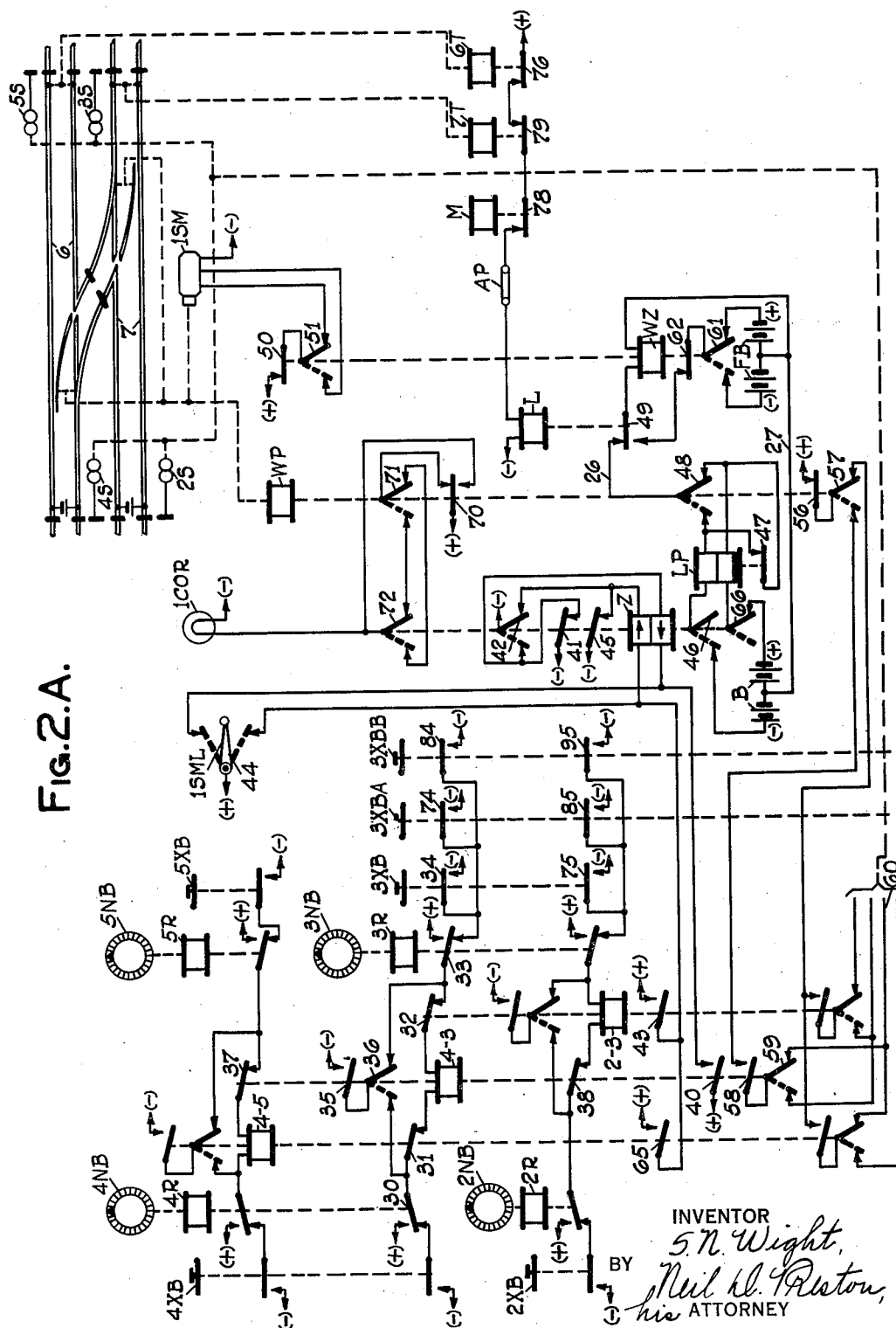
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Fig. 2.B.

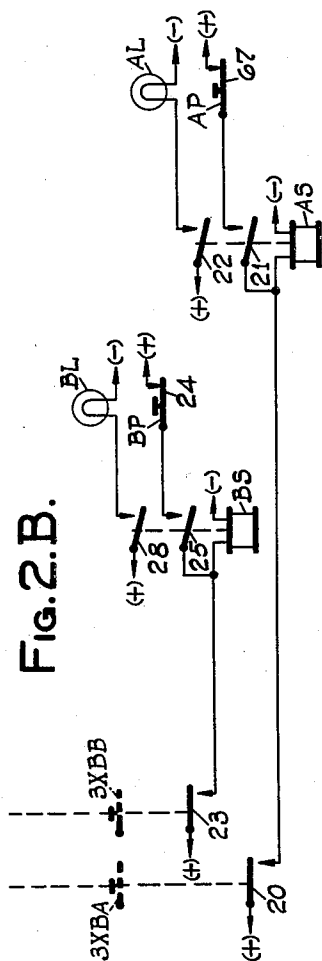
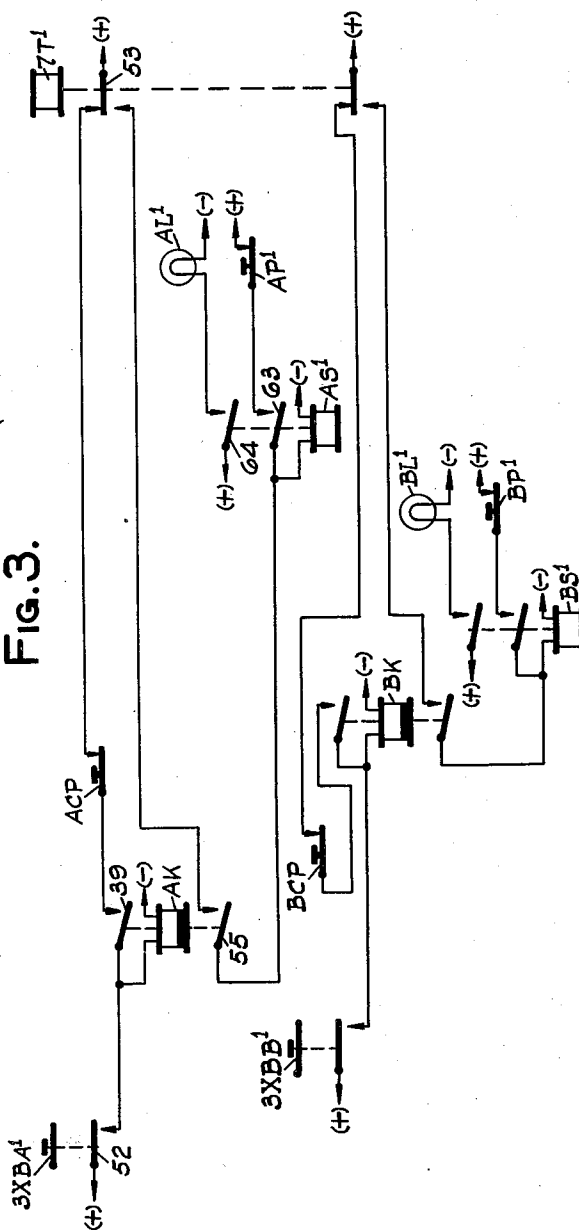


FIG. 3.



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UNITED STATES PATENT OFFICE

2,084,302

TRAIN DESCRIBER SYSTEM

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Application October 15, 1936, Serial No. 105,733

9 Claims. (Cl. 246—3)

This invention relates to centralized traffic controlling systems for railroads and it more particularly pertains to the identification of trains in the so-called entrance-exit or NX type of interlocking system.

The present invention relates to the application of a train describer system in a system of the entrance-exit route type interlocking system, disclosed in my prior application Ser. No. 69,905 filed March 20, 1936.

The organization of an entrance-exit or NX type system to which the train describer feature of the present invention is applied, contemplates a miniature track diagram associated with an interlocking plant, which track diagram corresponds to the actual track layout in the field. This track diagram has initiating or entrance buttons at each of the route determining points and completion or exit buttons for each of the points to which traffic may go. In other words, for each signal location there is an entrance button, which button requires the cooperation of an exit button for the end of a proposed route in order to establish movement of traffic in a particular direction over a particular track route.

In accordance with the present invention a plurality of auxiliary buttons are associated with certain of the exit buttons, which when actuated complete the setting up of the route in the same way as the regular exit button, and, in addition, condition circuits for transmitting indications relating to the classes of trains traversing the route.

An important feature of the present invention relates to the cooperation of the circuits controlled by the entrance-exit buttons with the auxiliary buttons in such a way that a single manual operation for the completion of each route is effective to not only complete the desired route, but also transmits indications relating to the destination or identification of trains traversing the route.

Other objects, purposes and characteristic features of the present invention will be in part obvious from the accompanying drawings and in part pointed out as the description thereof progresses.

In describing the invention in detail, reference will be made to the accompanying drawings, in which like reference characters designate the same parts in the several views and in which like letters in the reference characters designate similar functions and in which like preceding numerals associated with the reference characters, when applied to different letter

characters, represent the inclusion of such device within a particular group; and in which:—

Fig. 1 illustrates the layout of a system including a track diagram and the associated track layout in an interlocking plant, in which one route leads to a distant location at which the train describer or train class indicator is located.

Figs. 2A and 2B (with Fig. 2A placed above Fig. 2B), illustrate the detailed circuit arrangement for setting up routes in the entrance-exit type system to which the present invention is applicable, and furthermore indicate the control of the train describer lamps at the distant location.

Fig. 3 shows a modification of the control of the train describer apparatus.

For the purpose of simplifying the illustrations and facilitating in the explanation, various parts and circuits constituting the embodiment of the invention have been shown diagrammatically and certain conventional illustrations have been employed. The various relays and their contacts are illustrated in a conventional manner, with symbols employed to indicate connections to the terminals of batteries or other suitable sources of current, instead of showing all of the wiring connections to such terminals.

Certain contacts of exit buttons 3XBA and 3XBB are shown in Fig. 2B, the dotted lines connecting Figs. 2A and 2B indicating the buttons with which these contacts are associated. Symbols (+) and (—) are employed to indicate the positive and negative terminals respectively of suitable batteries or other source of current, with current presumed to flow from terminal (+) to terminal (—).

Track layout of Fig. 1.—In the accompanying drawings, the invention has been shown applied to a track layout including a stretch of double track connected by a cross-over having switches Tsa and TSb. For convenience the cross-over has been indicated as operated by a single switch machine 1SM (see Fig. 2A), although two such switch machines may be used and they may be of any suitable type, such, for example, as disclosed in the patent to W. K. Howe No. 1,466,903 dated September 4, 1923. It will be understood that the invention is not limited to the particular layout disclosed, since it may be applied to any track layout found in practice.

The track layout includes a main line track having rails 6 which are divided into track circuits by the usual insulated joints and including the usual track battery and a track relay 6T.

Another main line track includes track rails 7 which are likewise divided into track circuits by the usual insulated joints and has the usual track battery and a track relay 7T. The cross-over is connected to the main tracks by suitable bonds, so as to be partly included in the track circuit for rails 9 and partly included in the track circuit for rails 7, in such a manner that one or the other or both of the track relays will be de-energized when the cross-over is occupied.

Signal 2S provides means for governing east-bound traffic over the rails 7, while signal 3S provides for governing west-bound traffic over rails 7 as well as over the cross-over. Signal 4S provides means for governing east-bound traffic over rails 6 and over the cross-over, while signal 5S provides for governing west-bound traffic over rails 6. Although signals 3S and 4S are shown as governing both main line and cross-over traffic, it is to be understood that separate signals may be employed if desired.

The track, including rails 7, is illustrated as extending to a distant point, at which the train class indicator is located and in the following description it will be assumed, as a typical example, that trains traversing a route over the lower track rails 7, completed by the operation of exit button 3XB, will not be indicated on the train class indicator. Trains traversing this route when completed by the operation of button 3XBA will be announced at the distant point by the actuation of the indicator lamp AL. Trains traversing this route when completed by the actuation of buttons 3XBB will be indicated at the distant point by the actuation of lamp BL.

The cross-over illustrated in Fig. 2A and the switch machine 1SM, which controls the switches of this cross-over, preferably have associated therewith a point detector contact mechanism, such as shown, for example, in the patent to C. S. Bushnell No. 1,517,236, dated November 25, 1924. The contacts of this mechanism (not shown) are provided to control a switch position indicating relay WP of the usual polar neutral type, so that relay WP is energized with one polarity or the other for positioning its polar contacts to one position or the other when the track switch is in normal or reverse locked positions in correspondence with switch machine 1SM. Relay WP is de-energized whenever the cross-over track switches are unlocked or in operation either by the switch machine 1SM or by hand.

Control panel of Fig. 1.—In the central office a control machine includes a control panel provided with suitable control buttons and indicators, including entrance buttons 2NB, 3NB, 4NB and 5NB, which buttons are in positions corresponding to their respective signals, as indicated by the preceding numerals. Located at the center of these buttons are suitable indicators 2SK, 3SK, 4SK and 5SK which have arrows located on their lenses for indicating the direction which the corresponding signals govern. These indicators are illuminated when their corresponding signals are cleared, in a manner which has been specifically shown in my above-mentioned prior application Ser. No. 69,905. Since the control of these indicators is immaterial to an understanding of the present invention, it is only necessary to know that when an entrance button is rotated its corresponding repeating relay is picked up.

The exit buttons XB are of the self-restoring push button type and have arrows located thereon which indicate the direction of traffic which they govern. The actuation of an exit button closes

contacts for completing the circuits for route relays shown specifically in Fig. 2A.

The condition of track occupancy is indicated on the control panel by indicators 6TK and 7TK, which are suitably controlled by their corresponding track relays (6T and 7T of Fig. 2A), all of which has been omitted from the present disclosure for the sake of simplicity.

Above the portion of the miniature track diagram representative of the cross-over, is located a switch control lever 1SML and a correspondence lamp or indicator 1COR. The switch control lever and the correspondence indicator are used more particularly under emergency conditions and may be placed at some other location if desired.

Miniature switch points *ts* associated with the upper and lower track diagram are provided for indicating the positions of the associated track switches and are under the control of suitable correspondence circuits which are not shown, since this feature of the system is not related in any way to the present invention.

Control circuits Figs. 2A and 2B.—Associated with the entrance and exit buttons NB and XB respectively, are suitable route relays of the polar neutral type such as relays 4—5, 4—3 and 2—3. These route relays are controlled in a manner more specifically pointed out later in the specification and also described in detail in my above-mentioned application Ser. No. 69,905, for effecting the control of the cross-over through the medium of a switch control relay Z of the polar neutral type and a lock repeating relay LP of the neutral slow releasing type, which relays are assumed to be located in the office or tower.

The control of the track switch is transmitted over a line wire 26 and a common return wire 27, to which the switch control relay WZ is connected, for locally controlling switch machine 1SM. A lock relay L is provided at the field station and is controlled through a signal at stop relay M and track relays 6T and 7T, as well as by means of suitable approach locking indicated by jumper AP, it being understood that the usual approach and release locking may be inserted where this jumper is indicated without departing from the scope of the present invention.

Although the switch position repeating relay WP is usually located at the field station and a repeater is provided in the control office, for the sake of simplicity only the WP relay located in the control office is shown, since suitable control may be provided to accomplish the operation of the WP relay in the office in any desired manner.

Since it is assumed that the train describer feature of the present invention is operable by completing the setting up of a route by the operation of an exit button, two auxiliary exit buttons 3XBA and 3XBB have been provided for completing such a route and for transmitting the train identification to the remote point. Train identification relays AS and BS are operated in response to the actuation of exit buttons 3XBA and 3XBB respectively for lighting train identification lamps AL and BL, respectively. A train identification lamp remains lighted, when once lighted, until the operator at the distant location operates an associated cancelling button AP for lamp AL or BP for lamp BL.

In the Fig. 3 modification, buttons AP¹ and BP¹ correspond to buttons AP and BP respectively, of Fig. 2B. Lamps AL¹ and BL¹ correspond to lamps AL and BL of Fig. 2B, track relay 7T¹ corresponds to relays 7T of Fig. 2A. Slow acting re-

lays AK and BK are picked up by the actuation of exit buttons 3XBA¹ and 3XBB¹, which buttons correspond to buttons 3XBA and 3XBB, respectively, of Fig. 2A. Relays AK and BK control the operation of relays AS¹ and BS¹, the latter corresponding to relays AS and BS of Fig. 2B.

The operation of Fig. 3 differs from the operation disclosed in Figs. 2A and 2B, in that the actuation of a train indicator exit button is stored by the picking up of the associated slow acting relay (AK or BK). Then the lamp control relay is picked up for lighting the lamp when the track circuit is occupied, after which the lighted lamp is extinguished by the operation of the associated cancelling button. The purpose of Fig. 3 modification is to permit the operator to cancel a train identification in the event that a wrong exit button is operated. This cancellation can be effected any time up to the occupancy of the track section by a train and the consequent picking up of the AS¹ or BS¹ relay by the dropping of one or the other of the track relays.

Although the present invention is only disclosed for identifying two different types of trains, A trains or B trains, it will be apparent that provision can be made for identifying any desired number of trains by increasing the number of auxiliary exit buttons associated with the button which completes the setting up of the route over which the identified trains are to pass.

It is believed that the characteristic features of the present invention will be best understood by further description being given from the standpoint of operation.

Operation

Setting-up a route.—It will be assumed that the operator desires to set up a route over the cross-over from signal 4S to signal 3S and on through the interlocking plant, with no train identification being effected. To do this, he rotates entrance button 4NB in a clock-wise direction until the pointer on this button agrees with the position of the arrow on signal indicator 4SK. Then knowing that no route is set up over the cross-over (because the route indicators are not illuminated), he actuates exit button 3XB.

The actuation of entrance button 4NB picks up relay 4R (see Fig. 2A) and with button 3XB actuated, a circuit is closed for route relay 4—3, extending from (+), front contact 30 of relay 4R, back contact 31 of relay 4—5, winding of relay 4—3, back contact 32 of relay 2—3, back contact 33 of relay 3R, and contact 34 of exit button 3XB to (—). The current flowing in this circuit actuates the polar contacts of relay 4—3 to the right and picks up the neutral contacts for completing a stick circuit for relay 4—3, which circuit includes front contact 35 of relay 4—3 and polar contact 36 of relay 4—3 in a right-hand position, this circuit being independent of contact 34 of button 3XB, which contact is only momentarily closed, since the button is of the self-restoring type.

The energization of relay 4—3 opens the pick-up circuit of relay 4—5 at back contact 37 and the pick-up circuit for relay 2—3 at back contact 38, for the purpose of interlocking these relays so that no conflicting route can be set up.

Relay 4—3 closes an energizing circuit for relay Z extending from (+), front contact 40 of relay 4—3, lower winding of relay Z, and back contact 41 of relay Z to (—). The current flowing in this circuit causes the polar contacts of relay

Z to be actuated to the left and the neutral contacts to be picked up. Since the polar contacts of such a relay respond before the neutral contacts, polar contact 42 applies (—) in its left-hand dotted position to the lower winding of relay Z before contact 41 removes (—) from this winding.

The opening of the back neutral contacts of relay Z prevents further operation of this relay, either by the route relays or by the emergency switch control lever 1SML. For example, the closure of front contact 43 of relay 2—3 or contact 44 of lever 1SML in its lower dotted line position applies (+) to the left-hand terminal of the upper winding of relay Z, but this is ineffective to energize the relay because of open back contact 45 and because contact 42 is not closed in its right-hand position.

The actuation of the polar contacts of relay Z to the left closes a circuit from the negative terminal of battery B, contact 46 of relay Z in its left-hand dotted position, through the upper winding of relay LP, front contact 47 of relay LP, contact 48 of relay WP in its right-hand position, line conductor 26, front contact 49 of relay L and winding of relay WZ to the mid-tap of battery B over return conductor 27. Current flowing in this circuit causes the polar contacts of relay WZ to be actuated to the left for applying (+), through front contact 50 of relay WZ, polar contact 51 of relay WZ in its left-hand dotted position, to the reverse operating circuit for switch machine 1SM, which causes switch machine 1SM to actuate the cross-over track switches to reverse locked positions.

The operation of the cross-over track switches to reverse positions causes the operation of the polar contacts of relay WP to left-hand positions, followed by the picking up of the neutral contacts of this relay. A circuit is now closed for clearing signal 4S extending from (+), front contact 56 of relay WP, polar contact 57 of relay WP in a left-hand dotted position, front contact 58 of relay 4—3, contact 59 of relay 4—3 in its right-hand position, conductor 60 and through the various selections necessary to clear signals 4S, as indicated by the dotted line.

The clearing of signal 4S causes the deenergization of relay M which, by means of open front contact 70, effects the deenergization of relay L. A stick circuit is now closed for relay WZ extending from the (—) terminal of field battery FB, contact 61 of relay WZ in its left-hand dotted position, front contact 62 of relay WZ, back contact 49 of relay L and winding of relay WZ to the mid-tap of battery FB. This circuit maintains relay WZ energized even though its control from the central office is prevented.

The opening of front contact 49 deenergizes relay LP and therefore as soon as signal 4S goes to stop and such condition is indicated to the operator by signal indicator 4SK, he can return the entrance button 4NB to normal, which deenergizes relays 4R, 4—3 and Z. However, relay LP remains deenergized because relay L does not pick up and close front contact 49 until the train has passed beyond both track sections 6 and 7.

The occupancy of track sections 6 and 7 is indicated to the operator by indicators 6TK and 7TK controlled by relays 6T and 7T, although such control has not been shown. Furthermore, the miniature switch points *ts* and indicator 4SK indicate to the operator what route is being set up and when it has reached a locked condition. Lock lamps are also provided (not shown), which

correspond to the associated switch points illustrated in Fig. 2A. The control of these lock lamps is not material to an understanding of the present invention, but it will be understood that they are illuminated whenever the crossover is locked against operation or is being controlled to a new position.

As soon as the train passes beyond section 7 and lock relay L is energized, lock repeater relay LP is picked up for restoring the control of switch control relay WZ to the circuit including polar contacts 45 and 66 of relay Z, this latter relay being deenergized upon the restoration of entrance button 4NB to its normal position because of open front contact 40 of relay 4—3.

The provision of relay LP in the circuit including its front contact 47, cooperating with contact 48 of relay WP, is for the purpose of providing the electric lock equivalent feature and requires correspondence between the positions of the polar contacts of relay Z and the polar contacts of relay WP in order for relay LP to be energized. The function of this electric lock equivalent feature will not be explained in detail, since this feature has been disclosed in my prior application Ser. No. 69,905.

It is believed that it will be readily understood by analogy to the above description, how a route can be cleared from signal 4S to signal 5S, or in the reverse direction, or how various other similar routes can be set up. The operation of the entrance-exit buttons accomplishes the energization of one of the route relays 4—5, 4—3 or 2—3 with one polarity or the other depending upon the particular route and direction in such route to be established. Since the train identification feature of the present invention (later described) is applied to the exit end of a route, for example the one previously described, it is believed unnecessary to point out the control of other routes under such conditions.

Individual control of the track switch.—The operation of the emergency switch control machine lever ISML to its upper dotted line position closes contact 44 for energizing the lower winding of relay Z, in the same manner in which this relay was energized by the closure of front contact 40 of relay 4—3 as previously described. The closure of contact 44 in its lower dotted line position energizes the upper winding of relay Z, and since the two windings of relay Z are wound in opposite directions the energization of its upper winding actuates its polar contacts to the right, in the same manner that the closure of front contact 65 of relay 4—5 or front contact 43 of relay 2—3, which relays are energized for setting up routes 4—5 and 2—3, respectively. It is apparent that the operation of lever ISML to a position contrary to the position determined by a particular route relay already picked up, will not cause the energization of the relay Z in the opposite direction, because both neutral contacts 41 and 45 are open and because polar contact 42 is not in position for allowing such opposite energization.

A correspondence indication is provided for the purpose of indicating whether or not the switch control relay Z is in correspondence with the track switch under such conditions as require the operation of lever ISML. This correspondence indicator ICOR is energized when the track switch is unlocked, as indicated by the deenergization of relay WP and the consequent closure of back contact 70. When relay Z is out of correspondence with the locked position of

the track switch, as indicated by relay WP, a circuit is closed for indicator ICOR extending from (+), front contact 70 of relay WP, polar contact 71 of relay WP in a normal position, polar contact 72 of relay Z in a reverse position and indicator ICOR to (—). Similarly, this circuit is completed with relay WP having its contact 71 in a reverse position and relay Z having its contact 72 in a normal position.

Although the detailed circuits effective for clearing routes other than those above described will not be pointed out, it is believed desirable to point out the control of the route relays under such conditions.

Assuming that route relay 4—5 is picked up to establish a route over the main track 6 either from signal 4S to signal 5S, or in the reverse direction, then relay Z is energized to its normal position by reason of the closure of front contact 65 of relay 4—5.

If route relay 2—3 is picked up to establish a route over the main track 7 either from signal 2S to signal 3S, or in the opposite direction, then relay Z is energized to a normal position by reason of the closure of front contact 43 of relay 2—3.

Train identification.—It has been explained in detail how the operator completes a route for a train (identification not effected), from signal 4S to signal 3S by operating completion button 3XB. It will now be assumed that he wishes to complete a route either from signal 4S or 2S to signal 3S. In this case it will be assumed that he wishes to announce that the train is of a particular class, for example, an A class train and consequently instead of operating completion button 3XB he will operate completion button 3XBA.

The operation of button 3XBA effects the setting up of the route by way of the lower track section in exactly the same manner as described in connection with the operation of button 3XB, since contacts 74 of button 3XBA are in multiple with contacts 34 of button 3XB. The operation of button 3XBA furthermore closes a circuit for picking up relay AS which extends from (+), contact 20 of button 3XBA and winding of relay AS to (—). The operation of relay AS closes a stick circuit for itself extending from (+), normally closed contact 67 of cancelling button AP, front contact 21 and winding of relay AS to (—). The picking up of relay AS closes an obvious circuit at front contact 22 for lighting lamp AL, which gives an indication of the class of the train approaching the remote point. Relay AS then remains in its energized condition until the operator at the remote point actuates button AP, for deenergizing relay AS and extinguishing lamp AL.

In the event that this is a class B train, then button 3XBB is actuated to complete the NX route in the same manner as if he had used completion button 3XB, because contact 84 of button 3XBB is in multiple with contact 34 of button 3XB. The operation of button 3XBB closes an obvious pick-up circuit for relay BS at contact 23 and relay BS sticks up over a circuit including normally closed contact 24 of cancelling button BP and front contact 25 of relay BS. The operation of relay BS closes an obvious circuit for lamp BL at front contact 28. The lighting of lamp BL is an indication to the operator at the distant location that the train is a B class train. This indication is maintained until the

operator actuates button BP for deenergizing relay BS.

From the above explanation it will be apparent that the actuation of exit button 3XB in combination with entrance button 2NB, completes the circuit for relay 2—3 at contact 75. Furthermore, since contacts 85 and 86 of buttons 3XBA and 3XBB are in multiple with contact 75, the actuation of either of these auxiliary buttons completes the route circuit and in addition controls the operation of the indication as before.

Fig. 3 modification.—The modification disclosed in Fig. 3 uses auxiliary completion buttons 3XBA¹ and 3XBB¹, which correspond to buttons 3XBA and 3XBB of the disclosure of Figs. 2A and 2B.

In this modified arrangement, the actuation of button 3XBA¹ to announce an A train does not immediately pick up relay AS¹ (corresponding to relay AS of Fig. 2B), but it does pick up relay AK by an obvious circuit closed at contact 52. Relay AK closes a stick circuit for itself extending from (+), front contact 53 of track relay 7T¹ (corresponding to relay 7T of Fig. 2A), normally closed contact of button ACP, front contact 39 and winding of relay AK to (—). Therefore, relay AK will remain picked up as long as the track relay is energized and push button ACP is in its normal position.

When the train passes onto the track section with which relay 7T¹ is associated, the dropping of this relay closes a circuit for picking up relay AS¹, extending from (+), back contact 53 of relay 7T¹, front contact 55 of relay AK and winding of relay AS¹ to (—). The operation of relay AS¹ closes a stick circuit for itself including the normally closed contact of button AP¹, front contact 63 and winding of relay AS¹ to (—). The closure of front contact 64 of relay AS¹ lights lamp AL¹ to give the operator the information that the train is an A class train.

Relay AK is a stick relay of the slow releasing type, so that it will be energized in response to the momentary actuation of button 3XBA¹, and remain energized long enough after relay 7T¹ drops to permit relay AS¹ to pick up. Relay AK drops to its normally deenergized position shortly after track relay 7T¹ is deenergized.

The purpose of button ACP is to permit the operator to cancel a train identification in the event that an error is made by actuating the wrong completion button. It will be observed that this cancellation can be effected providing the error is noticed and corrected before the train passes onto the track section and drops relay 7T¹, since relay AS¹ is not picked up for lighting lamp AL¹ until this section becomes occupied.

It is not believed necessary to point out the circuits for and explain the operation of completion button 3XBB¹ in detail, since this circuit organization functions in a manner exactly the same as that explained in connection with button 3XBA¹.

It will be appreciated that considerable advantage is effected by this invention, whereby one act on the part of the operator serves both to complete the NX route and announce the identity of the train for which the route has been set up. If he were required to perform two acts, it would increase the manual effort required and furthermore would increase the likelihood of his failure to transmit the identity of the train.

Having thus described a centralized traffic controlling system for railroads as one specific embodiment and one modification thereof, it is 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 invention except as limited by the appended claims.

What I claim is:—

1. In an interlocking system for railroads, a plurality of routes through a track layout, an entrance button for each entrance to said routes, a plurality of exit buttons for the common exit of said routes, means responsive to the joint operation of an entrance button and any one of said common exit buttons for clearing a particular one of said routes, and means responsive to the particular one of said common exit buttons which is operated for indicating the class of train traversing said particular route.

2. In an interlocking system for railroads, a track layout comprising a plurality of routes having a common exit, entrance buttons for the entrances for said routes, a plurality of exit buttons for said common exit, means for setting up a route in response to the joint operation of the entrance button for that route and any one of said common exit buttons, and a plurality of indicators selectively activated in accordance with the common exit button operated.

3. In a railway signalling system, a first location in said system comprising an interlocking plant with a plurality of routes each having its individual entrance and having a common exit, a second location in said system at which trains of different classes arrive from said first location, an entrance button at said first location for each of said entrances, a first exit button and a second exit button for said common exit, means for setting up a route in response to the joint operation of the entrance button for that route and either said first exit button or said second exit button, a first indication relay operated by said first exit button, a second indication relay operated by said second exit button, and means controlled by said first and said second indication relays for controlling first and second indicators respectively to indicate the precursory arrival of trains of first and second classes.

4. In a railway signalling system, a first location in said system comprising an interlocking plant with a plurality of routes having entrance points and a common exit point, a second location in said system at which trains of different classes arrive from said first location, an entrance button at said first location for each of said entrance points, a first exit button and a second exit button at said first location for said common exit point, means for setting up any one of a plurality of routes in response to the joint operation of the entrance button for any one of said plurality of routes and either said first exit button or said second exit button, a first indication relay at said second location operated by said first exit button, a second indication relay at said second location operated by said second exit button, and means controlled by said first and said second indication relays for controlling first and second indicators respectively to indicate the precursory arrival of trains of first and second classes at said second location.

5. In a railway signalling system, a first location in said system comprising an interlocking plant with a plurality of routes having entrance points and a common exit point, a second location in said system at which trains of different classes arrive from said first location, an entrance button at said first location for each of said en-

trance points, a first exit button and a second exit button at said first location for said common exit point, means for setting up any one of a plurality of routes in response to the joint operation of the entrance button for any one of said plurality of routes and either said first exit button or said second exit button, a first indication relay at said second location operated by said first exit button, a second indication relay at said second location operated by said second exit button, means controlled by said first and said second indication relays for controlling first and second indicators respectively to indicate the precursory arrival of trains of first and second classes at said second location, manually controlled push buttons associated with said indication relays, and means for maintaining said indication relays operated when once operated until released by said manually controlled push buttons.

6. In a railway signalling system; a first location in said system comprising an interlocking plant with a plurality of entrances and having a common exit; a second location in said system at which trains of different classes arrive from said first location; an entrance button at said first location for each of said entrances; a first exit button and a second exit button at said first location for said common exit; means for setting up a route in response to the joint operation of the entrance button for that route and either said first exit button or said second exit button; a first indication relay at said second location having its circuit prepared by said first exit button; a second indication relay at said second location having its circuit prepared by said second exit button; train controlled means for completing said prepared circuits, whereby said indication relays are operated; and means controlled by the operation of said indication relays for controlling visual indicators to indicate the precursory arrival of trains of first and second classes at said second location.

7. In an interlocking system for railroads, a track layout having a plurality of routes, some of said routes having common ends, manually operable control means for each of said route ends, means responsive to the operation of said manually operable control means for the opposite ends of a route to set up and clear that route, and means controlled by the operation of said manually operable control means at the leaving end of such route to indicate at a distant point expected arrival of a train.

8. In an interlocking system for railroads, a track layout having a plurality of routes, some of said routes having common ends, manually operable control means for each of said route ends, certain said control means having distinctive operated conditions, means responsive to the operation of said manually operable control means for the entrance end of a route and the distinctive operation of said manually operable control means for the leaving end of such route to set up and clear that route, and means controlled by the distinctive operation of said manually operable control means at the leaving end of such route to indicate at a distant point expected arrival of a particular distinctive class of train.

9. In an interlocking system of the entrance-exit type; the combination with a track layout for establishing a plurality of routes, some of which routes have common entrance points and some of which routes have common exit points, a plurality of control buttons for each entrance-exit point, means responsive to the joint operation of a button for an entrance point and a particular button of the plurality of buttons for an exit point for establishing a route connecting corresponding points, a plurality of indicators one for each button for such exit point, and means for rendering active that indicator corresponding to the particular button operated at said exit point.

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