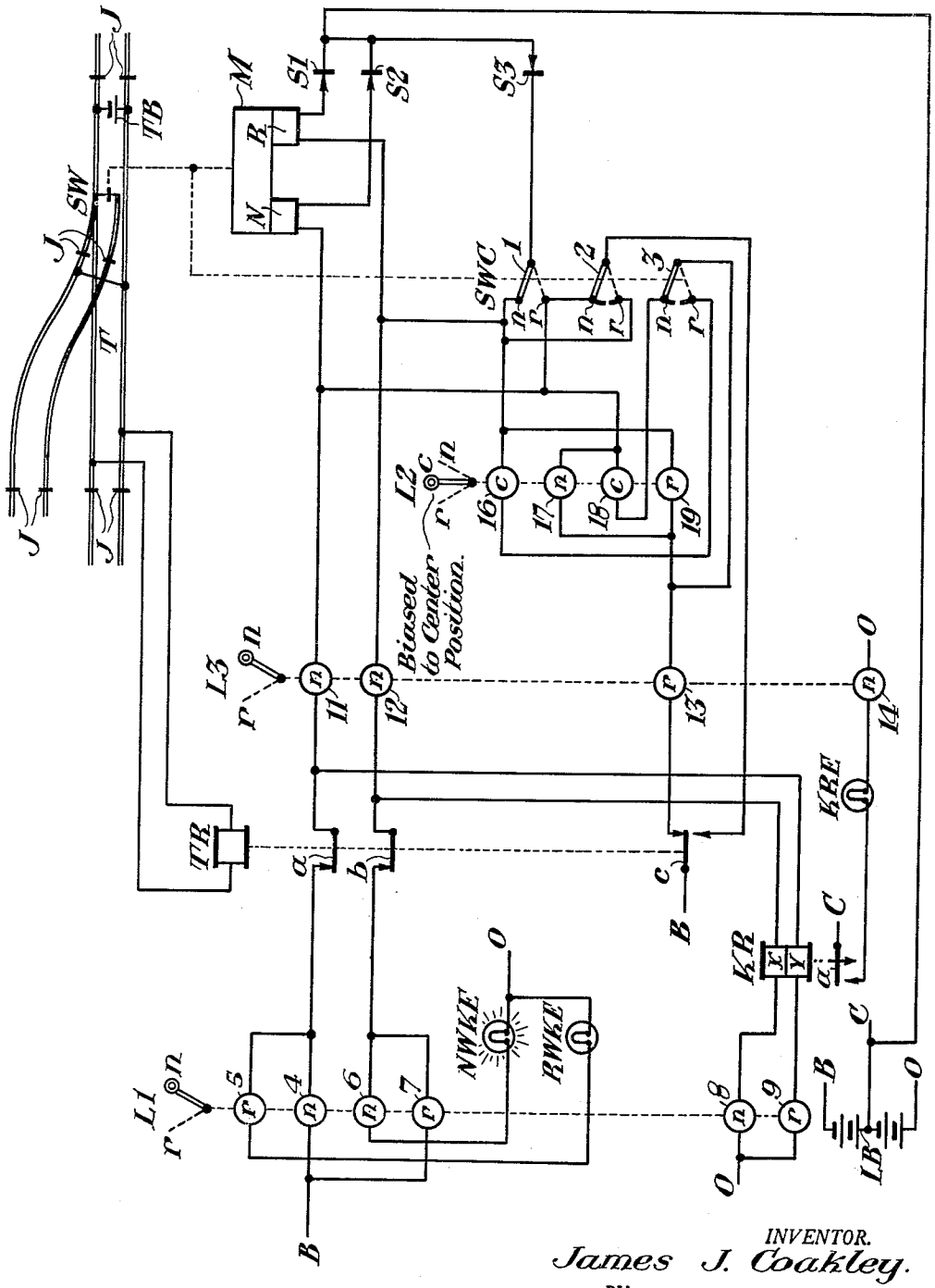
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RAILWAY TRACK SWITCH CONTROLLING APPARATUS

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RAILWAY TRACK SWITCH CONTROLLING APPARATUS

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My invention relates to railway track switch controlling apparatus of a type wherein the operations of a railway track switch are at times controlled from a point remote from the switch and are at other times controlled from a point adjacent the switch.

One object of my invention is the provision for an alarm indication at the control point remote from the switch to indicate when the railway switch points have failed to complete a movement from one position to the other.

Another object of my invention is to provide means for controlling a railway switch from a point adjacent the switch in such manner that, once a movement of the switch has been initiated, it will either attempt to continue the movement or will attempt to return to its former position.

Other objects and characteristic features of my invention will become apparent as the description proceeds.

The accompanying drawing is a diagrammatic view showing one form of apparatus embodying my invention.

Referring to the drawing, the reference character T refers to a section of railway track provided with a track circuit whose limits are defined by insulated points J, and including a suitable source of track circuit current here shown as a battery TB connected across the rails adjacent one end of the section, and a track relay TR connected across the rails adjacent the other end of the section. The track circuit as shown in the drawing is the normally energized type, that is, the track relay is energized when the track section is unoccupied by a train, but it is to be understood that any type of track circuit may be employed.

Located in the track section T is a switch SW which is moved from normal to reverse positions and vice versa by some suitable device such, for example, as a fluid pressure operated switch mechanism M which is equipped with normal and reverse control magnets designated by the reference characters N and R, respectively.

As shown in the drawing the switch occupies its normal position. If the reverse magnet R is now energized, fluid pressure will be supplied to mechanism M to operate switch SW to its reverse position. If, when the switch occupies its reverse position, magnet N is energized, fluid pressure will be supplied to mechanism M to restore switch SW to its normal position.

Connected with switch SW is a circuit controller SWC comprising two contacts 1*n* and 1*r*, two contacts 2*n* and 2*r* and two contacts 3*n* and 3*r*. Contacts 1*n* and 1*r* are closed when and only when the switch SW occupies its normal or reverse positions, respectively. Either contact 2*n* or 2*r* depending on whether the switch SW is nearer to its normal or reverse positions, respectively, is closed at all times except when the switch is in its exact mid-stroke position. Contacts 3*n* and 3*r* are closed or open in accordance with the position of switch SW precisely as contacts 2*n* and 2*r*, respectively, are closed or open.

The magnets N and R of the switch mechanism M are controlled by the circuit controller SWC, by the track relay TR, by a first manually operable control lever L1 and by a second manually operable control lever L2. A third manually operable control lever L3 is used to select the control of the magnets between lever L1 or lever L2 as desired.

Lever L1 is capable of assuming a normal position *n* and a reverse position *r*, and is equipped with a plurality of contacts designated 4 through 9 which are shown as circles with a reference character therein corresponding to the lever position in which the contact will be closed. For example, contact 4 is closed only in the *n* position of lever L1, while contact 5 is closed only in the *r* position of lever L1. It should also be pointed out at this time that the contacts of lever L1 are of a quick acting or snap type in order that a minimum of time will be consumed between the opening of the normal contacts and the closing of the reverse contacts or vice versa. Contacts of this type are in widespread use, and since these contacts by themselves form no part of my present invention, their detailed construction is not shown in the drawing. The expediency of such contacts will be fully brought out later in this description.

Lever L3 is also capable of assuming a normal position *n* and a reverse position *r* and is equipped with a plurality of contacts designated 11 through 14 which are also shown as circles with a reference character therein corresponding to the lever position in which the contact will be closed.

Lever L2 is capable of assuming a normal position *n*, a reverse position *r* and a center position *c*. This lever is mechanically biased to the center position *c* in such a manner that any time it is manually operated to either the *n* or *r* position and then released, it will automatically return to the center position *c*. This lever is equipped with a plurality of contacts 16 through 19 which are shown as circles with a reference character therein corresponding to the lever position in which the contact will be closed.

Lever L1 is located at a point remote from the switch and lever L2 is located adjacent the switch. Lever L3 may be located either at the remote control point or at the switch location, but, for purposes of this description, is presumably located at the point remote from the switch.

An indication relay designated by the reference character KR and having a slow release feature is also located at the remote control point. This relay is normally energized and is shown in the drawing as having two distinctly separate windings designated X and Y, the energization of either winding being operable to pick up the relay and retain it in that position. The slow release feature of the relay is effective upon the energization of either winding. This KR relay is used to control an alarm indication in the event the switch SW fails to complete its movement from one position to the other.

The apparatus also includes three indication lamps NWKE, RWKE and KRE, all located at the remote control point, and asymmetric units S1, S2 and S3, all located at the switch location.

It should be pointed out at this time that a suitable source of control current designated by the reference character LB is provided, this current source being arranged in such a manner that a center tap is provided. Each half of the center tapped source is preferably a battery of proper voltage and capacity and its positive and negative terminals are identified by reference characters B and O, respectively. The center tap or common terminal is designated by the reference character C.

As shown in the drawing, all apparatus is in its normal position. That is to say, levers L1, L2 and L3 occupy their normal position, switch SW occupies its normal position, and track section T is unoccupied by a train so

that track relay TR is energized. Under these conditions, magnet N is energized by a circuit which may be traced from battery terminal B through normal contact 4 of lever L1, front contact *a* of relay TR, normal contact 11 of lever L3, the winding of magnet N, and asymmetric unit S2 in its low resistance direction to battery terminal C. The energization of magnet N by the circuit thus traced causes fluid pressure to be supplied to switch mechanism M to hold the switch SW in its normal position.

Also under these conditions an indication circuit is completed for illumination of the normal switch indication lamp NWKE. This circuit may be traced from battery terminal C through asymmetric unit S3 in the low resistance direction, normal contact 1*n* of circuit controller SWC, normal contact 12 of lever L3, front contact *b* of relay TR, normal contact 6 of lever L1, and the filament of indication lamp NWKE to battery terminal O. Lamp NWKE is thus illuminated and indicates that the switch and lever L1 both occupy their normal positions and track section T is unoccupied by a train.

Under the above conditions a circuit is also completed retaining relay KR in its normally energized condition. This circuit may be traced from battery terminal C through asymmetric unit S3 in its low resistance direction, normal contact 1*n* of circuit controller SWC, normal contact 12 of lever L3, the X winding of relay KR, and normal contact 8 of lever L1 to battery terminal O. With relay KR in its energized position, its back contact *a* is open and lamp KRE is dark indicating that switch SW is, in this instance, in its full normal position. The purpose of this indication circuit will be more fully pointed out as this description proceeds.

I shall now assume that all apparatus is in its normal position, as shown in the drawing, and the operator who manipulates lever L1 desires to cause switch SW to move to its reverse position. The operator will move lever L1 from its normal position *n* to its reverse position *r*, thereby opening contacts 4, 6 and 8 and closing contacts 5, 7 and 9. The opening of contacts 4, 6 and 8 interrupts respectively the previously traced circuits for the magnet N, the indication lamp NWKE, and winding X of relay KR, so that the magnet, lamp and relay all become deenergized. The closing of contact 7 completes a circuit for energizing reverse magnet R, which circuit may be traced from battery terminal B through reverse contact 7 of lever L1, front contact *b* of relay TR, normal contact 12 of lever L3, the winding of magnet R, and through asymmetric unit S1 in its low resistance direction to battery terminal C. Magnet R thus becomes energized and causes the switch SW to move to its reverse position. This movement of the switch opens the normal contact 1*n* and closes the reverse contact 1*r* of the circuit controller SWC. When the reverse contact 1*r* becomes closed, a circuit is completed for the illumination of the reverse indication lamp RWKE which may be traced from battery terminal C through asymmetric unit S3 in its low resistance direction, reverse contact 1*r* of circuit controller SWC, normal contact 11 of lever L3, front contact *a* of relay TR, reverse contact 5 of lever L1, and the filament of lamp RWKE to battery terminal O. Lamp RWKE is thus now illuminated and indicates that the switch and lever L1 are both in their reverse positions and track section T is unoccupied by a train.

Under the above described manipulation of lever L1 and consequential opening of contact 8 of that lever, the previously traced energizing circuit to winding X of relay KR is opened. However, this relay does not drop out immediately due to its slow release feature. The snap action of the contacts of lever L1 and the fast action of the fluid pressure operated switch mechanism operate to close an energizing circuit to winding Y of relay KR in a sufficiently short period of time to retain that relay picked up, the open circuit time between the opening of the circuit to winding X and closing of the circuit to winding Y being bridged by the slow release feature of relay KR. The energizing circuit for winding Y of relay KR may be traced from battery terminal C through asymmetric unit S3 in its low resistance direction, reverse contact 1*r* of circuit controller SWC, normal contact 11 of lever L3, winding Y of relay KR, and reverse contact 9 of lever L1 to battery terminal O. It is therefore apparent that if switch SW completes its movement from normal to reverse in a predetermined period of time, no alarm indication will be given as back contact *a* of relay KR will not close.

If, after the switch has moved to its reverse position in the manner described, the operator desires to restore it to its normal position, he will move lever L1 to its normal position. This manipulation of lever L1 will open reverse contacts 5, 7 and 9 and close contacts 4, 6 and 8. The opening of contacts 5, 7 and 9 will interrupt, respectively, the above traced circuits for indication lamp RWKE, the magnet R, and winding Y of relay KR. The closing of contact 4 will complete the previously described circuit for the normal magnet N and cause the switch to move to its normal position. When the switch has completed this movement, normal contact 1*n* of circuit controller SWC will close and the previously traced circuit for the normal indication lamp NWKE will be completed to indicate that the switch SW and lever L1 are in their normal positions. The previously traced circuit through winding X of relay KR will also be completed to retain that relay in its energized condition, the slow release feature of relay KR again bridging the period of time between the opening of the circuit to winding Y and the closing of the circuit to winding X.

I shall now assume that the switch SW occupies its normal position and that a train enters the track section T. The shunting of the track circuit by the train will deenergize track relay TR, causing that relay to open its front contacts *a* and *b*. The opening of these contacts will open the control circuit to magnet N and the indication circuit to indication lamp NWKE and extinguish that lamp. If at this time the operator should move control lever L1 to its reverse position, the switch will not move as the circuit to control magnet R will be open at front contact *b* of relay TR. Furthermore, the circuit to indication lamp RWKE will be open at contact *a* of relay TR and that lamp will remain extinguished.

The deenergization of relay TR, by the occupancy of track section T by a train, also causes relay TR to close its back contact *c* and complete a circuit for energizing the normal control magnet. This circuit may be traced from battery terminal B through back contact *c* of relay TR, normal contact 2*n* of circuit controller SWC, winding of normal control magnet N, and asymmetric unit S2 in its low resistance direction to battery terminal C. This circuit will thus retain magnet N energized under the described conditions and will insure that the switch will remain in its normal position.

If a train enters track section T when the switch is in its reverse position, the operation of the apparatus will be similar to that just described when the switch occupies its normal position, except that the opening of contacts *a* and *b* will interrupt the reverse indication circuit to lamp RWKE and the energizing circuit for the reverse magnet R. Also the closing of back contact *c* of relay TR will complete a holding circuit to reverse magnet R which may be traced from battery terminal B through back contact *c* of relay TR, reverse contact 2*r* of circuit controller SWC, winding of reverse magnet R, and asymmetric unit S1 in its low resistance direction to battery terminal C.

It is to be noted at this time that the deenergization of relay TR has no effect on relay KR since no contacts of relay TR are included in the energizing circuit to either winding of relay KR. The indication lamp KRE therefore remains extinguished when a train enters track section T. It is apparent that lamp NWKE or RWKE being illuminated serves to indicate the position of switch

SW and also the condition of occupancy of track section T, both lamps being extinguished when that track section is occupied by a train. However, both of these lamps would also be extinguished if the switch SW would fail to complete its movement from one position to the other and stop somewhere between the two positions due to some failure in the equipment, as the circuit to lamps NWKE and RWKE would be open at contacts 1*n* and 1*r* of circuit controller SWC, respectively. In the event of such an improper operation of switch SW, however, the energizing circuit to both windings of relay KR will also be open at contacts 1*n* and 1*r* of circuit controller SWC and, after the slow release feature of relay KR has no more effect, that relay will drop and give an alarm by the closing of a circuit for illumination of indication lamp KRE. This circuit may be traced from battery terminal C through back contact *a* of relay KR, filament of indication lamp KRE, and normal contact 14 of lever L3 to battery terminal O. Thus the illumination of lamp KRE serves to notify the operator that the switch is not functioning properly, and there is no question in his mind whether lamps NWKE and RWKE are extinguished for that reason or due to track section T being occupied by a train.

I shall now assume that track section T is unoccupied and it is desired to control switch SW from the switch location, as may perhaps be the case if the operator is on duty part time only and the trainmen operate the switch the remainder of the time. As previously stated, lever L3 may be located at either the remote or the local control points but, for the purposes of this description, it is assumed to be located at the remote point. The operator, therefore, when desiring to turn over the operation of the switch to anyone at the local control point or switch location, moves lever L3 from its normal to its reverse position. Assuming all apparatus to be in normal position, this manipulation will open the control circuit to normal magnet N at normal contact 11 of lever L3 and the indication circuit to lamp NWKE at normal contact 12 of lever L3. The opening of contact 12 will extinguish lamp NWKE and also deenergize the X winding of relay KR, causing that relay to drop out. If lever L1 and all apparatus are in correspondingly reverse positions at the time the operator moves lever L3 as described, the control circuit for reverse control magnet R and the indication circuit to lamp RWKE would be opened at contacts 12 and 11, respectively, of lever L3. The energizing circuit to the Y winding of relay KR would also be opened at contact 11 of lever L3. The dropping out of relay KR in either instance does not illuminate indication lamp KRE as its previously traced energizing circuit is opened at normal contact 14 of lever L3. All the indication lamps are, therefore, extinguished and relay KR is deenergized when the operator moves lever L3 from its normal to its reverse position.

If switch SW is in its normal position, when lever L3 is moved reverse to transfer the control of the switch to the local control point, a circuit is completed to the normal control magnet N for retaining switch SW in its normal position. This circuit may be traced from battery terminal B through front contact *c* of relay TR, reverse contact 13 of lever L3, normal contact 3*n* of circuit controller SWC, center contact 18 of lever L2, winding of normal magnet N, and asymmetric unit S2 in its low resistance direction to battery terminal C. If switch SW is in its reverse position when the transfer of control is made, a holding circuit to reverse control magnet R is established which may be traced from battery terminal B, through front contact *c* of relay TR, reverse contact 13 of lever L3, reverse contact 3*r* of circuit controller SWC, center contact 16 of lever L2, winding of reverse magnet R, and asymmetric unit S1 in its low resistance direction to battery terminal C. These described holding circuits will be maintained, depending on whether the switch is normal or reverse, as long as lever L2 remains in its center position *c*. As previously pointed out, lever L2 is mechanically biased to its center position and will remain in that position until operated or will return to that position if moved therefrom and then released.

The completion of the movement of lever L3 to its reverse position completes the transfer of control of switch SW from the remote control point to the local control point. If a trainman or other person desires to cause the switch to move to its reverse position (the switch being assumed to be in the normal position when the control transfer was made), lever L2 is moved to its reverse position and held there until the switch has completed its movement at least past its exact midstroke position. This movement of lever L2 will open, at center contact 18 of lever L2, the above traced holding circuit for the normal magnet N of the switch SW and close a control circuit to reverse magnet R of the switch. This control circuit may be traced from battery terminal B through front contact *c* of relay TR, reverse contact 13 of lever L3, reverse contact 19 of lever L2, winding of reverse control magnet R, and asymmetric unit S1 in its low resistance direction to battery terminal C. The energization of control magnet R will cause the switch to move to its reverse position. If the lever L2 is allowed to return to its center position *c* before the switch has passed its midstroke position, the above described holding circuit to the normal magnet N will be reestablished, the normal magnet energized, and the switch will return to its normal position.

If the switch SW was in its reverse position when the control transfer was made from the remote point to the local point and it is desired to cause the switch to move to its normal position, lever L2 is operated to its normal position and held there until the switch has completed its movement at least past its exact midstroke position. This operation of lever L2 will open, at center contact 16 of lever L2, the previously traced holding circuit to reverse control magnet R and close a circuit for energization of normal control magnet N. This circuit may be traced from battery terminal B through front contact *c* of relay TR, reverse contact 13 of lever L3, normal contact 17 of lever L2, winding of control magnet N, and asymmetric unit S2 to battery terminal C. The resultant energization of control magnet N will cause switch SW to move to its normal position. If lever L2 is allowed to return to its center position *c* before the switch has passed its midstroke position, the previously described holding circuit to reverse control magnet R will be reestablished, the reverse magnet energized, and the switch will return to its reverse position.

If a movement of the switch SW from one position to the other is initiated by the moving of lever L2 and the lever is held in the position to which moved until the switch has merely passed its midstroke position and then the lever is released, the return of the lever to its center position *c* will establish the holding circuit for the new position of the switch and cause continuation of the movement of the switch to the new position.

I will now assume that the control of switch SW has been transferred from the remote control point to the local control point and a train occupies track section T. Under these conditions the circuit for energization of control magnet N or R is open at front contact *c* of track relay TR and the previously described holding circuit to control magnet N or R is closed at back contact *c* of relay TR. It is thus apparent that the holding circuit to the control magnet N or R during occupancy of track section T operates identically whether the remote point or the local point is, at that time, the control point.

I will now assume that the switch SW is being operated from the local point or switch location and it is desired to transfer the control back to the remote control point. I will also assume that the switch was last positioned normal and remains so, and that the lever L1 is also in

its normal position. The operator moves lever L3 from its reverse position to its normal position and reestablishes the first traced energizing circuits for normal control magnet N, indication lamp NWKE, and winding X of relay KR. The circuit for control of the magnets by lever L2 is opened at reverse contact 13 of lever L3. All the apparatus is thus again in its normal condition.

I will now assume that, at the time the transfer is made, lever L1 is in its normal position and switch SW is in its reverse position. The circuit for control of the magnets by lever L2 will again be opened at reverse contact 13 of lever L3, and the closing of normal contacts 11 and 12 of lever L3 will close the circuit for energizing normal magnet N and cause the switch to move to its normal position. Upon completion of the movement of the switch, lever L1 and the switch will be in agreement, the indication light NWKE will be illuminated, and relay KR will pick up and extinguish indication lamp KRE which was momentarily illuminated when normal contact 14 of lever L3 closed upon the return of the lever to its normal position. All apparatus is again in its normal condition.

If lever L1 is in its reverse position when the operator again assumes control of switch SW by the return of lever L3 to its normal position, and if switch SW is also in its reverse position at this time, no unusual action will result and all apparatus will immediately revert to the condition in which it would be if the operator had retained control of the switch, similarly as described above when lever L1 and the switch SW were both in their normal positions and the operator reassumed control.

However, if lever L1 is in its reverse position and switch SW is in the normal position when the operator returns lever L3 to its normal position, reverse control magnet R will be energized upon the closing of normal contact 12 of lever L3 and switch SW will move to its reverse position. Upon completion of the movement of the switch, lever L1 and the switch will be in agreement, the indication light RWKE will be energized and relay KR will pick up. Indication light KRE would be momentarily illuminated when normal contact 14 of lever L3 closed upon return of lever L3 to its normal position but the light would be extinguished when relay KR picked up and opened back contact *a* in the previously described energizing circuit to lamp KRE. All apparatus would then be in its proper condition.

One advantage of the apparatus arrangement of my invention is that lever L2 being mechanically biased to a neutral or center position, this lever can not be left in a position which is out of correspondence with the position of the switch. Therefore, when the operator reverses lever L3 to transfer control of the switch to lever L2, there is no danger of lever L2 being in a position out of correspondence with the position of the switch and thus inadvertently causing an unintentional movement of the switch which may be dangerous to trainmen or other persons at the switch location.

Another advantage of my invention is the provision of the alarm indication KRE giving notice to the operator that the switch has not operated properly to its full normal or full reverse position. This additional indication is provided over the same conductors used for control and switch position indication. While this alarm indication is shown in the drawing as a normally dark indication lamp, it is to be understood that a whistle, bell or other audible means could be used in place of or in conjunction with the indication lamp.

Although I have herein shown and described only one form of apparatus embodying my invention, it is to be understood that various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim is:

1. In combination, a railway track switch, a mechanism connected to said switch for moving the switch, a normal and a reverse control magnet for controlling said mechanism to move said switch to normal and reverse positions respectively according as the normal or reverse control magnet is energized, a first control lever having normal and reverse positions; a second control lever having normal, center and reverse positions, said lever being biased to its center position; a third control lever having normal and reverse positions, means controlled by said first and third control levers for energizing said normal control magnet when said first control lever occupies its normal position and said third control lever occupies its normal position, means controlled by said first and third control levers for energizing said reverse control magent when said first control lever occupies its reverse position and said third control lever occupies its normal position, means controlled by said second and third control levers for energizing said normal control magnet when said third control lever occupies its reverse position and said second control lever occupies its normal position, means controlled by said second and third control levers for energizing said reverse control magnet when said third control lever occupies its reverse position and said second control lever occupies its reverse position; and means controlled by said second and third control levers for energizing said normal or reverse control magnet according as said switch occupies its normal or reverse position respectively, when said third control lever occupies its reverse position and said second control lever occupies its center position.

2. In combination, a railway track switch, a mechanism connected to said switch for moving the switch, a normal and a reverse control magnet for controlling said mechanism to move said switch to normal and reverse positions respectively according as the normal or reverse control magnet is energized, a first control lever having normal and reverse positions; a second control lever having normal, center and reverse positions, said control lever being biased to said center position; a third control lever having first and second positions, a first means for energizing said normal control magnet effective when said first and third control levers occupy their normal position, a second means for energizing said normal control magnet effective when said third control lever occupies its reverse position and said second control lever occupies its normal position; a third means for energizing said normal control magnet effective when said third lever occupies its reverse position, said second control lever occupies its center position and said switch occupies a position between midstroke position and normal position, or normal position; a first means for energizing said reverse control magnet effective when said third control lever occupies its normal position and said first control lever occupies its reverse position, a second means for energizing said reverse control magnet effective when said third control lever occupies its reverse position and said second control lever occupies its reverse position; and a third means for energizing said reverse control magnet effective when said third control lever occupies its reverse position; said second control lever occupies its center position and said switch occupies a position between midstroke position and reverse position, or reverse position.

3. In combination, a section of railway track, a track circuit for said section of railway track including a source of track circuit energy and a track relay, a railway track switch located within said section of railway track and having normal and reverse positions, a control lever having normal and reverse positions, an indication relay; a first, second and third indication means; means effective for energizing said first indication means when said track relay is in its normal condition, and said control lever and said switch occupy their normal positions;

means effective for energizing said second indication means when said track relay is in its normal condition, and said control lever and said switch are in their reverse positions; means effective for energizing said indication relay only when said control lever and said switch are in corresponding normal or reverse positions; and means effective for energizing said third indication means when said indication relay is deenergized.

4. In combination, a section of railway track, a track circuit for said section of railway track including a source of track circuit current and a track relay, a railway track switch located within said section of railway track and having normal and reverse positions, a mechanism connected to said switch for moving the switch, a normal and a reverse control magnet for controlling said mechanism to move said switch to said normal or reverse positions respectively according as said normal or reverse control magnet is energized, a first control lever having normal and reverse positions; a second control lever having normal, reverse and center positions, said control lever being biased to its center position; a third control lever having normal and reverse positions; a first, second and third indication device; means effective when said first control lever occupies its normal position, said third control lever occupies its normal position and said track relay is in its normal condition for energizing said normal control magnet; means effective when said first control lever occupies its normal position, said third control lever occupies its normal position, said switch occupies its normal position and said track relay is in its normal condition for energizing said first indication device; means effective when said first control lever occupies its reverse position, said third control lever occupies its normal position and said track relay is in its normal condition for energizing said reverse control magnet; means effective when said first control lever occupies its reverse position, said third control lever occupies its normal position, said switch occupies its reverse position and said track relay is in its normal condition for energizing said second indication device; an indication relay; means effective when said third control lever occupies its normal position and said first control lever and said switch occupy corresponding normal or reverse positions for energizing said indication relay; means effective for energizing said third indication device when said indication relay is deenergized; means effective when said third control lever occupies its reverse position, said second control lever occupies its normal position and said track relay is in its normal condition for energizing said normal control magnet; means effective when said third control lever occupies its reverse position, said second control lever occupies its reverse position and said track relay is in its normal condition for energizing said reverse control magnet; and means effective when said third control lever occupies its reverse position, said second control lever occupies its center position and said track relay is in its normal condition for energizing said normal or reverse control magnet according as said switch occupies its normal or reverse position respectively.

5. In railway track switch controlling apparatus including a mechanism for moving said switch, the combination comprising, a first control lever, a second control lever biased to a preselected position, a third control lever, means controlled by said third control lever for connecting said mechanism to be selectively controlled by said first or second control lever according as the third lever occupies a first or second position respectively, and means controlled by said switch and said second lever in its preselected position for controlling said mechanism to maintain the switch in its established position when the mechanism is connected to be controlled by the second lever.

6. In railway track switch controlling apparatus including a mechanism for moving said switch to its normal or reverse positions, the combination comprising, a first control lever having normal and reverse positions; a second control lever having normal, center, and reverse positions, said lever being biased to its center position; a third control lever having normal and reverse positions, means controlled by said third lever in its normal position and said first lever for controlling said mechanism to move said switch to its normal or reverse position respectively according as the first lever occupies its normal or reverse position; and means controlled by said third lever in its reverse position and said second lever for controlling said mechanism to move said switch to its normal or reverse position respectively according as the second lever occupies its normal or reverse position, and controlling the mechanism to maintain the switch in its normal or reverse position when the second lever occupies its center position.

7. In combination, a railway track switch, a mechanism for moving said switch to normal or reverse positions, a normal and a reverse control magnet for controlling said mechanism to move said switch to its normal or reverse position according as the normal or reverse magnet respectively is energized, a first control lever having normal and reverse positions; a second control lever having normal, center and reverse positions, said lever being biased to its center position; a third control lever having normal and reverse positions, means controlled by said third control lever in its normal position and by said first control lever for energizing said normal or reverse control magnet according as the first lever occupies its normal or reverse position respectively, means controlled by said third control lever in its reverse position and by said second control lever for energizing said normal or reverse control magnet according as the second lever occupies its normal or reverse position respectively; and means controlled by said third control lever in its reverse position, by said switch, and by said second control lever in its center position for energizing said normal or reverse control magnet, according as the switch is nearer its normal or reverse position respectively.

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