Aug. 28, 1928. 1,681,977

C. W. FAILOR

CAB SIGNALING SYSTEM FOR RAILWAY YARDS

Original Filed Feb. 24, 1927 2 Sheets-Sheet 1

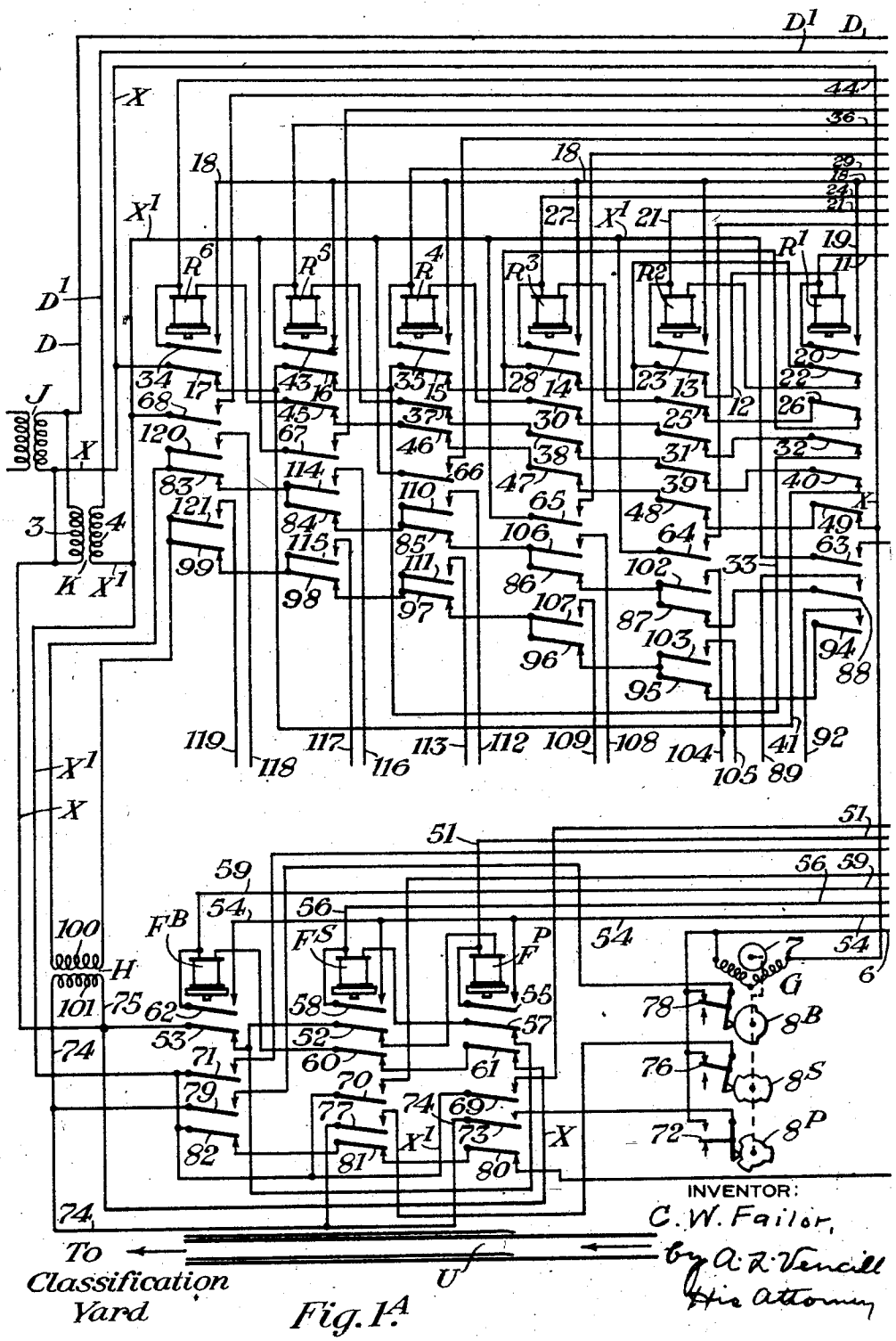


Fig. 1A

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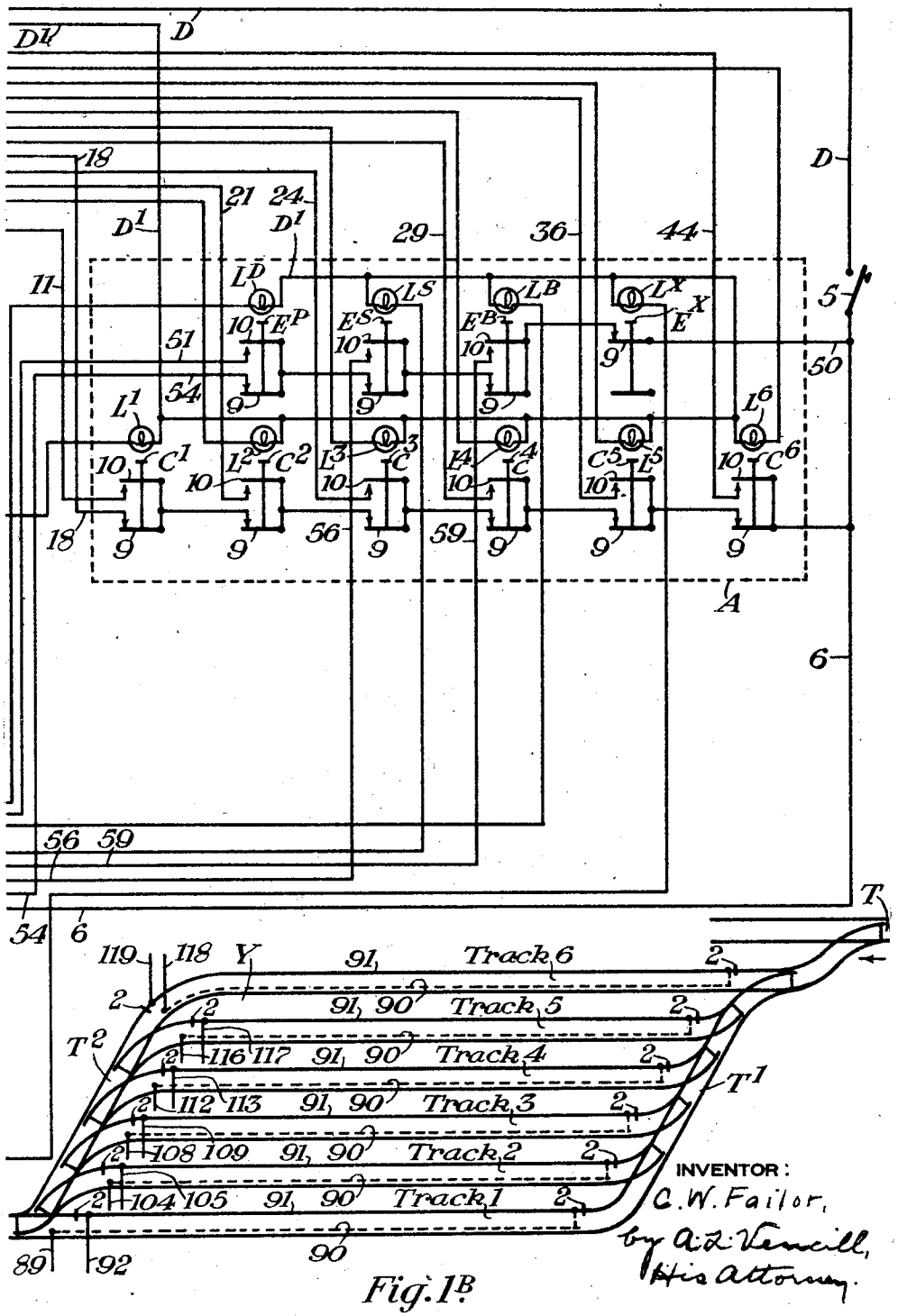


Fig. 1B

INVENTOR:
C. W. Failor,
by A. L. Vencill,
His attorney.

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UNITED STATES PATENT OFFICE.

CHARLES W. FAILOR, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO THE UNION SWITCH & SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

CAB SIGNALING SYSTEM FOR RAILWAY YARDS.

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My invention relates to cab signaling systems for railway yards, and has for an object the provision of means controlled from a central point for transmitting indications to a shifting locomotive. My invention is particularly well adapted to, though by no means limited to, cab signaling for freight distributing yards.

I will describe one form of signaling system embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawings, Figs. 1^A and 1^B, when placed side by side in the order named, constitute a diagrammatic view showing one form of signaling system embodying my invention.

Referring to the drawing, the reference character Y designates a distributing yard which as here shown comprises six parallel tracks. Traffic normally enters the yard Y from a main track T, and is distributed onto the yard tracks by a ladder track T^1. Traffic leaves the yard Y on a ladder track T^2 and passes over a scale U, which is usually located on a hump, and from which it moves into a classification yard, not shown in the drawing. In accordance with usual practice, cars are collected on the several tracks of the yard Y, and are then pushed over the hump by a shifting locomotive. The purpose of the present invention is to enable an operator in a control cabin to transmit signal indications to the shifting locomotive on any one of the tracks constituting the yard Y.

Each track is provided with a track selecting relay designated by the reference character R with an exponent corresponding to the number given to the track. The indication transmitted to the locomotive is selected by indication selecting relays, each designated by the letter F with a distinguishing exponent. All of the relays R and F are normally open, and all of these relays are controlled from an operating panel A located in the control cabin. This operating panel A is provided with a plurality of track selecting push buttons each designated by the reference character C with an exponent corresponding to the number of the track which it selects. The operating panel also contains a plurality of indication selecting push buttons E, one corresponding to each of the indication selecting relays F. Each push button comprises a normally closed contact 9 and a normally open contact 10. When the push button is operated the contact 9 is opened and contact 10 is closed, whereas when the push button is released it automatically returns to its normal condition.

Power for the operation of the relays is obtained from the secondary of a transformer J, the primary of which is connected with a source of alternating current not shown in the drawing.

I will assume that all of the relays are open, and that the operator desires to close track selecting relay R^1. To do this he closes a snap switch 5 and operates push button C^1. Current then flows from the upper terminal of the secondary of transformer J, through wire D, switch 5, normally closed contact 9 of each push button C^6, C^5, C^4, C^3 and C^2, normally open contact 10 of push button C^1, wire 11, winding of relay R^1, wire 12, back contact 13 of relay R^2, back contact 14 of relay R^3, back contact 15 of relay R^4, back contact 16 of relay R^5, back contact 17 of relay R^6, and wire X to the lower terminal of the secondary of transformer J. After relay R^1 becomes closed, the operator releases push button C^1, whereupon relay R^1 remains closed due to a stick circuit which passes from wire D, through switch 5, contact 9 on each push button C, wires 18 and 19, winding of relay R^1, front contact 20 of relay R^1, wire 12 and contacts 13, 14, 15, 16 and 17 as before, to wire X. Relay R^1 will then remain closed until any one of the push buttons C is operated, whereupon the stick circuit for relay R^1 will then be opened at contact 9 of such push button. Furthermore, should any one of the relays R^2, R^3, R^4, R^5 or R^6, become closed, the stick circuit for relay R^1 will be opened at the back contact 13, 14, 15, 16 or 17 of such relay and relay R^1 will release.

The pick-up circuit for relay R^2 passes from wire D, through the switch 5, contact 9 of each push button C^6, C^5, C^4 and C^3, contact 10 of push button C^2, wire 21, winding of relay R^2, back contact 22 of relay R^1, back contact 14 of relay R^3, back contact 15 of relay R^4, back contact 16 of relay R^5, and back contact 17 of relay R^6 to wire X. The stick circuit for relay R^2 passes from wire D,

through normally closed contact 9 of each of the push buttons C, wire 18, front contact 23 of relay R^2, winding of relay R^2, and thence through contacts 22, 14, 15, 16 and 17, as before, to wire X.

The pick-up circuit for relay R^3 is from wire D, through normally closed contact 9 of each push button C^6, C^5, and C^4, contact 10 of push button C^3, wire 24, winding of relay R^3, back contact 25 of relay R^2, back contact 26 of relay R^1, back contact 15 of relay R^4, back contact 16 of relay R^5, and back contact 17 of relay R^6 to wire X. The stick circuit for relay R^3 is from wire D, through normally closed contact 9 of each push button C, wire 18, wire 27, front contact 28 of relay R^3, winding of relay R^3, back contact 25 of relay R^2, back contact 26 of relay R^1, back contact 15 of relay R^4, back contact 16 of relay R^5, and back contact 17 of relay R^6 to wire X.

The pick-up circuit for relay R^4 includes the normally closed contact 9 of each push button C^6 and C^5, contact 10 of push button C^4, wire 29, winding of relay R^4, and back contacts 30, 31, 32, 16 and 17 of relays R^3, R^2, R^1, R^5 and R^6. The stick circuit for relay R^4 includes the normally closed contact 9 of each push button C, front contact 35 of relay R^4, and back contacts 30, 31, 32, 16 and 17 of the remaining relays R.

The pick-up circuit for relay R^5 includes normally closed contact 9 of push button C^6, contact 10 of push button C^5, wire 36, winding of relay R^5, and the back contacts 37, 38, 39, 40 and 17 of the remaining relays R. The stick circuit for relay R^5 includes the normally closed contact 9 of each push button C, front contact 43 of relay R^5, the winding of relay R^5, and back contacts 37, 38, 39, 40 and 17 of the remaining relays R.

The pick-up circuit for relay R^6 includes the normally open contact 10 of push button C^6, the winding of relay R^6, and back contacts 45, 46, 47, 48 and 49 of relays R^5 to R^1, inclusive. The stick circuit for relay R^6 includes the normally closed contact 9 of each push button C, front contact 34 of relay R^6, the winding of relay R^6, and back contacts 45, 46, 47, 48 and 49 of relays R^5 to R^1, inclusive.

It will be seen from the foregoing that the operator cannot close any relay R unless all of the remaining relays R are open, and it will also be seen that any relay R which is closed will be opened by the operation of any push button C and also by the closure of any other relay R.

I will now assume that the operator desires to cose the indication selecting relay F^P. To do this he operates the push button E^P, whereupon current flows from wire D, through switch 5, wire 50, normally closed contact 9 of each push button E^X, E^B, and E^S, contact 10 of push button E^P, wire 51, winding of relay F^P, back contact 52 of relay F^S, and back contact 53 of relay F^B to wire X. When push button E^P is released, a stick circuit for relay F^P is closed, which circuit is from wire D, through switch 5, wire 50, normally closed contact 9 of each push button E, wire 54, front contact 55 of relay F^P, winding of relay F^P, and back contacts 52 and 53 to wire X.

The pick-up circuit for relay F^S includes the normally closed contact 9 of each push button E^X and E^B, contact 10 of push button E^S, wire 56, winding of relay F^S, back contact 57 of relay F^P, back contact 53 of relay F^B, and wire X. The stick circuit for relay F^S includes contact 9 of each push button E, front contact 58 of relay F^S, the winding of relay F^S and back contacts 57 and 53 of relay F^P and F^B, respectively.

The pick-up circuit for relay F^B includes contact 9 of push button E^X, contact 10 of push button E^B, wire 59, winding of relay F^B, back contact 60 of relay F^S, and back contact 61 of relay F^P. The stick circuit for relay F^B includes the normally closed contact 9 of each push button E, front contact 62 of relay F^B, winding of relay F^B, and back contacts 60 and 61 of relays F^S and F^P, respectively.

It will be seen from the foregoing that the operator cannot close any one of the indication selecting relays F unless both of the remaining relays F are open, and that after one of these relays F is closed, it will become opened if any one of the push buttons E is operated and also if either of the remaining relays F becomes closed.

Each push button in the operating panel A is provided with an indicator lamp designated by the reference character L with the same exponent as that applied to the corresponding push button. The lamps L are supplied with current from the secondary 4 of a transformer K, the primary 3 of which is connected with the secondary of transformer J. The circuit for lamp L^1 is from secondary 4 of transformer K, through wire D^1, lamp L^1, front contact 63 of relay R^1, and wire X^1 to the secondary 4 of transformer K. When relay R^1 closes in response to operation of push button C^1, lamp L^1 becomes lighted and remains lighted as long as this relay is closed. Similarly, the circuit for lamp L^2 includes contact 64 of relay R^2, the circuit for lamp L^3 includes contact 65 of relay R^3, the circuit for lamp L^4 includes contact 66 of relay R^4, the circuit for lamp L^5 includes contact 67 of relay R^5, and the circuit for lamp L^6 includes contact 68 of relay R^6. The circuit for lamp L^P includes contact 69 of relay F^P, the circuit for lamp L^S includes contact 70 of relay F^S, and the circuit for lamp L^B includes contact 71 of relay F^B. The circuit for lamp L^X, which is associated with push button E^X, is from wire D^1, through lamp L^X, back contact 80 of relay F^P, back contact 81 of relay

F^S, and back contact 82 of relay F^B to wire X^1. This lamp will therefore be closed when and only when all three of the indication selecting relays are open.

Each track of the yard Y is provided with a trackway circuit for inductively transmitting indication to a vehicle on the track. As here shown, this trackway circuit includes one of the track rails 91 and an auxiliary conductor 90 parallel with and close to the other track rail. The track rail 91 is isolated from the ladder tracks T^1 and T^2 by insulated joints 2. This trackway circuit is intended for co-operation with vehicle-carried apparatus responsive to alternating current flowing in opposite directions at a given instant in the rail 91 and the auxiliary conductor 90. It will be observed that the trackway circuit is not shunted by the wheels and axles of a vehicle, so that the indications will be transmitted to a vehicle provided with receiving apparatus, whether the receiving apparatus is at one end or the other of the vehicle, and whether the vehicle is preceded or followed by other vehicles on the same track.

In the form here shown, the indications are produced by supplying to the trackway circuits alternating current periodically interrupted at different frequencies, and this periodic interruption is accomplished by a coding device G. The device G comprises a motor 7 operating a plurality of cams 8, which in turn actuate a plurality of contacts 78, 76 and 72. The cam 8^B has only one swell, so that contact 78 is closed only once for each complete revolution of this cam. Cam 8^S has two swells, so that contact 76 operated by this cam is closed twice for each revolution of the cams. Cam 8^P has three swells, so that contact 72 is closed three times for each revolution of the cam. Contact 78 produces what I will term the "back up" signal. Contact 76 produces what I will term the "proceed at reduced speed" indication. Contact 72 produces what I will term "proceed at regular speed" indication.

When the switch 5 is closed, the motor 7 of the coding device G is supplied with current by a circuit which passes from wire D, through switch 5, wire 6, and windings of motor 7 to wire X. It follows that when the switch 5 is closed, the coding device G is continuously operated.

I will now assume that all parts of the apparatus are in the positions illustrated in the drawing, and that the operator desires to transmit a "proceed at regular speed" indication to a locomotive on track 1. He first closes switch 5, thus setting motor 7 of coding device G in operation and also supplying current to any circuit which may subsequently be closed at the various push buttons. He then operates push button C^1, thereby closing relay R^1. As soon as this relay closes, lamp L^1 becomes lighted, whereupon the operator releases push button C^1 and operates push button E^P. This closes indication relay F^P, and as soon as the latter relay closes, lamp L^P becomes lighted, whereupon the operator releases push button E^P. Alternating current is then supplied to the primary 101 of an indication transformer H, through contacts 72 of the coding device G, the circuit being as follows: From wire D, through switch 5, wire 6, contact 72 of coding device G, contact 73 of relay F^P, wire 74, primary 101 of transformer H, and wire 75 to wire X. The secondary 100 of transformer H is then connected with the trackway circuit for track 1, the circuit being from secondary 100, through back contact 83 of relay R^6, back contact 84 of relay R^5, back contact 85 of relay R^4, back contact 86 of relay R^3, back contact 87 of relay R^2, front contact 88 of relay R^1, wire 89, auxiliary conductor 90 for track 1, track rail 91 of track 1, wire 92, front contact 94 of relay R^1, back contacts 95, 96, 97, 98 and 99 of relays R^2, R^3, R^4, R^5 and R^6, respectively, to secondary 100 of transformer H. Alternating current periodically interrupted at the frequency corresponding to the "proceed at regular speed" indication is thus transferred to the trackway circuit for track 1.

If the operator desires to transmit the "proceed at reduced speed" indication to a locomotive on track 1, the precedure is the same as before, except that he operates push button E^S instead of push button E^P. The circuit for the primary 101 of transformer H then includes contact 76 of the coding device G and contact 77 of relay F^S. If the operator desires to transmit a "back up" indication to a locomotive on track 1, he operates push button E^B, thereby closing relay F^B. The circuit for primary 101 of transformer H is then the same as before, except that it includes contact 78 operated by the coding device G and contact 79 of relay F^B.

I will now assume that the operator desires to transmit an indication to a locomotive on track 2. To do this, he operates push button C^2, thereby closing track selecting relay R^2. The indication which will be transmitted will, of course, depend on the indication selecting relay F which is closed, and the circuit for the secondary 100 of transformer H will pass through contacts 83, 84, 85 and 86, front contact 102 of relay R^2, wire 104, auxiliary conductor 90 of track 2, track rail 91 of track 2, wire 105, contact 103 of relay R^2, and contacts 96, 97, 98 and 99 to secondary 100. Similarly, if the operator desires to transmit an indication to track 3, track 4, track 5 or track 6, he closes track selecting relay R^3, R^4, R^5 or R^6. When relay R^3 is closed, the circuit for secondary 100 of transformer H passes through contacts 83, 84 and 85, front contact 106 of relay R^3,

wire 108, conductor 90 and track rail 91 of track 3, wire 109, contact 107 of relay R^3, and contacts 97, 98 and 99 to the secondary 100. When relay R^4 is closed, the trackway circuit includes contacts 83 and 84, contact 110 of relay R^4, wire 112, conductor 90 and rail 91 of track 4, wire 113, contact 111 of relay R^4, and contacts 98 and 99. When relay R^5 is closed, the circuit for secondary 100 includes contact 83 of relay R^6, contact 114 of relay R^5, wire 116, conductor 90 and rail 91 of track 5, wire 117, contact 115 of relay R^5, and contact 99 of relay R^6. When relay R^6 is closed, the circuit for secondary 100 includes contact 120 of relay R^6, wire 118, conductor 90 and wire 91 of track 6, wire 119, and contact 121 of relay R^6.

It will be noted that contact 9 of push button E^X is included in the stick circuit for each indication selecting relay F. If the operator desires to transmit a stop indication to a vehicle on any track after having transmitted one of the other indications, he operates push button E^X, thereby opening whichever indication selecting relay F had been closed, and so discontinuing the indication which had previously been given. As soon as this stop indication becomes effective, lamp L^X is lighted because all three of the indication relays F are open. The operator may then transmit any other indication to such vehicle by operating any other of the push buttons E, and this procedure may be continued until the vehicle has made all the movements desired by the operator. After such movements are completed, the operator opens switch 5, thereby opening whichever relays R and F may be closed, and stopping the motor 7 of coding device G.

Although I have herein shown and described only one form of apparatus embodying my invention, it is 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. A cab signal system for a railway receiving yard, comprisong a trackway circuit for each track for inductively transmitting indications to a vehicle on the track, manually controlled means for selecting any one of said circuits for operation, and other manually controlled means for supplying to such selected circuit any desired one of a plurality of distinctive currents.

2. A cab signal system for a railway receiving yard, comprising a trackway circuit for each track for inductively transmitting indications to a vehicle on the track, manually controlled means for selecting any one of said circuits for operation, and other manually controlled means for supplying to such selected circuit alternating current periodically interrupted at any one of a plurality of different frequencies.

3. A cab signal system for a railway receiving yard, comprising a trackway circuit for each track for inductively transmitting indications to a vehicle on the track, a transformer, manually controlled means for supplying the primary of said transformer with alternating current periodically interrupted at any desired one of a plurality of different frequencies, and other manually controlled means for connecting the secondary of said transformer with any desired one of said trackway circuits.

4. A cab signal system for a railway receiving yard, comprising a trackway circuit for each track for inductively transmitting indications to a vehicle on the track, a transformer, manually controlled means for supplying the primary of said transformer with alternating current having any desired one of a plurality of different characteristics, and other manually controlled means for connecting the secondary of said transformer with any desired one of said trackway circuits.

5. A cab signal system for a railway receiving yard, comprising a trackway circuit for each track for inductively transmitting indications to a vehicle on the track, a plurality of normally open indication selecting relays, a plurality of normally open track selecting relays one for each trackway circuit, manually controlled means for closing any desired one of said indication selecting relays and any desired one of said track selecting relays, and means controlled by said relays for impressing a distinctive current determined by the indication selecting relay which is closed on the trackway circuit corresponding to the track selecting relay which is closed.

6. A cab signal system for a railway receiving yard, comprising a trackway circuit for each track for inductively transmitting indications to a vehicle on the track, a plurality of normally open indication selecting relays, a plurality of normally open track selecting relays one for each trackway circuit, manually controlled means for closing any desired one of said indication selecting relays and any desired one of said track selecting relays, a source of alternating current, means for periodically interrupting the current from said source at any one of a plurality of different frequencies depending on the indication selecting relay which is closed, and means for supplying such periodically interrupted current to any one of said trackway circuits depending on the track selecting relay which is closed.

7. A cab signal system for a railway receiving yard, comprising a trackay circuit for each track for inductively transmitting indications to a vehicle on the track, a plurality of normally open indication selecting

relays, a plurality of normally open track selecting relays one for each trackway circuit, manually controlled means for closing any desired one of said indication selecting relays and any desired one of said track selecting relays, a transformer, means for supplying the primary of said transformer with alternating current periodically interrupted at any one of a plurality of different frequencies depending upon which of said indication selecting relays is closed, and means for connecting the secondary of said transformer with any one of said trackway circuits depending upon which of said track selecting relays is closed.

8. A cab signal system for a railway receiving yard, comprising a trackway circuit for each track for inductively transmitting indications to vehicles on the track, a plurality of normally open indication selecting relays, a plurality of normally open track selecting relays one for each trackway circuit, a plurality of indication selecting push buttons one for each indication selecting relay, a plurality of track selecting push buttons one for each track selecting relay, each push button having a normally closed contact and a normally open contact, a pick-up circuit for each indication selecting relay including a back contact of each of the remaining indication selecting relays and the normally open contact of the associated indication selecting push button, a stick circuit for each indication selecting relay including a front contact of such relay and a back contact of each of the remaining indication selecting relays as well as the normally closed contact of each indication selecting push button, a pick-up circuit for each track selecting relay including a back contact of each of the remaining track selecting relay and the normally open contact of the associated track selecting push button, a stick circuit for each track selecting relay including a front contact of such relay and a back contact of each of the remaining track selecting relays as well as the normally closed contact of each track selecting push button, and means controlled by said relays for impressing a distinctive current determined by the indication selecting relay which is closed on the trackway circuit corresponding to the track selecting relay which is closed.

9. A cab signal system for a railway receiving yard, comprising a trackway circuit for each track for inductively transmitting indications to vehicles on the track, a plurality of normally open indication selecting relays, a plurality of normally open track selecting relays one for each trackway circuit, a plurality of indication selecting push buttons one for each indication selecting relay, a plurality of track selecting push buttons one for each track selecting relay, each push button having a normally closed contact and a normally open contact, a pick-up circuit for each indication selecting relay including a back contact of each of the remaining indication selecting relays and the normally open contact of the associated indication selecting push button, a stick circuit for each indication selecting relay including a front contact of such relay and a back contact of each of the remaining indication selecting relays as well as the normally closed contact of each indication selecting push button, a pick-up circuit for each track selecting relay including a back contact of each of the remaining track selecting relay and the normally open contact of the associated track selecting push button, a stick circuit for each track selecting relay including a front contact of such relay and a back contact of each of the remaining track selecting relays as well as the normally closed contact of each track selecting push button, a transformer, means for supplying the primary of said transformer with alternating current periodically interrupted at any one of a plurality of different frequencies depending upon which of said indication selecting relays is closed, and means for connecting the secondary of said transformer with any one of said trackway circuits depending upon which of said track selecting relays is closed.

10. A cab signal system for a railway receiving yard, comprising a trackway circuit for each track for inductively transmitting indications to vehicles on the track, a plurality of normally open indication selecting relays, a plurality of normally open track selecting relays one for each trackway circuit, a plurality of indication selecting push buttons one for each indication selecting relay, a plurality of track selecting push buttons one for each track selecting relay, means for closing each indication selecting relay when the associated push button is operated and for subsequently keeping such relay energized after the push button is released until another indication selecting relay is closed or another indication selecting push button is operated, means for closing each track selecting relay when the associated push button is operated and for subsequently keeping such track selecting relay closed until another track selecting relay becomes closed or another track selecting push button is operated, and means controlled by said relays for impressing a distinctive current determined by the indication selecting relay which is closed on the trackway circuit corresponding to the track selecting relay which is closed.

11. A cab signal system for a railway receiving yard, comprising a trackway circuit for each track for transmitting indications to vehicles on the track, a plurality of normally open indication selecting relays, a plurality of normally open track selecting

relays one for each trackway circuit, a plurality of indication selecting push buttons one for each indication selecting relay a plurality of track selecting push buttons one for each track selecting relay, means for closing each indication selecting relay when the associated push button is operated and for subsequently keeping such relay energized after the push button is released until another indication selecting relay is closed or another indication selecting push button is operated, means for closing each track selecting relay when the associated push button is operated and for subsequently keeping such track selecting relay closed until another track selecting relay becomes closed or another track selecting push button is operated, a transformer, means for supplying the primary of said transformer with alternating current periodically interrupted at any one of a plurality of different frequencies depending upon which of said indication selecting relays is closed, and means for connecting the secondary of said transformer with any one of said trackway circuits depending upon which of said track selecting relays is closed.

12. A signal system for a railway yard, comprising a plurality of normally open indication selecting relays, a plurality of normally open track selecting relays one for each track, a plurality of indication selecting push buttons one for each indication selecting relay, a plurality of track selecting push buttons one for each track selecting relay, means for closing each indication selecting relay when the associated push button is operated and for subsequently keeping such relay energized after the push button is released until another indication selecting relay is closed or another indication selecting push button is operated, means for closing each track selecting relay when the associated push button is operated and for subsequently keeping such track selecting relay closed until another track selecting relay becomes closed or another track selecting push button is operated, and means controlled by said relays for transmitting a distinctive signal determined by the indication selecting relay which is closed to the track corresponding to the track selecting relay which is closed.

13. A signal system for a railway yard, comprising a plurality of normally open indication selecting relays, a plurality of normally open track selecting relays one for each track, a plurality of indication selecting push buttons one for each indication selecting relay, a plurality of track selecting push buttons one for each track selecting relay, means for closing each indication selecting relay when the associated push button is operated, means for closing each track selecting relay when the associated push button is operated, and means controlled by said relays for transmitting a distinctive signal determined by the indication selecting relay which is closed to the track corresponding to the track selecting relay which is closed.

14. A cab signal system for a railway classification yard, comprising a trackway circuit for each track for inductively transmitting indications to vehicles on the track, a plurality of normally open indication selecting relays, a plurality of normally open track selecting relays one for each trackway circuit, a plurality of indication selecting push buttons one for each indication selecting relay, a plurality of track selector push buttons one for each track selecting relay, means for closing each indication selecting relay when the associated push button is operated and for subsequently keeping such relay energized after the push button is released until another indication selecting relay is closed or another indication selecting push button is operated, means for closing each track selecting relay when the associated push button is operated and for subsequently keeping such track selecting relay closed until another track selecting relay becomes closed or another track selecting push button is operated, a transformer, means for supplying the primary of said transformer with alternating current periodically interrupted at any one of a plurality of different frequencies depending upon which of said indication selecting relays is closed, and means for connecting the secondary of said transformer with any one of said trackway circuits depending upon which of said track selecting relays is closed.

15. A cab signal system for a railway yard, comprising a trackway circuit for each track for signaling inductively to a vehicle on the track, and manually operable means for supplying signaling current to any selected one of said circuits and for preventing the supply of current to more than one circuit at a time.

16. A cab signal system for a railway yard, comprising a trackway circuit for each track for signaling inductively to a vehicle on the track, a transformer the primary of which is constantly supplied with alternating current, and manually operable means for connecting the secondary of said transformer with any selected one of said circuits and for preventing said secondary from being connected with more than one circuit at a time.

17. A cab signal system for a railway yard, comprising a trackway circuit for each track for signaling inductively to a vehicle on the track, and manually operable means for supplying signaling current to any selected one of said circuits.

18. A cab signaling system for a railway

yard having a plurality of tracks, comprising a manually controlled circuit controller for each track having a normally closed contact and a normally open contact, all of said normally closed contacts being connected in series with a source of current, and an individual trackway circuit for each track connected with the normally open contact of the associated circuit controller, whereby current may be supplied to any selected circuit but cannot be supplied to more than one circuit at a time.

19. A cab signaling system for a railway yard having a plurality of tracks, comprising a series of manually controlled circuit controllers one for each track and each having a movable member coacting with a normally closed fixed contact and a normally open fixed contact, a source of current connected with the movable member of the first circuit controller, a connection between the normally closed contact of each circuit controller and the movable member of the next circuit controller, and an individual trackway circuit for each track connected with the normally open contact of the associated circuit controller, whereby current may be supplied to any selected circuit but cannot be supplied to more than one circuit at a time.

20. A cab signaling system for a railway yard having a plurality of tracks, comprising a series of manually controlled circuit controllers one for each track, each controller having two movable members and each movable member coacting with a normally closed fixed contact and a normally open fixed contact, a source of current having its terminals connected with the two movable members of the first circuit controller, means for connecting the two normally closed contacts of each controller with the two movable members respectively of the next controller, and an individual trackway circuit for each track for signaling inductively to a vehicle on the track and having its terminals connected with the two normally open contacts respectively of the associated circuit controller, whereby said source may be connected with any selected one of said trackway circuits but cannot be connected with more than one circuit at a time.

In testimony whereof I affix my signature.

CHARLES W. FAILOR.