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3,206,722	9/1965	Gustus et al.	340/51
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[54] IMPROVED TRAFFIC CONTROL SYSTEM FOR DRIVE-IN BANKS AND THE LIKE
9 Claims, 3 Drawing Figs.

[52] U.S. Cl..... 340/41,
240/51

[51] Int. Cl. G08g 1/00

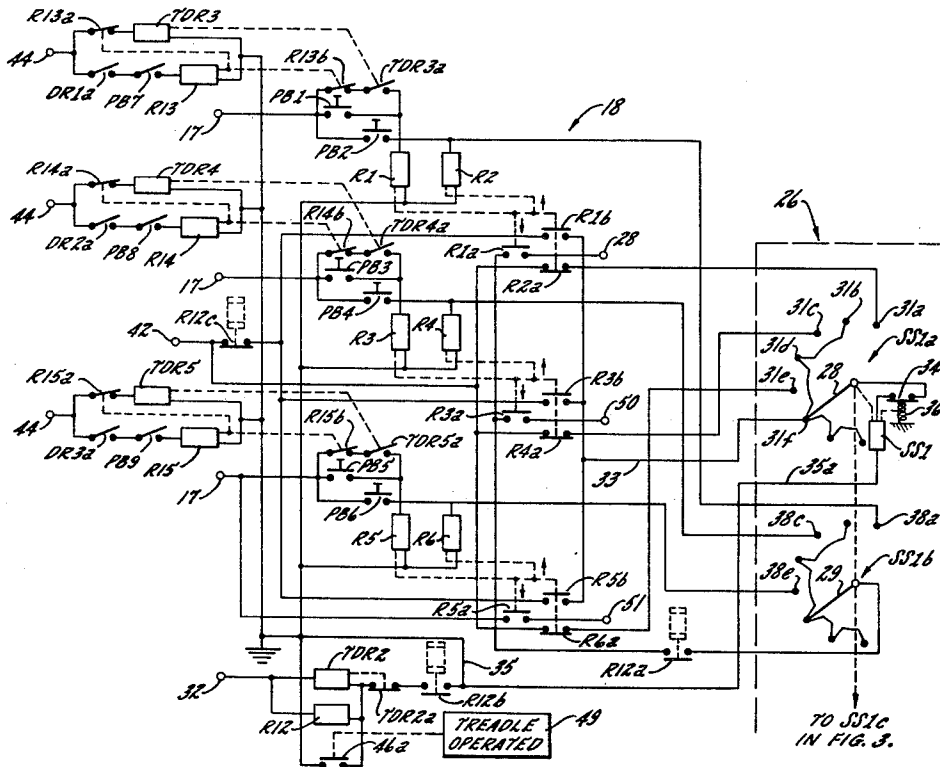
[50] **Field of Search**..... 340/51, 41,
31

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UNITED STATES PATENTS

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2,632,156	3/1953	Reynolds.....	340/51X

ABSTRACT: A system for controlling movement of traffic from a dispatching station, such as the entrance to a drive-in bank, to a plurality of serving stations, such as the teller windows in a drive-in bank. The system includes a sign or other means for instructing traffic at the dispatching station, a central control unit for energizing the instructing means, an actuating means at each of the serving stations to send actuating signals to the central control unit. The actuating means included a manual actuator which can be operated by the teller in a drive-in bank, for example, and also automatic actuators which respond to the arrival and departure of vehicles at the serving station to send actuating signals to the control unit. The control unit responds to the actuating signals to present sequential messages on the instructing means to direct the traffic at the dispatching.



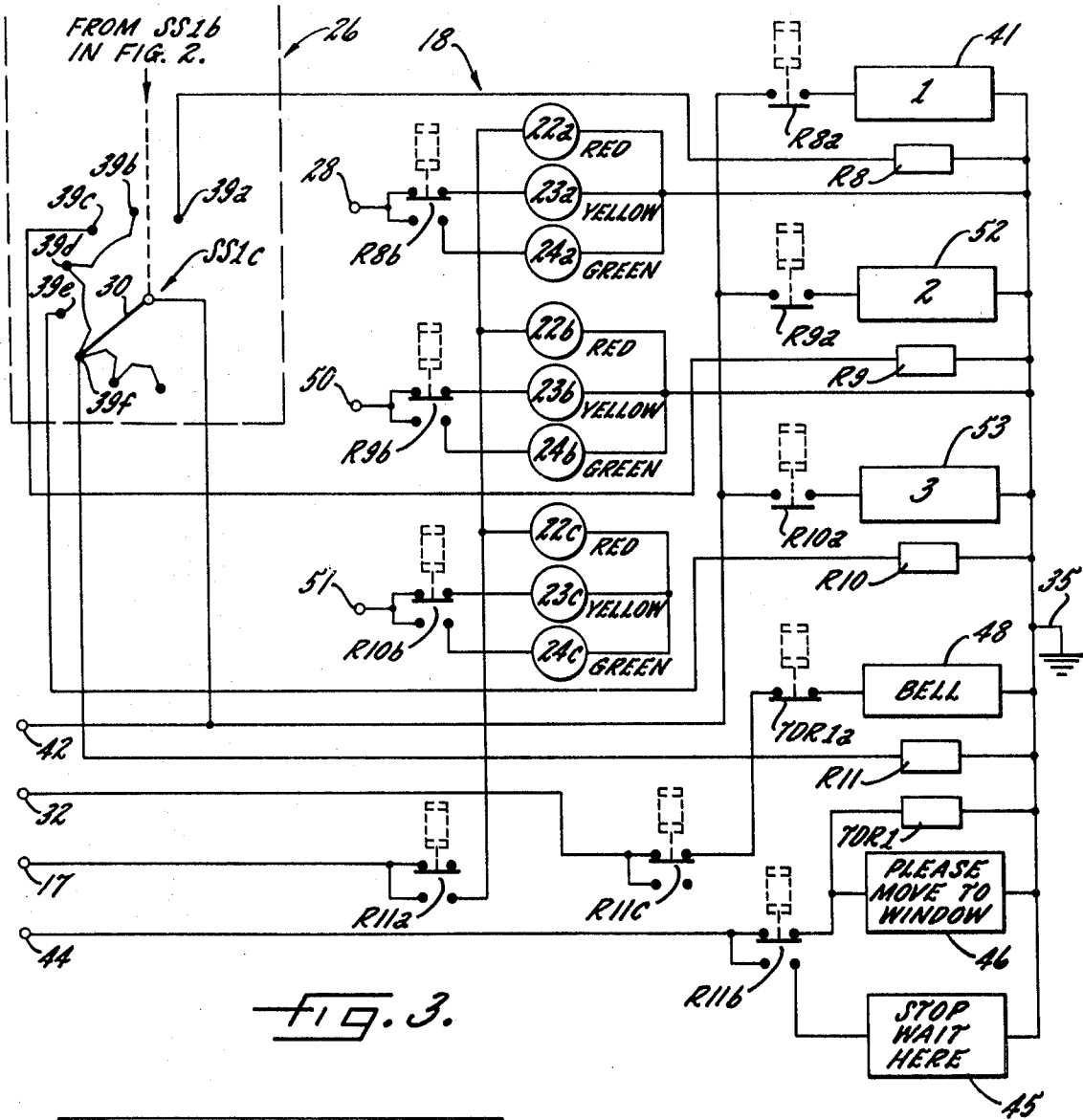


FIG. 3.

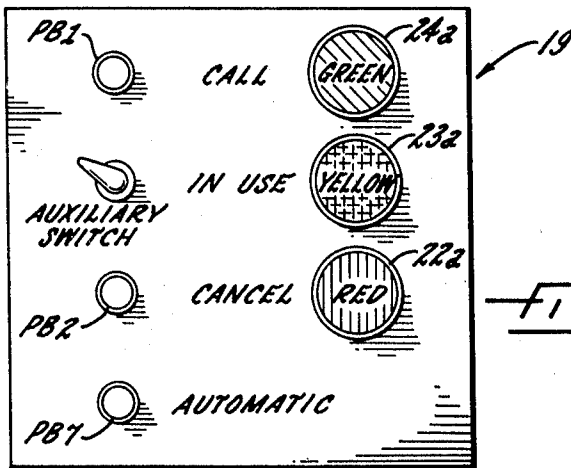
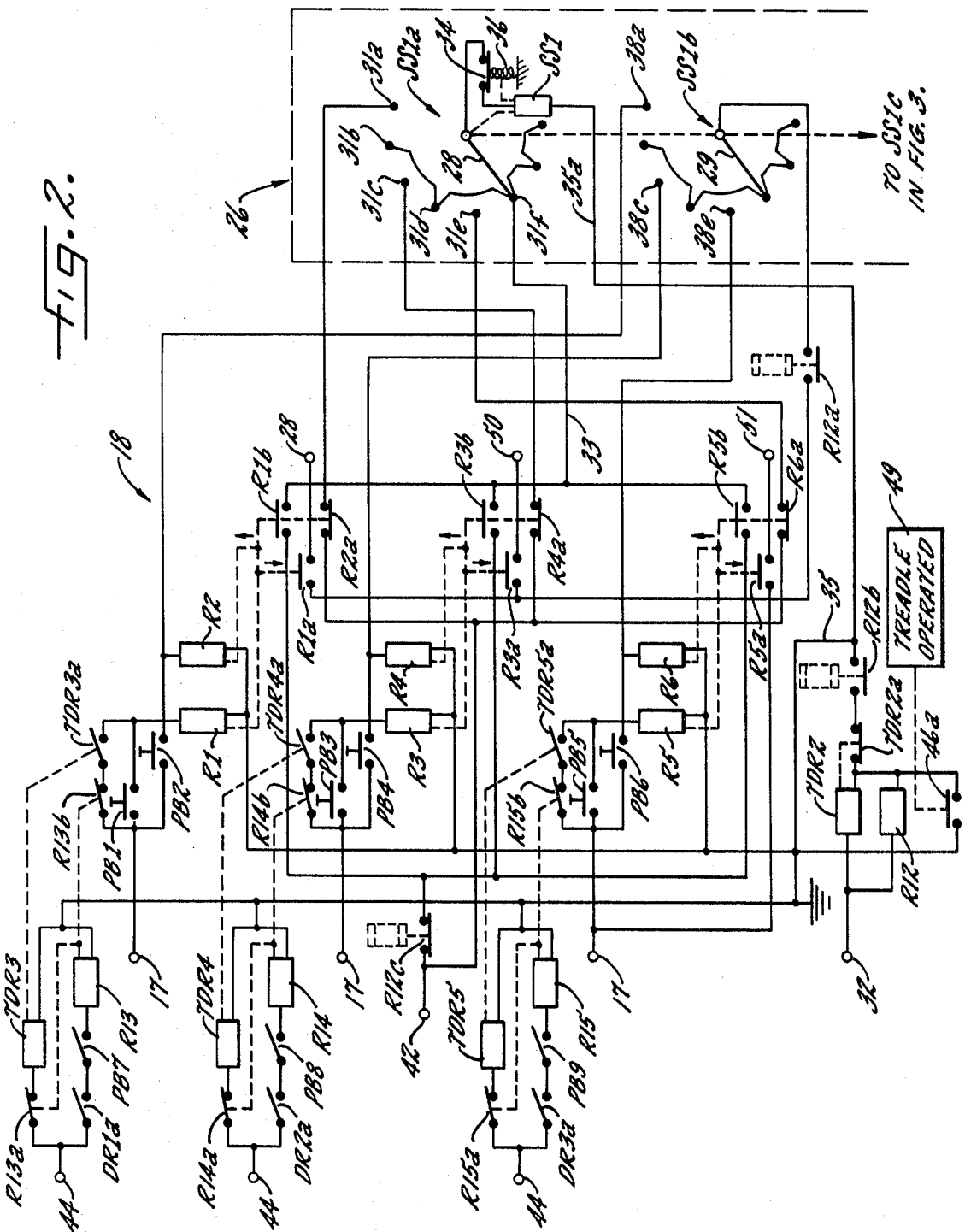


FIG. 1.

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IMPROVED TRAFFIC CONTROL SYSTEM FOR DRIVE-IN BANKS AND THE LIKE

The present invention relates generally to electronic systems for controlling the movement of traffic and, more particularly, to an improved electronic system for controlling the movement of traffic from one or more dispatching stations to a plurality of receiving stations.

In U.S. Pat. No. 3,206,722, issued Sept. 14, 1965, to O. T. Gustus et al., there is described and claimed an electronic traffic control system which controls the movement of traffic from a dispatching station to a plurality of receiving stations by accepting signals from the receiving stations as they are generated, which may include several signals generated simultaneously, and subsequently feeding out these signals to present messages at the dispatching station in a predetermined sequence. In the particular system described in the patent, the signals from the receiving station are generated by pushbuttons actuated by operating personnel such as bank tellers in a drive-in bank, for example. In certain applications, however, it has been found that continual operation of the actuating push buttons results in inconvenience to the operating personnel and, in addition, may result in delays in the traffic movement due to the inefficiency or forgetfulness of the operators.

It is a primary object of the present invention to provide an improved electronic control system for controlling the movement of traffic from one or more dispatching stations to a plurality of receiving stations, and which insures that each receiving station is utilized at maximum efficiency.

It is another object of the invention to provide an improved control system of the foregoing type which generates signals automatically from each receiving station in response to the movement of traffic therethrough.

A further object of the invention is to provide an efficient and economically manufacturable traffic control system of the type described above which is reliable and easy to maintain.

Other objects and advantages of the invention will become apparent upon reading the following description and upon reference to the drawings, in which:

FIG. 1 is a schematic diagram of a control panel for use in a traffic control system embodying the present invention;

FIG. 2 is a schematic circuit diagram of a portion of an electronic traffic control system embodying the invention; and

FIG. 3 is a schematic circuit diagram of the other portion of the system shown in FIG. 2.

While the invention will be described in connection with a preferred embodiment and method, it will be understood that we do not intend to limit the invention to such an embodiment and method but on the contrary we intend to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

Turning now to the drawings, there is shown an electronic traffic control system for controlling the movement of traffic from one or more dispatching stations, such as the entrance to a drive-in banking installation, to a plurality of receiving or serving stations, such as the various teller booths or windows in a drive-in bank. The illustrative system is designed for use with a single dispatching station serving three receiving stations, but it will be understood the system may be easily expanded for use with additional dispatching and/or receiving stations. For the purpose of controlling the movement of vehicles from the dispatching station to the various receiving stations, the illustrative system responds to signals generated at the various receiving stations, and to movement of vehicles through the stations, to present instructions on a sign or other instructing means located at the dispatching station to direct the operators of vehicles waiting at the dispatching station to the various receiving stations. Although specific reference will be made to a drive-in banking installation throughout the following description, it will be understood that the system provided by this invention has numerous other applications, such as the directing of trucks to cargo docks, the directing of transport vehicles in warehouses and the like.

For coordinating the presentation of particular movement messages along with hold position messages on the sign at the dispatching station, a central control unit 18 is provided coupling an operator actuated panel 19 with the sign. One panel is provided at each of the serving stations, an exemplary panel being shown in FIG. 1. The latter has a pair of pushbuttons PB1, PB2 connected with a source 17, and three indicator lights 22a, 23a, 24a explained subsequently. A master switch (not shown) controls energization of the complete system. When power is applied to the system, the light 22a, in the present instance red on panel 19, would indicate to an operator that the sign is presenting a hold position message: STOP WAIT HERE and the system is in condition for receiving his call.

Turning specifically to the exemplary construction of the central control unit 18, three sets of actuators or pushbuttons PB1, PB2; PB3, PB4; and PB5, PB6 are provided, one set being present at each of the receiving windows. The pushbuttons are electrically connected to complete an energizing circuit for respective sets of relays R1, R2; R3, R4; and R5, R6. Associated with each of the sets of relays are contacts R1a, R1b, R2a, R3a, R3b, R4a; and R5a, R5b, R6a. In the exemplary circuit the relays are of a construction known as latching relays in the art. Explaining operation of an exemplary set of these relays, upon actuation of push button PB1 the relay R1 is energized and contacts R1a, R1b are actuated and latched in a closed position to complete the respective circuits in which these contacts are operative. At the same time contacts R2a are opened. Should relay R2 be energized, for example if pushbutton PB2 were pressed, then the contacts R2a would be actuated and they would latch in the closed position while at the same time the contacts R1a and R1b would be opened. The arrows in FIG. 2 indicate the direction in which contact movement is effected. Summarizing, the contacts are latched in one or the other of two positions depending upon which relay was last energized.

For placing a call instructing a customer to move to respective service stations, e.g., teller windows, the control unit includes structure responsive to actuation of pushbuttons PB1, PB3 and PB5, respectively. As is explained subsequently, pushbuttons PB2, PB4 and PB6 at each of the respective stations are used to override or cancel signals submitted by the pushbuttons PB1, PB3 or PB5, respectively. Referring to the structure in control unit 18 responsive to actuation of PB1 at the first service station indicating a call for a vehicle to move to that station, source 17 is connected to relay R1 energizing the latter and actuating contacts R1a, R1b. The closing of contacts R1a provides electrical power at terminal 28 and, as shown in FIG. 3, completes a circuit through the light 23a, yellow in the present instance, to indicate on panel 19 to the operator that his call has been received.

At the same time that contacts R1a are closed contacts R1b are also closed energizing a selector 26 which in turn effects presentation of the movement message at the dispatching station. The selector 26 in the exemplary structure includes a stepping switch relay SS1 and three sets of stepping switches SS1a, SS1b and SS1c (the latter is shown in FIG. 3). The switches include a set of respective wipers 28, 29, 30 coupled to rotate as a unit. Summarizing the functions of each of the stepping switches, SS1 and SS1a cooperate to effect rotation of the wipers, SS1b prepares the control unit 18 for sequential presentation of messages and SS1c controls energization of the specific messages on the sign at the dispatching station.

Turning to stepping switch SS1a and the structure for effecting counterclockwise rotation of the wipers, SS1a includes contacts 31a, 31b, 31c, 31d, 31e and 31f with alternate contacts connected together, i.e. 31b, 31d, 31f, to provide a desired stepping operation of the wipers. The remaining alternate contacts 31a, 31c, 31e are coupled to respective relay contacts R2a, R4a and R6a. To effect unison stepping of the wipers 28, 29, 30, the wiper 28 is connected to source 42 through one of the respective relay contacts R2a, R4a, R6a or through the common conductor 33 and one of the contacts

R1b, R3b, R5b. The energizing circuit for relay SS1 includes the wiper 28, a set of relay contacts 34, the relay SS1 and conductor 35a connected to a common ground terminal 35. The relay SS1 operates as a self-interruption device effecting one-step movement of wiper 28. Explaining the self-interruption operation of the energization circuit of relay SS1, each time relay SS1 is energized the contacts 34 are opened. The interruption stops the wiper for a moment at one of the contacts 31a—31 whereupon a spring 36 biases the contacts 34 back to the closed position. If the contact at which the wiper 28 is stopped is energized, the relay SS1 will again step the wiper 28 around counterclockwise as viewed in FIG. 2. The operation continues until the wiper reaches a contact at which there is no electrical power, whereupon the relay SS1 is not energized after the circuit has been interrupted and stepping is stopped.

To effect positioning of the wiper 28 at a selected point, electrical energy is removed from selected ones of the contacts 31a—31f. To stop the wiper at contact 31a the actuation of pushbutton PB1 energizes relay R1 to actuate opening of contacts R2a and thereby open the circuit between contact 31a and source 42.

Accordingly, the wiper 28 will step around counterclockwise making the jump from the contacts at the lower end as viewed in FIG. 2 up to contact 31a and, upon making connection with contact 31a, the wiper stops because there is no electrical energy to energize relay SS1. The stepping switches SS1b and SS1c are mechanically coupled with the stepping switch SS1a thus all wipers rotate counterclockwise and stop at correspondingly oriented wiper contacts. Stepping switch SS1b has a set of contacts 38a, 38c, and 38e. The wiper 29 will stop at contact 38a. The remaining stepping switch SS1c has a set of contacts 39a—39f and the wiper 30 will stop at contact 39a.

Turning first to stepping switch SS1c which controls energization of specific messages, as best shown in FIG. 3, it has alternate contacts 39a, 39c and 39e, respectively, connected to relays R8, R9 and R10 to effect energization of respective numerals on the dispatching sign, i.e. 1, 2 and 3. The remaining contacts 39b, 39d, 39f, respectively are connected together and to relay R11. For providing electrical energy at each of the contacts, the wiper arm 30 is connected to an electrical source 42. Accordingly, when the wiper 30 is connected with the commonly connected contacts, electrical energy is transmitted to the relay R11, and as a result associated contacts R11a, R11b, R11c are actuated. Otherwise relay R11 is deenergized and the contacts are in a rest position. The contacts are shown in their rest positions. As is clear from FIG. 3, upon actuation contacts R11b complete an energization circuit from a source 44 to an initial hold position message 45: STOP WAIT HERE. At the same time the contacts R11a complete an energizing circuit through the respective red lights 22a, 22b, 22c indicating to the operators or tellers that the hold message STOP WAIT HERE is displayed on the instructing means. Contacts R11c are inoperative in their actuated state.

The movement message is effected on sign 16 by the wiper 30 stopping at contact 39a. Reviewing the effect of the person placing a call, the pushbutton PB1 was actuated and as a result wiper 28 of stepping switch SS1a steps to contact 31a. Simultaneously, at stepping switch SS1c the wiper 30 stepped to contact 39a. In this position of wiper 30, relay R11 is deenergized because the wiper no longer connects the relay to source 42. Accordingly, the contacts R11a, R11b, R11c, respectively take their rest positions. When contacts R11b drop to their rest position a message 46 PLEASE MOVE TO WINDOW is energized. At the same time contacts R11a assume a rest position in which the red lights 22a, 22b, 22c at each of the windows are extinguished indicating that the STOP WAIT HERE message has been blocked out. Also contacts R11c assume a rest position in which a bell 48 is energized from source 32 audibly indicating that a movement message is to be obeyed. In order to turn off the bell after a predetermined period of time, a time delay relay TDR1 and its associated contacts

TDR1a are provided. The time delay relay TDR1 is connected in parallel with the message means 46 and, accordingly, after the message PLEASE MOVE TO WINDOW has been on for a predetermined period of time the bell 48 is deenergized.

To display the numeral indicating which station the vehicle 15 is to move to, in the exemplary operation when wiper 30 makes electrical connection with contact 30a, a relay R8 is energized and its associated contacts R8a, R8b are actuated. The closing of contacts R8a completes an energizing circuit from source 42 to a numeral sign 41, reading: 1. The closing of contacts R8b energizes green light 24a to indicate to the teller that the sign reads: PLEASE MOVE TO WINDOW 1.

To prepare the control unit 18 for presenting the next message, movement of vehicles at the dispatching station is detected by a treadle 49 which effects energization of a relay R12. It is, of course, clear that detectors other than the pressure type can be used including among others infrared and induction detectors. Relay R12 has associated contacts R12a, R12b, R12c with contacts R12a controlling energization of stepping switch SS1b's wiper 29. Stepping switch SS1b includes contacts 38a, 38c, 38e connected respectively to relays R2, R4, R6 associated with the various service stations. Accordingly, when relay R12 is energized and contact R12a is actuated to close the circuit connecting the wiper 29 with the source 17, electrical energy is transmitted to relay R2 through stepping switch contact 38a. Operation of relay R2 closes contacts R2a and opens contacts R1a, R1b, the latching relay assembly having been explained previously.

The closing of contacts R2a completes a circuit from the source 42 to wiper contact 31a. Accordingly, the wiper 28 of stepping switch SS1a is energized and as a result self-interruption relay SS1 is energized. Upon energization of the relay SS1 the wiper arm is moved one step to contact 31b. The contacts R1b are open because the relay R2 was energized, accordingly the alternate, commonly connected terminals of stepping switch SS1a are no longer connected to source 42. As a result there is no electrical energy to effect operation of stepping relay SS1, and the wiper will stop at 31b. To prevent the wiper 29 from being stepped as the rear wheels of the vehicle pass over treadle 49, time delay relay TDR2 and contacts TDR2a are provided. Contacts R12b, R12c cooperate with relay TDR2 to assure proper operation.

The control unit 18 can accept signals from each receiving station at the same time and store these signals to effect sequential presentation of messages at the instructing means corresponding to the signals received so as to provide controlled movement of traffic to the various stations. In the present instance, the control unit includes a signal receiving and retaining device in the form of the latching relays associated with each of the receiving stations, in the present instance there being three stations and thus three sets of latching relays R1, R2; R3, R4; and R5, R6. To explain the signal receiving and storing structure in control unit 18, it is assumed that pushbuttons PB1, PB3 and PB5 at each of the respective windows are actuated at the same time, requesting that traffic move to these windows. Besides relay R1, relays R3 and R5 are also operated and thus contacts R3a, R3b and R5a, R5b are closed while contacts R4a, R6a are opened. Because the relays are of the latching type the contacts would hold their position. While the call from the first service station is processed, the closing of contacts R3a and R5a provides electrical power from terminal 17 to respective terminals 50, 51. Turning to FIG. 3, the providing of energy at terminals 50, 51 energizes respective yellow lights 23b, 23c. The yellow lights at each of the control panels indicate to the respective tellers that their signals have been received and stored.

At a later time after the message PLEASE MOVE TO WINDOW 1 has been displayed and a vehicle moving to the latter window actuates the detector 49, relay R2 is energized thereby effecting closing of contacts R2a. As a result, contact 31a of stepping switch SS1a is energized and wiper 28 is stepped by relay SS1 to contact 31b. Contact 31b is also energized because the contacts R3b are closed, because the teller

at the second window has actuated PB3 thus energizing all of the commonly connected contacts of stepping switch SS1a. Accordingly, the wiper 28 will step once more to terminal 31c. Contact 31c is not energized because contacts R4a are open since, as has been assumed, PB3 is actuated. Thus, the wiper arm 28 will stop at contact 31c. In step with wiper 28 are the wipers 29 and 30 of respective stepping switches SS1b, SS1c. In stepping switch SS1c the wiper 30 will stop at contact 39c. As a result the relay R11 is deenergized because the wiper 30 is not connecting the source 42 to any of the respective commonly connected terminals, 39b, 39d, 39f that are themselves connected to relay R11. Therefore contacts R11b will move to their rest position to connect source 44 to the message means 46; PLEASE MOVE TO WINDOW. At the same time relay R9 is energized actuating contacts R9a, R9b. Actuation of contacts R9a energizes message means 52 illuminating the numeral 2. The closing of contacts R9b energizes green light 24b to indicate to the operator at the second station that the message PLEASE MOVE TO WINDOW 2 is displayed on sign 16. Meanwhile the contacts R11a assume a rest position in which the red lights 22a, 22b, 22c at each of the control panels are extinguished. Also the contacts R11c are deenergized connecting the bell 48 to source 32 and audibly indicating to the vehicle operator that he should take note of the message that is displayed. The bell rings until the time delay relay TDR1 operates to actuate contacts TDR1a and thereby deenergize the bell 48.

As another vehicle passes over treadle 49 the selector 26 is prepared to present the next message. The contacts 46a are closed by actuation of treadle 49 to energize relay R12 and effect closing of contacts R12a, R12b and R12c. The closing of contacts R12a couples electrical energy from the source 17 to the wiper 29 which has stepped to contact 38c to thereby energize relay R4 and return the latching relay contacts to their rest position. In their rest position contacts R4a are closed and provide electrical energy at contact 31c to effect stepping of the wiper 28 because electrical energy is coupled into the stepping switch relay SS1. As a consequence wiper 28 moves to contact 31d which is also energized because the teller at the third station operated pushbutton PB5 to energize relay R5 and latch contacts R5a, R5b in the closed position. Contacts R5b in their closed position complete an energization circuit through conductor 33 to the commonly connected contacts of stepping switch SS1a. The wiper 28 will therefore couple electrical energy into stepping relay SS1 and effect further step movement of the wiper 28. The wiper 28 moves only one step to terminal 31e because the contacts R6a are open as a result of actuation of PB5 thereby removing electrical energy from the terminal 31e.

Meanwhile in stepping switch SS1c the wiper 30 has stepped to terminal 39e. As a result relay R11 is deenergized because contact 39e is not one of the commonly connected terminals to which relay R11 is connected and accordingly the message 45: STOP WAIT HERE is removed and the message 46: PLEASE MOVE TO WINDOW is presented on the sign 16. Because relay R10 is connected to terminal 39e, the stepping of wiper 30 to contact 39e couples electrical source 42 to relay R10 thereby energizing the latter and actuating contacts R10a, R10b. The actuation of contacts R10a effects energization of a numeral illuminating means 53 thereby displaying the number 3. The closing of contacts R10b completes the circuit for the green light 24c on the panel at the third station indicating to the teller that the message at the entrance station reads: PLEASE MOVE TO WINDOW 3.

For removing a signal or call after it has been placed and is either in storage or is displayed on the sign, the respective pushbuttons PB2, PB4 and PB6 are provided, one for each receiving station. Explaining the operation of one of the pushbuttons as an example, if the operator at the second service station has signalled a call which has either been placed on the sign or is awaiting presentation, cancellation of the call can be effected by operating pushbutton PB4. Upon actuation of the latter relay R4 is connected to source 17 which energizes the

relay R4 and effects return of relay contacts R3a, R3b and R4a to their rest position. The effect on the control unit 18 is the same as that explained previously when the detector 49 was actuated by a car passing over it to energize relay R4. The stepping relay SS1 is energized when contacts R4a close because the latter connect electrical source 42 to the contact 31c at which wiper 28 has stopped in response to the actuation of pushbutton PB3. The wiper 29 takes one step and stops at contact 31d unless an operator at the third station has placed a call whereupon the relay SS1a operates to effect the message PLEASE MOVE TO WINDOW 3.

In the foregoing description it has been assumed that the actuators PB1, PB3 and PB5 at respective serving stations 1, 2 and 3 are actuated at the same time. The system then operates so as to sequentially present instructions to direct vehicles at the dispatching station first to serving station 1, then to serving station 2 and finally serving station 3. If desired, any one or more of the stations can be bypassed while the other stations are operated. To explain the operation of the system when one of the serving stations is inoperative, it is assumed that serving station 2 is not operated but only stations 1 and 3. Accordingly, actuators PB1 and PB5 at respective stations 1 and 3 are operated, in the present instance simultaneously.

Turning to FIG. 2 and the selector 26 of control unit 18 there shown, the stepping switch SS1a is operated so it first stops at contact 31a and then stops at contact 31e. The wiper 30 of stepping switch SS1c steps in unison with switch SS1a and stops first at contact 39a to effect an instruction directing a vehicle to serving station 1, and then stops at contact 39e to effect an instruction on the sign 16 directing a subsequent vehicle to serving station 3. The operation of the pushbuttons or actuators to transmit signals to the control unit 18 thereby effecting signals at the dispatching station has been explained. At this point the structure allowing specific stations to be unused while the remainder of the stations are utilized is explained. To this end, the selector 26 steps the wiper 28 about from contact 31a to 31e. As has already been explained, the wiper 28 will be stepped counterclockwise as viewed in FIG. 2 from contact 31a to 31b after a movement message instructing a vehicle to move to station 1 has been displayed and the vehicle has actuated the detector 49 in proceeding to the station. Upon reaching contact 31b the wiper 28 takes another step because the commonly connected terminals 31b, 31d and 31f are connected to source 42 through closed contacts R5b and conductor 33. The latter is operated when relay R5 is energized by actuation of pushbutton PB5. Thus wiper 28 steps to contact 31c. The wiper 28 steps once again upon reaching contact 31c because when the serving station 2 is not being operated the relay R3 is deenergized and the contacts R3a, R3b and R4a are in their rest positions. In the latter position contacts R4a are closed thereby completing a circuit from the source 42 to wiper terminal 31c. Thus when the wiper 28 makes contact with the terminal 31e electrical energy will be coupled into stepping switch SS1 to effect stepping of wiper 28 to contact 31d. The wiper will step once more to contact 31e upon reaching contact 31d because the latter is coupled to the source 42 through common conductor 33 and the closed contacts R5b. Contacts R5b are actuated when pushbutton PB5 is operated to energize relay R5. Because contacts R6a have been open upon energization of relay R5, contact 31e is deenergized and thus wiper 28 stops at this contact. As was explained, the wiper 30 of stepping switch SS1c steps in unison with wiper 28 and thus will stop at contact 39e thereby effecting an instruction: PLEASE MOVE TO WINDOW 3. Thereafter, upon the detector 46 operating in response to vehicle 15 moving to station 3 the wipers 28, 29, 30 are stepped once and because power is removed from the commonly connected contacts of SS1a, the wiper comes to rest on contact 31f.

In accordance with the present invention, vehicle sensing means are provided at each of the receiving stations and coupled to the control unit for operating the selector automatically in response to the arrival and departure of vehicles at the

respective receiving stations. Thus, in the illustrative system, a vehicle sensing means or detector located at each teller window or other receiving station generates signals corresponding to those generated by the pushbuttons PB1, PB3, and PB5 each time a vehicle departs from one of the serving stations. One suitable detector for this purpose is the model EW65 Loop Detector made by Bliss-Eagle Signal Company which opens and closes a set of relay contacts built into the detector in response to the presence or absence, respectively, of a vehicle. In the illustrative system, these contacts are represented by reference characters DR1, DR2, and DR3, indicating that a separate detector is associated with each of the three serving stations.

In accordance with a further aspect of the invention, a second pushbutton or other actuating means is located at each of the receiving stations for enabling the vehicle sensing means or detector. Thus, in the illustrative system, an "automatic" pushbutton PB7 is included in the operator control panel 19, and corresponding buttons PB8 and PB9 are provided in the other two control panels for the other two serving stations. When the operator pushes button PB7, for example, the circuit from source 44 to the detector including contact DR1 is closed. If there is no vehicle present at the first serving station, the contacts DR1 are open, so that a relay R13 in series with the contacts DR1 and the pushbutton PB7 is deenergized. Consequently, contact R13a is in its normally closed position, thereby energizing a time delay relay TDR3 to open normally closed contacts TDR3a for purposes to be described below.

When the next vehicle arrives at the serving station corresponding to the detector having contacts DR1a (after actuation of the pushbutton PB7), the contacts DR1a close, thereby energizing the relay R13 and opening the contacts R13a and R13b. The opening of contact R13a deenergizes the time delay relay TDR3, thereby closing contact TDR3a. It will be appreciated that up to this point at least one of the contacts R13b or TDR3a in the line leading from the source 17 to the relay R1 is always open, so that power is supplied continuously to contact 31a of the stepping switch SS1a so that the wiper 28 is not stopped at the contact 31a.

When the vehicle departs from the serving station, the detector opens contacts DR1a again, thereby deenergizing the relay R13 and restoring the contacts R13a and R13b to their normally closed positions. The closing of contact R13a energizes the time delay relay R3, but because of its delaying function, the contact TDR3a remains closed for a predetermined delay interval, thereby closing the circuit from the source 17 to the relay R1. As described previously in connection with the actuation of pushbutton PB1, the energization of relay R1 opens contact R2a to remove power from the stepping switch contact 31a. Consequently, the wiper 28 of the stepping switch SS1a will be stopped at contact 31a the next time it reaches that point. Of course, all the other functions described previously as following the actuation of pushbutton PB1 will also be carried out automatically. After expiration of the predetermined delay interval determined by the time delay relay TDR3, the contact TDR3a opens, thereby completing one operating cycle. Thus, it can be seen that the opening and closing of the contact TDR3a performs essentially the same function as actuation of the pushbutton PB1, but this function is performed automatically in response to the arrival and departure of successive vehicles at the serving station.

It will be understood that the operation of the automatic calling system associated with the other two serving stations is the same as that described for the first serving station. Thus, vehicle sensing means or detectors at the second and third serving stations operate contacts DR2a and DR3a corresponding to DR1a at the first serving station, and the operator control panels include "automatic" pushbuttons PB8 and PB9 corresponding to pushbutton PB7 at the first serving station. Similarly, relays R14 and R15 control associated contacts R14a, R14b and R15a, R15b in the same manner as relay R13 controls contacts R13a, R13b, and time delay relays TDR4

and TDR5 control contacts TDR4a and TDR5a at the second and third serving stations, respectively, in the same manner as time delay relay TDR3 controls contact TDR3a at the first serving station.

As an example of usable voltages at the different sources herein enumerated, it has been found in a practical installation that the following voltages are usable: at terminal 17, 24 volts AC at terminal 32, 24 volts DC at terminal 42, 155 volts DC and at terminal 44, 115 volts AC.

I claim:

1. In a system for controlling movement of traffic in a dispatching installation, the combination comprising at least one dispatching station, means at said dispatching station for instructing entering traffic, a plurality of designated serving stations associated with said dispatching station, a central control unit having a manual selector operable to enable said instructing means, a vehicle detector at said dispatching station for returning said instructing means to their initial state upon passage of individual vehicles beyond said dispatching station, selectively operable manual actuating means at each of said serving stations and coupled to said control unit for operating said selector, and a second vehicle sensing means at each of said serving stations and coupled to said control unit for operating said selector automatically in response to the arrival and departure of vehicles at said serving stations, said central control unit being capable of receiving instructions from each of said actuating means or each of said sensing means at the same time and sequentially feeding instructions to said selector so that only one message is presented at a time at said dispatching station, said second vehicle sensing means being selectively enabled by a second manual enabling means.

2. A traffic control system as set forth in claim 1 which includes time delay means operatively connected to said second vehicle sensing means for responding to an output signal from said second sensing means to produce an actuating signal for said selector and maintaining said actuating signal for a predetermined delay interval to actuate said selector.

3. A traffic control system as set forth in claim 1 which includes relay means operatively associated with said second sensing means for opening and closing a first circuit associated therewith in response to the arrival and departure of vehicles at the corresponding serving station, and a time delay relay operatively associated with said relay means for closing and opening a second circuit of said first circuit, said time delay relay maintaining said circuit closed for a predetermined delay time interval following the closing of said first circuit to produce an actuating signal for said selector.

4. In a system for controlling movement of traffic in a dispatching installation, the combination comprising at least one dispatching station, means at said dispatching station for instructing entering traffic, a plurality of designated serving stations associated with said dispatching station, a control unit for energizing said instructing means to effect sequential instructions at said dispatching station to direct successive vehicles at said dispatching station when to move and to which serving station movement is to be made, a vehicle detector at said dispatching station for returning said instructing means to their initial state upon passage of individual vehicles beyond said dispatching station, a second vehicle sensing means directly responsive to the presence or absence of a vehicle at each of said serving stations for generating signals indicating the presence or absence of a vehicle at said stations, said vehicle sensing means being coupled to said control unit, and automatic actuating means operatively associated with each of said second sensing means for responding to the signal generated by said second sensing means to send actuating signals to said control unit to control the energization of said instructing means according to the arrival and departure of vehicles at said serving stations.

5. In a system for controlling movement of traffic in a dispatching installation, the combination comprising at least one dispatching station, means at said dispatching station for instructing entering traffic, a plurality of designated serving

stations associated with said dispatching station, a control unit for energizing said instructing means to effect sequential instructions at said dispatching station to direct successive vehicles at said station when to move and to which serving station movement is to be made, a vehicle detector at said dispatching station for returning said instructing means to their initial state upon passage of individual vehicles beyond said dispatching station, manual actuating means at each of said serving stations and coupled to said control unit for sending actuating signals to said control unit in response to manual operation of said actuating means, a second vehicle sensing means at each of said serving stations and coupled to said control unit for generating signals indicating the presence or absence of a vehicle at said stations, and automatic actuating means operatively associated with each of said second sensing means for responding to the signal generated by said second sensing means to send actuating signals to said control unit to control the energization of said instructing means according to the arrival and departure of vehicles at said serving stations, said second vehicle sensing means and said automatic actuating means being selectively enabled by manual enabling means.

6. A traffic control system as set forth in claim 5 which includes time delay means operatively connected to said second vehicle sensing means for responding to an output signal from said second sensing means to produce an actuating signal for said control unit and maintaining said actuating signal for a predetermined delay interval to actuate said control unit.

7. A traffic control system as set forth in claim 5 which in-

cludes relay means operatively associated with said second sensing means for opening and closing a first circuit associated therewith in response to the arrival and departure of vehicles at the corresponding serving station, and a time delay relay operatively associated with said relay means for closing and opening a second circuit in response to the opening and closing of said first circuit, said time delay relay maintaining said second circuit closed for a predetermined delay time interval following the closing of said first circuit to produce an actuating signal for said control unit.

8. A traffic control system as set forth in claim 4 which includes time delay means operatively connected to said second vehicle sensing means for responding to an output signal from said second sensing means to produce an actuating signal for said control unit and maintaining said actuating signal for a predetermined delay interval to actuate said control unit.

9. A traffic control system as set forth in claim 4 which includes relay means operatively associated with said second sensing means for opening and closing a first circuit associated therewith in response to the arrival and departure of vehicles at the corresponding serving station, and a time delay relay operatively associated with said relay means for closing and opening a second circuit in response to the opening and closing of said first circuit, said time delay relay maintaining said second circuit closed for a predetermined delay time interval following the closing of said first circuit to produce an actuating signal for said control unit.

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