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SELECTING SYSTEM FOR ELEVATORS

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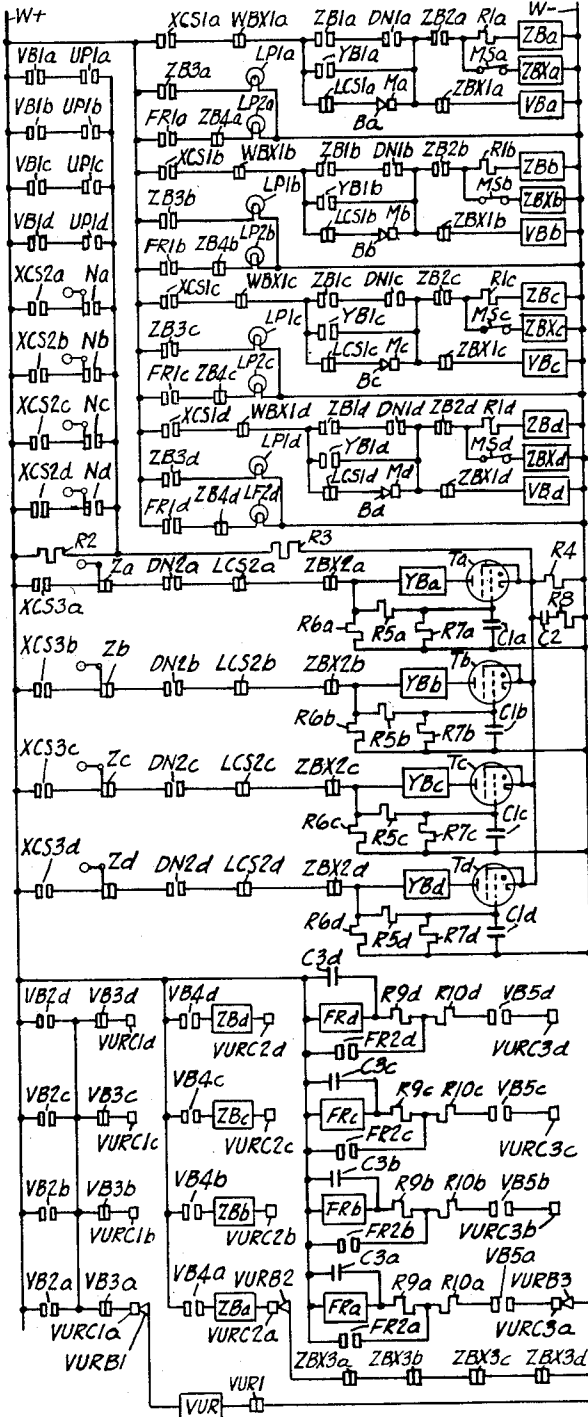


FIG. 1

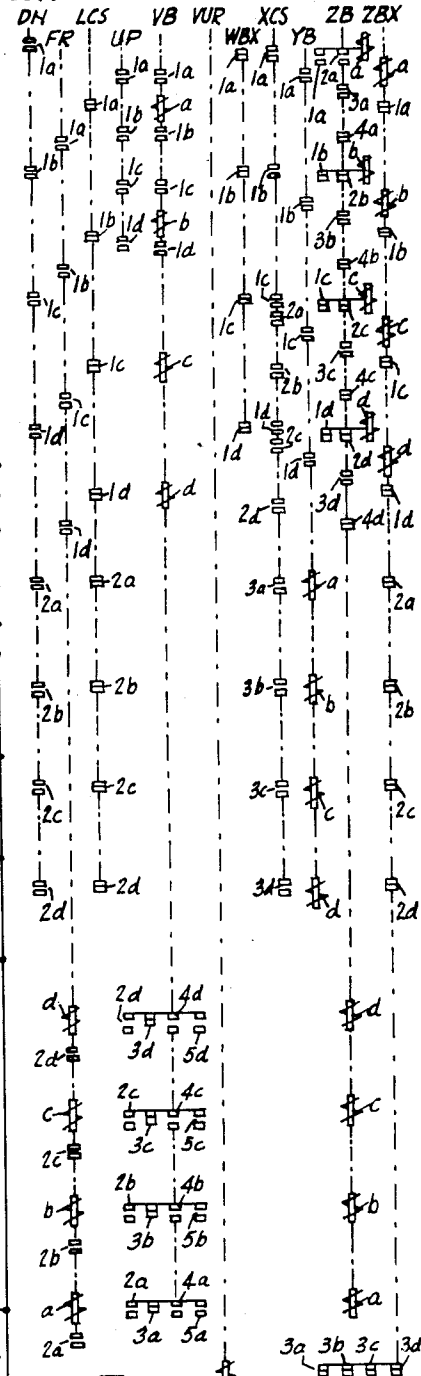


FIG. 1S

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1

2,936,858

SELECTING SYSTEM FOR ELEVATORS

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20 Claims. (Cl. 187—29)

The invention relates to elevator systems and particularly to apparatus for selecting the order in which cars are to depart from a predetermined landing.

The invention is particularly applicable to dispatching systems it is advantageous to dispatch the cars from a dispatch landing on a non-sequence basis without regard to the order in which they have previously departed from that landing. When the cars are dispatched on a non-sequence basis, the cars are selected for dispatching in the order in which they arrive at the dispatch landing, except where there is an accumulation of cars at the dispatch landing from which the selection may be made, in which case selection is usually made on a rotational basis. Selection of the next car takes place incident to the dispatching of the then selected car from the dispatch landing when one or more other cars is at the dispatch landing at the time the dispatching takes place. If no other cars are there, selection takes place as soon as another car arrives at the dispatch landing. With such an arrangement, selection is made before dispatching takes place, thus allowing time for the selected car to be loaded. Selection is indicated to waiting passengers, usually by lighting the hall lantern or a sign for the particular car which is selected, advising them which car will be the next to leave. Also in systems in which the cars are attendant controlled, selection is indicated to the car attendant to advise him when to start loading his car. The invention is particularly directed to non-sequence dispatching systems.

The object of the invention is to improve the operation of an elevator system in its selection of the elevator cars for starting from a given landing.

One feature of the invention is to select in advance of its arrival at the dispatch landing the next car to be dispatched, under conditions where no car is available at the dispatch landing for such selection.

Another feature of the invention is also to select in advance of its arrival at the dispatch landing the second car to be dispatched, under conditions where no car is available at the dispatch landing for such selection.

The selection of the next car to be dispatched is indicated to waiting passengers at the dispatch landing as soon as the selection takes place. Thus the advance indication of selection where the selection takes place prior to arrival of the selected car at the dispatch landing enables the waiting passengers to get into position to board the selected car before it arrives. This decreases the loading time with the result that the dispatching interval may be shortened, thus expediting elevator service.

The selection of the second car to be dispatched is also indicated to waiting passengers at the dispatch landing. Thus any excess of waiting passengers who are unable to board the selected car, may move into position to board the next car, as soon as it becomes the next selected car and arrives at the dispatch landing.

The selection of the next car to be dispatched in advance of its arrival at the dispatch landing may be used alone or in conjunction with the selection of the second car to be dispatched. When used alone, there may be, at the time the dispatch of the selected car is initiated, under conditions where no other car is at the dispatch landing, two or more down traveling cars within an advance

2

selection zone. Under such conditions, the car which will be the first to reach the dispatch landing is selected as the next to be dispatched. When used in conjunction with the selection of the second car to be dispatched, upon the dispatch of the selected car, the selection of the next car is transferred to the car selected as the second car to be dispatched. Here again there may be, at the time the selection is transferred, no car at the dispatch landing to be selected as the new second car to be dispatched but two or more cars other than the new next selected car may be traveling down within an advance selection zone. Under such conditions, the nearest of such cars to the dispatch landing is selected as the second car to be dispatched.

The invention is particularly applicable to installations in which the elevator cars operate express in a lower zone in a building and will be described as applied to the express elevators of such an installation. When applied to such an installation, the advance selection zone extends from a point in the express zone at which down traveling cars entering the express zone will have attained full speed.

Other features and advantages of the invention will be seen from the above and from the following description and appended claims.

The invention will be described for convenience as applied to dispatching cars from a lower dispatch landing, which may be the lobby of the building and which will hereinafter be termed the main landing. Also, it will be described as applied to a four car bank of express elevators. As the cars may also serve a basement, basement operation is included. Although the invention is applicable to various forms of elevator dispatch and control systems, it will be described with reference to the dispatch and control system disclosed in the Glaser and Hornung Patent No. 2,589,242. In such a system, when operating with attendants, the cars are manually started by the attendants in the cars upon receipt of dispatch signals and, when operating without attendants, the cars are dispatched by automatically starting the cars. While the invention is applicable to dispatching and control systems with attendant operation, it is particularly applicable to such systems in which the cars are operated without attendants.

In the drawings:

Figure 1 is a simplified schematic wiring diagram of a portion of the elevator dispatching and control system, which includes circuits embodying the invention; and

Figure 1s is a key sheet for Figure 1 showing the electromagnetic switches in spindle form.

The circuits are shown in "across-the-line" form, the relationship of the coils and contacts being seen from Figure 1s where the coils and contacts are in horizontal alignment with the corresponding coils and contacts in the wiring diagram. To facilitate and simplify the disclosure, only a portion of the dispatching and control circuits is shown and those shown relate to selection of the cars for dispatching from the main landing.

The electromagnet switches employed in the system illustrated are designated as follows:

DN—Down direction switch
FR—Flicker switch
LCS—Lowest call switch
UP—Up direction switch
VB—Availability switch
VUR—Up selecting switch
WBX—Up dispatch holding switch
XCS—Car in service switch
YB—Advance availability switch
ZB—Car selected switch
ZBX—Auxiliary car selected switch

In the wiring diagram, these letters are applied to the coils of the switches and, with reference numerals appended thereto, are applied to the contacts of the switches. The contacts of the switches are shown for switch deenergized condition. Only the contacts of switches DN, UP, WBX and XCS are illustrated, the circuits for their coils being shown in the aforementioned Glaser and Hornung patent. Also only the contacts of switch LCS are illustrated, the circuit for the coil being as shown in the Glaser and Lusti Patent No. 2,682,318, modified as will be explained later. Switch ZB has both an operating coil and a holding coil. Except for switch VUR, these switches are individual to the elevators, that is, each elevator has one of each of them. Differentiation will be made between the different elevators by appending to the reference characters employed to designate these switches and various other elements of the system individual to the elevators, lower case letters *a*, *b*, *c* and *d*, indicative of the different elevators for which they are provided.

Switch VUR is a rotary stepping switch utilized in the selection of the cars. It is provided with three banks, each bank comprising a series of stationary contacts, one for each car, and a movable brush adapted to engage the stationary contacts in succession. One of these banks represented by stationary contacts VURC1 and brush VURB1 control the selection of the cars. Another represented by stationary contacts VURC2 and brush VURB2 control the circuits for the coils of car selected switches ZB. The third bank represented by stationary contacts VURC3 and brush VURB3 control the circuits for the coils of flicker switches FR. The brushes of the rotary stepping switch are rotated in step by step movement by the operating coil. Successive deenergizations of the operating coil to cause stepping operations are effected by contacts VUR1.

Each car is provided with a switch Z which is actuated to closed position by car movement when the car traveling in the down direction arrives at a predetermined distance below the top of the express zone. This distance is such that the car will be traveling at full speed at this point. This insures that a down car that has operated its switch Z will not be overtaken by a following car as might happen if these switches were positioned say at the top of the express zone and for example one car entered the zone at full speed following a car which entered the zone at a slow speed due to a stop at the next landing above. Each switch remains closed until actuated to open position by the car for which it is provided, as the car returns to that point in its upward movement.

Each car is also provided with a switch N which is actuated by car movement to closed position, as the car leaves the main landing to go to the basement and is actuated to open position, as the car returns to the main landing from the basement.

Each car is provided with a selector machine, as described in the aforementioned Glaser and Hornung patent. Each selector machine has a stationary contact M for the main landing which is engaged by the movable brush B on the synchronous panel, incident to the car arriving at the main landing. Preferably switches Z and N for each car are operated by the synchronous panel of the selector machine for that car.

Each car is also provided with a lamp LP1 for indicating to waiting passengers at the main landing when lighted that that car is selected for dispatching. This lamp may be the up hall lantern for the car at the main landing. When the system is also arranged to select not only the next car to be dispatched but also the second car to be dispatched, each car is also provided with another lamp LP2 to indicate to the waiting passengers at the main landing when lighted that that car will be the second car to be dispatched. In such case, the lamp LP1 may be arranged to illuminate a "THIS CAR UP" sign and lamp LP2 may be arranged to illuminate a "SECOND CAR UP" sign.

W+ and W- designate direct current supply lines for the system. Resistors are designated generally as R and capacitors are designated generally as C. T are electron tubes, one for each elevator, in the circuits controlled by switches Z. These tubes may be thyatrons such as type RCA2050, each having control grid, anode, cathode and suppressor grid electrodes, the latter two being connected together. The control grid of each tube is connected through a resistor-capacitor network comprising, for tube Ta for example, grid resistors R5a, R6a, R7a and grid capacitor C1a to supply line W- and to its anode circuit. The cathodes of all tubes are connected together and to supply line W+ through current limiting resistors R2 and R3. These cathodes are also connected to supply line W- by means of a resistor-capacitor network comprising resistors R4 and R8 and capacitor C2.

For a 120 volt supply and for the type of electronic tube specified, the following ohmic values of resistors and capacities of condensers in the electronic circuits have been found satisfactory:

Resistors:

R2	ohms	40,000
R3	do	15,000
R4	do	1,500
R5	megohms	3.6
R6	ohms	220,000
R7	megohms	2.4
R8	ohms	250

Condensers:

Microfarads

C1	250
C2	10

The invention will first be described as arranged for selecting both the next car to be dispatched and the second car to be dispatched. Assume that all cars are in service so that contacts XCS1, XCS2 and XCS3 for each car are engaged. Assume also that all cars are at the main landing so that selector brush B for each car is in engagement with its corresponding selector stationary contact M. Thus upon the application of voltage to supply lines W+ and W-, a circuit is completed for the coil of the availability switch VBa for car *a*, the circuit extending from line W+ through XCS1a, WBX1a, LCS1a, Ba, Ma, ZBX1a and VBa to line W-. Similar circuits are completed for the coils of availability switches VBb and VBd for cars *b* to *d*, respectively. Thus, all the VB switches are operated and contacts VB1a, VB1b, VB1c and VB1d are engaged. Assuming further that all cars are set for upward travel, the up direction switches UP for cars *a* to *d* are operated and remain operated until the cars for which these switches are provided reverse their direction of travel. Thus contacts UP1a, UP1b, UP1c and UP1d are engaged and a circuit is completed from line W+ through the parallel circuits extending through VB1 and UP1 for each elevator, resistor R3, capacitor C2 and resistor R8 to line W-, charging capacitor C2 in the common cathode return circuit of tubes Ta to Td to establish a predetermined grid bias, for purposes to be explained later. Also contacts VB3 of each VB switch are separated. Assuming that brush VURB1 is in engagement with stationary contact VURC1a for car *a* at this time, no operation of the up selecting switch VUR takes place due to the fact that the circuit for its coil is open at contacts VB3a. Thus car *a* is selected to be the first to start upward from the main landing. Had brush VURB1 been in engagement with a contact for some other car, say contact VURC1b for car *b*, instead, no operation of the up selecting switch VUR would have taken place because the circuit for its coil would have been open at contacts VB3b. Under such conditions, car *b* would be the car selected as the first car to leave.

Also, contacts VB4 and VB5 of each VB switch are engaged. Thus with brush VURB1 in engagement with contact VURC1a, selecting car *a* as the first to leave the

main landing, brush VURB2 is in engagement with stationary contact VURC2a for car *a* so that a circuit is completed for the operating coil of car selected switch ZBa for car *a*. This circuit extends from line W+ through VB4a, ZBa, VURC2a, VURB2, ZBX3a, ZBX3b, ZBX3c and ZBX3d to line W—. Also brush VURB3 is in engagement with stationary contact VURC3a so that a circuit for the coil of flicker switch FRa for car *a* is complete, this circuit extending from line W+ through FRa, R9a, R10a, VBV5a, VURC3a and VURB3 to line W—. The purpose of the flicker switches will be explained later.

Car selected switch ZBa operates to engage contacts ZB2a, completing a circuit for its holding coil and for the coil of the auxiliary car selected switch ZBXa for car *a*, the circuit extending from line W+ through XCS1a, WBX1a, LCS1a, Ba, Ma, ZB2a, R1a and ZBa to line W— and through MSa and ZBXa in parallel with ZBa. Switch ZBa also separates contacts ZB4a in the circuit for lamp LP2a and engages contacts ZB3a to complete a circuit for lamp LP1a. Lamp LP1a illuminates the THIS CAR UP sign for car *a* to indicate that this car will be the first dispatched.

Auxiliary car selected switch ZBXa operates to separate contacts ZBX1a, interrupting the circuit for the coil of switch VBa. Switch ZBXa also separates contacts ZBX3a, breaking the circuit for the operating coil of switch ZBa. Switch ZBa is maintained operated by its holding coil when contacts ZBX3a separate. Switch VBa releases to separate contacts VB5a, breaking the circuit for the coil of flicker switch FRa, which releases. Thus while, under the assumption made, a circuit is completed for the coil of switch FRa, this circuit is immediately broken and is thus of no consequence.

Switch VBa, upon releasing, also engages contacts VB3a to complete a circuit for the coil of switch VUR, the circuit extending through VB2b, VB3a, VURC1a, VURB1, VUR and VUR1. Switch VUR notches its brushes VURB1, VURB2 and VURB3 into engagement with stationary contacts VURC1b, VURC2b and VURC3b, respectively, for car *b*, at which position the circuit for coil VUR is interrupted as contacts VUR1 separate. Coil VUR remains deenergized since contacts VB3b are open, as previously stated. Since contacts ZBX3a are now separated, the operating coil of switch ZBb for car *b* cannot be energized. However, a circuit is completed for the coil of flicker switch FRb for car *b*, the circuit being like that traced for the coil of switch FRa and extending through contact VURC3b and brush VURB3. This flicker switch is alternately operated and released by the action of its short circuiting contacts FR2b, being delayed in releasing by the discharge of condenser C3b into its coil. Thus, its contacts FR1b alternately engage and separate to cause flickering of lamp LP2b which illuminates the SECOND CAR UP sign for car *b*. Thus waiting passengers are advised that car *b* will be the next to be dispatched after car *a*.

Next assume that car *a* is dispatched. Incident to this dispatching operation, the up dispatch holding switch WBXa is operated and remains operated until car *a* leaves the main landing. Switch WBXa, upon operation, separates its contacts WBX1a, interrupting the circuit for the holding coil of switch ZBa and the coil of switch ZBXa for car *a*. Switch ZBa releases to separate contacts ZB3a, which interrupts the circuit for lamp LP1a, thereby extinguishing the THIS CAR UP sign for car *a*. Switch ZBXa releases to engage contacts ZBX3a, completing a circuit by way of contact VURC2b and brush VURB2 for the operating coil of switch ZBb for car *b*. Switch ZBb operates to engage contacts ZB2b, completing a circuit for its holding coil and for the coil of switch ZBXb for car *b*, the circuit being like that above traced for the holding coil of switch ZBa and the coil of switch ZBXa. Switch ZBb also engages contacts ZB3b, completing a circuit for lamp LP1b for car *b* to illuminate the THIS

CAR UP sign positioned above the entranceway to car *b*, and separates contacts ZB4b to interrupt the circuit of lamp LP2b, thereby extinguishing the SECOND CAR UP sign for car *b*. Thus waiting passengers are advised that car *b* will be the next car dispatched.

Switch ZBXb operates to separate contacts ZBX3b, interrupting the circuit for the operating coil of switch ZBb for car *b*. However, switch ZBb is maintained in operated condition by its holding coil. Switch ZBXb also separates contacts ZBX1b, interrupting the circuit for the coil of switch VBb for car *b*. Switch VBb releases to separate contacts VB5b, interrupting the circuit for the coil of switch FRb for car *b*. Switch VBb also separates contacts VB2b and engages contacts VB3b to complete a circuit through contacts VB2c for the coil of switch VUR. Switch VUR notches to its next position, moving its brushes VURB1, VURB2 and VURB3 into engagement with stationary contacts VURC1c, VURC2c and VURC3c, respectively, for car *c*, where they remain due to separated contacts VB3c. Contacts ZBX3b, which are now separated, prevent completion of the circuit for the operating coil of switch ZBc for car *c* at this time. The engagement of brush VURB3 with contact VURC3 completes a circuit through contacts VB5c for the coil of switch FRc for car *c*. Switch FRc operates as above described to cause the flickered lighting of lamp LP2c which illuminates the SECOND CAR UP sign for car *c*, advising the waiting passengers that car *c* will be the next to be dispatched after car *b*.

In a manner similar to that already described, incident to the dispatching of car *b*, car *c* is selected as next to be dispatched and car *d* is selected as the second to be dispatched. Then incident to the dispatching of car *c*, car *d* is selected as next to be dispatched.

It is to be noted that as each car is selected for dispatching, the availability switch for that car releases, separating its contacts. Therefore, as car *d* is selected and contacts VB1d separate, resistor R2 is inserted in series with condenser C2, now in a charged state, as previously set forth. Resistor R2 is of sufficient ohmic value to reduce the potential applied to condenser C2 to a value which causes this condenser to discharge partially through resistor R4. This makes the cathodes of tubes Ta to Td less positive with respect to their respective grids, decreasing the grid bias applied to these tubes to value which will permit their ionization, as will be explained.

Assume now that car *d* is dispatched so that all cars are away from the main landing. Assume next that car *b* traveling in the down direction arrives at the point in the express zone where it closes switch Zb. Since car *b* is traveling downward, contacts DN2b of the down direction switch for car *b* are engaged. Thus switch Zb completes the anode-cathode circuit of tube Tb through the coil of switch YBb. This circuit is from line W+ through XCS3b, Zb, DN2b, LCS2b, ZBX2b, YBb, Tb and R4 to line W—. Due to the charge on condenser C2, the voltage thus applied to this circuit is insufficient to cause ionization of tube Tb. Switch Zb also completes a circuit for grid condenser C1b from line W+ through XCS3b, Zb, DN2b, LCS2b, ZBX2b, R5b, and C1b to line W—. Condenser C1b charges quickly to a value to raise the grid to cathode potential of tube Tb sufficiently to cause conduction of the tube to take place. Thus the delay in causing conduction of the tube is only momentary.

As conduction takes place, switch YBb for car *b* operates to engage contacts YB1b, completing a circuit for the coil of switch VBb for car *b*, this circuit extending from line W+ through XCS1b, WBX1b, YB1b, ZBX1b and VBb to line W—. Switch VBb upon operation, engages contacts VB2b, VB4b and separates contacts VB3b. Since, as has been previously stated, car *d* was the last car dispatched, a circuit is completed for the coil of switch VUR through contacts VB2b and VB3d, contact VURC1d

and brush VURB1. Switch VUR notches its brushes VURB1, VURB2 and VURB3 into engagement with stationary contacts VURC1b, VURC2b and VURC3b, respectively for car *b* where they remain, due to separated contacts VB3b. A circuit is thus completed by way of contacts VB4b, contact VURC2b and brush VURB2 for the operating coil of switch ZBb for car *b*. Switch ZBb, upon operation, engages contacts ZB2b, completing a circuit for its holding coil and for the coil of switch ZBXb. Switch ZBb also engages contacts ZB3b completing a circuit for lamp LP1b illuminating the THIS CAR UP sign for car *b*, thereby advising waiting passengers in advance of the arrival of car *b* at the main landing that car *b* is selected as the next car to be dispatched from that landing.

Switch ZBXb, upon operation, separates contacts ZBX1b, interrupting the circuit for the coil of switch VBb. Switch ZBXb also separates contacts ZBX3b, breaking the circuit for the operating coil of switch ZBb. However, this switch is maintained operated by its holding coil. Switch VBb upon releasing, separates contacts VB2b and engages contacts VB3b, preparing a circuit for the coil of switch VUR. Switch ZBXb also separates contacts ZBX2b, interrupting the anode-cathode circuit of tube Tb, which ceases to conduct. Thus switch YBb releases, separating contacts YB1b, which is without effect since these contacts are short circuited by contacts ZB1b and DN1b.

Next assume that car *a* traveling downward actuates switch Za to closed position, completing the anode-cathode circuit of tube Ta through the coil of switch YBa and also completing a circuit for condenser C1a, which charges to a value to cause tube Ta to conduct. As a result switch YBa operates, engaging contacts YB1a to complete a circuit for the coil of switch VBa. Switch VBa upon operation, engages contacts VB2a, VB4a and VB5a and separates contacts VB3a. Thus, a circuit is completed by way of contacts VB2a and VB3b for the coil of switch VUR. Switch VUR notches brushes VURB1, VURB2 and VURB3 into engagement with contacts VURC1a, VURC2a and VURC3a, respectively, where they remain due to separated contacts VB3a. Contacts ZBX3b, which are now separated, prevent completion of the circuit for the operating coil of switch ZBa. However, the circuit for the coil of flicker switch FRa is completed through contacts VB5a. Switch FRa operates to cause flickered lighting of lamp LP2a, which illuminates the SECOND CAR UP sign for car *a*, thereby advising waiting passengers in advance of the arrival of car *a* at the main landing that it will be the next car dispatched after car *b* is dispatched.

Now assume that car *d* enters the express zone traveling downward and operates switch Zd to closed position, thereby applying voltage to the anode-cathode circuit of tube Td and causing grid condenser C1d to begin charging. Since tube Ta is conducting, the voltage drop across resistor R4, which resistor is common to the cathodes of tubes Ta to Td, drives the cathode of tube Td sufficiently positive with respect to its grid to maintain this tube in nonconducting condition.

Similarly, as car *c*, traveling downward, operates switch Zc to closed position, applying voltage to the anode-cathode circuit of tube Tc and causing grid condenser C1c to begin charging, tube Tc is maintained in nonconducting condition by the voltage drop across resistor R4 in the common cathode circuit.

Next assume that car *b*, which is selected as the next car to be dispatched, arrives at the main landing, becomes set for up travel and then is dispatched in a manner similar to that previously described in connection with car *a*. As car *b* is dispatched, contacts ZBX3b engage, completing a circuit through brush VURB2 and stationary contacts VURC2a for the operating coil of switch ZBa for car *a*, which car is presently selected as the second car to be dispatched. Switch ZBa, upon op-

eration, engages contacts ZB1a, completing a circuit for its holding coil and the coil of switch ZBXa, thereby transferring the selection of the next car to be dispatched to car *a*, the nearest down traveling car. In doing so, switch ZBa extinguishes the SECOND CAR UP sign for car *a* and illuminates its THIS CAR UP sign, as has been previously described, to advise waiting passengers of the status of car *a* in advance of its arrival at the main landing.

Switch ZBXa, upon operation, separates contacts ZBX2a, interrupting the anode-cathode circuit of tube Ta which ceases to conduct, causing condenser C2 to start discharging through resistor R4. Since condenser C1d started charging before condenser C1c, the grid of tube Td is presently at a more positive value with respect to its cathode than is the grid of tube Tc with regard to its cathode. Therefore, as condenser C2 discharges, the grid to cathode potential of tube Td is the first to attain a value sufficient to cause this tube to conduct and energize the coil of switch YBd for car *d*. At the same time, as tube Td conducts, tube Tc is biased to a nonconducting condition by the voltage drop across resistor R4, as has been previously explained.

Switch YBd, upon operation, engages contacts YB1d, completing a circuit for the coil of switch VBd for car *d*. As has been previously described in connection with car *a*, car *d*, the lowermost of the remaining down traveling cars, is thus selected in advance of its arrival at the main landing as the car second to be dispatched and flickers its SECOND CAR UP sign to indicate its status to waiting passengers at the main landing.

It is to be noted that the value of capacity, previously given, of condensers C1a to C1d is so selected that these condensers do not approximate their full charge in the time required for a car to travel the entire length of the express portion of its hoistway. This insures that, as condenser C2 begins to discharge with two or more cars traveling downward in the express zone, each of which has closed its switch Z, as has been described, the potential difference between the grid and cathode of the tube for the lowermost car is always the first to attain the breakdown voltage of that tube, so that the lowermost of two or more down traveling cars is the one selected for dispatching.

Assume now that cars *a* and *d* arrive at the main landing in that sequence and become set for up travel. As car *d* becomes set for up travel, contacts DN2d separate, interrupting the current flowing through tube Td and the coil of switch YBd. However, as contacts YB1d separate, switch VBd for car *d* is maintained operated through selector brush Bd, which is now in engagement with selector contact Md. As tube Td ceases to conduct, condenser C2 starts to discharge through resistor R4. At the same time, contacts UP1d engage and together with engaged contacts VB1d short circuit resistor R2, thereby applying sufficient voltage of a positive polarity to condenser C2 to maintain tube Tc in nonconducting condition.

Next assume that car *a* is dispatched and selection as the next car to be dispatched is transferred to car *d*, in a manner similar to that described previously for car *a*. Incident to this transfer of selection, switch ZBXd operates, separating contacts ZBX1d to interrupt the circuit for the coil of switch VBd. Switch VBd releases to separate contacts VB1d, inserting resistor R2 in series with condenser C2 which discharges through resistor R4 sufficiently to cause tube Tc to conduct, thereby selecting car *c* in advance of its arrival at the main landing, as the car to be dispatched after car *d*, as has been previously described for car *d*.

It thus can be seen that in the absence of a car available for dispatching at the main landing, the lowest car traveling toward the main landing in a given zone is selected as the next car to be dispatched and the next nearest car is selected as the second to be dispatched.

The status of these two cars is indicated to waiting passengers in advance of the cars arriving at the main landing, thereby expediting the loading of the cars. A third car traveling toward or arriving at the main landing is prevented from interfering with this selection. As the first car selected arrives at the main landing and is dispatched, selection as the next car to be dispatched is transferred to the car selected as the second car to be dispatched and the lowermost of the remaining down traveling cars with actuated switches Z is selected as the second car to be dispatched. This advance selection of the second car to be dispatched is especially valuable during periods of heavy up traffic, such as the up peak period in the morning.

In some installations it may be desirable to select only the next car to be dispatched. This operation may be provided in the system illustrated. In such case, in the absence of a car available for selection at the main landing, only the next car to be dispatched is selected in advance of its arrival and such selection is indicated by illuminating the THIS CAR UP sign for the selected car. Selection of all other cars is prevented until the dispatching of this first selected car is initiated. This may be accomplished by opening manual switches MS (a to d), thereby disabling the auxiliary car selected switch ZBX for each car. In this manner, once the tube T for a particular car conducts, incident to the selection of that car as the next to be dispatched, it remains conducting, preventing all other tubes from conducting, until the selected car arrives at the main landing and becomes set for up travel. As the selected car becomes set for up travel, its associated contacts DN2 separate, interrupting the anode-cathode circuit of the conducting tube. However, switch VB of the selected car, operated in response to the operation of switch YB for that car, is maintained operated by the engagement of brush B for that car with its M contact. Thus contacts VB1 for that car are engaged and since contacts UP1 for that car are now engaged, resistor R2 is short circuited. This raises the potential of condenser C2 and thus the potential of the cathodes of all tubes preventing other cars from being selected for dispatching until the dispatching of the particular car is initiated. Therefore, the lowermost car is selected in advance of its arrival as the next car to be dispatched, and a second car is not selected until the selected car arrives at the main landing and its dispatch is initiated. In this arrangement, waiting passengers are advised as to which car will be the next car dispatched in advance of its arrival at the main landing.

As has been set forth previously, the operation under conditions where basement service is provided has been included. Involved in this operation is lowest call switch LCS for each car. The control circuits for the coil of switch LCS for each car, shown in the Figure 3 of the aforementioned Glaser and Lusti Patent No. 2,682,318, are modified by the provision of additional (normally closed) contacts on switch ZB for that car connected in series with the coil. With this modification, when selection of a car as next to be dispatched takes place, either in advance of arrival of the car at the main landing or while the car is there, switch ZB for that car operates, separating its additional contacts to prevent the energization of the coil of switch LCS in response to a basement car call for that car, a down landing call for the main landing or a basement landing call. Thus the assignment of such a selected car to basement service is prevented. When selection of a car as next to be dispatched has not taken place, so that the additional contacts of switch ZB for that car are not separated, the registration of a basement car call for a down traveling car causes operation of switch LCS and if such selection has not been made by the time the car approaches the main landing and causes engagement of contacts HLR3 of the aforementioned Glaser and Lusti patent for that

car, a registered down landing call for the main landing or a registered landing call for the basement causes operation of switch LCS for that car. Such LCS switch, when thus operated, causes separation of its contacts LCS2 to prevent conduction of tube T and thus switch YB for that car. Thus, the advance selection of that car as next to be dispatched is prevented and the car is assigned to basement service. Switch LCS also separates its contacts LCS1 for that car under such conditions, thereby preventing the selection of that car as next to be dispatched in response to the engagement of brush B for that car with its contact M incident to the car arriving at the main landing.

In order to provide adequate basement service where the arrangement for selecting the second car to be dispatched is being employed, it is preferred to allow such second selected car to respond to a call for service to the basement. This is accomplished by switch LCS for that car, which switch is responsive to calls for basement service when switch ZB for that car is not operated. Thus, upon operation of switch LCS for the second selected car in response to a call for basement service, its contacts LCS1 and LCS2 separate, causing such second selected car to lose that selection, enabling it to respond to the basement call. Selection as the second selected car may be transferred to another car approaching the main landing, as will be explained.

In either case, if a car is assigned to basement service in response to a down landing call at the main landing, if no one enters the car and presses the basement car button within a certain time interval after the stop at the main landing is made, the down landing call is automatically canceled, causing release of switch LCS for that car and enabling it to be selected as next to be dispatched, as explained in the aforementioned Glaser and Lusti patent.

A car leaving the main landing for the basement moves the switch N for that car to closed position, short circuiting resistor R2 through engaged contacts XCS2 to increase the grid bias of the tubes T, thereby preventing advance selection, either as next or second to be dispatched, of any car traveling downward toward the main landing, and not already selected, until it arrives at a predetermined distance from the main landing, say two feet for certain installations. At this point the down traveling car engages its selector brush B with its contact M, causing operation of its switch VB so that the car is rendered available for selection.

A car traveling to the main landing from the basement landing is rendered available for selection before it arrives at the main landing. As such car arrives at a certain distance from the main landing, say six feet for certain installations, its brush B engages its contact M, causing its switch VB to operate. In the absence of a car selected as the next to be dispatched (or as the second car to be dispatched where switches MS are closed), and assuming no unselected down traveling car has already engaged its brush B with its contact M, the car traveling from the basement, by means of its brush B and contact M operating its switch VB, becomes selected, either as the next car, or as the second car to be dispatched in case the next car has already been selected, before the basement car actually arrives at the main landing and so advises waiting passengers at the main landing. If this car is so selected as the second car to be dispatched, or if it is so selected as the next car, where switches MS are open, its switch VB, upon operation, remains operated, as has been previously described, and engages its contacts VB1, which through engaged contacts UP1 for that car, short circuit resistor R2 to prevent the advance selection of any other down traveling car after the car arriving from the basement upon arrival at the main landing moves its switch N to open position. Therefore, this arrangement gives preference for selection to a basement car. However, if a down traveling unselected car arrives

near enough to the main landing to cause its brush B to engage its contact M before the brush B of the car traveling from the basement engages its contacts M, the down traveling car, instead of the basement car, will be selected, as its switch VB is operated.

In certain installations which include basement service, especially those having a relatively long express zone, the switches Z may be positioned a considerable distance below the top of the express zone, so that a car can only be selected in advance of its arrival, by means of its switch Z and its associated tube T, when it is near enough to the main landing that it will arrive at the main landing before a car, responding to a call for that basement, returns to the main landing. In such a case, as a car responding to a call for the basement leaves the main landing, moving the switch N for that responding car to closed position, it will minimize the possibility of advance selection of any down traveling car which cannot arrive at the main landing before the responding car returns to the main landing. With the switches Z positioned at this point, an unselected down car which is already below the position for operating its switch Z when selection is to be made will, in all probability, engage its brush B with its contact M before the basement car and thus become the selected car, as has been previously described.

As changes can be made in the above described construction and many apparently different embodiments of this invention can be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown on the accompanying drawing be interpreted as illustrative only and not in a limiting sense.

What is claimed is:

1. An elevator system of a plurality of elevator cars serving a plurality of landings comprising, means for each car for starting that car, and means operable incident to the starting of a selected car from a given one of said landings for selecting the next car to be started from such landing, said selecting means including means operable under conditions where no other car is at such landing but more than one car is traveling toward such landing and is within a predetermined selection zone extending a certain distance from such landing at such time, for selecting the nearest one of such cars to such landing, regardless of their order of previous departure from such landing.

2. A selecting and dispatching system for a plurality of elevator cars operating from a dispatching landing, said system comprising, means for dispatching the cars in succession from said dispatching landing in the order of their selection, measuring apparatus responsive to the movements of the cars while traveling toward but removed from said dispatching landing and within a certain selection zone proximate to said dispatching landing for producing a signal indicative of which one of said cars will first arrive at said dispatching landing, and selecting means responsive to said signal under conditions where the next preceding selected car has been dispatched by said dispatching means and no other car is at said dispatching landing for selecting as next to be dispatched the car so indicated by said measuring apparatus.

3. In an elevator installation in which a plurality of cars serve several floor landings of a building from a dispatching landing and in which visual indicating means for each of said cars are provided at said dispatching landing, means for dispatching selected cars from said dispatching landing, selecting means actuatable for selecting the car next to be dispatched from said dispatching landing by said dispatching means, measuring apparatus responsive to the movements of the cars while still remote from but traveling toward said dispatching landing, said measuring apparatus being adapted under conditions where the next preceding selected car has been dispatched by said dispatching means and no other car is at said dis-

patching landing for causing an indication by said visual indicating means of which one of the remote cars will first arrive at said dispatching landing and causing said selecting means to select that car while preventing the indication of the arrival and the selection of any other of such traveling cars.

4. A dispatching system for a plurality of elevator cars operating from a dispatch landing comprising, means for dispatching the cars in succession from the dispatch landing in the order of their selection, and means operable incident to the dispatching of a selected car from said dispatch landing under conditions where no other car is at said dispatch landing for selecting a car traveling toward said dispatch landing and within a certain distance thereof, said last named means including means operable under conditions where more than one car traveling toward said dispatch landing is within said certain distance thereof at such time, for selecting the nearest one of such cars to said dispatch landing, regardless of their order of previous departure from said dispatch landing.

5. A dispatching system for a plurality of elevator cars operating from a dispatch landing comprising; means for dispatching the cars in succession from the dispatch landing in the order of their selection; and means operable incident to the dispatching of a selected car from said dispatch landing for selecting the next car to be dispatched from said dispatch landing, said selecting means including means operable under conditions where one other car is at said dispatch landing at such time for selecting such other car, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where no other car is at said dispatch landing but more than one car is traveling toward said dispatch landing and is within a certain distance thereof at such time, for selecting prior to its arrival at said dispatch landing the nearest one of such cars to said dispatch landing, regardless of their order of previous departure from said dispatch landing.

6. A dispatching system for a plurality of elevator cars operating from a dispatch landing comprising; means for dispatching the cars in succession from the dispatch landing in the order of their selection; and means operable incident to the dispatching of a selected car from said dispatch landing for selecting the next car to be dispatched from said dispatch landing, said selecting means including means operable under conditions where one other car is at said dispatch landing at such time, for selecting such other car, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where no other car is at said dispatch landing but more than one car is traveling at normal speed toward said dispatch landing and is within a certain distance thereof at such time, for selecting prior to its arrival at said dispatch landing the nearest one of such cars to said dispatch landing, regardless of their order of previous departure from said dispatch landing.

7. A dispatching system for a plurality of elevator cars operating from a dispatch landing comprising; means for dispatching the cars in succession from the dispatch landing in the order of their selection; and means operable incident to the dispatching of a selected car from said dispatch landing for selecting the next car to be dispatched from said dispatch landing, said selecting means including means operable under conditions where one car is at said dispatch landing at such time for selecting such other car, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where no other car is at said dispatch landing but at least one car is traveling toward said dispatch landing and is within a certain distance thereof at such time, for selecting prior to its arrival at said dispatch landing the nearest

13

car to said dispatch landing, regardless of the order of its previous departure from said dispatch landing.

8. A dispatching system for a plurality of elevator cars operating from a dispatch landing comprising; means for dispatching the cars in succession from the dispatch landing in the order of their selection; a plurality of signals at said dispatch landing, one for each car, for indicating to waiting passengers at the dispatch landing which car is the next to be dispatched from said dispatch landing; means operable incident to the dispatching of a selected car from said dispatch landing for selecting the next car to be dispatched from said dispatch landing, said selecting means including means operable under conditions where one other car is at said dispatch landing at such time for selecting such other car, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where no other car is at said dispatch landing but more than one car is traveling toward said dispatch landing and is within a certain distance thereof at such time, for selecting prior to its arrival at said dispatch landing the nearest one of such cars to said dispatch landing, regardless of their order of previous departure from said dispatch landing; and means responsive to the selection of a car for dispatching for causing the giving of said signal for that car, whereby waiting passengers are advised which car is so selected to expedite loading time.

9. A dispatching system for a plurality of elevator cars operating from a dispatch landing comprising; means for dispatching the cars in succession from the dispatch landing in the order of their selection; first selecting means operable incident to the dispatching of a selected car from said dispatch landing for selecting the next car to be dispatched from said dispatch landing, said first selecting means including means operable under conditions where one other car is at said dispatch landing at such time, for selecting such other car as next to be dispatched, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where no other car is at said dispatch landing but more than one car is traveling at normal speed toward said dispatch landing and is within a certain distance thereof at such time, for selecting prior to its arrival at said dispatch landing the nearest one of such cars to said dispatch landing as next to be dispatched, regardless of their order of previous departure from said dispatch landing; and second selecting means operable incident to the dispatching of a selected car from said dispatch landing for selecting the second car to be dispatched from said dispatch landing, said second selecting means including means operable under conditions where one other unselected car is at said dispatch landing at such time, for selecting such other unselected car as second to be dispatched, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where no other unselected car is at said dispatch landing but more than one unselected car is traveling at normal speed toward said dispatch landing and is within a certain distance thereof at such time, for selecting prior to its arrival at said dispatch landing the nearest one of such unselected cars to said dispatch landing as second to be dispatched, regardless of their order of previous departure from said dispatch landing.

10. A dispatching system for a plurality of elevator cars operating from a dispatch landing comprising; means for dispatching the cars in succession from the dispatch landing in the order of their selection; first selecting means operable incident to the dispatching of a selected car from said dispatch landing for selecting the next car to be dispatched from said dispatch landing, said first selecting means including means operable under conditions where one other car is at said dispatch land-

14

ing at such time, for selecting such other car as next to be dispatched, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where no other car is at said dispatch landing but more than one car is traveling at normal speed toward said dispatch landing and is within a certain distance thereof at such time, for selecting prior to its arrival at said dispatch landing the nearest one of such cars to said dispatch landing as next to be dispatched, regardless of their order of previous departure from said dispatch landing; second selecting means operable incident to the dispatching of a selected car from said dispatch landing for selecting the second car to be dispatched from said dispatch landing, said second selecting means including means operable under conditions where one other unselected car is at said dispatch landing at such time, for selecting such other unselected car as second to be dispatched, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where no other unselected car is at said dispatch landing but more than one unselected car is traveling at normal speed toward said dispatch landing and is within a certain distance thereof at such time, for selecting prior to its arrival at said dispatch landing the nearest one of such unselected cars to said dispatch landing as second to be dispatched, regardless of their order of previous departure from said dispatch landing; and transfer means also operable incident to the dispatching of a selected car from said dispatch landing for causing said first selecting means to transfer the selection as the next car to be dispatched to a car selected as second to be dispatched under conditions where a car has been so selected by said second selecting means.

11. A dispatching system for a plurality of elevator cars operating from a dispatch landing comprising; means for dispatching the cars in succession from the dispatch landing in the order of their selection; means operable incident to the dispatching of a selected car from said dispatch landing for selecting the next and second cars to be dispatched from said dispatching landing, said selecting means including means operable under conditions where at least two other unselected cars are at said dispatch landing at such time, for selecting two of such other unselected cars as next and second to be dispatched, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where only one other unselected car is at said dispatch landing at such time but more than one unselected car is traveling at normal speed toward said dispatch landing and is within a certain distance thereof at said time, for selecting said one other car as next to be dispatched and for selecting prior to its arrival at said dispatch landing the nearest one of such unselected cars to said dispatch landing as second to be dispatched, regardless of their order of previous departure from said dispatch landing.

12. A dispatching system for a plurality of elevator cars operating from a dispatch landing comprising; means for dispatching the cars in succession from the dispatch landing in the order of their selection; means operable incident to the dispatching of a selected car from said dispatch landing for selecting the next and second cars to be dispatched from said dispatch landing, said selecting means including means operable under conditions where at least two other unselected cars are at said dispatch landing at such time, for selecting two of such other unselected cars as next and second to be dispatched, regardless of the order of previous departure of the cars from said dispatch landing, and also including means operable under conditions where only one other unselected car is at said dispatch landing at such time but more than one unselected car is traveling at normal speed toward said dispatch landing and is within a certain

15

distance thereof at said time, for selecting said one other car as next to be dispatched and for selecting prior to its arrival at said dispatch landing the nearest one of such unselected cars to said dispatch landing as second to be dispatched, regardless of their order of previous departure from said dispatch landing, and further including means operable under conditions where no other unselected car is at said dispatch landing but at least two unselected cars are traveling at normal speed toward said dispatch landing and are within a certain distance thereof at such time, for selecting the nearest of such unselected cars to said dispatch landing as the next to be dispatched and the next nearest to said dispatch landing as the second to be dispatched, prior to their arrival at said dispatch landing, regardless of their order of previous departure from said dispatch landing.

13. A dispatching system for a plurality of elevator cars operating from a dispatch landing comprising; means for dispatching the cars in succession from the dispatch landing in the order of their selection; first selecting means operable incident to the dispatching of a selected car from said dispatch landing for selecting the next car to be dispatched from said dispatch landing, said first selecting means including means operable under conditions where one other car is at said dispatch landing at such time, for selecting such other car as next to be dispatched, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where no other car is at said dispatch landing but more than one car is traveling at normal speed toward said dispatch landing and is within a certain distance thereof at such time, for selecting prior to its arrival at said dispatch landing the nearest one of such cars to said dispatch landing as next to be dispatched, regardless of their order of previous departure from said dispatch landing; and second selecting means operable incident to dispatching of a selected car from the said dispatch landing and under conditions where one other car is already selected as next to be dispatched by said first selecting means, for selecting the second car to be dispatched from said dispatch landing, said second selecting means including means operable under conditions where a second other car is at said dispatch landing at such time, said means selecting said second other car as second to be dispatched, regardless of the order of previous departure of the cars from said dispatch landing, and further including means operable under conditions where no second other car is at said dispatch landing but more than one unselected car is traveling at normal speed toward said dispatch landing and within a certain distance thereof at such time, for selecting prior to its arrival at said dispatch landing the nearest one of such unselected cars to said dispatch landing as second to be dispatched, regardless of their order of previous departure from said dispatch landing.

14. A device for indicating which one of a plurality of elevator cars in an elevator installation will be the first to arrive at a predetermined floor landing, said device comprising, means responsive to the relative positions of said cars as they travel toward said predetermined landing for determining which of said traveling cars will first arrive at said predetermined landing, and means selectively responsive to said first named means for indicating in advance of its arrival which car is so determined to arrive first while excluding any advance indication of the arrival of said other cars at said predetermined landing.

15. In an elevator installation in which a plurality of cars serves several floor landings of a building and in which there is provided mechanism adapted for dispatching said cars from a predetermined one of said landings, a device for selecting said cars for dispatching and for indicating which one of said cars will be next dispatched from that dispatch landing, said device comprising first means responsive to the relative positions of said cars as said cars travel toward said dispatch landing for deter-

16

mining which of said cars so traveling will first arrive at said dispatch landing, second means responsive to the presence of said cars at said dispatch landing selecting means operatively responsive to operation of said second means for selecting said cars present at said dispatch landing for dispatching by said dispatch mechanism in accordance with a predetermined sequence, said selecting means in the absence of any of said cars at said dispatch landing also being responsive to operation of said first means for selecting the nearest car to said dispatch landing as next to be dispatched, and indicating means responsive to actuation of said selecting means for indicating which of said cars so selected will be next dispatched.

16. In an elevator system adapted for dispatching a plurality of elevator cars from a preselected floor landing, a device for selecting and indicating the sequence in which said car will be dispatched from said landing, said device comprising, car position determining means for determining the relative position of each of said cars with respect to said landing, first selecting means operatively responsive to said position determining means for selecting in a predetermined sequence for dispatching any of said cars positioned at said landing, second selecting means also operatively responsive to said position determining means for selecting for dispatching the car traveling toward said landing which is nearest to said landing, said second selecting means being prevented by said first selecting means from so selecting said nearest car until said first selecting means ceases to select cars for dispatching, and indicating means responsive to said first and second selecting means for indicating at said landing which car has been selected for dispatching.

17. In an elevator system adapted for dispatching a plurality of elevator cars from a preselected floor landing, a device for selecting for dispatching the nearest car traveling toward said landing and indicating that selection at said landing in advance of the arrival of that car thereat, said device comprising, first position determining means responsive to the positions of said cars for determining the position of each of said cars relative to each other while said cars are traveling toward said landing, first selecting means selectively responsive to said position determining means for selecting only the car nearest to said landing, dispatch selecting means responsive to said selection of said nearest car by said first selecting means for selecting that car in advance of its arrival at said landing as the car to be dispatched from said landing, said dispatch selecting means when so operated preventing selection of any other car for dispatching until said selected car is dispatched, second position determining means responsive to the position of any of said cars at said landing for disabling said dispatch selecting means from selecting for dispatching any of said cars traveling toward said landing, and indicating means positioned at said landing for indicating said selection of said nearest car, said indicating means being actuated by said dispatch selecting means substantially simultaneously with said selection for dispatching for indicating in the absence of any of said cars at said landing which car traveling toward said landing is selected for dispatching in advance of its arrival at said landing.

18. In combination with an elevator control system adapted for dispatching a plurality of elevator cars in sequence from a dispatch landing located in the lowermost portion of a building, said cars being operated in their respective hoistways by said elevator control to serve a plurality of floor landings located in a predetermined upper portion of said building while bypassing all floor landings located below said predetermined upper portion except said dispatch landing, a device for providing advance dispatch information, said device comprising, first car position determining means responsive to said elevator control for determining the position of said cars relative to each other while said cars are below said upper

portion and are traveling at normal speed toward said landing, second car position determining means also responsive to said elevator control for determining the presence of any of said cars at said dispatch landing, advance availability means responsive to said first determining means for selecting the lowermost car traveling downward as being available for dispatching in advance of its arrival at said dispatch landing provided that car is below said predetermined upper portion of the building and traveling at normal speed, availability means responsive to both said advance availability means and said second car position determining means for selecting as available for dispatching said car so determined by said second car position determining means as being present at said dispatch landing and in the absence of such a determination selecting as available for dispatching said lowermost car selected by said advance availability means as being available for dispatching in advance of its arrival at said dispatch landing, selecting means responsive to operation of said availability means for selecting as next to be dispatched said car so selected as available for dispatching by said availability means and for maintaining such selection preventing any further selection of said cars as next to be dispatched until said car so selected as next is dispatched by said elevator control, first means responsive to said selecting means once any of said cars has been selected as next for causing said availability means to select as the second car to be dispatched a car determined by said second car position determining means as being present at said dispatch landing and in the absence of such a car causing said advance availability means to select in advance of its arrival at said dispatch landing the next lowermost of said downward traveling cars as the second car to be dispatched, second means responsive to operation of said first means for preventing operation of both said availability means and said advance availability means for preventing selection of a car as being available for dispatching, and indicating means for each car positioned above the entranceway of each car at said dispatch landing, said indicating means being responsive to operation of said selecting means and said availability means for indicating the selection of said cars as the next and second cars to be dispatched, thereby informing waiting passengers at the dispatch landing which will be the next car dispatched and which car will be the second car dispatched even though said cars may not be presently positioned at said dispatch landing.

19. In combination with an elevator control system adapted for dispatching a plurality of elevator cars in sequence from a dispatch landing located in the lowermost portion of a building, said cars being operated in their respective hoistways by said elevator control to serve a plurality of floor landings located in a predetermined upper portion of said building while bypassing all floor landings located below said predetermined upper portion except said dispatch landing and a basement landing located below said dispatch landing, a device for providing advance dispatch information, said device comprising, first car position determining means responsive to said elevator control for determining the position of said cars relative to each other while said cars are below said upper portion and traveling toward said landing at normal speed, second car position determining means also responsive to said elevator control for determining the presence of any of said cars at said dispatch landing, advance availability means responsive to said first determining means for selecting the lowermost car traveling downward as being available for dispatching in advance of its arrival at said dispatch landing, provided that car is below said predetermined portion of the building, availability means responsive to both said advance availability means and said second car position determining means for selecting as available for dispatching said car

so determined by said second car position determining means as being present at said dispatch landing and in the absence of such a determination, selecting as available for dispatching in advance of its arrival at the dispatch landing said lowermost car selected by said advance availability means as being available for dispatching, selecting means responsive to operation of said availability means for selecting as the next car to be dispatched said car so selected as available for dispatching by said availability means and for maintaining such selection, preventing any further selection of a next car until said car so selected as next is dispatched by said elevator control, first means responsive to said selecting means once any of said cars has been selected as next for causing said availability means to select as the second car to be dispatched a car determined by said second car position determining means as being present at said dispatch landing and in the absence of such a car causing said advance availability means to select in advance of its arrival at said dispatch landing the next lowermost of said downward traveling cars as the second car to be dispatched, third car position determining means also responsive to said elevator control for determining the presence of any of said cars below said dispatch landing, second means responsive to operation of said third car position determining means and to operation of said first means responsive to said selecting means for preventing operation of both said availability means and said advance availability means for preventing selection in advance of its arrival at said dispatch landing of a car being available for dispatching, basement call registering means for each car responsive to a call for service for said basement landing for that car provided that car is not already selected as said next car by said selecting means and is not already selected as said second car availability means, said basement call registering means when so responsive preventing operation of both said advance availability means and said availability means from selecting that car, and indicating means for each car positioned above the entranceway of each car at said dispatch landing, said indicating means being responsive to operation of said selecting means and said availability means for indicating the selection of one of said cars as the next car to be dispatched and the selection of another of said cars as the second car to be dispatched, thereby informing waiting passengers at the dispatch landing which will be the next car dispatched and which car will be the second car dispatched even though said cars may not be presently positioned at said dispatch landing.

20. An advance dispatch information device as claimed in claim 19 wherein the first car position determining means comprises a unidirectional power source, a plurality of resistor-capacitor networks, one for each of said cars, and a plurality of switching means, one each of which is provided for each of said cars and is adapted to be actuated from a first condition to a second condition as its associated car while traveling downward at normal speed arrives at a point located a predetermined distance below said upper portion of said building and is actuated from said second condition back to said first condition as said car arrives at said point while traveling upward, each of said switching means when so actuated to said second condition being effective for electrically connecting its associated one of said resistor-capacitor networks across said power source for charging the condenser of the network so connected and when so actuated back to said first condition disconnecting said network from said power source, each of said condensers having a predetermined value of capacity sufficient to insure that it will not approximate its fully charged condition until after its associated down traveling car arrives at said dispatch landing.