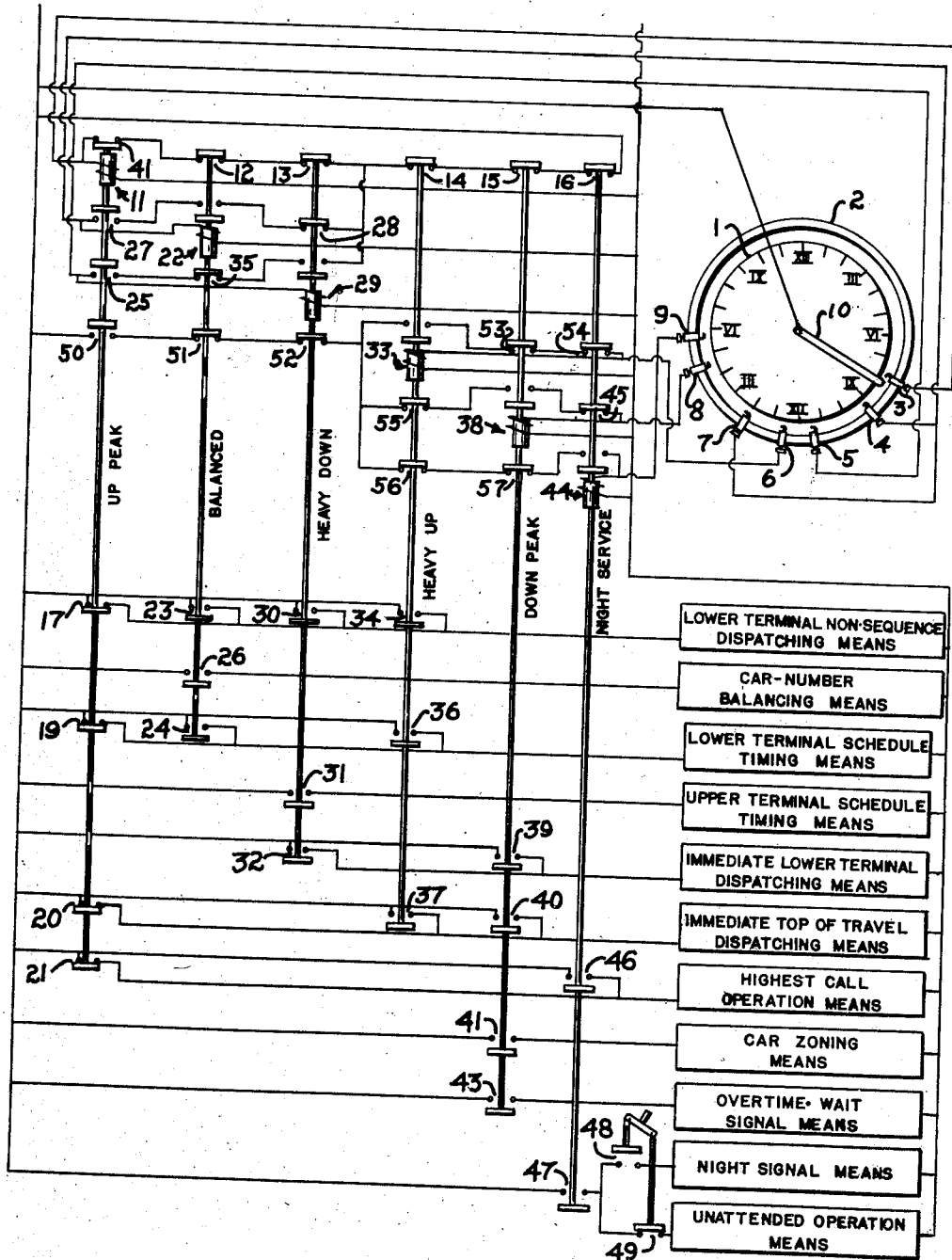


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AUTOMATIC ELEVATOR CONTROL

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AUTOMATIC ELEVATOR CONTROL

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This invention relates to elevator controls and particularly to supervisory control systems in which control devices are so organized that various groups of such devices can be caused to cooperate to automatically dispatch and reverse the cars of a bank of elevators and to automatically signal their attendants and persons wishing to use them in such manner as to utilize the elevators most economically and for the best accommodation of traffic. The invention is applicable to freight elevators as well as to passenger elevators.

A program of operation for a bank of elevators which would be most appropriate for their operation under conditions that are normal throughout most of the hours of an ordinary business day would be quite inappropriate for the operation of the bank of elevators during the morning and evening rush hours, and a program suitable for operation of the bank of elevators during noontime activity would differ not only from the morning and evening rush hour programs but also from that appropriate for operation under normal conditions.

Elevator engineers have worked out sub-combinations of circuits, signals, relays, and other elements which can be hooked together by means of switches under the manual control of an elevator starter to cause the bank of elevators to operate in accordance with such traffic conditions as seem to the elevator starter to be prevalent at the time. The conditions and the respective control programs that have been provided for them are referred to hereinafter as "Up Peak," "Balanced," "Heavy Down," "Heavy Up," "Down Peak" and "Night Service."

When there is no rush of ingress or egress the elevator starter can switch in circuits which will cause the cars to leave the lower terminal and the upper terminal at such intervals as to avoid collection of waiting cars either at the lower terminal or the upper terminal, thus insuring reasonably prompt service at all floors. At the same time he can switch in circuits which cause signals in the lobby to indicate to passengers which car is being loaded and circuits which automatically provide compensation for delay which may occur during the cycle of operation of any of the cars. This is the condition called "Balanced."

When the starter observes or expects Heavy Down traffic, he can switch in a different group of circuits including one which dispatches cars arriving at the lower terminal immediately so that as soon as they are emptied they can go up

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again and be available for bringing down additional loads, thereby utilizing the time which in the absence of Heavy Down traffic would be spent during loading intervals at the lower terminal.

If the starter should observe or expect Heavy Up traffic, he can switch in another group of circuits, including one which causes immediate dispatching from the upper terminal and another which restores scheduled timing from the lower terminal.

Upon the occurrence of an extreme Up Peak of traffic, the starter can switch in still another group of circuits, including one which signals each car to reverse at the highest floor for which that car has freight or a passenger, or from which that car has received a signal from a person desiring to descend or to send something down. Under the program thus set up cars go to the upper terminal only when they have passengers or items for that terminal or when they receive signals from that terminal.

Upon the occurrence of an extreme Down Peak of traffic, as for example during the evening rush, the starter can switch in a further group of circuits, one of which limits the travel of certain of the cars to the lower zone of floors, which otherwise might be by-passed by most of the descending cars because they had been filled at upper floors. Under this program all cars arriving at the lower terminal and all cars arriving at the upper terminal will be dispatched immediately, and the cars serving the lower zone of floors each will be signaled to reverse at the highest floor from which it has received a call.

In all cases the starter can interrupt the program that he thus has set up for automatic operation. In addition to setting up any of the five programs mentioned above, the starter can cause the bank to operate with one or more elevators idle. He also can set up a sixth program, usually with only one elevator in service, in which the elevator remains at the lower terminal except when it is called upon to go to an upper floor. This is known as "Night Service." In office buildings it usually is switched in for service at night or on Sundays and holidays.

Apparatus containing various circuits, signals, relays and other elements which may be selectively switched together to meet conditions that arise in elevator operation are well known in the art. Such apparatus will function satisfactorily however only at the hands of intelligent and experienced and alert supervisors who not only know what to do to meet every condi-

tion but who can and will perceive when to switch from program to program.

It is an object of this invention to provide a system of controls which will automatically initiate an appropriate program of operations for a bank of elevators and will successively automatically switch to other appropriate programs at intervals predetermined by experience and knowledge of the habits or routine practices of persons who customarily use the particular bank of elevators to which the programs are applied.

Other objects and advantages will be apparent from the following description illustrated by the accompanying drawing which is a diagram of circuits and other means constituting a combination of apparatus embodying the instant invention, the apparatus being conditioned for Up Peak Traffic.

Following are definitions of terms hereinafter used to designate sub-combinations of circuits and elements which are severally well known to those skilled in the art:

Lower terminal non-sequence dispatching means.—A circuit which can be switched into the control system for a bank of elevators, to cause cars at the terminals of a bank of elevators to receive signals to leave the terminals, such signals being received by the cars in the order of their arrivals at the terminal so that if more than one car is standing at the terminal the signal to leave ordinarily will be received by the car that was first to arrive. The signal usually is a light which flashes before the eyes of the elevator attendant. The circuit also successively illuminates light fixtures above the entrances to the cars next to be dispatched. Such a circuit is shown and described in U. S. Patent No. 1,966,071 dated July 10, 1934.

Car-number balancing means.—A circuit which can be switched into the control system for a bank of elevators, to cause dispatch signals to be given simultaneously to a car standing at the lower terminal and a car standing at the upper terminal when an even number (such as two, four, or six) of cars in the bank of elevators are in service, and can be altered to cause dispatch signals to be given alternately to cars standing at the lower and upper terminals when an odd number (such as three or five) of cars in the bank of elevators are in service. A manually alterable circuit of this kind is shown and described in U. S. Patent No. 1,966,071 dated July 10, 1934.

Lower terminal schedule timing means.—A circuit which can be switched into the control system for a bank of elevators to connect a timing device to the means for non-sequence dispatching, to cause the dispatch signals to be given at regular intervals to cars standing at the lower terminal. The timing device usually is so constructed that the length of the intervals can be adjusted. Such a circuit is shown and described in U. S. Patent No. 1,966,071 dated July 10, 1934.

Upper terminal schedule timing means.—A circuit which can be switched into the control system for a bank of elevators to connect a timing device to the means for non-sequence dispatching, to cause the dispatch signals to be given at regular intervals to cars standing at the upper terminal. The timing device usually is so constructed that the length of the intervals can be adjusted. Such a circuit is shown and described in U. S. Patent No. 1,966,071 dated July 10, 1934.

Immediate lower terminal dispatching means.—A circuit which can be switched into a control

system for a bank of elevators, to cause dispatch signals to be given to cars immediately upon their arrival at the lower terminal even though the cars at the upper terminal are being dispatched on schedule timing. Such a circuit is shown and described in U. S. Patent No. 1,966,071 dated July 10, 1934.

Immediate top of travel dispatching means.—A circuit which can be switched into a control system for a bank of elevators, to cause a dispatch signal to be given each car upon its arrival at the top of its travel cycle whether the top of its travel cycle be the upper terminal or an intermediate floor. Such a circuit is shown and described in U. S. Patent No. 2,074,575 dated March 23, 1937.

Highest call operation means.—A circuit which can be switched into a control system for a bank of elevators, to cause a signal to reverse to be given to each car whenever that car makes a stop at the highest floor for which that car has a passenger or from which that car has a call. Such a circuit is shown and described in U. S. Patent No. 2,074,575 dated March 23, 1937.

Car zoning means.—A circuit which can be switched into a control system for a bank of elevators, to cause certain of the cars in the bank of elevators to receive signals to reverse when in their upward travel they have reached a predetermined immediate floor. Such a circuit is shown and described in U. S. Patent No. 2,215,098 dated September 17, 1940.

Overtime-wait signal means.—A circuit which can be switched into a control system for a bank of elevators, to cause a signal to appear at the elevator starter's panel whenever a down call has been given by a passenger waiting on a certain floor and the descending car does not stop at that floor within a reasonable period, e. g., 60 seconds. Such a circuit is shown and described in U. S. Patent No. 2,103,123 dated December 21, 1937, and U. S. Patent No. 2,148,913 dated February 28, 1939.

Night signal means.—A circuit which can be switched into a control system for a bank of elevators, to cause a signal, audible wherever a car in service may be, to be given whenever a call button is pressed on any floor. A common annunciator circuit may be employed. The night signal means usually is switched in when only one car is in service as is the case in office buildings at night and on Sundays and holidays.

Unattended operation means.—A circuit which causes the car to which it is applied to perform as an automatic elevator with the home station at the lower terminal at every trip. Such a circuit is shown and described in U. S. Patent No. 1,984,308, dated December 11, 1934.

Since the means defined in the preceding paragraphs are severally well known in the art and are described in prior patents, and since the instant invention is nowise dependent upon the details of such means, and since elaborate wiring diagrams would be required to illustrate such means in detail, they are shown in the accompanying drawing by conventional block diagramming. In the drawing the terms by which the above defined means are designated in this specification are inscribed upon respective blocks that represent them.

In the drawing the relays and contacts which cooperate to close a circuit for implementing each particular program are shown connected to a bar which is labeled with the term designating the condition for which that particular program is appropriate.

It has been found by repeated observation that during each season of the year, the collective habits or routine practices of the persons who customarily use each bank of elevators concerning which observations were made fall into a daily pattern and that phases of such patterns shift in the same manner during every day from Monday through Friday, the shifts occurring at certain times of the day. For a typical office building bank of elevators, during the season extending from Labor Day to Christmas, the daily pattern may be as follows:

7:45 a. m. to 9:15 a. m. _____ Up Peak
 9:15 a. m. to 11:30 a. m. _____ Balanced
 11:30 a. m. to 12:30 p. m. _____ Heavy Down
 12:30 p. m. to 2:00 p. m. _____ Heavy Up
 2:00 p. m. to 4:30 p. m. _____ Balanced
 4:30 p. m. to 5:45 p. m. _____ Down Peak
 5:45 p. m. to 7:45 a. m.

Night Service or Unattended Operation

The instant inventors have found it feasible, after ascertaining the daily or weekly pattern of traffic carried by the bank of elevators, to organize the supervisory control system of the bank of elevators so that programs of operation suitable for the varying traffic conditions will be initiated automatically at the times of day or week that they should come into operation, each program being maintained until the initiation of the subsequent program.

The supervisory control system can be organized to operate with cycles of any desired length, such as twenty-four hours or seven days. For twenty-four hour cycle operation a twenty-four hour timing device is incorporated in the system. For seven day cycle operation a seven day timing device is employed. Various types of twenty-four hour cycle and seven day cycle timing devices which may be incorporated in the apparatus of the instant invention are commercially available.

Since the structures of timing devices per se are not features of the instant invention, a simple timing device capable of closing switches at predetermined intervals to initiate successive programs is shown somewhat diagrammatically in the drawing. The form thus shown is chosen for the sake of simplicity of diagram and description, but the choice does not indicate any preference for incorporation in actual installations. The timing device in this form has a dial 1 having twenty-four hourly markings from one o'clock a. m. to noon and from one o'clock p. m. to midnight.

Mounted for circumferential adjustment on a track 2 encircling the dial 1 are switches 3, 4, 5, 6, 7, 8 and 9, one switch 3 being located at the seven forty-five o'clock a. m. position, another switch 4 being located at the nine fifteen o'clock a. m. position, another switch 5 being located at the eleven thirty o'clock a. m. position, another switch 6 being located at the twelve thirty o'clock position and still another switch 9 being located at the two o'clock p. m. position, another switch 8 being located at the four thirty o'clock p. m. position and still another switch 7 being located at the five forty-five o'clock p. m. position. Each of the switches may be adjusted along the track 2 to other positions. An arm 10 is moved by clock work (not shown) over the dial 1 in a clockwise direction making one complete circuit each twenty-four hours, and closing the switches 3, 4, 5, 6, 7, 8 and 9 in succession as it reaches them.

In a like timing device operating on a seven

day cycle the arm would be moved by clock work to make one complete circuit in seven days and the sequence of switches would be repeated for certain days, e. g., from Monday through Friday, with different sequences for other days, e. g., Saturday and Sunday.

The closing of the switches 3, 4, 5, 6, 7, 8 and 9 is transitory. Upon reference to the drawing it will be seen that closing the switch 3 which is located at the seven forty-five o'clock a. m. position on the dial 1 closes a circuit through the coil of a relay 11, thus completing a circuit through closed switches 12, 13, 14, 15 and 16. The circuit thus completed keeps the coil of the relay 11 energized as long as all the switches 12, 13, 14, 15 and 16 remain closed even though the transitorily closed switch 3 opens.

Activating the relay 11 closes contacts 17, 19, 20 and 21 which, as indicated by the bar labeled "Up Peak," are connected to move with the relay 11 thus switching into the supervisory control system the "Lower Terminal Non-Sequence Dispatching Means," the "Lower Terminal Schedule Timing Means," the "Immediate Top of Travel Dispatching Means" and the "Highest Call Operation Means" for setting up the Up Peak program.

After having been set up, the Up Peak program remains in effect until one of the switches 12, 13, 14, 15 and 16 is opened to de-energize the coil of the relay 11. This occurs when the arm 10 reaches and transitorily closes the next switch 4 which is mounted on the track 2. Closing of the switch 4 energizes the coil of the relay 22 which, as is indicated by the bar labeled Balance, is so connected to the contact 12 that the contact 12 is open when the relay 22 is activated.

When the coil of the relay 11 is de-energized by the opening of the contact 12, the relay 11 acts to open the contacts 17, 19, 20 and 21 that were closed when the coil of the relay 11 was energized. Opening of the switches 20 and 21 cuts out the "Immediate Top of Travel Dispatching Means" and the "Highest Call Operation Means." The "Lower Terminal Non-Sequence Dispatching Means" and the "Lower Terminal Schedule Timing Means" are kept in the system by the closing of two contacts 23 and 24 which operate in connection with the relay 22 that was activated by the transitory closing of the switch 4. The "Automatic Car-Number Balancing Means" is brought into the system by the closing of a contact 26, which contact 26 also is connected with the relay 22 as indicated by the bar labeled "Balance." In this manner the Up Peak program is terminated and the balance program is initiated when the arm 10 reaches the switch 4 in its adjusted position on the track 2.

The supervisory control system operates in accordance with the Balance program until the coil of the relay 22 is de-energized. It is to be noted that the contact 27 was closed upon de-activation of the relay 11. Closing the switch 5 energizes the coil of the relay 29 which is shown by the bar labeled Heavy Down to be connected to the contact 28. Opening of the contact 28 de-energizes the coil of the relay 22 thus opening the contacts 23, 26 and 24. The opening of these three contacts has the effect of switching out of the supervisory control system the "Lower Terminal Non-Sequence Dispatching Means," the "Car-Number Balancing Means" and the "Lower Terminal Schedule Timing Means." The "Lower Terminal Non-Sequence Dispatching Means" however is kept in the system by the

enclosing of the contact 30, while closing of the contact 31 brings the "Upper Terminal Schedule Timing Means" into the system and closing of the contact 32 brings in the "Immediate Lower Terminal Dispatching Means." In this manner the Balance program is terminated and the Heavy Down program is put into effect.

The Heavy Down program is terminated when the arm 10 reaches the switch 6 in its adjusted position on the track 2. Transitory closing of the switch 6 activates a relay 33 thus opening the previously mentioned switch 14 which as is shown by the diagram carries the current that energizes the coil of the relay 29. Deactivation of the relay 29 by opening the switch 14 causes the switches 30, 31 and 32 to open. The "Upper Terminal Schedule Timing Means" and the "Immediate Lower Terminal Dispatching Means" are thereby switched out of the supervisory control system.

The "Lower Terminal Non-Sequence Dispatching Means" is retained in the system by the closing of a switch 34, which as is shown by the bar labeled Heavy Up, is closed upon activation of the relay 33. Activation of the relay also closes contacts 36 and 37 which closings bring into the supervisory control system the "Lower Terminal Schedule Timing Means" and the "Immediate Top of Travel Dispatching Means." In this manner the Heavy Up program is put into effect.

When the arm 10 reaches the switch 7 in its adjusted position on the track 2 the relay 22 once again is energized to close the contacts 23, 26 and 24, and the relay 33 is de-energized by the opening of contact 51 of the relay 22 to open the contacts 34, 36 and 37. The Heavy Up program thus is discontinued by switching out the "Lower Terminal Schedule Timing Means" and the "Immediate Top of Travel Dispatching Means" and the Balance program is restored by switching in the "Car-Number Balancing Means," and the "Lower Terminal Schedule Timing Means," the "Lower Terminal Non-Sequence Dispatching Means" being retained.

When the arm 10 reaches to switch 8 in its adjusted position on the track 2 the relay 38 is activated thus opening the contact 15 and deactivating the relay 22. Deactivation of the relay 22 switches out of the supervisory control system in the manner hereinbefore explained the "Lower Terminal Non-Sequence Dispatching Means," the "Car-Number Balancing Means" and the "Lower Terminal Schedule Timing Means." Activation of the relay 38 closes contacts 39, 40, 41 and 43. The closing of these contacts brings into the supervisory control system "Immediate Lower Terminal Dispatching Means," the "Immediate Top of Travel Dispatching Means," the "Car Zoning Means," and the "Overtime-Wait Signal Means." The Balance program thus is suspended and the Down Peak program is inaugurated to remain into effect until the arm 10 reaches the switch 9.

Closing of the switch 9 activates a relay 44 which by opening a contact 45 deactivates the relay 38 thus taking out of the supervisory control system the "Immediate Lower Terminal Dispatching Means," the "Immediate Top of Travel Dispatching Means," the "Car Zoning Means," and the "Overtime-Wait Signal Means" all of which have been functioning during the Down Peak program. Activation of the relay 44 also closes a contact 46 which brings into the supervisory control system the "Highest Call Operation Means" and a contact 47 which brings into the

service either the "Night Signal Means" or the "Unattended Operation Means" thus putting the Night Service program into effect.

Whether the "Night Signal Means" or the "Unattended Operating Means" is brought into service by activation of the relay 44 depends upon the condition of the manually operated switches 48 and 49. If the switch 48 is closed and the switch 49 is open the "Night Signal Means" is switched in. If the switch 49 is closed and the switch 48 is open the "Unattended Operation Means" is switched in. The switches 48 and 49 are operated by a common finger piece which closes one as it opens the other so that both are not closed at the same time.

The contacts shown in the drawing which have not heretofore been mentioned, viz. numbers 25, 35, 50, 51, 52, 53, 54, 55, 56 and 57, serve to prevent circuits through coils of two or more of the relays 14, 22, 29, 33, 38 and 44 from being closed at the same time.

With a system of controls organized according to the instant invention as above described, neither the composition of the programs nor the times at which they are initiated nor the periods for which they are effective is dependent upon the experience, judgment and alertness of the starter. The starter need have no knowledge of the control apparatus. He can devote his attention to the instruction and supervision of car attendants, to guiding patrons and answering questions. The supervisory control system of the instant invention functions with timely shifts from program to program even when the starter's attention is diverted or wanders and even though he be absent.

Definitions of the various means recited in the sub-joined claims are given in the foregoing specification. The claims are intended to encompass all modifications and variations within the spirit and scope of the definitions and the spirit and scope of the claims.

Having described the invention we claim:

1. A system of controls for a bank of elevators comprising, in combination, lower terminal non-sequence dispatching means, lower terminal schedule timing means, immediate top of travel dispatching means, highest call operation means, means for switching together said lower terminal non-sequence dispatching means, said lower terminal schedule timing means, said immediate top of travel dispatching means and said highest call operation means and thereby conditioning the system to operate according to a program appropriate for Up Peak traffic and means for causing said means for switching to operate at a predetermined time.
2. A combination such as is defined in claim 1 in which the means for causing said means for switching to operate at a predetermined time is adjustable to set such predetermined time.
3. A system of controls for a bank of elevators comprising, in combination, lower terminal non-sequence dispatching means, car-number balancing means, lower terminal schedule timing means, means for switching together said lower terminal non-sequence dispatching means, said car-number balancing means and said lower terminal schedule timing means and thereby conditioning the system to operate according to a program suitable for Balanced traffic, and means for causing said means for switching to operate at predetermined times.
4. A combination such as is defined in claim 3 in which the means for causing said means for

switching to operate at predetermined times of the day are adjustable to set each such predetermined time.

5. A system of controls for a bank of elevators comprising, in combination, lower terminal non-sequence dispatching means, upper terminal schedule time means, immediate lower terminal dispatching means, means for switching together said lower terminal non-sequence dispatching means, said upper terminal schedule timing means, and said immediate lower terminal dispatching means and thereby conditioning the system to operate according to a program appropriate for Heavy Down traffic, and means for causing said means for switching to operate at a predetermined time.

6. A combination such as is defined in claim 5 in which the means for causing said means for switching to operate at a predetermined time is adjustable to set such predetermined time.

7. A system of controls for a bank of elevators comprising, in combination, lower terminal non-sequence dispatching means, lower terminal schedule timing means, immediate top of travel dispatching means, means for switching together said lower terminal non-sequence dispatching means, said lower terminal schedule timing means and said immediate top of travel dispatching means and thereby conditioning the system to operate according to a program appropriate for Heavy Up traffic, and means for causing said means for switching to operate at a predetermined time.

8. A combination such as is defined in claim 7 in which the means for causing said means for switching to operate at a predetermined time is adjustable to set such predetermined time.

9. A system of controls for a bank of elevators comprising, in combination, immediate lower terminal dispatching means, immediate top of travel dispatching means, car zoning means, overtime-wait signal means, means for switching together said immediate lower terminal dispatching means, said immediate top of travel dispatching means, said car zoning means, and said overtime-wait signal means and thereby conditioning the system to operate according to a program appropriate for Down Peak traffic, and means for causing said means for switching to operate at a predetermined time.

10. A combination such as is defined in claim 9 in which the means for causing said means for switching to operate at a predetermined time is adjustable to set such predetermined time.

11. A system of controls for a bank of elevators comprising, in combination, highest call operation means, night signal means, means for switching in said highest call operation means and said night signal means, and means for causing said means for switching in to operate at a predetermined time.

12. A system of controls for a bank of elevators comprising, in combination, unattended operation means, means for switching in said unattended operation means and means for causing said means for switching in to operate at a predetermined time.

13. A system of controls for a bank of elevators comprising, in combination, lower terminal non-sequence dispatching means, car-number balancing means, lower terminal schedule timing means, immediate top of travel dispatching means, highest call operation means, means for switching together said lower terminal non-sequence dispatching means, said lower terminal

schedule timing means, said immediate top of travel dispatching means, said highest call operation means, and thereby conditioning the system to operate according to a program appropriate for Up Peak traffic, means for switching together said lower terminal non-sequence dispatching means, said car-number balancing means and said lower terminal schedule timing means and thereby conditioning the system to operate according to a program appropriate for Balance traffic, means for deconditioning the system for operating according to a program previously in effect whenever the system is conditioned for operating according to a newly initiated program, and means for causing each of said means for switching to operate at a predetermined time.

14. A combination such as is defined in claim 13 in which the means for causing said means for switching to operate at a predetermined time of the day are adjustable to set each such predetermined time.

15. A system of controls for a bank of elevators comprising, in combination, lower terminal non-sequence dispatching means, car-number balancing means, lower terminal schedule timing means, upper terminal schedule timing means, immediate lower terminal dispatching means, immediate top of travel dispatching means, highest call operation means, means for switching together said lower terminal non-sequence dispatching means, said lower terminal schedule timing means, said immediate top of travel dispatching means, said highest call operation means and thereby conditioning the system to operate according to a program appropriate for Up Peak traffic, means for switching together said lower terminal non-sequence dispatching means, said car-number balancing means and said lower terminal schedule timing means and thereby conditioning the system to operate according to a program appropriate for Balance traffic, means for switching together said lower terminal non-sequence dispatching means, said upper terminal schedule timing means and said immediate lower terminal dispatching means, and thereby conditioning the system to operate according to a program appropriate for Heavy Down traffic, means for deconditioning the system for operating according to a program previously in effect whenever the system is conditioned for operating according to a newly initiated program, and means for causing each of said means for switching to operate at a predetermined time.

16. A combination such as is defined in claim 15 in which the means for causing each of said means for switching to operate at a predetermined time of the day are adjustable to set each such predetermined time.

17. A system of controls for a bank of elevators comprising, in combination, lower terminal non-sequence dispatching means, car-number balancing means, lower terminal schedule timing means, upper terminal schedule timing means, immediate lower terminal dispatching means, immediate top of travel dispatching means, highest call operation means, means for switching together said lower terminal non-sequence dispatching means, said lower terminal schedule timing means, said immediate top of travel dispatching means, and said highest call operation means and thereby conditioning the system to operate according to a program appropriate for Up Peak traffic, means for switching together said lower terminal non-sequence dispatch means, said car-number balancing means and said lower

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terminal schedule timing means and thereby conditioning the system to operate according to a program suitable for Balance traffic, means for switching together said lower terminal non-sequence dispatching means, said upper terminal schedule timing means and said immediate lower terminal dispatching means and thereby conditioning the system to operate according to a program appropriate for Heavy Down traffic, means for switching together said lower terminal non-sequence dispatching means, said lower terminal schedule timing means and said immediate top of travel dispatching means and thereby conditioning the system to operate according to a program appropriate for Heavy Up traffic, means for deconditioning the system for operating according to a program previously in effect whenever the system is conditioned for operating according to a newly initiated program, and means for causing each of said means for switching to operate at a predetermined time.

18. A combination such as is defined in claim 17 in which the means for causing each of said means for switching to operate at a predetermined time is adjustable to set each said predetermined time.

19. A system of controls for a bank of elevators comprising, in combination, lower terminal non-sequence dispatching means, car-number balancing means, lower terminal schedule timing means, upper terminal schedule timing means, immediate lower terminal dispatching means, immediate top of travel dispatching means, highest call operation means, car zoning means, overtime-wait signal means, means for switching together said lower terminal non-sequence dispatching means, said lower terminal schedule timing means, said immediate top of travel dispatching means, and said highest call operation means and thereby conditioning the system to operate according to a program appropriate for Up Peak traffic; means for switching together said lower terminal non-sequence dispatching means, said car-number balancing means and said lower terminal schedule timing means and thereby conditioning the system to operate according to a program appropriate for Balance traffic; means for switching together said lower terminal non-sequence dispatching means, said upper terminal schedule timing means, said immediate lower terminal dispatching means and thereby conditioning the system to operate according to a program appropriate for Heavy Down traffic; means for switching together said lower terminal non-sequence dispatching means, said lower terminal schedule timing means and said immediate top of travel dispatching means and thereby conditioning the system to operate according to a program appropriate for Heavy Up traffic; means for switching together said immediate lower terminal dispatching means, said immediate top of travel dispatching means, said car zoning means, and said overtime-wait signal means and thereby conditioning the system to operate according to a program appropriate for Down Peak traffic; means for deconditioning the system for operating according to a program previously in effect whenever the system is conditioned for operating according to a newly initiated program, and means for causing each of said means for switching to operate at a predetermined time.

20. A combination such as is defined in claim 19

in which the means for causing each of said means for switching to operate at a predetermined time is adjustable to set each such predetermined time.

21. A system of controls for a bank of elevators comprising, in combination, lower terminal non-sequence dispatching means, car-number balancing means, lower terminal schedule timing means, immediate lower terminal dispatching means, immediate top of travel dispatching means, car zoning means, overtime-wait signal means, means for switching together lower terminal non-sequence dispatching means, said lower terminal schedule timing means, said immediate top of travel dispatching means, and said highest call operation means and thereby conditioning the system to operate according to a program appropriate for Up Peak traffic; means for switching together said lower terminal non-sequence dispatching means, said car-number balancing means, and said lower terminal schedule timing means and thereby conditioning the system to operate according to a program appropriate for Balance traffic; means for switching together said immediate lower terminal dispatching means, said immediate top of travel dispatching means, said car zoning means, and said overtime-wait signal means and thereby conditioning the system to operate according to a program appropriate for Down Peak traffic; means for deconditioning the system for operating according to a program previously in effect whenever the system is conditioned for operating according to a newly initiated program, and means for causing each of said means for switching to operate at a predetermined time.

22. A system of controls for a bank of elevators comprising, in combination, lower terminal non-sequence dispatching means, car-number balancing means, lower terminal schedule timing means, upper terminal schedule timing means, immediate lower terminal dispatching means, immediate top of travel dispatching means, highest call operation means, means for switching together said lower terminal non-sequence dispatching means, said lower terminal schedule timing means and said immediate top of travel dispatching means and thereby conditioning the system to operate according to a program appropriate for Heavy Up traffic; means for switching together said lower terminal non-sequence dispatching means, said car-number balancing means and said lower terminal schedule timing means and thereby conditioning the system to operate according to a program suitable for Balance traffic; means for switching together said lower terminal non-sequence dispatching means, said upper terminal schedule timing means and said immediate lower terminal dispatching means and thereby conditioning the system to operate according to a program appropriate for Heavy Down traffic; means for deconditioning the system for operating according to a program previously in effect whenever the system is conditioned for operating according to a newly initiated program, and means for causing each of said means for switching to operate at a predetermined time.

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