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DUPLICATE

ELEVATOR SYSTEM

1 The present invention relates to an elevator
system for supervising the movement of elevators, and
more particularly to improvements in an elevator system
which is suitable for application to a small number of
5 elevators.

In the system for supervising the movement of
elevators, the most significant problem is to reduce and
uniform the waiting time of each user.

For this problem, various techniques have
10 hitherto been employed.

In the initial stage, it has been practiced
that zones of which individual elevators take charge are
determined in accordance with respective positions of a
plurality of elevators so that the elevators may be
15 placed at intervals as equally as possible. With
subsequent development of microcomputers, a hall call
assignment method has been employed wherein various
factors are evaluated each time a hall call is generated
in order to assign an optimum elevator in accordance
20 with each hall call.

These control methods are techniques of
optimally serving hall calls generated irregularly. In
addition, for the sake of serving specified traffic,
there are available a zoning express running operation
25 at the office-going hour and an elevator for specified

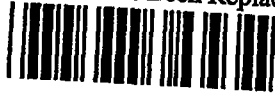
1 service which takes charge of a specified hall call to
take care of a specified traffic demand.

JP-A-63-247279 and JP-A-63-247280 disclose a
specified elevator serving a specified traffic demand.

5 JP-A-63-247279 describes that a numbered machine to be
specifically served accepts only a cage call from a
specified floor during a specified high demand occurring
at a preset hour, so that during a time zone such as the
lunch hour or the closing hour in which the demand is
10 heavily concentrated to a specified floor, an elevator
destined for a specified floor is designated and the
demand for the specified floor is served by this
elevator to reduce the one cycle time of the specified
numbered machine, thereby giving preferential service to
15 the high-demand floor. JP-A-63-247280 describes that in
addition to JP-A-63-247279, a plurality of elevators are
divided into two groups of elevators serving all of the
floors and of elevators serving specified floors,
special indicators and special buttons are provided to
20 the elevators serving the specified floors, and an
indication purporting the movement to only the specified
floors is given to the elevators serving the specified
floors when time comes to a preset hour, thereby
ensuring that passengers can be served without wavering
25 in choice.

The hall call assigning method and zone method
are control methods suitable for the case where the hall
call is generated irregularly and are not satisfactory





1 to serve a traffic demand in which a floor from which a
hall call is generated and a destination floor are
almost determined.

Good service is desired to be given to even a
5 high demand which the hall call assigning method can
cope with at the cost of difficulties and the prior arts
disclosed in the aforementioned laid-open publications
are achieved to solve the problems. But it has been
proven that with the prior arts, in a demand in which
10 passengers from individual floors are concentrated to
the first floor at the lunch hour, for example, an
elevator becomes crowded at higher floors and service to
intermediate and lower floors is degraded significantly.
It has also been proven that with the aforementioned
15 prior arts, the hour, the specified destination floor
and the specified elevator are determined in advance and
therefore demands for different destinations cannot be
dealt with, resulting in a failure to take care of a
demand changeable in various ways.

20 An object of the present invention is to solve
the above problems and to provide an elevator system
which can efficiently take care of the traffic demand
when it is subject to an unpredictable change or
unpredictable localization.

25 According to one aspect of the invention, in
response to a scheduled state, a desired elevator is
allowed to serve only a plurality of specified floors.
In an embodiment of the invention, when it is detected



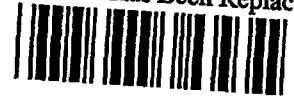
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1 that localization of the traffic demand in a building
occurs, the share of demand is so changed that a desired
elevator is allowed to take charge of a localized demand
and the remaining elevators are allowed to take charge
5 of the other or general demand.

With the above construction, assignment of
elevators suitable for traffic at that time can be
permitted and service can be improved as a whole.
According to a preferred embodiment of the invention,
10 the traffic is divided into specified high-demand
traffic and normal traffic and service is given by using
service elevators sorted into elevators serving the
specified high-demand traffic and elevators serving the
normal traffic, thereby preventing localization of
15 service to the traffic demand.

Further, in another preferred embodiment of
the invention, elevators serving the other floors are
freed from serving over high-demand floors in which much
time is consumed for boarding and alighting and
20 therefore the one cycle time can be reduced and the
waiting time can be reduced as a whole. Further, floors
preceding and succeeding a high-demand floor can be
prevented from being passed by owing to the occurrence
of crowdedness at the high-demand floor and so
25 serviceability can be improved as a whole.

As described previously, the recent hall call
assignment method for assigning a hall call by using
total evaluation is used for optimally serving a hall



- 5 -

1 call generated irregularly. Therefore, this method is
unsuitable for serving a high demand occurring over
specified floors. In the case where group-supervisory
control of four or more elevators is carried out, while
5 a certain elevator serves over specified floors, the
other elevators are allowed to serve the other floors
and therefore the hall call assignment method can be
employed to fulfill itself as far as the demand is not
excessively heavy.

10 However, simulation conducted by the inventors
in which that assignment method is applied to two to
three elevators at the most has demonstrated that in the
case of a demand being concentrated to, for example, the
first floor at, for example, the lunch time, crowdedness
15 occurs on the way if the number of boarding persons at
higher floors is large, resulting a failure to serve
lower floors. Even if crowdedness does not occur, time
is much more consumed in a heavy boarding and alighting
state than in a light boarding and alighting state, with
20 the result that a vicious circle occurs in which the one
cycle time of an elevator is prolonged to increase the
waiting time while the number of passengers waiting at
each floor is increased to cause the elevator to again
undertake heavy movement.

25 Even with four or more elevators employed,
when the demand is significantly high, the localization
of demand is heavy and the number of service floors is
large, most elevators serve over high-demand floors. As

1 a result, service to the other floors than the high-
demand floors is degraded and even in service to the
high-demand floors, the one cycle time is increased
owing to, for example, a heavy boarding and alighting
5 state and so the waiting time is prolonged, resulting in
degraded service.

Then, a desired elevator is allowed to serve
over high-demand floors. For example, when a demand
from the tenth and ninth floors to the first floor is
10 heavy in a building of ten stories, an elevator becomes
crowded at the ninth floor in the absence of any
countermeasures and service to the eighth and lower
floors is degraded. Then, this demand is detected so
that desired one of a plurality of elevators may be
15 allowed to perform shuttle running from the tenth and
ninth floors to the first floor so as to reduce the
waiting time at the tenth, ninth and first floors and
the other elevators may be allowed to serve the other
general floors, thereby preventing the pass-by due to
20 crowdedness and an increase in the boarding and
alighting time during crowdedness.

Through this, the one cycle time of all of the
elevators can be reduced and the waiting time can be
reduced in both the demand occurring over specified
25 floors and general demand to improve serviceability.

The above and other objects, features and
advantages of the present invention will become apparent



1 from the following detailed description taken in
conjunction with the accompanying drawings, in which:

Fig. 1 is an overall construction diagram;

Fig. 2 is a flow chart of the invention;

5 Figs. 3A-3I are diagrams for explaining the
invention;

Fig. 4 is a diagram showing an example of an
embodiment in the case of a single machine;

Figs. 5A-5E are diagrams for explaining an
10 example of schedule running of a single machine;

Fig. 6 is a flow chart of an example of
schedule running of a single machine;

Fig. 7 is a flow chart of high demand
measurement.

15 Fig. 8 is a flow chart of running method
decision;

Figs. 9A-9H are examples of schedule running;

Figs. 10A-10D are examples of schedule running
in the case of a single machine;

20 Fig. 11 is a diagram showing an example in the
case where learning is carried out;

Fig. 12A and 12B are examples of a learning
table;

Fig. 13 is an example in the case where
25 simulation is carried out on the basis of learning;

Fig. 14 is a diagram showing an example in the
case where a schedule is determined;



1 collected in a hall call collecting unit 31 included in
a group-supervisory controller 3 through a hall call
transmission path 2 and transmitted, together with cage
information from a cage information collecting unit 32,
5 to an assignment controlling unit 33 and a traffic
deciding unit 34. Information from cage call buttons
41 to 44 is transmitted to numbered machine controllers
61 to 64 through cage call transmission paths 51 to 54
and is transmitted, together with cage position
10 information and the like of each numbered machine, to
the cage information collecting unit 32 and assignment
controlling unit 33. The assignment controlling unit 33
determines an assigned elevator serving a hall call, on
the basis of the above information, and sends an
15 assignment signal to the numbered machine controllers 61
to 64 through a transmission line 7. The numbered
machine controllers 61 to 64 control motors 81 to 84 in
accordance with the assignment signal so that the motors
81 to 84 may cause traction machines 91 to 94 to move
20 conveyance cages 111 to 114, thereby serving the hall
call and a cage call. Denoted by 121 to 124 are
counterweights. Based on the information sent from the
hall call collecting unit 31 and cage information
collecting unit 32, the traffic deciding unit 34 decides
25 traffic in respect of each floor. The traffic at each
floor is defined by a presumptive value of traffic
volume to a destination floor, the presence or absence
of occurrence of crowdedness, the waiting time, the



1 then decides the traffic (202). Further, it decides
whether the occurrence of a high demand or service
degradation is detected (203). If a high demand or
service degradation is occurring, the traffic deciding
5 unit 34 transmits a schedule running command to the
assignment controlling unit 33 (204). If there is no
occurrence, the program returns to normal assignment
control (212). The assignment controlling unit 33
receiving the schedule running command selects a
10 schedule running operation suitable for the traffic on
the basis of the traffic decided by the traffic deciding
unit 34 (205). Subsequently, a predetermined elevator
is selected and disconnected from an object undergoing
normal assignment control (206), and an indication that
15 the elevator is placed in the schedule running is
indicated on the landing stage indicators 131 to 13n.
In that case, one of the landing stage indicators 131 to
13n provided on a floor at which the high demand is
occurring is given an indication that the elevator in
20 question goes non-stop from this floor to a major
destination floor presumed by the traffic. When
becoming empty or after service to an end floor, this
elevator goes straight to the high-demand floor (207).
Upon arrival at the high-demand floor, a cage call for
25 running from this floor to the presumed major
destination floor is registered (208) and the elevator
of interest is caused to go straight to the destination
floor (209). Thereafter, the high demand is checked for



1 In this case, immediately after the elevator departs, a
hall call button is depressed for the next elevator
calling. Because of the occurrence of such a wasteful
call for stopping devoid of boarding and alighting
5 passengers, the one cycle time is further prolonged to
further degrade the waiting time and boarding time.
When this condition becomes stationary, down users from
the fourth floor are forced to utilize an elevator by
depressing an up call button to once reach the highest
10 floor and by preventing themselves from alighting there
so as to take a down course. This aggravates
crowdedness and an essentially wasteful hall call is
issued to further increase the waiting time. The
aforementioned traffic models after traffic at the lunch
15 hour in a building, demonstrating that traffic for users
to have lunch from the sixth and fifth floors, on which
offices are located, to a reference floor or the first
floor is major traffic. Accordingly, the traffic shown
in Fig. 3B can be divided into one traffic from the
20 fifth and sixth floors to the first floor and the other
traffic as shown in Fig. 3C and Fig. 3D. Thus, one
elevator is dedicated to service to the traffic from the
fifth and sixth floors and the remaining elevator is
allowed to serve the other traffic. In this example, a
25 numbered machine A is an elevator dedicated to the
traffic from the fifth and sixth floors to the first
floor and a numbered machine B is an elevator allowed to
serve the other traffic. In this manner, users on the



1 and a load sensor included in a cage through the medium
of a hall call collecting unit 31 and a cage information
collecting unit 32 to decide traffic and when detecting
a high-demand floor or a low service floor, it sends a
5 schedule running command to a running control unit
611 which in turn controls a motor control unit 612 to
place the running in schedule running.

Figs. 5A-5E are diagram for explaining an
example of schedule running in the case of a single
10 machine. Traffic shown in Fig. 5A is divided into a
demand from the sixth floor to the first floor as shown
in Fig. 5B and the other demand as shown in Fig. 5D. In
the case of a single machine, a first one-round shuttle
running operation is defined, as shown in Fig. 5C, as a
15 period for serving a high-demand floor as shown in Fig.
5B with a second one-round shuttle running operation
defined, as shown in Fig. 5E, as a period for serving
the other floors, and the first and second one-round
shuttle running operations are carried out alternately
20 at a constant rate.

Fig. 6 is a flow chart of schedule running in
the case of a single machine. When a high-demand floor
or a low service floor is detected (601), a floor to be
served by schedule running is examined (602), and an
25 indication purporting the schedule running is given on
each floor (603). Since in the case of a single machine
the provision of a special indicator is seldom, an
express indication is given in many applications.



1 occurrence, on the basis of the time that the
crowdedness, pass-by of hall call, wasteful call and
long-term wait occur and floors at which they occur, the
occurrence is examined as to whether to be attributable
5 to a high demand (202-3). If the occurrence is not due
to a high demand, the normal running is allowed to
continue but if due to a high demand, the assignment
controlling unit 33 transmits a schedule running command
to the running control unit 611 to carry out schedule
10 running (202-4).

In normal traffic, a floor at which a user
gets on an elevator and a floor at which the user gets
off the elevator cannot be presumed in most cases, but a
high demand occurs when passengers move between a floor
15 on which entertainments are held and another floor, when
passengers gather at a specified floor at the lunch hour
or the closing hour or when traffic directed from a
specified floor to another floor takes place at, for
example, the office-going hour and therefore, by
20 recording the number of passengers who get on and off
each elevator during one up-and-down cycle thereof,
major traffic can be known.

In examining, in (203-3) of Fig. 7, whether
the long-term wait is due to a high demand to be served
25 by schedule running of the invention, a method is
employed in which a table based on, for example, an
occurrence time zone, an occurrence floor and an
occurring event as shown in Figs. 17A and 17B is



1 but it suffices that, for example, only floors calling
the cage immediately after high-demand floor hall call
service are recorded in accordance with time zones.
Subsequently, the number of elevators to be subject to
5 schedule running is determined from the learning results
or the table (205-2). In the case of a single machine,
not the elevator number but the ratio between effectua-
tion of service to high-demand floors and that of
service to general floors is determined. This ratio may
10 be defined in terms of time or may be two general floor
service operations (two up-and-down cycles) per one
high-demand floor service operation. The manner of
operating each elevator is determined by looking up a
table prepared in advance or a table prepared on the
15 basis of results of simulation (205-3).

Figs. 9A-9H are diagrams for explaining an
example of schedule running. Shown in Fig. 9A to 9D are
traffic types and shown in Figs. 9E and 9F are examples
of schedule running in the respective traffic types.
20 Shown in Fig. 9A is traffic in which passengers gather
from a high-demand floor to a reference floor at, for
example, the first half of the lunch hour or the closing
hour or when entertainments held on the rooftop of a
department store ends. Shown in Fig. 9B is a case where
25 there are two high-demand floors. Shown in Fig. 9C is
traffic in which passengers from a floor disperse to the
other floors at, for example, the office-going hour. In
contrast to the conventional zoning express during the



1 stops at the sixth and fifth floors in sequence and
thereafter goes non-stop to the first floor; but in the
event that the demand further grows and service to the
fifth floor is degraded, the numbered machine A stops at
5 the sixth floor, detects crowdedness occurring at the
sixth floor, goes non-stop to the first floor to allow
passengers to alight there and thereafter goes non-stop
to the fifth floor to serve the fifth floor. In
addition to the case of the occurrence of crowdedness at
10 the sixth floor, when the number of boarding passengers
at the fifth floor is smaller than that originally
expected, this running is also carried out on the
assumption that the occurrence of a high demand is
determined. In the extremity of this case, even upon
15 arrival responsive to a hall call, there is nobody
boarding. Shown in Fig. 9G is an instance where the
major traffic demand being a traffic demand as shown in
Fig. 9C is served wherein the traffic demand in which
passengers from the reference floor disperse to the
20 other floors at the office-going hour is somewhat mixed
with the traffic destined for the respective floors. In
this traffic demand, when the traffic demand destined
for the respective floors exceeds a constant rate, the
up and down elevators stop on each floor and therefore
25 the one cycle time is increased, resulting in the
occurrence of a long-term wait. In addition, passengers
at midway floors get on a crowded up elevator to prolong
the boarding and alighting time, and service to a floor



1 but also crowdedness due to the users from the specified
floor can be avoided, thus improving service as a whole.

Figs. 10A-10D show examples of a running
method in the case of a single machine. To take care of
5 the traffic as shown in Fig. 9A, non-stop service from
the sixth floor to the first floor is given during a
first period, service to the other floors is given
during a second period and the above service operations
are repeated alternately as shown in Fig. 10A, thus
10 attaining effects similar to those in the case shown in
Fig. 9E. To take care of the case shown in Fig. 9B,
there are provided, as shown in Fig. 10B, a period
during which service to the fifth and sixth floors is
given and a period during which service to the other
15 floors is given, and the above service operations are
repeated alternately. To take care of aggravated
crowdedness, there are provided three service periods as
shown in Fig. 10C, of which a first period is for
serving the sixth floor, a second period is for serving
20 the fifth floor and third period is for serving the
other floors. To take care of the case shown in Fig.
9D, there are provided, as shown in Fig. 10D, a period
for serving specified floors and a period for serving
the other floors, thus reducing the boarding time and
25 the boarding rate.

Fig. 11 is an embodiment in the case where
learning is effected. A learning unit 35 learns
information from a hall call collecting unit 31 and a

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1 recording can be simplified as shown in Fig. 12B by
using the occurring time zone, the occurrence floor and
the destination floor for which the elevator from each
floor is destined. In this case, the high-demand floor
5 and the destination floor for which the elevator from
high-demand floor is destined can be changed by results
of learning but fundamental movement for performing
schedule running remains unchanged.

Fig. 13 shows an embodiment in a case where
10 simulation is carried out on the basis of the results of
learning. A simulation unit 37 performs simulation by
changing each time zone, conditions within each time
zone, the number of machines subject to schedule running
in accordance with traffic types, the number of floors
15 and the running method on the basis of the contents of a
learning table 36, which contents is representative of
results of learning by a learning unit 35, to find
schedule running suitable for various conditions. The
schedule running is registered in a schedule running
20 table 38 corresponding to each learning running table,
and when the occurrence of conditions for performing
schedule running is detected by a traffic deciding unit
34, a schedule suitable for the decided traffic, running
conditions, time and floor is found from the schedule
25 running table 38 to carry out schedule running.

According to the present embodiment, schedule running
suitable for various conditions which differ for
different buildings can be prepared through simulation



1 simulation for the case where various types of schedule
running are carried out, by using data of a learning
table 36 based on results of learning by a learning unit
35, to determine a running method suitable for each time
5 zone, each traffic demand and each event and write the
determined running methods in a schedule running table
38. On the basis of outputs of a timer 39 and the
learning table 36 and conditions of halls and cages, an
assignment controlling unit 33 selects, from the
10 schedule running table 38, a schedule running type
suitable for a time zone of interest and conditions and
carries out the selected schedule running. According to
the present embodiment, since validity can be confirmed
in advance through the simulation, steadier running
15 control can be realized and how the schedule running
changes the flow of persons can be predicted. When the
actual flow of persons is found to be greatly different
from the predicted flow after the schedule running is
practiced, the actual traffic is determined to be
20 different from the traffic presumed by the schedule
running now in execution and the running is returned to
normal running to avoid improper movement.

Fig. 16 is a flow chart in the case where a
schedule to be executed at a certain hour is determined
25 in advance. Firstly, the assignment controlling unit
33 detects that the time comes to a predetermined hour by
means of the timer 39 (161). Subsequently, traffic is
decided (202) and the traffic is examined as to whether



1 appreciably degrading service to the other floors. A
service rate setting unit 12 sets a service rate, and a
simulation unit 37 finds out a control method capable of
realizing the service rate through simulation and writes
5 the control method in a schedule running table 38. An
assignment controlling unit 33 selects a schedule, which
can realize the set service rate, from the schedule
running table 38 in accordance with each traffic and
time zone and controls the assignment.

10 Fig. 19 shows an embodiment in the case where
a destination for which passengers are destined is
known. With destination buttons 14l to 14n provided at
landing stages, the efficiency can further be improved
by providing cages prepared for different destinations
15 when there are a plurality of major destinations of
high-demand floors.

Figs. 20A-20I show examples of an express
indication. Shown in Figs. 20A to 20E are instances
where an indication is given to indicators at a floor
20 and a landing stage of an elevator subject to schedule
running, and shown in Figs. 20F and 20G are instances
where an indication is given to landing stages for other
elevators than that subject to schedule running. Shown
in Fig. 20A is an instance where an indication simply
25 purporting express is given. Shown in Fig. 20B is an
instance where floors between which non-stop service is
given is indicated by going non-stop from the sixth
floor to the first floor. Shown in Fig. 20C is an



1 the first and sixth floors are flashed. Shown in Fig.
21C is arrival at the sixth floor. Shown in Fig. 21D is
an instance where schedule running is effected between
the first floor and each of the sixth and seventh
5 floors. Shown in Figs. 21E and 21F are an instance
where schedule running is effected between the first
floor and each of the sixth and seventh floors, with the
period for serving the sixth floor separated from the
period for serving the seventh floor as shown in Fig.
10 10C. Firstly, lamps for the seventh and first floors
served firstly are lit and indicated, a lamp for the
sixth floor served secondly is lit and indicated in
place of the lamp for the seventh floor when the first
service ends, and this is repeated until the schedule
15 running ends. Shown in Figs. 21G and 21H is an instance
where two indication lamps indicative of express and
normal are provided. When as shown in Fig. 4 a single
elevator is subject to schedule running, a period during
which the single elevator is subject to express running
20 and a period during which that elevator is subject to
normal service occur alternately. Under this condition,
an express indication is given during the period for
performing express running to give the indication
described so far and a normal indication is given during
25 normal service running, thus clarifying which running is
in execution at present.

Figs. 22A-22E show examples of indication in
the case where a movement diagram is indicated. Shown



1 a1 to f1 represent steps for detecting triggering events
which start the respective flows. Shown in Fig. 24A is
a flow chart in the case where crowdedness upon
departure is detected to perform schedule running.

5 Firstly, departure with crowdedness subsequent to
arrival with non-crowdedness is detected (a1).
Subsequently, a major destination floor is detected
(a2). Further, it is decided whether a call of a floor
subject to crowdedness is registered immediately after
10 departure (a3), and if the call is not registered,
normal running is carried out but if the call is
registered, straight-going running is carried out
between the crowded floor and the major destination
floor (a4). Thereafter, it is decided whether the
15 demand at the floor subject to crowdedness disappears
(a5) and the program is repeated until the demand
disappears (a5). In the present embodiment, the floor
subject to the occurrence of crowdedness is considered
as a floor subject to a high demand to advantageously
20 improve service to this floor. Shown in Fig. 24B is a
flow chart in the case where when degradation in service
due to pass-by attributable to crowdedness is detected,
a schedule is put in. Crowdedness upon departure is
detected (b2) and a major destination floor at that time
25 is examined. Subsequently, it is examined whether a
call is generated at a floor subject to the occurrence
of crowdedness immediately after departure of a service
elevator (b3) and if the call is not generated, normal



1 passengers. Firstly, the wait-passenger sensor detects
a high demand (d1). Subsequently, a major destination
floor is detected (d2) and it is examined whether a call
is registered immediately after departure at a floor
5 preceding or succeeding a floor subject to crowdedness
or to a high demand (d3), and if the call is not
registered, normal running is carried out but if the
call is registered, non-stop running is carried out
between the floor subject to a high demand and the major
10 destination floor (d4). It is then examined whether the
high demand disappears (d5), and if the demand does not
disappear, (d4) and the ensuing step are repeated but if
the demand disappears, the program returns to normal
running. According to the present embodiment, a high
15 demand can be detected accurately by means of the wait-
passenger sensor. Shown in Fig. 24E is an instance
where schedule running is carried out when nobody gets
on an elevator even upon arrival of the elevator in
response to a hall call and another hall call is
20 generated immediately thereafter. Firstly, it is
detected that upon arrival of a slightly crowded
elevator in response to a hall call, there is no
boarding and alighting person (e1). Subsequently, it is
examined whether immediately after departure from the
25 floor subject to the hall call, a hall call is
registered (e2), and if the hall call is not registered,
normal running is carried out but the hall call
is registered, non-stop running to a floor in



1 repeated but if not, the program returns to normal running.

Figs. 25A-25D show embodiments in which a wait-passenger is allowed to participate in operation.

5 In an office building, when a high demand occurs on a floor where a meeting room is located, a destination in this case cannot be predicted but is frequently almost determined. In that case, even when the destination depends on a time zone and is not fixed, good service
10 can be given by providing destination buttons 141 to 14nintegral with boarding hall indicators as shown in Fig. 25A or by carrying out running after the occurrence of a cage call without determining a destination direction of an express elevator, i.e., a schedule
15 running elevator. Conventionally, only arrival at the floor in question is effected but in the present invention, an elevator arrives at a floor at which a hall call occurs and thereafter goes non-stop to a floor at which a cage call occurs. Shown in Fig. 25B is an
20 embodiment in which when a passenger desires to go to a floor other than a floor subject to schedule running, the passenger is allowed to select the floor. Instead of using these buttons, a hall call button located at a place other than the vicinity of an elevator reserved
25 for schedule running can be depressed to select a cage for assigning the normal running other than the schedule running. When the number of elevators arranged is one or two, only a pair of hall call buttons are provided on





Claims

1. An elevator system with a plurality of elevators serving over a plurality of floors, comprising means, responsive to a scheduled state, to cause a desired elevator to serve only a plurality of specified floors.
2. An elevator system with a plurality of elevators serving over a plurality of floors, comprising means for selecting and assigning an elevator which serves in response to a hall call generated, and means, responsive to a scheduled state, to assign part of said elevators to only a hall call from a single specified floor.
3. An elevator system with a plurality of elevators serving over a plurality of floors, comprising means for selecting and assigning an elevator which serves in response to a hall call generated, and means, responsive to a scheduled signal, to assign part of said elevators to only hall calls from a plurality of specified floors.
4. An elevator system with a plurality of elevators serving over a plurality of floors, wherein a desired elevator has a normal running mode and a running mode for accepting only hall calls from a plurality of specified floors.
5. An elevator system with a plurality of elevators serving over a plurality of floors, wherein the same elevator has a running mode serving over only a





to serve only a plurality of specified floors including floors preceding said floor as well as said floor.

10. An elevator system with a plurality of elevators serving over a plurality of floors, comprising means, responsive to a scheduled state, to determine the number of elevators which serve only a specified floor, and means for indicating said service floor or floors not subject to service.

11. An elevator system with a plurality of elevators serving over a plurality of floors, comprising means for selecting and assigning an elevator which serves in response to a hall call generated, means for dividing said plurality of elevators into two groups and causing a first group to perform shuttle running over only a plurality of specified floors, and means for causing a second group to be have as an object of selection of an elevator which serves in response to said hall call.

12. An elevator system with a plurality of elevators serving over a plurality of floors, comprising means for selecting and assigning an elevator which serves in response to a hall call generated, means for dividing said plurality of elevators into two groups, means for causing elevators of a first group to serve only a specified floor, and means for causing elevators of a second group to behave as an object of assignment to a hall call from floors excluding said specified floor.



corresponding elevator at a landing stage when said elevator is placed in said specified running mode.

17. An elevator system with an elevator serving over a plurality of floors and performing independent running which is not linked with another elevator, said system comprising a normal running mode and a running mode for serving only a plurality of specified floors.

18. An elevator system with an elevator serving over a plurality of floors, comprising a normal running mode and a running mode for serving a plurality of specified floors, and means for executing running operations of said two modes alternately.

19. An elevator system according to claim 18, further comprising means for indicating alternate running operations at landing stages.

20. An elevator system substantially as described with reference to the accompanying drawings.

This Sheet Has Been Replaced

