

ABSTRACT

Smooth movement of passengers to a destination is insured even inside an office building where banks are installed at far places and operation efficiency is improved. An elevator group control system 2 having a plurality of group controllers (30, 31) for dividing a plurality of elevator cages installed inside a building into a plurality of banks and executing operation control includes information terminals (101, 102) for registering the destination of the passenger and a building information storage portion (204) for storing map information inside the building computes destination floor call information, a route to a destination, movement distance·movement time to the bank and movement distance·movement time from the bank to the destination after get-off, a wait time of the passenger, a required time from the get-on floor to the get-off floor and congestion inside the elevator cage, and executes guide displays of the elevator cage to be utilized by the passenger.

CLAIMS:

Claim 1

An elevator group control system having a plurality of group controllers (30, 31) for dividing a plurality of elevator cages installed inside a building into a plurality of banks and controlling the operation, comprising:

an information terminal (101, 102) for registering destinations of passengers;

a building information storage portion (204) for storing map information inside said building; and

an integrated group controller (2),

wherein said integrated group controller (2) computes:

destination floor call information representing get-on and get-off floors of said passengers from position information of said information terminal (101, 102) and destinations, and said map information;

a route to said destination when said passenger moves from the position of said information terminal by utilizing each of said banks;

a movement distance and a movement time from the position of said information terminal to said bank and from said bank to said destination after get-off from said elevator cage when said passenger moves by utilizing said bank; and

a wait time of said passenger when allocated to each of said elevator cages, a required time from the get-on floor to the get-off floor and congestion inside said elevator cage from said destination floor call information and control information of said group controller (30, 31); and

wherein said elevator group control system selects a plurality of elevator cage applicants to be utilized by said passenger on the basis of the computed values to enable said passenger to select said cage, and executes allocation to said selected elevator cage and guide display of said route.

Claim 2

An elevator group control system according to claim 1, wherein said information terminal is a fixed information terminal (101, 102) storing ID information and position information of said information terminal (101, 102) is determined from said ID information.

Claim 3

An elevator group control system according to claim 1, wherein said information terminal (101, 102) is a portable information terminal that is portable, stores present position information and can transmit said present position information.

Claim 4

An elevator group control system according to claim 1, wherein said applicant of said elevator cage is selected from the one having at least the shortest total required time to said destination, the shortest movement distance to said destination and the lowest congestion of said elevator cage and is displayed on said information terminal (101, 102).

Claim 5

An elevator group control system according to claim 1, wherein a route from the position of said information terminal (101, 102) to said bank to which said allocated elevator cage belongs is displayed as guide display of said route.

Claim 6

An elevator group control system according to claim 1, wherein a route to said destination after get-off of said elevator cage when travel is made by utilizing said allocated elevator cage is displayed as guide display of said route.

Claim 7

An elevator group control system according to claim 1, wherein said information terminal (101, 102) is a portable information terminal that is portable, stores present position information and can transmit said present position information, detects deviation of said passenger from said route on the basis of the present position of said portable information terminal (101, 102) and said route and displays the deviation.

Claim 8

An elevator group control system according to claim 7, wherein a message of reporting the return to said route is given to said portable information terminal (101, 102) when the deviation of the passenger from said route is detected.

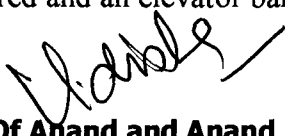
Claim 9

An elevator group control system according to claim 7, wherein allocation to said cage selected by the passenger is cancelled when deviation of the passenger from said route is detected, and a message of reporting the return to the passenger is displayed.

Claim 10

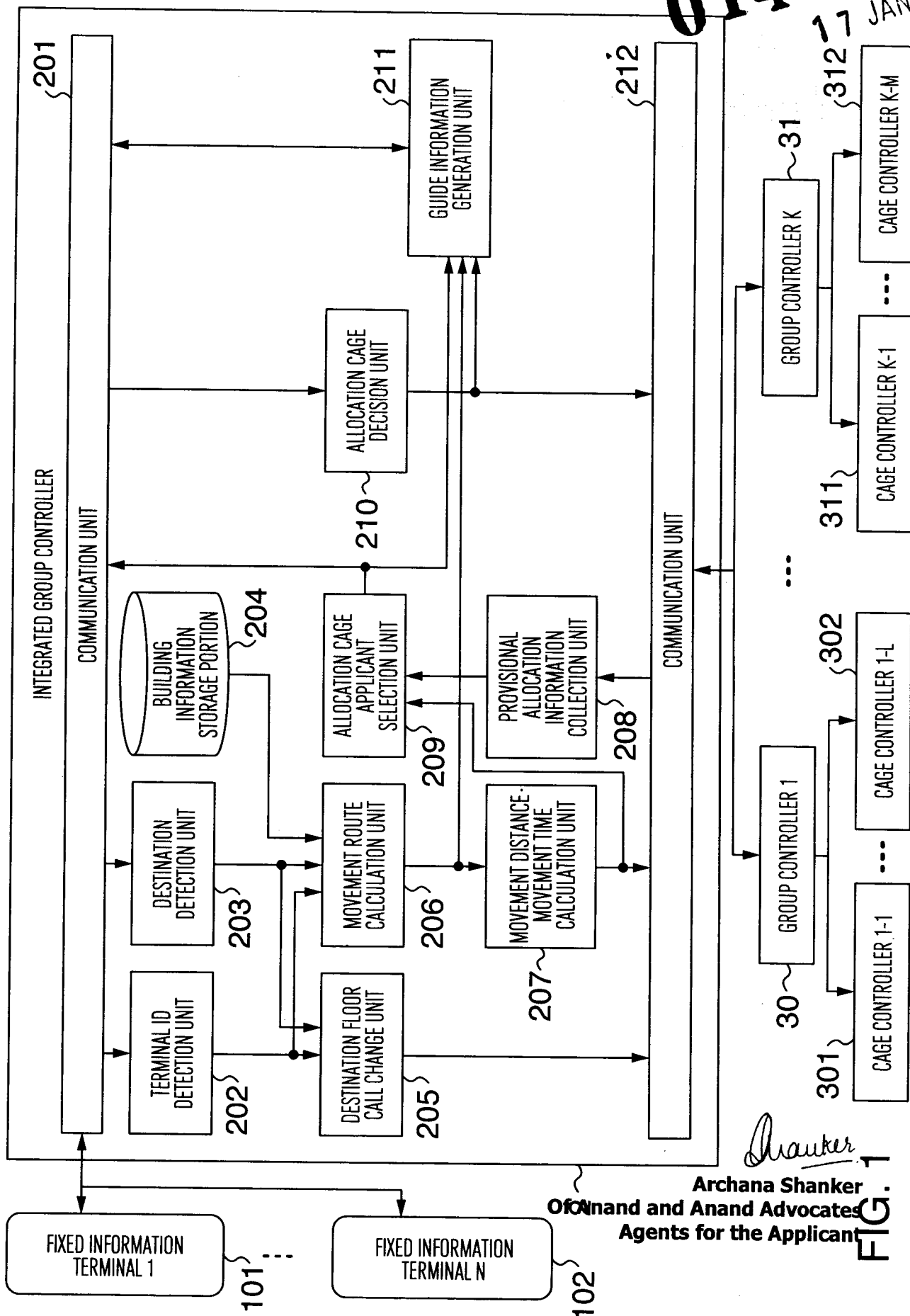
An elevator group control system according to claim 1, wherein an elevator bank having high utilization frequency of passengers is stored and an elevator bank having higher utilization frequency is displayed at a higher order.

Dated this 17th day of January 2012


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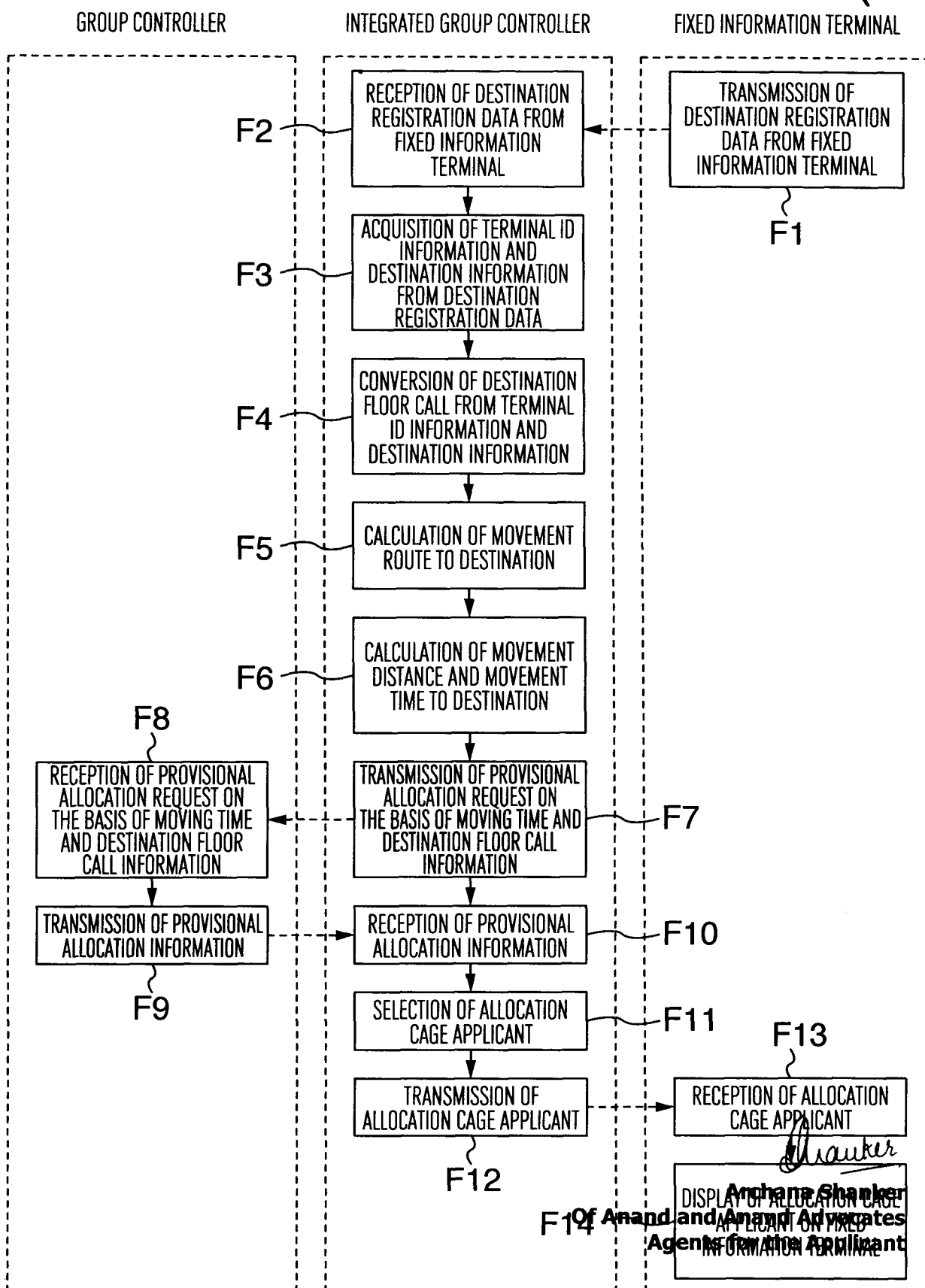
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FIG. 1

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FIG. 2

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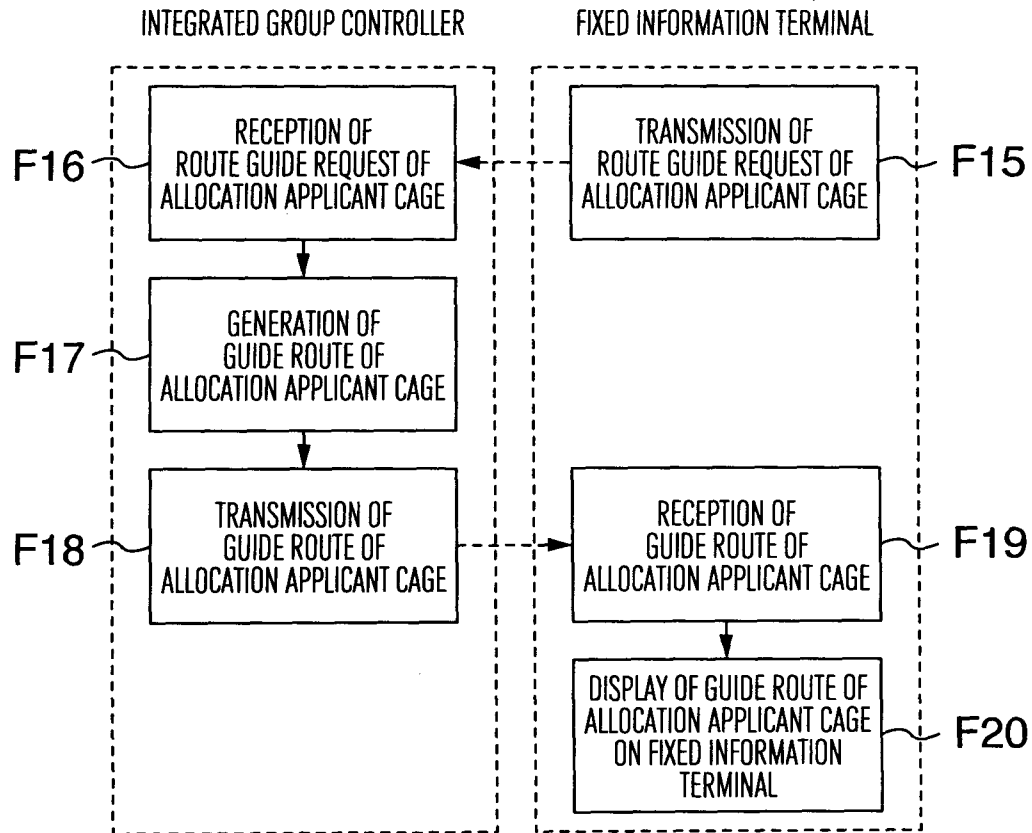


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FIG. 3

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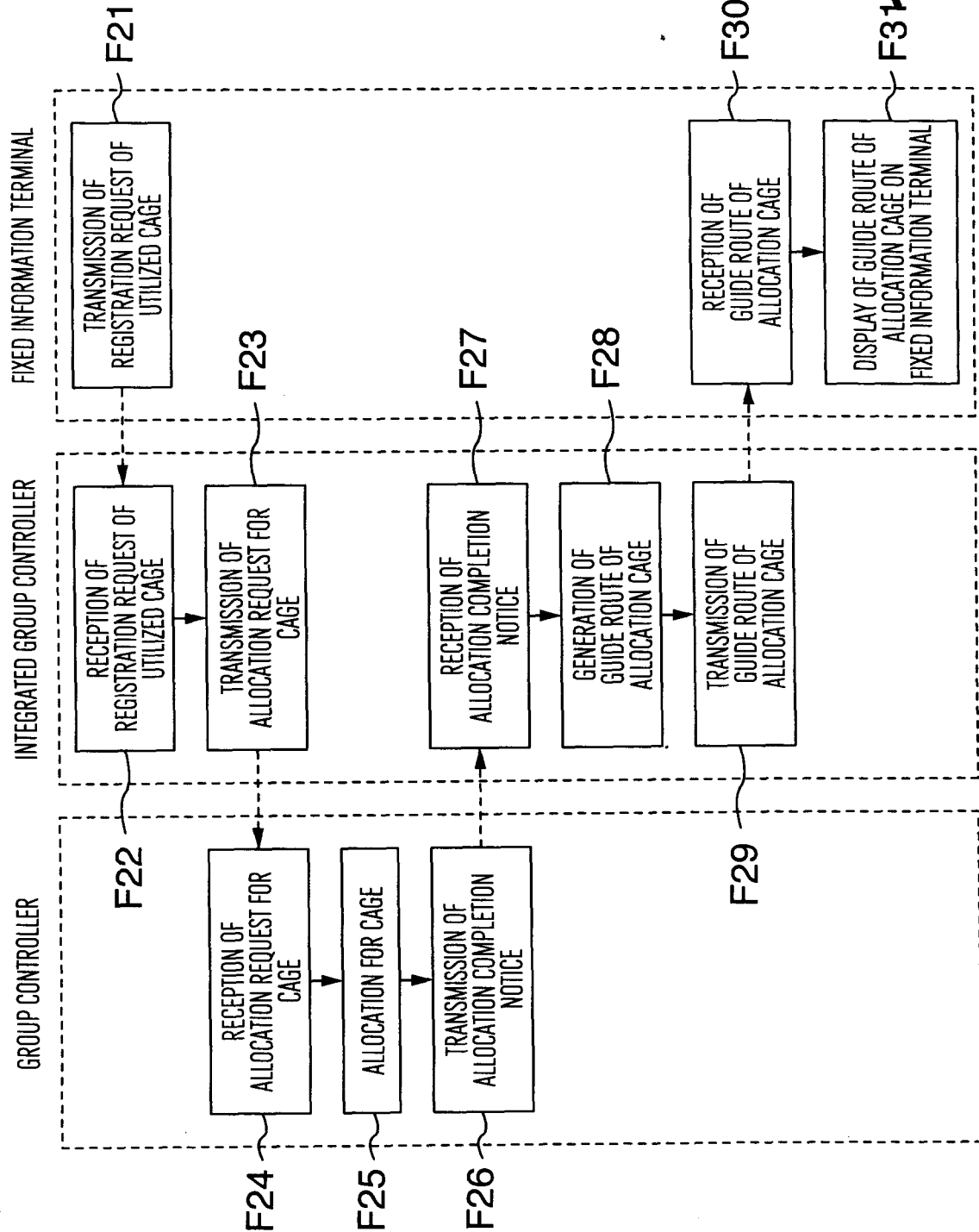
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FIG. 4



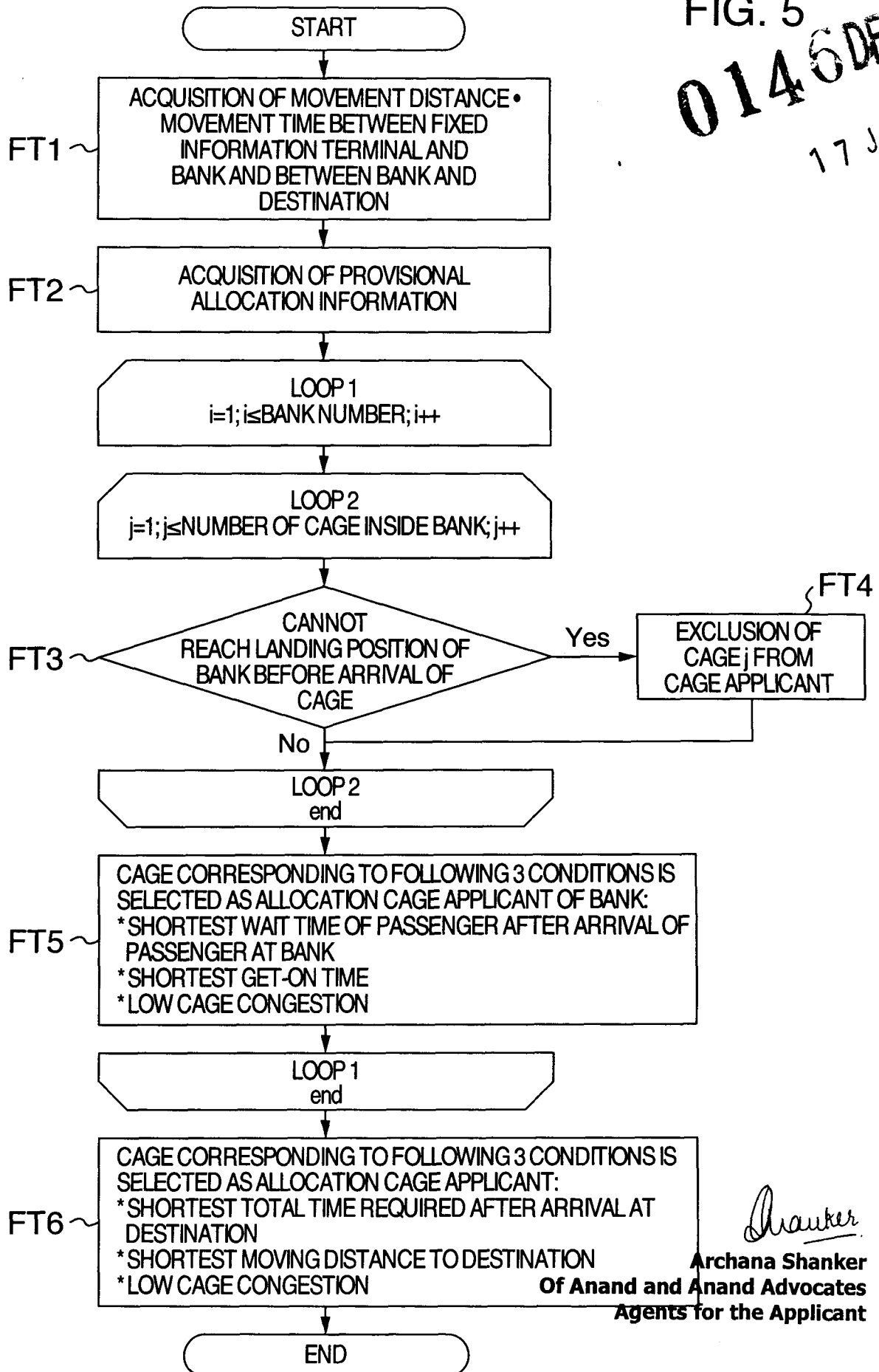
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FIG. 5

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FIG. 6

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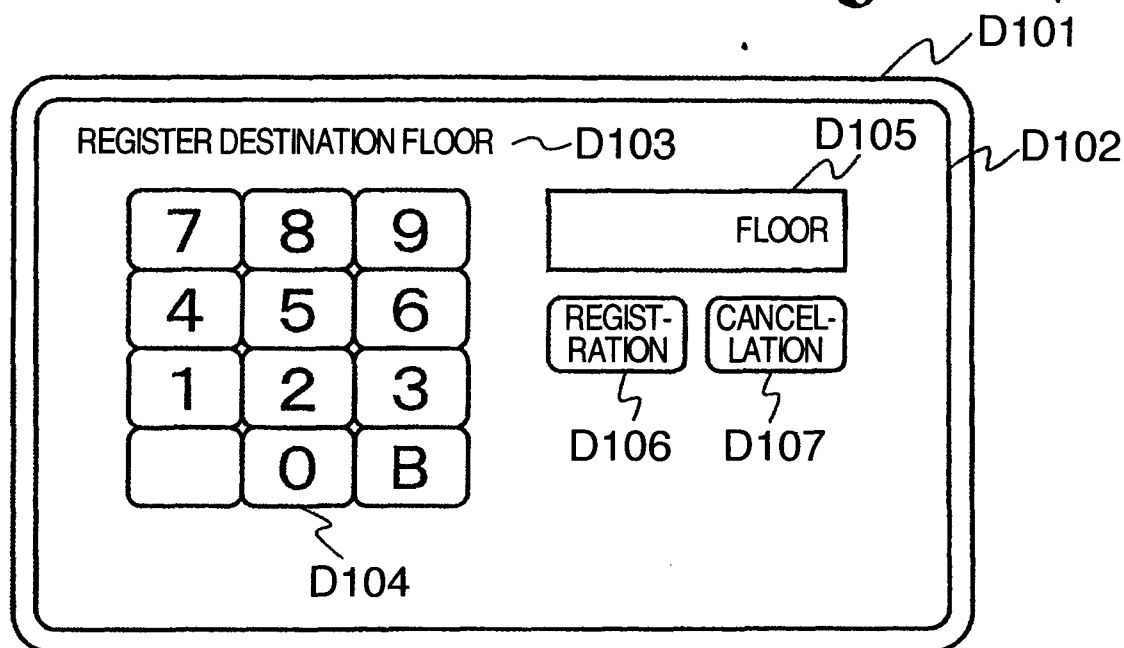
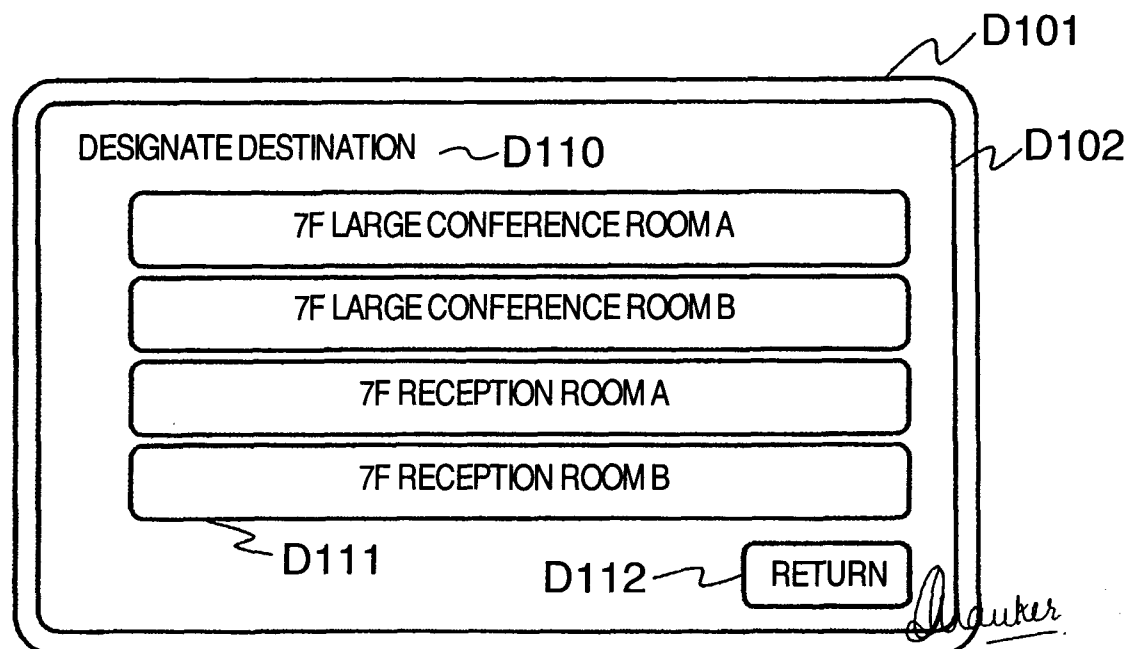


FIG. 7



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FIG. 8

D101

D102

D123

SELECT FROM 3 APPLICANTS ~ D120

ROUTE 1: QUICKLY ARRIVE AT DESTINATION ~ D121

NO. 3 MACHINE OF BANK A ~ D122

(REQUIRED TIME: 60 SEC, WALKING DISTANCE 50 m)

ROUTE REFERENCE

SELECT

ROUTE 2: SHORT WALKING DISTANCE D124

NO. 2 MACHINE OF BANK B

(REQUIRED TIME: 90 SEC, WALKING DISTANCE: 20m)

ROUTE REFERENCE

SELECT

ROUTE 3: CAGE IS EMPTY D125

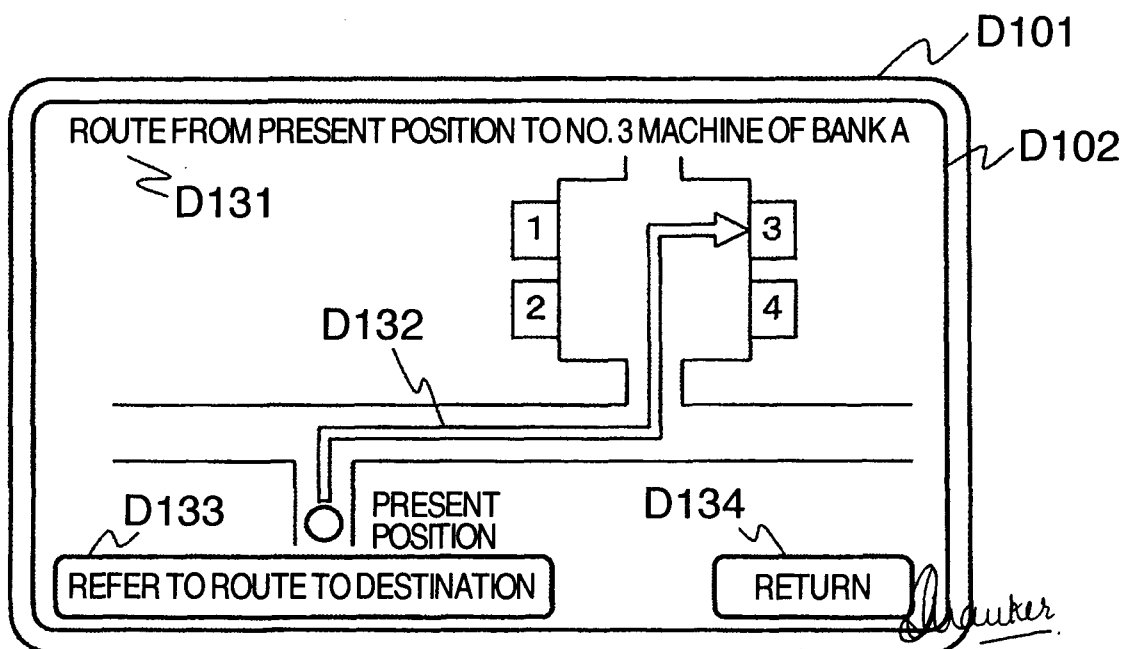
NO. 2 MACHINE OF BANK C

(REQUIRED TIME: 75 SEC, WALKING DISTANCE: 40 m)

ROUTE REFERENCE

SELECT

FIG. 9



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FIG. 10

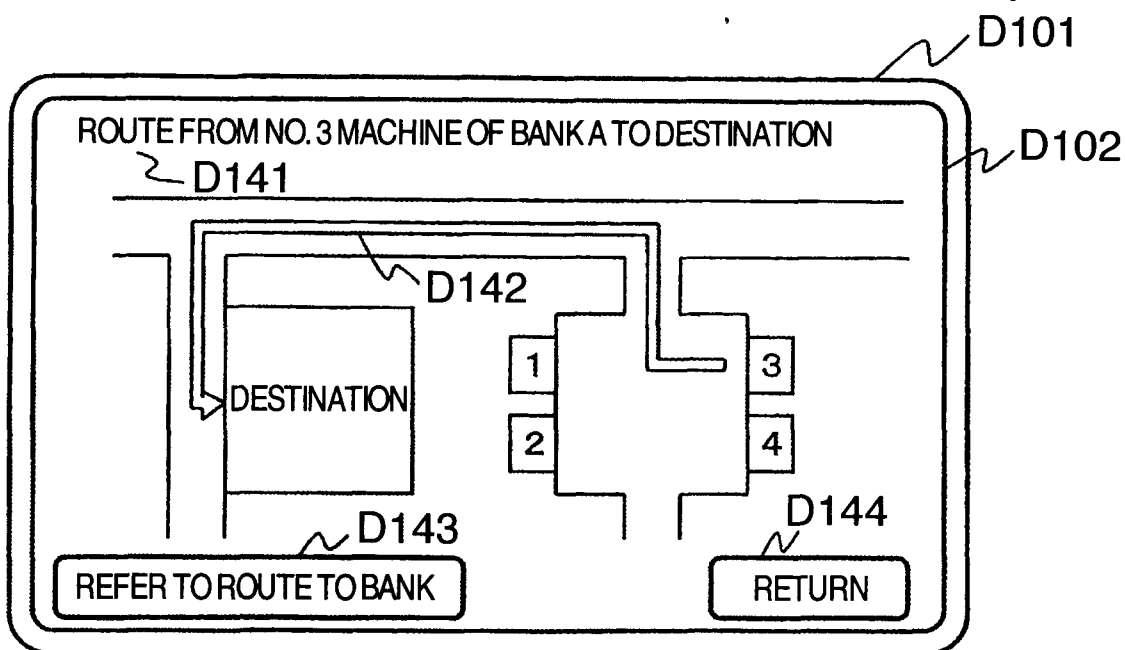
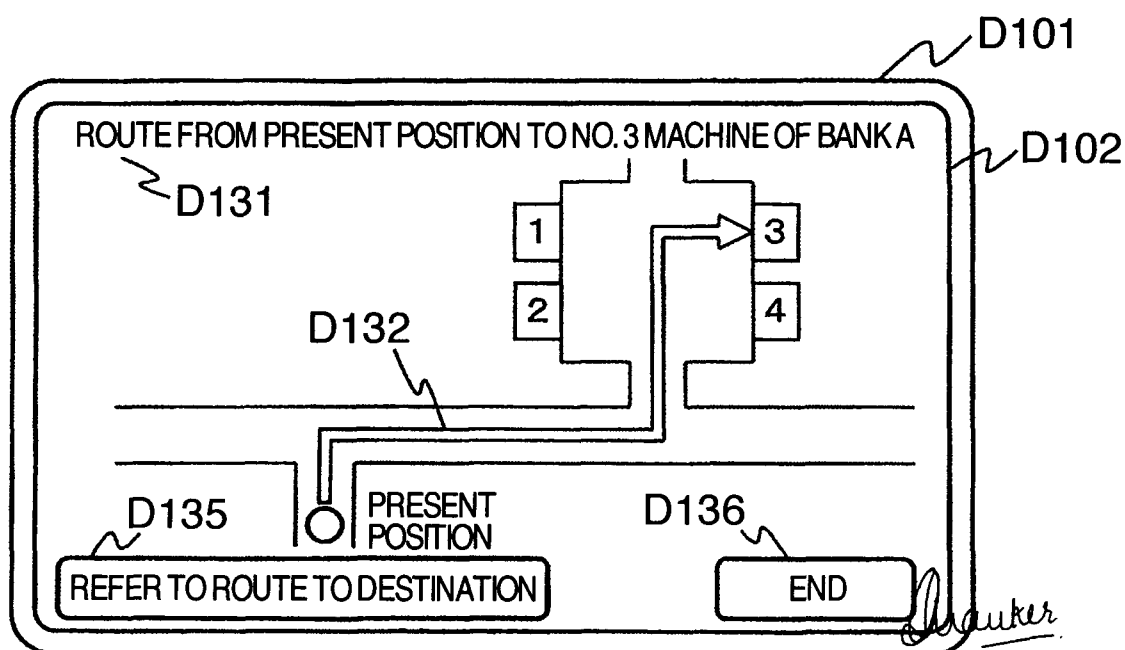


FIG. 11



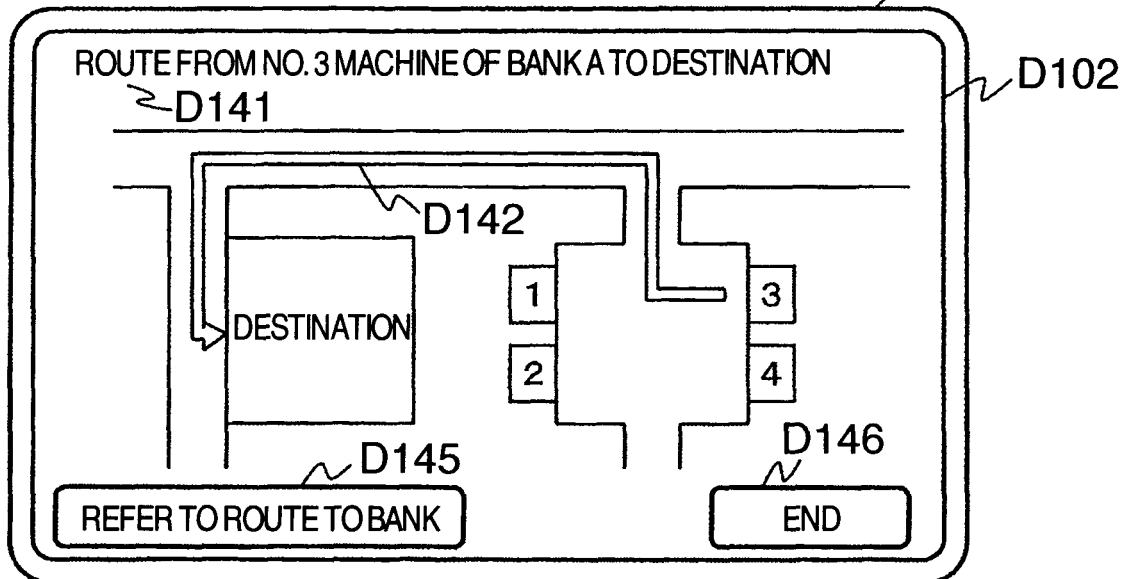
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FIG. 12

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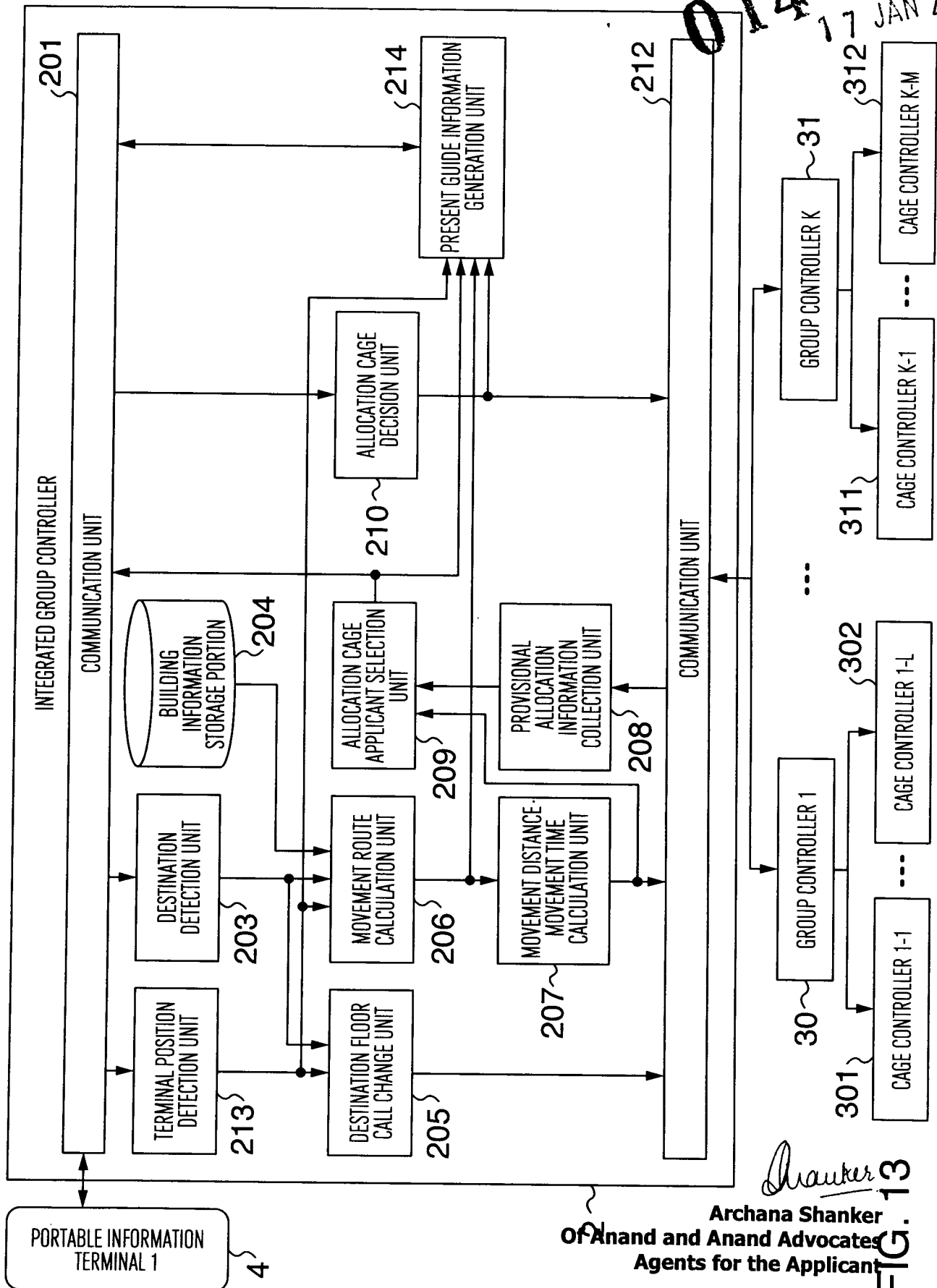


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FIG. 13

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FIG. 14

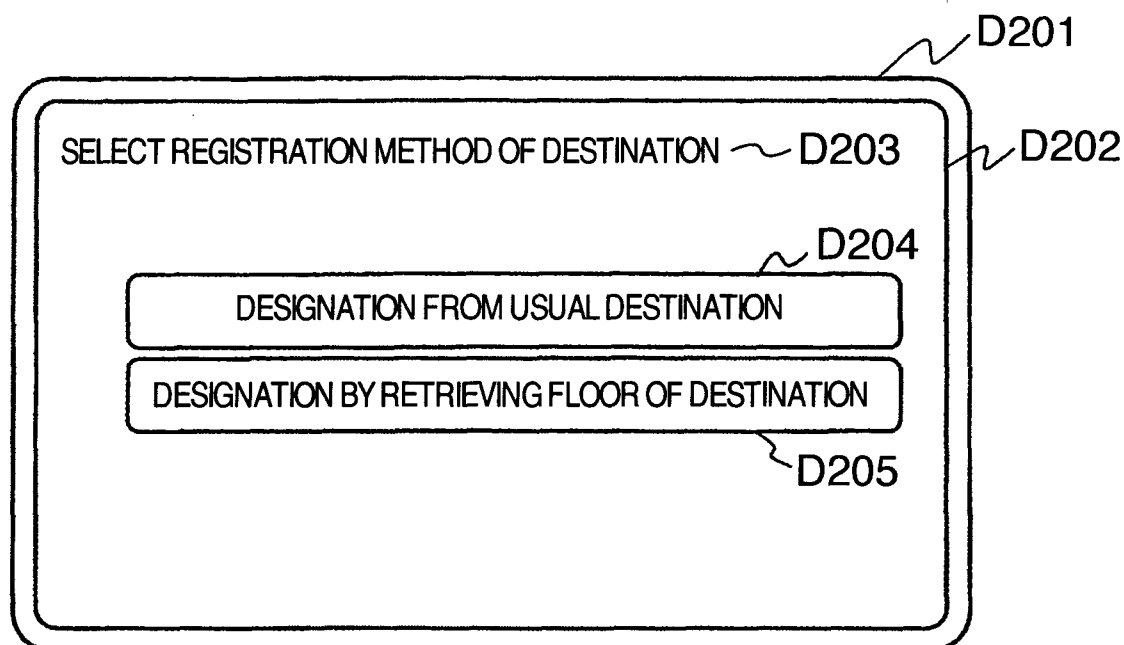
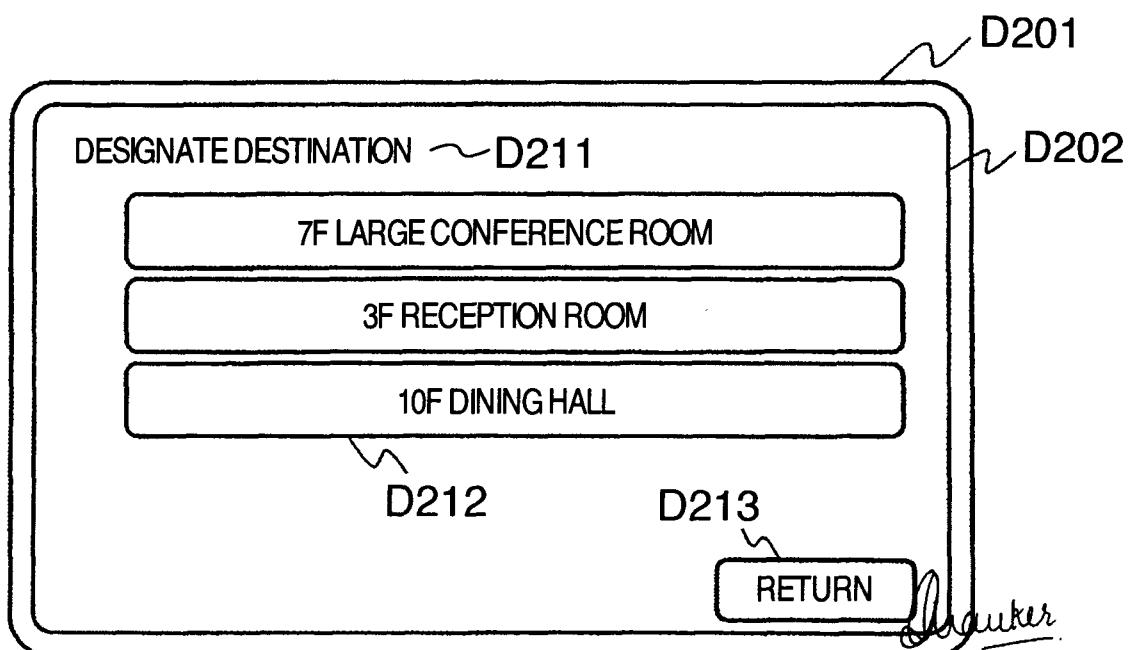
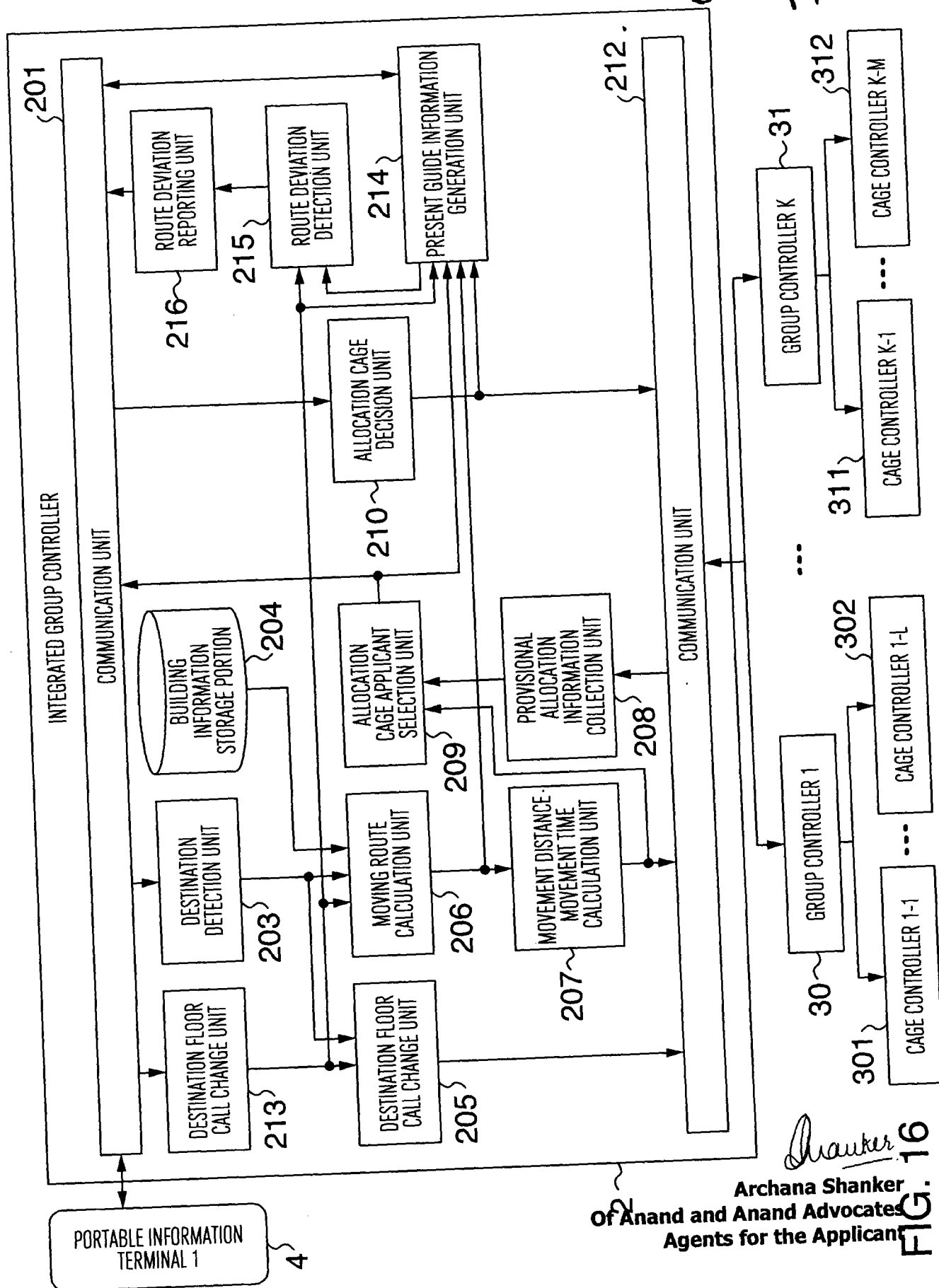


FIG. 15



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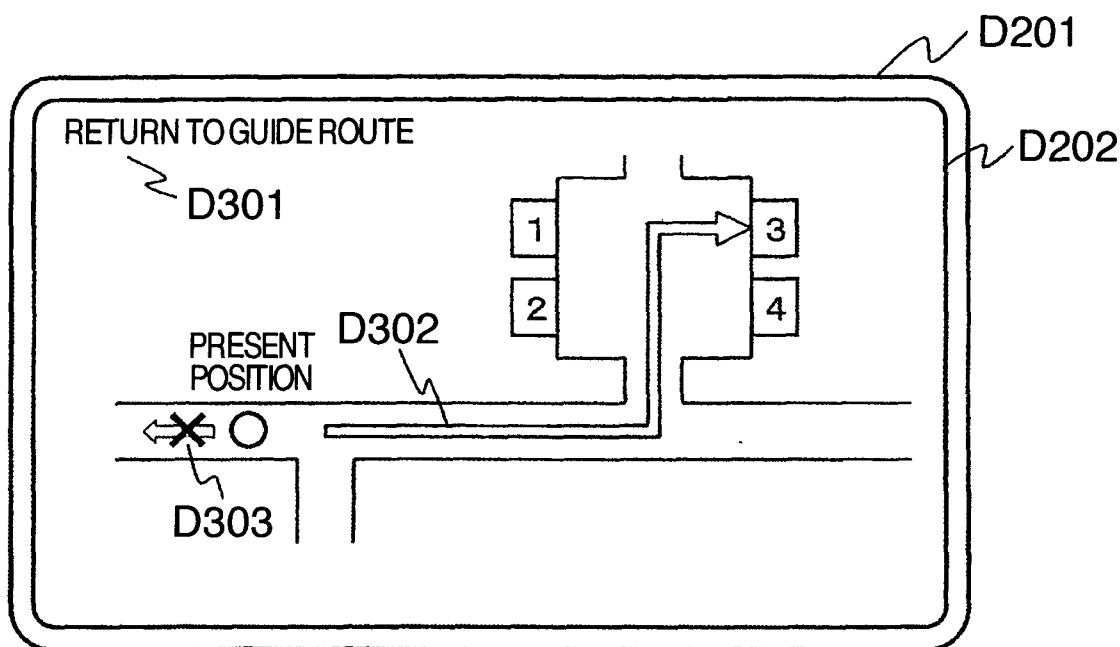
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FIG. 16

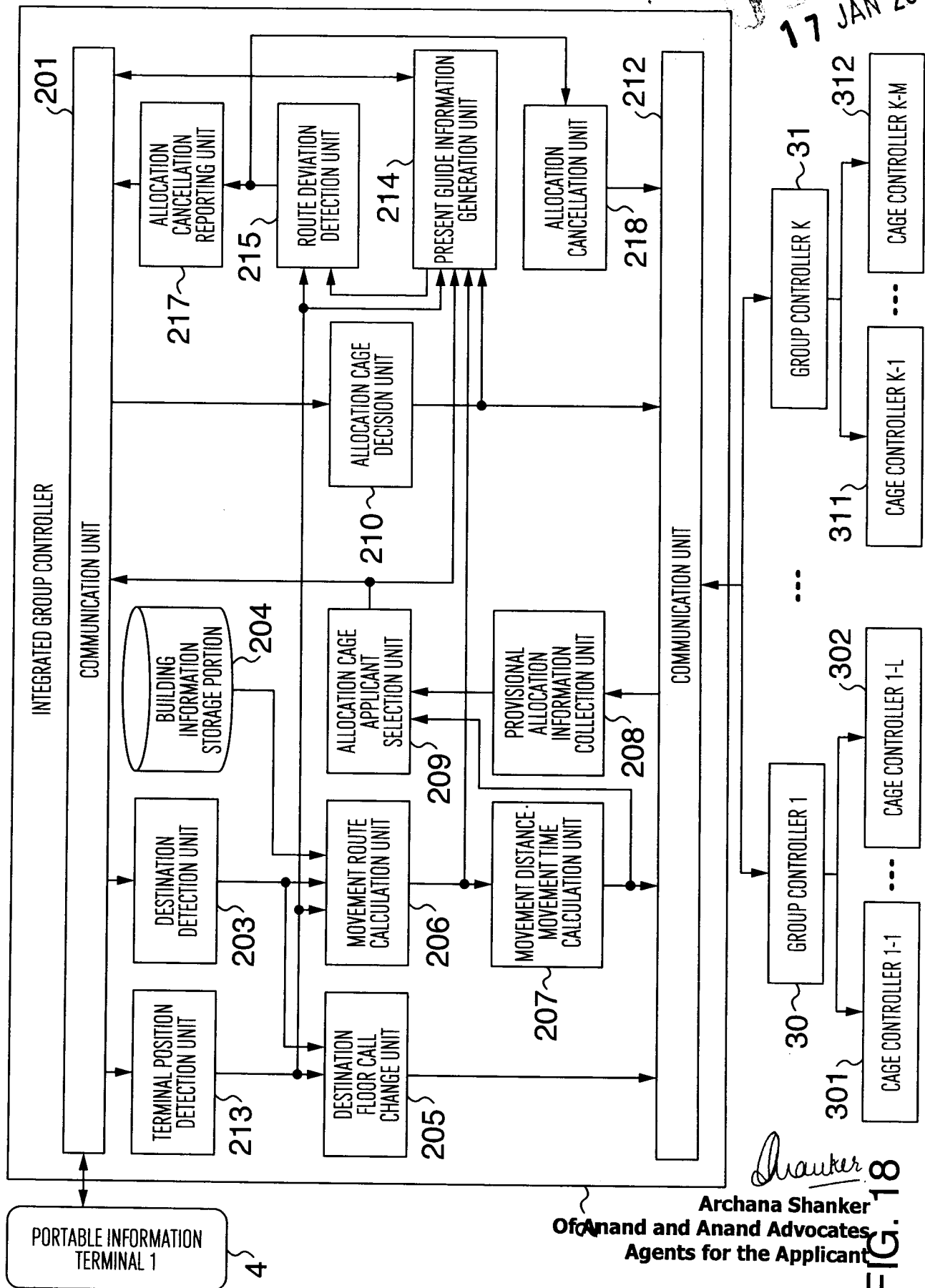
FIG. 17



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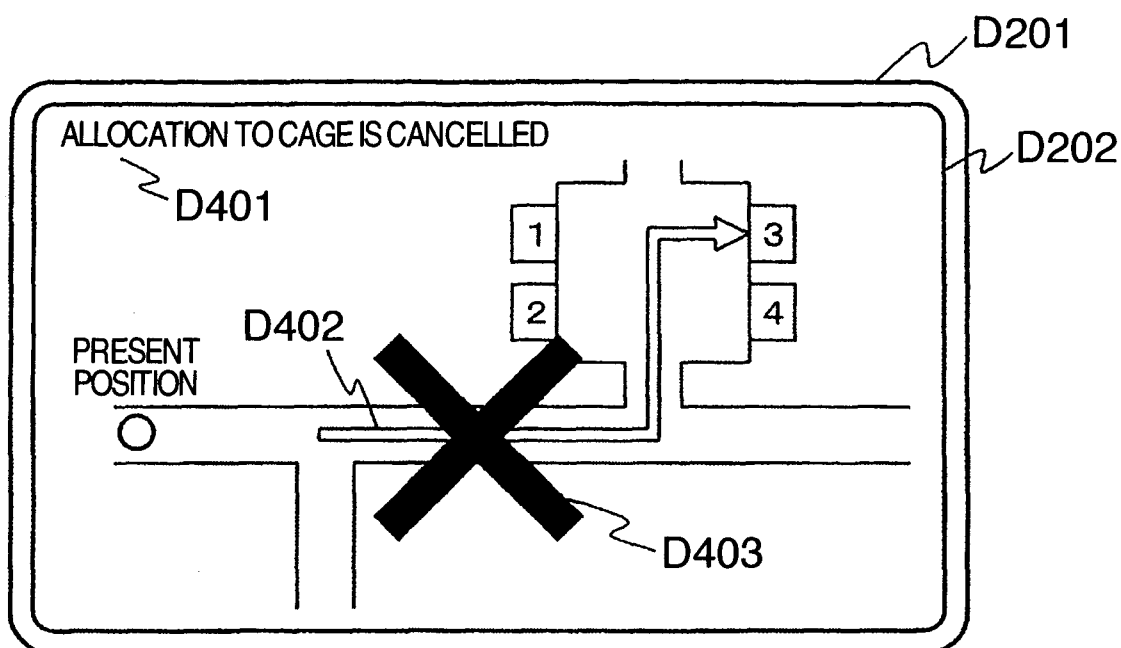
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FIG. 18

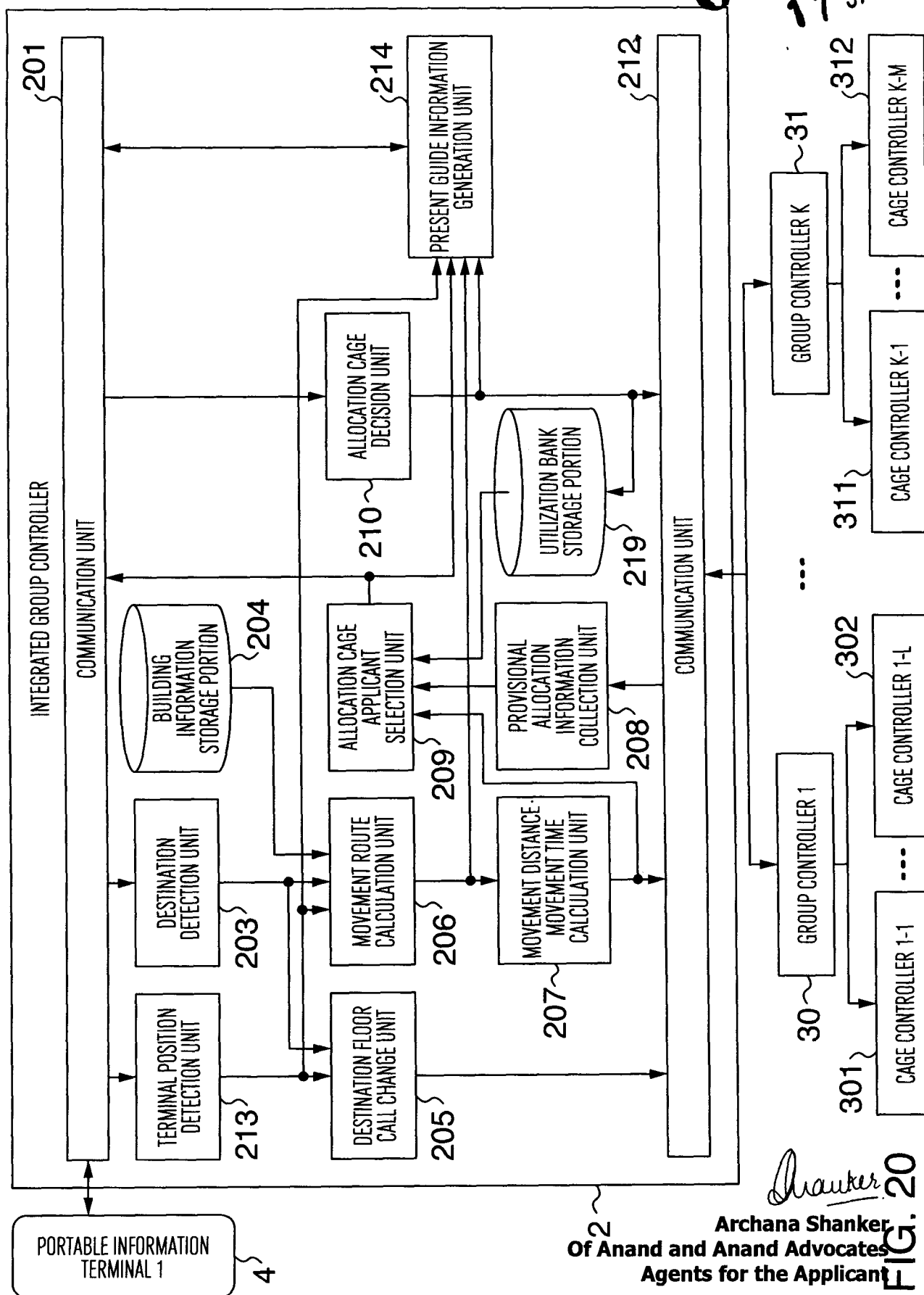
FIG. 19



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FIG. 20

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FIG. 21

D201

D202

SELECT FROM 3 APPLICANTS ~ D501

ROUTE 1: USUAL ROUTE IS UTILIZED ~ D502
NO. 2 MACHINE OF BANK C
(REQUIRED TIME: 60 SEC, WALKING DISTANCE 50 M)

ROUTE REFERENCE	SELECT
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ROUTE 2: ARRIVE QUICKLY AT DESTINATION
NO. 3 MACHINE OF BANK A
(REQUIRED TIME: 60 SEC, WALKING DISTANCE: 50M)

ROUTE REFERENCE	SELECT
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ROUTE 3: WALKING DISTANCE IS SHORT
NO. 2 MACHINE OF BANK B
(REQUIRED TIME: 90 SEC, WALKING DISTANCE: 20 M)

ROUTE REFERENCE	SELECT
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BACKGROUND OF THE INVENTION

This invention relates to a group control system for dividing a plurality of elevator cages into a plurality of banks and operating the elevator cages and is suitable particularly for an elevator system in which banks are arranged at far places inside a building.

An elevator group control system handles and manages a plurality of elevators (cages) as one group. Multistoried office buildings of a recent type have a large number of floors and mostly divide elevators into several layers (low layer, medium layer, high layer) of specific floors as banks at which the elevators are stopped to improve services for users. As for a 28-storied building, for example, a bank A serves from the first floor to the 14th floor as its service floors and a bank B serves the first floor and the 15th to 28th floors. In such a case, the bank A and the bank B are installed adjacent to each other.

In an office building of a larger scale, banks are arranged at positions spaced apart from one another because the building itself is large. For example, a bank A serving the first to 14th floors and a bank B serving the first floor and the 15th to 28th floors are arranged at a northern part of the building while a bank C serving the first to 14th floors and a bank D serving the first floor and the 15th to 28th floors are installed at a southern part.

To allow passengers to easily select the route they desire for reasons of their own in the elevator system in which cages are divided into a plurality of banks, a destination floor register button, an entrance display and a bank call register button are disposed at an elevator entrance. When a passenger pushes the destination floor register button, a required time of the route by each bank and congestion of a cage are displayed and such a system is disclosed in JP-A-6-321445, for example.

SUMMARY OF THE INVENTION

The conventional technology described above is satisfactory when the banks are installed adjacent to one another inside the building but because it does not consider the passenger after get-off, it does not sufficiently consider the movement from the present position of the passenger to the destination. Therefore, this system cannot cope with a large-scale building in which banks are arranged in a spaced-apart relation from one another and cannot easily satisfy the requirements of passengers who prefer not to walk even though they have to wait for a while or who want to take an empty cage, for example.

Objects of the invention are to solve the problems of the conventional technology described above, to insure smooth movement of the passenger to the destination in accordance with the requests of the passenger even inside a large-scale office building in which banks are arranged at far places, particularly to enable passengers visiting the building for the first time to readily travel to the destination and not to deteriorate operation efficiency as an elevator system.

To accomplish the objects described above in an elevator group control system having a plurality of group controllers for dividing a plurality of elevator cages installed inside a building into a plurality of banks and executing operation control, the elevator group control system of the invention includes information terminals for registering destinations of passengers and a building information storage portion for storing map information inside the building; wherein the elevator group control system computes destination floor call information representing get-on and get-off floors of the passengers from position information of the information terminal and destinations, and the map information; a route to the destination when the passenger moves from the position of the information terminal by utilizing each of the banks; a movement distance and a movement time from the position of the information terminal to each of the banks and from the bank to the destination after get-off from the elevator cage when the passenger moves by utilizing the bank; and a wait time of the passenger when allocated to each of the elevator cages, a required time from the get-on floor to the get-off floor and congestion inside the elevator cage from the destination call information and control information of the group controller; and wherein the elevator group control system selects a plurality of elevator cage applicants to be utilized by the passenger on the basis of the computed values to enable the passenger to select the cage, and executes allocation to the selected elevator cage and guide display of the route.

According to the invention, the destination floor call information, the route to the destination, the moving distance and the moving time to the bank and from the bank after get-off to the destination, the wait time of the passenger, the required time from the get-on floor to the get-off floor and congestion inside the elevator cage are computed and guide display of the elevator cage to be utilized by the passenger is guided and displayed. Therefore, smooth movement of the passenger to the destination is insured and operation efficiency can be improved even in an office building in which banks are arranged at far places from one another.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram showing an embodiment of the invention.

FIG. 2 is a flowchart showing a communication operation (1) of one embodiment.

FIG. 3 is a flowchart showing a communication operation (2) of one embodiment.

FIG. 4 is a flowchart showing a communication operation (3) of one embodiment.

FIG. 5 is a flowchart showing the detail of an allocation cage applicant selection unit in one embodiment.

FIG. 6 shows an example (1) of window display of one embodiment.

FIG. 7 shows an example (2) of window display of one embodiment.

FIG. 8 shows an example (3) of window display of one embodiment.

FIG. 9 shows an example (4) of window display of one embodiment.

FIG. 10 shows an example (5) of window display of one embodiment.

FIG. 11 shows an example (6) of window display of one embodiment.

FIG. 12 shows an example (7) of window display of one embodiment.

FIG. 13 is a block diagram showing another embodiment of the invention.

FIG. 14 shows an example (1) of window display of another embodiment.

FIG. 15 shows an example (2) of window display of another embodiment.

FIG. 16 is a block diagram showing still another embodiment of the invention.

FIG. 17 shows an example (1) of window display of still another embodiment.

FIG. 18 is a block diagram showing still another embodiment of the invention.

FIG. 19 shows an example (1) of window display of still another embodiment.

FIG. 20 is a block diagram showing still another embodiment of the invention.

FIG. 21 shows an example (1) of window display of still another embodiment.

DESCRIPTION OF THE EMBODIMENTS

Requirements for elevator cage services in large buildings are much diversified and vary with passengers to passengers: some want to quickly arrive at a destination even through a roundabout way to a certain extent or to avoid excessive walk though they have to wait a little, while other want to take a vacant cage. Therefore, elevator cage allocation and guide to the destination inside the building are made by taking into account both of the movement of the passengers in a horizontal direction (same floor) and movement in a vertical direction (elevator cage) from registration of the destination of the passenger to the arrival at the destination.

Hereinafter, an embodiment of the invention will be explained with reference to the drawings. FIG. 1 is a block diagram showing an elevator group control system.

The elevator group control system includes fixed information terminals 101, 102, an integrated group controller 2 and K groups of group controllers 30, 31 for executing integrated control of a plurality of elevator cages as one group. At least one of the fixed

information terminals 101, 102 is installed at each or specific floor inside the building and executes registration of the destination of the passenger, display of the allocated elevator cage of the passenger, display of the guide route of the passenger, registration of the elevator cage utilized by the passenger, and so forth.

The integrated group controller 2 includes a communication unit 201, a terminal position detection unit 202, a destination detection unit 203, a building information storage portion 204, a destination floor call change unit 205, a movement route calculation unit 206, a movement distance movement time calculation unit 207, a provisional allocation information collection unit 208, an allocation cage applicant selection unit 209, an allocation cage decision unit 210, a guide information generation unit 211 and a communication unit 212. The communication unit 212 executes communication between the integrated group controller 2 and the fixed information terminals 101, 102.

The terminal position detection unit 202 acquires ID information of the fixed information terminal contained in the transmission data when the passenger registers the destination by using the fixed information terminal 101 or 102, and the position of the fixed information terminal can be determined from the acquired ID information. Similarly, the destination detection unit 203 acquires the destination information contained in the transmission data and the position information of the destination is determined.

The building information storage portion 204 stores map information inside the building.

The destination floor call change unit 205 changes the get-on floor and get-off floor of the passenger on the basis of the ID information of the fixed information terminal and the destination information of the passenger.

The movement route calculation unit 206 calculates the route from the position of the fixed information terminal to each bank inside the building and the route from each bank to the destination after get-off from the elevator cage when movement is made by using each bank on the basis of the ID information of the fixed information terminal and the destination information of the passenger.

The movement distance-movement time calculation unit 207 calculates the movement distance from the position of the fixed information terminal to each bank inside the building and the movement distance and time from each bank to the destination after get-off of the passenger from the elevator cage when movement is made by using each bank on the basis of the route calculated by the movement route calculation unit 206.

The provisional allocation information collection unit 208 collects from the group

management controllers 30, 31 the wait time of the passenger, the time required from the get-on floor to the get-off floor and congestion inside the elevator cage as the provisional allocation information when the destination floor call changed by the destination floor call change unit 205 of each of the evaluator cage inside the group controllers 30, 31 is provisionally allocated.

The allocation cage applicant selection unit 209 selects at least one applicant of the elevator cage utilized by the passenger from the distance from the position of the fixed information terminal to each bank inside the building and the movement distance and movement time from each bank to the destination after get-off of the elevator cage when movement is made by utilizing each bank that are calculated by the movement distance·movement time calculation unit 207, and also from provisional allocation information. The allocation cage decision unit 210 transmits the allocation instruction of the elevator cage to one of the group controllers 30, 31 in which the selected applicant of the elevator cages exists.

When the guide information generation unit 211 detects the request by the operation of the passenger from the fixed information terminal 101 or 102 or when the elevator cage selected by the passenger is detected by the allocation cage decision unit 210, the guide information generation unit 211 generates a guide map of the movement route inside the building from the movement route calculated by the movement route calculation unit 206 for the elevator cage applicant. Incidentally, the communication unit 212 executes communication between the integrated group controller 2 and the group controllers 30, 31.

Next, the operation will be explained. FIG. 2, FIG. 3 and FIG. 4 show the communication operation at the time of destination registration between the fixed information terminals 101, 102 and the integrated group controller 2 shown in FIG. 1 and between the integrated group controller 2 and the group controllers 30, 31.

In FIG. 2, when the passenger registers the destination by using one of the fixed information terminals 101, 102 (hereinafter, explanation is made as to a case where the destination registration is made by using the fixed information terminal 101 as an example), the fixed information terminal 101 transmits the destination registration data from the fixed information terminal to the integrated group controller 2 (F1). The destination registration data contains the destination information and the terminal ID information of the fixed information terminal.

Receiving the destination registration data from the fixed information terminal (F2), the integrated group controller 2 acquires the terminal ID information and the destination information (F3) and converts them to destination floor call information including the get-on and get-off floors of the passenger from the terminal ID information and the destination information

acquired (F4).

The movement route from the fixed information terminal calculated by the movement route calculation unit to each elevator cage bank and the movement route from each elevator cage bank to the destination are calculated (F5), the movement distance and the movement time are calculated on the basis of this calculation result (F6) and the provisional allocation request of the destination floor call is transmitted to the group controller (F7).

Receiving the provisional allocation requirement (F8), the group controller 30, 31 carries out provisional allocation to each elevator cage inside each group controller and transmits the provisional allocation information to the integrated group controller (F9). Receiving the provisional allocation information (F10), the integrated group controller 2 selects the applicant of the allocation elevator cage (F11) and transmits the applicant of the allocation elevator cage to the fixed information terminal 101 where the destination registration is performed (F12).

Receiving the applicant of the allocation elevator cage (F13), the fixed information terminal 101 displays the applicant of the allocation elevator cage on the fixed information terminal (F14).

When the route guide request for the allocation applicant elevator cage develops by the operation of the passenger from the fixed information terminal, the route guide request for the allocation applicant elevator cage is transmitted to the integrated group management controller 2 as shown in FIG. 3 (F15).

Receiving the route guide request of the allocation applicant elevator cage (F16), the integrated group controller 2 generates a guide route of the allocation applicant elevator cage (F17) and transmits the guide route of the allocation applicant elevator cage to the fixed information terminal 101 (F18). Receiving the guide route of the allocation applicant elevator cage (F19), the fixed information terminal 101 displays the guide route of the allocation applicant elevator cage on the fixed information terminal (F20).

When the route registration request for the elevator cage to be used develops by the operation of the passenger from the fixed information terminal, the request is transmitted to the integrated group controller 2 as shown in FIG. 4 (F21). Receiving the registration request of the elevator cage to be used (F22), the integrated group controller 2 transmits the allocation request of the elevator cage to the one of the group controllers 30, 31 in which the selected applicant of the elevator cages exists (F23).

Receiving the allocation request of the elevator cage (F24), the one of the group controllers 30, 31 executes elevator cage allocation (F25) and transmits an allocation end notice to the integrated group controller 2 (F26).

Receiving the allocation end notice (F27), the integrated group controller 2 generates a guide route of the allocation elevator cage (F28) and transmits the guide route to the fixed information terminal 101 (F29).

Receiving the guide route of the allocation elevator cage (F30), the fixed information terminal 101 displays the guide route of the allocation elevator cage on the fixed information terminal (F31).

Selection of the allocation applicant elevator cage will be explained. FIG. 5 is an explanatory view showing the detail of the allocation cage applicant selection unit 209 in the integrated group controller 2 shown in FIG. 1. The movement distance and movement time between the fixed information terminal – bank and between the bank – destination, and the provisional allocation information, are acquired (FT1, FT2).

When the processes from step FT3 to step FT5 concerning the bank i are completed, the processes from step FT3 to step FT5 concerning the next bank ($i + 1$) are performed. In this manner, when the processes from step FT3 to step FT5 as to all the banks are completed, the process proceeds to step FT6.

In this respect, the aforesaid processes from step FT3 to step FT4 concern about the process concerning the cage j in the bank i . Thus, when the processes from step FT3 to step FT4 concerning the cage j in the bank i are completed, the processes from step FT3 to step FT4 concerning the next cage ($j+1$) in the bank i are performed. In this manner, when the processes from step FT3 to step FT4 as to all the cages in the bank i are completed, the process proceeds to step FT5.

Whether or not the passenger can reach the get-on position before the arrival of the elevator cage is judged on the basis of the movement time to the bank and the expected arrival time to the get-on floor of the elevator cage for all the elevator cages inside all banks in the building. When the passenger is not judged as being capable of reaching (FT3: YES), the corresponding elevator cages are excluded from the allocation elevator cage applicant (FT4).

The elevator cage satisfying the conditions that the wait time of the passenger after the arrival at the bank is the shortest, the get-on time is the shortest and elevator cage congestion is low is selected as the allocation elevator cage applicant of that bank (FT5).

The elevator cage congestion is judged as low when the degree of congestion is lower than a predetermined level. For example, the elevator cage having a degree of congestion is lower than 30% is judged as a low degree of congestion. When a plurality of elevator cages judged as having a degree of congestion of lower than 30% exists, the elevator cage having a shorter wait time and a shorter get-on time is selected as the applicant.

After the selection of the allocation elevator cage applicant by FT5 is completed for all the banks, the elevator cage corresponding to at least the following three conditions is selected as the final allocation elevator cage applicant (FT6).

- (1) The shortest total required time to destination
- (2) The shortest movement distance to destination
- (3) Low congestion of elevator cage

The total required time to the destination is calculated as the sum of the movement time from the fixed information terminal to the bank, the wait time of the passenger after arrival at the bank, the get-on time and the movement time from the bank to the destination after get-off of the passenger from the elevator cage. The movement distance to the destination is calculated as the sum of the movement distance from the fixed information terminal to the bank and the movement distance from the bank to the destination after the passenger gets off the elevator cage. As for the applicants having low congestion of the elevator cage, the elevator cage having a short total required time and a short movement distance to the destination is selected from among those having low congestion.

Selection of the allocation elevator cage applicant is made by the processing described above.

Next, examples of the windows shown on the fixed information terminal will be explained with reference to FIG. 6 to FIG. 12. The examples shown in FIG. 6 to FIG. 12 are explained about a touch panel by way of example but the explanation holds true similarly of a fixed information terminal having a button portion such as a ten-key and a display portion separated from the former.

FIG. 6 shows an initial window of the destination of the passenger in the fixed information terminal and a fixed information terminal D101 has a display D102 of a touch panel. Symbol D103 represents a message urging the passenger to register a destination floor.

When the passenger inputs the destination floor by operating the buttons of the ten-key type touch panel of D104, the floor of the destination inputted to D105 is displayed. After confirming this display, the passenger operates a register button D106 when the destination floor is correct and registers the destination floor. When the floor of the destination is wrongly inputted, on the other hand, the passenger cancels the input of the destination floor by operating a button D107.

FIG. 7 shows an example of the window when the 7th floor is registered in the window shown in FIG. 6. D110 urges the passenger to designate the destination. D111 is a button of the destination and the passenger registers the destination by using the destination

button. When registration of the floor of the destination is wrongly made, the window shifts to the window shown in FIG. 5 through the operation of a button D112.

FIG. 8 shows an example of the window after the allocation elevator cage is selected by the allocation cage applicant selection unit 209 in the integrated group controller 2 shown in FIG. 1. D120 shows a message that urges the passenger to select the route to be used from the route based on the allocation elevator cage applicant. In D121, the applicant of the route and its feature are displayed. In D122, the bank of the elevator cage corresponding to the route and the elevator cage are displayed. In D123, the required time and the walking distance corresponding to the route are displayed. When the passenger wants to refer to the route of the allocation elevator cage applicant, the route is looked up by the operation of a button D124. A button D125 is a button for selecting the route and the route to be used is selected from among the applicants of the route by operating the button.

FIG. 9 shows an example of the window when the route reference button of the route 1 is operated for the window shown in FIG. 8. D131 shows which route is displayed for the passenger. D132 shows the route from the present position to the No. 3 machine belonging to the bank A. A button D133 is the button for looking up the route to the destination. The route to the destination after get-off from the elevator cage is looked up by the operation of the passenger. D134 is the button for returning to the window for selecting the route. The window shifts to the window shown in FIG. 8 by the operation of the passenger.

FIG. 10 shows an example of the window when the passenger operates the D133 button on the window shown in FIG. 9. D141 shows which route is displayed for the passenger. D142 shows the route to the destination after get-off from the elevator cage. D143 is a button for referring to the route from the present position to the No. 3 machine of the bank A and the window shifts to the window shown in FIG. 9 by the operation of the passenger. D144 is a button for returning to the window for selecting the route and the window shifts to the screen shown in FIG. 8 by the operation of the passenger.

FIG. 11 shows an example of the window when the passenger operates the selection button of the route 1 on the screen shown in FIG. 8. A button D135 is a button for referring to the route to the destination and the route to the destination after get-off from the elevator cage is looked up by the operation of the passenger. D136 is a button for finishing the route guide and the window shifts to the window shown in FIG. 6 by the operation of the passenger.

FIG. 12 shows an example of the window when the passenger operates the button D135 on the window shown in FIG. 12. A button D145 is a button for referring to the route

from the present position to the No. 3 machine of the bank A and the window shifts to the window shown in FIG. 11 by the operation of the passenger. D146 is a button for finishing the route guide and the window shifts to the window shown in FIG. 6 by the operation of the passenger.

In the elevator cage group control system explained above, the integrated group controller selects the elevator cage applicant utilized by the passenger from a plurality of banks at far positions of the building as to the movement of the passenger to the destination and the passenger can utilize the elevator cage by looking up the service condition of the selected elevator cage applicant and the route. Therefore, the passenger can enjoy the service he/she desires as to the arrival at the destination. Because the route to the destination is guided, a passenger visiting the building for the first time can smoothly reach the destination.

FIG. 13 is a block diagram showing an elevator group control system according to another embodiment. In this embodiment, each of the fixed information terminals 101, 102 is a portable information terminal the passenger can carry around, the terminal position detection unit 202 is replaced by a terminal position detection unit 213 and the guide information generation unit 211 is replaced by a present guide information generation unit 214.

The terminal position detection unit 213 is used when the passenger acquires the present position information of the portable information terminal contained in the transmission data at the time of registration of the destination by using the portable information terminal 4.

The destination floor call change unit 205 changes the present position of the portable information terminal 4 acquired by the terminal position detection unit 213 and the destination information of the passenger acquired from the destination acquisition unit 203 to the destination floor call information presenting the get-on and get-off floors of the passenger.

The present guide information generation unit 214 generates a guide map of the movement route inside the building from the movement route calculated by the movement route calculation unit 206 when the request from the portable information terminal 4 by the operation of the passenger for the applicant of the cage to be utilized by the passenger selected by the allocation cage applicant selection unit 209 is detected or when the cage selected by the passenger is detected by the allocation cage decision unit 210. The present guide information generation unit 214 updates also the guide map of the movement route on the basis of the present position of the portable information terminal 4 detected by the terminal position detection unit 213.

Next, an example of the window displayed on the portable information terminal will be explained with reference to FIG. 14 to FIG. 18. The example of the window shown in

FIG. 14 to FIG. 18 will be explained about a touch panel by way of example but the explanation holds true of a fixed information terminal separated into a button portion such as a ten-key and a display portion, besides the touch panel.

FIG. 14 shows an initial window of registration of the destination of the passenger. A fixed information terminal D201 has a display D202 of a touch panel. D203 is a message urging the passenger to select a registration method of the destination. The window shifts to a window shown in FIG. 15 when a D204 button is pushed by the operation of the passenger. The window shifts to the one similarly to that of FIG. 6 when a button D205 is pushed. However, this is window display on the portable information terminal.

FIG. 15 shows the window when the passenger pushes the button D204 representing "designation from usual destination" on the window shown in FIG. 14. D211 displays a message urging the passenger to designate the destination from the destination of D212 shown on the window. D212 is a button for designating the destination and at least one destination having high frequency of use of the passenger operating the portable information terminal is displayed. The window shifts to the one shown in FIG. 14 by the operation of the D213 button when the passenger wrongly selects the registration method of the destination.

After selection of the allocation cage applicant is made by the allocation cage applicant selection unit 209 in the integrated group controller 2 shown in FIG. 13, the window shifts to the one similar to the window shown in FIG. 8. FIG. 9 shows an example of the window when the route reference button of the route 1 is operated on the window shown in FIG. 8. D131 represents which route is displayed for the passenger. D123 represents the route from the present position to the No. 3 machine of the bank A. D133 is a button for looking up the route to the destination and the route to the destination after get-off from the cage can be looked up by the operation of the passenger. D134 is a button for returning to the window for selecting the route and the window shifts to the one shown in FIG. 8 by the operation of the passenger.

FIG. 10 shows an example of the window when the passenger operates the D133 button on the window shown in FIG. 9. D141 represents which route is displayed for the passenger. D142 displays the route to the destination after get-off from the case. D143 is a button for looking up the route from the present position to the No. 3 machine of the bank A and the window shifts to the one shown in FIG. 9 by the operation of the passenger. D144 is a button for returning to the window for selecting the route and the window shifts to the one shown in FIG. 8 by the operation of the passenger.

FIG. 11 shows an example of the window when the passenger operates the

selection button of the route 1 on the window shown in FIG. 8. D135 is a button for looking up the route to the destination and the route to the destination after get-off from the cage can be looked up by the operation of the passenger. D136 is a button for finishing the route guide and the window shifts to the one shown in FIG. 6 by the operation of the passenger.

FIG. 12 shows an example of the window when the passenger operates the D135 button on the window shown in FIG. 11. D145 is a button for looking up the route from the present position to the No. 3 machine of the bank A and the window shifts to the one shown in FIG. 11 by the operation of the passenger. D146 is a button for finishing the route guide and the window shifts to the one shown in FIG. 6 by the operation of the passenger.

The integrated group controller selects the elevator cage applicant utilized by the passenger from a plurality of banks at far places of the building as to the movement of the passenger to the destination and the passenger can utilize the elevator cage by looking up the service condition of the selected elevator cage applicant and the route. Therefore, the passenger can enjoy the service he/she desires as to the arrival at the destination.

Because the route to the destination is guided, a passenger visiting the building for the first time can smoothly reach the destination.

Because the portable information terminal is used as described above, the passenger can register the destination from all places inside the building. Because the route to the destination is guided, a passenger visiting the building for the first time can smoothly reach the destination.

FIG. 16 is a block diagram showing an elevator group control system according to still another embodiment and a route deviation detection unit 215 and a route deviation reporting unit 216 are added.

The route deviation detection unit 215 detects the deviation of the passenger from the guide route from the present position of the portable information terminal 4 detected by the terminal position detection unit 213 and from the route guide map generated by the present guide information generation means 214. The route deviation reporting unit 216 reports the message urging the portable information terminal 4 to return to the guide route on the basis of the route deviation information of the passenger detected by the route deviation detection unit 215.

FIG. 17 shows the window displayed on the portable information terminal. The terminal is an example of a touch panel but may well be a fixed information terminal separated into a button portion such as a ten-key portion and a display portion. D301 represents a message urging the passenger to return to the guided route. D302 clearly represents that the travelling direction of the present passenger is different from the guide route. Message may

also be given by sound by using the portable information terminal 4.

Because the deviation of the passenger from the route is detected and the message for urging the passenger to return to the guide route is given, it becomes possible to prevent deterioration of the group control performance resulting from call of the unnecessary cages.

FIG. 18 is a block diagram showing still another embodiment. The route deviation reporting unit 216 is replaced by an allocation cancellation reporting unit 217 and an allocation cancellation unit 218 is added.

The allocation cancellation reporting unit 217 reports the message that allocation is cancelled owing to deviation of the route on the basis of the route deviation information of the passenger detected by the route deviation detection unit 215. The allocation cancellation unit 218 cancels the allocation for the group controller containing the allocated cages on the basis of the route deviation information of the passenger detected by the route deviation detection unit 215.

FIG. 19 represents the window displayed on the portable information terminal and the window shows an example of a touch panel. D301 displays the message for the passenger to the effect that the route returns to the guided route. D402 clearly shows the route guided at the time of allocation and D403 clearly represents that the guide route of D402 is invalid owing to the cancellation of the allocation.

Because the allocation is cancelled by detecting the deviation of the passenger from the guided route, it becomes possible to prevent deterioration of the group control performance resulting from call of unnecessary cages.

FIG. 20 is a block diagram showing still another embodiment and a utilization bank storage portion 219 is added. The utilization bank storage portion 219 stores the elevator bank having high frequency of utilization for each passenger.

The allocation cage applicant selection unit 209 selects at least one applicant of the cage utilized by the passenger from the elevator bank having high frequency of utilization of the passenger stored in the utilization bank storage portion 219 in addition to the movement distance and time from the position of the fixed information terminal calculated by the movement distance·movement time calculation unit 207, the movement distance and movement time from each bank to the destination after get-off from the cage and the provisional allocation information collected by the provisional allocation information collection unit 208.

FIG. 21 shows an example of the window displayed on the portable information terminal and is an example of a touch panel. The elevator in the elevator bank having high frequency of utilization of the passenger is displayed at a high order as an applicant of the route.

Because the cage inside the bank having high frequency of utilization of the passenger is displayed at a high order of the allocation cage applicant, it becomes possible to preferentially utilize the elevator inside the bank used frequently without the need for the passenger to consider the service condition of the group control, in particular.

REFERENCE SIGNS LIST

4:	portable information terminal (information terminal)
30, 31:	group controller
101, 102:	fixed information terminal (information terminal)
202:	terminal position detection unit
204:	building information storage portion
205:	destination floor call change unit
206:	movement route calculation unit
207:	movement distance·movement time calculation unit
208:	provisional allocation information collection unit
209:	allocation cage applicant selection unit]
210:	allocation cage decision unit
211:	guide information generation unit
212:	communication unit