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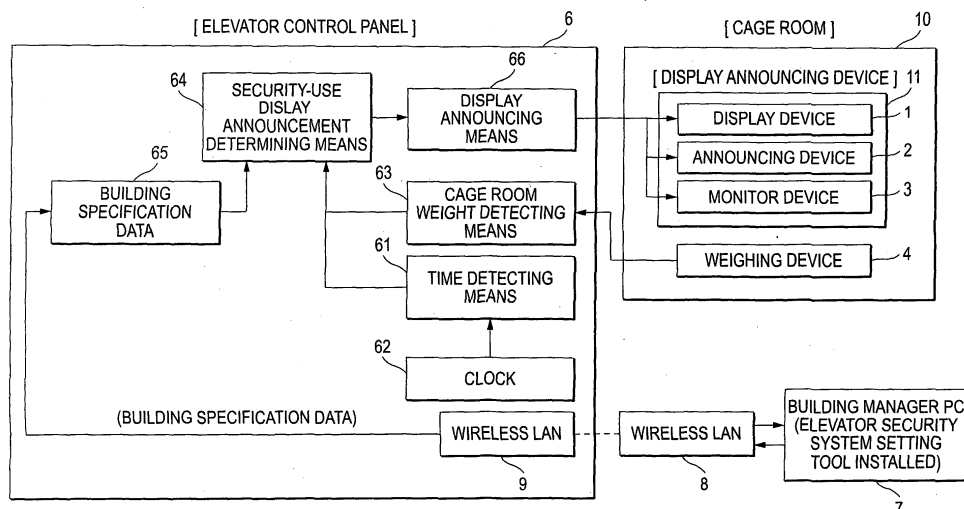
(54) **CRIME PREVENTION DEVICE FOR ELEVATOR**

(57) To obtain an elevator security system that is configured to control crime awareness of a user with the intent to commit a crime to prevent crime before it occurs by determining that there are few passengers inside a cage room of an elevator and displaying/announcing this to the inside of the cage room.

An elevator control panel 6 is disposed with time detecting means 61 that detects the current time from a clock 62, cage room weight detecting means 63 that detects the weight inside a cage room 10 of an elevator, security-use display announcement determining means 64 that determines the necessity of security-use display

announcement by comparing the current time and the weight inside the cage room detected by the cage room weight detecting means 63 with building specification data 65, and display announcing means 66 that performs security-use display announcement to a display announcing device 11 inside the cage room 10 when it has been determined that security-use display announcement is necessary. The fact that there are few passengers inside the cage room is determined by the weight inside the cage room and the current time, and the fact that the inside of the cage room 10 is being monitored is announced by the display announcing device 11.

FIG. 2



Description

Technical Field

[0001] The present invention relates to an elevator security system that performs an elevator security operation.

Background Art

[0002] A conventional elevator security system detects when an abnormality occurs inside a cage room, and on the basis of this, announces that there is an abnormality, records video with a camera, and transmits information to a manager room.

In Patent Document 1, there is described an invention that is configured to prevent crime before it occurs by spotting a suspicious person with the potential to commit a crime hidden inside a cage that is on call and notifying a monitoring center so that staff in the monitoring center can convey a message of caution or a warning message by telephoning means.

Further, in Patent Document 2, there is described an invention which, when a passenger operates a button on a cage operating panel after operating a destination floor registration button, conveys a message indicating that the inside of the cage is being monitored by a security camera to convey to a suspicious person that he/she is being monitored without exciting the suspicious person.

[0003] Patent Document 1: JP-A-2001-302123 (pp. 2-3; FIG. 1)

Patent Document 2: JP-A-2004-338828 (pp. 4-6; FIG. 1)

Disclosure of the Invention

Problems that the Invention is to Solve

[0004] Conventional elevator security systems detect when an abnormality occurs inside a cage room and announce that there is an abnormality, but these are elevator security systems that operate after a crime occurs, and there has been the problem that a user cannot ride the elevator at ease.

The invention of Patent Document 1 is directed to suspicious persons hidden inside a cage that is on call, and there has been the problem that it cannot handle a suspicious person that has entered the elevator as an ordinary passenger, so that it is necessary to always station staff in a monitoring center.

Further, in the elevator security system in Patent Document 2, it is necessary for a passenger to operate a button on the cage operating panel, so there has been the potential to excite suspicious persons.

[0005] The present invention has been made in order to solve these problems, and it is an object thereof to obtain an elevator security system that is configured to control crime awareness of a user with the intent to commit a crime to prevent crime before it occurs by deter-

mining that there are few passengers inside a cage room of an elevator and displaying/announcing this to the inside of the cage room.

Means for Solving the Problems

[0006] An elevator security system pertaining to this invention comprises: cage room weight detecting means that detects the weight inside a cage room of an elevator; security-use display announcement determining means that determines the necessity of security-use display announcement by determining whether or not the cage room weight detected by the cage room weight detecting means is within the range of a preset determination standard; and display announcing means that performs security-use display announcement to a display announcing device inside the cage room when it has been determined by the security-use display announcement determining means that security-use display announcement is necessary.

Effects of the Invention

[0007] As described above, this invention is disposed with: the cage room weight detecting means that detects the weight inside the cage room of the elevator; the security-use display announcement determining means that determines the necessity of security-use display announcement by determining whether or not the cage room weight detected by the cage room weight detecting means is within the range of the preset determination standard; and the display announcing means that performs security-use display announcement to the display announcing device inside the cage room when it has been determined by the security-use display announcement determining means that security-use display announcement is necessary. Thus, the invention can control crime awareness of a user with the intent to commit a crime to prevent crime before it occurs and can provide users with a sense of security, by determining that there are few passengers inside the cage room by the cage room weight and announcing with the display announcing device that the inside of the cage room is being monitored.

Best Modes for Implementing the Invention

First Embodiment

[0008] FIG. 1 is a schematic diagram showing an elevator security system according to a first embodiment of this invention.

In FIG. 1, disposed inside a cage room 10 are a display device 1 that performs display during a security operation, an announcing device 2 that performs announcing during the security operation, a monitor device 3 that displays a monitor image, and a weighing device 4 that detects the weight inside the cage room. The display device

1, the announcing device 2, and the monitor device 3 form a display announcing device.

An elevator control panel 6 controls the elevator security operation via a cage control device 5 and controls the display announcing device inside the cage room 10. Further, the elevator control panel 6 is connected to a building manager PC (personal computer) 7 in a building management room via a wireless LAN 9 inside the elevator control panel 6 and a wireless LAN 8 inside the building manager PC 7. An elevator security system setting tool 12, which will be described later in a second embodiment, is installed in the building manager PC 7.

[0009] FIG. 2 is a block diagram showing the elevator security system according to the first embodiment of this invention.

In FIG. 2, 1 to 4 and 6 to 10 represent the same things as those in FIG. 1. Time detecting means 61 acquires the current time from a clock 62 inside the elevator control panel 6, and cage room weight detecting means 63 acquires the weight inside the cage room from the weighing device 4 of the cage room 10. Security-use display announcement determining means 64 determines whether or not display announcement conditions are satisfied from building specification data 65, the current time, and the weight inside the cage room 10, and when the conditions have been satisfied, display announcing means 66 outputs a display announcement to a display announcing device 11 inside the cage room 10. 61 to 66 are disposed in the elevator control panel 6.

The display device 1, the announcing device 2, and the monitor device 3 and the like are disposed as the display announcing device 11 inside the cage room 10.

[0010] FIG. 3 is a diagram showing building specification data of the elevator security system according to the first embodiment of this invention.

In FIG. 3, there are stored YES/NO information of the security display announcing device 11, the start and end times of security display announcement, determination standards of security display announcement that are set such that it can be determined when there are few passengers inside the cage room 10, the type of the display announcing device 11, a display announcement message that informs the inside of the cage room that the inside of the cage room is being monitored, and a monitor display image.

FIG. 4 is a flowchart showing the operation of the elevator security system according to the first embodiment of this invention.

[0011] Next, the operation of the first embodiment will be described in accordance with the building specification data of FIG. 3 and the flowchart of FIG. 4.

In step S1, it is determined whether or not there is the security display announcing device 11 from the value of a security display announcement YES/NO flag of the building specification data in FIG. 3. When there is the security display announcing device 11, then the flow proceeds to step S2, where the current time is acquired from the clock 62 inside the elevator control panel 6. Next, in

step S3, it is determined whether or not the current time is within the range of the start time to end time of the building specification data shown in FIG. 3. When the current time is within the designated range, then in step S4, the weight inside the cage room 10 is acquired from the weighing device 4 inside the cage room.

Next, in step S5, it is determined whether or not the weight inside the cage room 10 is within the range of the determination standard minimum value to maximum value of the building specification data shown in FIG. 3. When the weight inside the cage room 10 is within the determination standard range, then in step S6, it is determined whether or not there is the display device 1 from a display device YES/NO flag of the building specification data shown in FIG. 3. When there is not the display device 1, then the flow proceeds to step S7. When there is the display device 1, then the flow proceeds to step S61, where the display announcement message of the building specification data shown in FIG. 3 is outputted to the display device 1.

[0012] Next, in step S7, it is determined whether or not there is the announcing device 2 from an announcing device YES/NO flag of the building specification data shown in FIG. 3. When there is not the announcing device 2, then the flow proceeds to step S8. When there is the announcing device 2, then in step S71, the display announcement message of the building specification data shown in FIG. 3 is outputted to the announcing device 2. Next, in step S8, it is determined whether or not there is the monitor device 3 from a monitor device YES/NO flag of the building specification data shown in FIG. 3. When there is the monitor device 3, then in step S81, the monitor display image of the building specification data shown in FIG. 3 is outputted to the monitor device 3.

It will be noted that processing ends when the weight inside the cage room 10 is not within the designated range in step S5.

Processing also ends when the current time is not within the designated range in step S3.

Further, processing also ends when there is not the security display announcing device 11 in step S1.

[0013] According to the first embodiment, when the state inside the cage room satisfies the determination standards for security display announcement, security display announcement is automatically performed, whereby crime awareness of a user with the intent to commit a crime is controlled to prevent crime before it occurs, and a sense of security can be imparted to users.

50 Second Embodiment

[0014] FIG. 5 is a diagram showing data held by a tool installed in a building manager PC of an elevator security system according to a second embodiment of this invention.

In FIG. 5, there are stored start and end times of security display announcement, determination standards of security display announcement, a display announcement

message provided to the inside of the cage, and a monitor display image.

[0015] FIG. 6 is a diagram showing a screen configuration of the tool installed in the building manager PC of the elevator security system according to the second embodiment of this invention.

In FIG. 6, when a manager password is inputted on a manager password input screen, a menu screen is displayed. When a time setting is selected on this menu screen, a time setting screen is displayed. When a determination standard setting is selected on the menu screen, a determination standard setting screen is displayed. When a display announcement message setting is selected on the menu screen, a display announcement message setting screen is displayed. When a monitor display image setting is selected on the menu screen, a monitor display image setting screen is displayed. When a value is inputted on the respective setting screens and a send button is pushed, the data of FIG. 8 is sent to the elevator control panel 6.

[0016] FIG. 7 is a flowchart showing the operation of the building manager PC of the elevator security system according to the second embodiment of this invention.

FIG. 8 is a diagram showing data sent by the tool installed in the building manager PC of the elevator security system according to the second embodiment of this invention.

In FIG. 8, there are stored commands representing security operation setting change requests, subcommands allocated to each of the setting items corresponding to FIG. 5, and data that are setting values corresponding to the subcommands.

[0017] FIG. 9 is a flowchart showing the operation of the elevator security system according to the second embodiment of this invention.

FIG. 10 is a flowchart showing the operation of the elevator security system according to the second embodiment of this invention, and is a flowchart continued from FIG. 9.

The second embodiment will be described with reference to FIG. 1 to FIG. 3.

[0018] In the second embodiment, the elevator security system setting tool 12 is installed in the building manager PC 7 of FIG. 1, and the building manager PC 7 communicates with the elevator control panel 6 via the wireless LANs 8 and 9 to enable the setting content of the building specification data 65 shown in FIG. 3 to be arbitrarily rewritten. That is, the settings of the building specification data shown in FIG. 3 inside the elevator control panel 6 can be changed using the elevator security system setting tool 12 installed in the building manager PC 7.

As for this changing of settings, first, the holding data shown in FIG. 5 of the elevator security system setting tool 12 inside the building manager PC 7 is changed using the screen shown in FIG. 6 of the elevator security system setting tool 12 installed in the building manager PC 7. In this elevator security system setting tool 12, as shown in

FIG. 6, the manager password is inputted on the initial screen, whereby only the manager is enabled to change settings. Next, the holding data of the elevator security system setting tool 12 whose setting has been changed is changed to the data of FIG. 8 and sent to the elevator control panel 6. Thus, in the elevator control panel 6, the settings of the building specification data 65 can be changed.

[0019] Next, the transmission of the setting data of the building specification data 65 to the elevator control panel 6 by the building manager PC of the second embodiment will be described in accordance with the flowchart of FIG. 7.

On the menu screen of FIG. 8 after password input, when a setting screen that the user wishes to change is selected and a value representing the change content is inputted and the send button is clicked, in step S9, a transmission event occurs, in step S10, the port of the building manager PC 7 is opened, and in step S11, transmission data is transmitted. As shown in FIG. 8, this transmission data has the configuration of commands and subcommands corresponding to individual setting items and data representing the setting content.

[0020] Next, processing where the building specification data 65 transmitted from the building manager PC 7 is received by the elevator control panel 6 will be described in accordance with the flowchart of FIGS. 9 and 10.

As shown in FIG. 2, the building manager PC 7 and the elevator control panel 6 communicate via the wireless LANs 8 and 9. First, in step S12 of FIG. 9, the port is opened. In step S13, it is determined whether or not there is a reception event, and when there is a reception event, in step S14 it is determined whether or not the command in the reception data is a security operation setting change request. In step S14, when the command is not a security operation setting change request, the flow proceeds to A.

[0021] In step S14, when the command is a security operation setting change request, then in step S15, it is determined whether or not the subcommand is a start time setting change request. When the subcommand is a start time setting change request, then in step S16, it is determined whether or not the transmission data is within the range of time (00: 00 to 23: 59). When the transmission data is not within the range of time, then the flow proceeds to A. When the transmission data is within the range of time, then in step S17, the transmission data is set to the display start time of the building specification data shown in FIG. 3 and the flow proceeds to A.

In step S15, when the subcommand is not a start time setting change request, then in step S18, it is determined whether or not the subcommand is an end time setting change request. When the subcommand is an end time setting change request, then in step S19, it is determined whether or not the transmission data is within the range of time (00: 00 to 23: 59).

When the transmission data is not within the range of time, then the flow proceeds to A. When the transmission data is within the range of time, then in step S20, the transmission data is set to the display end time of the building specification data shown in FIG. 3 and the flow proceeds to A.

[0022] In step S18, when the subcommand is not an end time setting change request, then in step S21, it is determined whether or not the subcommand is a determination standard minimum value setting change request. When the subcommand is a determination standard minimum value setting change request, then in step S22, it is determined whether or not the transmission data is equal to or less than a maximum load capacity. When the transmission data is not equal to or less than the maximum load capacity, then the flow proceeds to A. When the transmission data is equal to or less than the maximum load capacity, then in step S23, the transmission data is set to the determination standard minimum value of the building specification data shown in FIG. 3 and the flow proceeds to A.

[0023] In step S21, when the subcommand is not a determination standard minimum value setting change request, then in step S24, it is determined whether or not the subcommand is a determination standard maximum value setting change request. When the subcommand is a determination standard maximum value setting change request, then in step S25, it is determined whether or not the transmission data is equal to or less than the maximum load capacity. When the transmission data is not equal to or less than the maximum load capacity, then the flow proceeds to A. When the transmission data is equal to or less than the maximum load capacity, then in step S26, it is determined whether or not the transmission data is equal to or greater than a minimum value. When the transmission data is less than the minimum value, then the flow proceeds to A. When the transmission data is equal to or greater than the minimum value, then in step S27, the transmission data is set to the determination standard maximum value of the building specification data shown in FIG. 3 and the flow proceeds to A.

[0024] In step S24, when the subcommand is not a determination standard maximum value change request, then the flow proceeds to step S28 of FIG. 10, and in step S28, it is determined whether or not the subcommand is a display announcement message setting change request. When the subcommand is a display announcement message setting change request, then in step S29, it is determined whether or not the string of the transmission data is valid. When the string of the transmission data is not valid, then the flow proceeds to A. When the string of the transmission data is valid, then in step S30, the transmission data is set to the display announcement message of the building specification data shown in FIG. 3 and the flow proceeds to A.

In step S28, when the subcommand is not a display announcement message setting change request, then in step S31, it is determined whether or not the subcom-

mand is a monitor display image setting change request. When the subcommand is a monitor display image setting change request, then in step S32, it is determined whether or not the image of the transmission data is valid. When the image of the transmission data is not valid, then the flow proceeds to A. When the image of the transmission data is valid, then in step S33, the transmission data is set to the monitor display image of the building specification data shown in FIG. 3 and the flow proceeds to A.

In A, the flow proceeds to step S13 of FIG. 9.

[0025] According to the second embodiment, the building specification data of the elevator control panel can be set via the wireless LANs from the building manager PC.

Brief Description of the Drawings

[0026]

[FIG. 1] A schematic diagram showing an elevator security system according to a first embodiment of this invention.

[FIG. 2] A block diagram showing the elevator security system according to the first embodiment of this invention.

[FIG. 3] A diagram showing building specification data of the elevator security system according to the first embodiment of this invention.

[FIG. 4] A flowchart showing the operation of the elevator security system according to the first embodiment of this invention.

[FIG. 5] A diagram showing data held by a tool installed in a building manager PC of an elevator security system according to a second embodiment of this invention.

[FIG. 6] A diagram showing the screen configuration of the tool installed in the building manager PC of the elevator security system according to the second embodiment of this invention.

[FIG. 7] A flowchart showing the operation of the building manager PC of the elevator security system according to the second embodiment of this invention.

[FIG. 8] A diagram showing data transmitted by the tool installed in the building manager PC of the elevator security system according to the second embodiment of this invention.

[FIG. 9] A flowchart showing the operation of the elevator security system according to the second embodiment of this invention.

[FIG. 10] A flowchart continued from FIG. 9 showing the operation of the elevator security system according to the second embodiment of this invention.

Description of the Reference Numerals

[0027]

1	Display Device	
2	Announcing Device	
3	Monitor Device	
4	Weighing Device	
5	Cage Control Device	5
6	Elevator Control Panel	
7	Building Manager PC	
8	Wireless LAN (inside Building Manager PC)	
9	Wireless LAN (inside Elevator Control Device)	
10	Cage Room	10
11	Display Announcing Device	
12	Elevator Security System Setting Tool	
61	Time Detecting Means	
62	Clock	
63	Cage Room Weight Detecting Means	15
64	Security-Use Display Announcement Determining Means	
65	Building Specification Data	
66	Display Announcing Means	20

Claims

1. An elevator security system comprising:
 - cage room weight detecting means that detects the weight inside a cage room of an elevator;
 - security-use display announcement determining means that determines the necessity of security-use display announcement by determining whether or not the cage room weight detected by the cage room weight detecting means is within the range of a preset determination standard; and
 - display announcing means that performs security-use display announcement to a display announcing device inside the cage room when it has been determined by the security-use display announcement determining means that security-use display announcement is necessary.
2. The elevator security system of claim 1, further comprising an elevator security system setting tool that is operated by a building manager to set the determination standard.

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FIG. 1

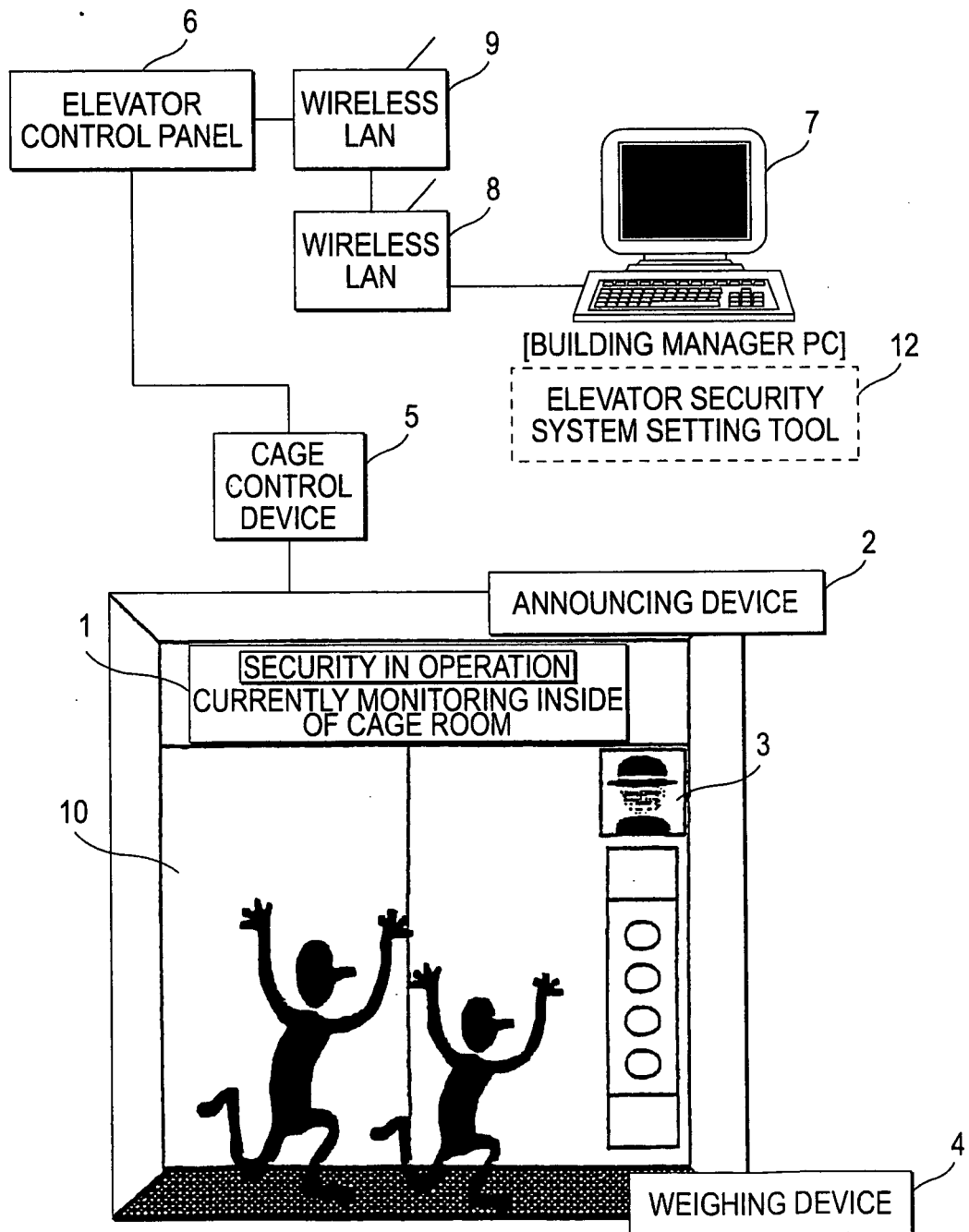


FIG. 2

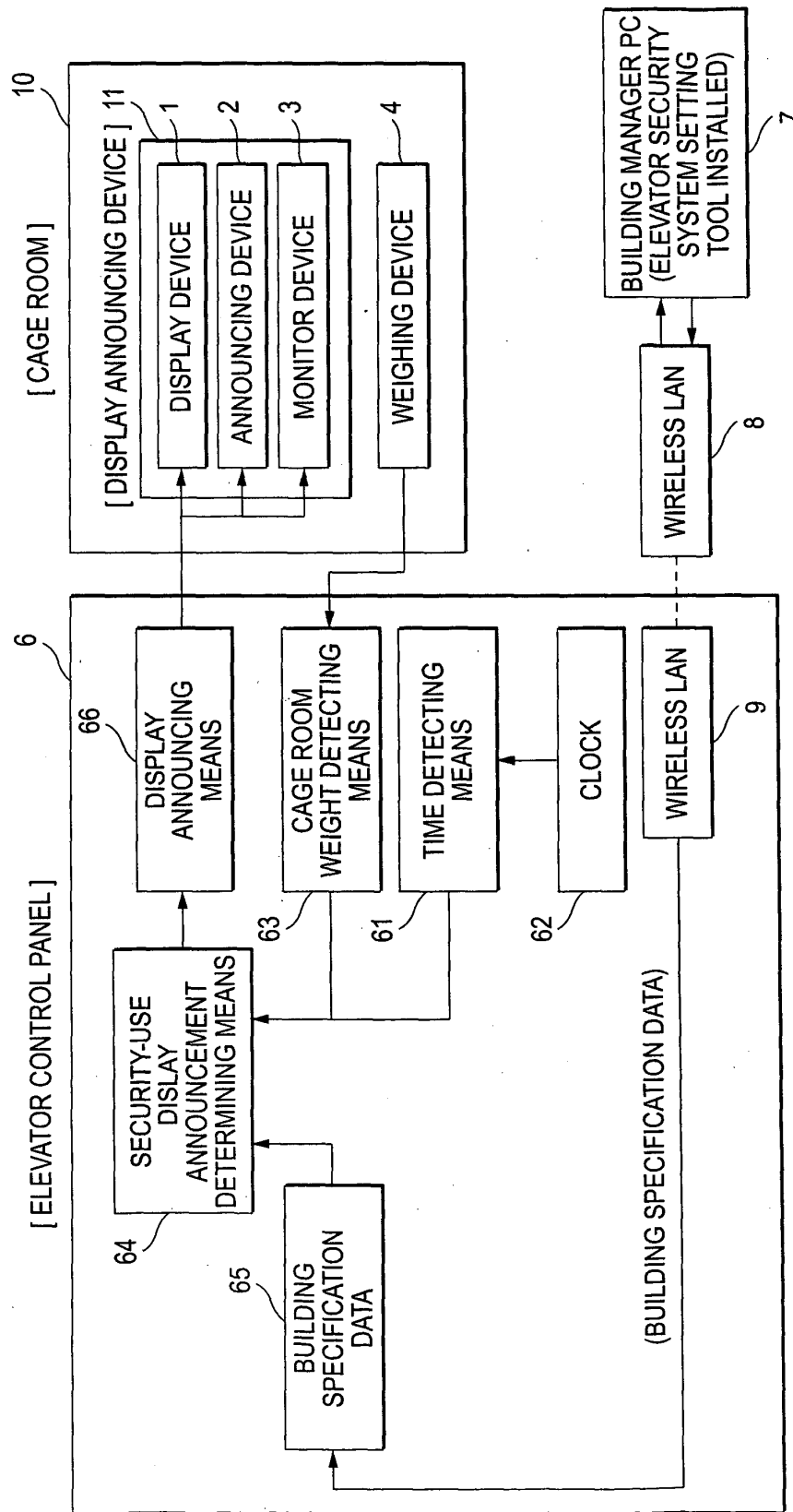
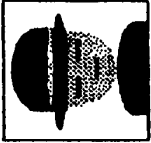


FIG. 3

ITEM	SETTING CONTENT	SET VALUE	REWRITABLE
SECURITY DISPLAY ANNOUNCEMENT YES/NO FLAG	YES	1	NO
SECURITY DISPLAY ANNOUNCEMENT START TIME	20:00	2000	YES
SECURITY DISPLAY ANNOUNCEMENT END TIME	05:00	0500	YES
SECURITY DISPLAY ANNOUNCEMENT DETERMINATION STANDARD MINIMUM VALUE	160Kg	160	YES
SECURITY DISPLAY ANNOUNCEMENT DETERMINATION STANDARD MAXIMUM VALUE (MAY ALSO BE SAME VALUE AS MINIMUM VALUE)	240Kg	240	YES
SECURITY DISPLAY ANNOUNCEMENT DISPLAY DEVICE YES/NO FLAG	YES	1	NO
SECURITY DISPLAY ANNOUNCEMENT BROADCASTING DEVICE YES/NO FLAG	YES	1	NO
SECURITY DISPLAY ANNOUNCEMENT MONITOR DEVICE YES/NO FLAG	YES	1	NO
DISPLAY ANNOUNCEMENT MESSAGE (DISPLAY DEVICE, BROADCASTING DEVICE)	—	"SECURITY IN OPERATION; CURRENTLY MONITORING INSIDE OF CAGE ROOM."	YES
FOR SECURITY DISPLAY ANNOUNCEMENT MONITOR DISPLAY IMAGE	—		YES

<BUILDING SPECIFICATION DATA>

FIG. 4

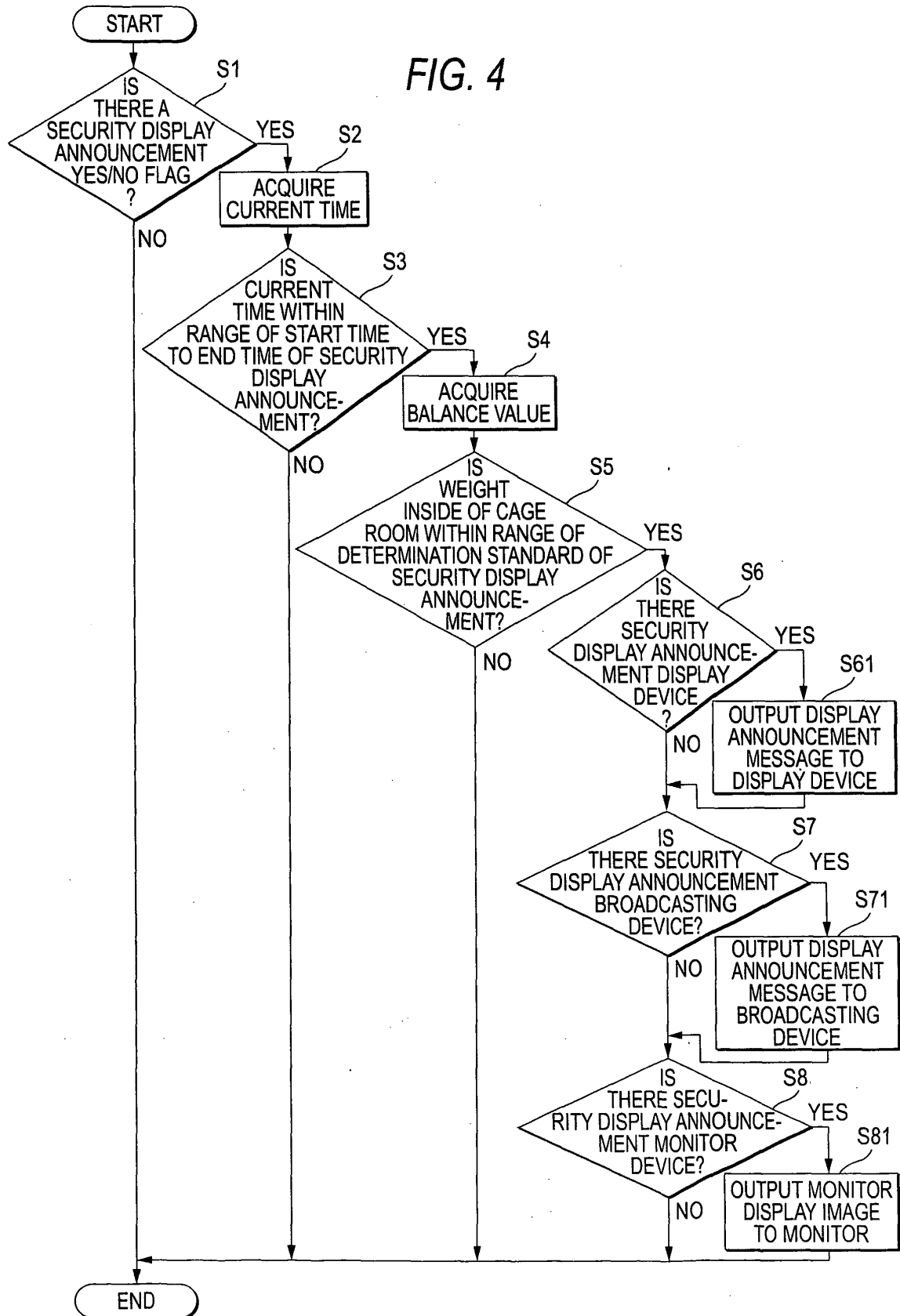


FIG. 5

ITEM	SETTING CONTENT	SET VALUE
SECURITY DISPLAY ANNOUNCEMENT START TIME	20:00	2000
SECURITY DISPLAY ANNOUNCEMENT END TIME	05:00	0500
SECURITY DISPLAY ANNOUNCEMENT DETERMINATION STANDARD MINIMUM VALUE	160Kg	160
SECURITY DISPLAY ANNOUNCEMENT DETERMINATION STANDARD MAXIMUM VALUE (MAY ALSO BE SAME VALUE AS MINIMUM VALUE)	240Kg	240
DISPLAY ANNOUNCEMENT MESSAGE (DISPLAY DEVICE, ANNOUNCING DEVICE)	—	"SECURITY IN OPERATION: CURRENTLY MONITORING INSIDE OF CAGE ROOM."
FOR SECURITY DISPLAY ANNOUNCEMENT MONITOR DISPLAY IMAGE	—	IMAGE DATA

<ELEVATOR SECURITY SYSTEM SETTING TOOL HOLDING DATA>

FIG. 6

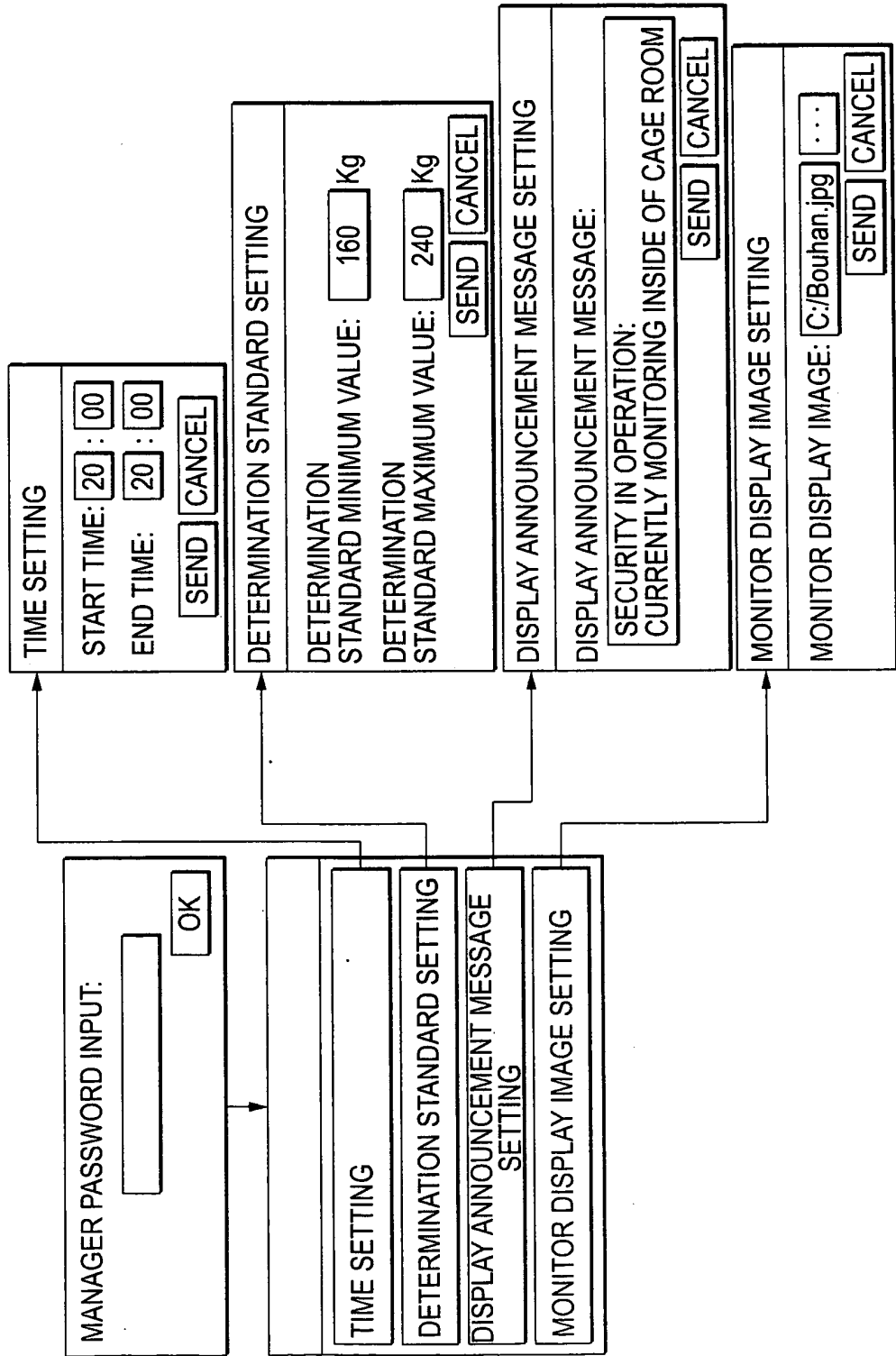


FIG. 7

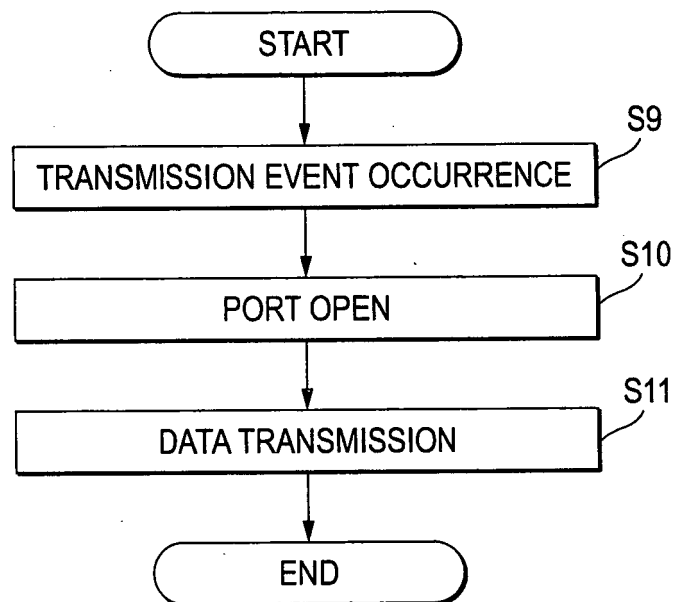
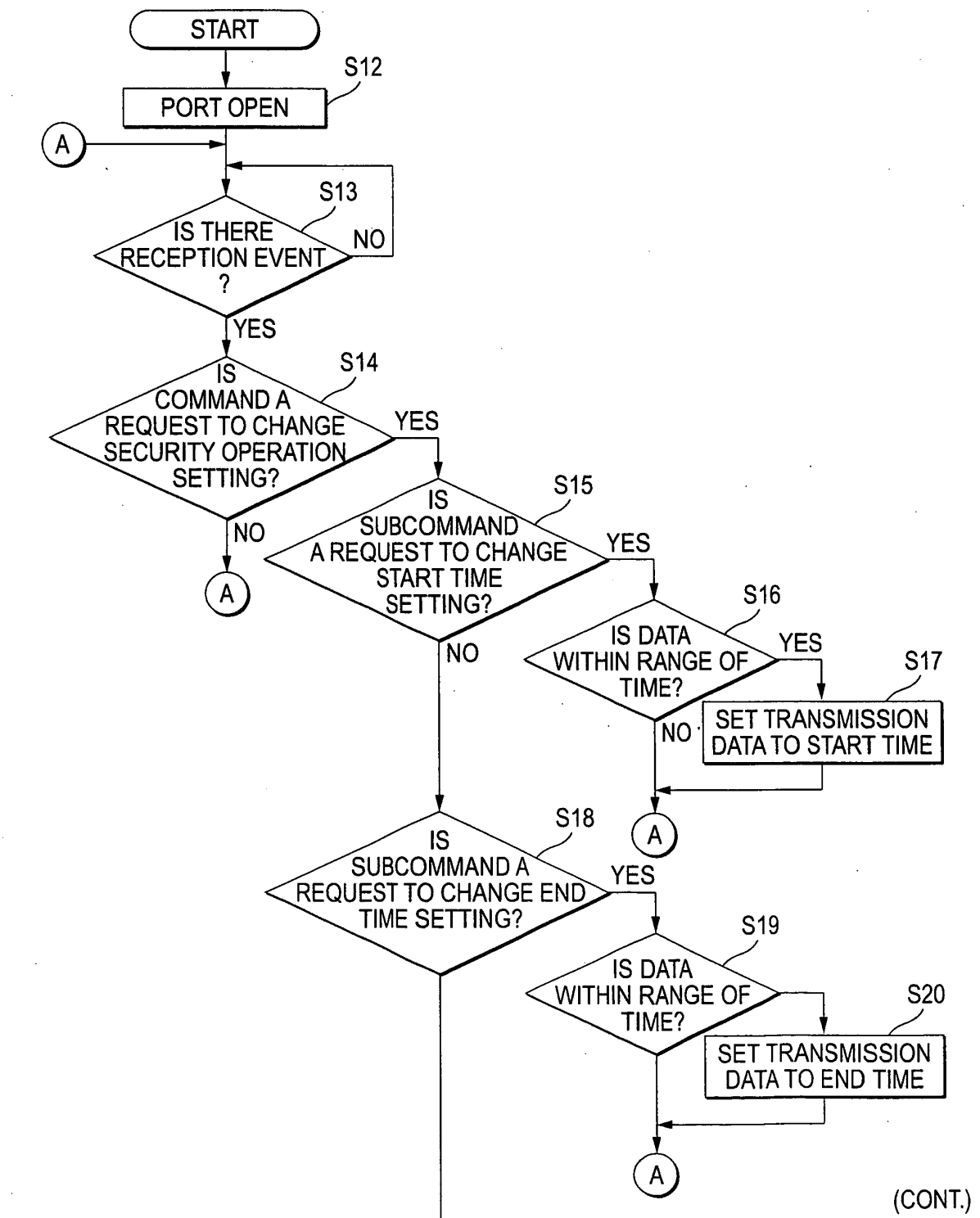


FIG. 8

ITEM	COMMAND	SUBCOMMAND	DATA
SECURITY DISPLAY ANNOUNCEMENT START TIME		1	2000
SECURITY DISPLAY ANNOUNCEMENT END TIME		2	0500
SECURITY DISPLAY ANNOUNCEMENT DETERMINATION STANDARD MINIMUM VALUE	AA11	3	160
SECURITY DISPLAY ANNOUNCEMENT DETERMINATION STANDARD MAXIMUM VALUE (MAY ALSO BE SAME VALUE AS MINIMUM VALUE)		4	240
DISPLAY ANNOUNCEMENT MESSAGE (DISPLAY DEVICE, ANNOUNCING DEVICE)		5	"SECURITY IN OPERATION: CURRENTLY MONITORING INSIDE OF CAGE ROOM."
FOR SECURITY DISPLAY ANNOUNCEMENT MONITOR DISPLAY IMAGE		6	IMAGE DATA

<TRANSMISSION DATA>

FIG. 9



(FIG.9 CONTINUED)

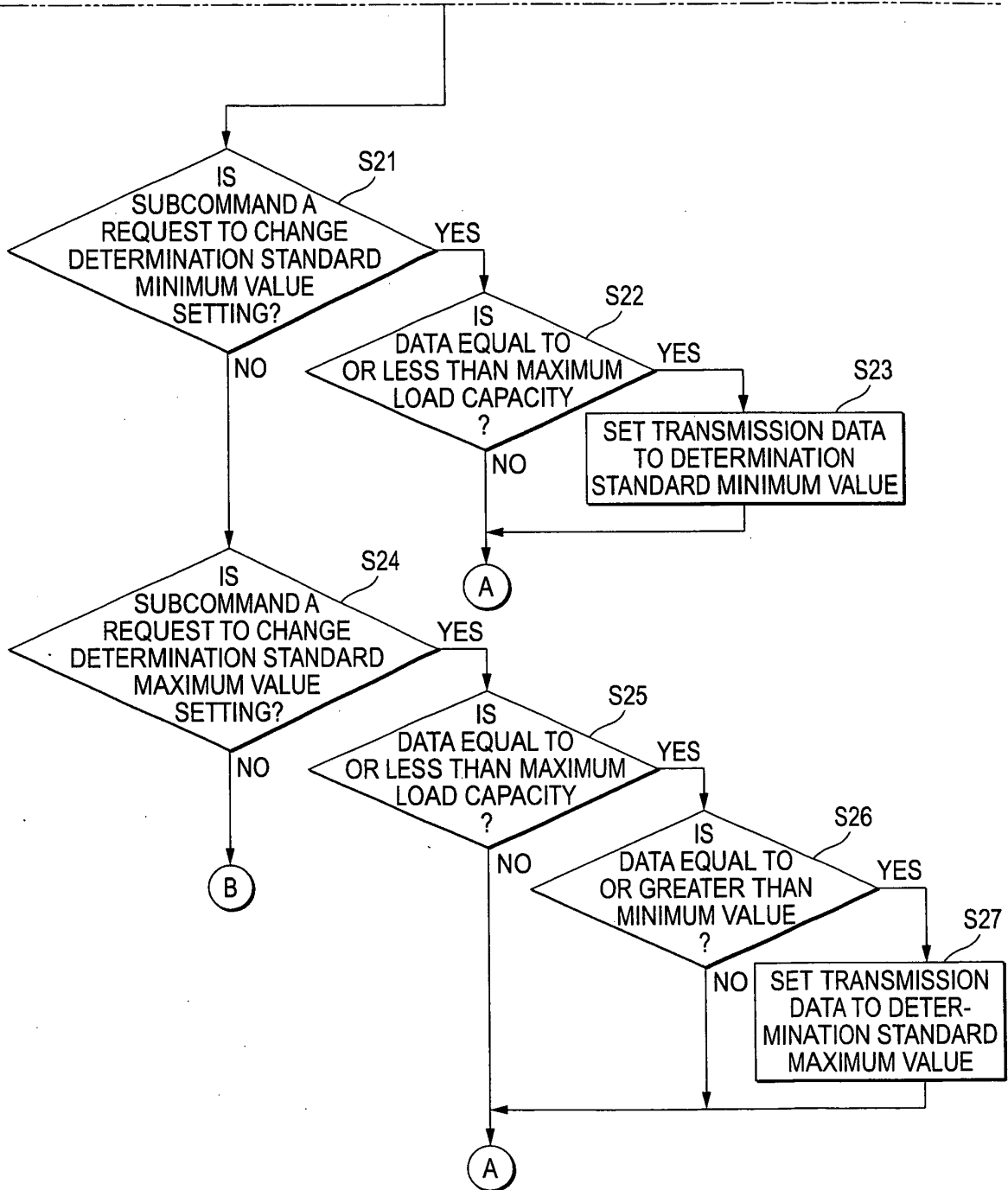
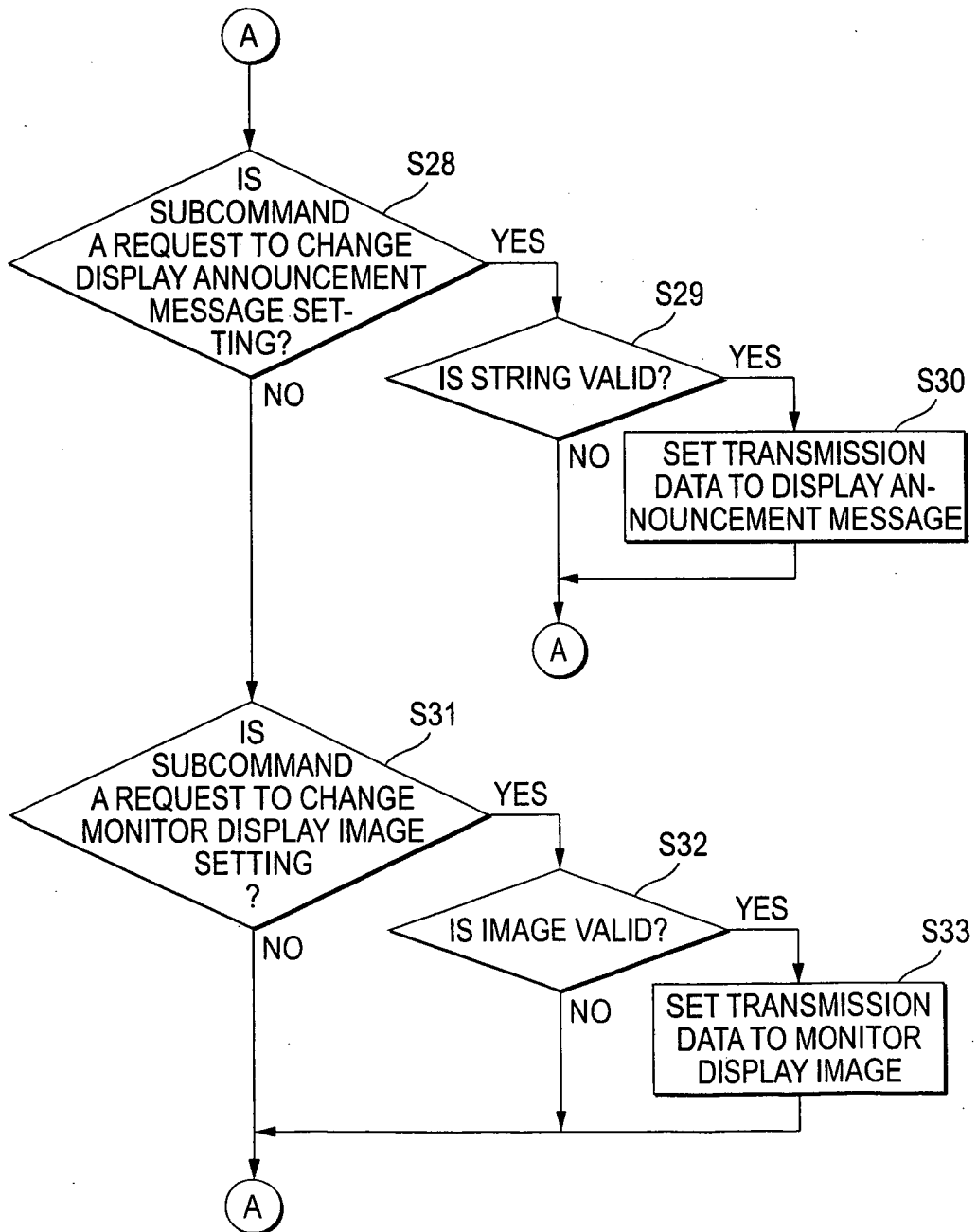


FIG. 10



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2006/302726

A. CLASSIFICATION OF SUBJECT MATTER

B66B3/00 (2006.01), **B66B5/00** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B66B1/00 (2006.01) - **B66B11/08** (2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2006

Kokai Jitsuyo Shinan Koho 1971-2006 Toroku Jitsuyo Shinan Koho 1994-2006

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2000-118900 A (Toshiba FA System Engineering Kabushiki Kaisha),	1
Y	25 April, 2000 (25.04.00), Claims 1 to 4; Par. Nos. [0020] to [0047]; Figs. 1 to 5 (Family: none)	2
Y	JP 2-117578 A (Hitachi, Ltd.), 02 May, 1990 (02.05.90), Claims 1 to 3 (Family: none)	2
A	JP 2000-351547 A (Toshiba Corp.), 19 December, 2000 (19.12.00), Claims 1 to 9 (Family: none)	1



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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"&" document member of the same patent family

Date of the actual completion of the international search

26 May, 2006 (26.05.06)

Date of mailing of the international search report

06 June, 2006 (06.06.06)

Name and mailing address of the ISA/

Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2006/302726

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 7-237837 A (Toshiba Elevator Technos Kabushiki Kaisha), 12 September, 1995 (12.09.95), Claims 1 to 3 (Family: none)	2

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2001302123 A [0003]
- JP 2004338828 A [0003]