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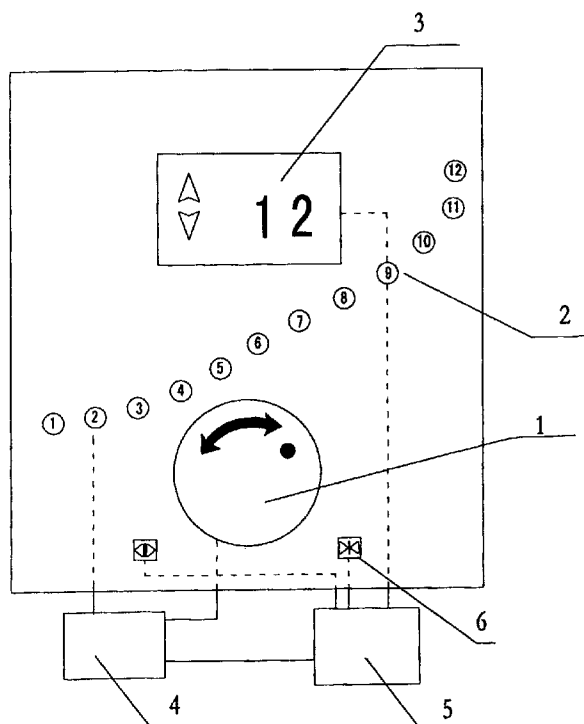


Fig. 1

(57) Abstract: The present invention relates to an
elevator operation panel, an elevator and an elevator
operation method. An elevator operation panel has a
turnplate-type button (1), turning angles of which are
respectively associated with floor numbers, wherein
upon actuation, the turnplate-type button (1) outputs
signals representing the selectable and selected floors.
The operating panel provides user feedback as to the
selectable and selected floors.



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Elevator Operation Panel, Elevator and Elevator Operation Method

Technical Field

5 The present invention pertains to the field of elevator technology. More particularly, it pertains to an elevator operation panel, an elevator, and an elevator operation method.

Background Art

10 In the prior art, an elevator operation panel is usually realized by mounting a plurality of buttons corresponding to floors on the surface of the operation panel. In other words, a button is required for each floor. This type of elevator operation panel operates as follows. After a passenger presses the button corresponding to the floor that he (or she) wants to go to, a main control system registers that floor. The lighting device on the button emits light and stays in this state for a prescribed period of time, indicating that said floor has been registered. This type of
15 conventional elevator operation panel usually requires a plurality of buttons corresponding to the number of the floors. In this situation, the number of buttons increases with the number of floors. As result, the surface of the conventional elevator operation panel becomes very complicated. Moreover, since the elevator buttons are relatively expensive, the plurality of buttons for floors will complicate the structure of the operation panel and increase the cost.

20 Therefore, there is specifically a need in the art for an improved elevator operation panel with simple structure and low cost.

Summary of the Invention

25 The present invention is directed to an improved elevator operation panel which uses a turnplate-type button to replace a plurality of buttons for floors, which makes the structure of the operation panel simple and compact, and can still realize the automatic control and display function of the conventional operation panel.

 According to one aspect of the present invention, there is provided an elevator operation panel which comprises:

a turnplate-type button, turning angles of which are respectively associated with floor numbers, wherein when turned, the turnplate-type button outputs a turning signal corresponding to a turning angle;

5 a button signal processing module configured to process the turning signal from the turnplate-type button to obtain a selectable floor signal corresponding to a selectable floor number; and

a registered floor display module configured to display the selectable floor number according to the selectable floor signal.

10 Further, when pressed, the turnplate-type button can output a press signal. The button signal processing module is further configured to process the turning signal and the press signal from the turnplate-type button to obtain a selected floor signal corresponding to a selected floor number. The registered floor display module is further configured to display the selected floor number according to said selected floor signal.

15 In one embodiment of the present invention, when turned clockwise, the turnplate-type button can output a clockwise turning signal to the button signal processing module. When turned counterclockwise, the turnplate-type button can output a counterclockwise turning signal to the button signal processing module.

In one embodiment of the present invention, said selected floor signal may be transmitted to a main control system to register a floor corresponding to said selected floor number.

20 In one embodiment of the present invention, the selectable floor number displayed on the registered floor display module varies sequentially as the turnplate-type button is turned. Alternatively, the registered floor display module may include an indicator for each selectable floor. Alternatively, the registered floor display module may include an indicator for displaying the selectable floor.

In one embodiment of the present invention, said turnplate-type button can further comprises an encoder configured to convert a turning operation of the turnplate-type button into a corresponding turning signal; and a contact conduction type switch configured to acquire a press signal corresponding to a press operation on the turnplate-type button. Optionally, the

encoder can be a mechanical or photoelectric encoder.

In one embodiment of the present invention, said registered floor display module can be selected from the group consisting of Liquid Crystal Display (LCD), Light Emitting Diode (LED), Organic Light Emitting Display (OLED), and Vacuum Fluorescent Display (VFD).

5 In one embodiment of the present invention, said operation panel further comprises an elevator position display module configured to display a floor number of the current position of the elevator.

According to another aspect of the present invention, there is provided an elevator comprising the above operation panel.

10 According to another aspect of the present invention, there is provided a method for operating an elevator system which has a moveable car, and a controller for controlling the position of the car. The method comprises the steps of: turning a turnplate-type button to output a turning signal; processing the turning signal from the turnplate-type button, to obtain a selectable floor signal corresponding to a floor number of a selectable floor; and displaying said
15 selectable floor number according to the selectable floor signal.

The method further comprises the steps of: pressing said turn-plate type button to output a press signal; processing the turning signal and the press signal from the turnplate-type button, to obtain a selected floor signal corresponding to a selected floor number; and displaying said selected floor numbers according to the selected floor signal.

20 In one embodiment of the present invention, the method further comprises the steps of: receiving an elevator position signal from the controller; and displaying a floor number corresponding to the position of the elevator car.

Compared with the prior art, the present invention has the following advantageous technical effects. It uses a turnplate-type button to replace a plurality of buttons for floors in the prior art,
25 which makes the structure of the operation panel simple and compact, and can still realize the automatic control and display function of the conventional operation panel.

Brief Description of the Figures

Figure 1 is the schematic front view of an elevator operation panel according to one

embodiment of the present invention;

Figure 2 is schematic block diagram of a circuit of an elevator operation panel according to one embodiment of the present invention; and

Figure 3 is schematic flowchart of a method for operating an elevator system according to one embodiment of the present invention.

Preferred Embodiments of the Invention

The main principle of the present invention is that a plurality of buttons of plural floors in the prior art is replaced with a turnplate-type button on an elevator operation panel, and turning angles of the turnplate-type button are associated with floor numbers, respectively. Thus, a floor to be registered can be selected by turning and pressing the turnplate-type button on the elevator operation panel.

Now, embodiments of the present invention will be further described with reference to the drawings. It should be understood that the following embodiments are only exemplary, not limitations to the principle of the present invention.

As shown in Figures 1 and 2, an elevator operation panel according to one embodiment of the present invention can comprise a turnplate-type button 1, a button signal processing module 4 and a registered floor display module 2.

In the present invention, turning angles of the turnplate-type button 1 are associated with floor numbers, respectively, so that a floor to be registered can be selected through turning and pressing the turnplate-type button 1.

Specifically, when the turnplate-type button 1 is turned, it can output a turning signal corresponding to a rotary angle and a rotary direction. The button signal processing module 4 receives the turning signal from the turnplate-type button 1, and processes the turning signal to obtain a selectable floor signal corresponding to a selectable floor number which is associated with the rotary angle of the turnplate-type button 1. The registered floor display module 3 receives the selectable floor signal from the button signal processing module 4, and displays the selectable floor number according to the selectable floor signal.

Further, when the turnplate-type button 1 is turned to a certain rotary angle and pressed, it

can output a press signal. The button signal processing module 4 receives the turning signal and the press signal from the turnplate-type button 1, and processes the turning signal and the press signal to obtain a selected floor signal corresponding to a floor number of a selected floor. The registered floor display module 2 receives the selected floor signal, and displays the selected floor number according to the selected floor signal.

Various elements will be described in detailed as follows.

According to an embodiment of the present invention, the turnplate-type button 1 can utilize any known components which can convert a turning operation and a press operation into the corresponding turning signal and press signal

For example, the turnplate-type button 1 can comprise an encoder configured to convert a turning operation of the turnplate-type button 1 into a corresponding turning (or phase) signal; and a contact conduction switch configured to acquire a press signal corresponding to a press operation on the turnplate-type-button 1. In other words, the encoder can obtain the rotary position signal corresponding to the turning angle and turning direction of the turnplate-type button 1. In addition, when the turnplate-type button 1 is pressed, said contact conduction switch is closed, thus obtaining a press signal corresponding to the press operation. Optionally, said encoder can be a mechanical or photoelectric encoder.

The structure of the turnplate-type button 1 is well-known in the art, and the detailed description therefor is thus omitted here.

In embodiments of the present invention, when turned clockwise, the turnplate-type button 1 can output a clockwise turning signal to the button signal processing module 4. When turned counterclockwise, the turnplate-type button 1 can output a counterclockwise turning signal to the button signal processing module 4. The turnplate-type button 1 can turn continuously. In other words, the encoder of the turnplate-type button 1 can turn continuously clockwise or counterclockwise.

According to embodiments of the present invention, the button signal processing module 4 can obtain a turning angle of the turnplate-type button 1 based on said turning signal, and based on the association between the turning angles of the turnplate-type button 1 and the floor numbers, can obtain a signal corresponding to the selectable floor to be registered, and can

output the signal to the registered floor display module 2.

The registered display module 2 can display the corresponding selectable floor number based on the signal from the button signal processing module 4. For example, as shown Figure 1, the registered display module 2 can include a set of indicators, each of which represents one of a plurality of floors. In this example, as the turnplate-type button 1 is turned, the indicators of the registered display module 2 can be illuminated sequentially from the numbers 1 to 12 or from the numbers 12 to 1. When the turnplate-type 1 is turned, the corresponding indicator can remain lit constantly until the floor corresponding to the indicator is reached.

It should be understood that the indicators in the registered floor display module 2 can also adopt any light sources and display modes, such as, Liquid Crystal Display (LCD), Light Emitting Diode (LED), Organic Light Emitting Display (OLED), and Vacuum Fluorescent Display (VFD), etc.

The layout of the registered floor display module 2 shown in Fig. 1 is only illustrative. For example, besides the plurality of indicators corresponding to floor numbers as shown in Fig. 1, the registered floor display module 2 can be a single indicator for displaying the floor numbers sequentially as the turnplate-type button is rotated. In this example, if the turnplate-type button 1 is turned clockwise, then the number on the indicator of the registered floor display module 2 can increase correspondingly; otherwise, if the turnplate-type button 1 is turned counterclockwise, the number decrease correspondingly. When the desired floor number is shown on the indicator of the registered floor display module 2, a user can press against the turnplate-type button 1, so that the switch in the turnplate-type button 1 can be contacted once. Then, the number displayed on the indicator of the registered floor display module 2 can be illuminated constantly.

In the embodiments of the present invention, when a passenger selects the destination floor, he or she may turn the turnplate-type button 1. Since the turn angle of said turnplate-type button 1 is associated with the floor number, when the turnplate-type button 1 is turned, the floor number corresponding to the turn angle can be displayed on the registered floor display module 2. The floor number displayed on the registered floor display module 2 can vary as the turnplate-type button 1 is turned. When the turn angle reaches the angle corresponding to the floor

number to be registered, the turnplate-type button 1 can be pressed to select the floor number to be registered. Thus, the floor number on the registered floor display module 2 may remain lit constantly.

According to embodiment of the present invention, the elevator operation panel may further comprise a communication module 5. The button signal processing module 4 may communicate with a communication module 5, so as to transmit the selected signal via said communication module to a main control system 7 to register the floor selected. Of course, the selected signal may be transmitted directly from the processing module 4 to the main control system 7.

The elevator operation panel may further comprise a position display module 3 configured to display the floor number corresponding to the current position of the elevator.

Further, the elevator operation panel may further comprise an intrinsic function module 6, such as door close and door open function module, which respectively communicate with the communication module 5. The module 6 may transmit the corresponding signals to the communication module 5, which further transmit the corresponding signal to the main control system 7. After certain actions, the main control system 7 feeds a signal back to module 6 via the communication module 5. The module 6 is any existing module in the elevator operation panel, and the detailed description thereof is thus omitted here.

Referring to Figure 3, a method for operating an elevator system will be described as follows. The elevator system can have a moveable car, and a controller for controlling the position of the car.

When a passenger wishes to select the destination floor, the method starts.

Firstly, at the step S1, the turnplate-type button 1 is turned to output a turning signal corresponding to the rotary angle of the turnplate-type button 1.

Then, at the step S2, the turning signal from said turnplate-type button is processed to obtain a selectable floor signal corresponding to a floor number of a selectable floor.

Then, at S3, The selectable floor number is displayed according to the selectable floor signal.

Then, at S4, when a selectable floor number to be registered is displayed, the turn-plate type button is pressed to output a press signal.

Then, at S5, the turning signal and the press signal from said turnplate-type button is processed to obtain a selected floor signal corresponding to a floor number of the selected floor.

Then, at S6, the selected floor number is displayed according to the selected floor signal.

5 Thereafter, the remaining steps of the method are as usual. For example, the selected floor signal may be transmitted to a main control system to register the selected floor.

It should be understood that the elevator operation panel of the present invention can be applied to any similar elevator.

10 Further, it should be understood that, according to a specific application, the elevator operation panel can be disposed on the inside wall of an elevator car, or disposed on the wall of the floor corridor corresponding to the position of the elevator.

It is to be understood from the foregoing description that modifications and alterations may be made to all embodiments of the present invention without departing from the spirit of the present invention. The description in the present specification is intended to be illustrative
15 and not limiting. The scope of the present invention is limited by the claims only.

What is claimed is:

1. An elevator operation panel, comprising:

a turnplate-type button (1), turning angles of which are respectively associated with floor
5 numbers, wherein when turned, said turnplate-type button (1) outputs a turning signal
corresponding to a turning angle;

a button signal processing module (4) configured to process said turning signal from said
turnplate-type button (1) to obtain a selectable floor signal corresponding to a selectable floor
number; and

10 a registered floor display module (2) configured to display said selectable floor number
according to said selectable floor signal.

2. An elevator operation panel according to claim 1, wherein,

when pressed, said turnplate-type button (1) outputs a press signal;

15 said button signal processing module (4) is further configured to process the turning signal
and the press signal from said turnplate-type button (1) to obtain a selected floor signal
corresponding to a selected floor number; and

said registered floor display module (2) is further configured to display said selected floor
number according to said selected floor signal.

20 3. An elevator operation panel according to claim 1 or claim 2, wherein when turned
clockwise, said turnplate-type button (1) outputs a clockwise turning signal to said button signal
processing module (4), and when turned counterclockwise, said turnplate-type button (1) outputs
a counterclockwise turning signal to said button signal processing module (4).

25 4. An elevator operation panel according to claim 2, wherein said selected floor signal is
further transmitted to a main control system to register a floor corresponding to said selected
floor number.

5. An elevator operation panel according to claim 1 or claim 2, wherein the selectable floor number displayed on the registered floor display module (2) varies sequentially as the turnplate-type button (1) is turned.

5 6. An elevator operation panel according to claim 5, wherein the registered floor display module (2) comprises an indicator for each selectable floor.

7. An elevator operation panel according to claim 5, wherein the registered floor display module (2) comprises an indicator for displaying the selectable floor

10

8. An elevator operation panel according to claim 2, wherein said turnplate-type button (1) further comprises:

an encoder configured to convert a turning operation of the said turnplate-type button (1) into a corresponding turning signal; and

15

a contact conduction type switch configured to acquire a press signal corresponding to a pressing operation on said turnplate-type button (1).

9. An elevator operation panel according to claim 7, wherein said encoder is a mechanical or photoelectric encoder.

20

10. An elevator operation panel according to claim 1 or 2, wherein said registered floor display module (2) is selected from the group consisting of Liquid Crystal Display, Light Emitting Diode, Organic Light Emitting Display, and Vacuum Fluorescent Display.

25

11. An elevator operation panel according to claim 1 or 2, further comprising an elevator position display module (3) configured to display a current floor number corresponding to the position of the elevator.

12. An elevator, comprising an operation panel according to any one of claims 1-11.

13. A method for operating an elevator system, the elevator system having a moveable car, and a controller for controlling the position of the car, the method comprising the steps of:

turning a turnplate-type button to output a turning signal;

5 processing the turning signal from said turnplate-type button, to obtain a selectable floor signal corresponding to a floor number of a selectable floor; and

displaying said selectable floor number according to the selectable floor signal.

14. A method according to claim 13 further comprising the steps of:

10 pressing said turn-plate type button to output a press signal;

processing the turning signal and the press signal from said turnplate-type button, to obtain a selected floor signal corresponding to a selected floor number; and

displaying said selected floor numbers according to the selected floor signal.

15 15. A method according to claim 13 further comprising the steps of;

receiving an elevator position signal from the controller; and

displaying a floor number corresponding to the position of the elevator car.

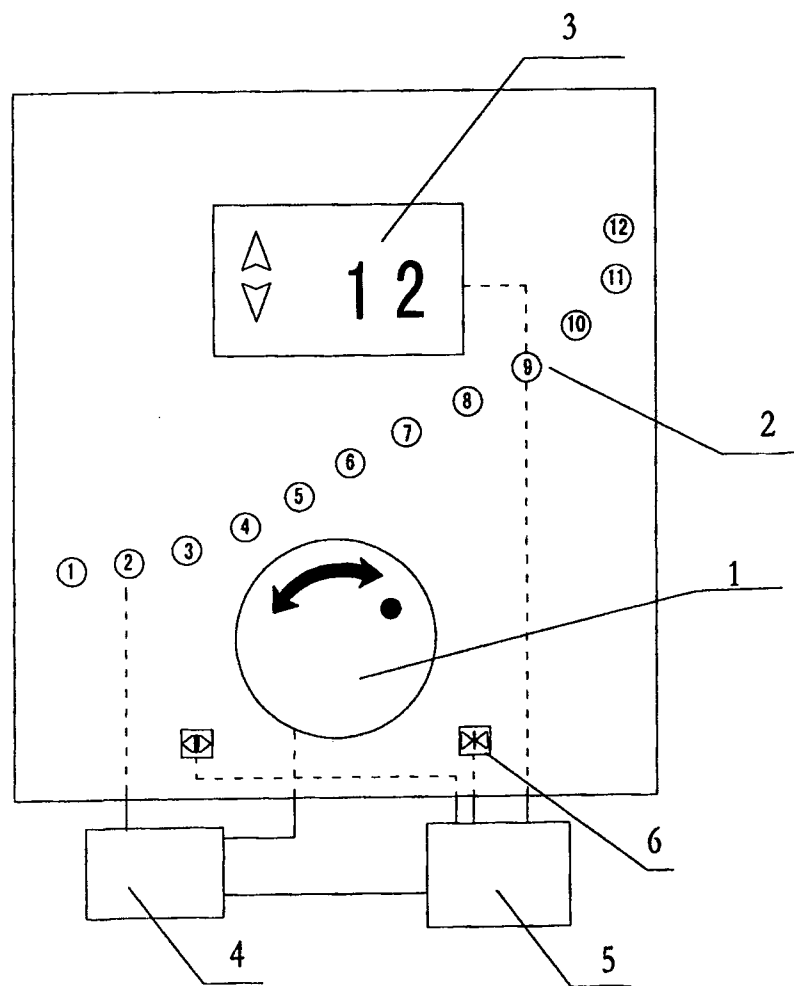


Fig. 1

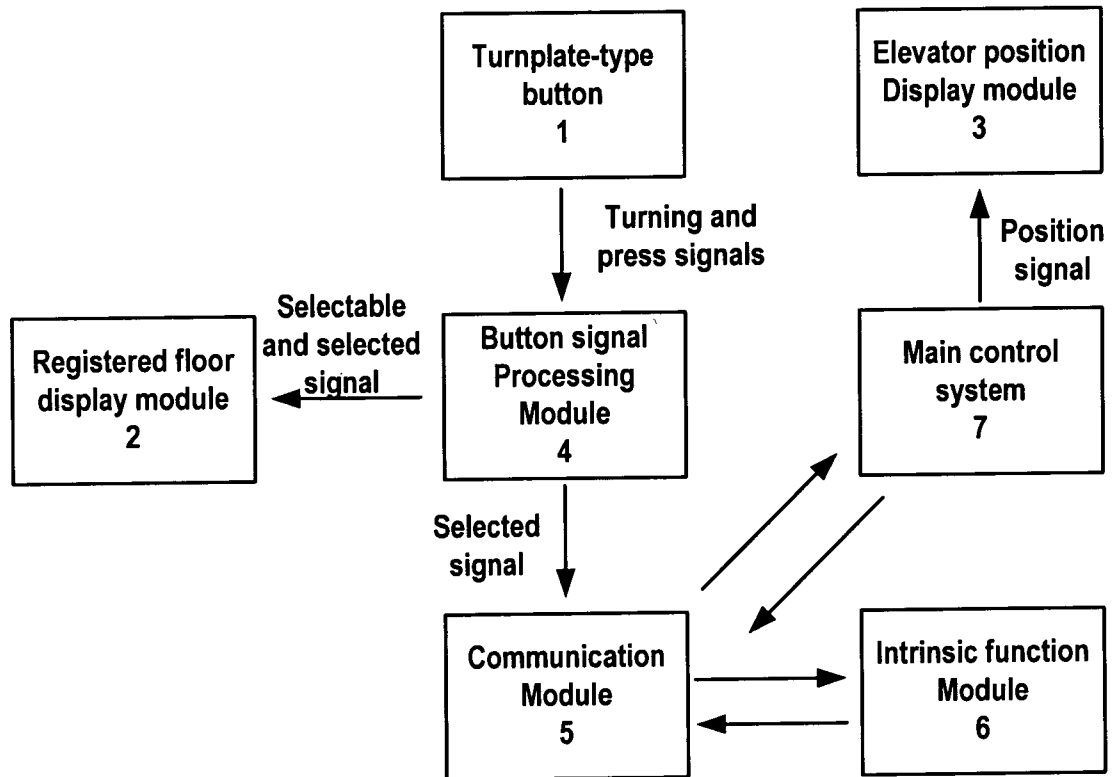


Fig. 2

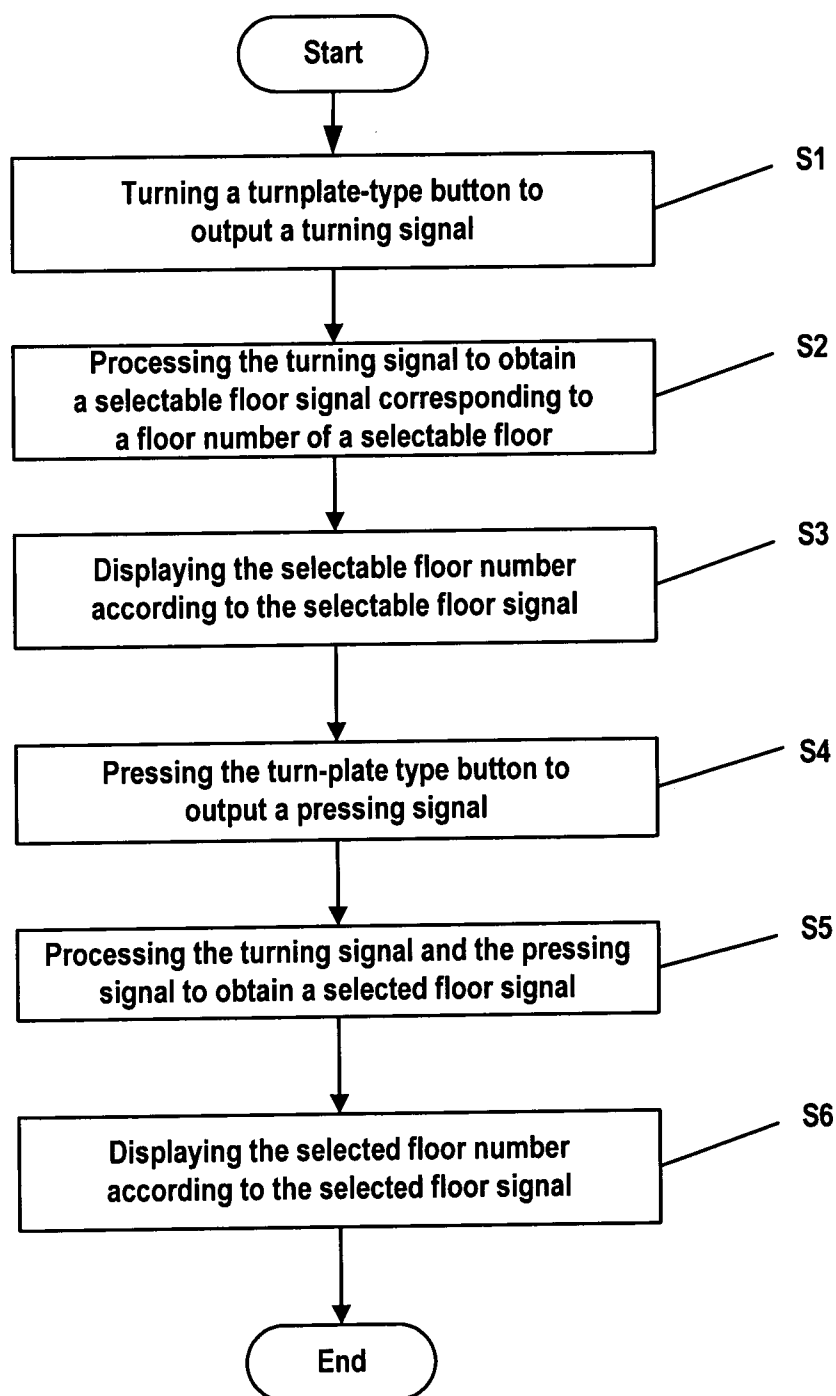


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2008/001128

A. CLASSIFICATION OF SUBJECT MATTER

B66B1/46 (2006.01)i

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)

IPC: B66B, H01H

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

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

EPODOC, PAJ, WPI, CNPAT: switch, button rotatable, panel, turn, turnplate, elevator

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO2005121003 A2 (KONE CORPORATION) 22 Dec. 2005 (22.12.2005) See page 7, line 10—page 9, line 31, figures, claims 1—7	1—15
X	US5679933A (WEBER STEUERUNGSTECHNIK GMBH) 21 Oct. 1997 (21.10.1997) See column 2, line 63—column 3, line 15, figures 1,2	1—15

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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“&” document member of the same patent family

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

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Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
WO2005121003 A	22.12.2005	FI115963B	31.08.2005
US5679933 A	21.10.1997	DE9416959U	22.12.1994
		DE4435740 A	06.04.1995