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(54) ELEVATOR OPERATION PANEL AND A METHOD FOR OPERATING AN ELEVATOR CALL

(57) An elevator operation panel (1) is proposed which comprises a plurality of input objects (2, 2a) corresponded with floors (3, 3a) of a building, wherein by an inputting activity an input object (2, 2a) registers an elevator call. The elevator operation panel (1) has at least one blocked input object (2a) which is configurable to block an inputting activity or to reject registering an elevator call. And the elevator operation panel (1) comprises further an alarm device (4) for generating an alarm signal, when an inputting activity is acted on the blocked input object (2a).

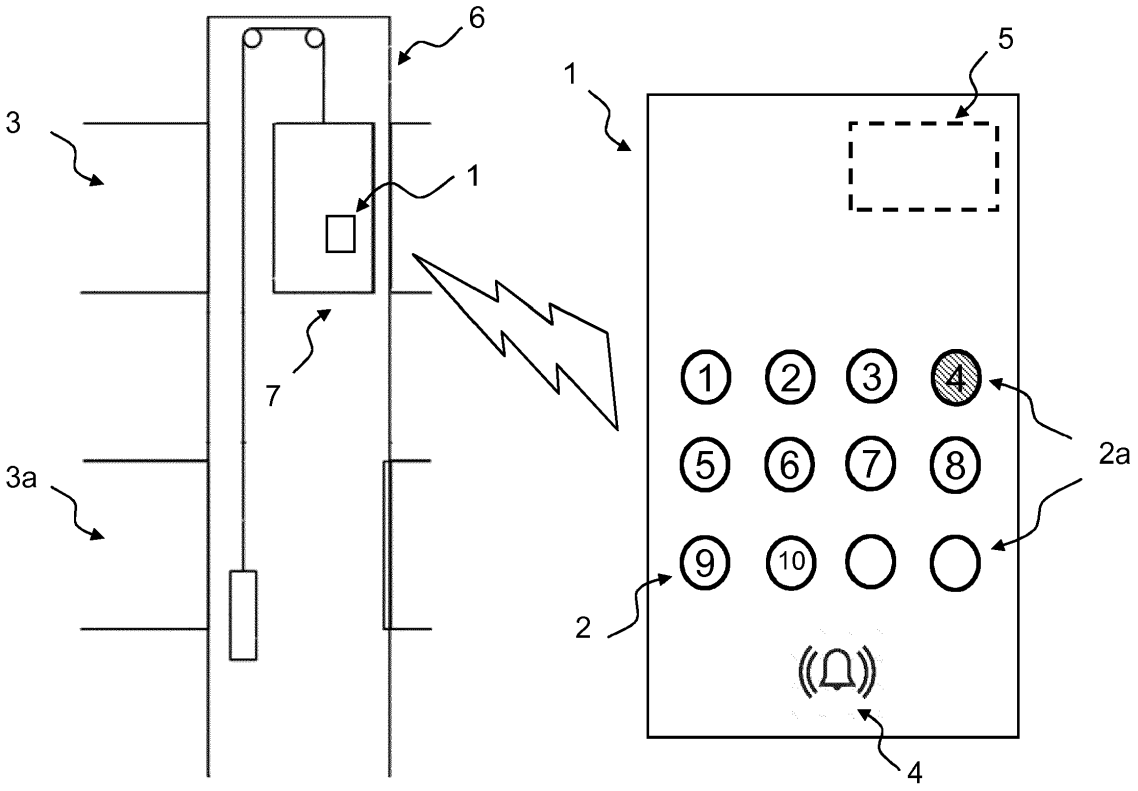

Fig.1

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Description

[0001] The present invention concerns an Elevator operation panel with a plurality of input objects and a method for operating an elevator call.

[0002] An elevator system may comprise an elevator car that is movable vertically in an elevator hoistway or elevator shaft by an electrical drive and that may be stopped at different floors of a building. All elevator systems are equipped with at least an elevator operating panel. As with other elevator fixtures, elevator operating panels vary in appearance and design in deferent forms, such as COP (car operation panel) and LOP (lobby operation panel). But the most of them contain following basic features: elevator call register pushbuttons, door open button, alarm button, communication system intercom or telephone etc.

[0003] Usually, an elevator system has a COP inside of an elevator car to give an elevator car call and a floor-control-panel outside of the elevator car to give an elevator floor call or to provide an elevator car calling, whereat the floor-control-panel is normally mounted on a wall in a floor and adjacent to a hoistway door. Some elevators have LOP situated at the different floors. A LOP in this application is to understand as a control panel which is different to a conventional floor-control-panel, as LOP provides a possibility for passengers to give a destination floor, e.g. the port-technology. An elevator call is thus to understand as a call operating using a LOP, a COP or a floor-control-panel. A floor-control-panel provides a user interface with one or more buttons which may be pushed by a passenger for generating a floor call and optionally for selecting the direction (up or down). On a LOP it is then no more necessary to provide one or two buttons for selecting a car moving direction. Every one of COP, LOP and floor-control-panels has normally a plurality of input objects corresponding to floors of a building respectively. The input objects can be constructed in form of push buttons or keys etc. and in form of input areas if an operation panel is a touchscreen.

[0004] Today, most companies are looking for a way to improve their development and at the same time decrease the production time and cost. More and more elevator companies or suppliers provides their products with a so-called "modular design". A modular design is a design approach that subdivides a system into smaller parts that can be independently created and then used in different systems. Therefore, elevator operation panels are provided as modular components sharing approximately the same form or function appear in different elevator systems. However, buildings have different number of floors. An elevator operation panel of a modular design, especially its input objects, cannot suit every elevator system or building exactly. There could be one or some input objects that are not used for a building. Such an input object should be blocked or leave blank.

[0005] To secure specific areas of a building for security purposes, not all input objects of an elevator operation panel are available for every passenger, although when all the input objects are already registered for the floors of this building. For example, access to specific floors of an office building is managed in respect of a rule of accessing rights so that employees can only access to the floor where they work. An access control could also be managed on a time schedule with standard access during business hours, but restricted during nighttime and weekends. Senior personnel and maintenance personnel may be granted with a full access to all floors and with a time scheduled limit for the maintenance staff respectively. In such case, until now an elevator will either ignore an unavailable elevator call or indicate the inaccessible floor numbers just in front of the elevator door outside of an elevator car.

[0006] CN104773624 A discloses a target floor registering method during an installation working of an elevator. If a register is done correctly, a voice signal will be sent to a microphone.

[0007] One Object of this invention is to further improve the operation function and comfort of an elevator operation panel.

[0008] Such an object may be achieved by the subject-matter of the independent claims. Further exemplary embodiments are evident from the dependent claims and the following description.

[0009] According to the present invention, an elevator operation panel comprises a plurality of input objects which at least partially correspond with floors of a building, wherein by an inputting activity an input object registers an elevator call. The elevator operation panel has at least one blank input object not corresponding to any floor of the building or at least one blocked input object which is configurable to block an inputting activity or to reject registering an elevator call for a corresponding floor. And the elevator operation panel comprises further an alarm device for generating an alarm signal, when an inputting activity is acted on the blocked or blank input object.

[0010] According to an embodiment, the elevator operation panel comprises a control unit to identify a person who has no access right to at least one limited floor of the floors of a building, whereas the blocked input object is configurable in relation to the restricted access rights of this person. This control unit identifies a person either by itself or with a help of a communication with a remote center.

[0011] One advantage hereof is that a warning feedback or indication will be generated for a passenger, when an inputting activity e.g. an elevator call cannot be recognized or accepted by an elevator or this passenger has no access right to a destination chosen by him-/herself. Consequently, the passenger has a better opportunity to recognize a wrongly or advertently inputted elevator call and correct it in time. The passenger can thus redo an elevator calling again or to check immediately whether the target floor is correct or not. So that is Optimizing the passenger traffic and saving energy.

[0012] The generated alarm signal could be an acoustic signal, a visible signal, a vibration signal and/or a haptic signal. Such an instant signal is especially advantageous for old people who have both vision and hearing impairment or handicapped people, e.g. blind or deaf people.

[0013] A further aspect of the invention relates to a method for operating an elevator call, the method comprising: corresponding with a plurality of input objects of an elevator operation panel to floors of a building, wherein by an inputting activity an input object registers an elevator call, configuring at least one blocked input object to block an inputting activity or to reject registering an elevator call, and generating an alarm signal by acting an inputting activity on the blocked input object.

[0014] Below embodiments of the present invention are described in more detail with reference to the attached drawings.

[0015] Embodiments of the invention are described with reference to the accompanying drawings. In the drawings, like reference numbers may indicate identical or functionally similar elements.

Fig. 1 shows a schematic view of an elevator operation panel according to the invention,

Fig. 2 shows a flow diagram for a method for operating an elevator call according to embodiments of this invention.

[0016] Fig. 1 represents an elevator operation panel 1 of an elevator 6. This elevator operation panel 1 is installed e.g. as a COP in an elevator car 7 of this elevator 6. This Figure shows also an enlarged view of this elevator operation panel 1 on the right side of the illustrated elevator 6.

[0017] On this elevator operation panel 1 there is a plurality of input objects 2, 2a which correspond at least partially with floors 3, 3a of a building where the elevator 6 is installed. So that these input objects 2, 2a are used to select a floor destination or give an elevator car call. The input objects 2, 2a are e.g. push buttons or keys etc. If the elevator operation panel 1 is a touchscreen, then the input objects 2, 2a can be as input areas or menu items on a layout of the HMI (Human-machine-interface) of the touchscreen. In the embodiment illustrated in the Fig.1, the input objects 2, 2a are push buttons. The numbers on the push button 2, 2a represent certain floors 3, 3a which are corresponded with these push buttons 2, 2a respectively. Therefore, a push button 2 will register an elevator call to a target floor 3, 3a for a passenger, when this passenger presses this push button 2.

[0018] For instance, the operation panel 1 of the Fig. 1 comprises totally twelve push buttons 2, 2a, but the building has only ten floors. There are three blocked push buttons 2a under the push buttons 2, 2a, wherein two blank buttons 2a have no floor number and are therefore superfluous and needless. The blank buttons 2a means that they do not correspond with any of the floors. Furthermore, another blocked button 2a having a floor number is for registering an elevator call to a limited floor 3a. The limited floor 3a means that this floor is not accessible for every passenger or for all times. The stripe pattern background of this blocked button 2a is only to illustrate that this blocked button 2a is a different button than the normal and blank push buttons 2, 2a. Accordingly, there is a control unit 5 which is e.g. integrated in the operation panel 1. This control unit 5 will identify a passenger whether he/she has an access right to a target floor 3a chosen by him/her. This identification can be executed by a remote center (not displayed) too which monitors this elevator 6. Hereby there is a lot of different possible solutions to such an identification, e.g. id-cards, iris-scanning, fingerprint or face recognition etc.

[0019] The operation panel 1 comprises further an alarm device 4 for generating an alarm signal, when an inputting activity is acted on the blocked or blank push buttons 2a. The alarm device 4 is e.g. a microphone or a buzzer which sounds to alert a passenger that this button is not useable or not available for this passenger. Additionally, this alarm device can emit an optical signal as an alarm signal, to make possible that a hearing-handicapped passenger can also be informed about this failure in time. An instant alert to passengers could be e.g. an audible voice message or announcement likes "Invalid floor!", "Invalid entry!" or "Floor not registered" etc.

[0020] Fig. 2 represents a flow diagram for operating an elevator call according to an embodiment of this invention.

[0021] When a passenger has taken an input activity 8 on an elevator operation panel 1 likes one represented in Fig.1, in the next step the elevator operation panel 1 will check whether this activity was done with an available input object 2. If it was an unavailable (blocked or blank) input object 2a, then an alarm signal will be generated 12. If the acted input object is available, then it is further to identify 10, whether this input activity was acted by an authorized passenger. If this passenger has an accessing right to the chosen destination, the inputted elevator call will be registered and executed 11. Otherwise, the operation panel 1 will reject 13 to register the elevator call and generate an alarm signal 12.

[0022] One advantage hereof is that a warning feedback or indication will be generated for a passenger if an inputting activity e.g. an elevator call cannot be recognized or accepted by an elevator operation panel 1 or this passenger has no access right to a destination. Consequently, the passenger has a better opportunity to recognize and correct wrongly or advertently inputted elevator calls in time. Then passenger can input an elevator calling again or to check immediately whether the chosen destination is correct or not. So that the passenger traffic can be optimized and the energy consumption will be hence saved.

[0023] The reference symbols used in the drawings,

and their meanings, are listed in summary form in the list of reference symbols. In principle, identical parts are provided with the same reference symbols in the figures.

[0024] While the invention has been illustrated and described in detail in the drawings and foregoing description, such illustration and description are to be considered illustrative or exemplary and not restrictive; the invention is not limited to the disclosed embodiments. Other variations to the disclosed embodiments can be understood and effected by those skilled in the art and practicing the claimed invention, from a study of the drawings, the disclosure, and the appended claims. In the claims, the word "comprising" does not exclude other elements or steps, and the indefinite article "a" or "an" does not exclude a plurality. A single processor or controller may fulfil the functions of several items recited in the claims. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage. Any reference signs in the claims should not be construed as limiting the scope.

List of reference signs

[0025]

1	Elevator operation panel
2	Input objects
2a	Blocked input object
3	Floors
3a	A limited floor
4	Alarm device
5	Control unit
6	Elevator
7	Elevator car
8	Step: inputting an elevator call
9	Step: checking an available input object
10	Step: identification
11	Step: registering an elevator call
12	Step: generating an alarm
13	Step: rejecting an elevator call

Claims

1. Elevator operation panel (1) having a plurality of input objects (2, 2a) which at least partially correspond with floors (3, 3a) of a building, wherein by an inputting activity an input object (2) registers an elevator call, comprising:

at least one blocked input object (2a), configurable to block an inputting activity or to reject registering an elevator call, and/ or
at least one blank input object, not corresponding with any of the floors of a building, and an alarm device (4) for generating an alarm signal when an inputting activity is acted on the blocked or blank input object (2a).

2. Elevator operation panel (1) of claim 1, comprising:

at least one blocked input object (2a), configurable to block an inputting activity or to reject registering an elevator call, and
a control unit (5) to identify a person who has no access right to at least one limited floor (3a) of these floors (3, 3a), whereas the blocked input object (2a) is configurable in relation to the restricted access right of the identified person.

3. Elevator operation panel (1) of claim 1 or 2, wherein the generated alarm signal is an acoustic signal, a visible signal, a vibration signal and/or a haptic signal.

4. Method for operating an elevator call, the method comprising:

corresponding with a plurality of input objects (2, 2a) of an elevator operation panel (1) to floors (3, 3a) of a building, wherein by an inputting activity an input objects (2) registers an elevator call,
configuring at least one blocked or blank input object (2a) to block an inputting activity or to reject registering an elevator call, and
generating an alarm signal when an inputting activity is acted on the blocked or blank input object (2a).

5. Method of claim 4, the method comprising:

identifying a person who has no access right to at least one limited floor (3a) of these floors (3, 3a), and
executing the configuration of the blocked input object (2a) in relation to the restricted access right of this person.

6. Method of claim 4 or 5, wherein
an acoustic signal, a visible signal, a vibration signal and/or a haptic signal is generated as the alarm signal.

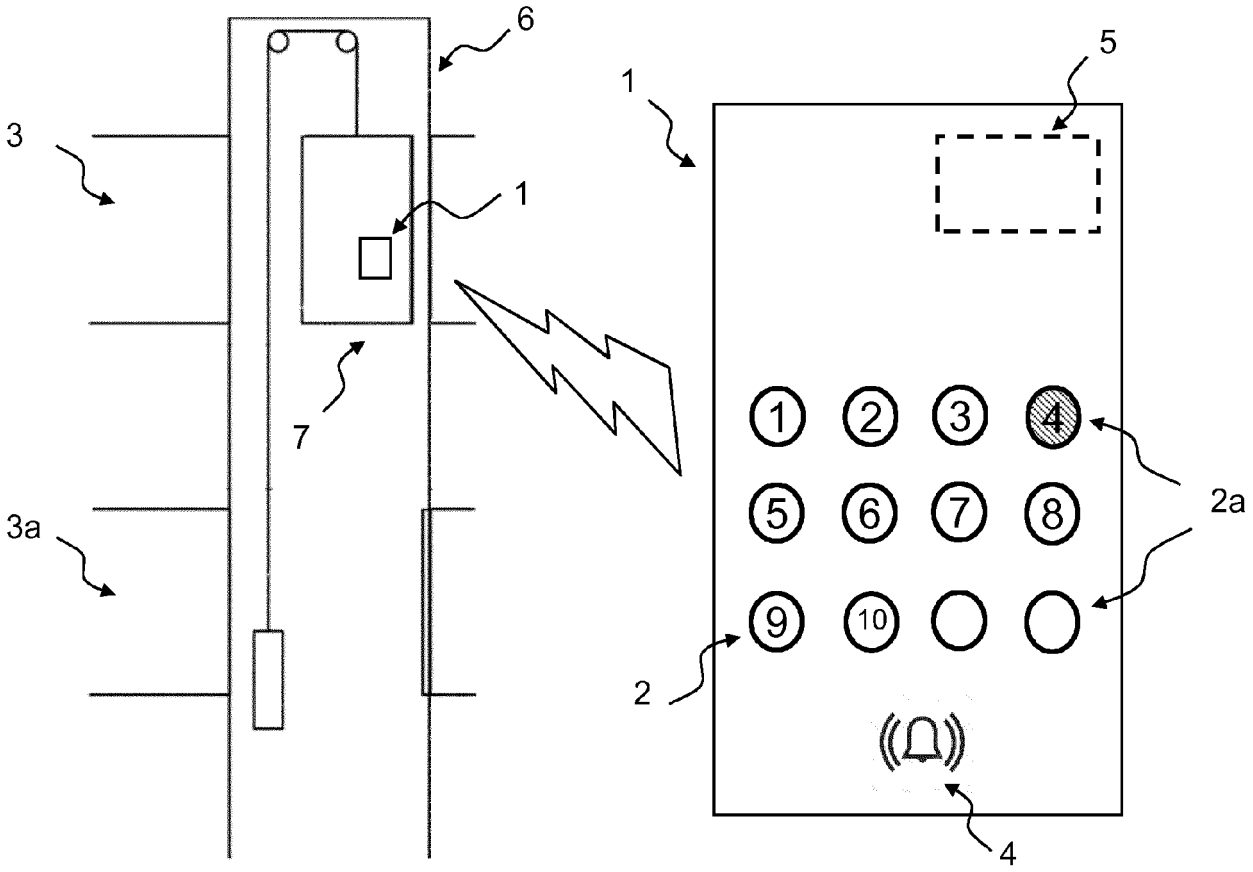

Fig.1

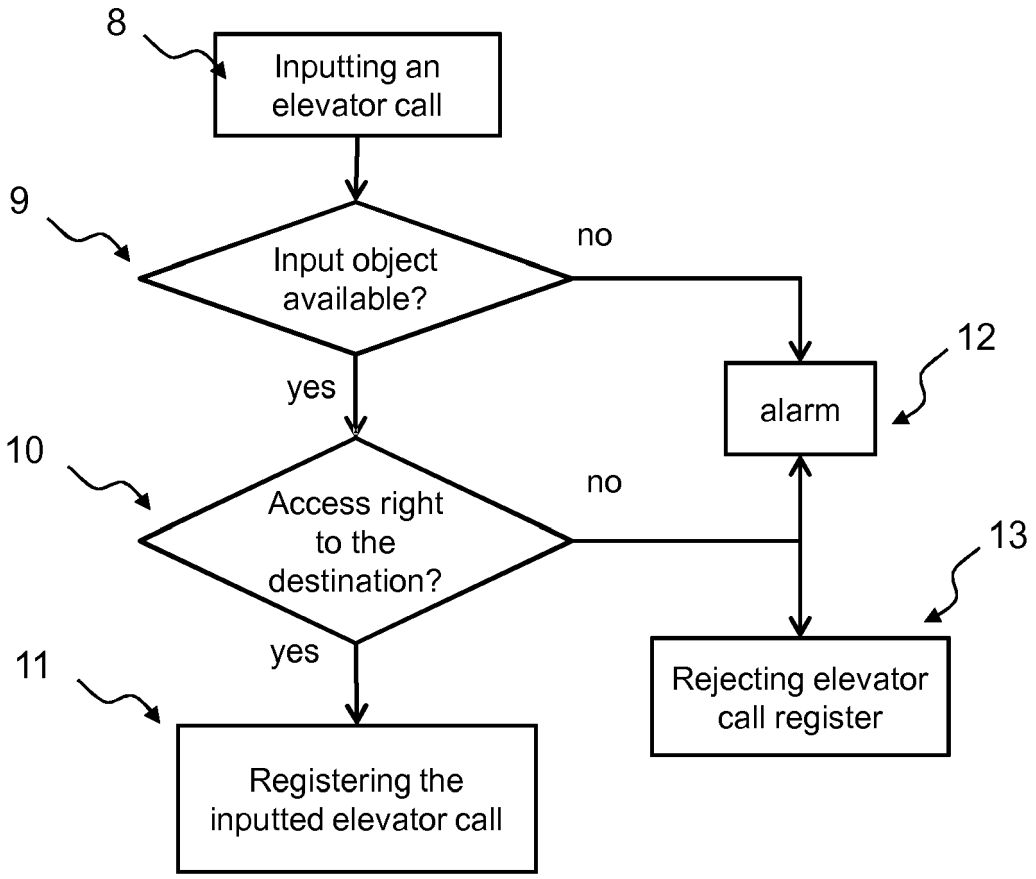
8
Inputting an elevator call
9
Input object available?
no
yes
12
alarm
10
Access right to the destination?
no
13
yes
11
Rejecting elevator call register
Registering the inputted elevator call

Fig.2

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EUROPEAN SEARCH REPORT

Application Number
EP 17 20 7138

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12 June 2018	Oosterom, Marcel

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 17 20 7138

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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