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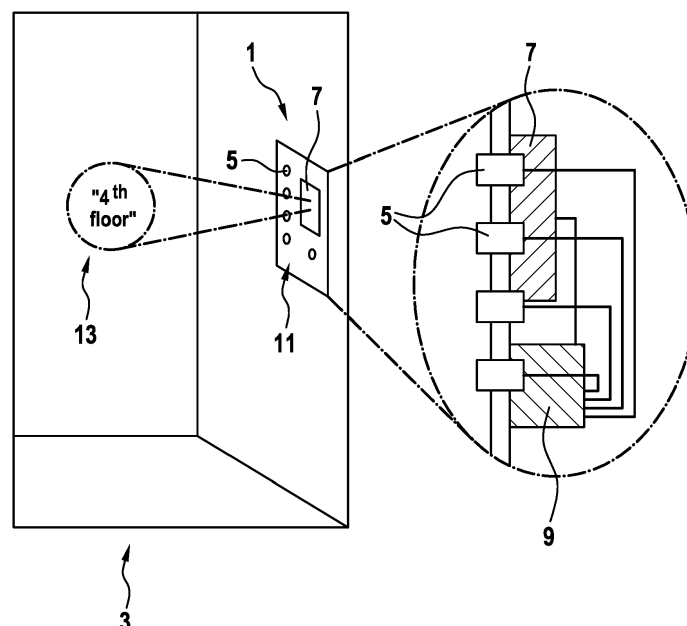
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(54) **METHOD FOR OPERATING A CAR OPERATING PANEL FOR AN ELEVATOR**

(57) A method for operating a car operating panel (1) in an elevator car (3) for an elevator is proposed. The method comprising (i) receiving a destination selection signal indicating a passenger's request for transportation to a selected destination floor; (ii) detecting an occupation degree indicating a current occupation of the elevator car; and (iii) outputting an audible feedback stating the selected destination floor in case the occupation degree is higher than a predetermined occupation limit.

While the approach presented herein appears to be simple, it may provide significant benefits with respect to improved traffic management, advantages for blind or handicapped people with low eye sight or lack of awareness or knowledge, improved customer satisfaction and/or increased life cycle of components. Furthermore, the approach presented herein may require no or only minor hardware modification of existing COPs but may mainly be implemented in software.

Fig. 1



Description

[0001] The present invention relates to a method for operating a car operation panel for an elevator and to a car operating panel configured for performing such method. The invention furthermore relates to a computer program product and to a computer readable medium.

[0002] Elevators generally have at least one car, sometimes also referred to as cabin, which may be displaced between various floors or levels within a building. Passengers may enter the car in order to be transported to another floor.

[0003] In order to be able to indicate a passenger's intended destination floor, a car operation panel (COP) is generally provided within the elevator car. The COP comprises a human-machine interface via which a passenger may input the destination floor to which he wants to be transported. Various types of human-machine interfaces may be applied in COPs.

[0004] In many cases, the COP comprises a plurality of push buttons with one push button being provided for each of a plurality of selectable destination floors. Therein, a push button may be a button which may be activated by a passenger by contacting and/or pushing it. For example, a push button may be a mechanical button which may be mechanically pressed down for actuation. Alternatively, a push button may be a capacitive sensor, an inductive sensor or another type of sensor which may be actuated by only touching it.

[0005] There may be a need for an improved car operating panel for an elevator or for an improved method for operating such COP. Particularly, there may be a need for an improved functionality and/or passenger comfort upon using a COP for elevator transportation. Furthermore, there may be a need for a computer program product configured for performing or controlling the proposed method and for a computer readable medium comprising such computer program product.

[0006] Such needs may be met with the subject-matter of the independent claims. Advantageous embodiments are defined in the dependent claims and in the following specification. According to a first aspect of the present invention, a method for operating a car operating panel in an elevator car for an elevator is proposed. The method comprises the following steps: (i) receiving a destination selection signal indicating a passenger's request for transportation to a selected destination floor; (ii) detecting an occupation degree indicating a current occupation of the elevator car; and (iii) outputting an audible feedback stating the selected destination floor in case the occupation degree is higher than a predetermined occupation limit.

[0007] According to a second aspect of the invention, a car operating panel for an elevator is proposed, the COP being configured for performing a method according to an embodiment of the first aspect of the invention.

[0008] Ideas underlying embodiments of the present invention may be interpreted as being based, inter alia,

on the following observations and recognitions.

[0009] As indicated above, a car operating panel is generally used for enabling passengers to input their request to be transported to a destination floor. However, conventionally, there is no or at most a minimal feedback from the car operating panel indicating that the passenger's request has been correctly received. For example, a minimal feedback may be established by a push button of the COP being illuminated upon actuation thereof. Alternatively, a minimal feedback may be issued by generating a simple sound or an audible "bing" issued upon actuation of a push button.

[0010] However, from such conventional minimal feedback, a passenger was not able to derive an information about which destination floor was actually selected at the COP unless the passenger was able to look at the COP and see for example the illuminated push button.

[0011] Accordingly, for example a person in a crowded elevator car having no direct view towards the COP was not able to receive a feedback about whether the intended selection of a destination floor has been correctly input and received by the COP.

[0012] It is therefore proposed to modify the operation of a COP such that, upon having received a destination selection signal indicating a passenger's request for transportation to a selected destination floor, an audible feedback, i.e. a feedback to be heard by a passenger, is outputted at least under certain predefined circumstances.

[0013] Particularly, this feedback shall state the selected destination floor. In other words, the audible feedback shall enable the passenger to derive an information about the destination floor requests actually received by the COP. This means that, depending on which destination selection signal is received by the COP, i.e. depending on for example which push button has been pressed at the COP, an individual audible feedback is issued by the COP.

[0014] However, such audible feedback may not have to be outputted under all circumstances. For example, as long as only few people are inside the elevator car, each passenger may generally see the COP and may therefore visually observe whether or not the COP was actuated for indicating a specific floor selection. In such cases, no audible feedback might be needed and, as outputting such audible feedback might annoy at least some passenger's, outputting the audible feedback may be suppressed in such circumstances of low car occupation.

[0015] However, when the elevator car is very crowded, i.e. a current occupation degree is high, at least some of the passengers in the elevator car might no more have a direct view onto the COP and might therefore no more visually observe themselves whether or not the COP was actuated as required. Accordingly, when such high occupation degree is detected, outputting of the audible feedback may be initiated upon the destination selection signal being received. In other words, according to the

method proposed herein, it may be detected whether or not the elevator car is occupied to more than a predetermined degree and, if or exclusively if this is the case, outputting of the audible feedback stating the selected destination floor is initiated.

[0016] Accordingly, even in a crowded elevator car in which at least for some passenger's a direct view towards the COP is blocked, each passenger in the car may hear the audible feedback and may therefore know which destination floors have already been selected for example upon pressing push buttons by other passengers. Same is true for blind passengers.

[0017] According to an embodiment, the audible feedback may be outputted as a voice message. Such voice message may be generated artificially, for example by a voice sound generator, and may include the information about the selected destination floor in a form of spoken words. Accordingly, the voice message may be easily understood by passengers.

[0018] According to an embodiment, the audible feedback comprises audible information about a floor identification of the selected destination floor. In other words, the audible feedback may comprise an audible information indicating for example a number of the selected floor (e.g. "floor number 4 is selected"), a name of the selected floor (e.g. "lobby is selected"), a function of the selected floor (e.g. "restaurant level is selected", "conference level is selected") or similar. Such information may be easily understood by passengers.

[0019] According to an embodiment, the destination selection signal is to be generated in the COP upon actuating a push button of the COP. Push buttons are an easy to implement option for destination selection in a COP.

[0020] According to an embodiment, the audible feedback is outputted via a speaker of the COP. Typically, COPs include one or more speakers integrated therein or connected thereto in order to for example enable communication between a passenger and a person being outside the elevator car, for example during emergency situations. Accordingly, the method proposed herein may be easily implemented by using such speaker. No additional hardware may be necessary.

[0021] According to an embodiment, the predetermined occupational limit is more than 50%, alternatively more than 60%, more than 70%, more than 80% or more than 90%, of an allowable maximum occupation of the elevator car. Therein, the allowable maximum occupation of the elevator car may be a nominal weight admitted for the elevator car or a nominal number of passengers admitted for the elevator car. Accordingly, the audible feedback is outputted only when the elevator car is occupied to for example more than 50% of the admitted nominal weight or 50% of the admitted nominal number of passengers.

[0022] According to an embodiment, the occupation degree is detected based on a measured current load of the elevator car. In other words, whether or not the pre-

determined occupational limit is exceeded such that the audible feedback is to be outputted upon receiving the destination selection signal is decided on measurement values representing the current load of the elevator car.

5 Generally, the load of the elevator car directly relates to the weight of the elevator car which, in most elevators, is continuously monitored. Thus, as car weight measuring systems are already present in most elevators, the proposed method may be easily implemented using their signals representing the current load of the elevator car.

10 **[0023]** As an alternative embodiment, the occupation degree may be detected based on a counted number of passengers in the elevator car. In other words, provisions may be made in an elevator for counting the current number of passengers having entered the elevator car and the corresponding information may be used for deciding whether or not the predetermined occupational limit is exceeded. The number of passengers may be determined for example based on information is from a camera system included in the elevator car, information from a light curtain at the car door, information from motion sensors, infrared sensors or other sensors, etc.

15 **[0024]** According to an embodiment, the car operating panel proposed herein may comprise a human machine interface, a speaker and a controller. The human machine interface may be configured for generating a destination selection signal indicating a passenger's request for transportation to a selected destination floor. The speaker may be configured for outputting an audible feedback. The controller may be configured for receiving the generated destination selection signal and for controlling the speaker such as to output an audible feedback stating the selected destination floor. Using such COP, an audible information may be given to passengers for informing about which destination floors are currently selected.

20 **[0025]** Particularly, according to an embodiment, the human machine interface may be implemented using a plurality of push buttons. Such implementation may be easily established using reliable and/or low-cost technical means.

25 **[0026]** The car operating panel as proposed herein and the method for operating such COP may generally be implemented with COPs having conventional hardware. In other words, no additional hardware has to be necessarily included in a COP in order to enable outputting of the audible feedback stating the selected destination floor. Particularly, COPs with conventional hardware may be modified by means of software such as to implement the idea proposed herein.

30 **[0027]** Accordingly, a third aspect of the invention relates to a computer program product comprising computer readable instructions which, when performed by a processor of a controller of a COP, instruct the controller to perform and/or control the method according to an embodiment of the first aspect of the invention. Such computer program product may be implemented in an arbitrary one of a variety of computer languages. Specif-

ically, the computer program product may be adapted for addressing a speaker for outputting an audible feedback for example in the form of a voice message.

[0028] According to a fourth aspect of the invention, a computer readable medium comprising a computer program product according to an embodiment of the third aspect of the invention is proposed. Such computer readable medium may be any medium on which computer readable instructions may be stored. For example, the computer readable medium may be a flash memory, a CD, a DVD, a ROM, a PROM, an EPROM, etc. Alternatively, the computer readable medium may be any computer on which the computer program product is stored and which forms a server from which the computer program product may be downloaded, for example via a network such as the Internet.

[0029] It shall be noted that possible features and advantages of embodiments of the invention are described herein partly with respect to a method for operating a COP and partly with respect to a COP specifically adapted for performing such method. One skilled in the art will recognize that the features may be suitably transferred from one embodiment to another and features may be modified, adapted, combined and/or replaced, etc. in order to come to further embodiments of the invention.

[0030] In the following, advantageous embodiments of the invention will be described with reference to the enclosed drawing. However, neither the drawing nor the description shall be interpreted as limiting the invention.

[0031] Fig. 1 shows an elevator car with the car operating panel according to an embodiment of the present invention.

[0032] The figures are only schematic and not to scale. Same reference signs refer to same or similar features.

[0033] Fig. 1 shows an elevator car 3 in which a car operating panel 1 according to the present invention is installed. The COP 1 comprises a plurality of push buttons 5 serving as a human machine interface 11, a speaker 7 and a controller 9.

[0034] In normal operation, when a passenger enters the car 3, he may indicate that he wants to be transported to a destination floor by pushing the respective push button 5 on the COP 1. In such way, the COP one receives a destination selection signal from the push button 5 actuated by the passenger. Thus, the push button 5 serves as a human-machine interface. The destination selection signal indicates the passenger's request for transportation to the selected destination floor. This destination selection signal is then transmitted to the controller 9 of the COP 1. Upon registering this destination selection signal, the controller 9 retrieves information which allows to detect a current occupation degree indicating a current occupation of the elevator car 3. Such information may be retrieved for example from a weight sensor of the elevator indicating a current load carried by the elevator car 3. In case it is detected that the current occupation degree exceeds a predetermined occupational limit of for example 50% of an admitted nominal weight of the elevator

car 3, the controller 9 addresses the speaker 7 and controls the speaker such as to output an audible feedback stating the selected destination floor. Particularly, the audible feedback may be output as a voice message 13 indicating the floor identification of the selected destination floor. In the example shown, a voice message 13 indicating "fourth floor" is emitted.

[0035] With the approach disclosed herein, for example efforts to select same destination floor calls may be reduced. For example, in a crowded car 3, when a first passenger presses one of the push buttons 5 for selecting a destination floor, all other passengers in the car 3 will be informed about this selection by the outputted audible feedback. Accordingly, those other passengers who also want to be transported to the selected destination floor do no more have to approach the COP 1 and press the same push button 5. In this way, customer satisfaction may be increased. Furthermore, usage of the push buttons 5 may be reduced, thereby potentially reducing any wear effects and, in the end, possibly increasing a lifetime of the COP 1.

[0036] Another advantage may be that, for example in a crowded car 3, a person, which may not reach out to the COP 1, may ask another person to actuate a desired push button 5 for destination floor selection and may then verify that the COP 1 has been correctly actuated upon hearing the audible feedback output by the COP 1.

[0037] Furthermore, for example blind people or handicapped people may benefit from the audible feedback output by the COP 1.

[0038] Overall, the approach presented herein appears to be simple but may provide significant benefits with respect to improved traffic management, advantages for blind or handicapped people with low eye sight or lack of awareness or knowledge, improved customer satisfaction and/or increased life cycle of components. Furthermore, the approach presented herein may require no or only minor hardware modification of existing COPs but may mainly be implemented in software.

[0039] Finally, it should be noted that the term "comprising" does not exclude other elements or steps and the "a" or "an" does not exclude a plurality. Also elements described in association with different embodiments may be combined. It should also be noted that reference signs in the claims should not be construed as limiting the scope of the claims.

List of reference signs

[0040]

1	car operating panel
3	elevator car
5	push button
7	speaker
9	controller
11	human-machine interface
13	voice message

Claims

1. Method for operating a car operating panel (1) in an elevator car (3) for an elevator, the method comprising:

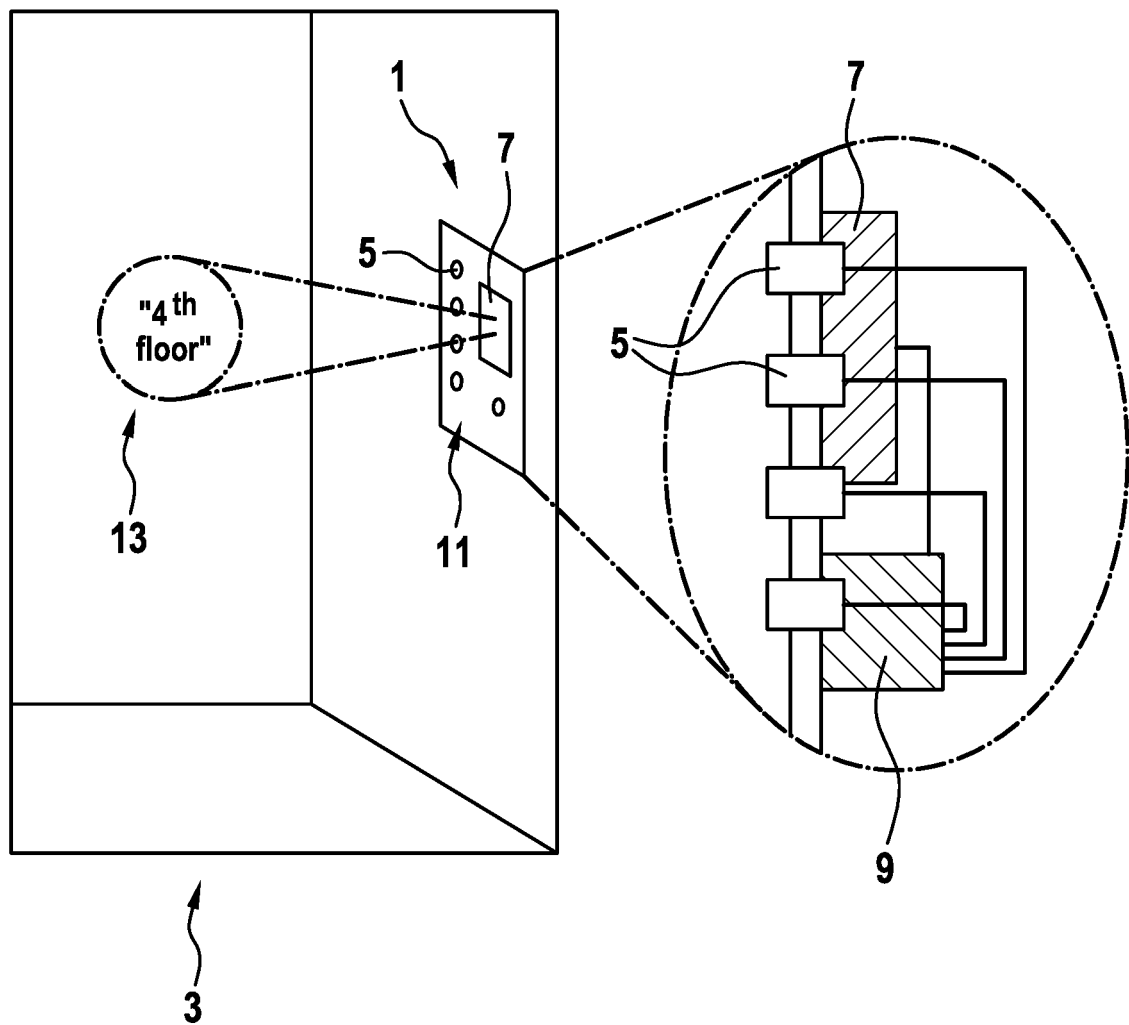
receiving a destination selection signal indicating a passenger's request for transportation to a selected destination floor;
 detecting an occupation degree indicating a current occupation of the elevator car (3); and
 outputting an audible feedback stating the selected destination floor in case the occupation degree is higher than a predetermined occupation limit.
2. Method of claim 1, wherein the audible feedback is outputted as a voice message (13).
3. Method of one of claims 1 and 2, wherein the audible feedback comprises audible information about a floor identification of the selected destination floor.
4. Method of one of claims 1 to 3, wherein the destination selection signal is to be generated by actuating a push button (5) of the car operating panel (1).
5. Method of one of claims 1 to 4, wherein the audible feedback is outputted via a speaker (7) of the car operating panel (1).
6. Method of one of claims 1 to 5, wherein the predetermined occupation limit is more than 50% of an allowable maximum occupation of the elevator car (3).
7. Method of one of claims 1 to 6, wherein the occupation degree is detected based on a measured current load of the elevator car (3).
8. Method of one of claims 1 to 7, wherein the occupation degree is detected based on a counted number of passengers in the elevator car (3).
9. Car operating panel (1) for an elevator, configured for performing a method according to one of claims 1 to 8.
10. Car operating panel of claim 9, comprising:

a human-machine interface (11) being configured for generating a destination selection signal indicating a passenger's request for transportation to a selected destination floor;
 a speaker (7) being configured for outputting an audible feedback;
 a controller (9) being configured for receiving the generated destination selection signal and

for controlling the speaker (7) such as to output an audible feedback stating the selected destination floor.

11. Car operating panel of one of claims 9 and 10, wherein the human machine interface (11) comprises a plurality of push buttons (5).
12. Computer program product comprising computer readable instructions which, when performed by a processor of an controller (9) of a car operating panel (1), instruct the controller (9) to one of perform and control the method according to one of claims 1 to 8.
13. Computer readable medium comprising a computer program product according to claim 12 stored thereon.

Fig. 1





EUROPEAN SEARCH REPORT

Application Number
EP 17 17 8177

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 2009 249058 A (MITSUBISHI ELEC BUILDING TECHN) 29 October 2009 (2009-10-29) * abstract * * paragraphs [0001], [0007] - [0029] * * figures 1-3 *	1-13	INV. B66B3/00 B66B1/46
A	JP 2016 005982 A (HITACHI LTD) 14 January 2016 (2016-01-14) * abstract * * paragraphs [0001], [0008] - [0019] * * figures 1, 2 *	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			B66B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 15 December 2017	Examiner Oosterom, Marcel
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 17 17 8177

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2009249058 A	29-10-2009	NONE	
JP 2016005982 A	14-01-2016	NONE	

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