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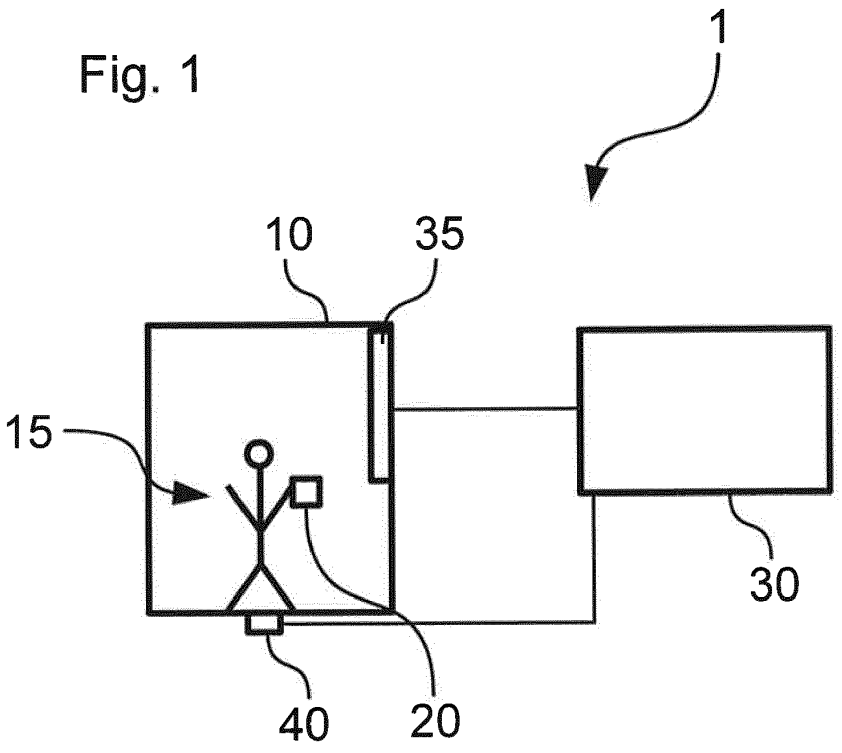
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(54) **METHOD FOR CONTROLLING AN ELEVATOR CABIN OF AN ELEVATOR SYSTEM**

(57) A method for controlling an elevator cabin (10) of an elevator system (1) is disclosed, comprising the following steps: detecting the presence of a short range device (20) at a shaft door of a first floor; identifying the short range device (20) by receiving an identification number of the short range device (20); if the short range device (20) has a registered identification number stored in a database - generating a call for moving the elevator cabin (10) to the first floor; - opening a door of the elevator cabin (10) when the elevator cabin (10) is at the first floor; - detecting that the short range device (20) has entered the elevator cabin (10); - generating a call for moving the elevator cabin (10) to a preset second floor, wherein the preset second floor depends on the identified short range device (20); and - opening the door of the elevator cabin (10) at the second floor when the elevator cabin (10) is at the second floor.

Fig. 1



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Description

[0001] The present invention pertains to a method for controlling an elevator cabin of an elevator system and to an elevator system.

[0002] Many methods for controlling an elevator cabin of an elevator system are known. Typically the cabin is called by pressing a button at the floor where the elevator cabin should be entered. After moving the elevator cabin to the floor, the person enters the elevator cabin and inputs the floor whereto the person wants to be moved with the elevator cabin via buttons.

[0003] One disadvantage thereof is that, normally, disabled people, in particular paraplegic or quadriplegic people, have difficulties using the elevator system, since pressing a button at the floor entering the elevator cabin and a button inside the elevator can be very hard or almost impossible for them. Furthermore, generally, many people are not comfortable touching a surface which is touched by many other people. Also, generally, using a common touching surface can transmit contagious diseases and, thus, may endanger the health of the users of the elevator system under unfavorable circumstances.

[0004] There may be a need for an elevator system wherein no touching of any surfaces is necessary for using the elevator.

[0005] Such needs may be met by the subject-matter of the independent claims. Advantageous embodiments are defined in the dependent claims.

[0006] An aspect of the invention pertains to a method for controlling an elevator cabin of an elevator system, comprising the following steps: detecting the presence of a short range device at a shaft door of a first floor; identifying the short range device by receiving an identification number of the short range device; if the short range device has a registered identification number stored in a database - generating a call for moving the elevator cabin to the first floor; - opening a door of the elevator cabin when the elevator cabin is at the first floor; - generating a call for moving the elevator cabin to a preset second floor, wherein the preset second floor depends on the identified short range device; and - opening the door of the elevator cabin at the second floor when the elevator cabin is at the second floor.

[0007] One advantage thereof is that generally no buttons and, thus, no surfaces have to be touched by the user. Also, disabled user, in particular paraplegic or quadriplegic people, can use the elevator system without assistance, in general. Generally, the disabled person only has to move itself and/or be moved into the elevator cabin and out of the elevator cabin. Furthermore, typically, the transfer of contagious diseases is strongly reduced, since no common touching surface is used. In addition, usually, no misentry of the destination floor is possible, since the destination floor is associated/linked with the short range device. In particular, in residential buildings, where tenants move from the same first floor to the same second floor at almost all times (mostly from the street level to the level with his/her apartment and the other way round), the method also saves a lot of time and reduces the number of wrong entries into the elevator system when dialling the floor whereto the elevator should move, normally.

[0008] Generally, the term "at a shaft door of a first floor" can comprise locations/positions "near the shaft door of a first floor", in particular ranges between 0.2 m and 10.0 m from the shaft door at the first floor. Normally, the range can be between 0.2 m and 5 m. Also, generally, distances of lower than 2 m away from the shaft door of a first floor, e.g., 1.0 m and less, can be necessary to be considered as being "at a shaft door of a first floor".

[0009] Usually, the identification number of the short range device can be the serial number or device address of the short range device or a part thereof. E.g., the identification number can be the identification number of the Bluetooth device. Also, normally, the identification number can be any other identification means to (uniquely) identify the short range device, e.g., a MAC-address (media-access-control-address). Furthermore, generally, the identification number can be a programmable/changeable number of the short range device. Normally, relevant can be that the identification number is unique in the database. Thus, generally, the identification number can be unambiguously association/linked to a floor or floors (first floor and second floor) stored in the database. Generally, the short range device can be a wireless device using radio frequency with low power, e.g., less than ca. 25 mW to ca. 100 mW effective radiative power (ERP). Normally, in most countries no license for the use of short range devices is needed. In particular, the short range device can be a mobile phone.

[0010] Usually, the shaft door at the first floor can be the stationary door of the elevator at the first floor. Generally, the shaft door can be not identical with the door of the elevator cabin.

[0011] Generally, the database can be any kind of organized collection of data. Usually, the database can have any format.

[0012] Another aspect of the invention pertains to an elevator system comprising - an elevator cabin for transporting persons and/or goods, - a control unit for controlling the elevator cabin, and - a short range communication device for detecting the presence of a short range device at a shaft door of a first floor and for identifying the short range device by an identification number of the short range device; wherein the control unit is adapted - for generating an elevator call to the first floor if the detected short range device has a short range identification number which is registered in a database; - for opening the door of the elevator cabin when the elevator cabin is at the first floor if the detected short range device has a short range identification number which is registered in the database, - for generating an elevator call to a preset second floor, wherein the preset second floor depends on the identified short range device, and - for opening the door of the elevator cabin at the second floor when

the elevator cabin is at the second floor.

[0013] One advantage thereof is that generally no buttons and, thus, no surfaces have to be touched by the user when using the elevator system. Also, disabled user, in particular paraplegic or quadriplegic people, can use the elevator system without assistance, in general. Generally, the disabled person only has to move itself and/or be moved into the elevator cabin and out of the elevator cabin. Furthermore, typically, the transfer of contagious diseases is strongly reduced, since no common touching surface is used. In addition, usually, no misentry of the destination floor is possible, since the destination floor is associated/linked with the short range device. In particular, in residential buildings, where tenants move from the same first floor to the same second floor at almost all times (mostly from the street level to the level with his/her apartment and the other way round), the elevator system allows to save a lot of time and reduces the number of wrong entries into the elevator system when dialling the floor whereto the elevator should move, normally.

[0014] Ideas underlying embodiments of the present invention may be interpreted as being based, inter alia, on the following observations and recognitions.

[0015] According to an embodiment, the method further comprises the following step: detecting that the short range device has entered the elevator cabin after the doors of the elevator cabin are opened at the first floor and before moving the elevator cabin to the preset second floor. Generally, this ensures technically easily that the person/goods with the short range device has entered the elevator cabin. Thus, the safety and reliability of the elevator system is enhanced, normally.

[0016] According to an embodiment, the entering of the short range device into the elevator cabin is detected by detecting a person and/or goods carrying the short range device entering the elevator cabin. By this, usually, the entering of the short range device can be detected technically easily.

[0017] According to an embodiment, the entering of the person and/or the goods is detected by a weight sensor and/or an infrared sensor. Generally, by this the entering of a person and/or goods can be detected technically easily and reliably. Normally, this ensures that the shaft door at the first floor as well as the door of the elevator cabin can be opened until the person and/or the goods have entered the elevator cabin. This increases the security of the operation of the elevator system, generally.

[0018] According to an embodiment, the short range device is a Bluetooth device and/or a RFID device. One advantage thereof, that the method can be used with low-priced equipment, generally. Generally, a Bluetooth device can be any device which uses short-wavelength UHF radio waves in the ISM band from 2.4 GHz to 2.485 GHz for wireless communication. Normally, a Bluetooth device can use Bluetooth as described in the norm IEEE Std 802.15.1™-2002 which was published June 14, 2002.

[0019] According to an embodiment, an exiting of the short range device out of the elevator cabin is detected. Generally, this ensures technically easily that the person/goods with the short range device has exited the elevator cabin. Thus, the safety and reliability of the elevator system is enhanced, normally.

[0020] According to an embodiment, an exiting of the short range device out of the elevator cabin is detected by detecting a person and/or goods carrying the short range device exiting the elevator cabin. Generally, by this the exiting of a person and/or goods can be detected technically easily and reliably. Normally, this ensures that the shaft door at the second floor as well as the door of the elevator cabin can be opened until the person and/or the goods have exited the elevator cabin. This increases the security of the operation of the elevator system, generally.

[0021] According to an embodiment, the call for moving the elevator cabin to the first floor is generated only if the short range device has a registered identification number stored in a database and if the first floor is saved in connection with the short range device in the database. Usually, by this, calling the elevator cabin via the short range device is only possible at floors which are stored in connection with/linked with the short range device in the database. This enhances the security of the usage of the elevator system, normally.

[0022] According to an embodiment, the method further comprises the following step: inputting identification numbers of short range devices and a corresponding floor or corresponding floors into the database. This ensures that the database can amended technically easily.

[0023] According to an embodiment, an opening time of the door of the elevator cabin at the first floor and/or at the second floor depends on the identified registered short range device, wherein the opening time is the time during which the door of the elevator cabin is left open. Generally, this facilitates the entering and/or exiting of a disabled person into/out of the elevator cabin. Furthermore, normally, this also saves time, since the door or doors of the elevator cabin are only left open as long the short range device/person with the short range device normally needs to enter the elevator cabin. Generally, the opening time can be shorter for non-handicapped persons and can be longer for persons with minor handicaps/disabilities and can be even longer for persons with major handicaps/disabilities (paraplegic people). This opening time can be stored in the database linked/in connection with the short range device/the identification number of the short range device.

[0024] According to an embodiment, the control unit is further adapted for detecting that the short range device has entered the elevator cabin. Generally, this may be done with one or more short range communication devices within the elevator cabin. Generally, this ensures technically easily that the person/goods with the short range device has entered the elevator cabin. Thus, the safety and reliability of the elevator system is enhanced,

normally.

[0025] According to an embodiment, the elevator system further comprises a weight sensor and/or an infrared sensor for detecting the entering and/or exiting of a person and/or goods carrying the short range device the elevator cabin. By this, in general, the entering of the short range device can be detected technically easily.

[0026] According to an embodiment, the control unit is a single-board-computer. One advantage thereof is, generally, that the elevator system can be very low-priced.

[0027] According to an embodiment, the short range device is a Bluetooth device and/or a radio-frequency identification device. One advantage thereof is, generally, the elevator system can be low-priced. Furthermore, generally, many devices normally in use by a person, e.g., mobile phones etc., can be used as short range device.

[0028] 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.

Fig. 1 shows a schematic view of the elevator system according to an embodiment of the invention.

[0029] The figures are only schematic and not to scale.

[0030] Fig. 1 shows a schematic view of the elevator system 1 according to an embodiment of the invention. The elevator system 1 comprises at least one elevator cabin. The elevator cabin has one or more doors for letting people and/or goods enter the elevator cabin and exit the elevator cabin 10. The elevator cabin 10 is adapted for transporting persons 15 and/or goods.

[0031] Typically, at each floor there are one or more stationary shaft doors.

[0032] The elevator system 1 comprises a control unit which is connected to a short range communication device 35. The control unit controls the movement of the elevator cabin 10 and the opening and closing of the doors of the elevator system 1.

[0033] The control unit is connected with a database. The database stores the identification number of short range devices. The short range device 20 communicates wireless over a short distance or range with the control unit 30. The short range device 20 can be a device communicating via Bluetooth, radio-frequency identification (RFID) etc. among others. The short range device 20 can be an active or a passive radio-frequency identification (RFID) device.

[0034] The control unit 30 needs only limited computational power and limited random access memory, since the computing done is quite simple and the information to be stored is very limited.

[0035] The control unit 30 can be a single-board-computer. The single board-computer can be a Raspberry Pi manufactured/distributed by the Raspberry Pi Foundation, United Kingdom or a C.H.I.P. manufactured/distributed by Next Thing Company, Oakland, California. The control unit 30 can be an embedded system.

[0036] The single-board computer can be a Raspberry Pi Zero, a Raspberry Pi 2 Model B and/or a Raspberry Pi 3 Model B. The CPU can be an ARM Cortex-A7 (900 MHz) or an ARM Cortex-A53 (1200 MHz) manufactured by ARM Holdings Plc., Cherry Hinton, United Kingdom. The RAM can be 512 MB or 1024 MB, for example.

[0037] In particular, the elevator system 1 is suited for low-rise to mid-rise buildings. The number of floors can be 50, 30, 20, 15 floors or below 12 floors, e.g., 10 or 8 floors. In particular, the elevator system 1 is suited for residential buildings.

[0038] In a residential building, the elevator rides are normally limited to two types for each resident: from the ground level/street level (where the person 15 enters the building) to the floor where the person 15 /resident lives; and from the floor where the residents live to the ground floor/street level (where the person 15 exits the building). Rides between floors which do not include the ground floor (floor to enter and exit the building) are rare.

[0039] Also, visitors to the building ride from the ground floor to the floor where the person 15 to visit lives, normally.

[0040] The short range device 20 is registered in the elevator system 1 by inputting/registering the (unique) identification numbers of the short range devices in a database. Also, the floor where the resident lives or where the visitor wants to go with the short range device 20 is stored in the database. Each person 15 carries a (registered) short range device 20 to use the elevator system 1.

[0041] The short range device 20 can be the mobile phone of the person 15.

[0042] Also, it is possible to transport goods with the elevator system 1. The goods can be transported by automobile vehicles. The automobile vehicle and/or the goods comprise a short range device 20. The unique identification number of the short range device 20 and the destination floor, whereto the goods shall be transported, are stored in the database.

[0043] The elevator system 1 detects the proximity of a person 15 who is in physical possession of the short range device 20. When the person 15 with the short range device 20 approaches the shaft door or shaft doors at a first floor/level (which does not have to be or is not the ground floor/street level), the short range device 20 connects with the short range communication device 35 of the elevator system 1. For example, there is a short range communication device 35 with a sender/receiver for communicating with the short range devices 20 at each floor.

[0044] The short range communication device 35 connects with the short range device 20 when the short range device 20 is in the proximity of the shaft door, i.e., at/near the shaft door, for example within 10 m, 5 m, 2 m or within 1 m of the shaft door. When the short range communication device 35 connects with the short range device 20, the unique identification number of the short range

device 20 is received by the communication device. The control unit 30 receives the identification number of the short range device 20. The received identification number is looked up in the database. The database stores all registered identification numbers of short range devices 20 and their corresponding rides or floors, i.e., from which floor to which floor the short range device 20 with the person 15 /goods should be transported.

[0045] If the identification number cannot be found in the database, either nothing happens or an indication signal is generated. The indication signal can cause an information text to be shown on a display at that level/floor (e.g. "identification number unknown/not registered") and/or on the short range device 20 (e.g. a mobile phone) itself. Additionally or alternatively, an audio signal may be played, either via loudspeakers at the floor and/or via the short range device 20.

[0046] If the identification number is found in the database, a call to the elevator cabin 10 of the elevator system 1 is generated to bring/move the elevator cabin 10 to the floor where the short range device 20 with the person 15 /goods is at. This floor will be called "first floor" in the following (nota bene that the "first floor" is normally not the ground floor/street level of the building).

[0047] Furthermore, information that the identification number was found in the database and that the elevator cabin 10 is called can be displayed at the first floor and/or shaft door and/or on the short range device 20 itself (e.g. "identification number found, cabin is called"), when the identification number was found in the database. Additional information about the approximate waiting time for the elevator cabin 10 etc. can be displayed, too.

[0048] When the elevator cabin 10 has arrived (or already is) at the first floor, the door or doors of the elevator (and the door or doors of the elevator cabin 10) are opened. Furthermore, an arrival information notice can be send to the short range device 20.

[0049] The person 15 and/or goods with the short range device 20 enters the elevator cabin 10. The entering of the person 15 and/or goods can be detected with a weight sensor 40 which detects an increase in weight of the elevator cabin 10 and its contents. Additionally or alternatively hereto, a motion sensor and/or an infrared sensor can detect the entering of the person 15 and/or goods with the short range device 20.

[0050] Also, a change in the signal intensity of the signal of the short range device 20 at different points can be used to detect the entering of the short range device 20 into the elevator cabin 10. For this, a multitude of short range communication senders/receivers is advantageous.

[0051] Since the elevator system 1 is especially suited for disabled persons, the opening of the door or doors can be extended (compared to the normal time limit), so that disabled persons have enough time to enter the elevator cabin 10.

[0052] Also, the automatic vehicle for transporting goods with the short range device 20 can enter the elevator cabin 10.

[0053] After the person 15 and/or goods with the short range device 20 has/have entered the elevator cabin 10 or it is presumed that they had enough time to enter the elevator cabin 10, the shaft door at the first floor and the elevator cabin door or doors are closed.

[0054] Typically, the shaft door or shaft doors at the floor where the elevator cabin 10 is, are opened/closed at the same time the door or doors of the elevator cabin 10 are opened/closed. Normally, the shaft doors can be the doors delimiting the shaft/duct wherein the elevator cabin 10 is moved from the floors, respectively.

[0055] The database comprises the destination floors for each identification number of a short range device 20. For each identification number one destination floor or two floors is/are stored in the database. As soon as the short range device 20 has been identified and, thus, the person 15 carrying the short range device 20, the destination floor is looked up in the database. This information can be used for controlling the movement of the elevator cabin 10 and/or elevator cabins 10, in particular when the elevator is in use or used by/for somebody else.

[0056] After closing the doors, the elevator cabin 10 is moved to the destination floor which is stored for that particular short range device 20 in the database. No entering of the destination floor via the short range device 20 (e.g., an app on a mobile phone as short range device 20) and/or a pad is necessary. Thus, no touching of any surface of the elevator is necessary when using the elevator, so-called "hands free" use.

[0057] The elevator cabin 10 can be controlled so that the elevator cabin 10 is moved to other floors before it is moved to the destination floor of that short range device 20 while the short range device 20 is inside of the elevator cabin 10 in the framework of an efficient elevator control as it is known in the state of the art. This is relevant when the elevator is in use for other users.

[0058] When the elevator cabin 10 has been moved to the destination floor/second floor, the shaft door or doors and the elevator cabin door or doors is/are opened. The person 15 and/or goods carrying the short range device 20 can exit the elevator cabin 10. The exiting of the short range device 20 out of the elevator cabin 10 can be monitored via several short range communication devices 35 which detect the change of signal of the short range device 20. Additionally or alternatively, a weight sensor 40 and/or an infrared sensor can detect the exiting of the person 15 /goods holding or carrying the short range device 20. When the person 15 /goods have exited the elevator cabin 10, the doors of the elevator and the doors of the elevator cabin 10 can close.

[0059] The elevator system 1 can comprise so-called VIP calls (calls of a very important person). One or more short range devices 20 and their corresponding identification number/numbers can be flagged as VIP in the database. If a short range device 20 flagged as VIP comes in proximity of the shaft door at a first floor, a VIP call for an elevator cabin 10 is generated. A VIP call can override

any previous calls or planned movements by the elevator cabin 10. The elevator cabin 10 is moved as fast/soon as possible to the floor where the short range device 20 flagged as VIP is. Then, after the short range device 20 flagged as VIP in the database has entered the elevator cabin 10, the elevator cabin 10 is moved to the destination floor of the short range device 20 without any stops at any other floors. Thus, no other passenger can call the elevator or is transported to his/her destination floor, when the transportation/movement of a short range device 20 flagged as VIP is underway.

[0060] Any other requests/calls for an elevator cabin 10 are ignored or stored to be executed later as long as the short range device 20 flagged as VIP is transported.

[0061] Also, each short range device 20 can have a priority saved in the database. Calls by short ranges devices with a higher priority are handled preferably over calls by short ranges devices with a lower priority.

[0062] In a residential building, the tenants usually enter the building at the ground floor/lobby (street level) and enter the elevator at the ground floor (street level). They travel/ride with the elevator to the floor where their apartment is and exit the elevator at that floor. When the tenant wants to exit the building, they usually enter the elevator at the floor where their apartment is and travel/ride the elevator to the ground floor/lobby (street level) to exit the building.

[0063] Rarely, the tenant wants to ride to another floor from the ground floor or from the floor where they live. E.g., the tenant wants to go to the basement or visit another tenant at another floor. In this case, the person 15 either can use another short range device 20 which has another destination floor, e.g., basement, or they can enter the destination floor manually. The users of the elevator system 1 can have different short range devices 20. For example, the user can have one regular short range device 20 for his/her way in/out of the building and one addition short range device 20 for going from his/her apartment to the basement and back. The user should carry only one (active) short range device 20 registered in the database with him/her. The other device should be left in the apartment or should be switched off.

[0064] The short range devices 20 have to be registered. During the registration the identification number, the first floor and the second floor (e.g., the ground floor/street level floor and the floor where the person 15 usually wants to go to or where the person 15 lives) is stored in a database. The database and the stored floors can be changed at a later point of time. Thus, each short range device 20 can be used to ride from a first floor to a second floor/preset second floor and the other way round. If a registered short range device 20 is detected at or near the shaft door/elevator door at a floor which is one of the (two) floors stored in connection with that short range device 20, it is assumed that the person 15 wants to go from that floor (first floor) to the stored other floor (second floor). The same applies the other way round.

[0065] Alternatively, only one floor is stored in the database linked/in connection with a short range device 20 and the other floor is (always) the ground floor/street level floor.

[0066] If a short range device 20 is detected at/near the shaft door at a floor which is neither the first floor nor the second floor stored in the database linked/in connection to that short range device 20, the control unit 30 can either assume that

1. the person 15 wants to ride to the ground floor/street level

or

2. the person 15 wants to ride the floor where his/her apartment is.

[0067] Alternatively, if a short range device 20 is detected at/near the shaft door at a floor which is neither the first floor nor the second floor stored in the database linked/in connection to that short range device 20, no elevator is called since this is considered a breach of security. A warning signal can be issued in this case. Thus, the person 15 can only enter the elevator at one of the two stored floors.

[0068] The elevator system 1 can also be used with automatic vehicles for transporting goods. The goods carry one short range device 20, i.e., a Bluetooth and/or radio-frequency identification (RFID) device. First, the automatic vehicle comes in proximity of the shaft door at a first floor. Then, the identification number of the short range device 20 is looked up in the database. If the identification number is found in the database, an elevator call is generated. Also, the destination floor is looked up. The automatic vehicle with the goods are transported to the destination floor by the elevator cabin 10, where the automatic vehicle with the goods exit the elevator cabin 10.

[0069] The identification number of the short range device 20 can be the serial number of the short range device 20 or a part thereof. E.g., the identification number can be the identification number of the Bluetooth device. Also, the identification number can be any other identification means to uniquely identify the short range device 20, e.g., a MAC-address (media-access-control-address).

[0070] If more than (registered) one short range device 20 is detected at/near a shaft door at the first floor and/or more than one (registered) short range device 20 enters the elevator cabin 10, the elevator cabin 10 will be moved to all floors which are stored in the database in connection with the short range devices 20 consecutively. The order of moving the elevators to the floors will be decided based on the most efficient or fastest possibility/way.

[0071] Also, the destination floor can not only depend on the short range device 20 but for the same short range device 20 different destination floors depending on the time of the day and/or depending on the weekday can be used.

[0072] Visitors to a residential building can get (temporarily or for longer terms) a short range device 20 to visit a resident from the resident and/or a doorman of the building. The short range device 20 would allow a ride from/to the ground floor/street level floor to the floor where the apartment of the person 15 is the visitor wants to visit. The short range device 20 can be the mobile phone of the visitor which is registered in the database.

[0073] The short range device 20 can be installed at the wheelchair of a disabled person. In particular, the short range device 20 can be part of the wheelchair. The short range device 20 can be exchangeable and/or can be reprogrammable. In particular, the identification number of the short range device 20 can be reprogrammable/changeable.

[0074] Additionally or alternatively, the short range device 20 can be a mobile phone of the disabled person 15 or a particular device for using the elevator. The short range device 20 can be hung around the neck of the person 15.

[0075] The elevator system is especially suited for a home for the handicapped.

[0076] The short range device 20 can communicate via Lift CAN (CANL) with the control unit.

[0077] Furthermore, it is possible to adjust the conditions inside the elevator cabin 10 based on the identified short range device 20 which entered the elevator cabin 10. In particular, playing of different music and/or different lighting of the inside of the elevator cabin 10 is possible.

[0078] Furthermore, the disability or disabilities of the person 15 can be stored additionally in the database. For a blind person, more descriptive audio information can be played. E.g., when the elevator cabin 10 arrives at the first floor, at which floor the elevator cabin 10 is during moving and the arrival of the elevator cabin 10 at the second floor and/or the opening of the doors of the elevator cabin 10 at the second door.

[0079] If a registered short range device 20 is detected at/near an elevator at a floor which is one of the two floors stored/saved in the database, it is assumed that the destination floor is the other of the two floors stored/saved in the database.

[0080] Furthermore, the registration of the short range device 20 can be as follows:

> When a short range device 20 is detected at/near/close to the door of the elevator at a first floor (for example, the ground floor/street level floor), the device number of the short range device 20 is stored, the elevator is called to that first floor, the doors of the elevator cabin 10 are opened. If the short range device 20 enters the cabin, the user has to enter his destination floor/second floor via buttons and/or via the short range device 20. This information is stored in the database. After this initial ride of the short range device 20, the short range device 20 is registered and the two floors (first floor and second floor) between which the short range device 20 travels are stored in the database.

[0081] Additionally, it is possible that the described registration via an initial ride is only possible if the elevator system and/or the short range communication device 35 at the first floor has been set into a registration mode. Only then, the newly detected (not yet registered) short range device 20 with the two corresponding floors is stored in the database.

[0082] The database can be stored locally or non-locally. In particular, the database can be stored in a cloud and can be used by several different elevator systems. The elevator systems can be in different buildings.

[0083] The elevator system 1 can comprise more than one elevator/elevator cabin 10.

[0084] 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.

[0085] List of reference numerals

1	elevator system
10	elevator cabin
15	person
20	short range device
30	control unit
35	short range communication device
40	weight sensor

Claims

1. Method for controlling an elevator cabin (10) of an elevator system (1), comprising the following steps:

   detecting the presence of a short range device (20) at a shaft door of a first floor;
   identifying the short range device (20) by receiving an identification number of the short range device (20);
   if the short range device (20) has a registered identification number stored in a database

   - generating a call for moving the elevator cabin (10) to the first floor;
   - opening a door of the elevator cabin (10) when the elevator cabin (10) is at the first floor;
   - generating a call for moving the elevator cabin (10) to a preset second floor, wherein the preset second floor depends on the identified short range device (20); and
   - opening the door of the elevator cabin (10) when the elevator cabin (10) is at the second floor.

2. Method according to claim 1, wherein the method further comprises the following step:

detecting that the short range device (20) has entered the elevator cabin (10) after the doors of the elevator cabin (10) are opened at the first floor and before moving the elevator cabin (10) to the preset second floor.

3. Method according to claim 1 or 2, in particular according to claim 2, wherein the entering of the short range device (20) into the elevator cabin (10) is detected by detecting a person (15) and/or goods carrying the short range device (20) entering the elevator cabin (10).

4. Method according to one of the preceding claims, in particular according to claim 3, wherein
the entering of the person (15) and/or the goods is detected by a weight sensor (40) and/or an infrared sensor.

5. Method according to one of the preceding claims, wherein
the short range device (20) is a Bluetooth device and/or a radio-frequency identification (RFID) device.

6. Method according to one of the preceding claims, wherein
an exiting of the short range device (20) out of the elevator cabin (10) is detected.

7. Method according to one of the preceding claims, in particular according to claim 6, wherein
the exiting of the short range device (20) out of the elevator cabin (10) is detected by detecting a person (15) and/or goods carrying the short range device (20) exiting the elevator cabin (10).

8. Method according to one of the preceding claims, wherein
the call for moving the elevator cabin (10) to the first floor is generated only if the short range device (20) has a registered identification number stored in a database and if the first floor is saved in connection with the short range device (20) in the database.

9. Method according to one of the preceding claims, further comprising the following step:

inputting identification numbers of short range devices (20) and a corresponding floor or corresponding floors into the database.

10. Method according to one of the preceding claims, wherein
an opening time of the door of the elevator cabin (10) at the first floor and/or at the second floor depends on the identified registered short range device (20), wherein the opening time is the time during which the door of the elevator cabin (10) is left open.

11. Elevator system (1) comprising

- an elevator cabin (10) for transporting persons (15) and/or goods,
- a control unit (30) for controlling the elevator cabin (10), and
- a short range communication device (35) for detecting the presence of a short range device (20) at a shaft door of a first floor and for identifying the short range device (20) by an identification number of the short range device (20);
wherein the control unit (30) is adapted
- for generating an elevator call to the first floor if the detected short range device (20) has a short range identification number which is registered in a database;
- for opening the door of the elevator cabin (10) when the elevator cabin (10) is at the first floor if the detected short range device (20) has a short range identification number which is registered in the database,
- for generating an elevator call to a preset second floor, wherein the preset second floor depends on the identified short range device (20), and
- for opening the door of the elevator cabin (10) at the second floor when the elevator cabin (10) is at the second floor.

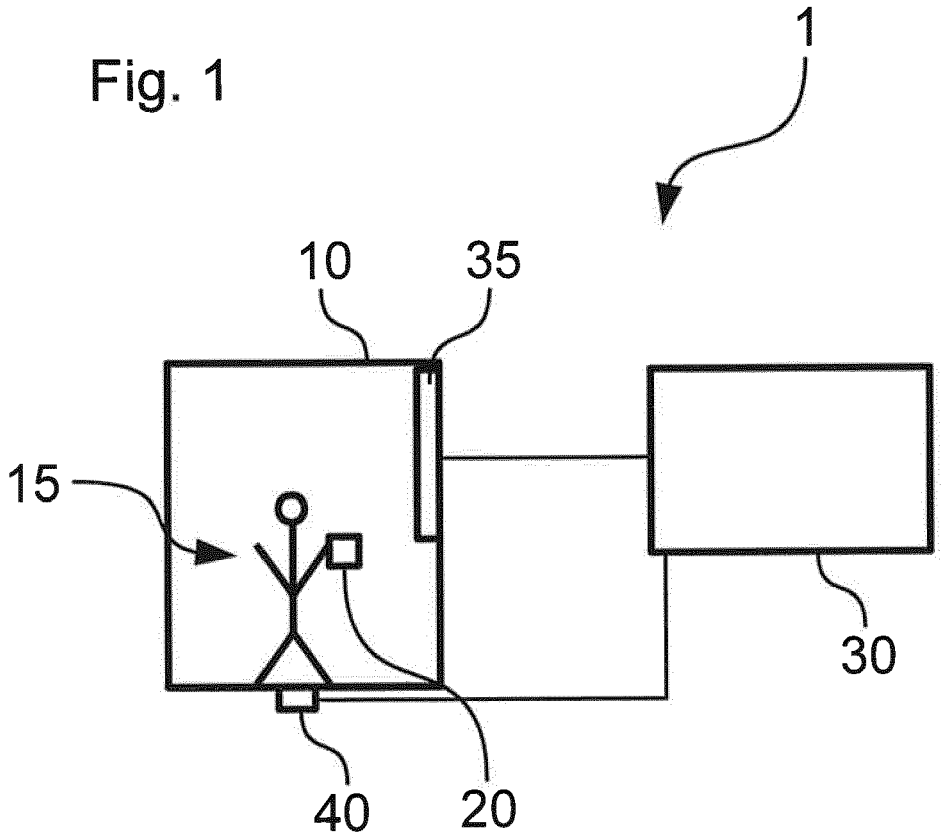
12. Elevator system (1) according to claim 11, wherein the control unit (30) is further adapted for detecting that the short range device (20) has entered the elevator cabin (10).

13. Elevator system (1) according to claim 11 or 12, further comprising
a weight sensor (40) and/or an infrared sensor for detecting the entering and/or exiting of a person (15) and/or goods carrying the short range device (20) the elevator cabin (10).

14. Elevator system (1) according to one of the claims 11-13, wherein
the control unit (30) is a single-board-computer.

15. Elevator system (1) according to one of the claims 11-14, wherein
the short range device (20) is a Bluetooth device and/or a radio-frequency identification (RFID) device.

Fig. 1



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EUROPEAN SEARCH REPORT

Application Number
EP 16 19 4618

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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	24 April 2017	Bleys, Philip

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