(19) Europäisches Patentamt
European Patent Office
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(11) **EP 2 816 000 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
24.12.2014 Bulletin 2014/52

(51) Int Cl.:
B66B 11/02 *(2006.01)*

(21) Application number: **13172438.7**

(22) Date of filing: **18.06.2013**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

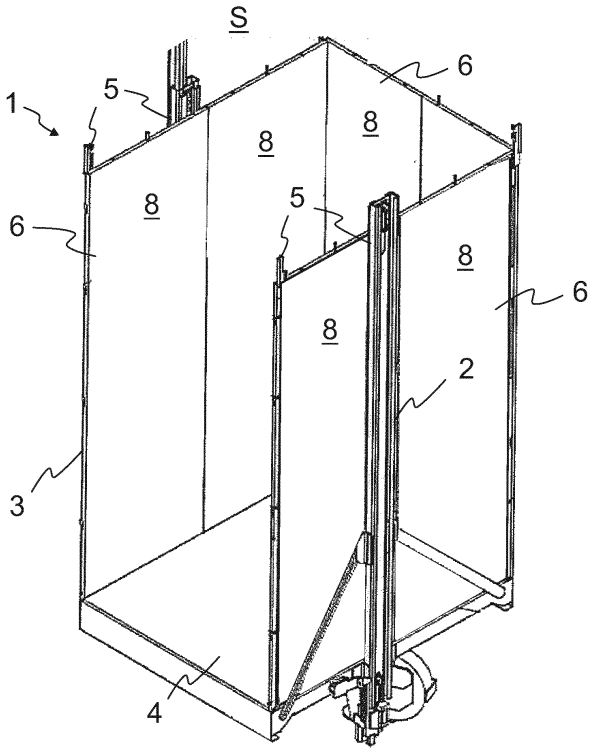
(71) Applicant: **Kone Corporation**
00330 Helsinki (FI)

(72) Inventor: **Bärneman, Håkan**
17147 Solna (SE)

(54) **An elevator car and an elevator**

(57) An elevator car (1) comprising suspension means (2) for supporting the elevator car (1) in the elevator hoistway (S) and a car box (3), which comprises a free interior, bounded by floor, walls, roof and also a door arrangement,the car box (3) comprising a floor element (4), upright beams (5) and planar wall (6) elements and a roof, connected to each other such that they form a load-bearing structure, a plurality of planar wall elements (6) forming a uniform wall surface, one or more planar wall elements (6) comprising a sandwich type plate element (8) with a first planar surface (9) and an opposite second planar surface (10) wherein between the first and the second planar surface one or more hollow layers (11) comprising one or more hollow elements (12) are located.

Fig. 1



EP 2 816 000 A1

Description

Field of the invention

[0001] The object of the invention is an elevator car and an elevator, more particularly an elevator car and an elevator applicable to the transporting of people and/or of freight.

Background of the invention

[0002] Elevator cars are conventionally formed to comprise a car box and suspension means, which suspension means comprise hoisting roping and a load-bearing frame, which comprises a lower horizontal beam system, an upper horizontal beam system, and also a upright beam system of a first side and a upright beam system of a second side, which beam systems are connected to each other so that they form a closed sling, inside which is an interior comprised in a car box fixed to the beam systems, which interior can receive freight and/or passengers for conveying them in the interior of the elevator car.

[0003] Conventionally the car box of an elevator has been essentially fully inside the aforementioned sling. Also known in the art are elevator cars, in which the beams participating in forming the sling structure of the aforementioned load-bearing frame are integrated as a part of the wall structures, roof structures or floor structures bounding the interior of the car box. This type of solution is presented in, among others, publications EP1970341 and WO9933743. The vertical space usage is very efficient, but nevertheless some free space remains unutilized and modification of the elevator car according to site regulations and customer needs is not possible.

[0004] Current technologies aim to make thin and strong noise absorbing panels for elevator car walls and landing doors, which requires usage of complex stiffeners that most commonly are glued and riveted to panels. Plywood has been used on the interior wall surfaces of the elevator car for a long time. The appearance of plywood is, however, not very appealing restricting the use of plywood as such in modern elevator cars. Honeycomb materials are also available but they are not cost effective and much additional material is required to be added to enable connection of material with good joints. Weight of material and final components as well as factory assembly time is not optimal.

Brief description of the invention

[0005] The object of the invention is, *inter alia,* to solve one or more of the previously described drawbacks of known solutions and problems discussed later in the description of the invention. An object of the invention is, in particular, to provide an elevator and an elevator car thereof, the structure of which is lightweight and easily adaptable according to the needs of the operating site.

[0006] It is brought forward a new elevator car for an elevator, comprising suspension means for supporting the elevator car in the elevator hoistway and a car box, which car box comprises

- a free interior for receiving and transporting freight and/or passengers in the interior of the car box of the elevator, which interior is bounded by at least the floor, walls, roof, and preferably also a door arrangement comprised in the car box,
- car box of the elevator comprising a floor element, upright beams and planar wall elements, and a roof connected to each other such that they form a load-bearing structure of rectangular prism shape of the car box,
- a plurality of planar wall elements of rectangular shape fixed side-by-side from which plurality of planar wall elements a uniform wall surface of the car box is formed.

[0007] The planar wall elements of said car box comprise a sandwich type plate element comprising a first planar surface and a second planar surface opposite the first planar surface and between the first planar surface and the second planar surface one or more hollow layers comprising one or more hollow elements in a plane parallel to the first planar surface and the second planar surface of said plate element.

[0008] In a preferred embodiment, said first surface and said second surface and said hollow layers are a one piece structure of predetermined size made from a plate of an extruded profile. Thus an elevator car is achieved wherein material extrusion can be customized and made optimal per design and the number of final components of the elevator car is reduced.

[0009] In a preferred embodiment, the hollow elements are hollow tubes with round or rectangular cross-section and tube length equal to said plate element. The orientation is defined by axial lengthwise direction of said hollow elements being parallel with said car wall plane, preferably oriented in upright or horizontal direction of said elevator car wall.

[0010] In a preferred embodiment, said one or more hollow layers are located symmetrically with respect to the midplane of said plate element in the thickness direction of the plate element.

[0011] In one other embodiment, the first surface and the second surface and the hollow layers are separate elements and joined together by gluing or by mechanical joint, preferably by welding, spot welding, adhesive bonding, riveting or by press-formed joints.

[0012] In a preferred embodiment, the first surface and/or the second surface and/or the hollow layers are made from plastic, preferably from polycarbonate, PE, PET, or PP. Thus an elevator car is achieved wherein steel material usage is reduced and particular metal stiffeners are eliminated. Furthermore, an elevator car is

achieved wherein the panel structure is easy to cut to size.

[0013] In one other embodiment, the first surface and/or the second surface and/or the hollow layers are made from fiber-reinforced plastic, preferably from glass, carbon, aramid and/or UHMWPE fiber-reinforced polymer composite material. Thus an elevator car is achieved wherein strength and stiffness of said planer wall elements is increased and wherein material used can be selected to be of different hardness.

[0014] In a preferred embodiment, the first surface and/or the second surface and/or the hollow layers are transparent.

[0015] In a preferred embodiment, the hollow elements of said hollow layers of sandwich type plate elements are oriented to the direction parallel to said elevator car wall upright or horizontal direction.

[0016] In a preferred embodiment, said first surface and said second surface of said sandwich type plate element are final surfaces of said elevator wall element.

[0017] In a preferred embodiment, the plate elements comprising one or more hollow layers are permanently fixed to a plate frame.

[0018] In a preferred embodiment, the sandwich type plate element comprises ventilation ducts and/or ventilation openings and/or communications cables and/or electricity cables, between a device of the elevator car and a control unit of the elevator car and/or an electricity source. Thus an elevator car is achieved wherein flutes act as heat sink and air flows through flutes vertically and cool base panel material down.

[0019] In a preferred embodiment, the hollow layers comprising one or more hollow elements are of thickness preferably 1-15 mm, more preferably 2-12 mm, most preferably 4-10 mm.

[0020] In a preferred embodiment, the structural wall thickness of said hollow element is preferably 0.5-2 mm.

[0021] In a preferred embodiment, the outer surface of said sandwich type plate element forms a part of the visible outer surface of the car box of the elevator and/or the inner surface of said sandwich type plate element forms a part of the visible inner surface of the wall/roof bounding the free interior of the car box of the elevator.

[0022] In a preferred embodiment, the sandwich type plate elements are joined together by gluing or riveting. Thus an elevator car is achieved wherein manufacturing the sandwich type plate structure is cost effective. Thus an elevator car is achieved of which factory assembly time is reduced.

[0023] Thus an elevator is achieved wherein the structure of the elevator car is lightweight still offering stiffness of the load-bearing structure and wall plate elements enabling parametric design of the elevator car for elevators of different sizes.

[0024] Thus an elevator is achieved wherein the wall structure of the elevator car is cheaper than before to manufacture and optimized for the operating site.

[0025] In a preferred embodiment, the sandwich type plate element is of non-metallic material, preferably plastic or glass-, aramid- or carbon fiber reinforced laminated polymer composite material. Plastic and polymer matrix material can be thermoplastic or thermoset depending on the needs of the installation site. Thus an elevator is achieved, the materials of the wall elements of the car box of the elevator car of which can be selected according to the regulations and needs of the installation site.

[0026] In a preferred embodiment, the floor element is a planar sandwich structure of rectangular shape, which comprises a sandwich type plate element comprising a first skin and a second skin and one or more core elements, which said core elements are formed from said first skin by cutting and bending or by punching through one or more core members from the cutting edge of said first skin towards said second skin and by joining said core members to said second skin of said plate element.

[0027] In one other embodiment, the floor element is a planar sandwich structure of rectangular shape, which comprises at least one skin plate and a core, which core is a flute or waved profile bent from metal or a honeycomb fabricated from thermoplastic, e.g. a polypropylene honeycomb, and said skin plates are of a metallic material and fixed to the core material by welding, spot welding, adhesive bonding, riveting or by press-formed joints.

[0028] In a preferred embodiment, the outer surface of said planar wall elements forms a part of the visible outer surface of the car box of the elevator and/or the inner surface of said planar wall elements forms a part of the visible inner surface of the wall bounding the free interior of the car box of the elevator. Thus an elevator is achieved, the space usage of the wall structure of the elevator car of which is more efficient than before.

[0029] In a preferred embodiment, the elevator car comprises suspension means of the elevator car that are separate from the car box. Thus an elevator is achieved, the wall structure and/or roof structure of the car box of the elevator car of which is composed of elements having different functionalities and is adaptable according to the regulations of the operating site by modifying the elements and the sequence of them with respect to each other.

[0030] In a preferred embodiment, the aforementioned beam elements have essentially the same continuous structure in the longitudinal direction of the beam, the width/height ratio of which cross-section is preferably at least 0.5, preferably 0.5-1, more preferably 0.7-0.9. One advantage is a rigid structure, and enables the fixing of the roof and other necessary structural elements, such as wall frame elements to the upright beams.

[0031] In a preferred embodiment, the aforementioned upright beam elements are in their length such that they cover preferably at least most of the vertical height of the elevator car.

[0032] In a preferred embodiment, the aforementioned upright beam elements are rigidly fixed to the aforementioned floor element. In this way the floor element is firmly positioned and withstands standing and at the same time

stiffens the load-bearing structure of the car box.

[0033] In a preferred embodiment, the elevator car is suspended with hoisting roping, which is connected to the elevator car with means, such as via a diverting pulley system or equipment for fixing the ropes, which means are on the side of or below the elevator car.

[0034] In a preferred embodiment, the elevator car is suspended with hoisting roping, which is connected to the elevator car such that it supports the elevator car via a diverting pulley system supported on the elevator car.

[0035] In a preferred embodiment, the elevator car is suspended with hoisting roping passing around and below the elevator car.

[0036] It is also brought forward a new elevator comprising an elevator car and a counterweight arrangement, and a roping suspending the counterweight and the elevator car, and passing around the diverting pulley. The elevator car is as defined in any one of the preceding claims.

[0037] The elevator as described anywhere above is preferably, but not necessarily, installed inside a building. The elevator is preferably of the type where the car is arranged to serve two or more landings. Then, the car preferably responds to calls from landing and/or destination commands from inside the car so as to serve persons on the landing(s) and/or inside the elevator car. Preferably, the car has an interior space suitable for receiving a passenger or passengers. The car may be provided with a floor, a ceiling, walls and at least one door these all forming together a closable and openable interior space. In this way, it is particularly well suitable for serving passengers.

[0038] Some inventive embodiments are also presented in the descriptive section and in the drawings of the present application. The inventive content of the application can also be defined differently than in the claims presented below. The inventive content may also consist of several separate inventions, especially if the invention is considered in the light of expressions or implicit subtasks or from the point of view of advantages or categories of advantages achieved. In this case, some of the attributes contained in the claims below may be superfluous from the point of view of separate inventive concepts. The features of the various embodiments of the invention can be applied within the framework of the basic inventive concept in conjunction with other embodiments. The additional features mentioned by each preceding embodiment can also singly and separately from the other embodiments form a separate invention.

Brief description of the figures

[0039] The invention will now be described mainly in connection with its preferred embodiments, with reference to the attached drawings, wherein:

Fig. 1 illustrates structure of the car box of an elevator according to a preferred embodiment of the invention.

Fig. 2a illustrates a sandwich type plate element with one hollow layer according to one embodiment of the invention.

Fig. 2b illustrates a sandwich type plate element with two hollow layers according to one embodiment of the invention.

Fig. 3 illustrates a planar wall element according to a one embodiment of the invention.

Detailed description of the invention

[0040] Figure 1 presents structure of an elevator car 1 of an elevator arranged to be moved in the elevator hoistway S with roping, the ropes of which connecting the aforementioned elevator car 1 and a counterweight of an elevator to each other.

[0041] The elevator car 1 comprises an interior, which is bounded by the floor 4, walls 8, a roof, and a door of the elevator car. The elevator car 1 and the counterweight are arranged to be moved with a hoisting machine by exerting a vertical force on at least the elevator car 1 or on the counterweight. For this purpose the elevator comprises suspension means 2 for exerting the aforementioned force on at least the elevator car 1 or on the counterweight. The suspension roping comprises one or more ropes.

[0042] The elevator car 1 comprises a platform forming the floor 4 of the car box 3 and a wall structure 6, which comprises parallel, elongated upright beams 5 in connection with the platform of the elevator car 1, said beams 5 being integrated as a part of the wall structure 6 and at a horizontal distance from each other, and a plurality of planar wall elements 8 of rectangular shape fixed side-by-side from which plurality of planar wall elements 8 a uniform wall surface of the car box 3 is formed.

[0043] The planar wall elements 8 of said car box 3 comprise sandwich type plate elements comprising a first surface 9 and a second surface 10 and hollow layers 11 between the first and second surfaces 9, 10 comprising hollow elements 12 in a plane parallel to said car wall plane 6 and said wall plate element 8.

[0044] The elevator car 1 is suspended with hoisting roping, which is connected to the elevator car 1 via the car frame beams 2 and the diverting pulley system. The suspension is implemented via the diverting pulley system, which diverting pulley system is supported on the car frame below the level of the roof of the elevator car, on the floor beam system of the elevator car such that the hoisting roping passes below the elevator car 1. The hoisting roping could also otherwise suspend the car 1 without it traveling a disadvantageous route in this respect. For example, the suspension of the elevator could be arranged by fixing the diverting pulley systems to the side of the car, to the beams 2, or by suspending the car with a 1:1 solution and by fixing the ends of the ropes to the sides of the car.

[0045] The elevator hoisting roping is guided to pass

over a driven rope pulley, i.e., the traction sheave, the traction sheave being rotated by the hoisting machine located in this case in the proximity of the top end of the path of movement of the elevator car 1. As the hoisting machine rotates, the traction sheave at the same time moves the elevator car 1 and the counterweight in the up direction and down direction, respectively, due to friction.

[0046] Figure 2a presents planar wall elements of said car box comprising a sandwich type plate element 8 comprising a first planar surface 9 and a second planar surface 10 opposite the first planar surface and between the first planar surface and the second planar surface one or more hollow layers 11 comprising one or more hollow elements 12 in a plane parallel to the first planar surface 9 and the second planar surface 10 of said plate element 8.

[0047] The first surface 9 and the second surface 10 and the hollow layer 11 are a one piece structure of predetermined size made from a plate of an extruded profile. Hence an elevator car is achieved wherein material extrusion is customized and made optimal per design and the number of final components of the elevator car has been reduced.

[0048] The hollow elements 12 are hollow tubes with rectangular cross-section and the tube length essentially equal to said plate element 8 length. Axial lengthwise direction of said hollow elements 12 is parallel to said plane of the car wall 6, preferably tubes oriented to upright direction of elevator car wall 6.

[0049] Figure 2b presents planar wall elements of said car box comprising a sandwich type plate element comprising a first surface 9 and a second surface 10 opposite the first surface and between the first surface 9 and the second surface 10 two hollow layers 11 comprising hollow elements 12 parallel to and between the first and the second surfaces 9, 10 in a plane parallel to said car wall plane 6 and said plate element 8.

[0050] The first surface 9 and the second surface 10 and the hollow layers 11 are a one piece structure of predetermined size made from a plate of an extruded profile. Hence an elevator car is achieved wherein material extrusion is customized and made optimal per design and the number of final components of the elevator car has been reduced.

[0051] The hollow layers 11 are located symmetrically with respect to the midplane of said plate element 8 in the thickness direction of the plate element 8. The hollow elements 12 are hollow tubes with rectangular cross-section and the tube length essentially equal to said plate element 8 length. Axial lengthwise direction of said hollow elements 12 is parallel to said plane of the car wall 6, preferably tubes oriented to upright direction of the elevator car wall 6.

[0052] The first surface 9 and the second surface 10 and the hollow layers 11 are made from plastic, preferably from polycarbonate, PE, PET, or PP. Hence an elevator car 1 is achieved wherein steel material usage has been reduced and particular metal stiffeners have been eliminated. Furthermore, an elevator car 1 is achieved wherein the panel structure 8 is easy to cut to size.

[0053] Figure 3 presents a wall element 6 of said car box 3 comprising a sandwich type plate element 8 with a panel frame 13 according to one embodiment of the invention, which said panel frame 13 comprises two elongated, parallel upright C-profile beam elements and a horizontal elongated C-profile beam element fixed to the upright beam elements 8, preferably made from metallic material, e.g., steel or aluminum. Hence adequate stiffness and strength is achieved required for the wall element 6.

[0054] According to one embodiment of the invention, the plate elements 8 comprising one or more hollow layers 11 are permanently fixed to a plate frame 13.

[0055] The invention is based on the concept that the elevator car comprises suspension means for supporting the elevator car in the elevator hoistway and a car box to be assembled according to site regulations and customer needs, which car box comprises a free interior for receiving and transporting freight and/or passengers in the interior of the car box of the elevator, which interior is bounded by at least the floor, walls, roof, and preferably also door arrangement comprised in the car box, a floor element, upright beams and roof beams, which floor element and upright beams and roof beams are connected to each other such that they form a load-bearing frame structure, of rectangular prism shape, of the car box of the elevator, on the inside of which frame structure is a plurality of planar elements of rectangular shape fixed side-by-side to the frame structure and extending essentially from one edge side of the car box to another, from which plurality a uniform wall surface and/or roof surface of the car box is formed, and the plurality of which elements comprises elements differing to each other in respect of the functionalities integrated into the elements.

[0056] In a more refined embodiment of the concept according to the invention the aforementioned load-bearing frame 2 and the car box 3 are separate from each other and the load-bearing frame 2 is fixed to the car box 3 essentially via the floor element 4.

[0057] In a more refined embodiment of the concept according to the invention the aforementioned load-bearing frame 2 is integrated into the car box 3, in which case at least the floor element 4 forms a part of the load-bearing frame 2.

[0058] In a more refined embodiment of the concept according to the invention the frame structure 2 of the car box 3 of the elevator car 1 comprises a floor element 4, above which is the aforementioned interior and which floor element 4 rigidly connects the aforementioned upright beams 5 and on which floor element means 4, such as diverting pulleys or rope clamps, for connecting the hoisting ropes to the elevator car 1 are supported.

[0059] In a more refined embodiment of the concept according to the invention the aforementioned frame structure 2 of the car box 3 of the elevator car 1 comprises

the upright beam(s) of a first side and the upright beam(s) of a second side, between which is the aforementioned interior, and which beams are rigidly connected to each other by the aid of the aforementioned roof beams.

[0060] In a more refined embodiment of the concept according to the invention the aforementioned frame structure 2 of the car box 3 of the elevator car 1 comprises the upright beam(s) of a first side and the upright beam(s) of a second side, which are disposed in the corners of the rectangularly-shaped floor element 4 and together with the floor element 4 form the edge sides of a frame structure of rectangular prism shape.

[0061] All the joints referred to in this application can be implemented mechanically by connecting, e.g. with a screw and nut, by riveting, by welding or by glueing. The joint means can comprise a screw, a nut, a rivet, a stud, a nail or some other corresponding element suited to joining.

[0062] It is obvious to the person skilled in the art that in developing the technology the basic concept of the invention can be implemented in many different ways. The invention and the embodiments of it are not therefore limited to the examples described above, but instead they may be varied within the scope of the claims.

Claims

1. An elevator car (1) comprising suspension means (2) for supporting the elevator car (1) in the elevator hoistway and a car box (3), which car box (3) comprises

   - a free interior for receiving and transporting freight and/or passengers in the interior of the car box (3) of the elevator, which interior is bounded by at least the floor, walls, roof, and preferably also a door arrangement comprised in the car box (3),
   - car box (3) of the elevator comprising a floor element (4), upright beams (5) and planar wall (6) elements, and a roof connected to each other such that they form a load-bearing structure of rectangular prism shape of the car box (3),
   - a plurality of planar wall elements (6) of rectangular shape fixed side-by-side to the load-bearing structure, from which plurality of planar wall (6) elements a uniform wall surface of the car box (3) is formed, **characterized in that** said one or more planar wall elements (6) of said car box (3) comprises a sandwich type plate element (8) comprising a first planar surface (9) and a second planar surface (10) opposite the first planar surface and between the first planar surface and the second planar surface one or more hollow layers (11) comprising one or more hollow elements (12) in a plane parallel to the first planar surface (9) and the second planar surface (10) of said plate element (8).

2. The elevator car (1) according to claim 1, **characterized in that** said first surface (9) and said second surface (10) and said one or more hollow layers (11) are a one piece structure of predetermined size made from a plate of an extruded profile.

3. The elevator car (1) according to any of the preceding claims, **characterized in that** the orientation of said hollow layers is defined by the lengthwise axial direction of said hollow elements (12) being hollow tubes with round or rectangular cross-section and tube length essentially equal to said plate element.

4. The elevator car (1) according to any of the preceding claims, **characterized in that** said first surface (9) and/or said second surface (10) and/or said one or more hollow layers (11) are separate elements and joined together by gluing or by mechanical joint, preferably by welding, spot welding, adhesive bonding, riveting or by press-formed joints.

5. The elevator car (1) according to any of the preceding claims, **characterized in that** the said first surface (9) and/or said second surface (10) and/or said one or more hollow layers (11) are made from plastic, preferably from polycarbonate, PE, PET, or PP.

6. The elevator car (1) according to any of the preceding claims, **characterized in that** the said first surface (9) and/or said second surface (10) and/or said one or more hollow layers (11) are made from fiber-reinforced plastic, preferably from glass, carbon, aramid and/or UHMWPE fiber-reinforced plastic.

7. The elevator car (1) according to any of the preceding claims, **characterized in that** the said first surface (9) and/or said second surface (10) and/or said one or more hollow layers (11) are transparent.

8. The elevator car (1) according to any of the preceding claims, **characterized in that** the said one or more hollow layers (11) are located symmetrically with respect to the midplane of the wall element in the thickness direction of the wall element.

9. The elevator car (1) according to any of the preceding claims, **characterized in that** said hollow elements (12) of said hollow layers (11) of sandwich type plate elements (8) are oriented to the direction parallel to said elevator car wall (6) upright or horizontal direction.

10. The elevator car (1) according to any of the preceding claims, **characterized in that** said plate elements (8) comprising one or more hollow layers (11) are permanently fixed to a plate frame (13).

11. The elevator car (1) according to any of the preceding claims, **characterized in that** said sandwich type plate element (8) comprises ventilation ducts and/or ventilation openings and/or communications cables and/or electricity cables, between a device of the elevator car (1) and a control unit of the elevator car and/or an electricity source.

12. The elevator car (1) according to any of the preceding claims, **characterized in that** said one or more hollow layers (11) comprising one or more hollow elements (12) are of thickness preferably 1-15 mm, more preferably 2-12 mm, most preferably 4-10 mm.

13. The elevator car (1) according to any of the preceding claims, **characterized in that** the wall thickness of said hollow elements (12) are of thickness preferably 0.5-2 mm.

14. The elevator car (1) according to any of the preceding claims, **characterized in that** the outer surface of said sandwich type plate element forms a part of the visible outer surface of the car box (1) of the elevator and/or the inner surface of said sandwich type plate element forms a part of the visible inner surface of the wall/roof bounding the free interior of the car box (1) of the elevator.

15. An elevator, which comprises an elevator hoistway (S), and an elevator car (1) arranged to move in the elevator hoistway (S), which elevator car (1) is according to any of the preceding claims.

Fig. 1

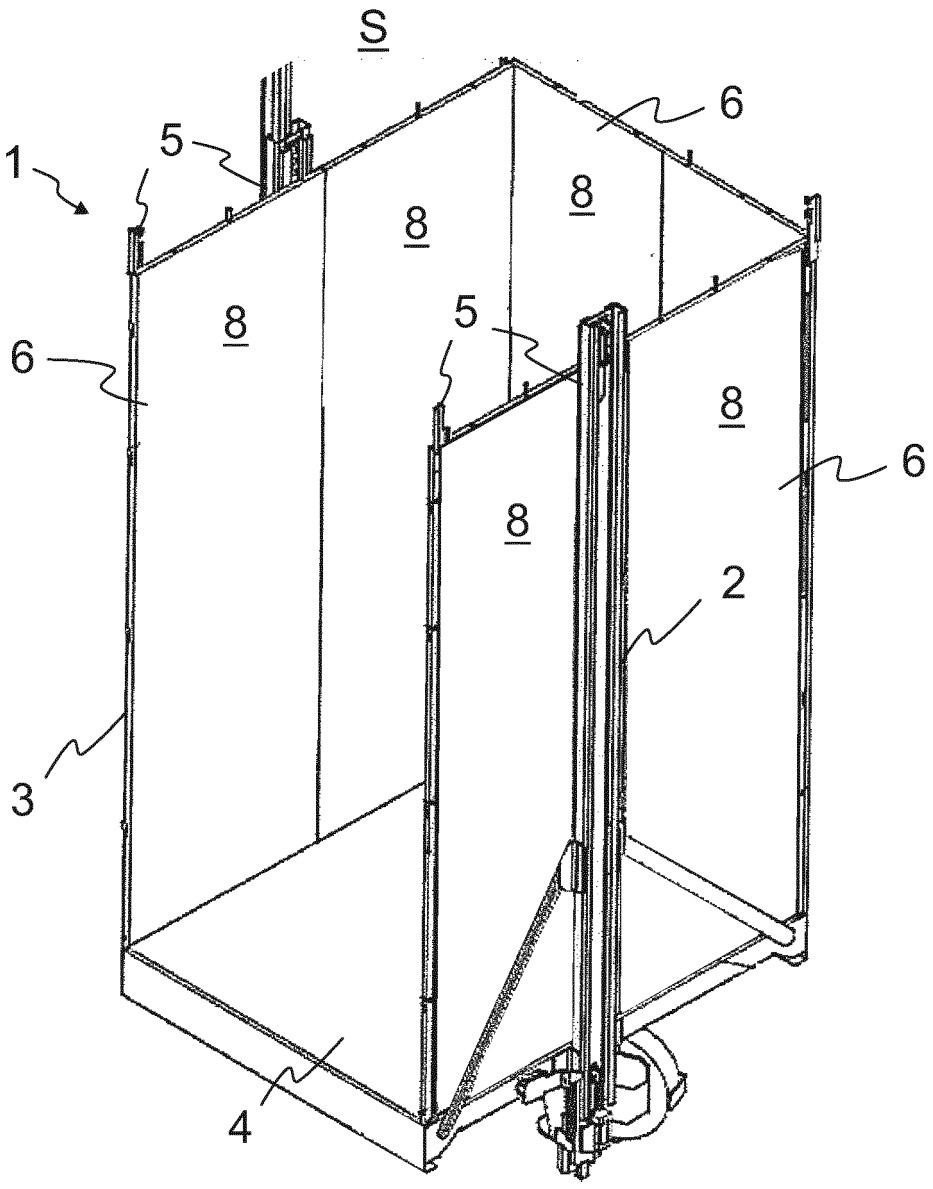


Fig. 2

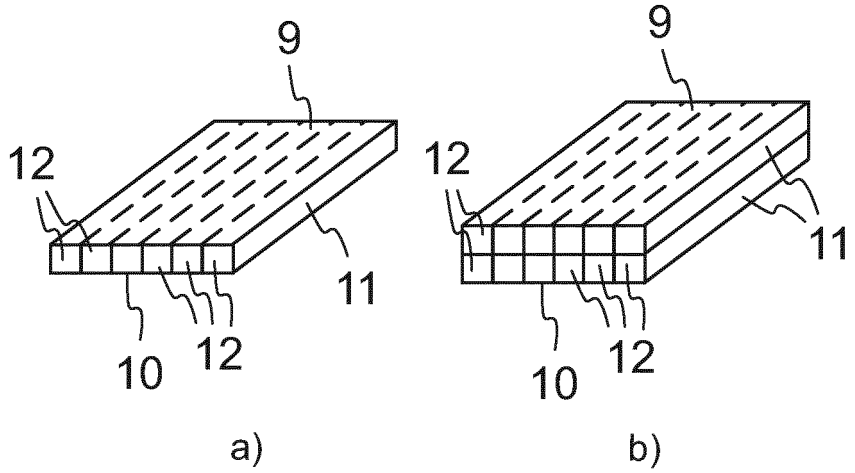
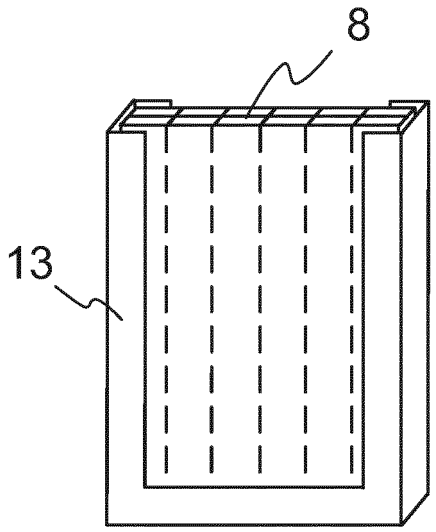


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 13 17 2438

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 H08 73157 A (TORAY INDUSTRIES) 19 March 1996 (1996-03-19)	1,3,4,6, 8-10, 12-15	INV. B66B11/02
Y	* figures 1-5 * * paragraph [0006] * * paragraph [0010] * * abstract * -----	2	
Y	US 5 207 295 A (BIALY LOUIS [US] ET AL) 4 May 1993 (1993-05-04) * figures 2,2a,2b * * column 3, line 19 - line 33 * -----	2	
			TECHNICAL FIELDS SEARCHED (IPC)
			B66B

~~The present search report has been drawn up for all claims~~

Place of search	Date of completion of the search	Examiner
The Hague	26 November 2013	Fiorani, Giuseppe

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
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E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

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Application Number
EP 13 17 2438

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-4, 6, 8-10, 12-15

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 13 17 2438

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-4, 6, 8-10, 12-15

   Elevator car with walls which are quick to manufacture

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2. claim: 5

   Elevator car with light walls

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3. claim: 7

   Elevator car with walls allowing an easier technical inspection

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4. claim: 11

   Elevator car with increased fraction of hoistway available for payload

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 17 2438

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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26-11-2013

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REFERENCES CITED IN THE DESCRIPTION

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- EP 1970341 A **[0003]**
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