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(54) **Accessible transport system for moving passengers and/or goods**

(57) The present invention relates to an accessible transport system for moving passengers/goods having a movable platform (3, 3', 3'') having a floor (1) configured for supporting a weight of the passengers/goods during a transport path and side walls (100) attached in the lower area to the floor (1), the floor (1) and the side walls (100) forming a U-shaped cross-section, wherein the side walls

(100) of the movable platform (3, 3', 3'') have a structure for reducing pit depth and reaching a stacking grade in the transport system such that the height of two stacked platforms is less than the sum of the height of the two platforms and greater than the height of one platform, wherein movable platforms on a transport path (3') cross paths with movable platforms on a return path (3'').

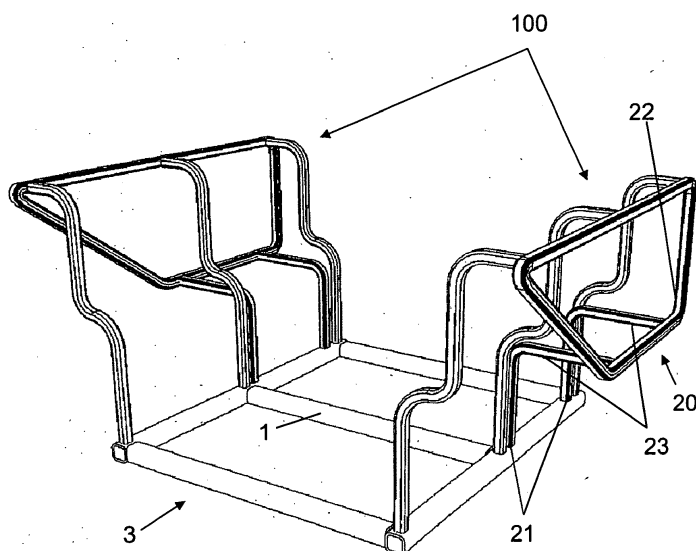


Fig. 1

Description

Field of the Invention

[0001] The present invention relates to different constructive possibilities related to the support structure of a platform belonging to a universal accessible system for transporting passengers/goods.

Background of the Invention

[0002] Within the field of accessible systems for transporting passengers/goods including cars or platforms transporting high volumes of passengers, certain constructive needs or improvements are observed. The most notable need in such systems is due to the size of the passenger/goods transport platforms, which are too large and unwieldy, as in the case of inclined elevators, in which these entirely closed platforms require a volume that will increase the space occupied by the system, and will therefore make the civil works project difficult. On the other hand, there is another series of transport systems the platforms or cars of which do not offer complete safety to the passenger since they either allow direct and continuous contact of the passenger with movable and fixed parts of the structure of the system, or they do not have sufficient individual protective elements since they mainly protect the user with railings.

[0003] A new architecture for the structure of these cars or platforms is proposed in the present invention which solves and provides solutions to the aforementioned problems, such as reducing the necessary space for the continuous movement of these cars or platforms and increasing passenger safety.

Description of the Invention

[0004] The invention relates to two options of carrying out the architecture of the structure of a car or platform pertaining to an accessible system for transporting passengers/goods.

[0005] These transport structures consist of a set of tubular elements and sections attached to one other by means of screwed or welded attachments, such that a new structural solution improving the total space of the system and increasing user safety as it protects users from contact with movable parts is proposed.

[0006] One aspect of the invention relates to a transport system for passengers/goods such as that defined in the set of claims

Brief Description of the Drawings

[0007] A series of drawings is very briefly described below which aid in better understanding the invention with two alternatives and they are expressly related to an embodiment of said invention presented as a non-limiting example thereof.

Figure 1 shows a perspective view of the first platform proposal.

Figure 2 shows a side view of the first platform structure proposal with two platforms, one platform ascending and another platform descending.

Figure 3 shows a cross-section of the first platform structure proposal with two platforms crossing paths with one another.

Figure 4 shows a perspective view of the second platform proposal.

Figure 5 shows a side view of the second platform structure proposal with two platforms, one platform ascending and another platform descending.

Figure 6 shows a cross-section of the second platform structure proposal with two platforms crossing paths with one another.

Description of Preferred Embodiments of the Invention

[0008] A first proposal consists of the platforms crossing paths with one another in the central area of the transport system as is shown in Figure 3, where a platform on the outgoing path is moved above a platform on the return path. This movement is possible due to the undulated shape of the sides of the platform, and in addition a reduction in the pit depth in the central sector of the transport system is achieved, central sector being understood as the sector comprised between the loading and unloading areas. The platform structure is formed by a lower part or floor on which the bottom of the platform rests, and by sides having an undulated shape according to the cross-section of the shown platform in Figure 3. This structure facilitates the platforms crossing paths with one another in the central sector of the system and therefore reduces pit depth.

[0009] Another architectural possibility is to design the platform such that the sides are configured for being vertically moved as is shown in Figure 4. Less side height of the walls of the platform and consequently of the pit depth, as seen in Figure 5, is obtained on the return path when the platform is not being used by passengers, and therefore this reduction of side height does not entail a risk for the passengers. This arrangement comprises two parts: on one hand the platform bearing structure and on the other the extendable or retractable parts in the sides of the platform. The operation for moving the extendable or retractable side parts comprises a scissor mechanism for vertical movement of the extendable or retractable side parts. For opening/closing the scissors, the lower part of the scissors is operated by means of a linear or extendable device (13) which in turn is operated by an electric motor. Once the platform has its sides drawn in, a notable reduction of the height of the platform and reduction of the height of the system in the central sector is obtained.

[0010] One embodiment of the invention relates to an accessible transport system for moving passengers/goods comprising a movable platform (3, 3', 3'') having:

- 1a) a floor (1) configured for supporting a weight of the passengers/goods during a transport path;
 1b) side walls (100) attached in the lower area to the floor (1), the floor (1) and the side walls (100) forming a substantially U-shaped cross-section of the movable platform (3, 3', 3'');
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wherein the side walls (100) of the movable platform (3, 3', 3'') have a structure configured for reducing pit depth and reaching a stacking grade $0 < SG < 1$ in the transport system, wherein movable platforms on a transport path (3') cross paths with movable platforms on a return path (3''). Stacking grade is understood as the ratio expressing the capacity of stacking one platform on another, where:
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SG=0 when the height of two stacked platforms is equal to the sum of the height of the two platforms;
 SG=1 when the height of two stacked platforms is equal to the height of one platform, i.e., when two platforms are superimposed;
 20 $0 < SG < 1$ when the height of two stacked platforms is less than the sum of the height of the two platforms and greater than the height of one platform.

[0011] Other features of the invention are included below:
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2. According to an embodiment of the invention, the side walls (100) have an undulated shape comprising:
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- 2a) a lower part (101) of the side walls (100) attached to the floor (1), having a lower height (H1);
 2b) an upper part (102) of the side walls (100) having an upper height (H2);
 wherein:
 2c) the lower part (101) defines a lower inner width (A1) of the movable platform (3, 3', 3'') equal to a width of the floor (1);
 2d) the upper part (102) defines an upper inner width (A2) of the movable platform (3, 3', 3'') greater than the width of the floor (1);
 2e) the ratio between the lower width (A1) and the upper width (A2) is configured for allowing a stacking grade $0 < SG < 1$ in the transport system.
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3. The side walls (100) comprise:
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- 3a) a curved transition area (112) having a transition height (H12) between the lower part (101) and the upper part (102);
 3b) a capping (103) at the end of the upper part (102). This transition area has an inclined shape configured for preventing passengers from resting against and being able to jump over the side wall of the platform (3, 3', 3'').
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4. The side walls (100) comprise an outer side chassis (20) for providing greater rigidity to the platform structure allowing the platform on the transport path (3') to cross paths with the platform on the return path (3'') at an inclination comprising:

- 4a) a vertical post (21) attached to at least one area of the platform (3, 3', 3'') selected from the lower part (101) and the floor (1), having a lower height (H1);
 4b) a vertical frame (22) attached to the upper part (102) having a height equal to the sum of the transition height (H12) and the upper height (H2);
 4c) a horizontal support (23) attached at an end to the post (21) and at the other end to the frame (22);
 wherein:
 4d) the post (21) defines a lower width (A1) of the movable platform (3, 3', 3'') equal to the width of the floor (1);
 4e) the frame (22) defines an upper outer width (A3) of the movable platform (3, 3', 3'') greater than the upper width (A2).
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5. The posts (21), supports (23) and a lower part of the frame (22) are located in a rear part of the platform (3, 3', 3''). The location of these elements in the rear part of the platform (3, 3', 3'') facilitates the platform on the transport path (3') crossing paths with the platform on the return path (3'') at an inclination.
 6. According to another embodiment of the invention, the side walls (100) are telescoping and comprise:

- 6a) a lower part (101) attached to the floor (1), having a lower height (H11);
 6b) an upper part (102) having an upper height (H22), configured for being moved between:

6b1) an extended position when the movable platform (3) is on the transport path (3'), wherein the movable platform (3) has a total height of the sum of the lower height (H11) and the upper height (H22), $H = H11 + H22$;
 6b2) a drawn-in position when the movable platform (3) is on the return path (3''), wherein the movable platform (3) has a total height equal to the lower height (H11), $H = H11$;
 wherein:

6c) the ratio between the total height of the movable platform (3) on the transport path (3'), $H11 + H22$, and the total height of the movable platform (3) on the return path (3''), $H11$, is configured for allowing a stacking grade $0 < SG < 1$ in the transport system.

7. The accessible transport system comprises:

- 7a) a scissor mechanism (10) having one end attached to the upper part (102) configured for moving the upper part (102) between the drawn-in position and the extended position;
- 7b) an electric motor (12) for operating a linear device (13) configured for opening/closing the scissor mechanism (10) connected to a lower part of the scissor mechanism (10);
- 7c) a plurality of guides (11) configured for driving a movement of the upper part (102) between the drawn-in position and the extended position.

8. The accessible transport system comprises a dividing panel (5) in the central sector of the structure of the system (4) located between a transport path (3') and a return path (3''). The dividing panel (5) is configured for preventing visual contact with the platforms on the return path (3'') and for preventing objects/users from falling into the pit.

Claims

1. An accessible transport system for moving passengers/goods, **characterized in that** it comprises a movable platform (3, 3', 3'') having:

- 1a) a floor (1) configured for supporting a weight of the passengers/goods during a transport path;
- 1b) side walls (100) attached in the lower area to the floor (1), the floor (1) and the side walls (100) forming a substantially U-shaped cross-section of the movable platform (3, 3', 3''); wherein the side walls (100) of the movable platform (3, 3', 3'') have a structure configured for reducing pit depth and reaching a stacking grade $0 < SG < 1$ in the transport system, wherein movable platforms on a transport path (3') cross paths with movable platforms on a return path (3'').

2. The accessible transport system of claim 1, **characterized in that** the side walls (100) have an undulated shape comprising:

- 2a) a lower part (101) of the side walls (100) attached to the floor (1), having a lower height (H1);
- 2b) an upper part (102) of the side walls (100) having an upper height (H2); wherein:
- 2c) the lower part (101) defines a lower inner width (A1) of the movable platform (3, 3', 3'') equal to a width of the floor (1);
- 2d) the upper part (102) defines an upper inner

width (A2) of the movable platform (3, 3', 3'') greater than the width of the floor (1);

2e) the ratio between the lower width (A1) and the upper width (A2) is configured for allowing a stacking grade $0 < SG < 1$ in the transport system.

3. The accessible transport system of claim 2, **characterized in that** the side walls (100) comprise:

- 3a) a curved transition area (112) having a transition height (H12) between the lower part (101) and the upper part (102);
- 3b) a capping (103) at the end of the upper part (102).

4. The accessible transport system of any of claims 2-3, **characterized in that** the side walls (100) comprise an outer side chassis (20) comprising:

- 4a) a vertical post (21) attached to at least one area of the platform (3, 3', 3'') selected from the lower part (101) and the floor (1), having a lower height (H1);
- 4b) a vertical frame (22) attached to the upper part (102) having a height equal to the sum of the transition height (H12) and the upper height (H2);
- 4c) a horizontal support (23) attached at an end to the post (21) and at the other end to the frame (22); wherein:
- 4d) the post (21) defines a lower width (A1) of the movable platform (3, 3', 3'') equal to the width of the floor (1);
- 4e) the frame (22) defines an upper outer width (A3) of the movable platform (3, 3', 3'') greater than the upper width (A2).

5. The accessible transport system of claim 4, **characterized in that** the posts (21), supports (23) and a lower part of the frame (22) are located in a rear part of the platform (3, 3', 3'').

6. The accessible transport system of claim 1, **characterized in that** the side walls (100) comprise:

- 6a) a lower part (101) attached to the floor (1), having a lower height (H11);
- 6b) an upper part (102) having an upper height (H22), configured for being moved between:

- 6b1) an extended position when the movable platform (3) is on the transport path (3'), wherein the movable platform (3) has a total height of the sum of the lower height (H11) and the upper height (H22);
- 6b2) a drawn-in position when the movable

platform (3) is on the return path (3''), where-
in the movable platform (3) has a total height
equal to the lower height (H11);
wherein:

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6c) the ratio between the total height of the mov-
able platform (3) on the transport path (3'),
H11+H22, and the total height of the movable
platform (3) on the return path (3''), H11, is con-
figured for allowing a stacking grade $0 < SG < 1$ in
the transport system.

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7. The accessible transport system of claim 6, **charac-
terized in that** it comprises:

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7a) a scissor mechanism (10) having one end
attached to the upper part (102) configured for
moving the upper part (102) between the drawn-
in position and the extended position;

7b) an electric motor (12) for operating a linear
device (13) configured for opening/closing the
scissor mechanism (10), connected to a lower
part of the scissor mechanism (10);

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7c) a plurality of guides (11) configured for driv-
ing a movement of the upper part (102) between
the drawn-in position and the extended position.

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8. The accessible transport system of any of claims 1-7,
characterized in that it comprises a dividing panel
(5) in the central sector located between a transport
path (3') and a return path (3'').

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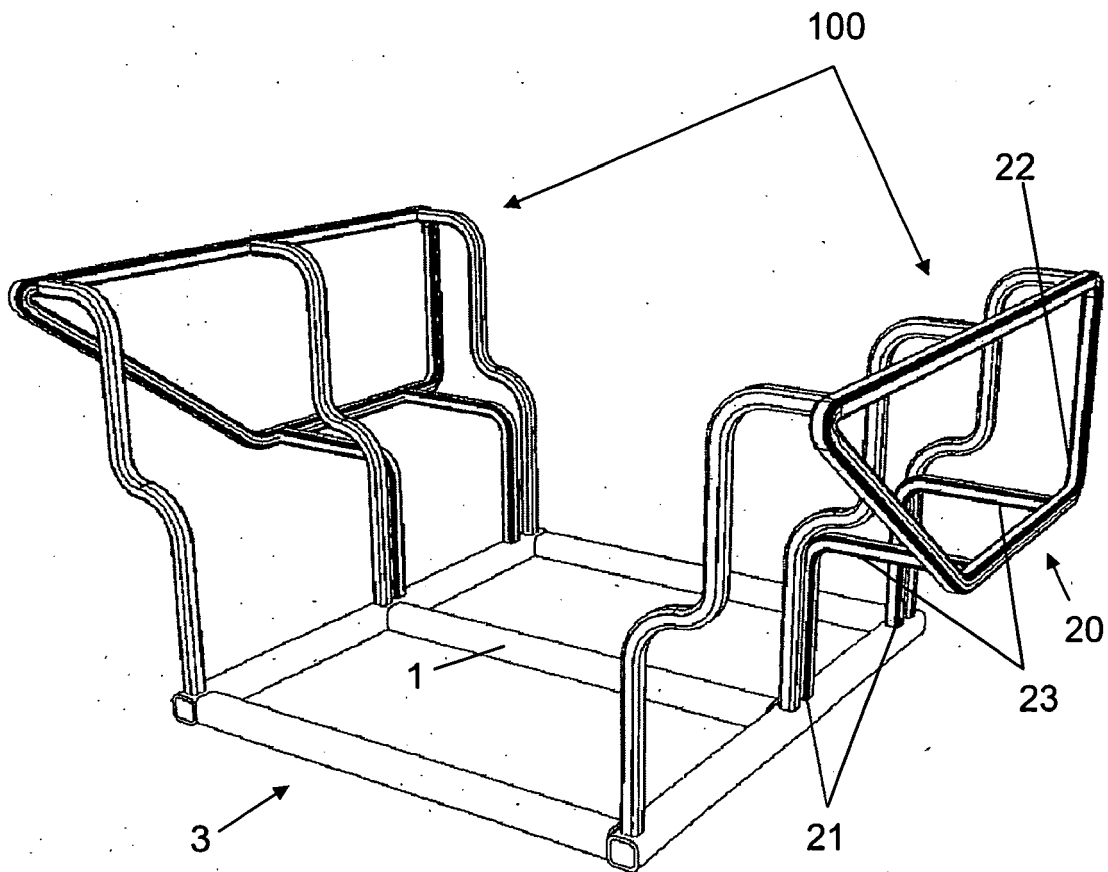


Fig. 1

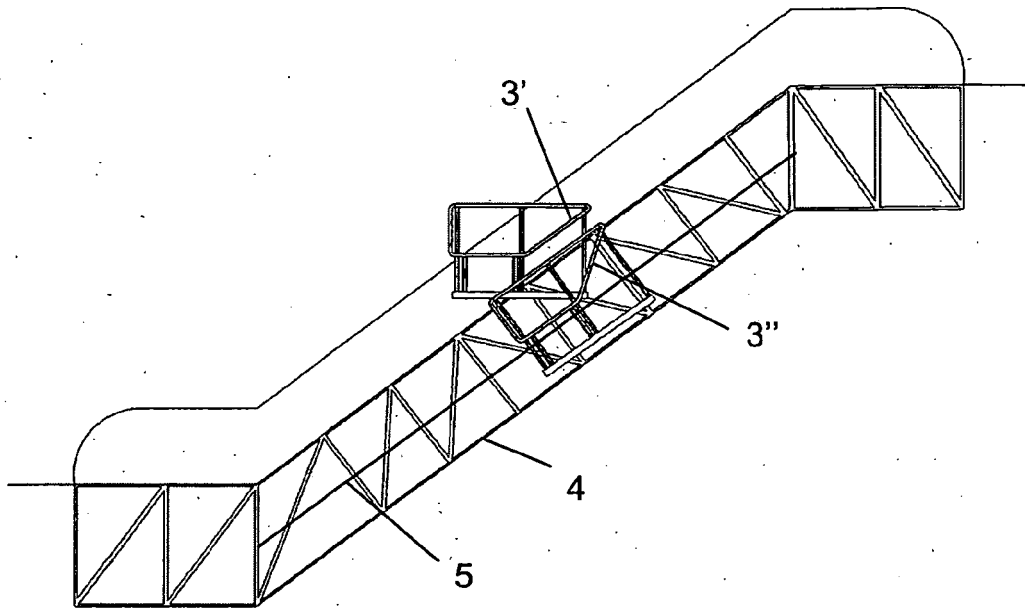


Fig. 2

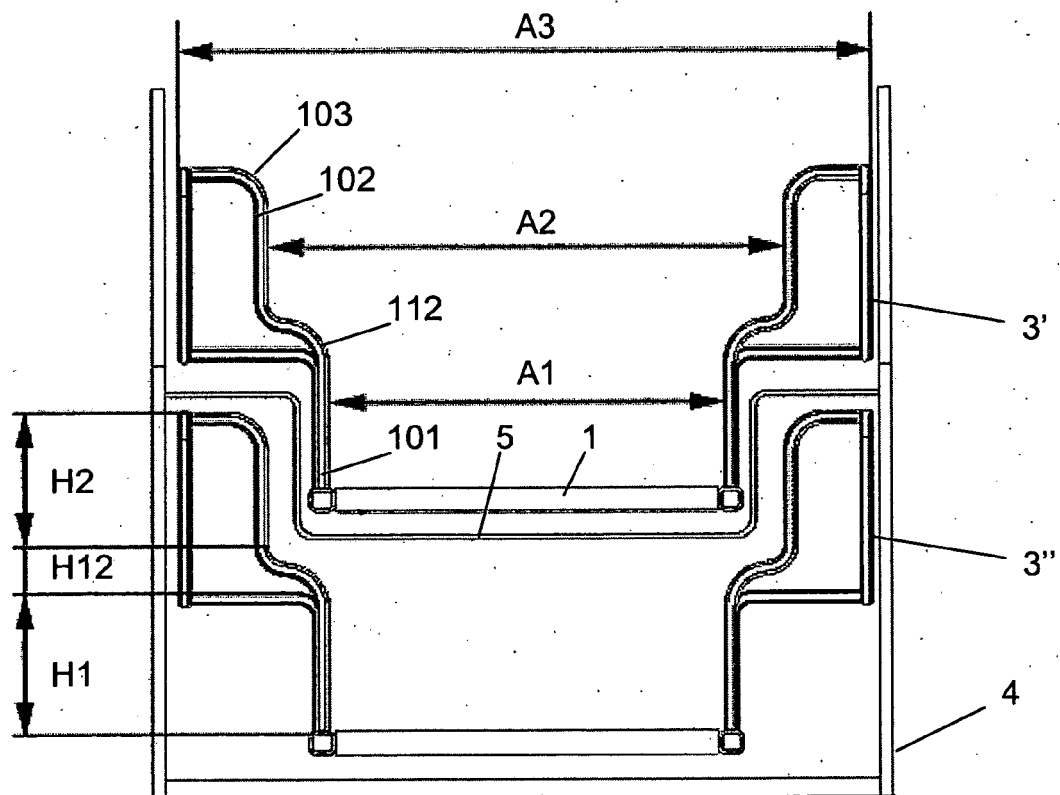


Fig. 3

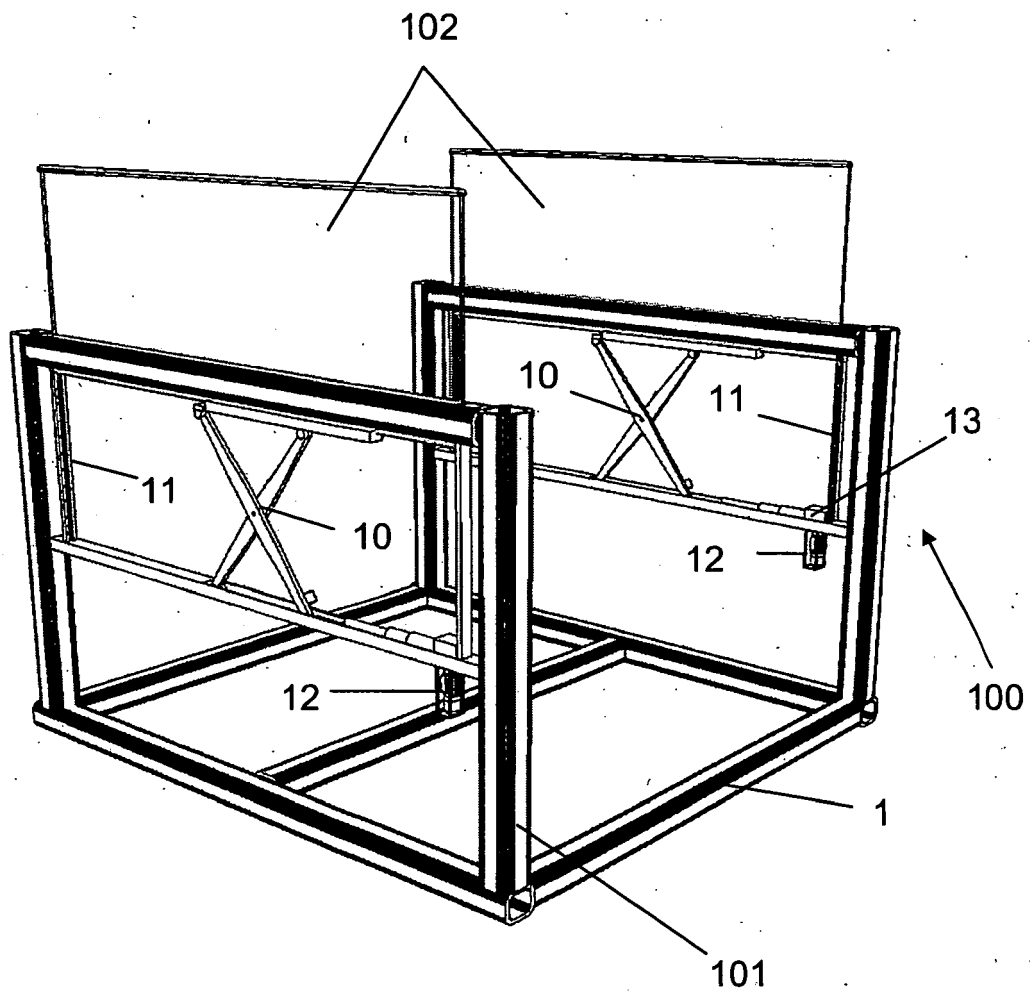


Fig. 4

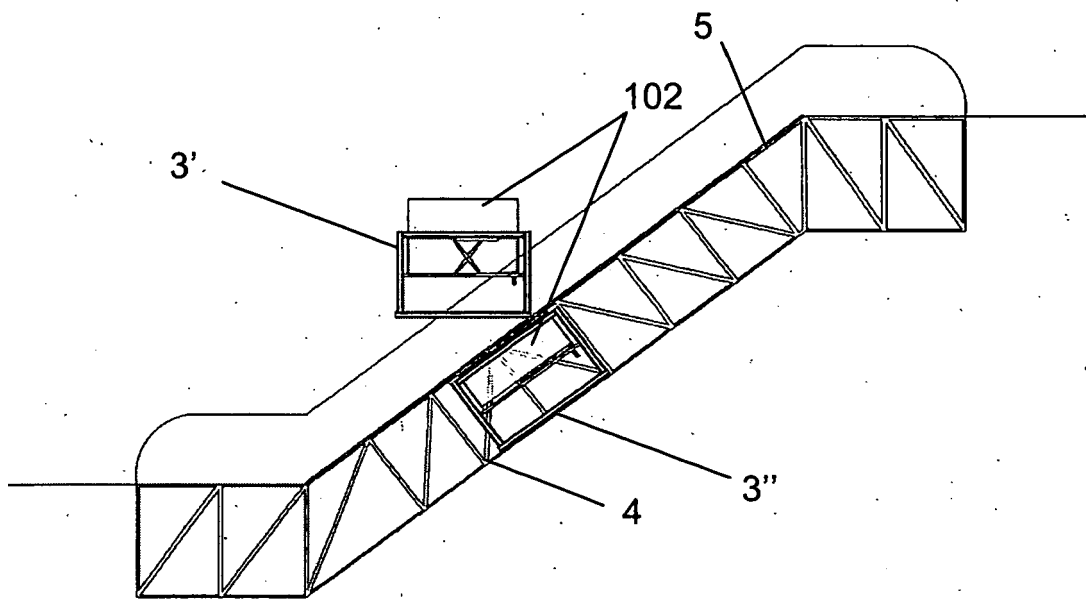


Fig. 5

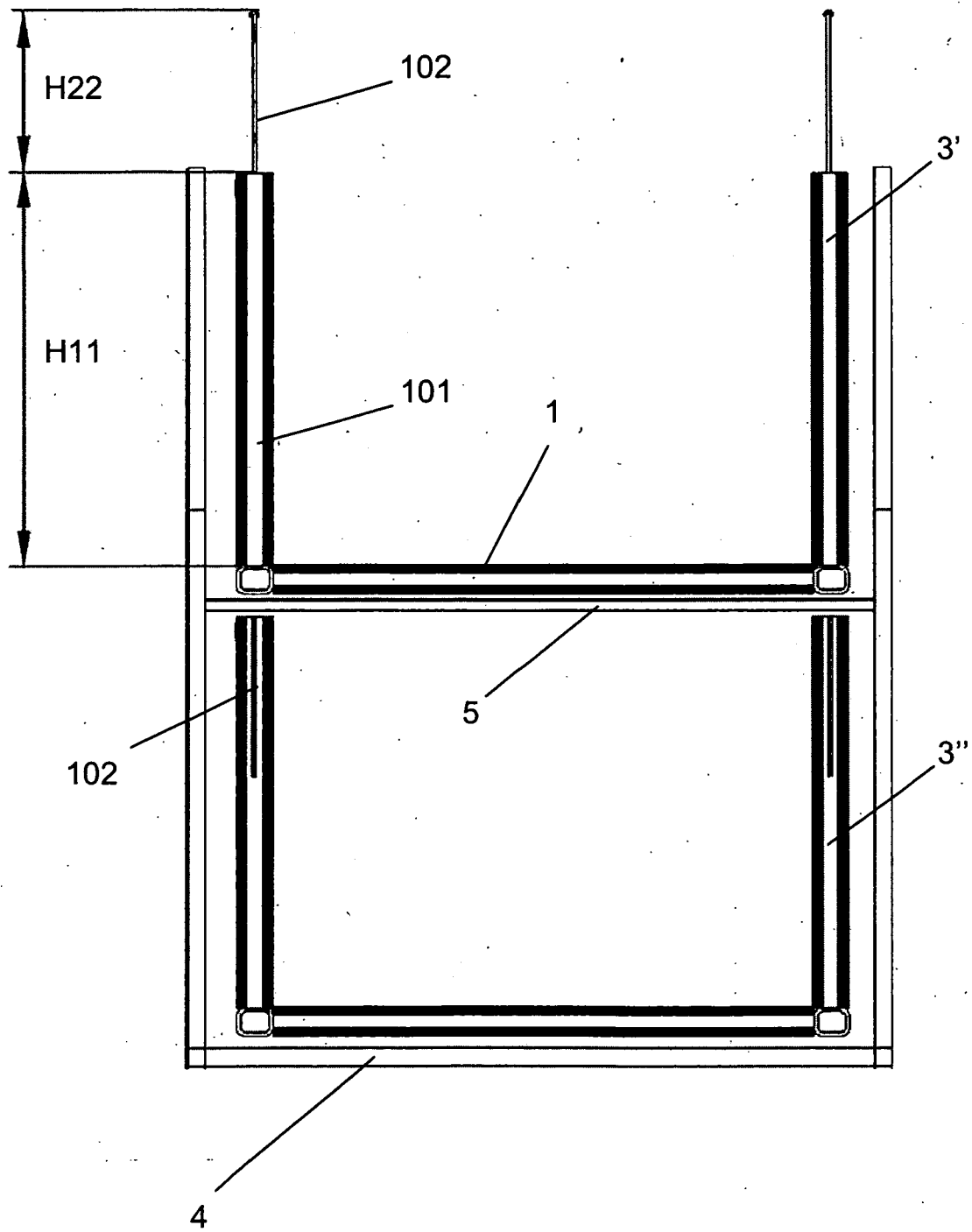


Fig. 6



EUROPEAN SEARCH REPORT

Application Number
EP 11 38 0071

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	ES 2 333 640 A1 (THYSSENKRUPP ELEVATOR INNOVATI [ES]; THUSSENKRUPP ELEVATOR ES PBB G) 24 February 2010 (2010-02-24)	1-3,6-8	INV. B66B21/00
Y	* page 4, line 50 - line 60; figure 5 *	4,5	
Y	FR 2 482 030 A1 (HABEGGER WILLY [CH]) 13 November 1981 (1981-11-13)	4,5	
A	* figures 2,9a-9c *	1	
A	US 3 610 160 A (ALIMANESTIANU MIHAI) 5 October 1971 (1971-10-05) * abstract; figure 3 *	1-8	
			TECHNICAL FIELDS SEARCHED (IPC)
			B66B B61K
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 8 December 2011	Examiner Nelis, Yves
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 P : intermediate document T : theory or principle underlying the invention 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			

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EPO FORM 1503 03.82 (P04001)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 11 38 0071

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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