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(54) **CABIN FOR A TRANSPORTATION SYSTEM, IN PARTICULAR FOR TRANSPORTING PASSENGERS WITH SKIS OR SNOWBOARDS**

(57) A cabin (2) for a transportation system (5), in particular for transporting passengers with skis or snowboards along a forward direction (A, B), the cabin comprising: a floor wall (6); a roof wall (7); at least one side wall (8, 9) provided with a door (12) for embarking/disembarking from the cabin; at least one row of passenger

seats (10, 11) along the at least one side wall; wherein inside the cabin beside each passenger seat there is a ski or snowboard holder (13) configured for individually supporting the skis or snowboard of a single passenger in a vertical position during the movement of the cabin.

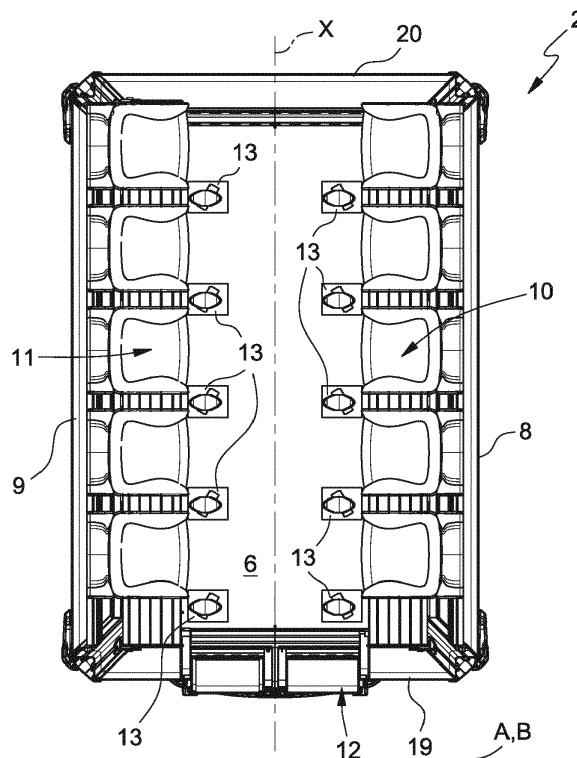


FIG. 3

Description

Cross-reference to related applications

[0001] This patent application claims priority from Italian patent application no. 102019000016751 filed on 19/09/2019.

Technical field

[0002] The technical field of this invention is that of gondola lifts, i.e. the technical field relating to passenger transportation systems in which these passengers are moved along a route inside transport units in the form of cabins. This invention preferably finds its most advantageous application in a particular type of transportation system, i.e. an aerial cable transportation system where the cabins are moved along the system by a hauling cable in a configuration where they do not rest on any support below. However, the cabin of this invention may find application in systems where its movement can be carried out in another way, for example by means of motors connected to the individual cabins, and/or where the cabins rest below on special supports (land-based systems).

Background art

[0003] As indicated above, this invention refers to a cabin for a gondola lifts transportation system. The term "cabin" refers to a space or volume isolated from the outside environment inside of which passengers are housed. In fact, gondola lifts are systems in which the cabins are moved along a track to allow passengers to reach one or more destinations. For this purpose, a gondola lift comprises an upstream and a downstream station that define the ends of the route. There may be intermediate stations between these terminal stations. It is known that between stations, the cabins are moved at a travel speed while within the stations the cabins advance more slowly, or even stopped for a few moments, to allow passengers to board and land. In the terminal stations, the cabins can make U-turns in order to travel along two parallel lanes with opposite directions.

[0004] For the purposes of this invention, additional definitions of possible cabin transportation systems are omitted because they are well known to the person skilled in the art. However, in order to better define this invention, it is appropriate to try to define what is meant with the term cabin. The term "cabin" refers to a space or volume delimited by a series of walls; in particular, at least one floor wall and one roof wall. In the case of rectangular plan cabins, the remaining walls are a front boarding and landing wall provided with a door, a back wall opposite the boarding and landing wall (this could also be provided with a door), and two side walls facing each other that join the boarding and landing wall and the back wall. In this rectangular plan configuration, the side walls are basically orthogonal to the forward direction of the cabin

while the boarding and landing wall is parallel to that direction. In the case of circular plan cabins, in addition to the roof and floor, there is basically a single circular side wall (in plan view, of course) in a portion of which there is a passenger boarding and landing door.

[0005] To a large extent, these gondola lifts are used in mountain systems where passengers with skis or snowboards are transported during the winter season in order to reach the desired winter sports resorts. Therefore, during the use of these systems, passengers carry their skis or snowboards. In order to enable the comfortable transport of these skis or snowboards, or, in general, of one- (snowboard) or two-board (skis) winter sports equipment, the provision of one or more equipment holders configured to house such equipment outside the cabin is well known. These holders can be made in the form of a case (commonly called a ski-rest) in which to place a plurality of skis or snowboards that are not separated from each other. There are some disadvantages to this design. The major disadvantage of this prior art technique is that, on boarding, passengers must place their skis in the case or ski-rests while the cabins move forward in the station and special coordination is required to carry out this procedure. This condition often generates stress for those who have to get into the cabin, with a consequent rising of the boarding time. As a direct consequence, the cabins are not often fully loaded, thus increasing waiting and queuing times in the system. In addition, skis or snowboards in these cases are jolted during the movement of the cabin. Such jolts can not only cause damage to the equipment itself but also contribute to their disorderly arrangement so that it takes time for users to identify and take their equipment as they land.

[0006] To overcome this drawback, today there are cabins configured to transport skis or snowboards together with their passengers internally. In order to allow a safe and orderly travel in the cabin (it is necessary to prevent a user's skis or snowboard from inadvertently bumping into another passenger), a first known solution involves providing the cabin with a number of selective restraint or support devices for skis or snowboards. These devices may be in the form of openings or recesses made in the floor or rail seats or hooks protruding from the roof. According to a first prior art practice, these devices are positioned in such a way that the skis or snowboards transported are essentially in the middle of the cabin. In the case of a circular plan, the centre of the cabin can be immediately defined, while "rectangular plan" means along a row orthogonal to the forward direction that ideally connects the centrelines of the front (boarding) and back walls. In this solution, the passenger seats are arranged adjacent and along the side walls so that there is enough space between the seated user and their equipment. On the other hand, this design has a major disadvantage. In fact, the skis when placed constrained in the centre of the cabin are an obstacle for any new passengers entering the cabin or for passengers leaving the cabin. By way of example, Figure 2 represents

a cabin incorporating this solution according to the prior art. Incidentally, the solution of enlarging the cabin to provide more space between the central row of skis and the seats is generally not feasible because the maximum size of the cabin is defined by specific regulations.

[0007] To solve the problems related to the solution in Figure 2, other solutions are known in which the skis are placed in a different position inside the cabin other than the middle row. EP0497713 and EP0222646 offer as a solution that of moving the selective restraint devices for the skis or snowboards from the centre of the cabin to a more lateral position, i.e. along the rows placed a short distance from the side passenger seats. In particular, exactly facing each seat, there is a holder in the floor wherein the passenger can fasten their skis or snowboard. Thanks to this solution, the central space in the cabin is left free to enable passengers to board and disembark in greater comfort.

[0008] However, even this solution is not without drawbacks. In fact, the position of the ski holders next to and facing each seat obliges passengers who want to leave the cabin to first remove their skis and only afterwards to get up. This procedure is also not easy to carry out because the skis or snowboards must be held securely in place to prevent their accidentally falling.

Description of the invention

[0009] Starting from this prior art, one purpose of this invention is that of providing a cabin for a gondola lift, i.e. a cabin transportation system, suitable of housing the skis and snowboards of passengers inside in convenient holders and, on the other hand, which does not create obstacles along the centreline for easily boarding/disembarking and that enables passengers to be able to first get up and then, while standing, remove the skis or snowboard from the corresponding holders.

[0010] In accordance with these purposes, this invention relates to a cabin for a transportation system, in particular for the transport of passengers with skis or snowboards along a forward direction, wherein the cabin comprises:

- a floor wall;
- a roof wall;
- at least one side wall provided with a door for boarding/landing from the cabin;
- at least one row of seats along the at least one side wall; wherein inside the cabin, beside each seat, there is a holder configured for individually supporting the skis or snowboard of a single passenger in a vertical position when the cabin moves.

[0011] Advantageously, therefore, according to this invention, the skis or snowboards, when housed in their corresponding holders inside the cabin, are not an obstacle to passengers either when they are boarding or disembarking (the central part of the cabin remains, in

fact, free), nor when they are seated or leaving their seat (the space facing the seat remains, in fact, free). In this way, the passenger can first get up, find a correct and subjective position of equilibrium, and then free their skis or snowboard from the corresponding holder in order to exit the cabin.

[0012] The expression "beside each seat" comprises a plurality of embodiments in which the holders are physically in alternating positions along the same row of seats (possibly also integrated into a kind of lateral arm) and embodiments in which the holders are positioned a little beyond the body of the seats towards the centre of the cabin. To generalise this last embodiment, it is possible to state that, according to this invention, the distance between the row of holders and the centre or middle of the cabin is less than the distance separating the row of holders from the row of seats.

[0013] The cabin in this invention can have, in plan view, different shapes. In fact, it can have a circular extension in which there is only one side wall, one row of seats, and one row of holders. Alternatively, the cabin in plan view can have a rectangular extension with a front wall for boarding and landing provided with a door, a back wall opposite the front wall, and two side walls wherein the side walls are basically orthogonal in the forward direction of the cabin. In this embodiment (of which one example will also be shown in the figures), there are two rows of seats (one row for each side wall) and two rows of holders.

[0014] The holders may also be made in various forms. In fact, the holders can be made in the form (as known) of simple openings or recesses (possibly shaped) formed in the floor in which part of the skis or snowboard can be inserted (one such example will be shown in the figures), or each holders may have a shape (as known) of tracks protruding from the roof in which the tip of the skis or snowboards is inserted by sliding.

[0015] Finally, as mentioned at the start of this invention, the inventive cabin described here can be installed in transportation systems of various kinds, i.e. in air or on land transportation systems. The cabin may be moved by means of a hauling cable or with individual motorised trolleys, or in any other possible way. The following figures will schematically show an aerial cable transportation system in which this invention finds advantageous application because this is the type of system most used for reaching winter sports resorts where passengers use skis or snowboards.

Brief description of the drawings

[0016] Additional features and advantages of this invention will be apparent from the following description of a nonlimiting embodiment thereof, with reference to the figures of the accompanying drawings, wherein:

- Figure 1 is a schematic view of a transportation system in which the cabin of this invention finds ad-

vantageous application;

-- Figure 2 is a schematic view of a cabin according to the prior art;

- Figures 3 and 4 are schematic views of an example of a cabin according to this invention, in particular a top view (cabin in plan) and a cross-section view (view from the entrance of the cabin), where for simplicity some components have been removed.

Best mode for carrying out the invention

[0017] Therefore, with reference to the figures, Figure 1 schematically shows a portion of an aerial cable transportation system in which the inventive cabin of this invention finds advantageous application. Naturally, as shown in the general description of the invention, the innovative cabin of this invention can also be used in different systems. Figure 1 shows a portion of a system 5 comprising a section 14 configured as a cable transportation system. The system comprises a number of transport units in the form of cabins 2 moved in succession in aerial or suspended configurations, i.e. lifted from the ground and not resting on anything below. As is known, the aerial cable systems can be of various types, for example back-and-forth systems or systems with ascent and descent return branches, and comprise a plurality of stations at which passengers can enter or exit the cabins 2. Figure 1 shows a station 16 that can be an intermediate station or the downstream station. As indicated, the cabins 2 can traverse the system 5 in both directions indicated with the arrows A and B that are the opposite directions to a shared forward direction. By analysing, for example, the path defined by the arrow A, upstream of the station 16, the cabins 2 are supported hanging from and moved by a cable 3. In particular, each cabin 2 is connected to a respective clamp 1 configured to couple to the cable 3. The cabin 2 is kept suspended by means of a suspending arm 17 having one end coupled to the roof 18 of the cabin 2 and the opposite end coupled to the clamp 1. As is known, in the station 16, the cabin 2 advances no longer supported by the cable 3, but on special tracks formed in the station 16 itself. The cabin 2 can, naturally, also be applied to two-cable or three-cable systems wherein the support and forward movement functions are divided between different cables.

[0018] Figure 2 shows an enlarged view of the detail indicated as II in Figure 1, i.e. the cabin 2. In particular, Figure 2 shows a plan view, i.e. from the roof 18 towards the interior of the cabin, of a cabin according to the prior art. The elements that will be described in this figure of the prior art will have the same references as the analogous elements present in the successive figures of this invention. Figure 2 also shows the forward direction A, B in this example the cabin 2 has a rectangular plan, is configured for transporting passengers with skis or snowboards and comprises:

- a floor wall 6;
- a roof wall 18 (removed in Figure 2 to see the inside of the cabin);
- a front wall 19 or wall for boarding and disembarking the cabin provided with a door 12;
- a back wall 20 facing the front one;
- two side walls 8, 9 joining the front wall to the back wall.

[0019] This embodiment comprises, in addition, two rows of seats 10, 11; in particular, each row of seats is arranged along a corresponding side wall and each seat comprises a backrest arranged basically in contact with the corresponding side wall. In this example, the reference X (which can also be seen in Figures 3 and 4) identifies a transverse centreline plane of the cabin (i.e. a plane transverse to the forward direction that passes through the centre of the front and back walls, i.e. through the centre of the door 12). In this example, the cabin comprises a row of holders 13 in which each holder 13 is configured (in a known way) to individually support the skis or snowboards of a single passenger in a vertical position when the cabin 2 advances. In this example, the holders are a plurality of openings or recesses made on the floor wall and the row of holders 13 is arranged along the central plane X.

[0020] Figures 3 and 4 show one embodiment of the invention. In this example, unlike the example in Figure 2, inside the cabin 2 each holder 13 is positioned beside the corresponding passenger seat 10, 11. In this way, both the space at the centre of the cabin (centreline plane X) and the space immediately in front of each seat is, advantageously, left free. Also in this example, the holders 13 are in the form of openings or recesses formed in the floor 6. In this example, the limitation "positioned beside" relative to the holder with respect to the seat does not indicate the fact that the holder is physically between one seat and the other along the same row (which is however possible according to this invention), but that the holders are adjacent to the seats (distance d between the seat and the holder is less than the distance D from the plane X) and that they are not placed frontally to the seats but in a theoretical continuation of a hypothetical lateral armrest of the seats.

[0021] Lastly, it is clear that modifications and variations may be made to the cabin described herein without departing from the scope of the appended claims.

Claims

1. A cabin (2) for a transportation system (5), in particular for transporting passengers with skis or snowboards along a forward direction (A, B), the cabin (2) comprising:

- a floor wall (6);
- a roof wall (7);

- at least a side wall (8, 9) provided with a door (12) for the embarking/landing from the cabin (2);
- at least a row of passenger seats (10, 11) along the at least a side wall (8, 9);

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wherein inside the cabin (2) beside each passenger seat (10, 11) a ski (18) or snowboard holder (13) is provided and configured for individually supporting the ski (18) or snowboard of a single passenger in a vertical position during the movement of the cabin (2).

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2. The cabin as claimed in claim 1, wherein in plan view the floor wall (6) has a circular shape; the cabin comprising a single side wall, a single row of passenger seats, and a single row of ski or snowboard holders (13) parallel to the row of passenger seats. 15
3. The cabin as claimed in claim 1, wherein in plan view the floor wall (6) has a rectangular shape; the cabin comprising two side walls (8, 9), two rows of passenger seats (10, 11), and two rows of ski or snowboard holders (13) wherein each row of ski or snowboard holders (13) is parallel and near to the relative row of passenger seats. 20 25
4. The cabin as claimed in any one of the foregoing claims, wherein the ski or snowboard holders (13) comprise recesses made in the floor wall. 30
5. The cabin as claimed in any one of the foregoing claims, wherein the ski or snowboard holders (13) comprise rail guides connected to the roof wall. 35
6. The cabin as claimed in any one of the foregoing claims from 3 to 5 wherein along the direction transverse to the forward direction (A, B) each ski or snowboard holder (13) is at a greater distance (D) from the cabin (2) transverse centreline (X) with respect to its distance (d) from the relative passenger seat. 40
7. The cabin as claimed in claim 6, wherein there is a lateral alternation between ski or snowboard holders (13) and passenger seats along the same row transverse to the forward direction (A, B). 45

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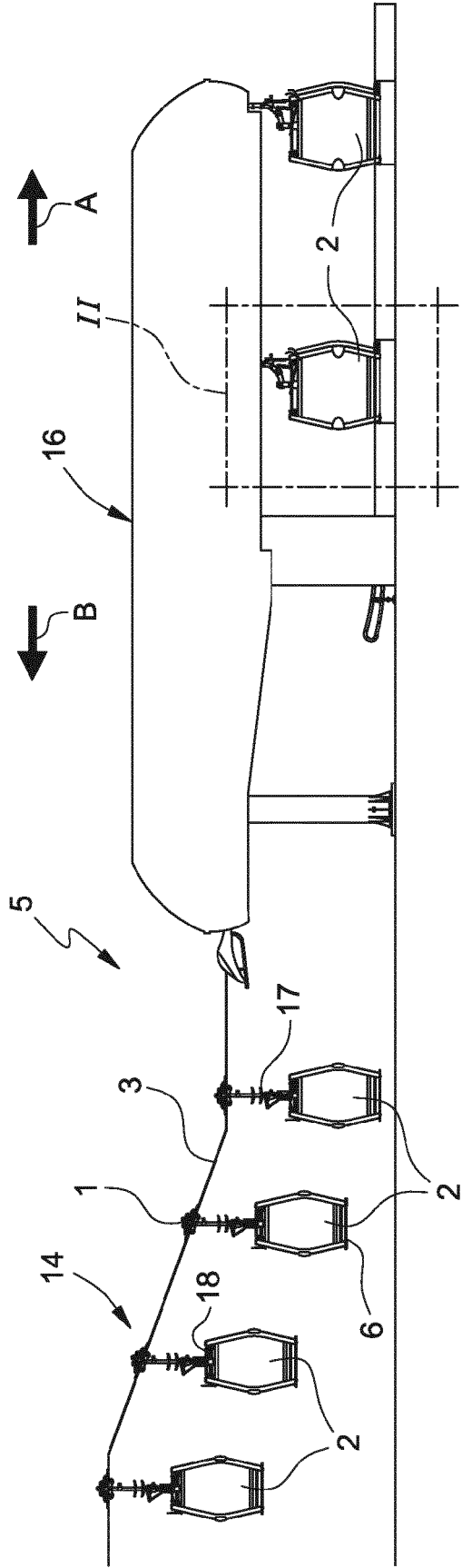


FIG. 1

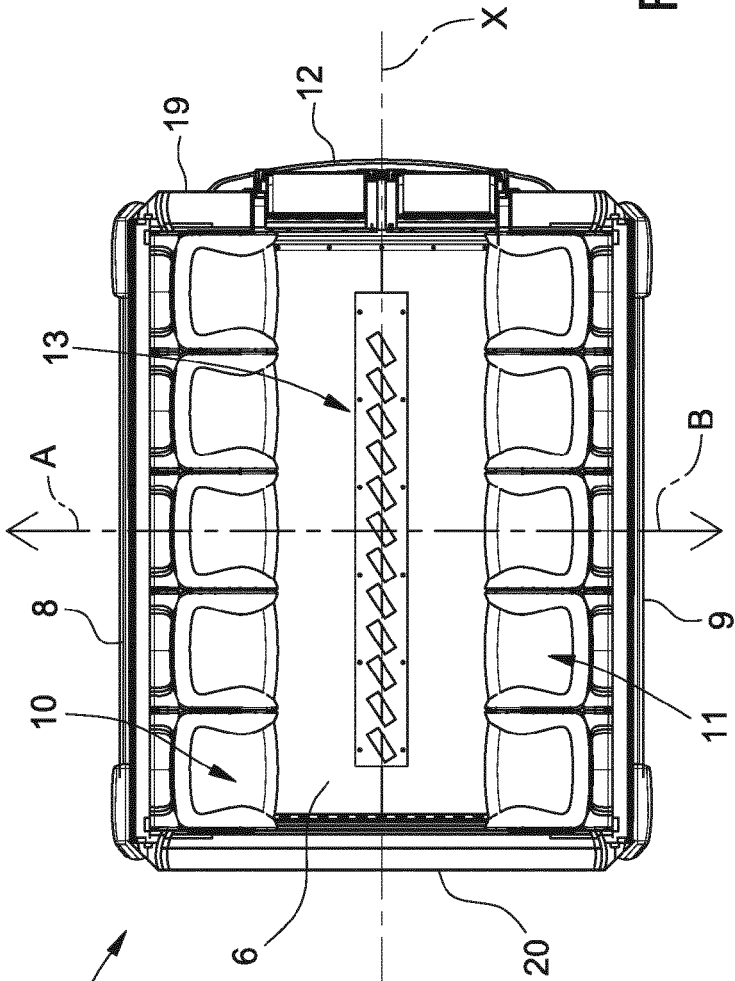


FIG. 2

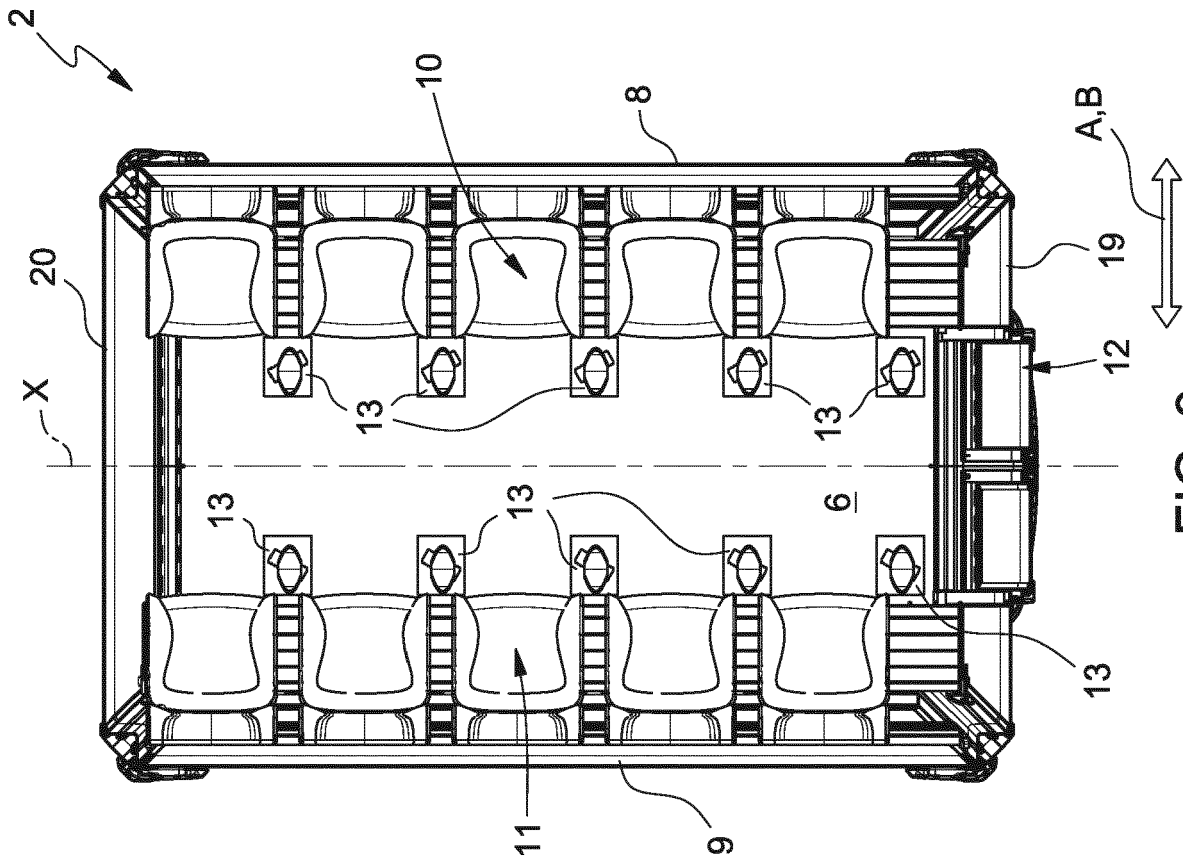


FIG. 3

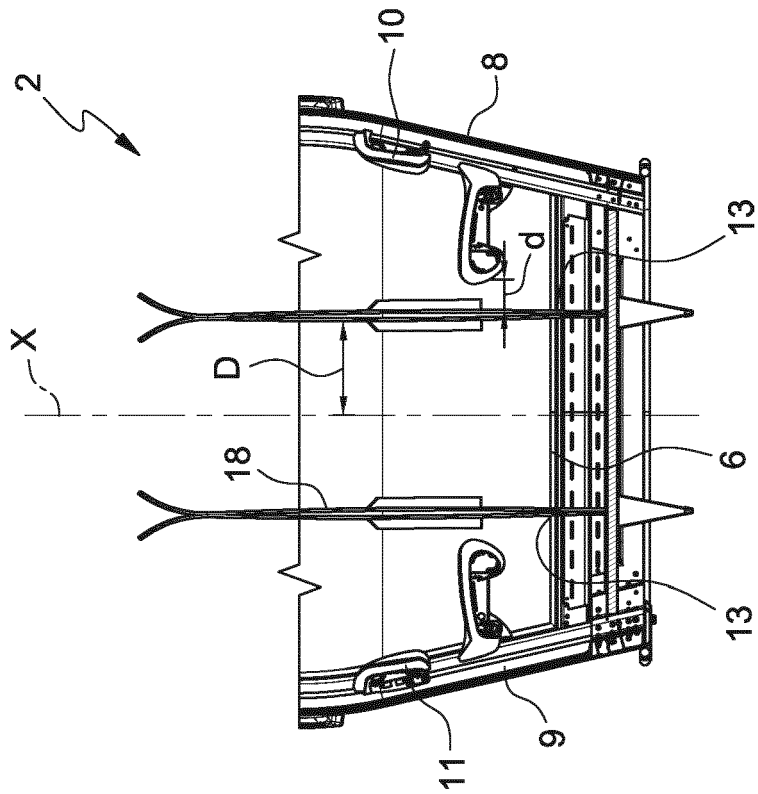


FIG. 4



EUROPEAN SEARCH REPORT

 Application Number
 EP 20 19 7010

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,D	EP 0 222 646 A1 (POMAGALSKI SA [FR]) 20 May 1987 (1987-05-20)	1,3-5	INV. B61B12/00
A	* column 2, lines 36-45; figures 1,2 * -----	2,6,7	
X,D	EP 0 497 713 A1 (POMAGALSKI SA [FR]) 5 August 1992 (1992-08-05)	1,2,4,5	
A	* the whole document * -----	3,6,7	
A	WO 2012/045651 A1 (CWA CONST SA [CH]; GUBLER DANIEL [CH]) 12 April 2012 (2012-04-12)	1	
	* the whole document * -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			B61B
Place of search		Date of completion of the search	Examiner
Munich		15 January 2021	Schultze, 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 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 20 19 7010

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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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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0222646	A1	20-05-1987	AT 48574 T	15-12-1989
			EP 0222646 A1	20-05-1987
			FR 2588816 A1	24-04-1987
			JP S62101573 A	12-05-1987

EP 0497713	A1	05-08-1992	CA 2060394 A1	01-08-1992
			EP 0497713 A1	05-08-1992
			FR 2672264 A1	07-08-1992
			JP H0624331 A	01-02-1994

WO 2012045651	A1	12-04-2012	CA 2813701 A1	12-04-2012
			CH 703910 A1	13-04-2012
			CN 103153408 A	12-06-2013
			EP 2624925 A1	14-08-2013
			JP 2013545502 A	26-12-2013
			KR 20130142114 A	27-12-2013
			US 2013320052 A1	05-12-2013
			WO 2012045651 A1	12-04-2012

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- IT 102019000016751 [0001]
- EP 0497713 A [0007]
- EP 0222646 A [0007]