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(54) **ROLLING CEILING OF ELEVATOR CABIN**

(57) This invention refers to a rolling ceiling of a cabin (1) which allows it to be opened and closed in order to facilitate access for maintenance purposes. Specifically, the rolling ceiling (4) is located above a false ceiling (2) and during the opening it wraps like a roll, moving on two guides (5a), (5b) and rotating around an axis (6). This invention offers a simple, reliable and efficient solution to facilitate elevator maintenance.

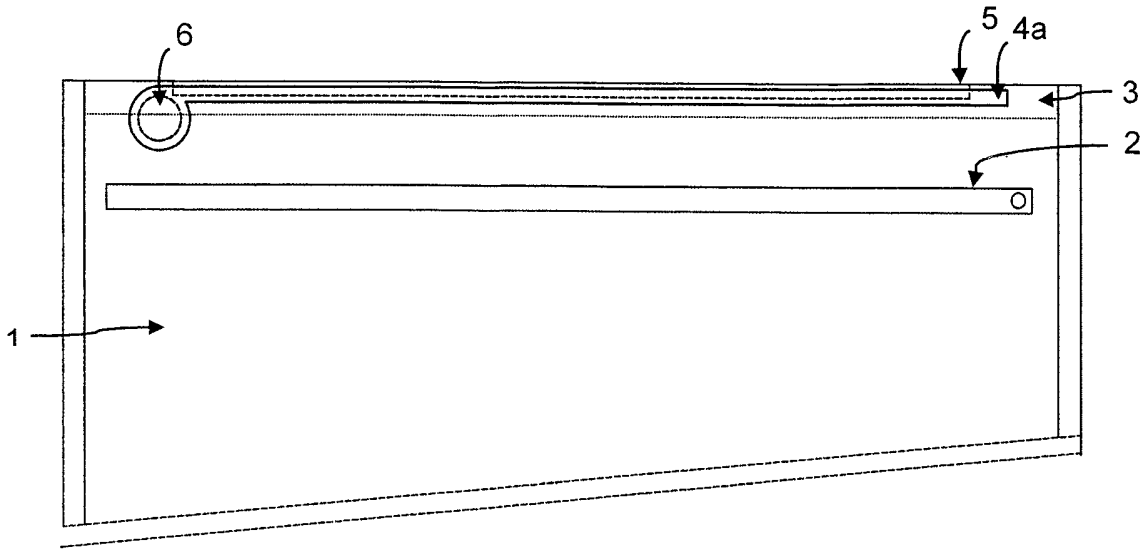

Figure 1.

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Description

[0001] This invention concerns a sliding ceiling of a cabin and allows it to be opened and closed in order to facilitate access for maintenance purposes. Specifically, the ceiling is made of aluminum sheets, plastic or tarpaulin, without being limited to these materials, and during opening it is packed like a roll. This invention offers a simple, reliable and efficient solution to facilitate elevator maintenance while providing an attractive appearance.

[0002] According to the state of the art, during the most common elevator maintenance process, the maintainer should be located above the ceiling of the cabin. Maintenance includes checking elevator cables, maintaining the machine and drive system, replacing damaged or worn parts, and adapting the lift system to the latest safety requirements and regulatory specifications. In order to perform elevator maintenance above the roof of the cabin, access to the elevator should be blocked and work done safely using appropriate equipment and protective measures. Overall, elevator maintenance above the ceiling of a cabin requires special attention and preparation to ensure the safety and efficiency of the elevator system.

[0003] Mainly due to the risk of the aforementioned way, in recent years solutions have been proposed where maintenance is carried out from inside the cabin. In these solutions it is proposed to remove the false ceiling and ceiling or remove the side parts of the cabin. Each of these solutions, however, has disadvantages since it requires, apart from the special construction, a special process of removing each piece, which is often difficult, while a small cabin makes the process even more difficult. Also, all of the above-mentioned solutions demand a lot of space inside the shaft and this is problematic.

[0004] The present invention refers to a practical and easy solution. It is a special design, but the use is very easy, without requiring specialized knowledge, and can be applied in small or large cabins, even with limited space in the shaft. It is located in the upper part of an elevator cabin. In this space there is the false ceiling, the ceiling space and the present invention concerning a rolling ceiling, which moves on two guides and wraps around the axis, while the false ceiling opens by moving about another axis. The rolling ceiling consists of joined strips of similar or different width, with indicative ways of connection.

BRIEF DESCRIPTION OF THE FIGURES

[0005] The invention will hereinafter be made apparent to those skilled in the art by reference to the accompanying drawings, which illustrate it in an indicative, non-limiting manner.

Figure 1 shows the invention in a side section. In particular, the state of normal operation of the elevator is presented, where the ceiling completely closes the upper part of the cabin, and the false ceiling is also in a closed position. In this case, the strips are of equal width.

Figure 2 shows the invention in an open position, for example during a maintenance.

Figure 3 shows the upper view of the invention in an open position.

Figures 4 and 5 present two more illustrative cases of the placement of the invention. The rolling ceiling can be packed either in the space between the ceiling and the false ceiling or from above the upper level of the cabin and also the installation can be both on the left and on the right, depending on the needs of each installation.

Figure 6 shows an alternative form of invention in a side section, where the strips of material are of different widths. In particular, the state of normal operation of the elevator is presented, where the ceiling completely closes the upper part of the cabin, and the false ceiling is also in a closed position.

Figure 7 shows the invention, in the case of uneven strips, in an open position, for example during maintenance.

Figure 8 illustrates the alternative ways of connecting the strips, regardless of width. On the left is presented the connection with a flexible joint, while on the right is an alternative way of connecting with a prefabricated joint morphology with a profile or sheet metal that bends at the point.

DETAILED DESCRIPTION OF THE IMPLEMENTATION OF THE INVENTION

[0006] The invention will hereinafter be made apparent to those skilled in the art by reference to the accompanying drawings, which illustrate it in an indicative, non-limiting manner.

[0007] The present invention is found in the upper part of an elevator cabin (1). In this area there is the false ceiling (2), where the lighting, ventilation, and other parts and accessories related to the operation of the elevator are located, the ceiling space (3) and the present invention, i.e. the rolling ceiling (4) that moves on two guides (5a), (5b), and is packed in position (6). The roller shutter ceiling (4) is made of aluminium, plastic or tarpaulin sheets, without being limited to these materials, of the same or different width. The main issue is that the construction allows opening and closing, in a way similar to a roll.

[0008] Specifically, Figure 1 shows the normal operating condition of the elevator where the ceiling space (3) fully covers the upper part of the car and the false ceiling (2) is also in a closed position. The roller shutter ceiling (4) is fully opened, resting right and left on the guides (5a) and (5b) on which it can move, as shown in Figure 3. Figures 1-5 illustrate the invention with sheets-strips of equal width.

[0009] In contrast, Figure 2 shows a state of non-nor-

mal operation of the elevator, such as during maintenance. In this case the false ceiling (2) opens downwards, having as an axis of rotation when opening an axis (7). The rolling ceiling (4) is then wrapped around another axle (6), moving on guides (5a) and (5b). In this way the maintainer is able to access the shaft through the cabin (1), which is much easier and safer. Figure 3 shows the invention as it could be seen from above. In this figure the rolling ceiling (4) is open, as already described in the case of Figure 2.

[0010] Finally, Figures 4 and 5 present alternative placements of the rolling ceiling (4). The rolling ceiling (4) can be wrapped either upwards or downwards, while the placement both to the right and left of the cabin (1) does not affect the functionality of the invention at all. The installation way depends entirely on how the elevator is designed for a particular installation. If, for example, the installation is carried out in a small shaft, then the rolling ceiling (4) can be wrapped between the ceiling and the false ceiling, while if space is available, it can be wrapped towards the upper side.

[0011] The following Figures 6 and 7 illustrate the invention, in closed and open positions respectively, in the case of unequal sheet-stripes. The mode of operation remains the same. The roller shutter ceiling (4b) is wrapped around the axis (6) and its installation can be from above or below, left or right, depending on the requirements of each installation.

[0012] The strips-sheets can be connected to each other either by a flexible joint (8a), or alternatively by a prefabricated joint morphology (8b) with a profile or sheet metal that bends at the point. These connections allow the strip sheets to spread out to completely cover the upper part of the cabin, while at the same time they can be easily wrapped, being next to each other, around an axis to create a roll, partially or completely open the upper part of the cabin and thus allow the maintainer access to the shaft.

[0013] Overall, the invention offers a solution for carrying out elevator maintenance from inside the cabin, without affecting the aesthetics or durability of its construction. It should be noted that the durability of the invention fully meets what the relevant European regulations stipulate. The application can be done in alternative ways to meet different requirements in each installation, for example minimum available space at shaft height or on one side of the roof.

Claims

1. Rolling ceiling of elevator cabin, in the upper part of an elevator cabin (1) and above a false ceiling (2), consisting of an axis of rotation (6), two guides (5a) and (5b) and a rolling ceiling (4) made of sheet-strips of aluminium, plastic or tarpaulin, of the same or different width, connected to each other by a flexible joint (8a) or by a prefabricated joint morphology (8b) with a profile or sheet metal bent at the point.

2. Rolling ceiling of an elevator cabin, according to claim 1, **characterized by** the fact that the rolling ceiling (4) is placed to the right or left of the elevator cabin (1).

3. Rolling ceiling of elevator cabin, according to claim 1, **characterized by** the fact that the rolling ceiling (4) is wrapped either upwards or downwards.

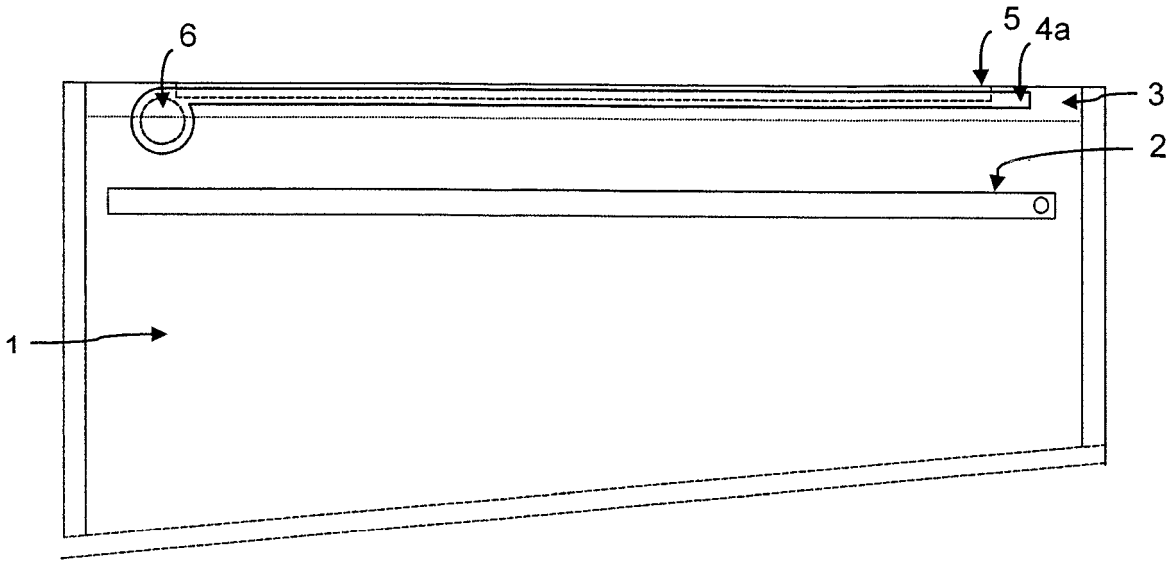

Figure 1.

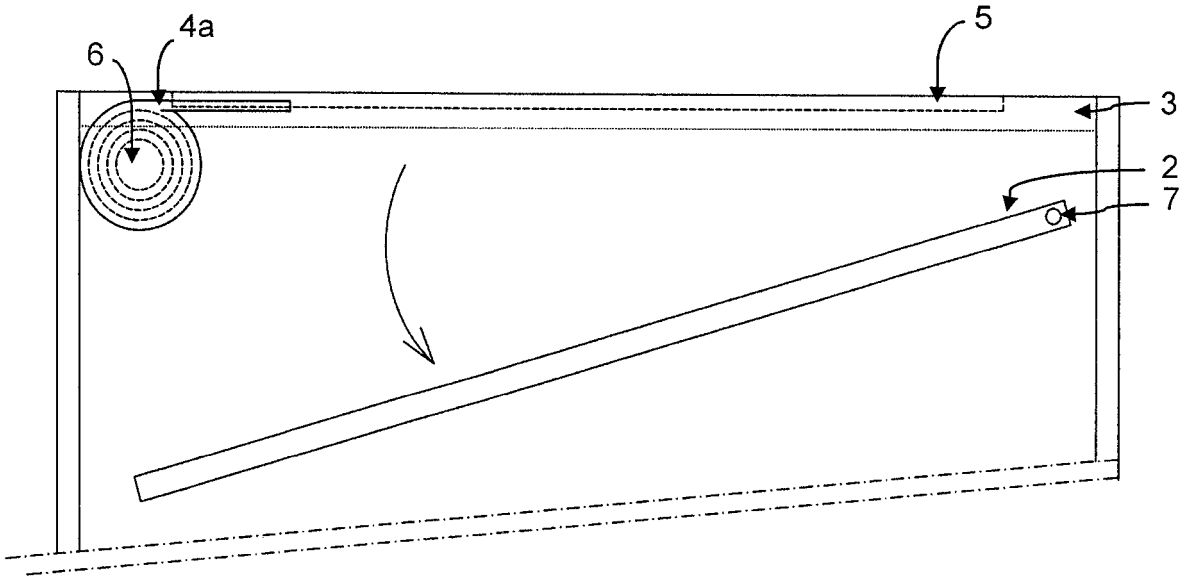

Figure 2.

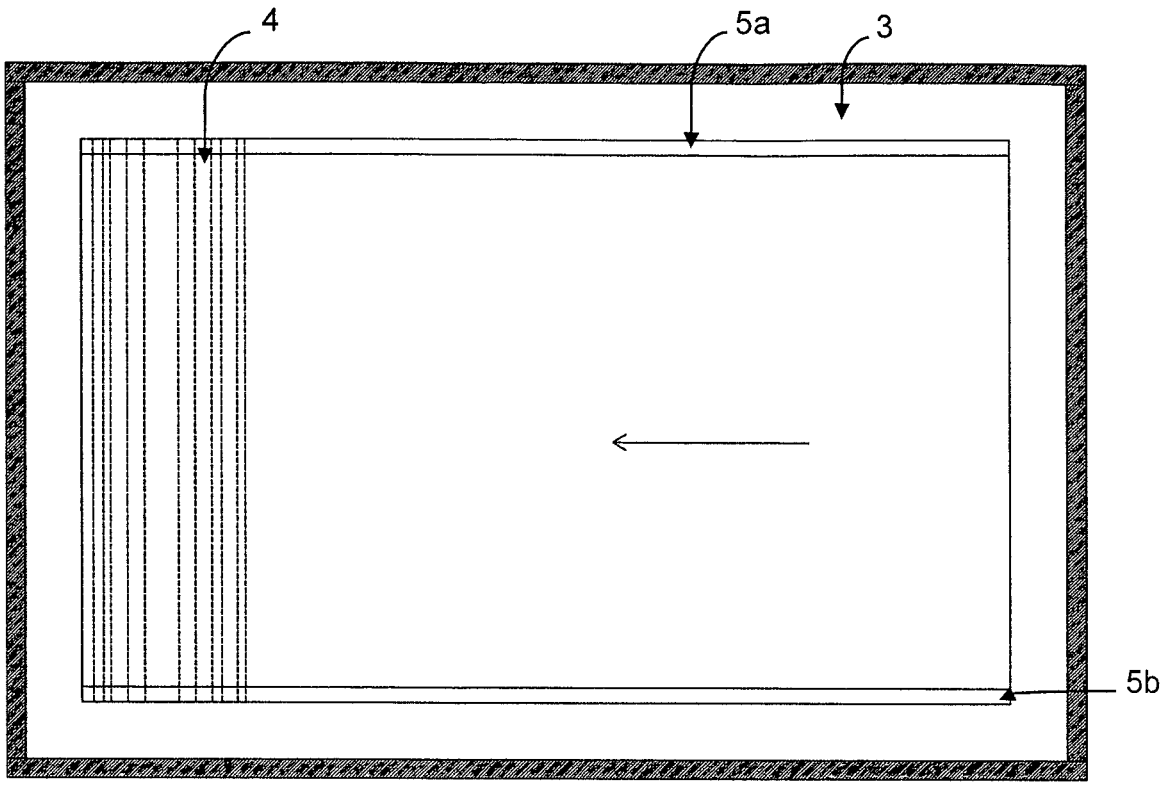

Figure 3.

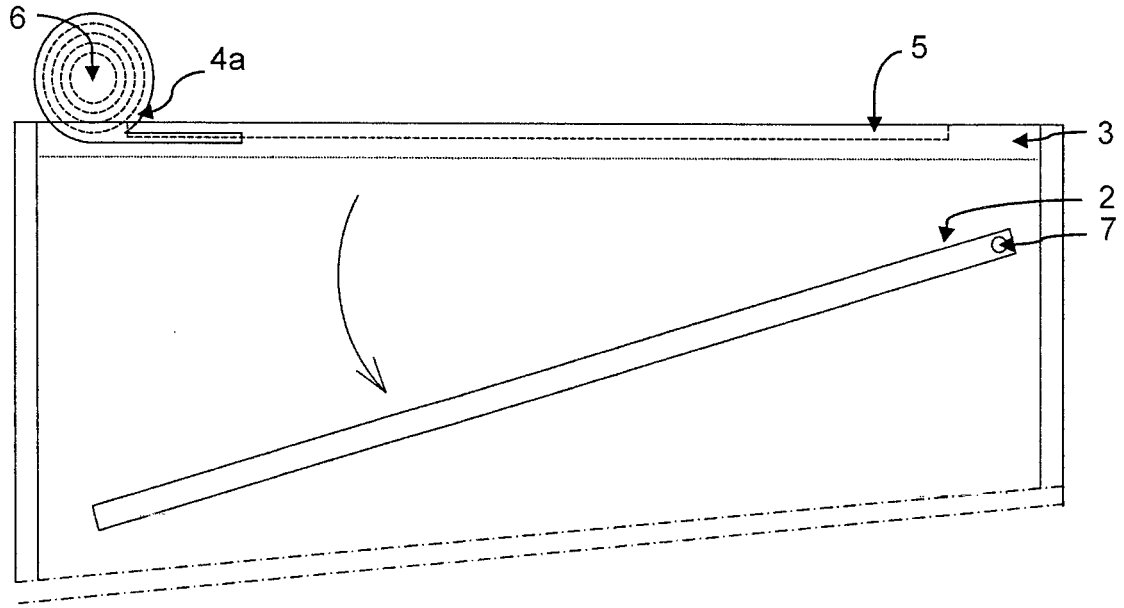

Figure 4.

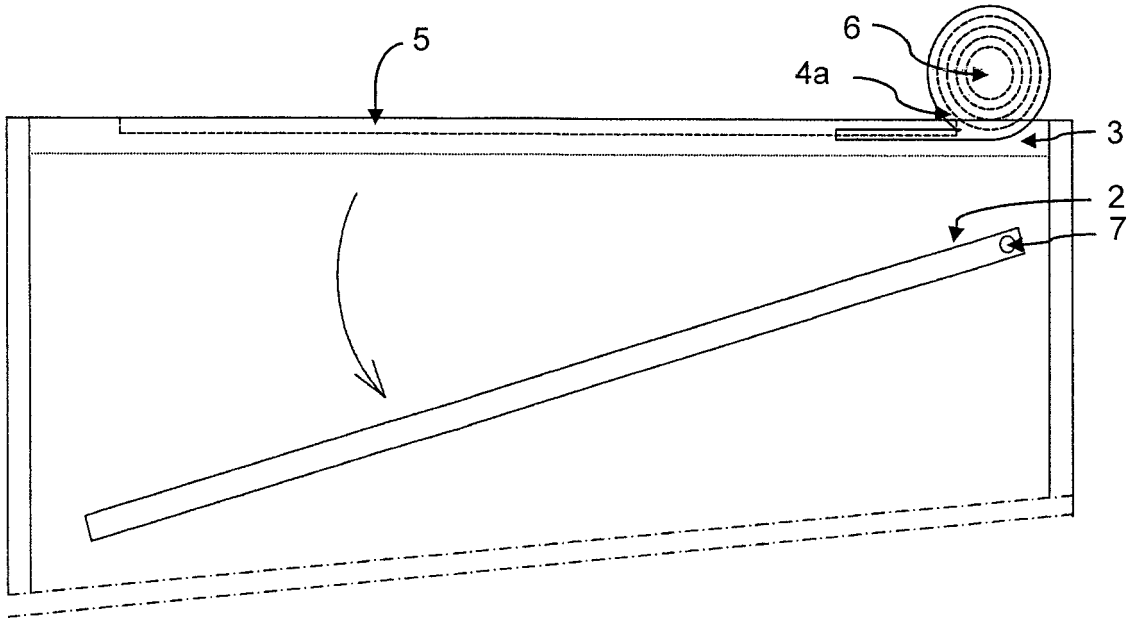

Figure 5.

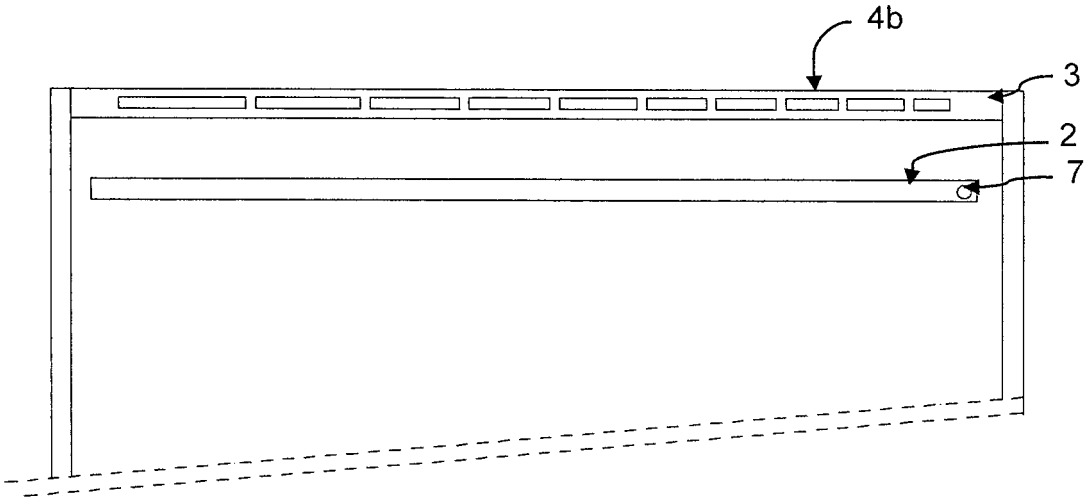

Figure 6.

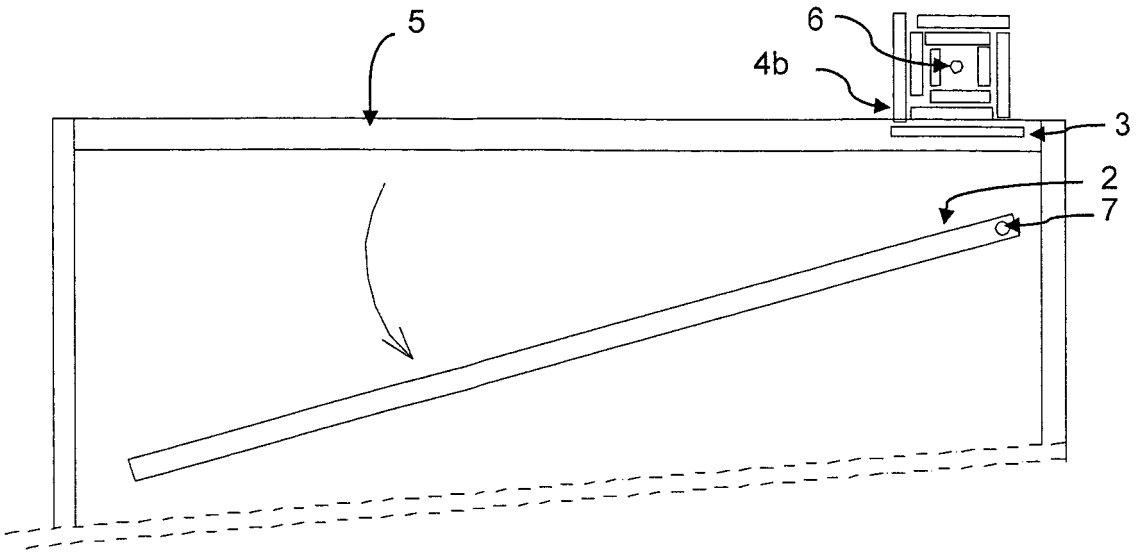

Figure 7.

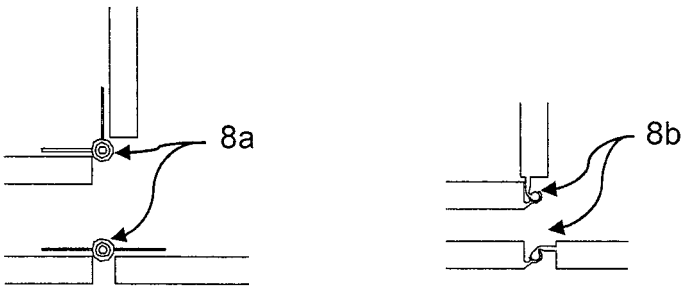

Figure 8.

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EUROPEAN SEARCH REPORT

Application Number
EP 24 38 6125

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 S53 50962 U (UNKNOWN) 28 April 1978 (1978-04-28) * figures 3,4 * -----	1-3	INV. B66B5/00 B66B11/02
A	US 2019/135586 A1 (HAAPANIEMI MARKKU [FI] ET AL) 9 May 2019 (2019-05-09) * paragraph [0053]; figure 9 * -----	1-3	

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	6 March 2025	Janssens, Gerd

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 24 38 6125

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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06-03-2025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US 2019135586 A1	09-05-2019	CN 109476461 A	15-03-2019
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		US 2019135586 A1	09-05-2019
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82