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(54) A platform lift

(57) The invention concerns a platform lift (1) for transferring a wheelchair from a first position to a second position, in particular for lifting a disabled person in a wheelchair over one or more steps from one level to a higher second level, including a carrier element having a console (4) and a substantially horizontal platform (3), said carrier element is moveable relative to a fixed base element (2), and drive means for moving the carrier element, wherein the base element is positioned adjacent to the carrier element and that the carrier element is mounted to the base element by two or more pivotable arms (5,6). By a platform lift according to the present invention, the foundation, i.e. base elements is only required on one side of the lift which in turn means that the lift only takes up space on one side of the steps.

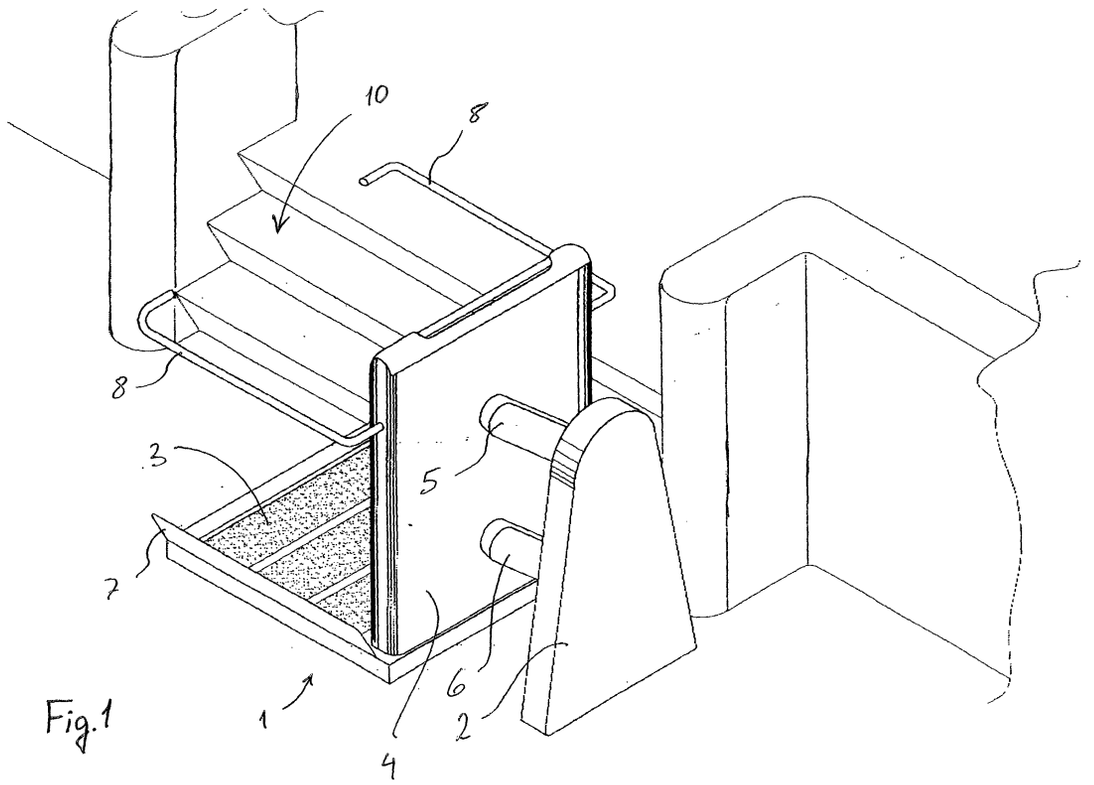

Fig.1

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Description

[0001] The present invention relates to a platform lift for transferring a wheelchair from a first position to a second position, in particular for lifting a disabled person in a wheelchair over one or more steps from one level to a higher second level, including a carrier element having a console and a substantially horizontal platform, said carrier element is moveable relative to a fixed base element, and drive means for moving the carrier element.

[0002] For disabled persons in wheelchairs or other persons with limited mobility, it is difficult to climb steps on their own. Such lifts for raising a load to the top of a small number of steps may generally be referred to as low-rise vertical lifting platforms.

[0003] A various kinds of lifts that are dealing with this problem are known. A platform lift of this kind is known from EP-A-0 732 296. This platform deals with the disadvantage that such platforms take up a lot of space around the steps, which is particularly disadvantageous when the lift is not in use.

[0004] However, this platform lift still hinders a free access to the steps when the lift is in a parked position, as it extends across the entire width of the steps. Moreover, although the lift according to EP-A-0 732 296 is provided with a relative compact driving mechanism, this drive mechanism takes up a considerable amount of space on each side of the steps, just as it is technically complicated and consequently difficult to service and to carry out maintenance on the lift.

[0005] It is therefore the object of the present invention to provide a platform lift of the initially mentioned kind that is compact and simple to operate and service.

[0006] The invention consists of a platform lift of the initially mentioned kind wherein the base element is positioned adjacent to the carrier element and that the carrier element is mounted to the base element by two or more pivotable arms.

[0007] By a platform lift according to the present invention, the foundation, i.e. base elements is only required on one side of the lift which in turn means that the lift only takes up space on one side of the steps. In order to keep the platform in a horizontal position at least two lifting arms are provided. Hereby, the carrier element carrying the load is maintained with the same orientation throughout the lifting operation ensuring that the platform is horizontal during the swinging movement of the carrier element.

[0008] Preferably, the arms are substantially parallel in orientation and at least one of the arms is connected to the drive means for pivoting the arms. Hereby, a first arm is used for driving the lift by lifting the carrier element and the second arm functions as a stabilising arm as the two arms represent a parallelogram lifting structure.

[0009] In the preferred embodiment, the drive means for pivoting the arms causing the movement of the carrier element include an electrically driven linear actuator. Hereby, the drive means may be particularly compact in design.

[0010] Preferably, the drive means for pivoting the carrier element are provided in the console. Hereby, the overall size of the lift may be minimised as the drive means may be provided in the carrier element, i.e. the moveable part of the lift. Moreover, the operating panel may also be provided on the console of the carrier element whereby the person in a wheelchair may operate the lift on his own. Alternatively, the drive means for pivoting the carrier element may be provided in the base element.

[0011] Preferably, the arms are pivotable between a substantially horizontal lower position to a substantially vertical higher position. Moreover, the length of the arms is less than the distance between the pivoting points of the first and second arm on the carrier element and pivoting points of the base element. Hereby, performance of the lift may be chosen according to circumstances, and the swinging action may be adjusted by limitation in accordance to the actual dimensions of the steps to the bridged.

[0012] In a second preferred embodiment of the invention, the arms are mounted to the carrier element via a swivel joint allowing for at least a 90° rotation of the carrier element in one of the extreme positions. Hereby, the carrier element may be swung aside to a parking position beside the steps in front of the base element leaving the steps unblocked by the lift.

[0013] Preferably, the platform is hinged to the console and foldable to an inactive vertical position. Hereby, a free and unhindered access to the steps is ensured when the lift is parked in its inactive position.

[0014] The invention will be described in detail with reference to the accompanying drawings, in which

- fig. 1 shows a perspective view of a platform lift according to the invention during use,
- fig. 2 shows same in its lower position,
- fig. 3 shows the same in its top position,
- fig. 4 is a side view of the platform lift according to a first preferred embodiment of the invention, and
- fig. 5 shows a schematic top view of a platform lift according to a second embodiment of the invention.

[0015] The platform lift shown in the figures comprises a carrier element 1 that is movably mounted on a base element 2 via a first arm 5 and a second arm 6 that connects a console 4 of the carrier element 1 to the base element 2. Beside the generally vertical console 4, the carrier element 1 includes a generally horizontal platform 3 for carrying the load in the lift. The platform 3 that is generally rectangular in shape, is provided with foldable edges 7 at each of the sides adjacent the console 4. These foldable edges 7 may be lowered to facilitate rolling a load such as a wheelchair onto the platform 3 and may be folded upwards in order to prevent the load

from rolling off during the lifting operation and to prevent the load from being able to roll off in the wrong direction (see fig. 2 and 3). As another safety feature, the console 4 is also provided with retention bars 8 circumscribing the space above the platform 3. The retention bars 8 may be raised and lowered independently, as shown in the figures 1 to 3 in order to retain and to direct the loading and unloading of the platform 3.

[0016] The base element 2 of the platform lift is permanently fixed adjacent to a staircase comprising one or more steps 10. By moving the arms 5, 6, the carrier element 1 is swung from a lower level, as shown in fig. 2 to a top position, shown in fig. 3. The arms 5, 6 are preferably in a generally horizontal orientation in the lower position and are swung to the top position where the arms 5, 6 are in a generally vertical position, see fig. 4.

[0017] The console 3 may preferably be provided with drive means (not shown) and an operation panel 9 enabling a person on the lift to operate the lift him or herself. At least one of the arms 5 is connected to a drive source for moving the carrier element 1 relative to the base element 2. This drive source may preferably be an electrically driven linear actuator or a rotary actuator. The drive means may preferably also include an electrical power source such as a rechargeable battery or an external power supply for driving the actuator.

[0018] The platform 3 is preferably connected to the console via a hinge (not shown) so that the platform 3 may be folded up to a vertical position with the lift is not in use. Hereby, the amount of space may be minimised and the inconvenience of blocking the steps may be avoided.

[0019] As shown in fig. 5, the arms 5, 6 may be connected to the carrier element 1 via a swivel joint 11. Hereby, the carrier element 1 may be swung aside when it is not being used. This embodiment is particularly advantageous with respect to some staircases where the space beside the stairs makes it difficult or even impossible to install a platform lift that does not hinder the access to the stairs.

[0020] By the invention, it is realised that many other embodiments of the invention than the ones described above may be provided without departing from the scope of the invention as set forth in the accompanying claims. The importance is that the drive means and the design makes it possible to support the platform on one side only, whereas hitherto known low-rise vertical lifts for climbing a small number of steps must have a platform that is supported on both sides of the steps.

Claims

1. A platform lift for transferring a wheelchair from a first position to a second position, in particular for lifting a disabled person in a wheelchair over one or more steps from one level to a higher second level, including
a carrier element having

a console and
a substantially horizontal platform,

said carrier element is moveable relative to a fixed base element, and
drive means for moving the carrier element
characterised in that
the base element is positioned adjacent to the carrier element and that the carrier element is mounted to the base element by two or more pivotable arms.

2. A platform lift according to claim 1, wherein the arms are substantially parallel in orientation and at least one of the arms is connected to the drive means for pivoting the arms.

3. A platform lift according to claim 1 or 2, wherein the drive means for pivoting the arms causing the movement of the carrier element include a linear actuator.

4. A platform lift according to any of claims 1 to 3, wherein the drive means for pivoting the carrier element are provided in the console.

5. A platform lift according to any of claims 1 to 3, wherein the drive means for pivoting the carrier element are provided in the base element.

6. A platform lift according to any of claims 1 to 5, wherein the arms are pivotable between a substantially horizontal lower position to a substantially vertical higher position.

7. A platform lift according to claim 6, wherein the length of the arms is less than the distance between the pivoting points of the first and second arm on the carrier element and pivoting points of the base element.

8. A platform lift according to any of claims 1 to 7, wherein the arms are mounted to the carrier element via a swivel joint allowing for at least a 90° rotation of the carrier element in one of the extreme positions.

9. A platform lift according to any of claims 1 to 8, wherein the platform is hinged to the console and foldable to an inactive vertical position.

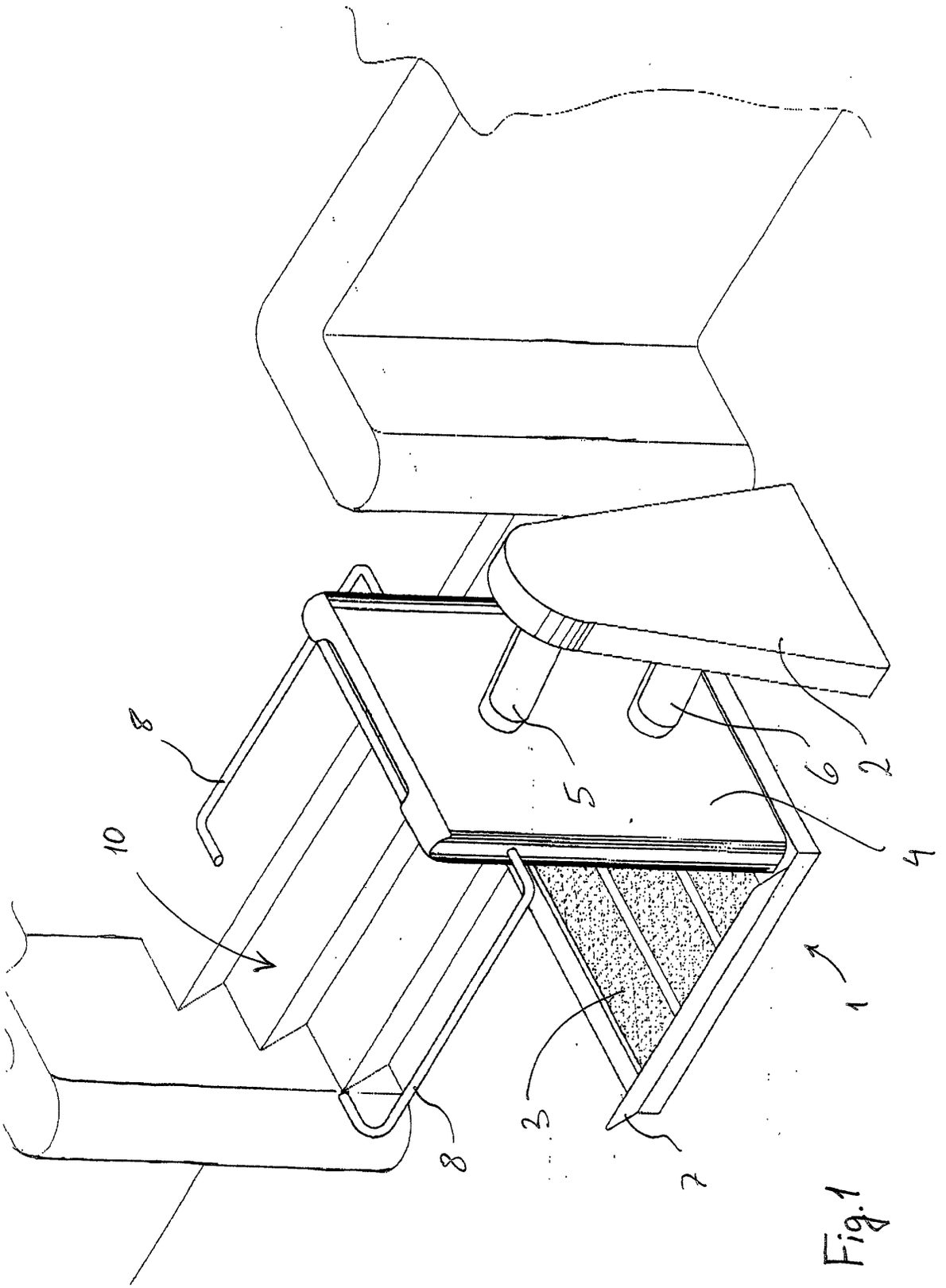

Fig.1

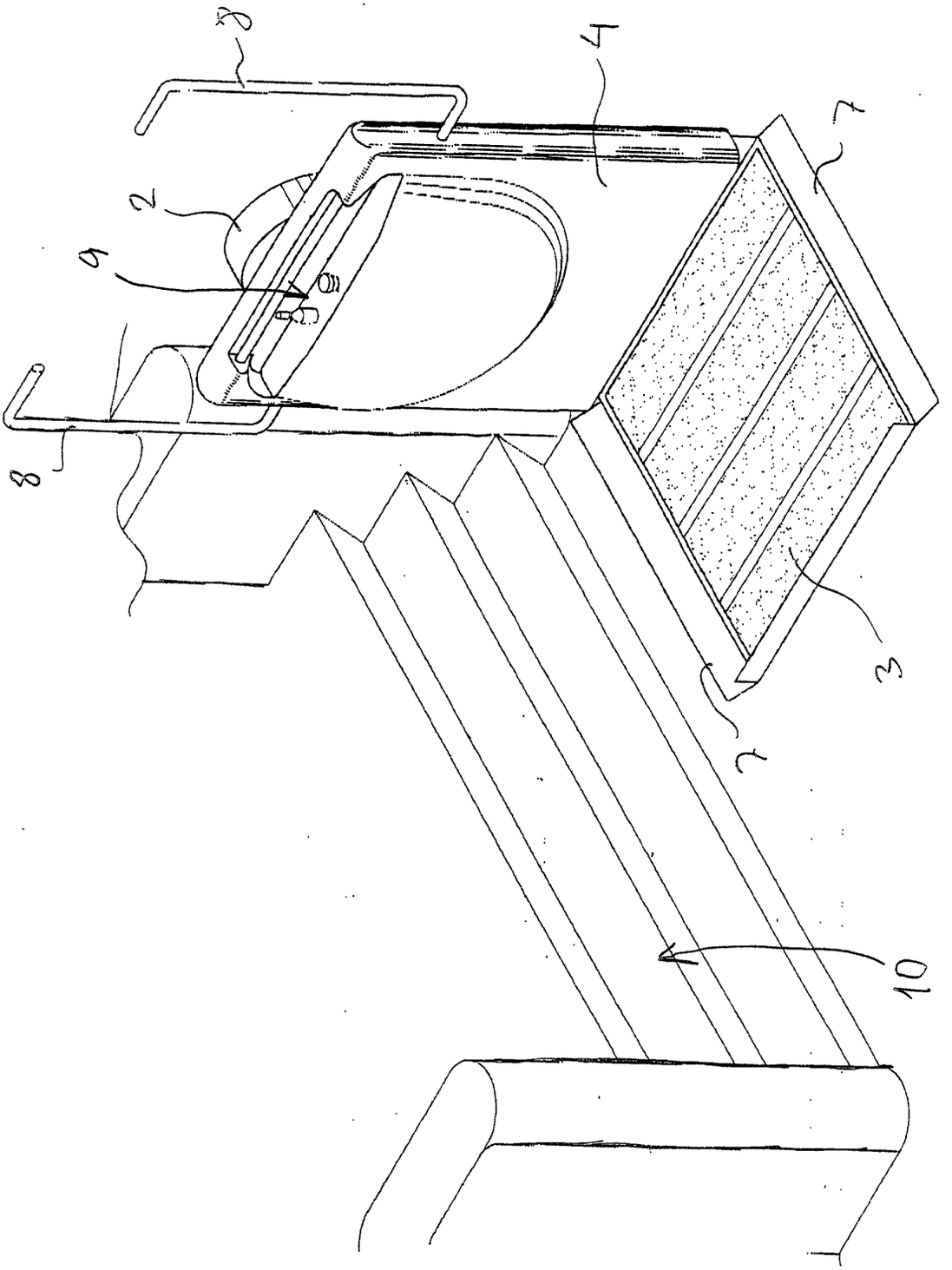

Fig. 2

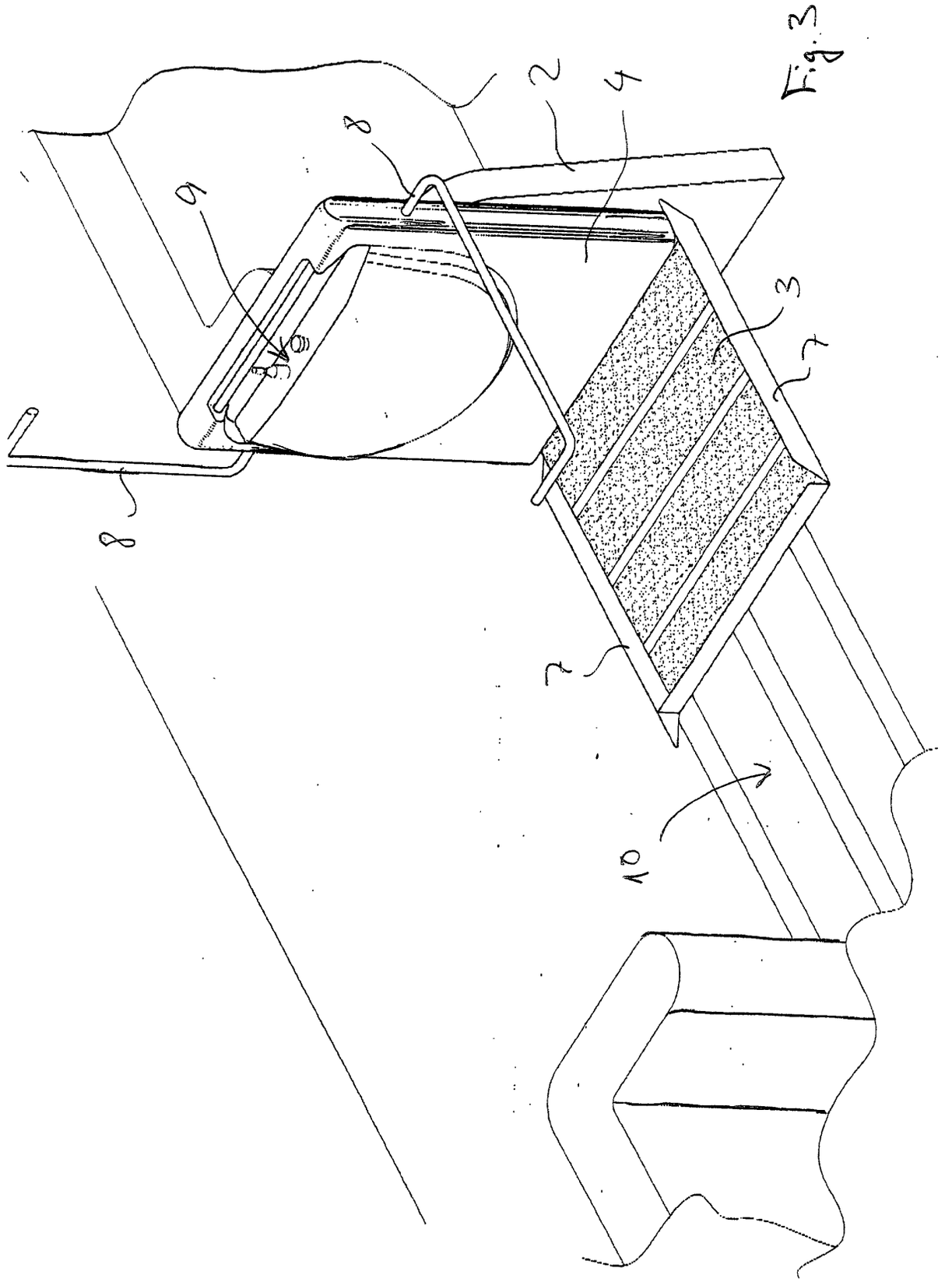
Fig 3
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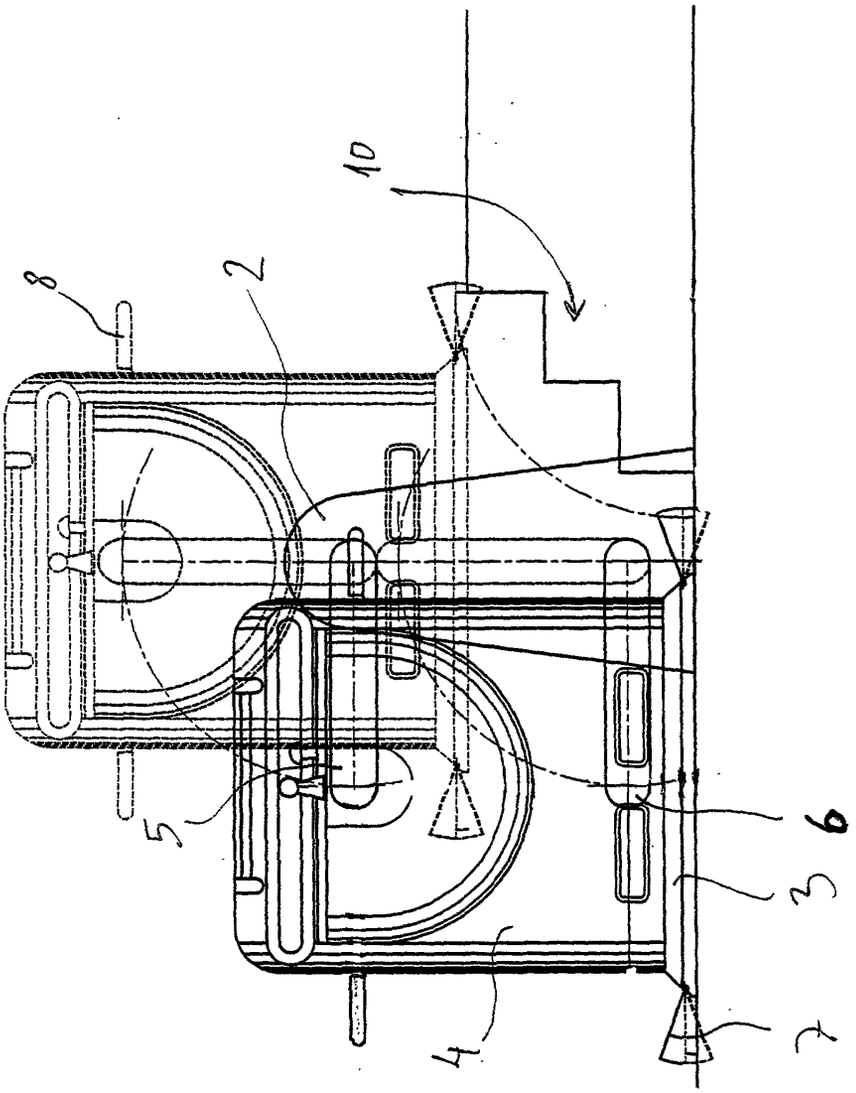

Fig. 4

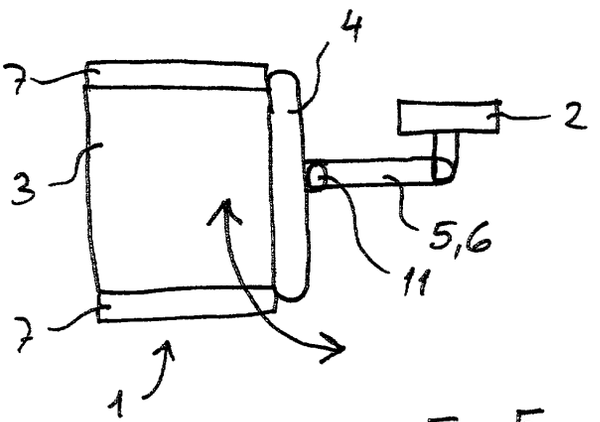

Fig. 5

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 20 1769

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	DE 37 39 267 A (RHEIN BAYERN FAHRZEUGBAU GMBH) 1 June 1989 (1989-06-01) * abstract; figures 1-3 * * column 3, line 6 - line 30 * * column 2, line 10 - line 50 *	1-7,9 8	B66B9/08
Y A	DE 297 07 633 U (HAPPEL INDUSTRIETECHNIK) 10 July 1997 (1997-07-10) * figure 2 *	8 1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B66B
A61G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	29 August 2001	Janssens, G

CATEGORY OF CITED DOCUMENTS

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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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29-08-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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DE 29707633 U	10-07-1997	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82