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(54) **PLATFORM LIFT**

(57) Platform lift (1), in particular a stairlift,
the platform lift (1) has a rail (2) and a drive unit (6),
wherein the drive unit (6) is adapted to drive along the rail (2);
wherein the drive unit (6) has a plurality of rollers (65) supporting the drive unit (6) on the rail (2),
wherein a light-strip (24), in particular a LED-strip (24), is attached to the outside of the rail (2).

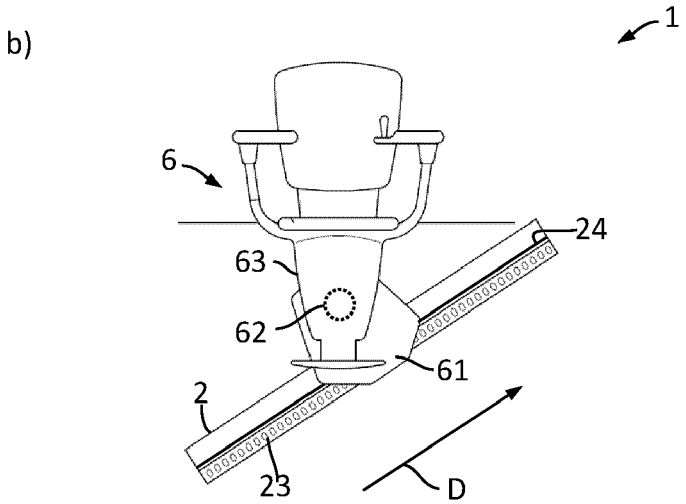

fig. 1

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Description

[0001] The invention refers to a platform lift. The platform may comprise a seat. In particular the platform lift is a stairlift having a seat.

[0002] EP 3 024 770 B1 discloses a stairlift guide rail. The rail is formed from a plurality of rail sections each having two holes for attaching the sections to each other. A light tube can be inserted into the rail sections (EP 3 024 770 B1, [0025]). The light tube extends along the length of sections and has a lighting element configured to align with one of the two holes. To arrange the light tube within the rail has the advantage, that the light tube is safe against damages caused by the guide rollers of the stairlift carrier.

[0003] DE 10 2017 202 288 A1 discloses a stairlift having an ambient light attached to the carrier.

[0004] Both solutions submit visible status information to the user of the platform lift or can provide an ambient light to the area of the platform lift via illumination. As a disadvantage, the solution according to EP 3 024 770 B1 requires difficult assembly of the LED strip into the inner area of the rail and alignment with holes. The solution of DE 10 2017 202 288 A1 can merely provide an illumination to an area, where the carrier is located. Any status information cannot be provided to a user located at another landing area.

[0005] It is the object of the present invention to provide an improved platform lift. In particular a solution is required, which provides easy installation of illumination elements and/or good visibility everywhere, along with no impact to the usage of the platform lift.

[0006] The invention comprises a platform according to the main claim; embodiments are subject to the subclaims and the description.

[0007] The invention results from a detailed analysis of the advantages and disadvantages of the prior art solutions as well as the effect to the usability and installation.

[0008] The invention therefore provides a solution, which has very good and illumination effect, since the LED-strip is attached to the outer side of the rail despite the fact, that the rollers use the outer surface as well. None of the prior art teaches to use the outer surface of the rail for attaching the light strip in addition to providing a support surface for the rollers.

[0009] Using an light strip is also advantageous to provided illumination to all areas of the rail, so that even a user located at a distance to the platform, in particular in another landing area, has access to the information provided by the illumination.

[0010] The light strip can extend over a huge distance of the rail, enabling a good visibility for a user, which is at a location different of the carrier. As an example, a user who has called the carrier from a different location, can be informed of a low battery status of the carrier, even if the carrier is located at a different floor.

[0011] Attaching the light strip to the outside of the rail can be performed easily, as long as the boundary condition in form of the support sections are is taken into account. Therefore, the carrier may be designed in a manner, to leave space available for attaching on the outside of the rail, which is not required for supporting the rollers of the rail.

[0012] The invention is explained in more detail by means of the figures, the figures show:

figure 1 an inventive platform lift in two embodiments;

figure 2 a conventional rail suitable for conventional lifts comparable to the lifts according to figure 1 a) in cross section and b) side view;

figure 3 an embodiment of an rail of the inventive platform lifts according to figure 1 a) in cross section and b) side view;

figure 4 two other embodiments of inventive rails of the platform lifts according to figure 1 in two cross sections.

[0013] Figure 1 shows exemplary embodiments of platform lifts 1. In figure 1a a platform lift 1 for the use with a wheelchair is shown. The platform 63 therefore comprises a kind of lifting ramp, which can travel along a direction of travel D form a first landing area 4 to a second landing area 5. The direction of travel D is defined by a rail 2, and is defined in main by the course of an existing stairway 9 in a house or outside of a house. An alternative embodiment is shown in figure 1b wherein the platform 63 comprises a seat. Here the platform lift is a stairlift with chair.

[0014] The rail 2 of the platform lift has in particular a curved shape, which at last partially deviates from a straight line; thus, a direction of travel D will change at least once during the course of the rail 2. There may be changes in the direction D in top view and in side view. The rail 2 may comprise a plurality of separate rail segments 2S, which are joined together at rail connections.

[0015] The platform 63 is part of a driving unit 6, which further comprises a carrier 61. The carrier 61 has rollers 65 (see figure 2a below), which roll along the rail 2. For driving the carrier first positive engagements means 23 (only shown in detail in figure 1b) are provided on the rail 2, which cooperates with driving means, in particular a driven gear 64 (see figure 3a below), of the carrier 61. A balancing system 62 is provided on the drive unit 6, to keep the platform 63 always in a horizontal orientation, even if the inclination of the rail 2 varies along its course.

[0016] Figure 2 shows a section of a conventional rail (figure 2a in cross section and figure 2b in side view). The rail 2 comprises a tubular section 21 and a rack section 22. The tubular section 21 and the rack section 22 are bended accordingly before joining. The bended rack section 22 is joined to an outer surface of the bended tubular section 21 by welding (see weld seam 28). The rack section 22 comprises said engagement means 23.

Here the engagement means 23 have the shape of holes in the rack section 22, into which the driven pinion can engage. Alternative the rack section can have the shape of a gear rack or other means for positive engagement.

[0017] To ensure safe guiding of the carrier 61 during all situations of operation the rollers 65 surround the rail of more than 180°. During use the rotational position of the rollers 65 over the rail can vary during operation as shown by the rollers depicted in dashed lines.

[0018] Figure 3 shows an embodiment of the rail according to figure 2, comprising inventive improvements. The description of the above conventional rails is fully applicable to the inventive rail. Together with the description of platform lifts according to figure 1, the rail according to figure 3 forms an inventive platform lift.

[0019] In the inventive platform lift the rollers 65 does not contact the full circumference of the tubular section 21 of the rail 2. Merely a defined area of the tubular section 21 provides a support area 21S, at which the rollers 65 contact the tubular section 21.

[0020] The rail 2 according to the inventive platform lift as shown in figure 3 comprises a light strip, which is in particular an LED strip 24. The light strip 24 is attached to the rail 2 outside of the support area 21S, in particular below the support area 21S.

[0021] In case that the light strip is a LED strip 24, said LED strip has a plurality of LEDs 241 arranged one behind the other and may be attached to a common housing 242. The common housing may surround the LEDs 241 and may be translucent or transparent. In another embodiment the housing 241 may merely be formed as a carrier strip or conductor strip, to which the LEDs are attached at one side.

[0022] In the example of figure 3 the light strip 24 is attached to the tubular section below the support area 21. Here the light strip 24 does not interfere with the rollers 65.

[0023] Compared to the prior art (see EP 3 024 770 B1) the light strip is easy to install. In addition, there is an improved visibility since the light strip is attached to the outside of the rail.

[0024] The light strip 24 is in particular glued to the rail 2, in particular with a double-sided adhesive tape (not shown).

[0025] Figure 4 shows other locations where the light strip can be located. Generally, the light strip 24 can be attached also to the rack section 22 of the rail in different positions, where it does not interfere with the gear drive 64 as well with the rollers 65.

List of reference signs

[0026]

1	platform lift
2	rail
2S	rail segment
21	tubular section
21S	support area
22	rack section
23	engagement means
24	light strip
241	LED
242	strip housing
28	weld seam
4	first landing area
5	second landing area
6	drive unit
61	carrier
62	balancing system
63	platform
64	drive gear
65	rollers
9	stairway
D	direction of travel

Claims

1. Platform lift (1), in particular a stairlift,

the platform lift (1) has a rail (2) and a drive unit (6),
wherein the drive unit (6) is adapted to drive along the rail (2);
wherein the drive unit (6) has a plurality of rollers (65) supporting the drive unit (6) on the rail (2),
characterized in
that a light-strip (24), in particular a LED-strip (24), is attached to the outside of the rail (2).

2. Platform lift (1) according to the preceding claim **characterized in**

that the rollers (65) contacting the rail (2) at a support area (21S) at an outer surface of the rail (2); and
that the light strip (24) is attached to the outer surface of the rail (2) outside of the support area (21S).

3. Platform lift (1) according to the preceding claim, **characterized in**
that the light-strip (24) is attached to the rail (2) below the support area (21S).

4. Platform lift (1) according to any of claims 2 to 3, **characterized in**

that the rail (2) has a tubular section (21) providing the support area (21S); and
that the light-strip (24) is attached to the tubular section (21).

5. Platform lift (1) according to any of claims 2 to 3, **characterized in**

that the rail (2) has a rack section (22) providing engagement means (23) for positive engagement with a drive gear (24) of the drive unit (6), and
that the light-strip (24) is attached to the rack section (22).

6. Platform lift (1) according to any of the preceding claims,
characterized in
that the light-strip (24) is glued to the rail (2).

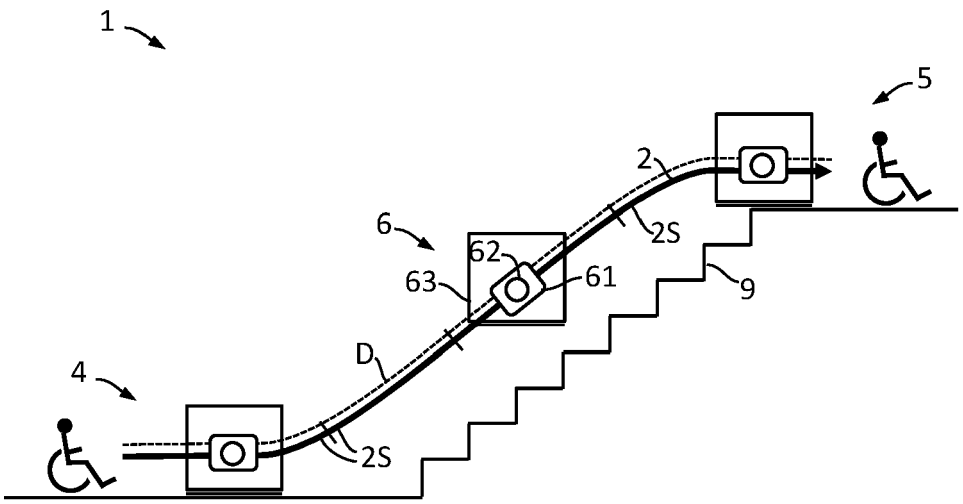
7. Platform lift (1) according to any of the preceding claims,
characterized in
that the light-strip (24) is glued to the tubular section (21) below the support area (21S).

8. Platform lift (1) according to any of the preceding claims,
characterized in
that the light-strip (24) is extends over the entire length of the rail (2).

9. Platform lift (1) according to any of the preceding claims,
characterized in

that the rail (2) comprises a plurality of rail segments (2S), which are joined together, and
that the light-strip (24) is extends over the entire length of at least one rail segment (2S).

a)



b)

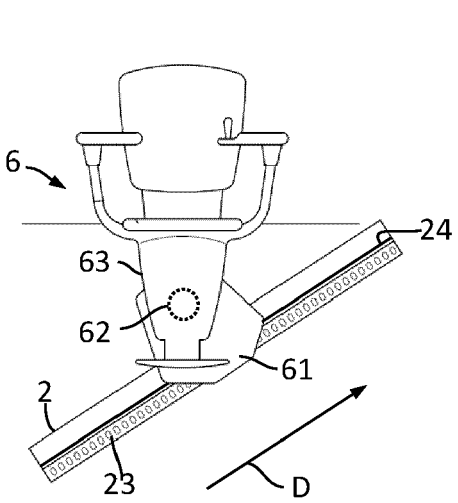
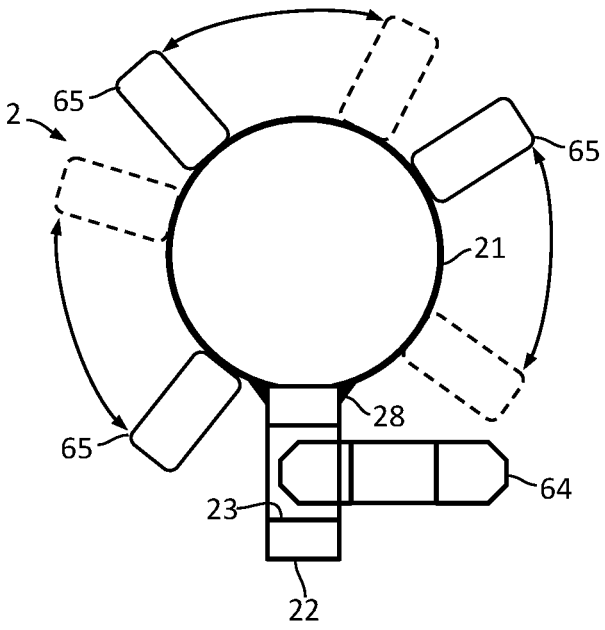


fig. 1

a)



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b)

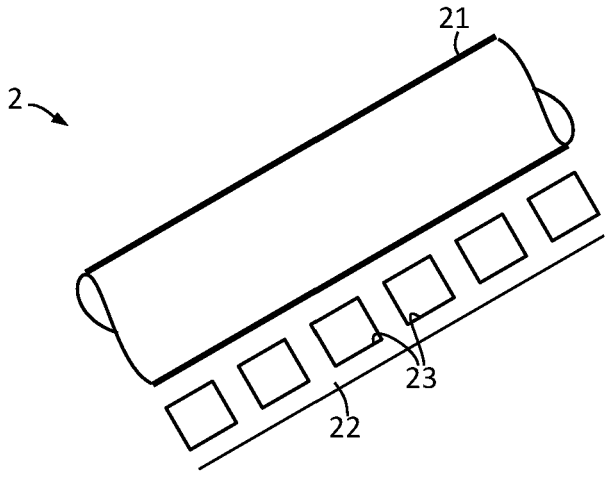

fig. 2

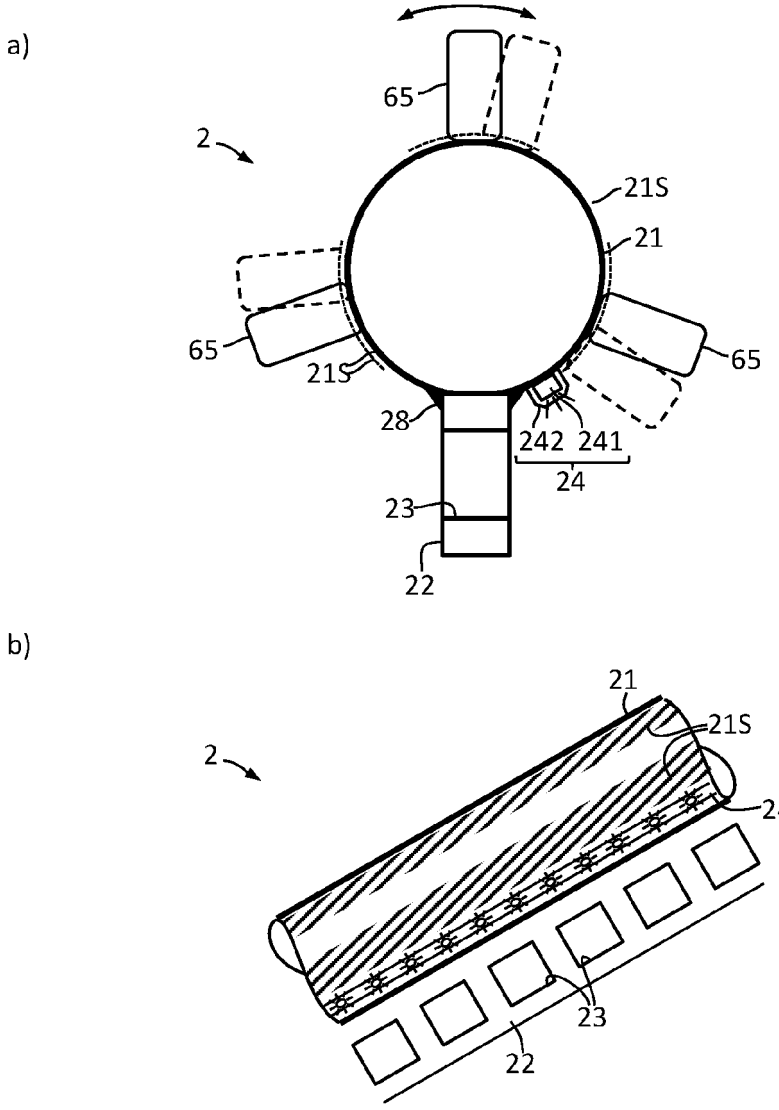
a)
65
2
21S
21
65
65
21S
28
242
241
24
23
22
b)
21
21S
2
24
23
22

fig. 3

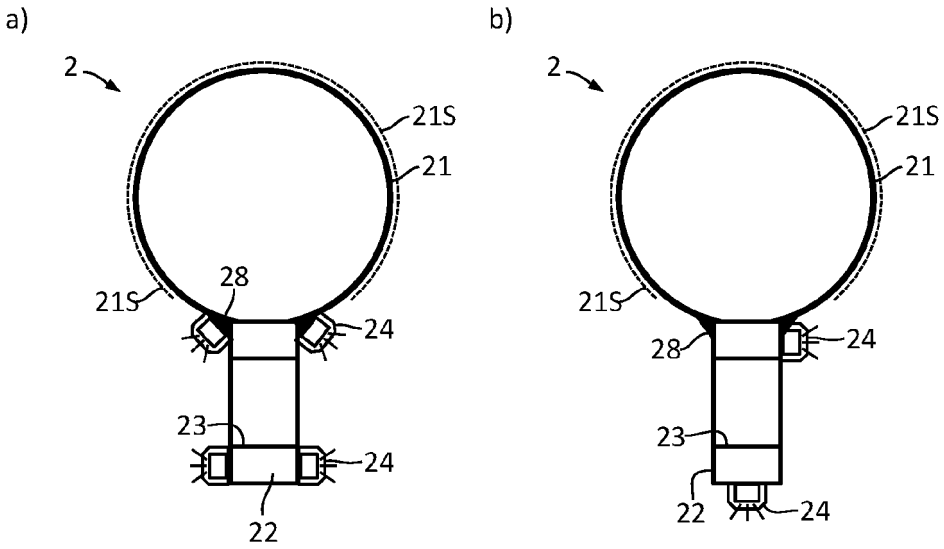
a)
2
21S
21
28
21S
24
23
24
22
b)
2
21S
21
21S
28
24
23
22
24

fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 23 21 8209

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	EP 4 086 213 A1 (TK HOME SOLUTIONS B V [NL]) 9 November 2022 (2022-11-09) * abstract * * paragraphs [0011] - [0014] * * figures 1-4, 6, 7 *	1-9	INV. B66B9/08
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T	US 11 945 692 B1 (YOUNG LEWIS [US] ET AL) 2 April 2024 (2024-04-02) * abstract * * column 5, lines 49-57 * * figure 10 *		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 May 2024	Oosterom, Marcel

CATEGORY OF CITED DOCUMENTS

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

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- EP 3024770 B1 **[0002] [0004] [0023]**
- DE 102017202288 A1 **[0003] [0004]**