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(54) **VACUUM CLEANER WITH A HOLDER FOR REMOVING DUST CONTAINER**

(57) The invention relates to a vacuum cleaner (10) with a holder (11) for removing a dust bag (12).

In an aspect of the invention, a vacuum cleaner (10) comprising a holder (11) for a dust container is provided. The dust container comprises a dust bag (12) and a connector plate (13) surrounding an opening (24) of the dust bag (12) and being configured to attach the dust container to the holder (11). The holder (11) is removably attached to the vacuum cleaner (10) for allowing a user to remove the dust container upon removing the holder (11) from the vacuum cleaner (10). The connector plate (13) comprises a closure member (25) being arranged to at least partly close the opening (24) of the dust bag (12) when the dust container is removed from the vacuum cleaner (10) upon the user removing the holder (11). The holder (11) comprises a mechanism (22) configured to release the dust container from the holder (11) upon user operation of the mechanism (22).

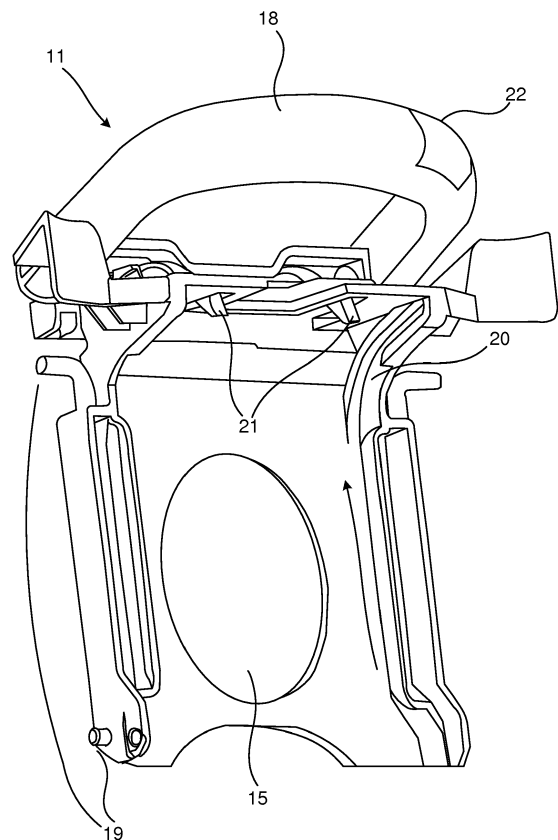


Fig. 3

## Description

### TECHNICAL FIELD

**[0001]** The invention relates to a vacuum cleaner with a holder for removing a dust container.

### BACKGROUND

**[0002]** In prior art vacuum cleaners, removing a dust collecting container for disposal can be a non-hygienic process. The dust container comprises a dust bag and a connector plate surrounding an opening of the dust bag which a user must disconnect from a holder in an interior of the vacuum cleaner if the bag is to be disposed.

**[0003]** Thus, the user needs to open a chassis of the vacuum cleaner, and manually remove the dust container by disconnecting the connector plate from the holder and carry the dustbag to a garbage bin for disposal.

**[0004]** There is a risk that dust sticks onto the hands of the user in the process, and there is also a risk that dust falls out of the opening of the dust bag.

**[0005]** JP2008036214 discloses a vacuum cleaner being arranged with a holder to which the dust container is attached. After having opened a top section of the chassis of the vacuum cleaner, the user can remove the container by pulling the holder in an upwards direction for disconnecting the container from the interior of the vacuum cleaner. Further, the holder is arranged with a button which can be operated by the user to release the container from the holder.

**[0006]** A problem still remains in that dust and debris collected in the dust bag may fall out of the bag upon being transported to a garage bin for disposal.

### SUMMARY

**[0007]** An object of the present invention is to solve, or at least mitigate, this problem in the art and to provide a vacuum cleaner comprising an improved holder for removing a dust container from the vacuum cleaner.

**[0008]** This object is attained in an aspect of the invention by a vacuum cleaner comprising a holder for a dust container. The dust container comprises a dust bag and a connector plate surrounding an opening of the dust bag and being configured to attach the dust container to the holder. The holder is removably attached to the vacuum cleaner for allowing a user to remove the dust container upon removing the holder from the vacuum cleaner. The connector plate comprises a closure member being arranged to at least partly close the opening of the dust bag when the dust container is removed from the vacuum cleaner upon the user removing the holder. The holder comprises a mechanism configured to release the dust container from the holder upon user operation of the mechanism.

**[0009]** Advantageously, after the user has removed the holder from the vacuum cleaner, she carries the dust

container to the garbage bin and presses the release mechanism, wherein the holder releases the dust container into the garbage bin without the user having to come into contact with the dust container. Further advantageous is that the closure member closes the opening of the dust bag when the dust container is removed from the vacuum cleaner upon the user removing the holder. Hence, not only is the dust container removed from the vacuum cleaner without the user having to come into contact with the dust bag, but any risk of having debris fall out of the opening of the dust bag is further eliminated.

**[0010]** In an embodiment, the holder further comprises a handle operable by the user for removing the holder from the vacuum cleaner, the handle being configured to be pivotably arranged at the holder, wherein the handle advantageously is pivoted in a direction towards the dust bag when the holder is in an operating position inside the vacuum cleaner, thereby allowing closing of a top section of a chassis of the vacuum cleaner without the top section abutting against the handle.

**[0011]** In a further embodiment, the handle is further configured to be spring-loaded for advantageously pivoting the handle in an upwards direction, when the top section of a vacuum cleaner chassis is opened for removal of the dust container.

**[0012]** In another embodiment, the holder further comprises a holding structure configured to engage with the connector plate of the dust container for attaching the dust container to the holder.

**[0013]** In still an embodiment, the holding structure comprises two oppositely arranged rails into which the connector plate easily and straightforwardly can be slidably fastened.

**[0014]** In an embodiment, the holding structure comprises tap members configured to engage with tap openings of the connector plate for attaching the dust container to the holder.

**[0015]** In a further embodiment, the release mechanism is configured to be connected to the tap members to cause the tap members to disengage with the tap openings of the connector plate to release the dust container from the holder upon the user operating the release mechanism.

**[0016]** In yet another embodiment, the closure member comprises a sliding shutter being configured to attach to the vacuum cleaner and slide along the upwards-moving connector plate to close at least a part of the opening of the dust bag when the holder is removed from the vacuum cleaner.

**[0017]** In yet a further embodiment, the sliding shutter comprises a fixating opening configured to engage with a locking member of the vacuum cleaner upon positioning the holder in the vacuum cleaner, which fixating opening is configured to disengage from the locking member of the vacuum cleaner after the sliding shutter has closed said at least a part of the opening of the dust bag upon removal of the holder.

**[0018]** In still a further embodiment, the locking mem-

ber is configured to be spring-loaded for engaging with the fixating opening upon positioning the holder in the vacuum cleaner.

**[0019]** In another embodiment, the holder further comprises fixing members to be fitted into a holder carrier in an interior of the vacuum cleaner for attaching the holder to the vacuum cleaner in its operating position.

**[0020]** Generally, all terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the element, apparatus, component, means, step, etc." are to be interpreted openly as referring to at least one instance of the element, apparatus, component, means, step, etc., unless explicitly stated otherwise. The steps of any method disclosed herein do not have to be performed in the exact order disclosed, unless explicitly stated.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0021]** The invention is now described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 illustrates a prior art vacuum cleaner;

Figure 2a illustrates a vacuum cleaner according to an embodiment of the invention;

Figure 2b illustrates the vacuum cleaner of Figure 2a, where a top section of a chassis has been opened to remove a dust container from an interior of the vacuum cleaner;

Figure 3 illustrates a holder for removing a dust container from a vacuum cleaner according to an embodiment;

Figure 4 illustrates a dust container being arranged with a closure member according to an embodiment, the opening of the dust container being open;

Figure 5 illustrates a dust container being arranged with a closure member according to an embodiment, the opening of the dust container being closed; and

Figure 6 further illustrates a locking member configured to engage with a fixating opening of a closure member upon the holder being positioned in the vacuum cleaner in an embodiment.

## DETAILED DESCRIPTION

**[0022]** The invention will now be described more fully hereinafter with reference to the accompanying drawings, in which certain embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as

limited to the embodiments set forth herein; rather, these embodiments are provided by way of example so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout the description.

**[0023]** Figure 1 shows a prior art vacuum cleaner 1 as disclosed in JP2008036214 with a top section 2 of its chassis open in order for a user to remove a dust container located in an interior of the vacuum cleaner 1.

**[0024]** Hence, after having opened the top section 2 of the chassis of the vacuum cleaner 1, the user can remove the container by pulling, in an upwards direction, a handle 3 of a holder 4 to which a dust container 5 is attached.

**[0025]** After having carried the holder 4 to a garbage bin, the user can operate a button 6 for releasing the dust container 5 from the holder 4. As has been discussed, a problem with this solution is that dust and debris may fall out of an opening 7 of the dust container 5 as the user transports the dust container to the garbage bin.

**[0026]** Figures 2a and b illustrate a side view of a vacuum cleaner 10 comprising a holder 11 for a dust container according to an embodiment of the invention. The dust container consists of a dust bag 12 and a connection plate 13 for attaching the dust container to the holder 11, and the holder is in its turn removably attached to holder carriers 14 inside the vacuum cleaner. Dust and debris enter the dust bag 11 via air inlet 15.

**[0027]** As shown in Figure 2b, a top section 16 of a chassis of the vacuum cleaner 10 can be opened by a user by placing her hand in indentation 17 and opening the top section 16, after which she can pull the holder 11 in an upwards direction and thus remove the dust container, the connection plate 13 of which is attached to the holder 11, from the vacuum cleaner 10 as indicated with the arrow.

**[0028]** In the particular embodiment illustrated with reference to Figures 2a and b, the holder 11 comprises a handle 18 operated by the user for removing the holder 11 from the vacuum cleaner 10. This handle 18 is advantageously configured to be pivotably arranged at the holder 11, such that the handle 18 is folded in a direction towards the dust bag 11 when the holder is an operating position inside the vacuum cleaner, i.e. when the top section 16 of the chassis is closed. It is envisaged that an alternative to the handle 18 is a smaller grip, such as a knob-like element.

**[0029]** Further, as illustrated in Figure 2b, in an embodiment, the handle 18 is spring-loaded for advantageously pivoting the handle 18 in an upwards direction, when the top section 16 of the vacuum cleaner chassis is opened for removal of the dust container.

**[0030]** Figure 3 shows the holder 11 according to embodiments of the invention in a different view. As can be seen in Figure 3, the handle 18 is pivoted in the manner it would be in its operating position, i.e. when the top section 16 of the chassis is closed. Further shown are

fixing members 19 which in an embodiment are fitted into the holder carrier 14 for attaching the holder 11 to the interior of the vacuum cleaner 10 in its operating position.

**[0031]** Now, in an embodiment a dust container (not shown) is attached to the holder 11 by a holding structure configured to engage with the connector plate 13 of the dust container for attaching the dust container to the holder 11.

**[0032]** In an embodiment, the holding structure comprises opposite rails 20 into which the connection plate 13 is inserted in a sliding manner in a direction indicated by the arrow by fitting a respective edge of the connector plate 13 into a corresponding rail 20.

**[0033]** In an embodiment, the holding structure further comprises tap members 21 configured to engage with tap openings 23 of the connector plate 13 (described below with reference to Figure 4) for attaching the dust container to the holder 11.

**[0034]** When attached to the holder 11, the opening 24 of the dust container will be aligned with the air inlet 15.

**[0035]** In an embodiment, the handle 18 of the holder 11 comprises a release mechanism 22, in Figure 3 illustrated by means of a button, which is connected to the tap members 21 to cause the tap members 21 to disengage with the tap openings 23 of the connector plate 13 to release the dust container from the holder 11 upon the user operating the release mechanism 22.

**[0036]** It is to be understood that any appropriate release mechanism configured to act on the tap members 21 for releasing the dust container from the folder 11 can be envisaged.

**[0037]** Advantageously, after the user has removed the holder 11 from the vacuum cleaner 10, she carries the dust container to the garbage bin and presses the release mechanism 22, wherein the tap members 21 disengage with the tap openings 23 and the holder 11 releases the dust container into the garbage bin without the user having to come into contact with the dust container.

**[0038]** Figure 4 shows a dust container according to an embodiment to be slid into the rails 20 of Figure 3 to have the tap openings 23 engage with the tap members 21 in order to advantageously attach the dust container to the holder 11 by sliding the connector plate 13 along the rails 20 and into engagement with the tap members 21.

**[0039]** Thus, with reference to Figures 3 and 4, the connection plate 13 is inserted into the rails 20 in a sliding manner in a direction indicated by the arrow of Figure 3. When the connection plate 13 reaches its end position, the tap members 21 engage with the respective tap opening 23 of the connector plate 13 for attaching the dust container to the holder 11.

**[0040]** Figure 5 further illustrates closing of the opening 24 of the dust bag 11 in an embodiment upon the holder 11 being removed from the vacuum cleaner 10 in order to avoid a situation where dust and debris falls out of the opening 24 of the dust bag 11. Advantageously, the con-

connector plate 13 is arranged with a closure member in the form of a sliding shutter 25 being configured to engage to an interior of the vacuum cleaner 10 via a fixating opening 26 (and an appropriate locking member of the vacuum cleaner shown in the below with reference to Figure 6) when the holder 11 is placed inside the vacuum cleaner 10 in its operating position.

**[0041]** Now, when the holder 11 is removed from the vacuum cleaner 10, the connector plate 13 moves in an upward direction with the holder 11, while the sliding shutter 25 is fixed and thus slides along the upwards-moving connector plate 13 to close at least a part of the opening 24 of the dust bag 11, after which the fixating opening 26 disengages from contact with the previously mentioned locking member. Advantageously, not only is the dust container removed from the vacuum cleaner 10 without the user having to come into contact with the dust bag 11, but any risk of having debris fall out of the opening 24 of the dust bag 11 is further eliminated.

**[0042]** Figure 6 further illustrates the locking member 27 configured to engage with the fixating opening 26 of the sliding shutter 25 upon the holder 11 being positioned in the vacuum cleaner 10 in an embodiment. To achieve this engagement with the fixating opening 26, the locking member 27 is in an embodiment spring loaded. When the holder 11 is removed from the vacuum cleaner 10, the connector plate 13 moves in an upward direction with the holder 11, while the sliding shutter 25 is fixed and thus slides along the upwards-moving connector plate 13 to close at least a part of the opening 24 of the dust bag 11, after which the fixating opening 26 disengages from contact with the locking member 27 as further removal of the holder 11 causes the locking member 27 snap out of the fixating opening 26.

**[0043]** The invention has mainly been described above with reference to a few embodiments. However, as is readily appreciated by a person skilled in the art, other embodiments than the ones disclosed above are equally possible within the scope of the invention, as defined by the appended patent claims.

## Claims

1. Vacuum cleaner (10) comprising a holder (11) for a dust container, the dust container comprising a dust bag (12) and a connector plate (13) surrounding an opening (24) of the dust bag (12) and being configured to attach the dust container to the holder (11), the holder (11) being removably attached to the vacuum cleaner (10) for allowing a user to remove the dust container upon removing the holder (11) from the vacuum cleaner (10), the vacuum cleaner (10) being **characterized in that:**

the connector plate (13) comprises a closure member (25) being arranged to at least partly close the opening (24) of the dust bag (12) when

- the dust container is removed from the vacuum cleaner (10) upon the user removing the holder (11); and  
the holder (11) comprises a mechanism (22) configured to release the dust container from the holder (11) upon user operation of said mechanism (22). 5
2. The vacuum cleaner (10) of claim 1, the holder (11) further comprising: 10
- a handle (18) operable by the user for removing the holder (11) from the vacuum cleaner (10), the handle being configured to be pivotably arranged at the holder (11), wherein the handle (18) is pivoted in a direction towards the dust bag (12) when the holder (11) is an operating position inside the vacuum cleaner (10). 15
3. The vacuum cleaner (10) of claim 2, the handle (18) further being configured to be spring-loaded for pivoting the handle (18) in an upwards direction, when a top section (16) of a vacuum cleaner chassis is opened for removal of the dust container. 20
4. The vacuum cleaner (10) of any one of the preceding claims, the holder (11) further comprising: 25
- a holding structure (20, 21) configured to engage with the connector plate (13) of the dust container for attaching the dust container to the holder (11). 30
5. The vacuum cleaner (10) of claim 4, the holding structure comprising: 35
- two oppositely arranged rails (20) into which the connector plate (13) is slidably fastened.
6. The vacuum cleaner (10) of claims 4 or 5, the holding structure comprising: 40
- tap members (21) configured to engage with tap openings (23) of the connector plate (13) for attaching the dust container to the holder (11). 45
7. The vacuum cleaner (10) of claim 6, the release mechanism (22) being configured to be connected to the tap members (21) to cause the tap members (21) to disengage with the tap openings (23) of the connector plate (13) to release the dust container from the holder (11) upon the user operating the release mechanism (22). 50
8. The vacuum cleaner (10) of any one of the preceding claims, the closure member comprising: 55
- a sliding shutter (25) being configured to attach to the vacuum cleaner (10) and slide along the upwards-moving connector plate (13) to close at least a part of the opening (24) of the dust bag (12) when the holder (11) is removed from the vacuum cleaner (10).
9. The vacuum cleaner (10) of claim 8, the sliding shutter (25) comprising:
- a fixating opening (26) configured to engage with a locking member (27) of the vacuum cleaner (10) upon positioning the holder (11) in the vacuum cleaner (10), which fixating opening (26) is configured to disengage from the locking member (27) of the vacuum cleaner (10) after the sliding shutter (25) has closed said at least a part of the opening (24) of the dust bag (12) upon removal of the holder (11).
10. The vacuum cleaner (10) of claim 9, the locking member (27) being configured to be spring-loaded for engaging with the fixating opening (26) upon the holder (11) being positioned in the vacuum cleaner (10).
11. The vacuum cleaner (10) of any one of the preceding claims, the holder (11) further comprising:
- fixing members (19) to be fitted into a holder carrier (14) in an interior of the vacuum cleaner (10) for attaching the holder (11) to the vacuum cleaner (10) in its operating position.

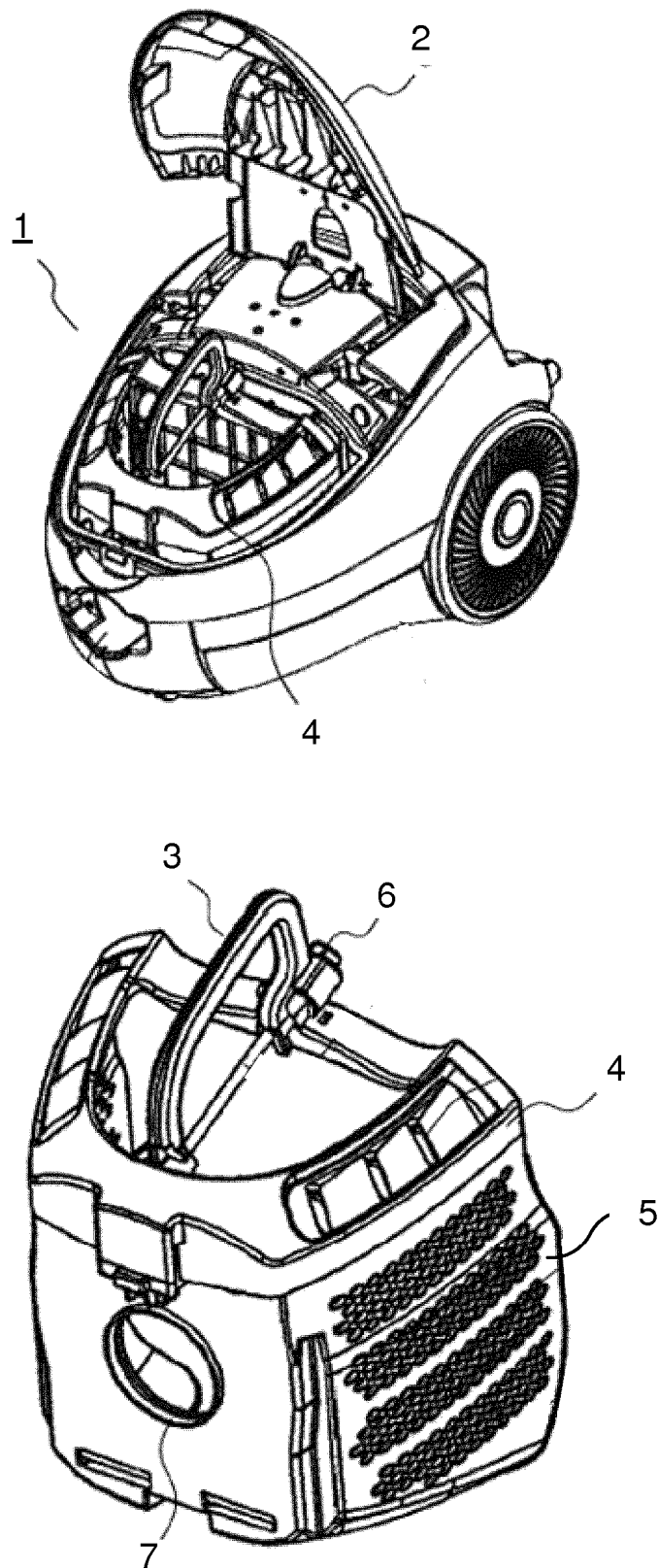


Fig. 1

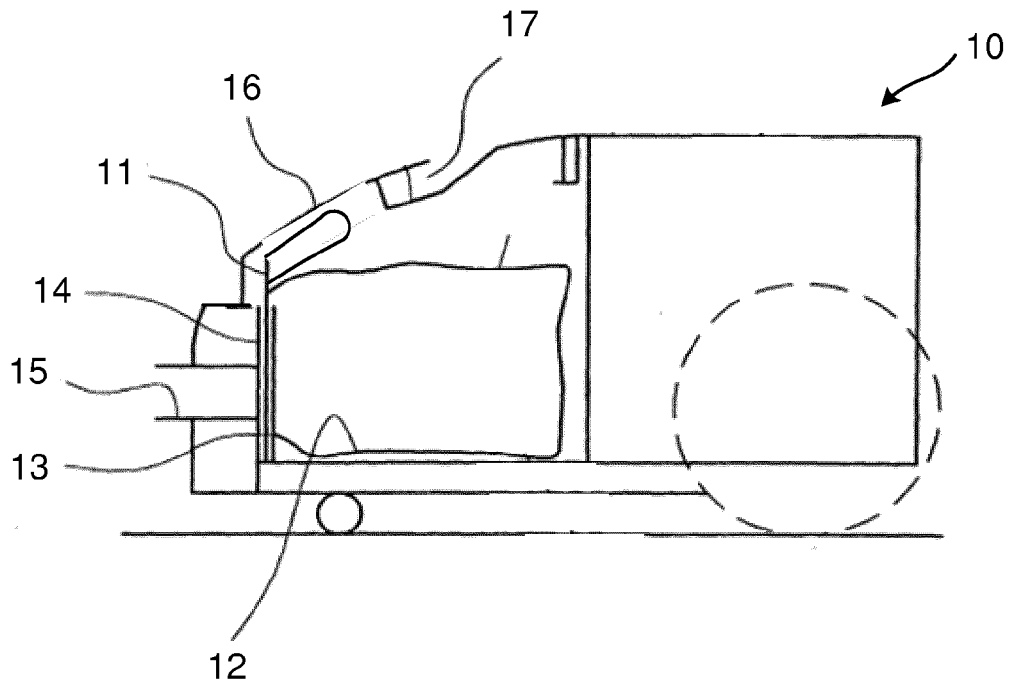


Fig. 2a

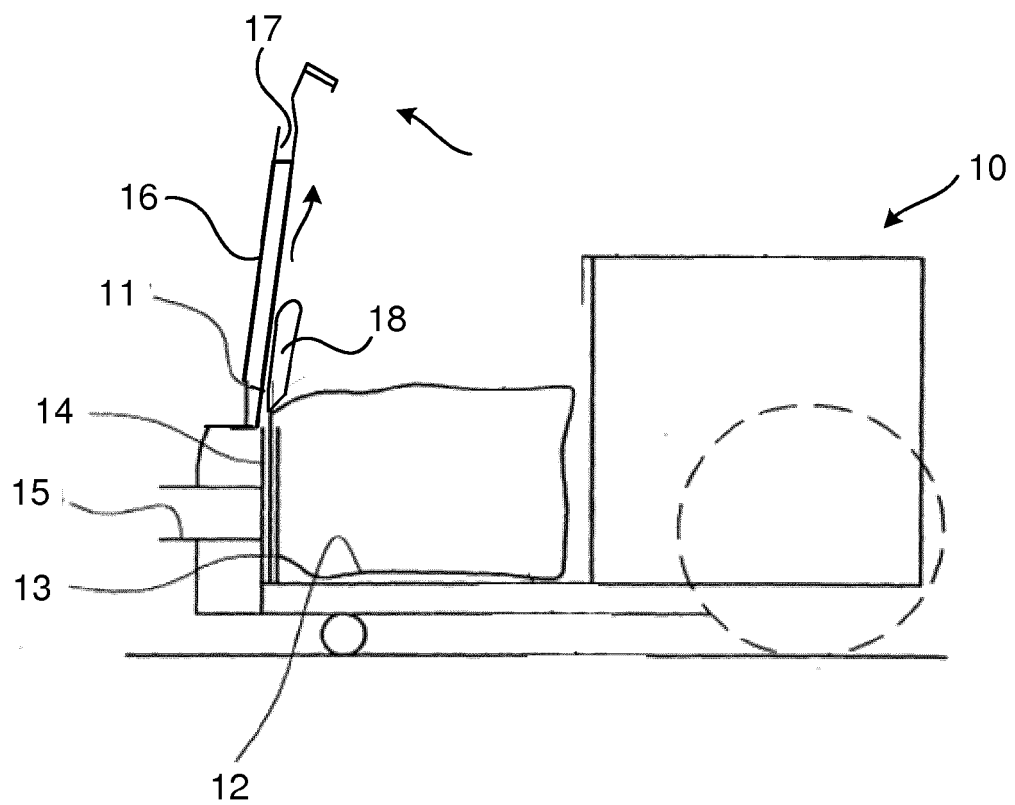


Fig. 2b

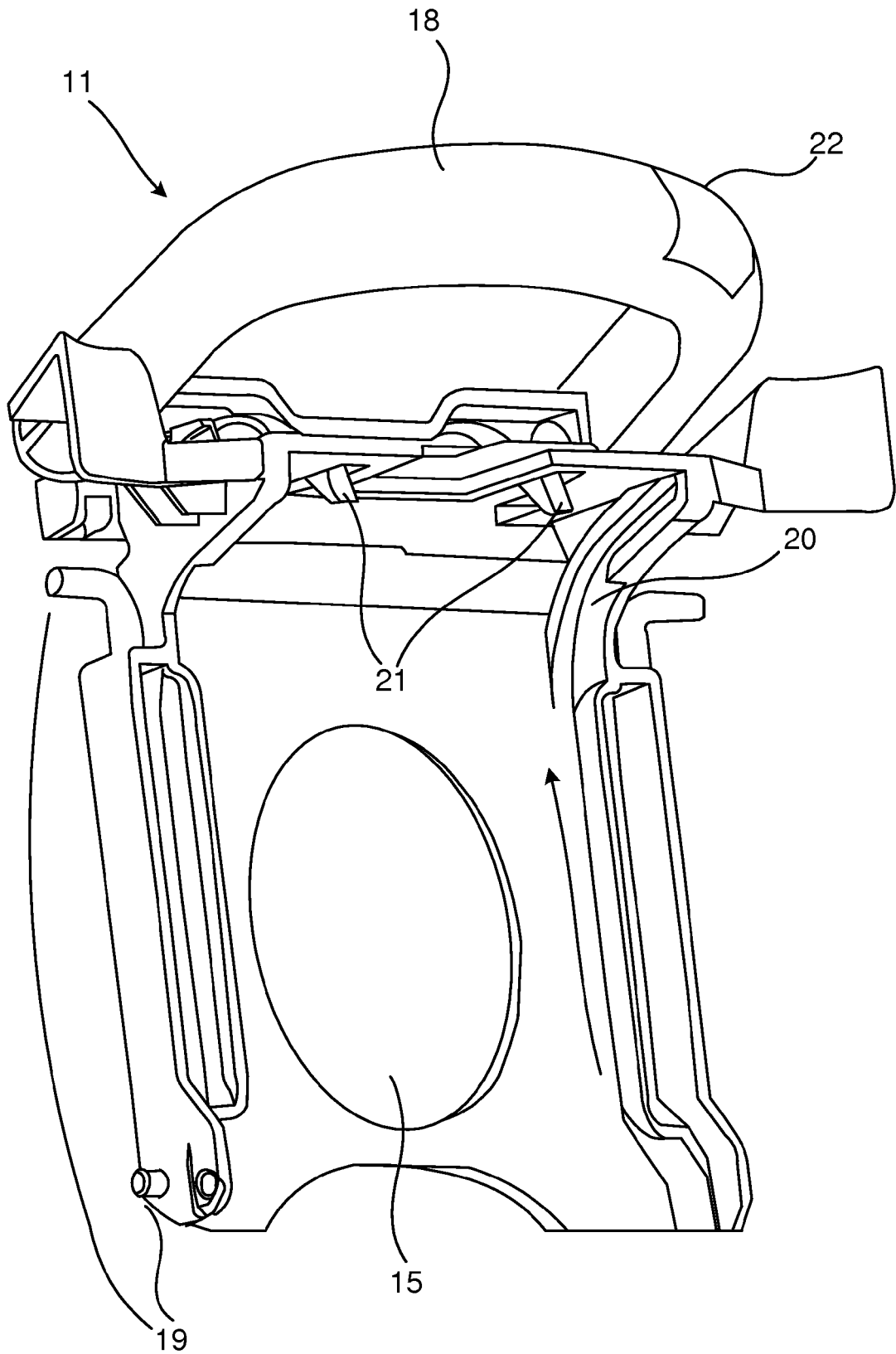


Fig. 3

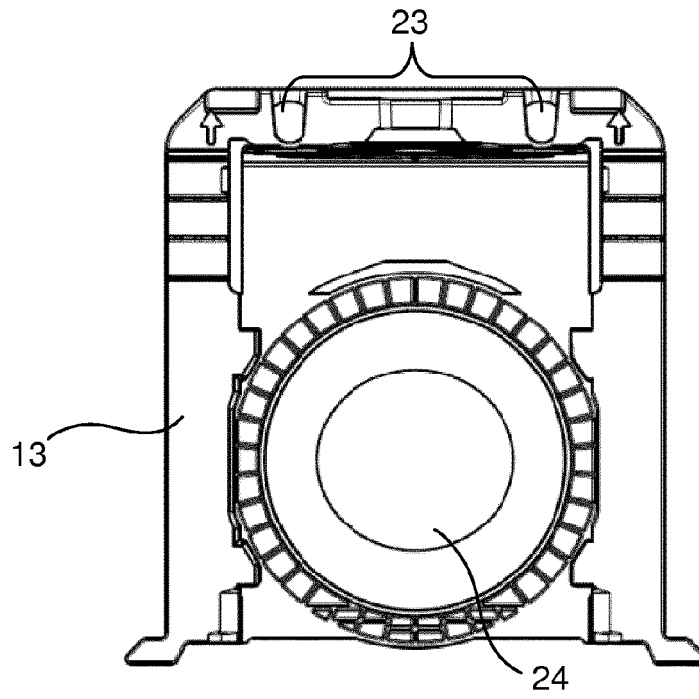


Fig. 4

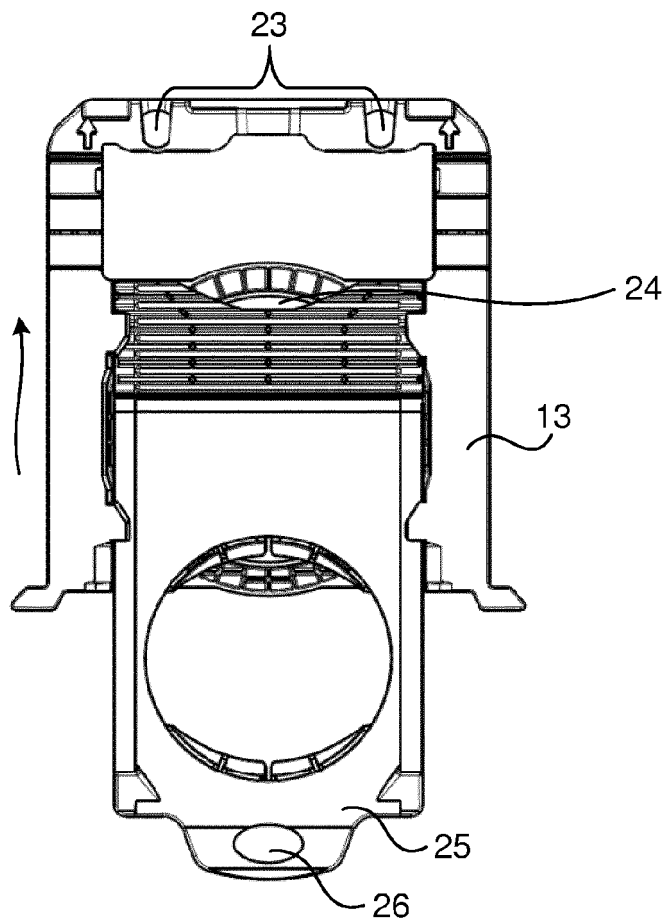


Fig. 5

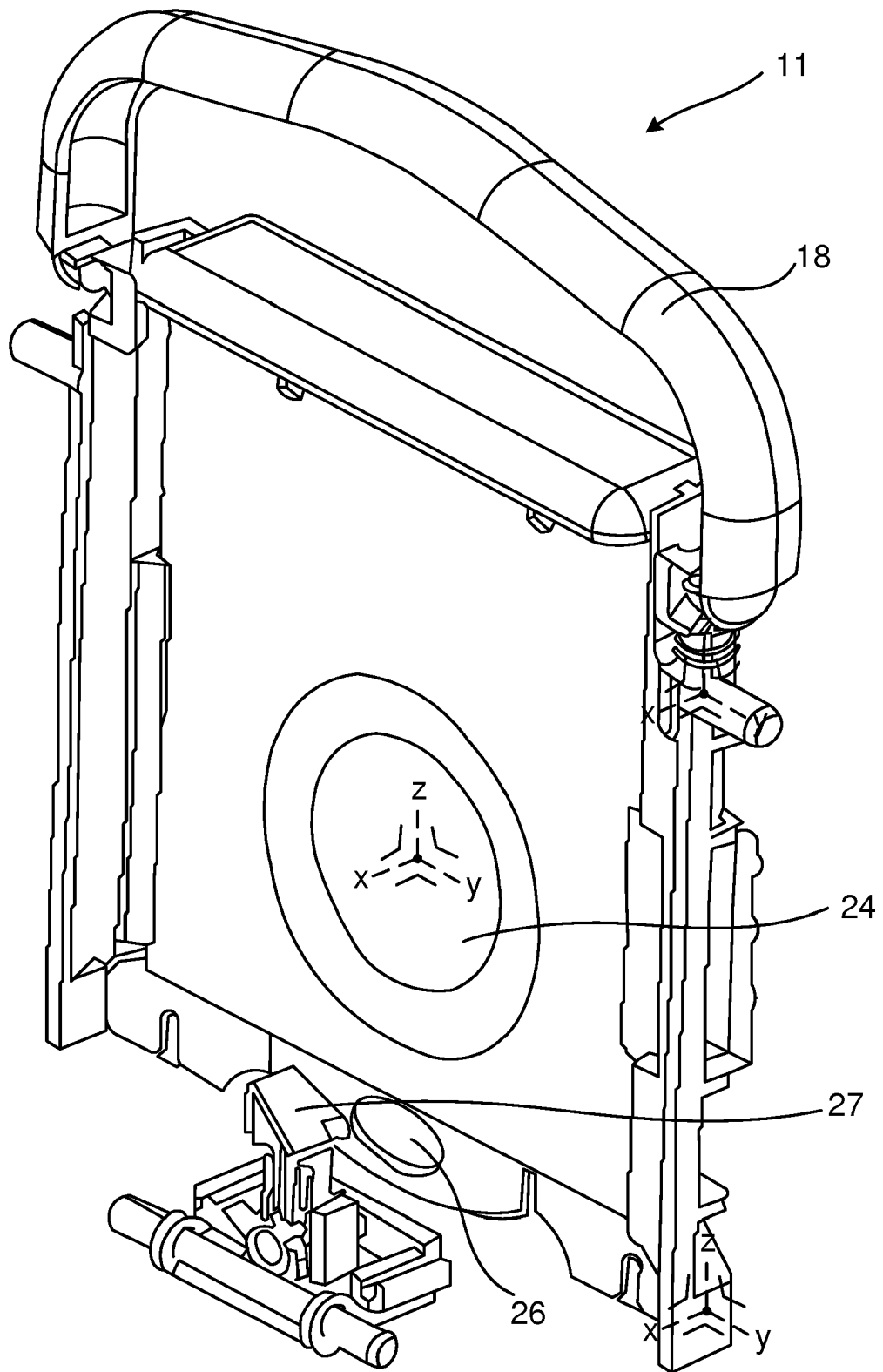


Fig. 6



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Application Number  
EP 16 20 0343

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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                |                                  |                                         |
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| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages  | Relevant to claim                | CLASSIFICATION OF THE APPLICATION (IPC) |
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| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | * paragraph [0033] - paragraph [0043];<br>figures 2a,2b,2c,3a,3b,4a,4b,5a,5b * | 2,3,8-10                         |                                         |
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| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | * page 2, line 29 - page 5, line 8;<br>figures 1-4 *                           | 2,3,6-11                         |                                         |
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| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | * column 2, line 14 - column 3, line 35;<br>figures 2,3 *                      | 1-11                             |                                         |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                |                                  | A47L                                    |
| Place of search                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                | Date of completion of the search | Examiner                                |
| Munich                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                | 19 April 2017                    | Blumenberg, Claus                       |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                |                                  |                                         |

EPO FORM 1503 03/82 (P04C01)

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The members are as contained in the European Patent Office EDP file on  
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