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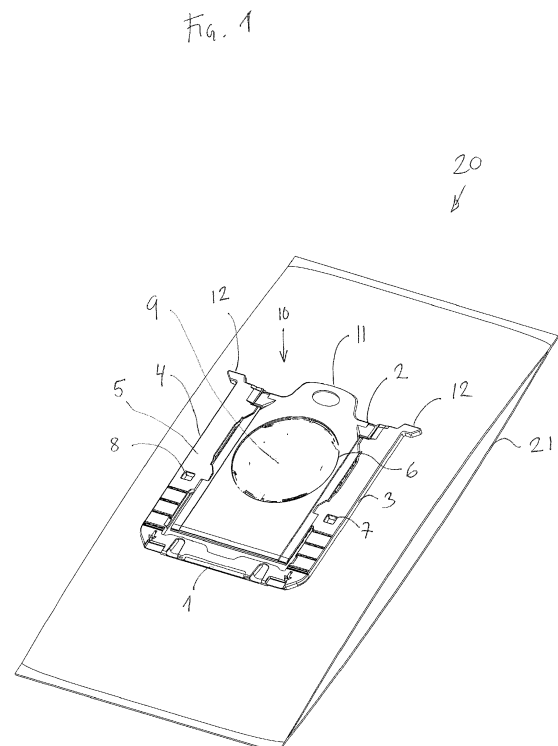
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(54) **DUST CONTAINER FOR A VACUUM CLEANER**

(57) The present disclosure relates to a dust container (20) for a vacuum cleaner. The dust container comprising a dust bag (21, made of an air permeable material, and a connector plate (10). The connector plate surrounds an inlet (9) in the dust bag (21), whereby the connector plate (10) is configured to correctly position the inlet (9) within a vacuum cleaner by the connector plate (10) being slid into a holder of the vacuum cleaner. The connector plate (10) comprising a front surface (5) having an opening (6) for an airflow, a first side (1) adapted to be inserted into the holder of a vacuum cleaner. An opposite second side (2), a third side (3) connecting the first and second sides, and a fourth side (4) connecting the first and second sides. The first side (1) is connecting the third (3) side and fourth side (4), and the connector plate (10) comprises two control apertures (7,8).



## Description

### Technical field

**[0001]** The present disclosure relates to a dust container for a vacuum cleaner, the dust container comprising a dust bag, made of an air permeable material, and a connector plate, surrounding an inlet in the dust bag, such that the connector plate can correctly position the inlet within a vacuum cleaner by the connector plate being inserted in a holder of the vacuum cleaner.

### Background

**[0002]** An example of such a container is disclosed for instance in WO-02/24046-A1. Thanks to the connector plate, the inlet of the dust bag can be reliably positioned and oriented to receive a flow of dust laden air from the vacuum cleaner inlet. Further, the connector plate may have means for securing the dust bag during use and also securing parts of the connector plate, such as a shutter arrangement, to the vacuum cleaner during removal of the dust bag to have an automatic closure of the dust bag during removal.

**[0003]** Further, the connector plate can trigger a feed-back switch in the holder of the vacuum cleaner to verify that a dust container has been correctly installed in the holder, thus enabling the vacuum cleaner to prevent use in case of an absent or incorrectly installed dust container. Such use could otherwise damage the vacuum cleaner by injecting heavily dust laden air into a fan/motor arrangement.

**[0004]** One problem associated with dust containers of this type is how to improve the securing of the dust bag to the vacuum cleaner during use and removal of the dust bag, and/or to have a more versatile way of sensing an absent or incorrectly installed dust container.

### Summary

**[0005]** An object of the present invention is to solve, or at least mitigate, this problem in the art. This object is achieved by means of a dust container as defined in claim 1 and preceding claims.

**[0006]** A vacuum cleaner comprising the dust container is further envisaged.

**[0007]** In an embodiment a dust container for a vacuum cleaner comprises a dust bag, made of an air permeable material, and a connector plate. The connector plate is surrounding an inlet in the dust bag. The connector plate is configured to correctly position the inlet within a vacuum cleaner by the connector plate being slid into a holder of the vacuum cleaner. The connector plate is comprising a front surface having an opening for an airflow. A first side adapted to be inserted into the holder of a vacuum cleaner, and an opposite second side. A third side is connecting the first and second sides, and a forth side is connecting the first and second sides. The first

side is also connecting the third side and fourth side. The connector plate also comprises two control apertures.

**[0008]** In an embodiment the third side is arranged at a first distance/radius from the center of the opening and the forth side is arranged at a second distance/radius from the center of the opening. At least one of the control apertures is/are arranged substantially at the first distance/radius from the center of the opening.

**[0009]** In an embodiment at least one of the control apertures is/are arranged substantially at the second distance/radius from the center of the opening.

**[0010]** In an embodiment the third side and the forth side are arranged at the same distance/radius from the center of the opening. The two control apertures, i.e. both first and second control apertures, are arranged at substantially the same distance/radius from the center of the opening.

**[0011]** In an embodiment at least a part of both of the control apertures are arranged in the area between the opening and the first side.

**[0012]** In an embodiment the first control aperture is arranged in an area between the opening and the third side. The second control aperture is arranged in an area between the opening and the forth side.

**[0013]** In an embodiment the first and second control apertures comprises a hole through the connector plate.

**[0014]** In an embodiment the first side comprises a rigid part connecting the third side and the fourth side.

**[0015]** In an embodiment the second side is arranged closer to the opening than the first side.

**[0016]** In an embodiment the connector plate comprises a flexible zone arranged between the opening and the first side. The flexible zone is flexible about an axis parallel to the first side.

**[0017]** In an embodiment a handle is arranged on the second side.

**[0018]** In an embodiment a tab is arranged on the second side, said tab is extending sideways outside the third and/or fourth sides.

**[0019]** In an embodiment the third and fourth sides both being adapted to slide into a holder of a vacuum cleaner.

**[0020]** In yet an embodiment a vacuum cleaner comprises a holder for a dust container. The vacuum cleaner also comprises a holding element, such as a hook or pin, adapted to secure the dust container during use. The holding element is securing the dust container through the connector plate, by engagement with at least one, preferably both, of the control apertures.

**[0021]** In yet an embodiment a Vacuum cleaner comprises a holder for a dust container. The vacuum cleaner comprises also a sensor element, such as a light sensor, or mechanical sensor, adapted to secure that the dust container is correctly installed in the holder. The sensor element engaged with or through at least one, preferably both, of the control apertures.

# Brief description of the drawings

## [0022]

Fig 1 shows a dust container for a vacuum cleaner.

Fig 2 shows a connector plate for a dust container.

Fig 3 shows a vacuum cleaner

Fig 3a shows an enlargement of a portion of Fig. 3

[0023] 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.

[0024] Figure 1 shows a dust container (20) for a vacuum cleaner. The dust container comprising a dust bag (21), made of an air permeable material, and a connector plate (10). The connector plate (10) surround an inlet (9) in the dust bag (21). The connector plate (10) is configured to correctly position the inlet (9) within a vacuum cleaner by the connector plate (10) being slid into a holder of the vacuum cleaner. The connector plate (10) comprising a front surface (5) having an opening (6) for an airflow. The opening (6) is positioned at the inlet (9) to the dust bag (21). The connector plate (10) also comprises a first side (1) adapted to be inserted into holder of a vacuum cleaner, and an opposite second side (2). A third side (3) connecting the first and second sides, and a forth side (4) connecting the first and second sides. The first side (1) is connecting the third (3) and fourth (4) sides. The connector plate also comprises two control apertures (7,8).

[0025] In the Figure 1 and 2 the third side (3) and the forth side (4) are arranged at the same distance/radius (R1, R2) from the center of the opening (6), and two control apertures (7,8) are arranged at substantially the same distance/radius (R1, R2) from the center of the opening (6).

[0026] Alternatively, the third side (3) is arranged at a first distances/radius (R1) from the center of the opening (6) and the forth side (4) is arranged at a second distance/radius (R2) from the center of the opening (6). At least a first of the control apertures (7) is arranged substantially at a first distance/radius (R1) from the center of the opening (6) and/or at least a second of the control apertures (8) is arranged substantially at a second distance (R2) from the center of the opening (6).

[0027] Figure 1 and 2 shows a connector plate (10) with both control apertures (7,8) arranged in the area

between the opening (6) and the first side (1). Alternatively at least a part of both of the control apertures (7,8) are arranged in the area between the opening (6) and the first side (1).

[0028] Figure 1 and 2 shows a connector plate (10) comprising a first control apertures (7) arranged in the area between the opening (6) and the third side (3), and a second control aperture (8) arranged in the area between the opening (6) and the forth side (4).

10 [0029] Figure 1 shows that the control apertures (7,8) comprises a hole through the connector plate (10). The first side (1) comprises a rigid part connecting the third (3) and fourth sides (4). The first side (1) also defines the part of the connector plate (10) furthest away from the opening (6).

15 [0030] Figures 1 and 2 shows that the second side surface (2) is arranged closer to the opening (6) than the first side surface (1). The connector plate (10) comprises a flexible zone (13) arranged between the opening (6) and the first surface (1), the flexible zone (13) is flexible about an axis parallel to the first side surface (1).

20 [0031] With the flexible zone (13) a part of the connector plate may be bent into a curved shape. The flexible zone (13) is arranged so that the area around the opening (6) may remain flat when bending the flexible zone (13). This facilitates the connection to the inlet hose of the vacuum cleaner.

25 [0032] Typically, the flexible zone (13) may be configured to be more easily bent backwards, towards the dust bag, as this is how the connector plate would best fit inside a vacuum cleaner. The flexibility can be accomplished by for example living hinges or perforation.

30 [0033] Figure 1 and 2 shows a handle (11) arranged on the second side (2). A tab (12) is also arranged on the second side (2), the tab (12) is extending sideways outside the third (3) and/or forth side (4). There may be a shutter (14) on the connector plate. Generally, the shutter (14) can be used to close the opening (6), and thereby the inlet (9), once the dust container (20) is full and is to be replaced. As the shutter (14) substantially seals the opening (6), it can be prevented to a great extent that collected dust leaks out of the dust bag when handled to be disposed.

35 [0034] The shutter (14) can be slid upwards in fig 2, away from the first side (1), such that the shutter moves over the dust bag inlet (9), thereby effectively closing this inlet.

40 [0035] The connector plate may be made of for example polypropylene or paper.

45 [0036] Figure 3 and 3a shows a vacuum cleaner (22). The connector plate (10) may be slide into a holder (23) in the vacuum cleaner (22). The third side (3) and fourth side (4) both being adapted to slide in a holder (23) of a vacuum cleaner. The first side (1) of the connector plate is first inserted into the holder (23).

50 [0037] The holder (23) of a vacuum cleaner may be fixed inside the vacuum cleaner or may be removable. The holder (23) may comprise a holding element (24),

such as a hook or pin (24), adapted to secure the dust container during use. The holding element (24) engage with at least one, preferably both, of the control apertures (7,8). This can be done by inserting the holding element (24) into one or both of the control aperture (7,8). Preferably holding elements (24) are engaging with both control aperture to get a reliable connection.

**[0038]** When the dust container is removed the holding element disengage with the control apertures (7,8) at a certain force, for example by spring loaded holding elements, or snap function. Or the holding elements are automatically or manually disconnected from the control apertures (7,8).

**[0039]** Alternatively a holder (23) for a dust container comprises a sensor element, such as a light sensor, or mechanical sensor. The sensor element (24) could be a mechanical sensor such as a hook or pin (24), which snap into one or both of the control apertures (7,8) when the connector plate (10) is inserted into the holder. Such sensor could then inform the vacuum cleaner that a correct dust container is installed. In another embodiment the sensor element is a light sensor comprising a light emitter arranged on one side or the connector plate and a sensor on the other side. When the connection plate is correctly installed in the holder the light sensor can send a signal that the dust container is correctly installed in the holder. Light sensors can be arranged close to at least one, preferably both, of the control apertures (7,8).

**[0040]** The present disclosure is not limited to the examples described above, and may be varied and altered in different ways within the scope of the appended claims.

#### List of features

#### **[0041]**

1. First side
2. Second side
3. Third side
4. Fourth side
5. Front surface
6. Opening
7. First control aperture
8. Second control aperture
9. Inlet
10. Connector plate
11. Handle
12. Tab
13. Flexible zone
14. Shutter
20. Dust container
21. Bag
22. Vacuum cleaner
23. Holder
24. Pin

#### Claims

1. Dust container (20) for a vacuum cleaner, the dust container comprising a dust bag (21), made of an air permeable material, and a connector plate (10), surrounding an inlet (9) in the dust bag (21), whereby the connector plate (10) is configured to correctly position the inlet (9) within a vacuum cleaner by the connector plate (10) being slid into a holder of the vacuum cleaner, said connector plate (10) comprising a front surface (5) having an opening (6) for an airflow, a first side (1) adapted to be inserted into the holder of a vacuum cleaner, an opposite second side (2), a third side (3) connecting the first and second sides, and a forth side (4) connecting the first and second sides, the first side (1) is connecting the third (3) side and fourth side (4), **characterized by** that the connector plate (10) comprises two control apertures (7,8).
2. Dust container (20) according to claim 1, wherein the third side (3) is arranged at a first distance/radius (R1) from the center of the opening (6) and the forth side (4) is arranged at a second distance/radius (R2) from the center of the opening (6), and at least one of the control apertures (7,8) is arranged substantially at the first distance/radius (R1) from the center of the opening (6).
3. Dust container (20) according to claim 2, wherein at least one of the control apertures (7,8) is arranged substantially at the second distance/radius (R2) from the center of the opening (6).
4. Dust container (20) according to claim 1, wherein the third side (3) and the forth side (4) are arranged at the same distance/radius (R1,R2) from the center of the opening (6), and the two control apertures (7,8) are arranged at substantially the same distance/radius (R1, R2) from the center of the opening (6).
5. Dust container (20) according to any of the claims 1-4, wherein at least a part of both of the control apertures (7,8) are arranged in the area between the opening (6) and the first side (1).
6. Dust container (20) according to any of the claims 1-5, wherein the first of the control apertures (7) is arranged in an area between the opening (6) and the third side (3), and the second control aperture (8) is arranged in an area between the opening (6) and the forth side (4).
7. Dust container (20) according to any of the claims 1-6, wherein the control apertures (7,8) comprises a hole through the connector plate (10).
8. Dust container (20) according to any of the claims

1-7, wherein the first side (1) comprises a rigid part connecting the third side (3) and the fourth side (4).

9. Dust container (20) according to any of the claims 1-8, wherein the second side (2) is arranged closer to the opening (6) than the first side (1). 5
10. Dust container (20) according to any of the claims 1-9, wherein the connector plate (10) comprises a flexible zone (13) arranged between the opening (6) and the first side (1), said flexible zone (13) is flexible about an axis parallel to the first side (1). 10
11. Dust container (20) according to any of the claims 1-10, wherein a handle (11) is arranged on the second side (2). 15
12. Dust container (20) according to any of the claims 1-11, wherein a tab (12) is arranged on the second side (2), said tab (12) is extending sideways outside the third or fourth sides. 20
13. Dust container (20) according to any of the claims 1-12, wherein the third and fourth sides both being adapted to slide into a holder of a vacuum cleaner. 25
14. Vacuum cleaner (22) comprising a holder (23) for a dust container (20) according to any of the claims 1-13, wherein the vacuum cleaner comprises a holding element (24), such as a hook or pin (24), adapted to secure the dust container (20) during use, by engagement with at least one, preferably both, of the control apertures (7,8). 30
15. Vacuum cleaner (22) comprising a holder (23) for a dust container according to any of the claims 1-13, wherein the vacuum cleaner comprises a sensor element, such as a light sensor, or mechanical sensor, adapted to secure that the dust container is correctly installed in the holder, by use of at least one, preferably both, of the control apertures (7,8). 35 40

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Fig. 1

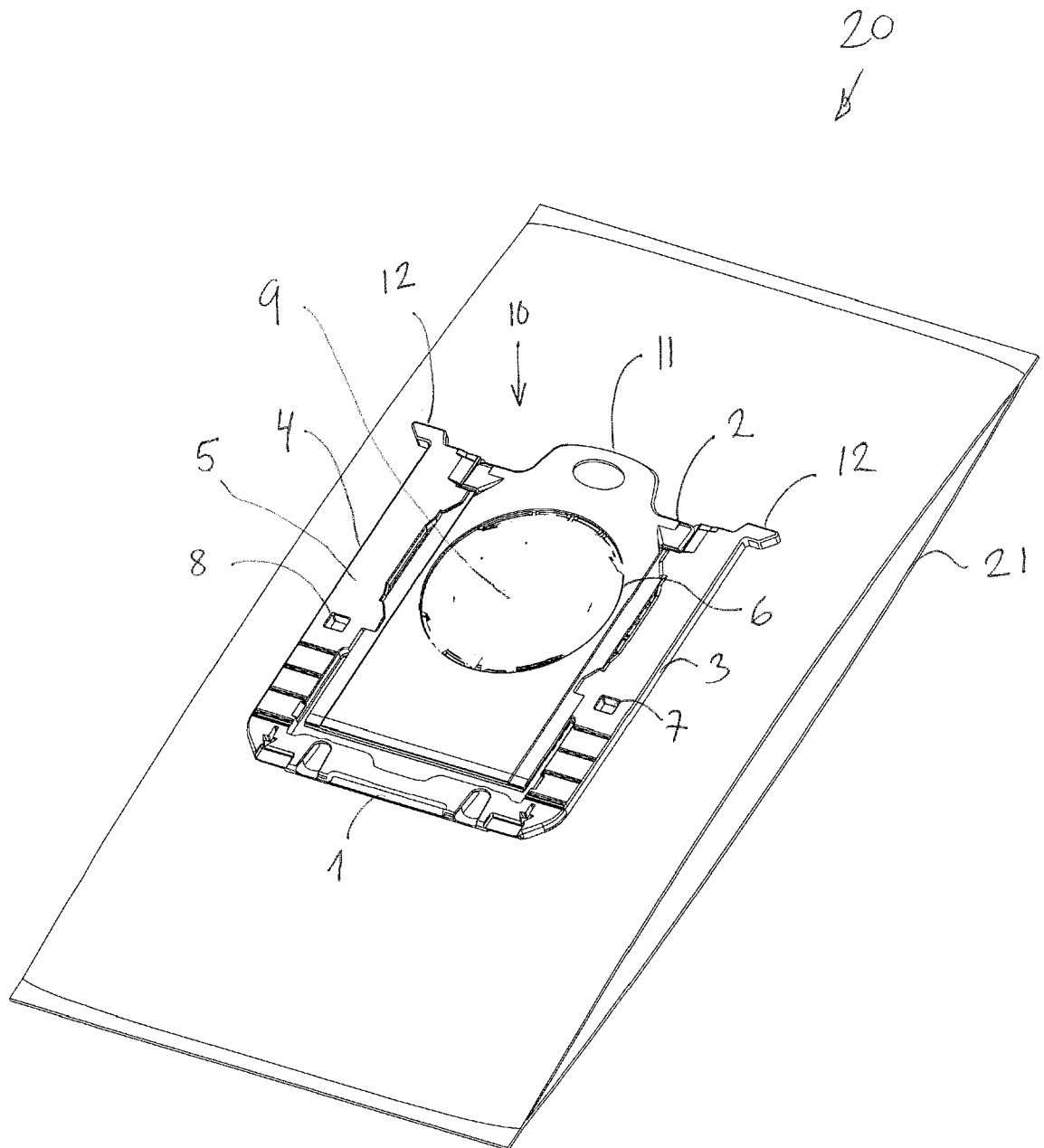
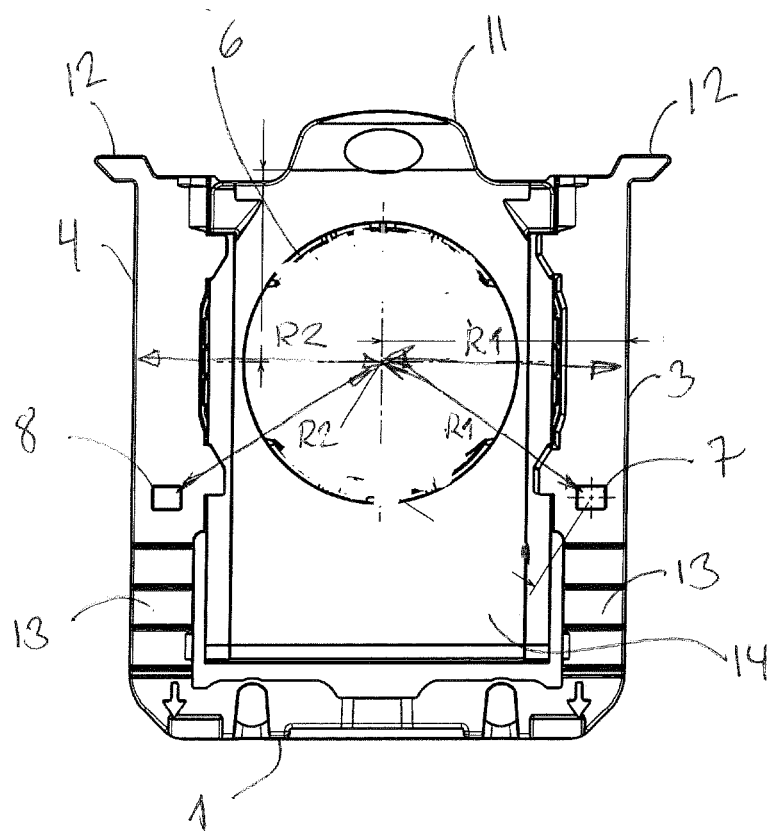
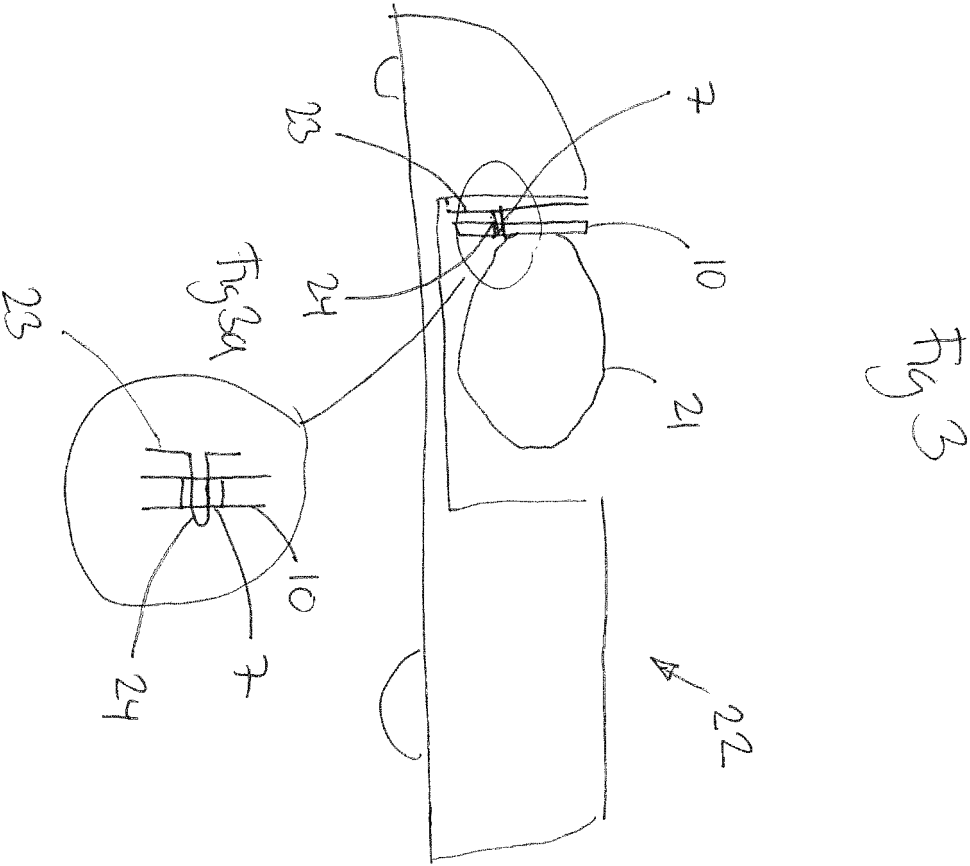


Fig 2









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Application Number  
EP 16 20 0150

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The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>26 April 2017</b>	Examiner <b>Blumenberg, Claus</b>
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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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**REFERENCES CITED IN THE DESCRIPTION**

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