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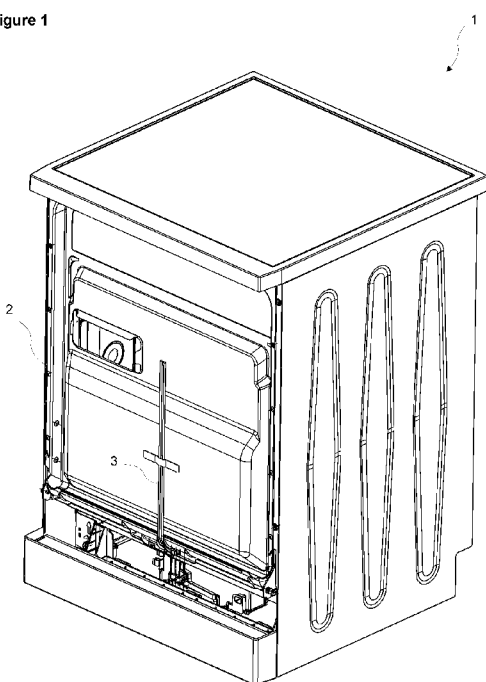
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(54) Title: A HOUSEHOLD APPLIANCE COMPRISING A CABLE PROTECTOR

Figure 1



(57) Abstract: The present invention relates to a household appliance (1) comprising a body (2); at least one cable tree (3) which accommodates the cables providing the electrical connections in the household appliance (1); at least one cable protector (4) which protects and guides the cable tree (3); a U-shaped housing (9) which is provided on the cable protector (4) and which extends in the horizontal direction; and at least one fixing member (7) which provides access to the housing (9) in the horizontal axis and which has an opening (8) narrower than the width of the housing (9).



Description**A HOUSEHOLD APPLIANCE COMPRISING A CABLE PROTECTOR**

- [0001] The present invention relates to a household appliance comprising a cable protector.
- [0002] The control units on household appliances, especially dishwashers, comprise electronic cards with circuit components thereon and electronic components such as memory, etc. wherein the software controlling the operation of the household appliance is stored. Today, built-in dishwashers which have lesser number of buttons are preferred for aesthetic purposes. The control units which were previously positioned at the upper side of the dishwashers are moved to under the washing tub when the washing tub is enlarged upwards since the dishwasher is preferred to occupy less space. However, in this type of embodiments, water may drip during the washing process performed in the washing tub, which results in the malfunction of the control unit, even danger of fire.
- [0003] Particularly in the dishwashers, a structure called cable tree is used in order to provide the electrical connection between the control panel and the control unit. As the cable tree is bent over the inner door, the cables may be subject to deformations such as stretching, cutting, breaking, etc. due to the movement of the inner door. Therefore, cable protectors are used at these regions.
- [0004] In the state of the art International Patent Application No. WO2016119844, a household appliance comprising a cable protector is disclosed.
- [0005] In the state of the European Patent Application No. EP0555687, a cable protector is disclosed, comprising belts which are positioned so as to surround the cable in the clamp for squeezing the cable.
- [0006] In another state of the art European Patent Application No. EP2107655, a cable protector is disclosed, which changes the direction of at least one cable.
- [0007] In the state of the art European Patent Application No. EP1681752, a cable protector is disclosed, which enables the cables to be mounted at once by disposing a plurality of holders onto a body.
- [0008] In the state of the German Patent Application No. DE3917201, a cable

protector is disclosed, comprising two flexible interlocked shells which guide the cable.

- [0009] Another state of the art embodiment is disclosed in the European Patent Application No. EP1434923. In this document, a cable protector is disclosed, which is used for preventing the cables from getting damaged and which is connected so as to rotate in two different ways.
- [0010] The aim of the present invention is the realization of a household appliance comprising a cable protector which is efficiently fixed.
- [0011] The household appliance realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a U-shaped housing which is arranged on the cable protector and which extends in the horizontal direction, and at least one fixing member which provides access to the housing and which has an opening narrower than the width of the housing.
- [0012] By means of the fixing member, the cable protector is enabled to be easily and quickly fixed onto the components in the household appliance. Thus, the noise arising from reasons such as the cable tree hitting the body or other components in the household appliance, etc. is eliminated, and the deformations which may arise due to impacts are prevented.
- [0013] In an embodiment of the present invention, the fixing member comprises at least one cut-out which surrounds the housing and the opening. By means of the cut-out, saving in material is provided and the fixing member becomes flexible. In the preferred embodiment of the present invention, the fixing member comprises two cut-outs arranged at both sides of the U-shaped housing.
- [0014] In an embodiment of the present invention, the household appliance comprises a pin which is provided on the card holder or the sump where to the cable protector is fixed and which has a foot extending in the vertical axis and a head in the form of a rim arranged at the top of the foot. In the preferred embodiment of the present invention, the foot and the head are cylindrical.
- [0015] By means of the present invention, the cable protector guiding the cable tree is fixed, thus enabling the cables to move as a group and preventing

resulting quality errors. The problem of noise arising from the cable tree hitting and rubbing against the walls of the household appliance is eliminated. Moreover, particularly the mounting of the cable tree in the production line of the dishwasher is facilitated.

[0016] A household appliance realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

[0017] Figure 1- is the perspective view of a household appliance.

[0018] Figure 2 - is the perspective view of a cable protector.

[0019] Figure 3 - is the perspective view of the card holder.

[0020] Figure 4 – is the perspective view of the cable protector fixed to the card holder.

[0021] Figure 5 - is the view of detail A in Figure 4.

[0022] Figure 6 - is the perspective view of the sump.

[0023] Figure 7 - is the perspective view of the cable protector fixed to the sump.

[0024] The elements illustrated in the figures are numbered as follows:

1. Household appliance
2. Body
3. Cable tree
4. Cable protector
5. Card holder
6. Sump
7. Fixing member
8. Opening
9. Housing
10. Cut-out
11. Pin
12. Foot
13. Head

[0025] The household appliance (1) comprises a body (2); at least one cable tree (3) which accommodates the cables providing the electrical connections in the household appliance (1); at least one cable protector (4) which protects and guides the cable tree (3); a U-shaped housing (9) which is provided on the cable protector (4) and which extends in the horizontal

direction; and at least one fixing member (7) which provides access to the housing (9) in the horizontal axis and which has an opening (8) narrower than the width of the housing (9). By means of the fixing member (7), the cable protector (4) is enabled to be easily and quickly fixed onto the components in the household appliance (1). Thus, the noise arising from reasons such as the cable tree (3) hitting the body (2) or other components in the household appliance (1), etc. is eliminated, and the deformations which may arise due to impacts are prevented (Figure 1 and Figure 2).

- [0026] In an embodiment of the present invention, the fixing member (7) comprises at least one cut-out (10) which surrounds the housing (9) and the opening (8). By means of the cut-out (10), saving in material is provided and the fixing member (7) becomes flexible. In the preferred embodiment of the present invention, the fixing member (7) comprises two cut-outs (10) arranged at both sides of the U-shaped housing (9).
- [0027] In an embodiment of the present invention, the household appliance (1) comprises a pin (11) which is provided on the card holder (5) or the sump (6) where to the cable protector (4) is fixed and which has a foot (12) extending in the vertical axis and a head (13) in the form of a rim arranged at the top of the foot (12). In the preferred embodiment of the present invention, the foot (12) and the head (13) are cylindrical (Figure 3 and Figure 6).
- [0028] In the embodiment of the present invention, the pin (11) is fitted into the fixing member (7) in the following manner, thus fixing the cable protector (4) to the card holder (5) or the sump (6). When the foot (12) bears against the opening (8), the two sides of the opening (8) stretch sideways. By means of this stretching, the foot (12) passing through the opening (8) to be seated into the housing (9). In this case, the foot (12) remains in the housing (9) unless a force enough for the pin (11) to pass through the opening (8) is applied onto the pin (11). As the foot (12) is seated into the housing (9), the head (13) of the pin (11) slides over the fixing member (7). The width of the head (13) of the pin (11) is larger than the width of the housing (9) and of the opening (8). Thus, it becomes impossible for the pin

(11) to be detached from the fixing member (7) in the vertical direction (Figure 4, Figure 5 and Figure 7).

[0029] In the preferred embodiment of the present invention, the household appliance (1) is a dishwasher.

[0030] By means of the present invention, the cable protector (4) guiding the cable tree (3) is fixed, thus enabling the cables to move as a group and preventing resulting quality errors. The problem of noise arising from the cable tree (3) hitting and rubbing against the walls of the household appliance (1) is eliminated. Moreover, particularly the mounting of the cable tree (3) in the production line of the dishwasher is facilitated.

Claims

1. A household appliance (1) **comprising** a body (2); at least one cable tree (3) which accommodates the cables providing the electrical connections in the household appliance (1); at least one cable protector (4) which protects and guides the cable tree (3), **characterized by** a U-shaped housing (9) which is provided on the cable protector (4) and which extends in the horizontal direction; and at least one fixing member (7) which provides access to the housing (9) in the horizontal axis and which has an opening (8) narrower than the width of the housing (9).
2. A household appliance (1) as in Claim 1, **characterized by** the fixing member (7) comprising at least one cut-out (10) which surrounds the housing (9) and the opening (8).
3. A household appliance (1) as in Claim 2, **characterized by** the fixing member (7) comprising two cut-outs (10) arranged at both sides of the U-shaped housing (9).
4. A household appliance (1) as in Claim 1, **characterized by** a pin (11) which is provided on the card holder (5) or the sump (6) where to the cable protector (4) is fixed and which has a foot (12) extending in the vertical axis and a head (13) in the form of a rim arranged at the top of the foot (12).
5. A household appliance (1) as in Claim 4, **characterized by** the foot (12) and the head (13) which are cylindrical.

Figure 1

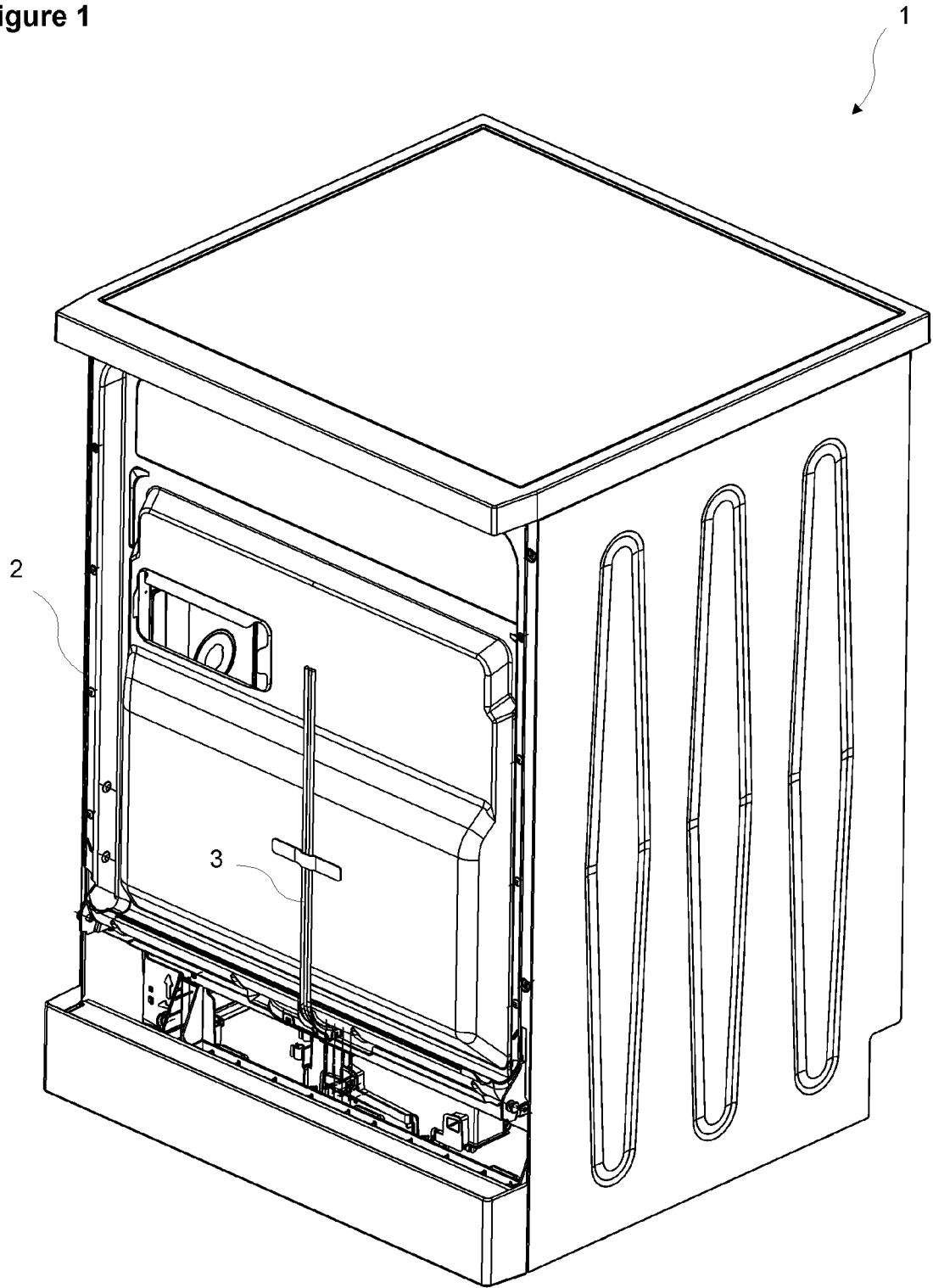


Figure 2

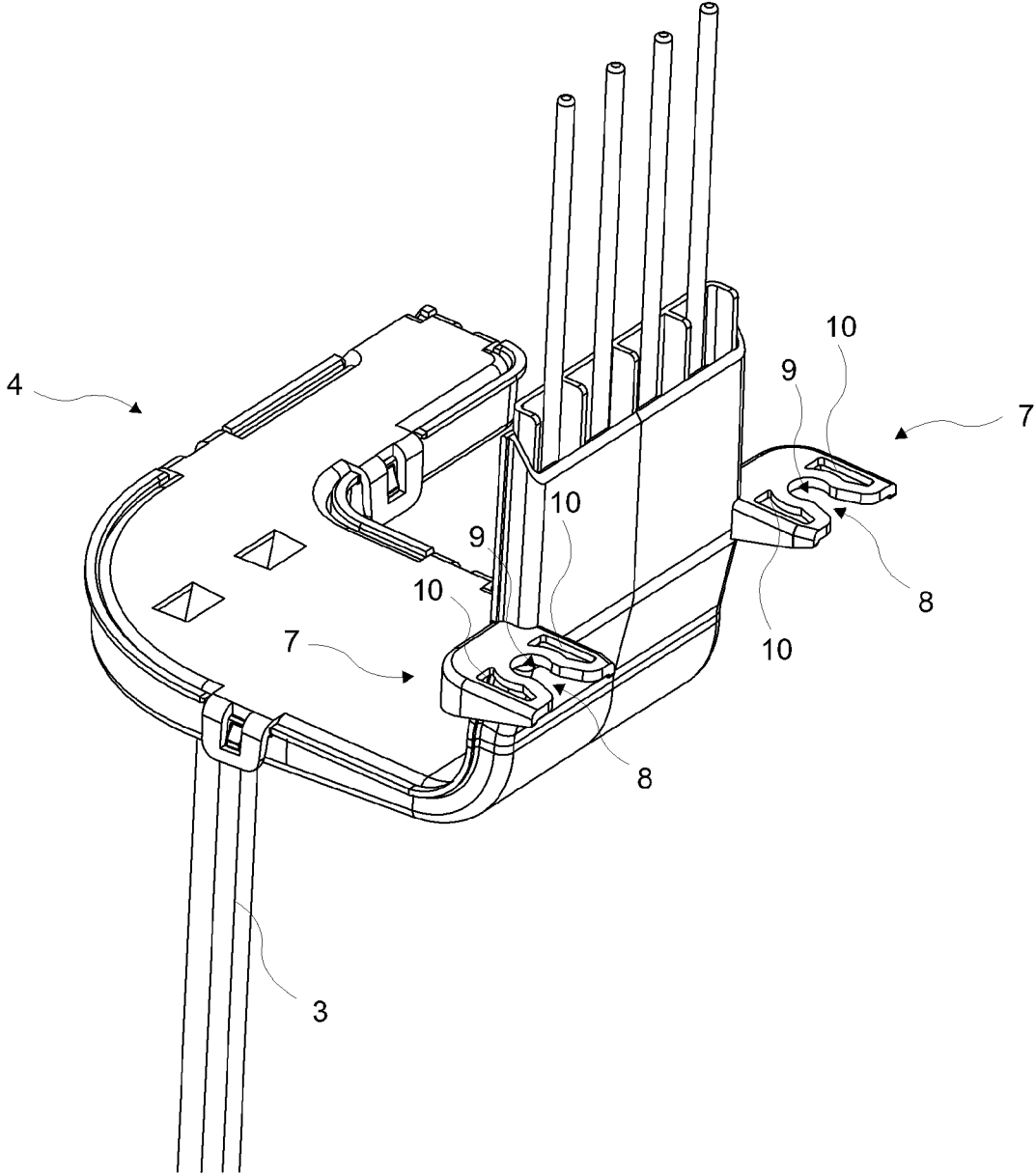


Figure 3

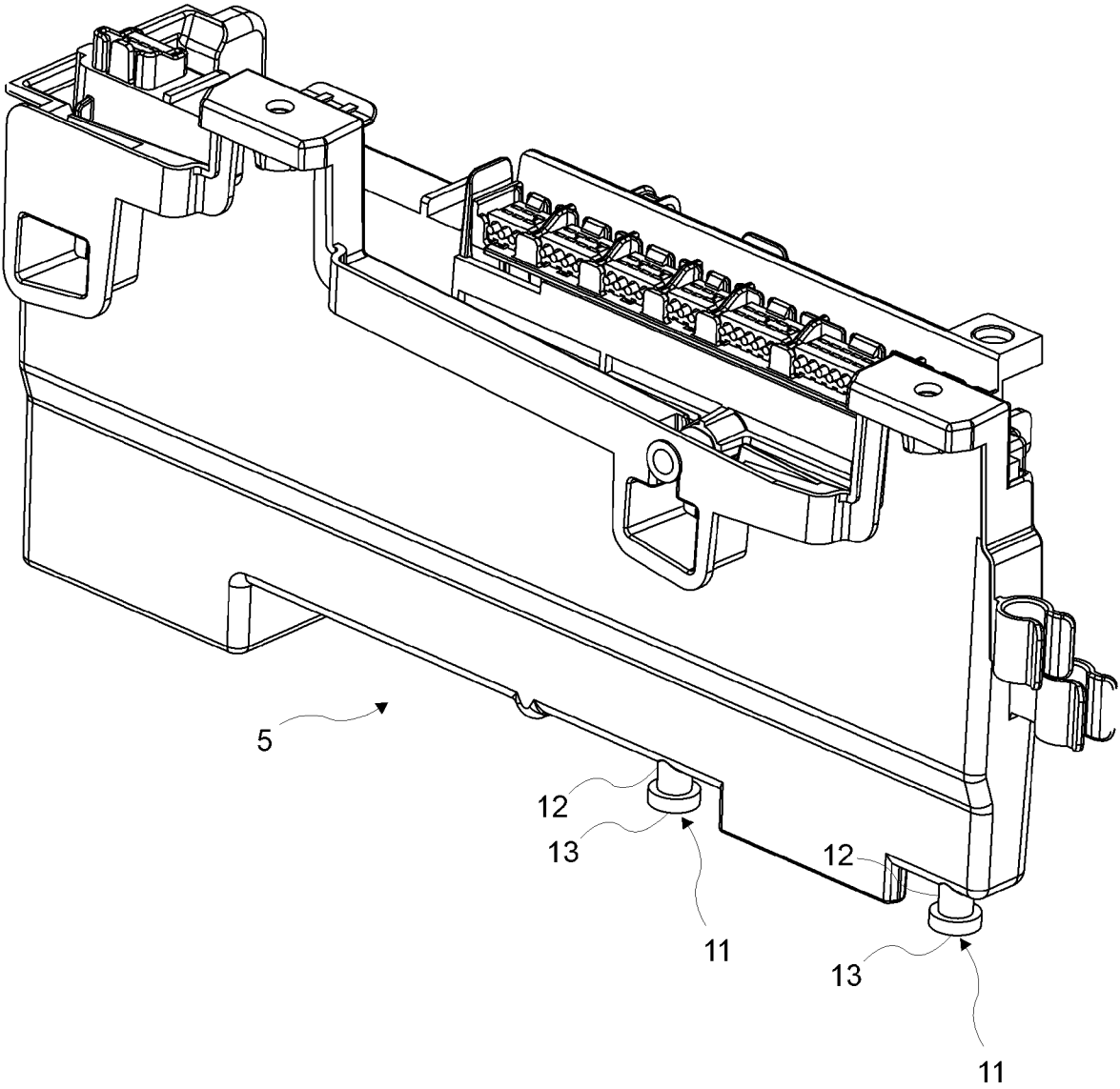


Figure 4

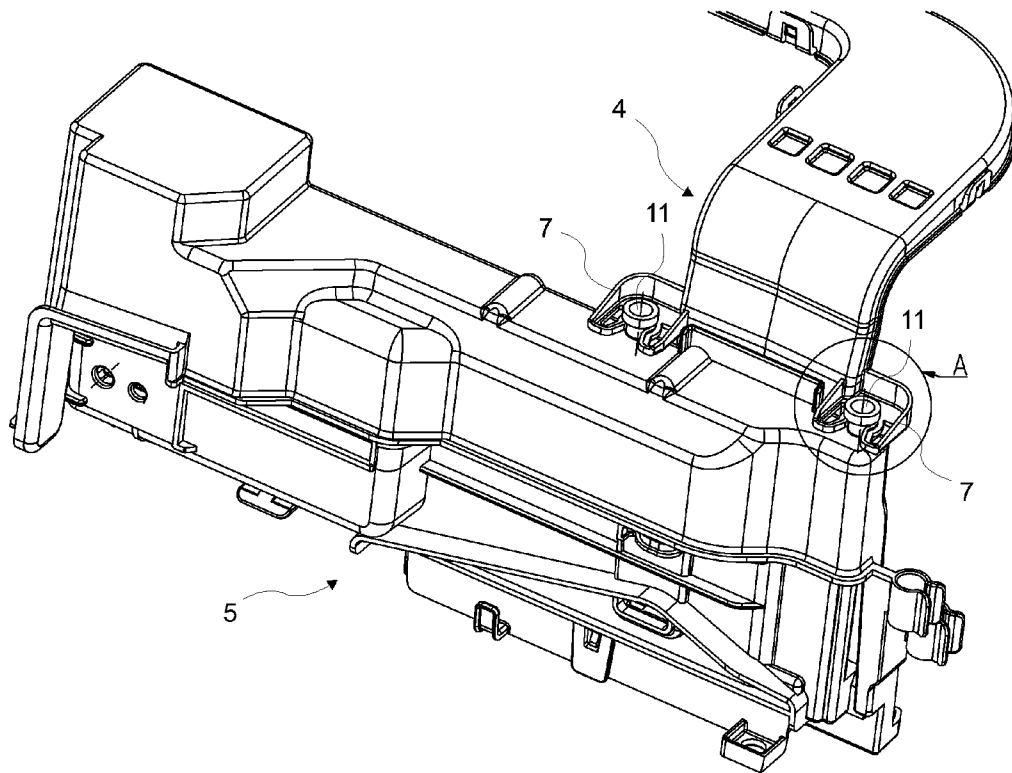


Figure 5

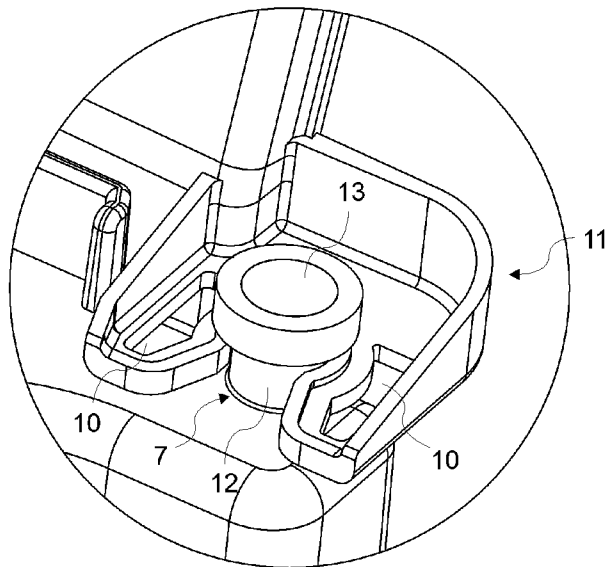


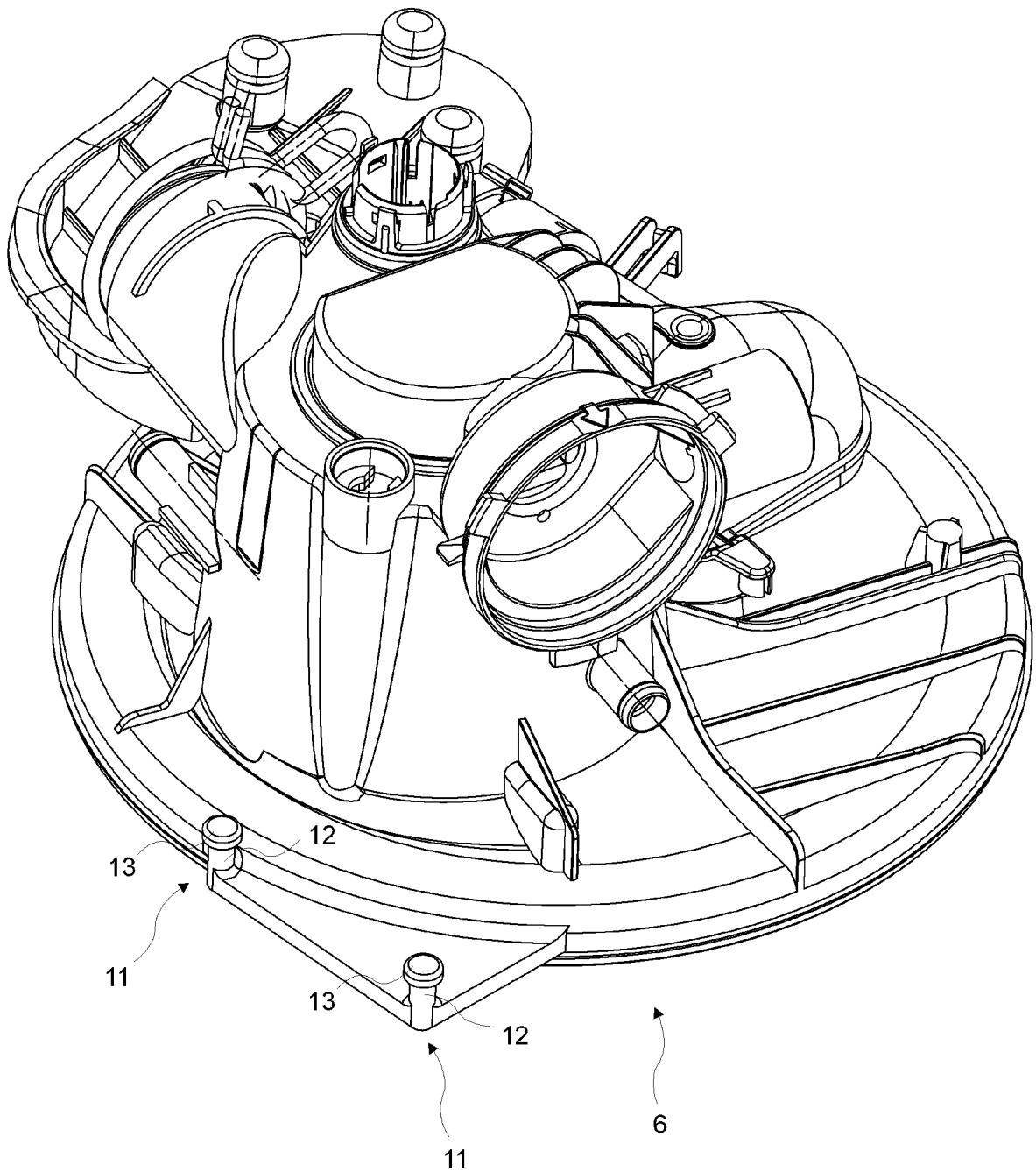
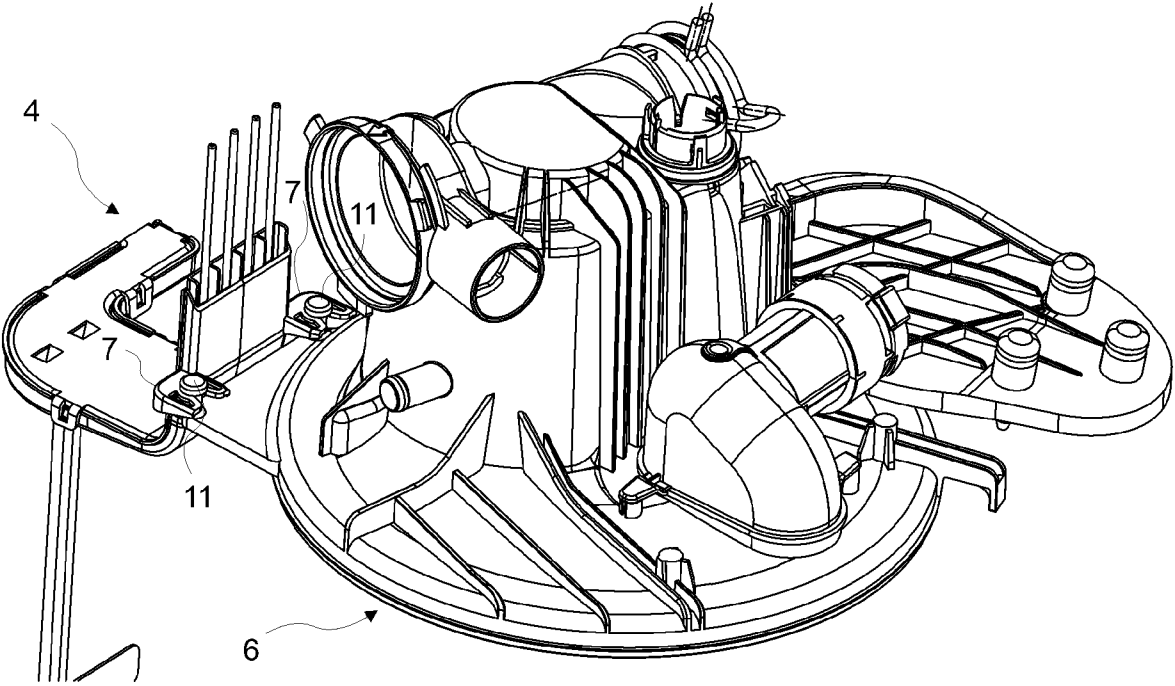
Figure 6

Figure 7



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/087097

A. CLASSIFICATION OF SUBJECT MATTER

INV. F16L3/22 H02G3/00 D06F39/12 D06F39/00 A47L15/42
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F16L H02G D06F A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ES 2 389 801 A1 (BSH ELECTRODOMESTICOS ESPANA [ES]) 31 October 2012 (2012-10-31)	1-4
Y	figures 1-4,7	5
Y	----- DE 197 30 963 A1 (VOLKSWAGEN AG [DE]) 21 January 1999 (1999-01-21) figure 5	5
A	----- EP 2 209 410 A2 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 28 July 2010 (2010-07-28) figure 1	1
A	----- JP S59 30623 U (UNKNOWN) 25 February 1984 (1984-02-25) figures 1-3	1
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/087097

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 37 18 618 A1 (YAZAKI CORP [JP]) 10 December 1987 (1987-12-10) figures 1,2 -----	1,2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2019/087097

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EP 2209410	A2	28-07-2010	AT 501663 T 15-04-2011 CN 101842042 A 22-09-2010 DE 102007052073 B3 26-02-2009 EP 2209410 A2 28-07-2010 ES 2360918 T3 10-06-2011 KR 20100087118 A 03-08-2010 PL 2209410 T3 31-08-2011 RU 2010120018 A 10-12-2011 US 2010212957 A1 26-08-2010 US 2012217059 A1 30-08-2012 WO 2009056445 A2 07-05-2009
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