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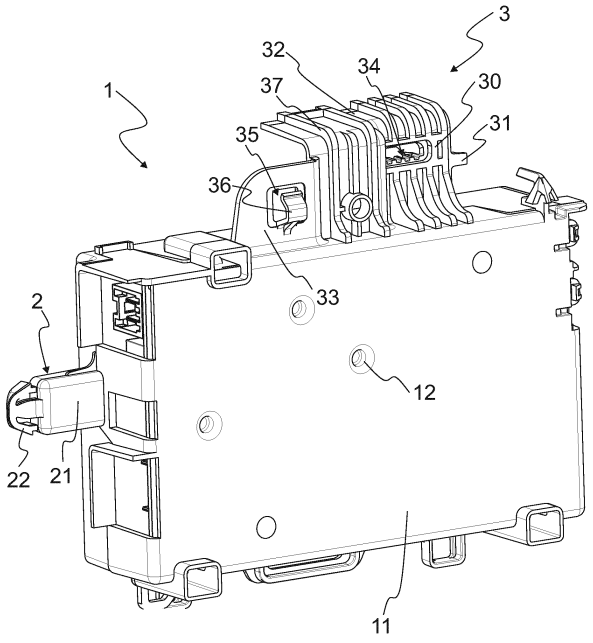
(54) A HOUSEHOLD APPLIANCE COMPRISING A BOARD HOLDER AND A BOARD HOLDER GROUP

(57) The present invention relates to a household appliance (100) comprising a body (101); a first panel (102) which is disposed on an accessible exterior surface of the body (101); and a primary board holder (1) which is suitable for being connected to the inner surface of the first panel (102) facing the body (101); wherein the primary board holder (1) comprises a fixing means (3) which is suitable for connection to the first panel (102) or a secondary board holder (5) connected to the first panel (102), and at least one claw (2) which extends outwards from a main body (11).

Figure 1



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Description

[0001] The present invention relates to a household appliance comprising a board holder and a board holder group which can be used in a plurality of different locations, wherein electronic components are held.

[0002] In electrical household appliances, board holders are fixedly connected to the panel in the body. It is important that said fixed components in the household appliances are placed at a distance so as not to contact the moving dynamic components.

[0003] The number and location of the board holders may vary in different types of household appliances. For example, in washing machines and laundry dryers, components may vary depending on the control system, the loading capacity, the number of programs and the speed characteristics. Accordingly, the number of the board holders used in some household appliances may vary. In this case, new mounting areas should be formed to position the board holders.

[0004] In the state of the art Turkish Patent Application No. 2016/01137, a locking structure is disclosed, which provides the holding and protection of circuit boards in a household electrical appliance.

[0005] The aim of the present invention is the realization of a household appliance comprising a board holder and a board holder group with a modular structure, suitable for use in a plurality of different locations.

[0006] The household appliance of the present invention comprises a body; a panel which is provided on an accessible outer surface of the body; and a primary board holder which contacts the inner surface of the panel facing the interior of the body. The primary board holder can fixedly hold the different electronic components related to the household appliance and can advantageously be positioned on the panel or another board holder.

[0007] The household appliance of the present invention advantageously comprises a primary board holder comprising a fixing means which is suitable for connection to the panel or a secondary board holder connected to the panel, and at least one claw which extends outwards from the main body. Thus, the primary board holder can be connected to the panel depending on the features of the household appliance to be used. If the household appliance has different features, the primary board holder can be attached on the secondary board holder. In this case, both the primary board holder and the secondary board holder are used together, and both can be easily accessed in case of a possible malfunction.

[0008] The primary board holder of the present invention comprises a coupling protrusion which is formed on the fixing means and which is suitable for engaging with a coupling channel provided on the first panel. The body of said household appliance forms a closed environment as a result of connecting a plurality of panels to each other. While the first type is in use in the primary board holder, any desired panel can be attached. During this attachment process, a coupling protrusion which protrudes outwards on the fixing means enters the opposite coupling channel on the panel. In another embodiment of the present invention, on the fixing means, there is an abutment claw which is suitable for bearing against one end of said coupling channel.

[0009] The primary board holder of the present invention comprises an "L" shaped fixing means comprising an upper abutment area suitable for connection to the upper surface of the first panel. Thus, the primary board holder is enabled to be held firmly on the first panel. Moreover, by means of the claw structure, the primary board holder can be connected to the body without the need for any fixing members such as screw, etc.

[0010] The primary board holder of the present invention comprises a flexible claw which is configured and sized to couple with a mounting hole on a second panel adjacent to the panel to which the primary board holder is to be connected. By means of said claw, a solid connection is achieved with the claw structure which both grips the upper surface of the first panel and engages with a neighboring panel. By means of the flexibility of said claw structure, the same is prevented from dislodging after passing through the relevant housing.

[0011] The household appliance of the present invention comprises a board holder group comprising a secondary board holder which is connected to the inner surface of the panel facing the interior of the body and a primary board holder which is connected on said secondary board holder. Thus, by using two board holders together, additional space is formed in the body of the device.

[0012] The board holder group of the present invention comprises a protective lid which has a claw housing matching the claw on the primary board holder and which surrounds the claw. Said lid has lateral walls and completely covers the claw area of the primary board holder. Thus, possible liquid leaks into the board are prevented.

[0013] The household appliance of the present invention comprises a flow guiding protrusion in the form of a protrusion which is provided on the mounting surface of the secondary board holder. Said flow guiding protrusion extends in an inclined direction and after a point, extends parallel to the floor. By means of said protrusion structure, possible liquid leaks are prevented from reaching the primary board holder.

[0014] The board holder group of the present invention comprises the secondary board holder having at least one first claw group which is suitable for being attached to the fixing means of the primary board holder. In an alternative embodiment of the present invention, on the secondary board holder, there may be a second claw group which is suitable for holding the primary board holder. Appropriate protrusions on the primary board holder can be attached to said claw groups by snap-fitting.

[0015] The cooking device realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the perspective view of the primary board holder related to an embodiment of the present invention.

Figure 2 - is the front view of the primary board holder as shown in Figure 1.

Figure 3 - is the partial perspective view of the primary board holder in the position connected to the first panel in the household appliance, wherein the top and rear panels in the household appliance are removed to make the primary board holder visible.

Figure 4 - is the perspective view of the board holder group wherein the primary board holder is formed as connected to the secondary board holder connected in the body related to an embodiment of the present invention.

Figure 5 - is the front view of the board holder group comprising the primary board holder positioned on the secondary board holder as shown in Figure 4.

Figure 6 - is the perspective view of the board holder group shown in Figure 4 as not connected to the panels yet.

Figure 7 - is the perspective view of the primary board holder shown in Figure 1 and 2 as connected to the first panel.

Figure 8 - is the perspective view of the mounted position of the primary board holder shown in Figure 7 from a different angle so as to show the existing claw.

Figure 9 - is the partial perspective view of the household appliance having a body comprising connection parts on the panel, suitable for the connection of the primary board holder and the board holder group of the present invention.

Figure 10 - is the perspective view showing the inner part of the protective lid structure suitable to be attached to the primary board holder of the present invention.

Figure 11 - is the perspective view of the protective lid shown in Figure 10 from a different angle.

Figure 12 - is the rear perspective view of a household appliance which is suitable for using therein the primary board holder and the board holder group of the present invention.

[0016] The elements illustrated in the figures are numbered as follows:

1. Primary board holder
    11. Main body
    12. Connection hole
2. Claw
    21. Claw protrusion
    22. Claw end
3. Fixing means
    31. Abutment claw
    32. Upper abutment surface
    33. Lateral protrusion
    34. Coupling protrusion
    35. Opening
    36. Cable holding claw
    37. Support protrusion
    38. Coupling housing
4. Protective lid
41. Claw housing
5. Secondary board holder
    51. Mounting surface
    52. Flow guiding protrusion
    53. First claw group
    54. Abutment protrusion
    55. Second claw group
    56. Panel claw
6. Board holder group
100. Household appliance
    101. Body
    102. First panel
    103. Second panel
    104. Coupling channel
    105. Mounting hole

X. Longitudinal axis of the household appliance

[0017] The household appliance (100) of the present invention comprises a body (101); a first panel (102) which is disposed on an accessible exterior surface of the body (101); and a primary board holder (1) which is suitable for being connected to the inner surface of the first panel (102) facing the body (101). The relevant primary board holder (1) is connected in the body (101) without using any fixing members such as screw, etc. The primary board holder (1) advantageously comprises a fixing means (3) which is suitable for connection to the first panel (102) or a secondary board holder (5) connected to the first panel (102), and at least one claw (2) which extends outwards from the main body (11).

[0018] In an embodiment of the present invention, as shown in Figure 1, the primary board holder (1) comprises a coupling protrusion (34) which is formed on the fixing means (3) and which is suitable for engaging with a coupling channel (104) provided on the first panel (102). Said coupling protrusion (34) is hollow but protrudes outwards and engages with the coupling channel (104) as shown in Figure 9. The length of said coupling channel (104) is preferably twice the length of the coupling protrusion (34), and on the fixing means (3), there is an abutment claw (31) which is suitable for bearing against one end of said coupling channel (104). Referring to Figure 1, said abutment claw (31) extends from a lateral surface of the fixing means (3) in the form of a protrusion.

[0019] In an embodiment of the present invention, the fixing means (3) is shaped in an "L" form so as to comprise an upper abutment surface (32) which is suitable for being connected to the upper surface of the first panel (102). As shown in Figure 7, the fixing means (3) grips the upper part of the first panel (102) by means of the upper abutment surface (32). Advantageously, no fixing member such screw, etc. are used here. Thus, a board holder which is both easy to assemble and cost-efficient is obtained. In an alternative embodiment of the present invention, on the upper abutment surface (32), there may be a plurality of support protrusions (37) extending in the same direction.

[0020] In addition to the fixing means (3), the primary board holder (1) further comprises a flexible claw (2) which engages with the second panel (103). As shown in Figure 9, there is a mounting hole (105) on the second panel (103), and said claw (2) engages with said mounting hole (105). Said claw (2) is shaped and sized to match the mounting hole (105), and as shown in Figure 1, comprises a claw protrusion (21) which extends planarly outwards from the main body (11) of the primary board holder (1) and two opposite flexible claw ends (22) which extend from said claw protrusion (21). The surroundings of said claw ends (22) are cut out, and as shown in Figure 6, said claw ends (22) narrow down while passing through the relevant mounting hole (104) and then expand, preventing the same from moving back. Said claw protrusion (21) is also long enough for the second panel (103).

[0021] In an embodiment of the present invention, there is a lateral protrusion (33) which extends from a lateral wall of the fixing means (3) of the primary board holder (1). As shown in Figures 1 and 2, there is a cut-out-shaped opening (35) in said lateral protrusion (33), and there is a curved cable holding claw (36) opposite said opening (35). By means of said cable holding claw (36), cable groups which may pass over the primary board holder (1) can be directed as desired and held steadily. Said lateral protrusion (33) is formed as an extension of the fixing means (3) and bears against the main body (11) of the primary board holder (1). The main body (11) of the primary board holder (1) comprises two matching parts in the form of a lower and upper lid. Electronic components are kept between said two main body (11) parts. As shown in Figure 1, there are a plurality of connection holes (12) in the connection area of said two main body (11) parts, and fixing member such screw, etc. can be used in said connection holes.

[0022] The primary board holder (1) of the present invention can be connected directly to the first panel (102), as shown in Figures 3 and 7, or can be connected to a secondary board holder (5), connected to the first panel (102), as shown in Figures 4 and 5. The primary board holder (1) advantageously does not require any additional structural changes for such use. Using the primary board holder (1) together with a secondary board holder (5) as described above forms a board holder group (6).

[0023] As shown in Figure 5, there is a board holder group (6) comprising a secondary board holder (5) which is connected to the inner surface of the first panel (102) facing the interior of the body (101) and a primary board holder (1) which is connected on said secondary board holder (5). Thus, said board holder group (6) can be used advantageously in case a plurality of board holders (1 and 5) are used and there is a need to make space.

[0024] In an embodiment of the present invention, if the primary board holder (1) is positioned on the secondary board holder (5), said claw (2) is not attached to the second panel (103). As shown in detail in Figure 6, a protective lid (4) is used, which has a claw housing (41) matching the claw (2) on the primary board holder (1) and which surrounds the claw (2). Possible leaks are prevented by means of said protective lid (4) shown in perspective views in Figures 10 and 11. Said claw housing (41) is configured to match the claw (2) on the primary board holder (1), and two opposite flexible claw ends (22) pass through said claw housing (41) and prevent the same from moving back. In an embodiment of the present invention, on the secondary board holder (5), there is an abutment protrusion (54) having a plurality of protrusion-shaped fins. Said abutment protrusion (54) engages with the coupling housing (38) on the primary board holder (1). Said coupling housing (38) has a rectangular cross-section and is surrounded by lateral edges. Said abutment protrusion (54) engages with the coupling housing (38) and supports the primary board holder (1) from the bottom.

[0025] In an embodiment of the present invention, there are a plurality of connection and fixing members on the secondary board holder (5) and there is also a panel claw (56), just like on the primary board holder (1). Said panel claw (56) engages with the opposite mounting hole on the second panel (103). The primary board holder (1) is connected to the mounting surface (51) on the secondary board holder (5) which is fixed in this manner. In this case, the fixing means (3) engages with at least one first claw group (53) suitable for mounting on the secondary board holder (5). As shown in Figure 6, the upper abutment surface (32) on the primary board holder (1) engages with the first claw group (53) protruding from the mounting surface (51) on the secondary board holder (5). Said first claw group (53) comprises hollow sections

facing the fixing means (3) and restricts the upward movement of the fixing means (3). Moreover, said first claw group (53) also matches the support protrusions (37) on the primary board holder (1).

[0026] In another embodiment of the present invention, the secondary board holder (5) may contain a plurality of claw groups. As shown in Figures 5 and 6, on the mounting surface (51) of the secondary board holder (5), there is a second claw group (55) which is positioned close to the second panel (103). Said second claw group (55) is also structured in the form of a flexible claw by means of the cut-out therein so as to bear against the primary board holder (1). Thus, the primary board holder (1) is fixed to the secondary board holder (5) by means of a plurality of connection details.

[0027] In an embodiment of the present invention, the secondary board holder (5) comprises a flow guiding protrusion (52) which is provided in the form of a protrusion on the mounting surface (51) and which has inclined regions. Referring to Figure 6, said flow guiding protrusion (52) extends in an inclined manner so as to have a certain wall thickness and width. Thus, possible liquid leaks are guided through said flow guiding protrusion (52). By means of said flow guiding protrusion (52), any liquid is also prevented from reaching the open ends and existing sockets.

[0028] In a preferred embodiment of the present invention, the primary board holder (1) can be arranged as a board holder comprising energy regulating components for regulating the energy provided for the household appliance (100). This type of board holder can be placed at the top of the rearmost panel of the household appliance (100), for example, the first panel (102). In another embodiment of the present invention, the secondary board holder (5) can be arranged as a board holder which holds the electronic components required for the motor group in the household appliance (100). This type of secondary board holder (5) can again be placed at the lower side of the first panel (102), close to the base, without using any fixing members such screw, etc. By means of the present invention, the primary board holder (1) can be connected to the first panel (102) alone if desired, depending on different model types, or depending on different models and features, can be placed on the secondary board holder (5) to create space in the household appliance (100).

[0029] Figure 12 shows an example of the household appliance (100) of the present invention, and the household appliance (100) of the present invention can be a washing machine or a laundry dryer. By means of the present invention, a household appliance (100) is realized, comprising a board holder group (6) which can be used in a plurality of models, wherein costs and labor are reduced. In an embodiment of the present invention, the primary board holder (1) can be positioned in the vicinity of the first panel (102) of the washing machine, furthest from the base, while the secondary board holder (5) can be positioned, on the contrary, close to the base. In another embodiment of the present invention, the primary board holder (1) can be used in a laundry dryer with the same features. In this case, the location of the primary board holder (1) in the device changes and can be advantageously connected to the secondary board holder (5) as shown in Figures 4 and 5. Thus, the free space in the household appliance (100) is used and space is made available for the household appliance (100) to be manufactured so as to have a larger capacity. Moreover, by means of the board holder group (6) comprising the board holders (1 and 5) placed on top of each other, there is no need to open additional holes on the panel (102). Thus, the need for the boring process for holes and openings, and loss of strength on the panel (102) are eliminated.

Claims

1. A household appliance (100) **comprising** a body (101); a first panel (102) which is disposed on an accessible exterior surface of the body (101); and a primary board holder (1) which is suitable for being connected to the inner surface of the first panel (102) facing the body (101), **characterized by** the primary board holder (1) comprising a fixing means (3) which is suitable for connection to the first panel (102) or a secondary board holder (5) connected to the first panel (102), and at least one claw (2) which extends outwards from a main body (11).

2. A household appliance (100) as in Claim 1, **characterized by** the fixing means (3) comprising a coupling protrusion (34) which is suitable for engaging with a coupling channel (104) provided on the first panel (102).

3. A household appliance (100) as in Claim 2, **characterized by** the fixing member (3) comprising an abutment claw (31) which is suitable for bearing against one end of said coupling channel (104) on the first panel (102).

4. A household appliance (100) as in Claim 2 or 3, **characterized by** a L-shaped fixing means (3) comprising an upper abutment surface (32) which is suitable for being connected to the upper surface of the first panel (102).

5. A household appliance (100) as in any one of the above claims, **characterized by** a claw (2) which is sized to couple with a mounting hole (105) on a second panel (103) adjacent to the first panel (102) to which the primary board holder (1) is to be connected.

6. A household appliance (100) as in any one of Claims 1 to 5, **characterized by** a board holder group (6)

comprising a secondary board holder (5) which is suitable for being connected to the inner surface of the first panel (102) facing the interior of the body (101) and a primary board holder (1) which is connected on said secondary board holder (5).

7. A household appliance (100) as in Claim 6, **characterized by** the board holder group (6) comprising a protective lid (4) which has a claw housing (41) matching the claw (2) on the primary board holder (1) and surrounding the claw (2).

8. A household appliance (100) as in Claim 6 or 7, **characterized by** a flow guiding protrusion (52) which is provided on the mounting surface (51) of the second board holder (5) and which has inclined regions.

9. A household appliance (100) as in Claim 6, 7 or 8, **characterized by** the board holder group (6) having the second board holder (5) comprising at least one first claw group (53) suitable for engaging with the fixing means (3) of the first board holder (1).

10. A household appliance (100) as in Claim 9, **characterized by** the board holder group (6) having the second board holder (5) comprising a second claw group (55) which is suitable for engaging with the first board holder (1) and which is positioned in the vicinity of the second panel (103).

11. A household appliance (100) as in Claim 10, **characterized by** the board holder group (6) having the second board holder (5) comprising an abutment protrusion (54) which is suitable for engaging with an enclosed coupling housing (38) on the first board holder (1).

12. A household appliance (100) as in any one of the above claims, which is a laundry dryer.

13. A household appliance (100) as in any one of Claims 1 to 11, which is a washing machine.

Figure 1

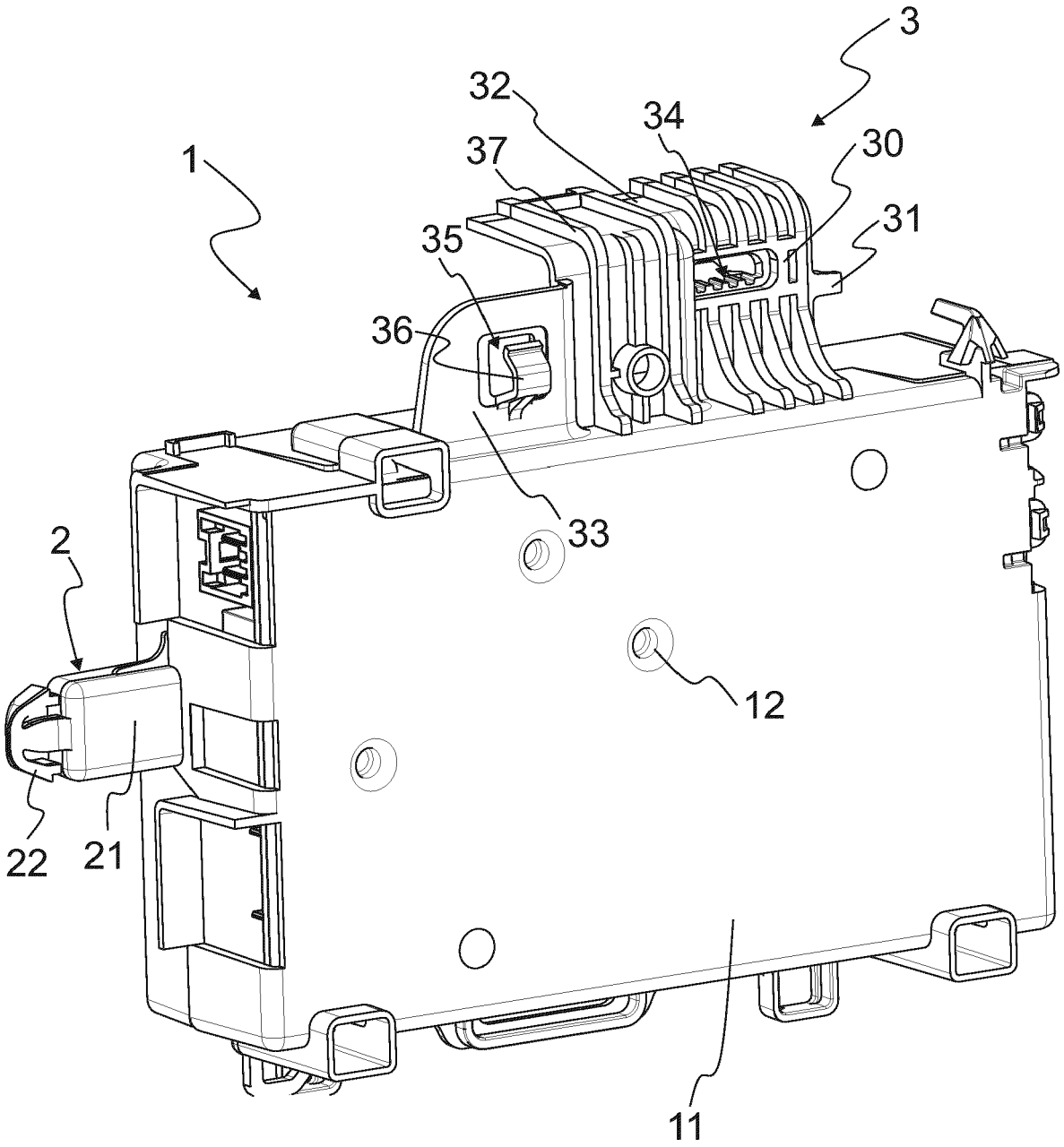


Figure 2

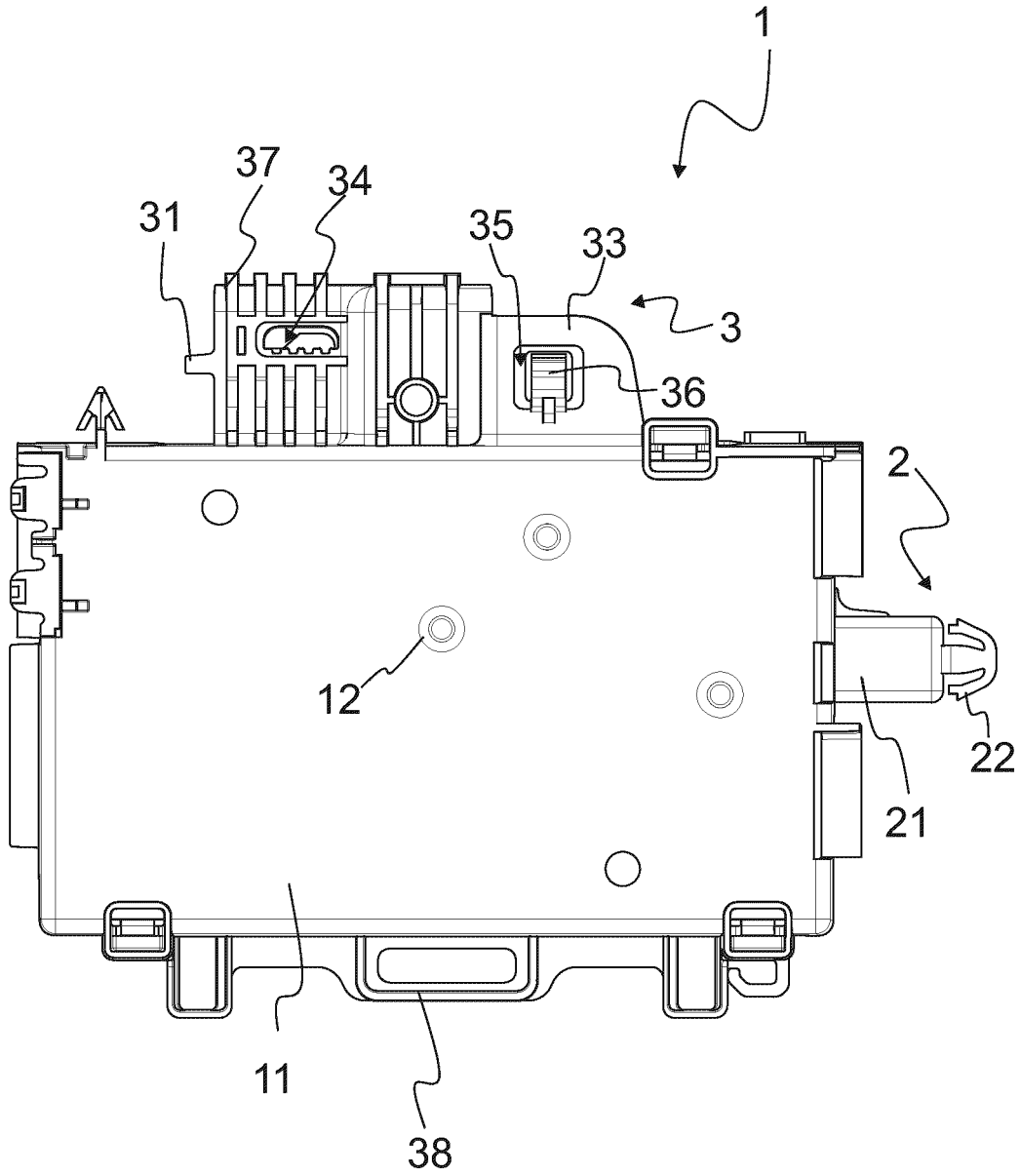


Figure 3

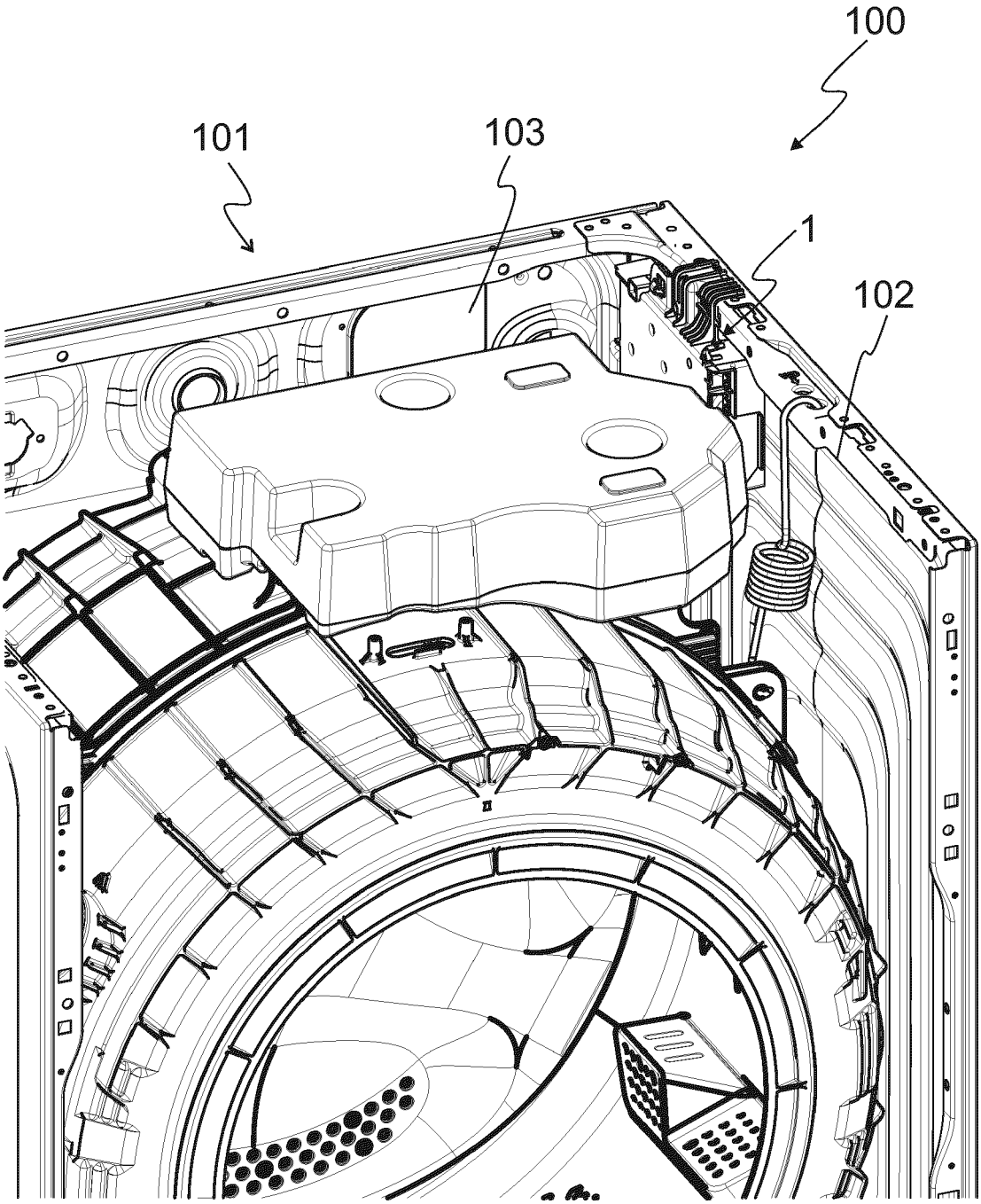


Figure 4

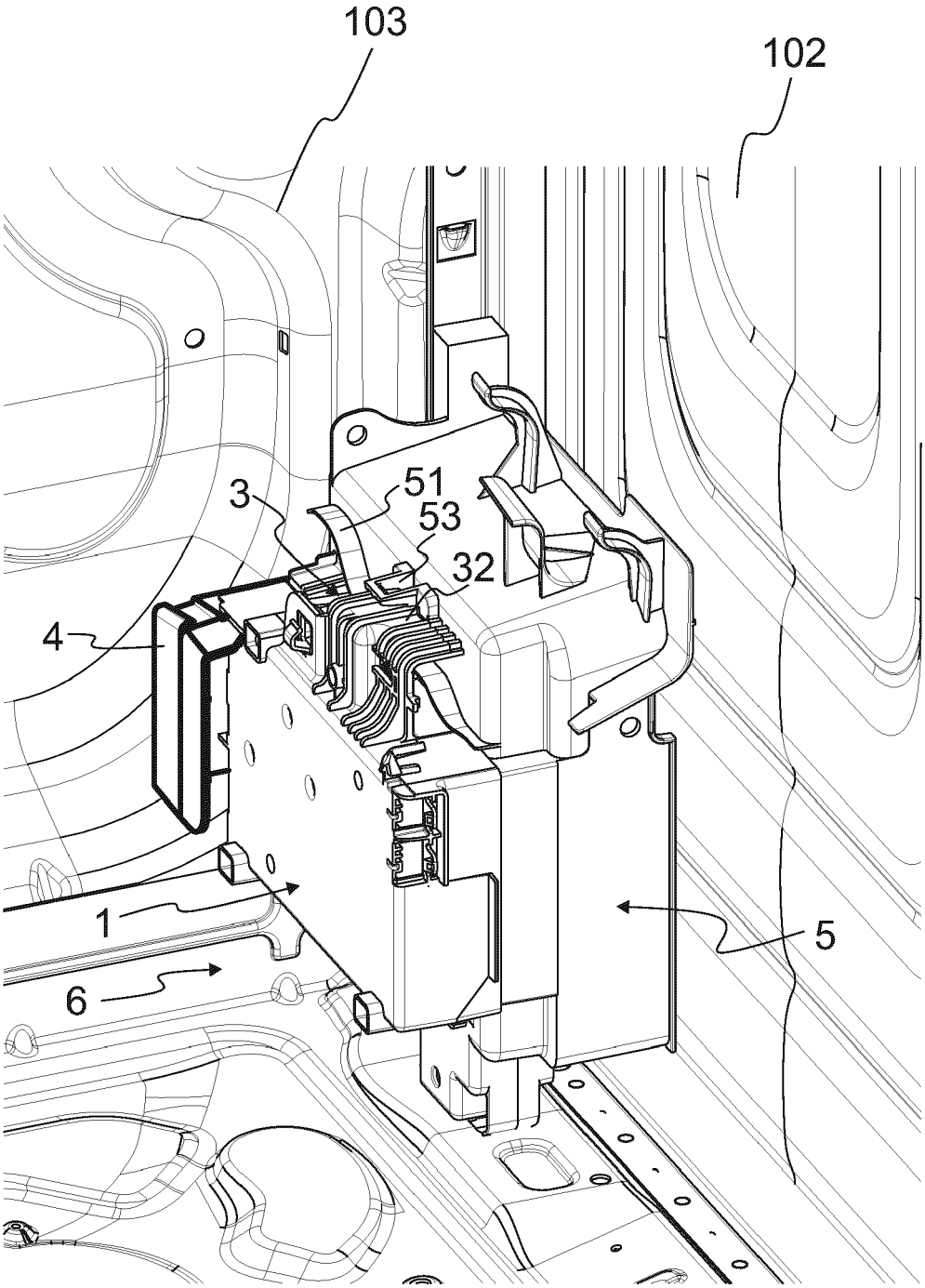


Figure 5

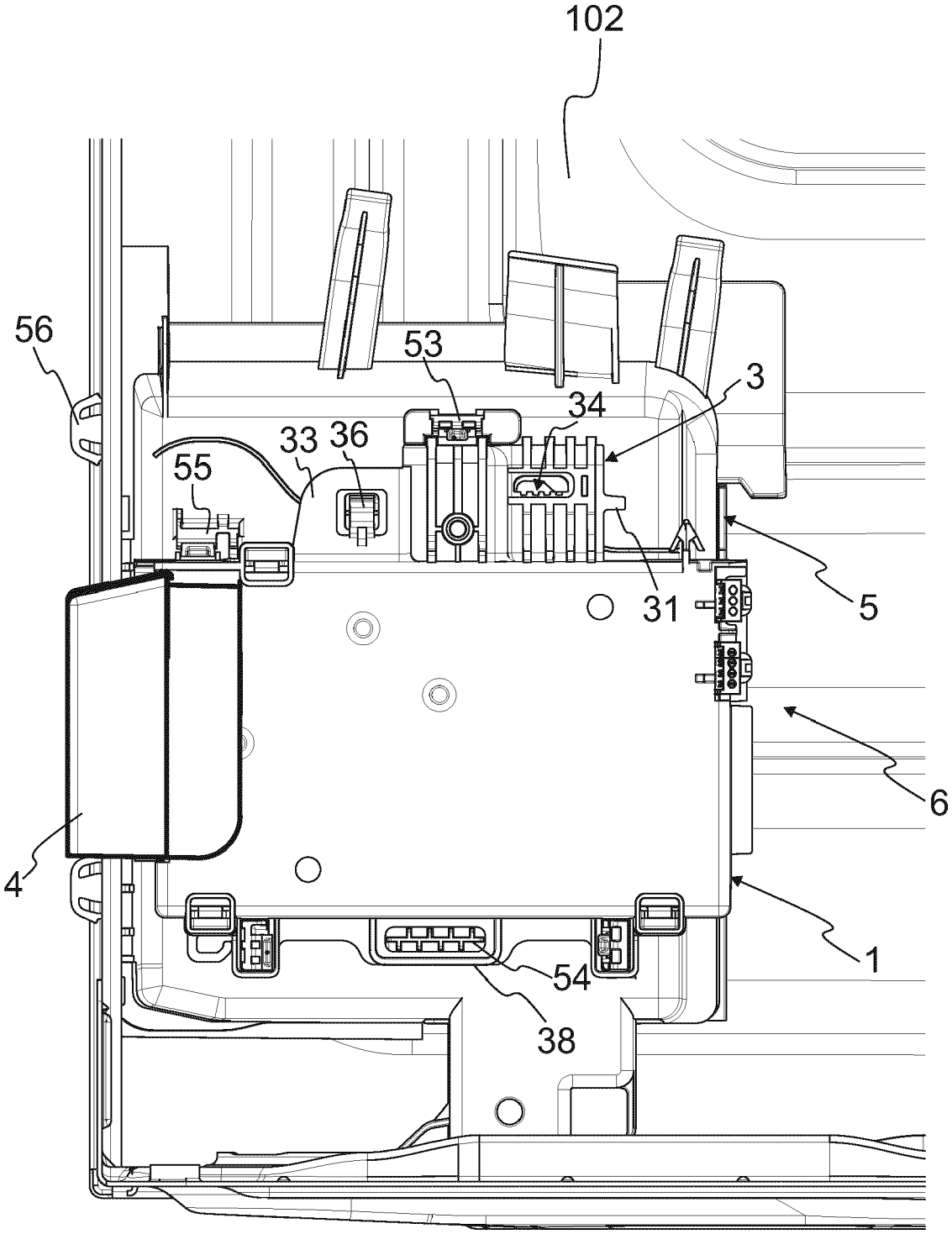


Figure 6

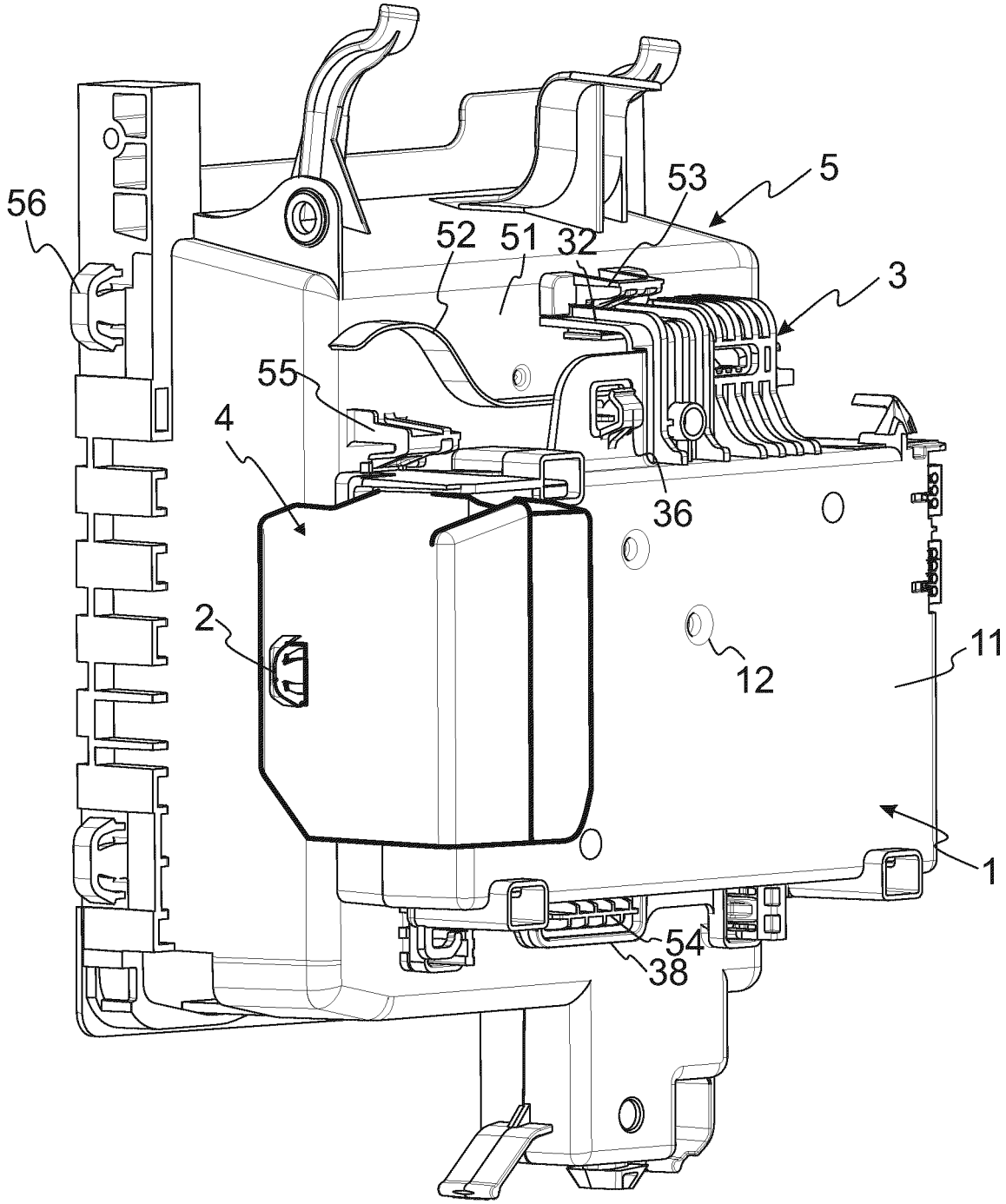


Figure 7

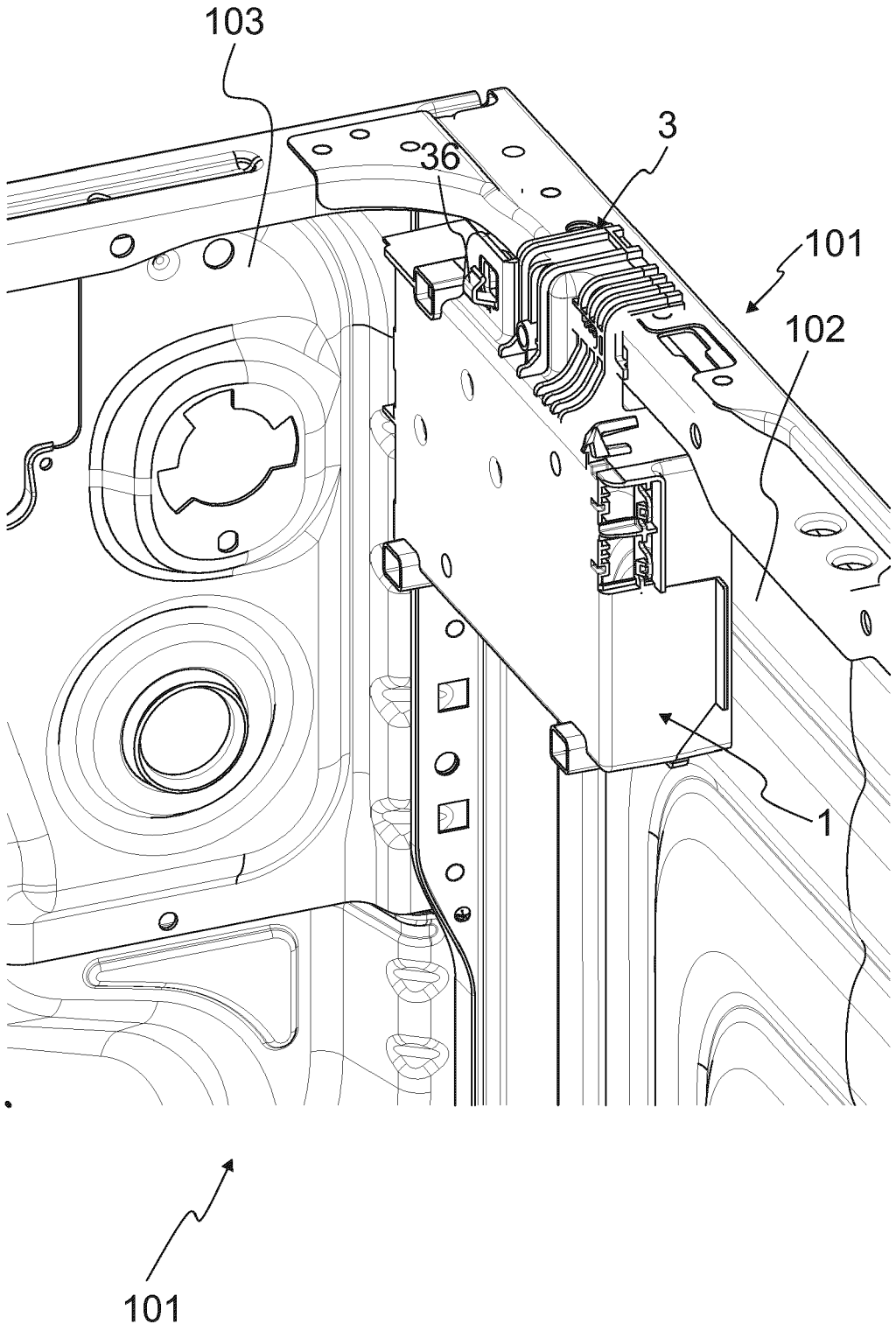


Figure 8

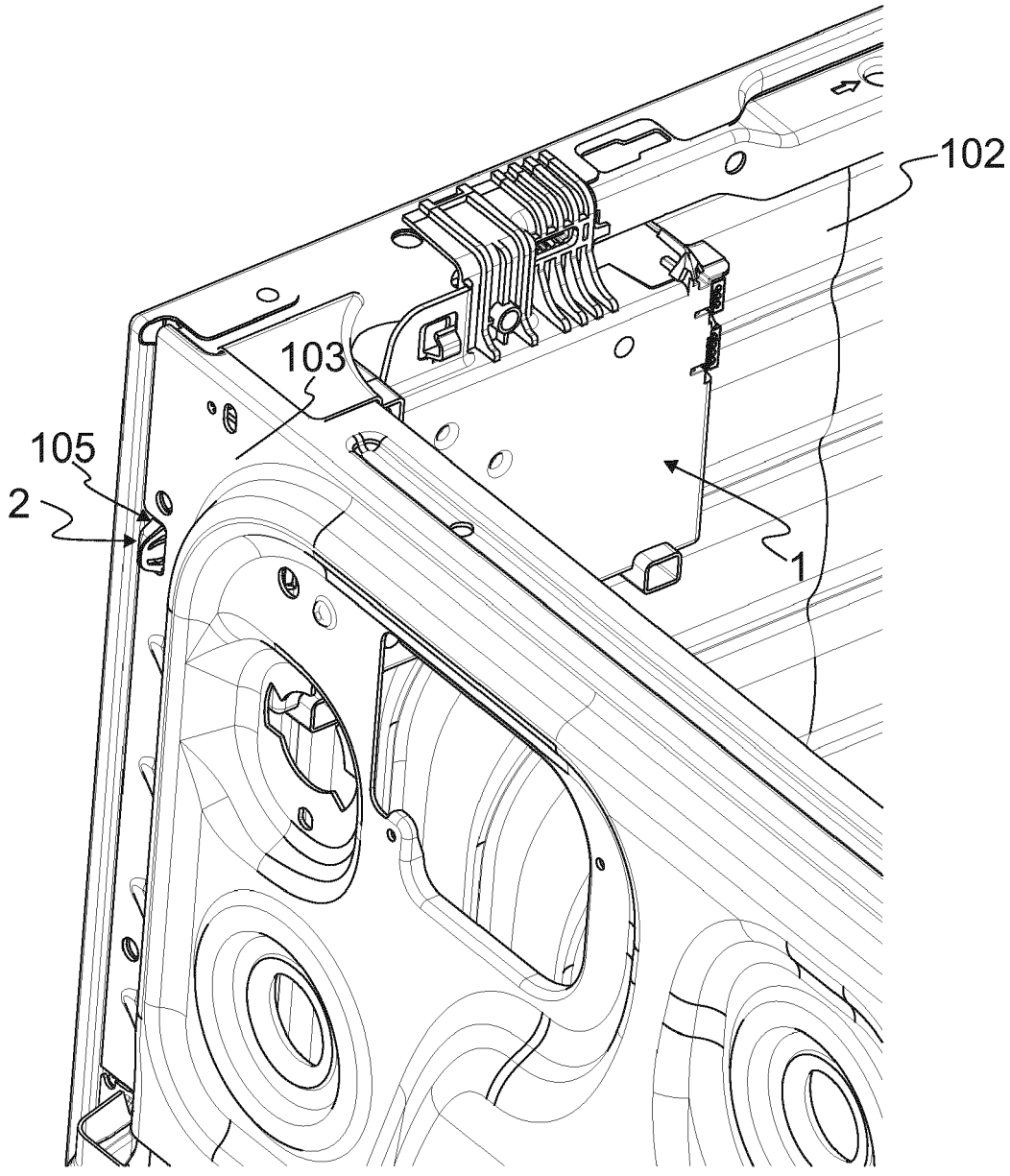


Figure 9

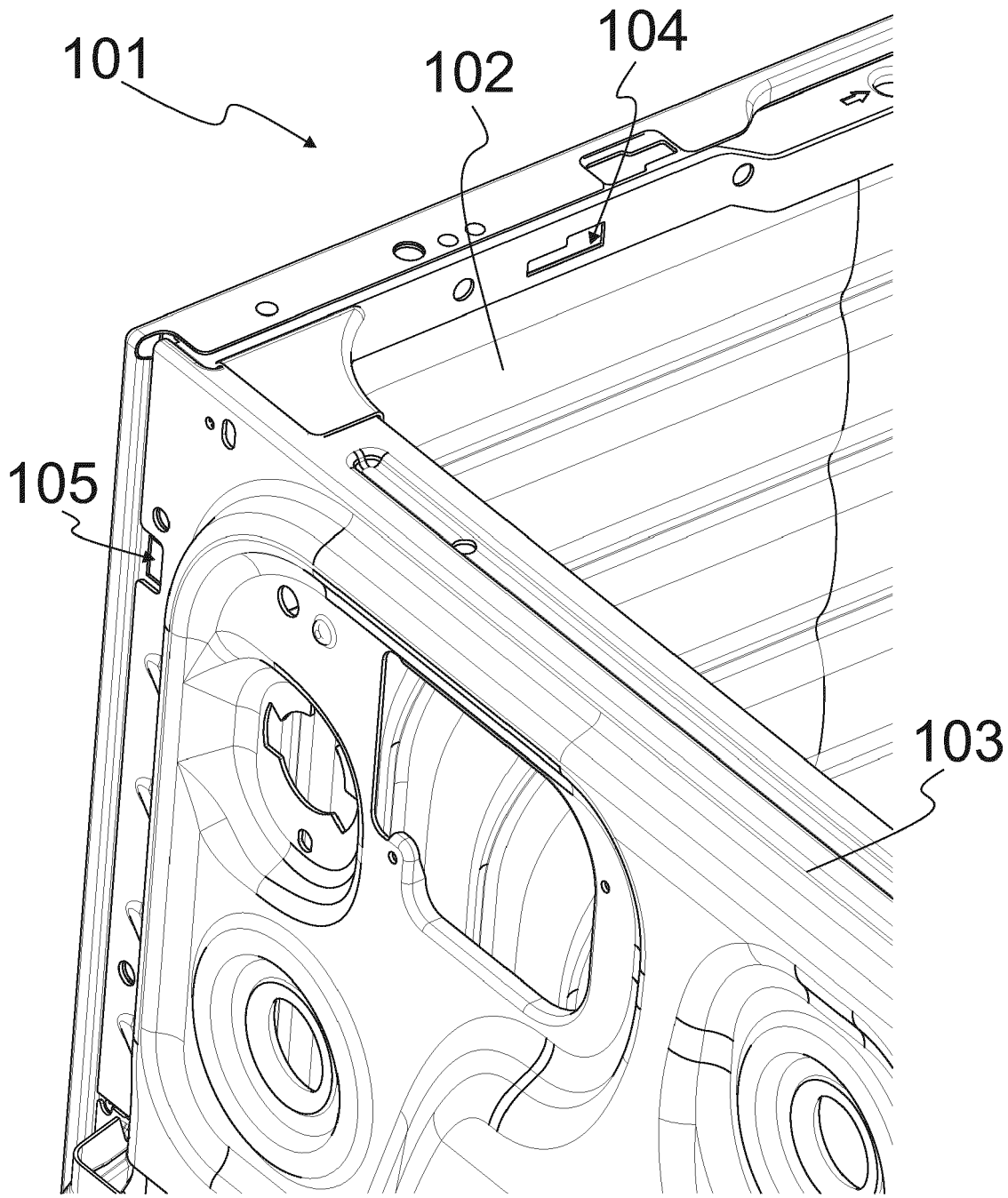


Figure 10

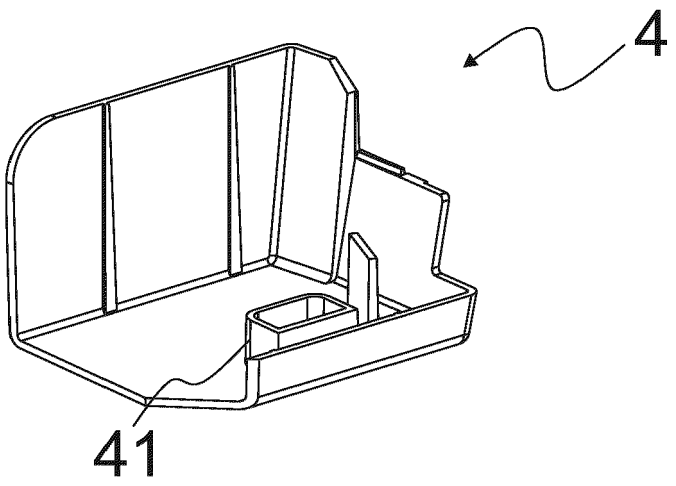


Figure 11

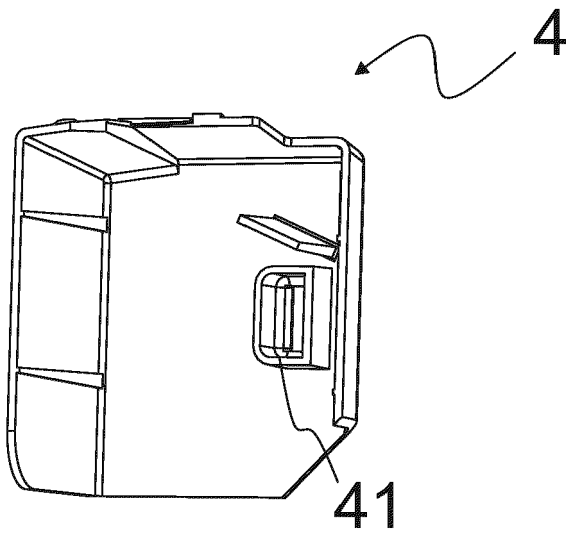
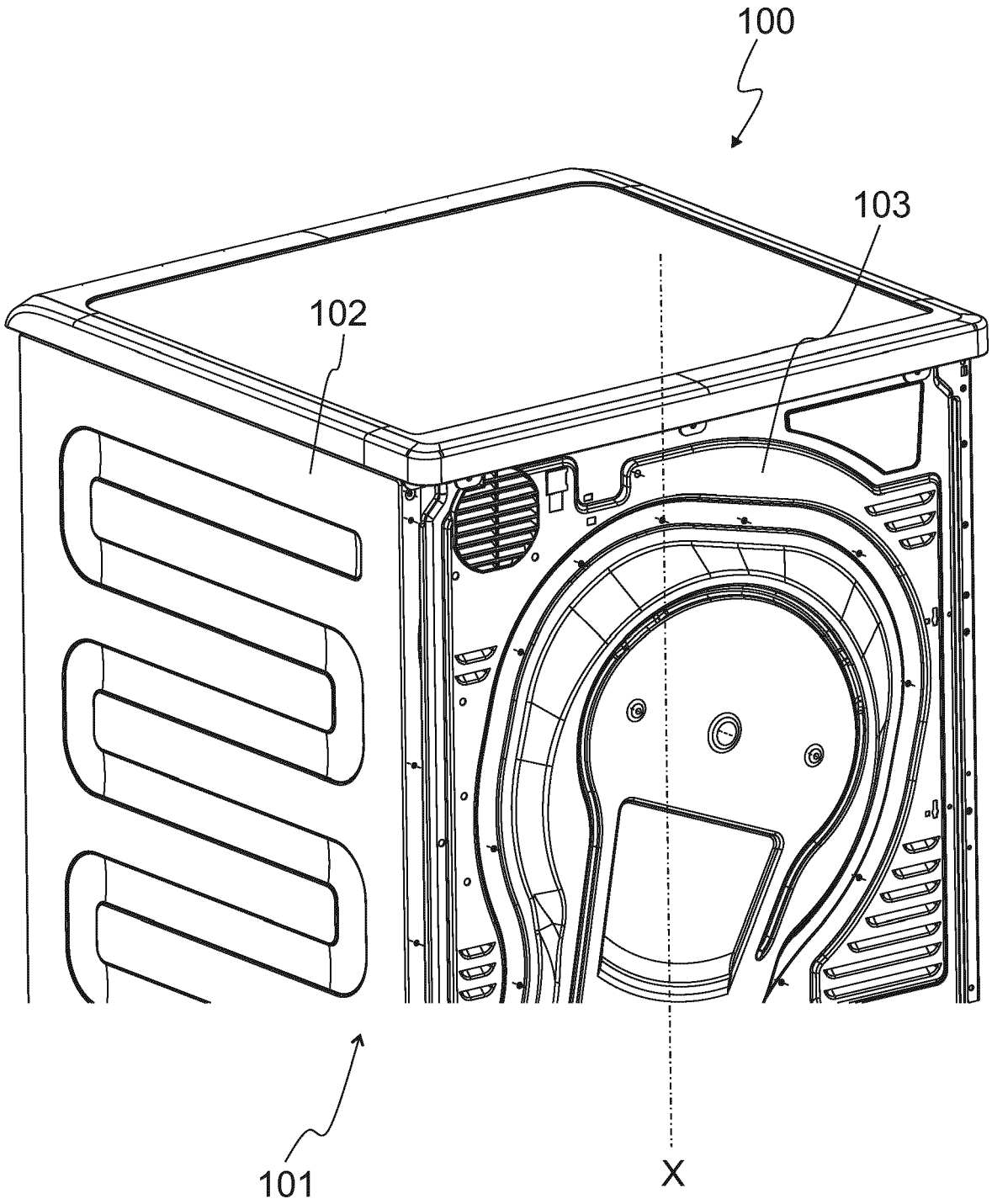


Figure 12



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EUROPEAN SEARCH REPORT

Application Number
EP 23 22 0162

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 3 187 647 A1 (ELECTROLUX APPLIANCES AB [SE]) 5 July 2017 (2017-07-05) * paragraphs [0054] - [0070] * * figures 1-8 *	1-13	INV. D06F34/34 ADD. D06F39/12
X	EP 2 458 060 A1 (ELECTROLUX HOME PROD CORP [BE]) 30 May 2012 (2012-05-30) * paragraph [0027] * * paragraphs [0029] - [0069] * * figures 1-7 *	1-5,12, 13	
A	KR 2000 0013747 A (LG ELECTRONICS INC [KR]) 6 March 2000 (2000-03-06) * abstract * * figures 1-4 *	1	
A	WO 03/089707 A1 (LG ELECTRONICS INC [KR]; HEO SEONG-EUN [KR] ET AL.) 30 October 2003 (2003-10-30) * abstract * * figures 1-4 *	1	
			TECHNICAL FIELDS SEARCHED (IPC) D06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 April 2024	Weidner, Maximilian

CATEGORY OF CITED DOCUMENTS

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19-04-2024

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