



(12)

EUROPEAN PATENT APPLICATION

- (43) Date of publication:
03.07.2024 Bulletin 2024/27

(21) Application number: 23220165.7

(22) Date of filing: 22.12.2023
- (51) International Patent Classification (IPC):
A47L 15/42 (2006.01) D06F 34/00 (2020.01)
D06F 39/12 (2006.01) A47L 15/46 (2006.01)

(52) Cooperative Patent Classification (CPC):
A47L 15/4274; D06F 34/00; D06F 39/12;
A47L 15/4209; A47L 15/46

- (84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL
NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(30) Priority: 30.12.2022 TR 202221648

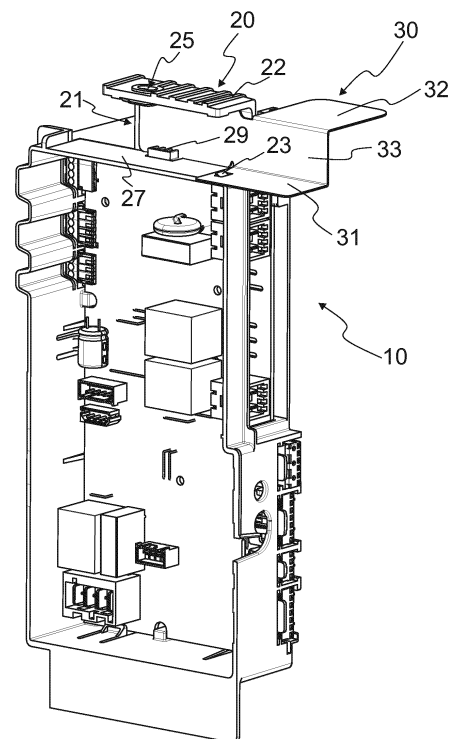
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A HOUSEHOLD APPLIANCE COMPRISING A BOARD HOLDER

(57) The present invention relates to a household appliance (100) comprising a body (101); a panel (102) which is disposed on an accessible exterior surface of the body (101); and a board holder (10) which is suitable for being disposed on the surface of the panel (102) facing the inside of the body (101) and which is suitable for enclosing circuit board therein. The household appliance further comprises a fixing means (20) which is suitable for connecting the board holder (10) to the panel (102), and at least one thermal barrier (30) which is at least partially integrated in said fixing means (30).

Figure 7



Description

[0001] The present invention relates to a household appliance comprising a board holder using a thermal barrier structure for security purposes.

[0002] In modern household appliances, the board holders comprising electronic components are positioned in a fixed manner in the body. There is a risk of the heat, which may arise due to problems caused by the socket and similar components in the board holder, reaching the surrounding plastic components. In this case, the plastic components may melt and become perforated under the influence of heat, and if the heat continues to spread, the household appliance may burn completely, affecting other items in the user's house.

[0003] It is known in the art that to protect the components around the board holder from melting and/or getting perforated due to heat, metal or hard plastic barriers attached to the household appliance body in the area close to the heat source are used and peripheral components which may be affected by heat are manufactured from metal instead of plastic.

[0004] In the state of the art Turkish Patent Application No. 2016/01137, a locking structure is disclosed, which is provided in the frame of a circuit board providing 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 device with improved security wherein melting and perforating around the board holder and the existing sockets due to heat is prevented.

[0006] The household appliance of the present invention comprises a body; a panel which is disposed on an accessible exterior surface of the body; a board holder which is suitable for being disposed on the surface of the panel facing the inside of the body and which is suitable for enclosing circuit boards; a fixing means which is suitable for connecting said board holder to the panel; and at least one thermal barrier member which is at least partially disposed in the fixing means. Thus, the need for mounting the thermal barrier member to the body is eliminated and the thermal barrier member can be connected to the board holder.

[0007] In an embodiment of the present invention, the fixing means comprises a housing having a mounting base whereon the thermal barrier member is positioned. The thermal barrier member is held securely in the housing formed. The limiting and fixing members in said housing enable the thermal barrier member to be kept in the desired position.

[0008] In an embodiment of the present invention, the fixing means comprises the housing having at least one coupling protrusion which is shaped and formed according to at least one coupling hole provided on the thermal barrier member. By means of said coupling protrusion, the thermal barrier member is prevented from dislodging from the housing where the thermal barrier member is positioned.

[0009] In an embodiment of the present invention, the fixing means has a U-section and comprises a first connection wall and a second connection wall which contact the mounting base and which are positioned opposite to each other. By means of said walls, the board holder is connected to the panel, and as an additional feature to this function, the thermal barrier member is held.

[0010] In an embodiment of the present invention, the fixing means comprises a fixing hole which is provided on the second connection wall and which is suitable for passing at least one fixing member therethrough to be attached to the panel. A fixing member such as a screw, bolt or rivet is passed through the hole on the second connection wall so as to enable the panel to be connected to the appropriate part thereof. In another version of the present invention, the number of the holes can be increased, and a nut can be used behind the screw or bolt to ensure a tighter connection.

[0011] In an embodiment of the present invention, the fixing means comprises a movement limiting member which is provided on the first connection wall and which limits the movement of the thermal barrier member. Thus, the movement of the thermal barrier member in the direction of the transverse axis of the housing is limited. The movement limiting member may be in the form of a protrusion containing a plurality of cavities or may also be a solid protrusion.

[0012] In an embodiment of the present invention, the thermal barrier member comprises a base, and a first wing and a second wing which extend in opposite directions from said base. Thus, effective heat insulation is provided. In other words, the heat generated in the relevant components in the household appliance is dissipated before reaching the top plate and other components which may be affected.

[0013] In an embodiment of the present invention, the thermal barrier member comprises the first wing having the coupling hole which is suitable for engaging with the coupling protrusion provided on the fixing means. Said coupling hole is positioned on the first wing and is shaped and shaped according to the coupling protrusion. The coupling protrusion preferably has an inclined surface, and while being slid in the housing, the first wing passes over said inclined surface such that the coupling protrusion and the coupling hole engage each other and provide fixing.

[0014] In an embodiment of the present invention, the fixing means comprises a third wing which is positioned in the same direction as the first wing of the thermal barrier member and which has a connection hole aligning with a fixing hole on the fixing means when in use. By means of said connection hole, the thermal barrier member is enabled to be more securely connected. The thermal barrier member disposed in the housing is also enabled to be fixed so as to contact the body.

[0015] In an embodiment of the present invention, the board holder comprises a hook-shaped cable holder which extends so as to face the fixing means.

[0016] In an embodiment of the present invention, the thermal barrier member has a galvanized coating.

[0017] 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 rear perspective view of the board holder related to an embodiment of the present invention.

Figure 2 - is the perspective view of the board holder shown in Figure 1 from a different angle.

Figure 3 - is the perspective view of a thermal barrier member suitable to be placed into the board holder of the present invention.

Figure 4 - is the top view of the thermal barrier member suitable to be placed into the board holder of the present invention.

Figure 5 - is the front view of the board holder of the present invention.

Figure 6 - is the perspective view of the board holder of the present invention and the thermal barrier member to be positioned thereon.

Figure 7 - is the perspective view of the thermal barrier member shown in Figure 6 as positioned in the board holder.

Figure 8 - is the partial perspective view of the thermal barrier member showing the third wing thereof as placed in the board holder as shown in Figure 7.

Figure 9 - is the perspective view of the board holder of the present invention as connected to a panel of the household appliance.

Figure 10 - is the top view of the connected board holder as shown in Figure 9.

Figure 11 - is the partial perspective view of the board holder of the present invention as connected to one of the two adjacent panels.

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

[0018] The elements illustrated in the figures are numbered as follows:

- 10. Board holder
- 11. Inner receptacle
- 20. Fixing means
- 21. Housing
- 22. Support protrusion
- 23. Coupling protrusion
- 24. Cable holder
- 25. Fixing hole
- 251. Fixing member
- 26. Mounting base
- 27. First connection wall
- 28. Second connection wall
- 29. Movement limiting member
- 30. Thermal barrier member
- 31. First wing

- 311. Coupling hole
- 32. Second wing
- 33. Base
- 34. Third wing
- 5 341. Connection hole
- 100. Household appliance
- 101. Body
- 102. Panel
- X. Longitudinal axis of the household appliance

[0019] The household appliance (100) of the present invention comprises a body (101); a panel (102) which is disposed on an accessible exterior surface of the body (101); and a board holder (10) which is suitable for being disposed on the surface of the panel (102) facing the inside of the body (101) and which is suitable for enclosing electronic components and sockets therein. The board holder (10) comprises important electronic components for the operation of the household appliance (100) and enables the same to be connected to the body (101) in a fixed manner.

[0020] The household appliance (100) of the present invention further comprises a fixing means (20) which is suitable for connecting the board holder (10) to the panel (102); and at least one thermal barrier member (30) which is at least partially disposed in said fixing means (20). The board holder (10) has an inner receptacle (11), and the thermal barrier member (30) is used in said inner receptacle (11) to prevent side effects caused by the heat generated around the electronic components and the existing sockets. Since the thermal barrier member (30) is positioned directly on the board holder (10), there is no need to mount the thermal barrier member (30) in the body (101). Since said thermal barrier member (30) does not require mounting to the body (101), the need for one or more possible mounting openings is eliminated. Moreover, the need for adding fixing members is eliminated, thus preventing a possible loss of strength. Since said thermal barrier member (30) can be disposed in the fixing means (20), the need for performing additional operations on the assembly line is eliminated. Both the board holder (10) and the thermal barrier member (30) are enabled to be mounted at the same time, thus reducing the number of assembly operations.

[0021] In an embodiment of the present invention, the fixing means (20) comprises a housing (21) having a mounting base (26) whereon the thermal barrier member (30) is positioned. As shown in Figure 7, by means of said housing (21), the thermal barrier member (30) is kept in the fixing means (20) without the need to connect the same to the body (101) of the household appliance (100).

[0022] In an embodiment of the present invention, as shown in Figure 1, the housing (21) comprises a coupling protrusion (23) shaped and formed according to at least one coupling hole (311) on the thermal barrier member (30). While the number of said coupling holes (311) and the opposing coupling protrusions (23) can be increased,

the form of the preferably inclined surface of the coupling protrusion (23) can be also changed. By means of said inclined surface, the coupling hole (311) of the thermal barrier member (30), which is slid on the mounting base (26), can be easily engaged with the appropriate coupling protrusion (23). Accordingly, Figure 6 shows the thermal barrier member (30) which is not mounted to the board holder (10), and Figure 7 shows the position of the thermal barrier member (30) in the housing (21) when mounted.

[0023] In an embodiment of the present invention, the fixing means (20) comprises a first connection wall (27) and a second connection wall (28) which contact the mounting base (26) therein and which are positioned opposite to each other. As shown in Figures 1 and 2, the fixing means (20) is configured to have a U-section by means of the first connection wall (27) and the second connection wall (28), and the second connection wall (28) also enables the board holder (10) to be fixed to the panel (102). The first connection wall (27) is one of the lateral edges of the board holder (10) forming the inner receptacle (11), and is positioned opposite to the second connection wall (28).

[0024] In an embodiment of the present invention, a plurality of support protrusions (22) may be provided on the second connection wall (28). Thus, the strength of said second connection wall (28) configured to engage with the panel (102), is increased. As shown in Figure 9, on the second connection wall (28), a fixing hole (25) is provided, which is suitable for passing at least one fixing member (251) therethrough to be attached to the panel (102) on the household appliance (100). The number of said fixing hole (25) may be more than one, and is configured and sized to allow a screw or bolt to pass through as the fixing member (251).

[0025] In an embodiment of the present invention, the fixing means (20) comprises a movement limiting member (29) which is provided on the first connection wall (27) with a flat surface and which limits the movement of the thermal barrier member (30). The movement limiting member (29) is preferably in the form of a protrusion and is manufactured as integrated with the first connection wall (27). The movement limiting member (29) is formed in a position close to the mounting base (26) and a gap is left therebetween to enable the thermal barrier member (30) to pass.

[0026] In an embodiment of the present invention, the thermal barrier member (3) comprises a base (33), and a first wing (31) and a second wing (32) which extend in opposite directions from said base (33). As shown in Figure 2, the first wing (31) and the second wing (32), which extend opposite to each other in a "Z" form, provide better thermal insulation. The metal barrier can be easily shaped by bending and cutting operations without the need for complex production operations such as plastic injection or deep metal drawing. In a preferred embodiment of the present invention, the second wing (32) has a wider cross-section compared to the first wing (31) and

provides heat dissipation more effectively.

[0027] In an embodiment of the present invention, on the first wing (31), there is a coupling hole (311) which is suitable for engaging with the coupling protrusion (23) provided on the fixing means (20). Said coupling hole (311) provided on the first wing (31) extending parallel to the mounting base (26) prevents the thermal barrier member (30) from moving back in the direction the same is slid for assembly. In another embodiment of the present invention, there may be a plurality of coupling holes (311) which may have different cross-sections and dimensions.

[0028] In an embodiment of the present invention, the thermal barrier member (30) comprises a third wing (34) which is positioned in the same direction as the first wing (31) and which has a connection hole (341) aligning with a fixing hole (25) provided on the fixing means (20). As shown in Figure 8, said third wing (34) extends parallel to the first wing (31), and by means of the connection hole (341) of the third wing (34), the thermal barrier member (30) is also connected to the panel (102) by means of a fixing member (251) such as screw or bolt passing therethrough. Said third wing (34) also bears against the inner part of the second connection wall (28).

[0029] In an embodiment of the present invention, the fixing means (20) comprises a hook-shaped cable holder (24) which extends from the board holder (10) so as to face the fixing means (20). Referring to Figure 9, by means of said cable holder (24), the cable group suitable for passing over the board holder (10) is enabled to be guided in an appropriate direction. Said cable holder (24) is preferably configured in the form of an "L".

[0030] In an embodiment of the present invention, the thermal barrier member (30) may have a galvanized coating to provide better thermal insulation and increase durability. The galvanized metal thermal barrier member (30) is coated with zinc so as to make the same more resistant to corrosion/rusting.

[0031] The household appliance (100) of the present invention may be a laundry dryer or a washing machine. By means of the present invention, a household appliance (100) is realized, comprising a board holder (10) wherein cost and labor are reduced and safety features are increased.

Claims

1. A household appliance (100) **comprising** a body (101); a panel (102) which is disposed on an accessible exterior surface of the body (101); and a board holder (10) which is suitable for being disposed on the surface of the panel (102) facing the inside of the body (101) and which is suitable for enclosing a circuit board therein, **characterized by** a fixing means (20) which is suitable for connecting the board holder (10) to the panel (102); and at least one thermal barrier member (30) which is at least partially disposed

in said fixing means (20).

2. A household appliance (100) as in Claim 1, **characterized by** the fixing means (20) comprising a housing (21) having a mounting base (26) whereon the thermal barrier member (30) is positioned. 5
3. A household appliance (100) as in Claim 2, **characterized by** the housing (21) comprising a coupling protrusion (23) shaped according to at least one coupling hole (311) on the thermal barrier member (30). 10
4. A household appliance (100) as in Claim 2 or 3, **characterized by** the fixing means (20) having a U-shaped cross-section and comprising a first connection wall (27) and a second connection wall (28) which contact the mounting base (26) and which are positioned opposite to each other. 15
5. A household appliance (100) as in Claim 4, **characterized by** the fixing means (20) comprising a fixing hole (25) which is provided on the second connection wall (28) and which is suitable for passing at least one fixing member (251) therethrough to be attached to the panel (102). 20 25
6. A household appliance (100) as in Claim 4 or 5, **characterized by** a movement limiting member (29) which is provided on the first connection wall (27) and which limits the movement of the thermal barrier member (30). 30
7. A household appliance (100) as in any one of the above claims, **characterized by** the thermal barrier member (3) comprising a base (33), and a first wing (31) and a second wing (32) which extend in opposite directions from said base (33). 35
8. A household appliance (100) as in Claim 7, **characterized by** the thermal barrier member (30) comprising the first wing (31) having a coupling hole (311) which is suitable for engaging with the coupling protrusion (23) provided on the fixing means (20). 40
9. A household appliance (100) as in Claim 7 or 8, **characterized by** a third wing (34) which is positioned in the same direction as the first wing (31) of the thermal barrier member (30) and which has a connection hole (341) aligning with a fixing hole (25) provided on the fixing means (20). 45 50
10. A household appliance (100) as in any one of the above claims, **characterized by** a hook-shaped cable holder (24) which extends from the board holder (10) so as to face the fixing means (20). 55
11. A household appliance (100) as in any one of the above claims, **characterized by** the thermal barrier

member (30) having a galvanized coating.

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

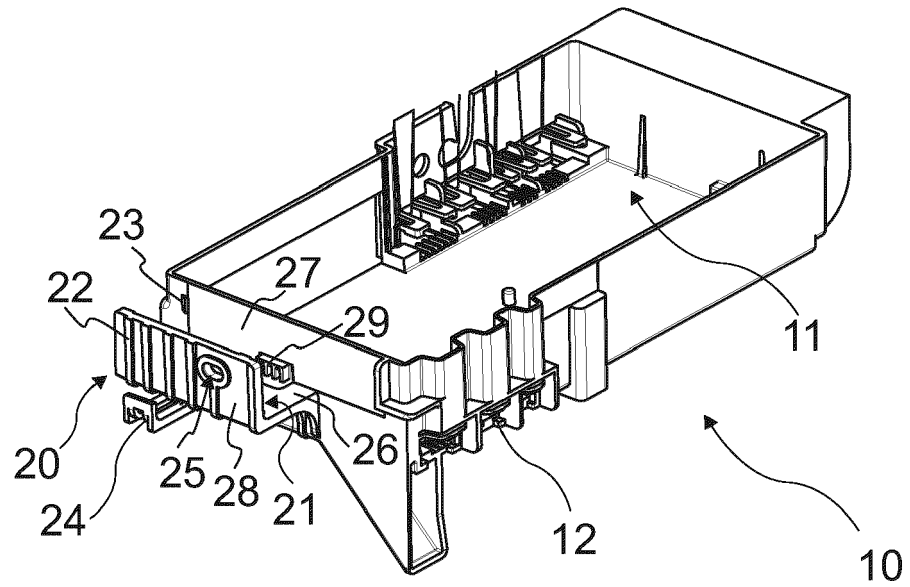


Figure 2

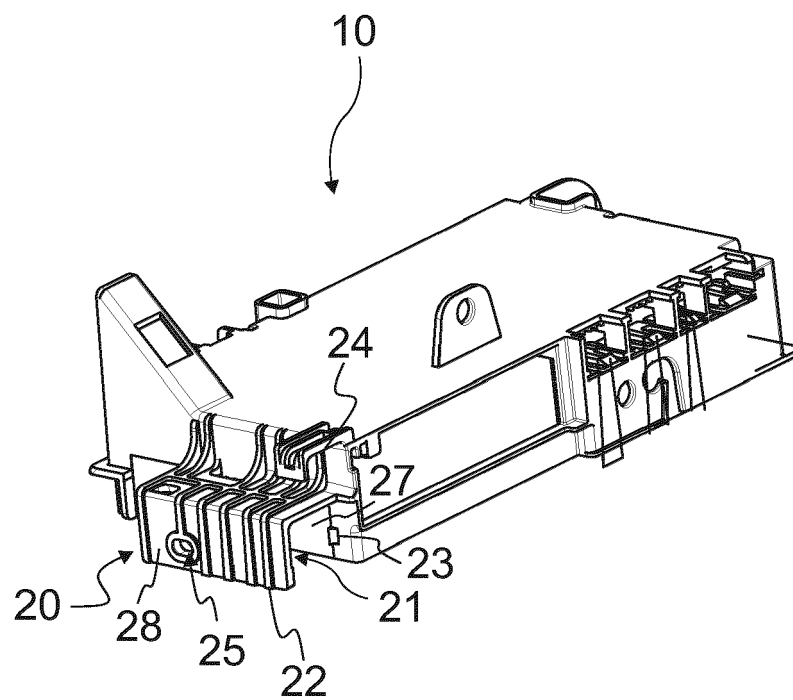


Figure 3

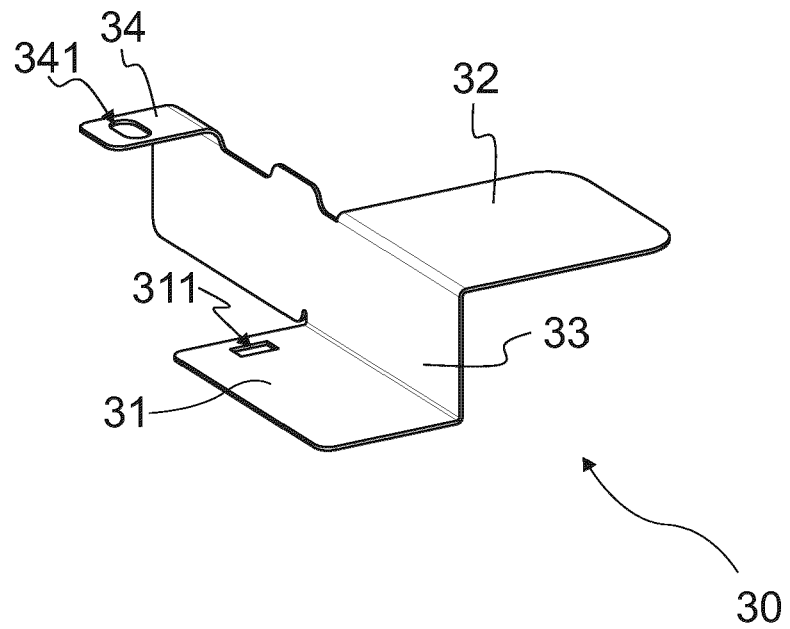


Figure 4

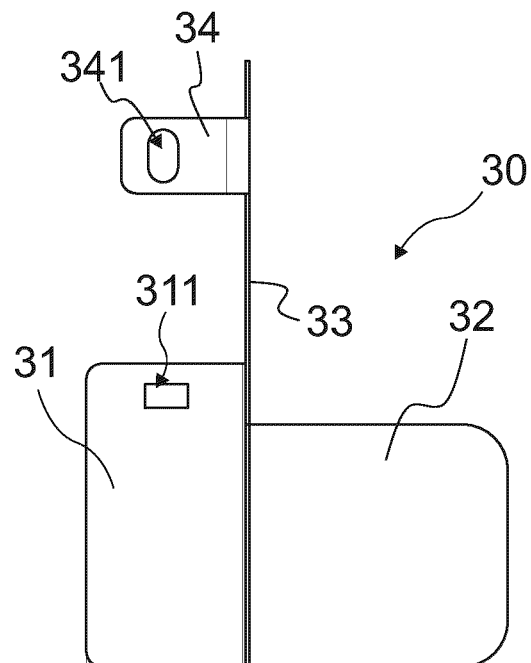


Figure 5

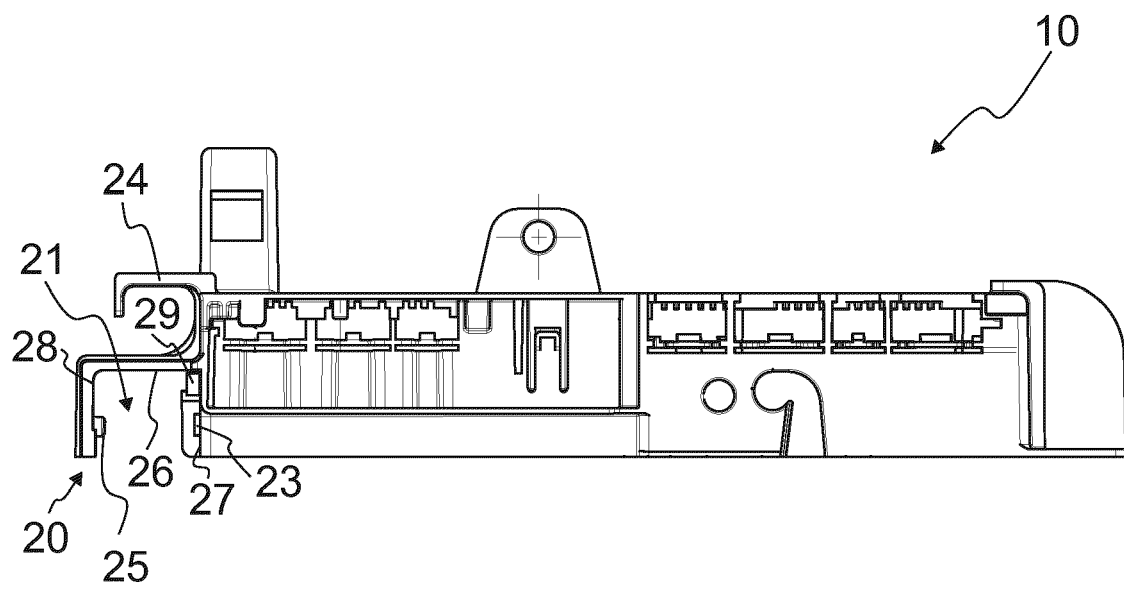


Figure 6

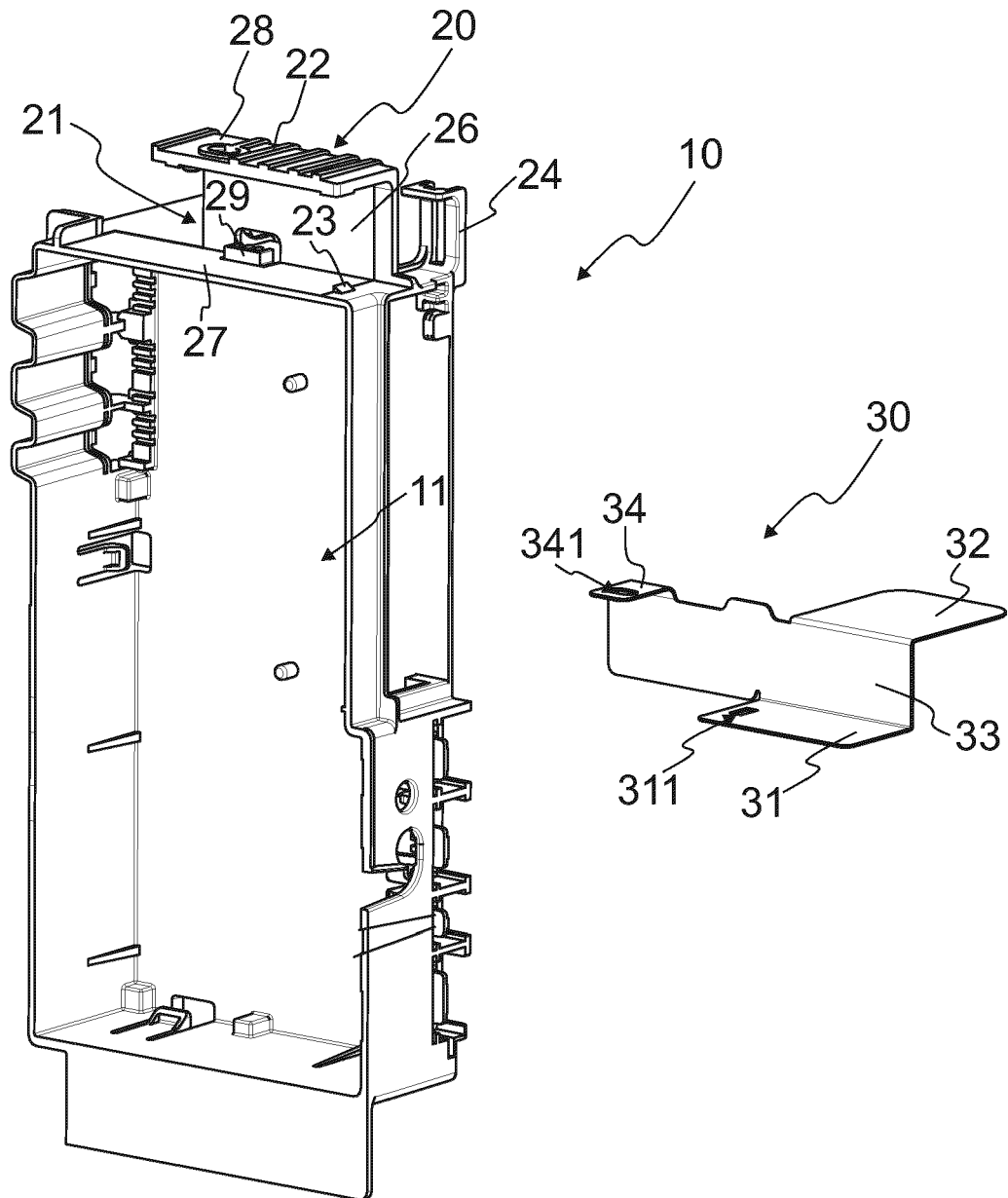


Figure 7

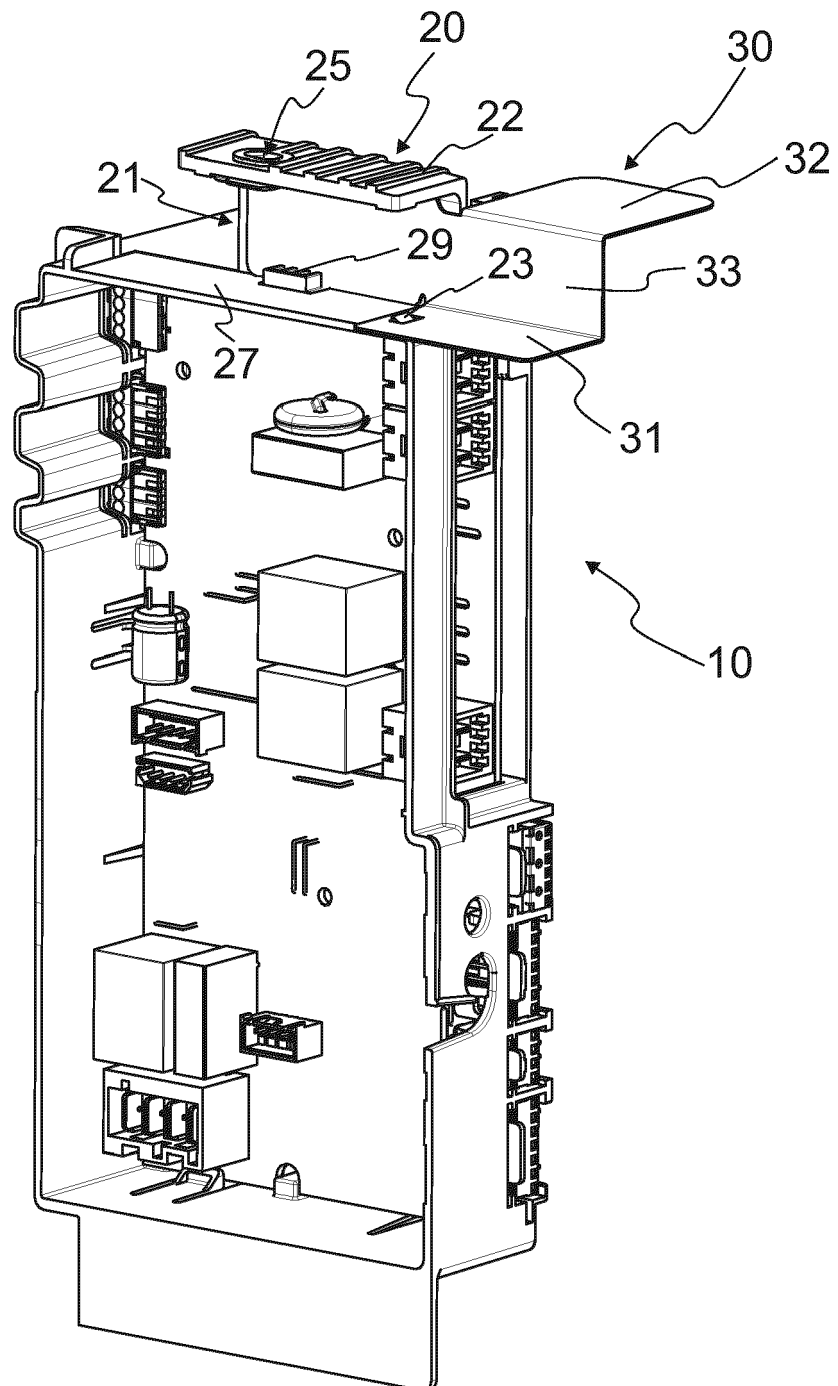


Figure 8

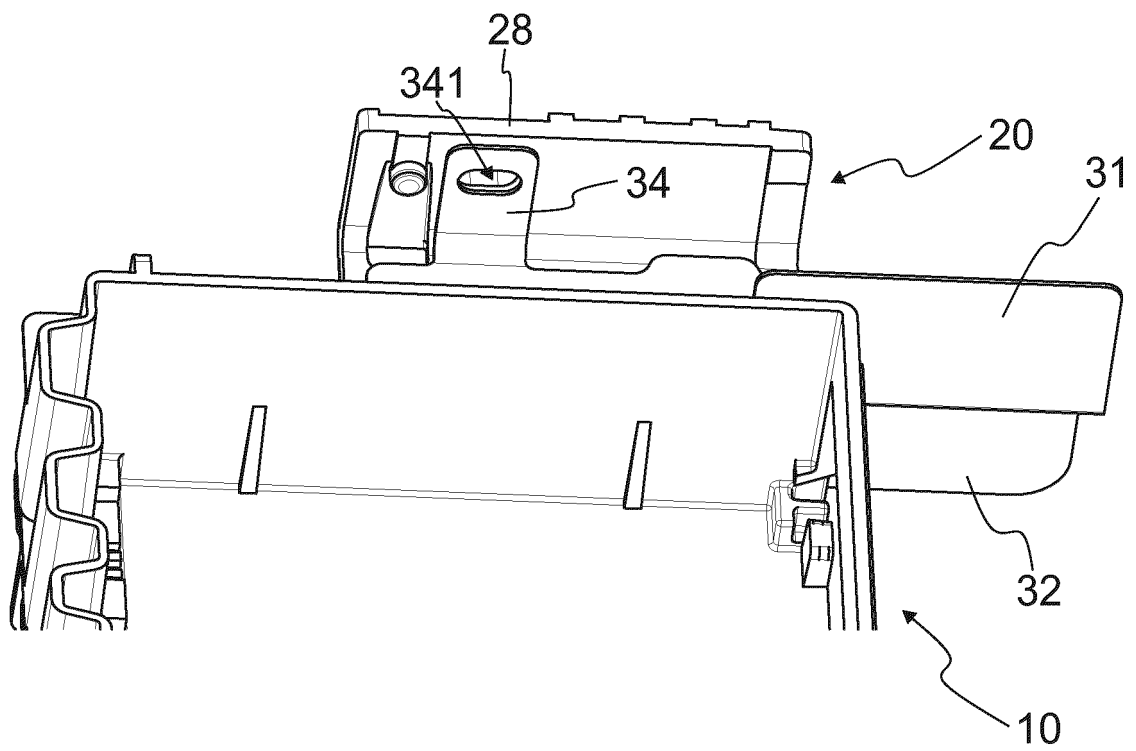


Figure 9

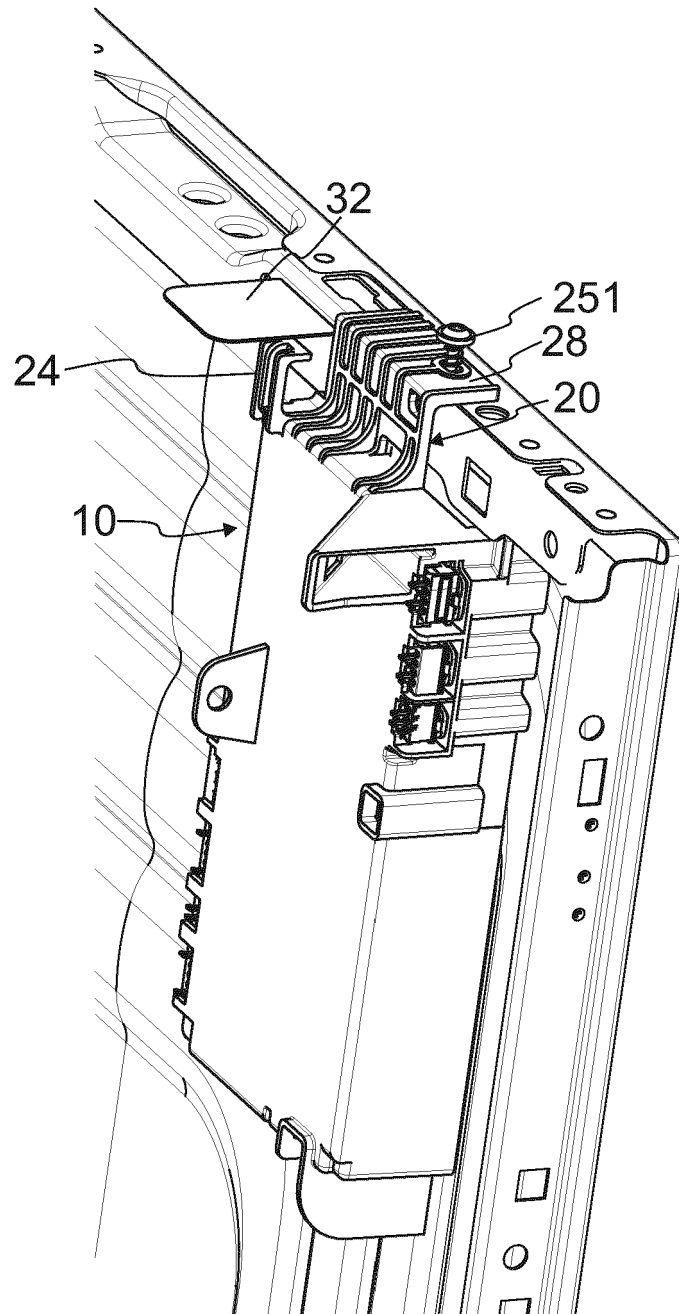


Figure 10

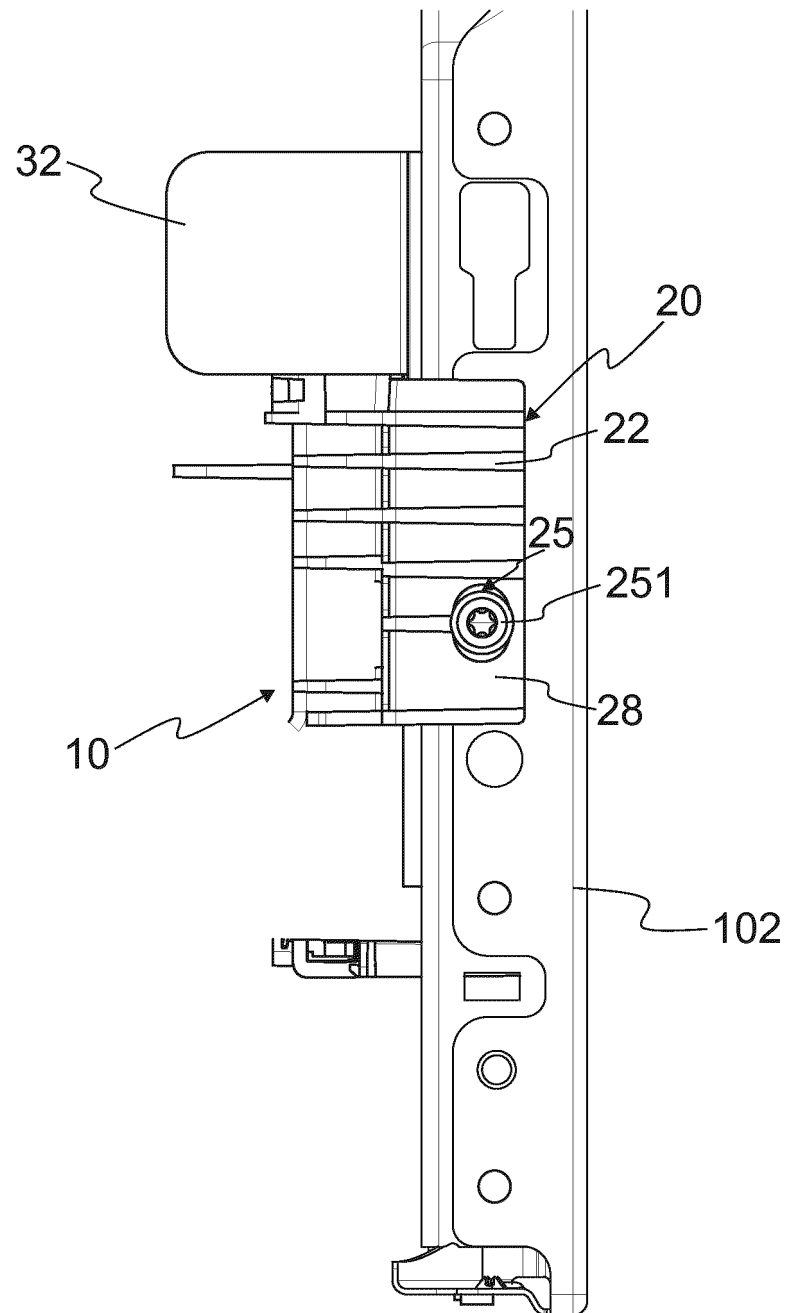


Figure 11

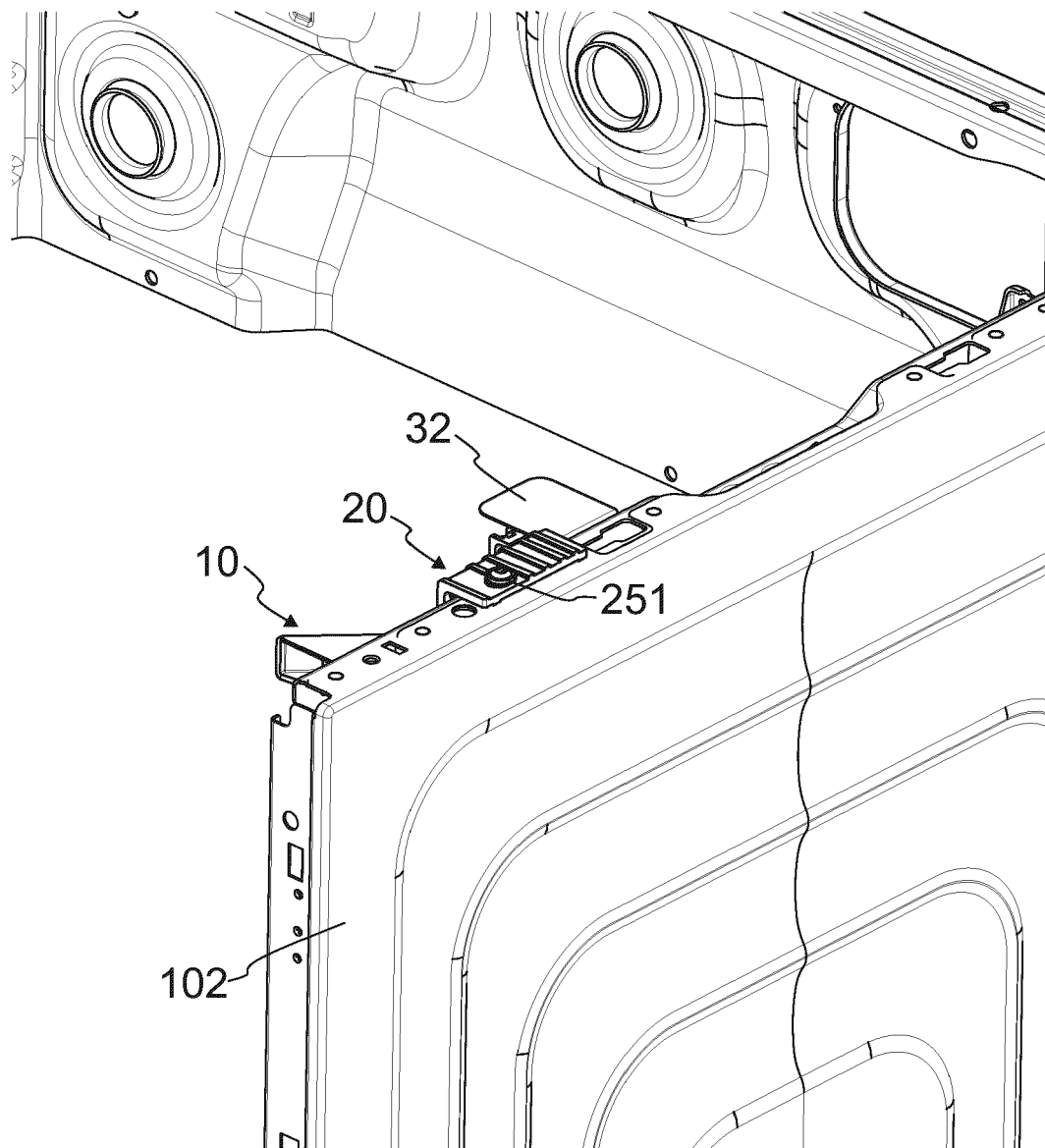
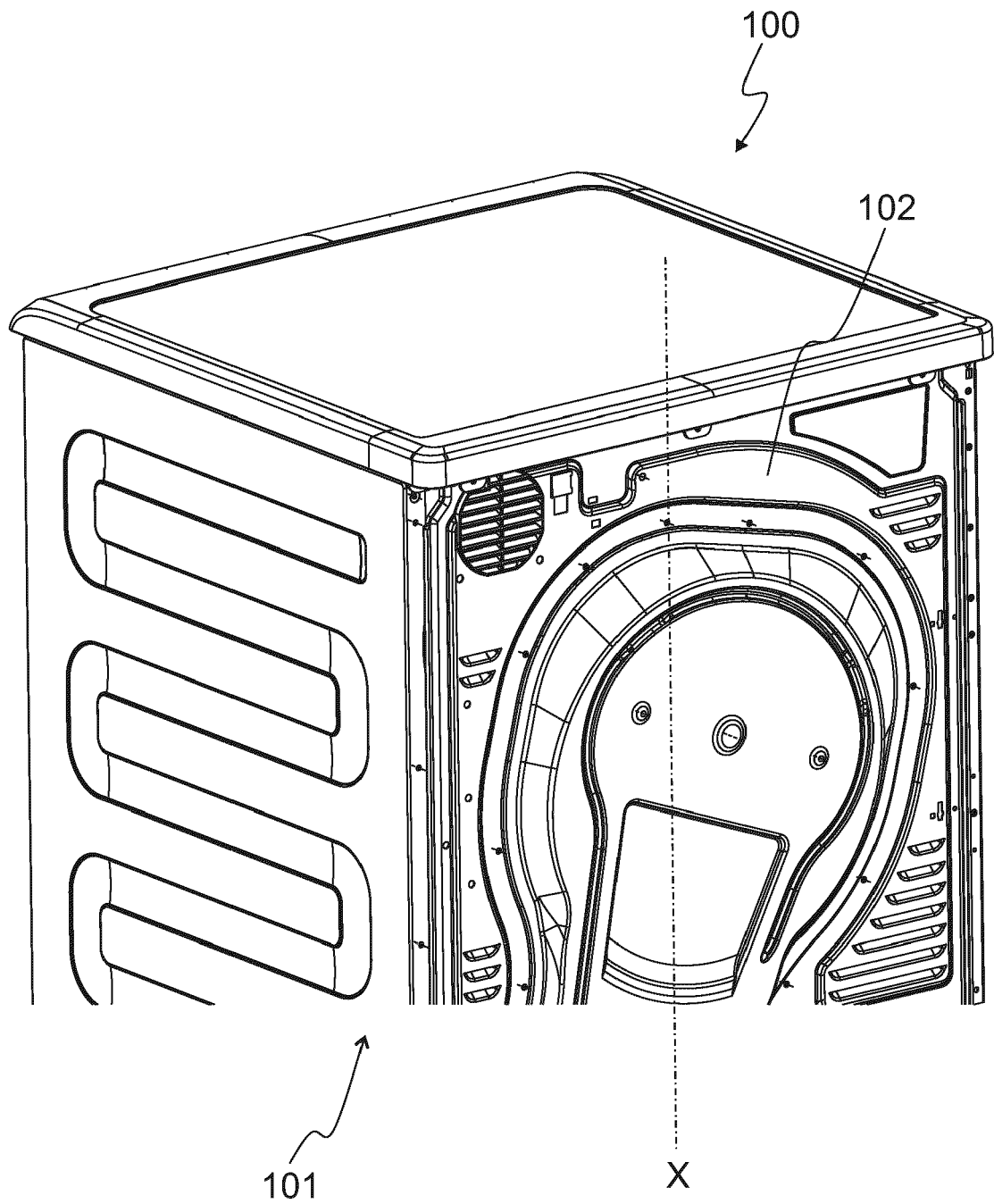


Figure 12





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Application Number

EP 23 22 0165

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EPO FORM 1503 03.82 (P04C01)

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Place of search Munich		Date of completion of the search 22 May 2024	Examiner Weinberg, Ekkehard
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			

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

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