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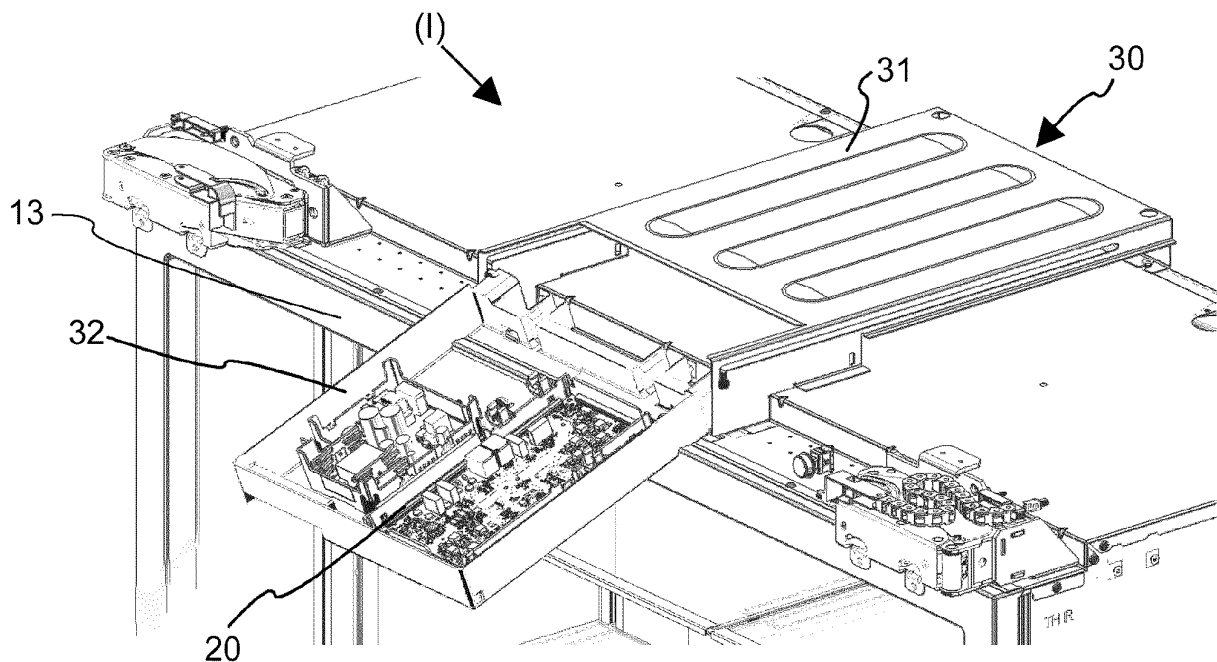
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(54) A CARRIER TRAY FOR A CONTROL UNIT OF A COOLING DEVICE

(57) Cooling device (10) comprising a body (11) defining a storage space and at least one control unit (20) for controlling an operation of the cooling device, provided on an outer wall surface (12) of the body (11) facing outside. The cooling device (10) further comprises at least one carrier tray (32) whereon the control unit (20)

is positioned, and wherein the carrier tray (32) is configured to be movable between a closed position (II) in which the carrier tray (32) is positioned on the outer wall surface (12), and an open position (I) in which the carrier tray (32) at least partially extends outwardly from the body (11).

**Figure 4**

Description

TECHNICAL FIELD

[0001] The present invention relates to a cooling device according to the preamble of claim 1.

PRIOR ART

[0002] A cooling device is an electronic device which provides keeping of food without spoiling for specific duration and which cools beverages and which has a chamber which is at least partially closed. Cooling devices operate by means of cooling cycle. In general, a cooling cycle takes place in a cooler, and the changes, formed by suctioning of heat by a cooling fluid and afterwards emitting heat by said cooling fluid, are defined in a cooling cycle. In a cooling cycle, the low pressure cooling fluid is increased to high pressure by the compressor and is transferred to condenser. Condensation takes place in the condenser, and transformation into low pressure liquid is realized by passing through the expansion valve, and from here, cooling is realized by means of the evaporator.

[0003] There are pluralities of units in the cooling cycle. Additionally, there are electronic elements like sensors, illumination elements on the cooling device. These electronic elements must be associated and controlled with a control unit. The control unit can be placed in parts like base, ceiling and side wall on the cooling devices.

[0004] The application with number KR19980050656U known in the literature relates to a micro-PCB fixing device for a refrigerator, and is not coupled and fixed by fixing screws as used in the prior art, but guides formed on both sides of the PCB base and guide guide grooves formed on the inner lower part of the PCB cover are engaged. By making the structure to be coupled by sliding, it is easy to disassemble and assemble to reduce manufacturing and repair time, and it is possible to save materials by not using a set screw, thereby improving overall productivity.

[0005] As a result, because of the abovementioned problems, an improvement is required in the related technical field.

BRIEF DESCRIPTION OF THE INVENTION

[0006] The present invention relates to a container arrangement, for eliminating the abovementioned disadvantages and for bringing new advantages to the related technical field.

[0007] An object of the present invention is to provide a movable carrier tray whereon the control unit is positioned in cooling devices.

[0008] Another object of the present invention is to provide a container arrangement for facilitating servicing intervention in cooling devices.

[0009] In order to realize the abovementioned objects

and the objects which are to be deducted from the detailed description below, the present invention is a cooling device comprising a body defining a storage space and at least one control unit for controlling an operation of the cooling device, provided on an outer wall surface of the body facing outside. Accordingly, the cooling device further comprises at least one carrier tray whereon the control unit is positioned, and wherein the carrier tray is configured to be movable between a closed position in which the carrier tray is positioned on the outer wall surface, and an open position in which the carrier tray at least partially extends outwardly from the body. Thus, a cooling device is obtained which has a container arrangement with improved servicing and assembly services.

[0010] In another possible embodiment of the present invention, at least one control unit housing, fixedly positioned on the body, configured so that it at least partially surrounds the carrier tray in the closed position. Thus, the control unit on the carrier tray is protected from external factors in the closed position.

[0011] In another possible embodiment of the present invention, the control unit housing comprises an inner gap for at least partially receiving the carrier tray. Thus, the carrier tray is at least partially surrounded in the closed position.

[0012] In another possible embodiment of the present invention, at least one first connection element is provided on the control unit housing, and wherein at least one second connection element is provided on the carrier tray so as to be attached to the corresponding first connection element. Thus, the carrier tray can be displaced between the open position and the closed position relative to the control unit housing.

[0013] In another possible embodiment of the present invention, the first connection element is being a guide opening and wherein the second connection element is being a connection protrusion associated with the guide opening. Thus, the second connection element is connected with the first connection element, allowing the carrier tray to be displaced relative to the control unit housing.

[0014] In another possible embodiment of the present invention, the first connection element is being an essentially L-shaped guide opening. Thus, sliding displacement of the second connection element in the opening of the first connection element is provided.

[0015] In another possible embodiment of the present invention, the first connection element has a first guiding portion extending longitudinally and a second guiding portion extending in a direction perpendicular to the first guiding portion at an end of the first guiding portion. Thus, sliding of the second connection element in the first guiding portion and locking in the second guiding portion are provided.

[0016] In another possible embodiment of the present invention, the second guiding portion is configured so that the carrier tray is being in a rest position in which an angle is provided between the carrier tray and the outer

wall surface. Thus, the second connection element is locked in the second guiding portion.

[0017] In another possible embodiment of the present invention, at least one first lock element is provided on the control unit housing, wherein at least one second lock element is provided on the carrier tray, and wherein the lock elements are arranged to be attached to each other, when the carrier tray is in the closed position. Thus, the carrier tray is prevented from moving to the open position by mistake.

[0018] In another possible embodiment of the present invention, the carrier tray comprises at least one handle portion provided at a front wall which is in a perpendicular plane with respect to the outer wall surface of the body. Thus, the user is provided to move the carrier tray by holding it.

BRIEF DESCRIPTION OF THE FIGURES

[0019]

In Figure 1, a representative perspective view of the subject-matter cooling device is given.

In Figure 2, a representative perspective view of the container arrangement provided on the subject-matter cooling device is given.

In Figure 3, a representative dismantled view of the container arrangement provided on the subject-matter cooling device is given.

In Figure 4, a representative perspective view of the container arrangement provided on the subject-matter cooling device is given where the container arrangement is in open position.

In Figure 5, a representative perspective view of the container arrangement provided on the subject-matter cooling device is given where the container arrangement is in closed position.

DETAILED DESCRIPTION OF THE FIGURES

[0020] In this detailed description, the subject matter is explained with references to examples without forming any restrictive effect only in order to make the subject more understandable.

[0021] With reference to Figure 1, the present invention relates to a cooling device (10). In the subject-matter cooling device (10), items placed in at least one body (11) are cooled by means of a cooling cycle. The aim of realizing cooling in the cooling device (10) is to keep various items under environmental temperature in said body (11). The cooling cycle of the cooling device (10) is controlled by means of at least one control unit (20). Said control unit (20) is essentially a PCB. Thus, the control unit (20) controls operation of various components pro-

vided on the cooling device (10). The control unit (20) on the cooling device (10) locates on an outer wall surface (12) of the body (11). Said outer wall surface (12) is essentially a ceiling part of the body (11) away from the floor.

[0022] In Figure 2, a representative perspective view of at least one container arrangement (30) positioned on the subject matter cooling device (10) is given. Accordingly, said container arrangement (30) is positioned on the body (11). The container arrangement (30) control unit housing at least one part of the control unit (20) and protects the control unit (20) from external factors. In order to be able to realize this, the container arrangement (30) has at least one control unit housing (31) and at least one carrier tray (32). Said carrier tray (32) is in the form of a drawer. Said control unit housing (31) is in the form of a chamber connected in a fixed manner on the cooling device (10) and wherein the carrier tray (32) can be positioned. The control unit (20) is positioned on the carrier tray (32). Thus, assembly and maintenance facility is provided to the control unit (20) as the carrier tray (32) is placed into and moved away the control unit housing (31).

[0023] In Figure 3, a representative dismantled view of the container arrangement (30) provided on the subject-matter cooling device (10) is given. There is at least one inner gap (312) for the placement of the carrier tray (32) on the control unit housing (31). The inner gap (312) at least partially receives the carrier tray (32). A vertical part (314) and an upper wall (315) are provided on at least one side of said inner gap (312) on the control unit housing (31). Said vertical part (314) essentially exists on both mutual sides of the inner gap (312). The carrier tray (32) can be placed to said inner gap (312). The placement of the carrier tray (32) to the inner gap (312) provided on the control unit housing (31) is a closed position (II). The control unit housing (31), fixedly positioned on the body (11), is configured so that it at least partially surrounds the carrier tray (32) in the closed position (II). The extending of the carrier tray (32) outwardly from a front wall (13) of the body (11) is at least one open position (I). Said front wall (13) is the side of the body (11) which faces the user under normal usage conditions of the cooling device (10). As the carrier tray (32) is moved between said closed position (II) and said open position (I), maintenance and assembly can be realized for the container arrangement (30).

[0024] The control unit housing (31) comprises at least one first connection element (311). The carrier tray (32) comprises at least one second connection element (321). Said first connection element (311) and said second connection element (321) are configured to be associated with each other. In a possible embodiment of the present invention, the first connection element (311) is a guide opening. The second connection element (321) can be in the form of a pin formed in a manner able to enter into the guide opening. The first connection element (311), provided in the form of a guide opening, exists mutually on the vertical parts (314) of the control unit housing (31). Thus, as the second connection element (321) is slid on

the first connection element (311), the container arrangement (30) can displace between the open position (I) and the closed position (II). The first connection element is (311) being an essentially L-shaped guide opening. Thus, sliding displacement of the second connection element (321) in the opening of the first connection element (311) is provided. The first connection element (311) has a first guiding portion (311a) extending longitudinally and a second guiding portion (311b) extending in a direction perpendicular to the first guiding portion (311a) at an end of the first guiding portion (311a). Thus, sliding of the second connection element (321) in the first guiding portion (311a) and locking in the second guiding portion (311b) are provided. However in alternative embodiments, the cooling device (10) can be produced also in different shapes in order to displace between the open position (I) and the closed position (II).

[0025] In Figure 4, a representative perspective view of the container arrangement (30) provided on the subject-matter cooling device (10) is given where the container arrangement (30) is in the open position (I). While the container arrangement (30) is in the open position (I), it is positioned in a manner facing outwardly from the front wall (13) such that servicing process can be applied to the control unit (20). In the container arrangement (30), there is at least one second guiding portion (311b) for keeping the carrier tray (32) in the open position (I) with respect to the control unit housing (31). Said second guiding portion (311b) keeps the carrier tray (32) continuously in the open position (I). Therefore, second guiding portion (311b) is configured to prevent essentially the movement of the second connection element (321) on the first connection element (311). In case the first connection element (311) is provided in a guide opening form, the second guiding portion (311b) is provided in the form of a pocket which is adjacent to the guide opening. In case the second connection element (321) is slid on the first connection element (311) and passes to the open position (I), the second connection element (321) is stopped by the second guiding portion (311b) and movement of the second connection element (321) in the guide opening is prevented. In the invention, the second guiding portion (311b) is configured so that the carrier tray (32) is being in a rest position in which an angle is provided between the carrier tray (32) and the outer wall surface (12). Thus, the undesired movement of the carrier tray (32) in the servicing process is prevented.

[0026] In Figure 5, a representative perspective view of the container arrangement (30) provided on the subject-matter cooling device (10) is given where the container arrangement (30) is in the closed position (II). Accordingly, the carrier tray (32) passes to the closed position (II) as it fills the inner gap (312) of the control unit housing (31). This closed position (II) is the operation position of the cooling device (10) under normal conditions, and the control unit (20) is protected from external factors. For providing this, the second connection element (321) moves on the first connection element (311)

and fills the inner gap (312). In order to be able to keep the carrier tray (32) in the closed position (II), at least one first lock element (313) is positioned on the control unit housing (31), and at least one second lock element (323) is positioned on the carrier tray (32). Said first lock element (313) and said second lock element (323) are associated with each other in the closed position (II), and delimit the movement of the carrier tray (32). For this reason, in a possible embodiment of the present invention, the first lock element (313) is a hole form provided on the carrier tray (32). Said second lock element (323) is a protrusion formed in a manner placed to the first lock element (313) which is in hole form. Thus, the desired locking can be realized at the closed position (II).

[0027] At least one handle portion (322) is positioned on the carrier tray (32). Said handle portion (322) is essentially held by the user, and enables displacement of the carrier tray (32) between the open position (I) and the closed position (II). By means of this, the reachability of the container arrangement (30) is increased. In a possible embodiment, the handle portion (322) is provided at a front wall which is in a perpendicular plane with respect to the outer wall surface (12) of the body (11).

[0028] By means of all these embodiments, the requirement of operation at the top part of the cooling device (10) for servicing is eliminated. The assembly of the control unit (20) onto the cooling device (10) can be facilitated by means of the container arrangement (30), and repair and maintenance services in case of failures are facilitated. Additionally, as the control unit (20) is positioned on the outer wall surface (12) of the cooling device (10), the wetness risks are also prevented.

[0029] The protection scope of the present invention is set forth in the annexed claims and cannot be restricted to the illustrative disclosures given above, under the detailed description. It is because a person skilled in the relevant art can obviously produce similar embodiments under the light of the foregoing disclosures, without departing from the main principles of the present invention.

REFERENCE LIST

[0030]

- 10 Cooling device
- 11 Body
- 12 Outer wall surface
- 13 Front wall
- 20 Control unit
- 30 Container arrangement
- 31 Control unit housing
- 311 First connection element
- 311a First guiding portion
- 311b Second guiding portion
- 312 Inner gap
- 313 First lock element
- 314 Vertical part
- 315 Upper wall

32 Carrier tray
 321 Second connection element
 322 Handle portion
 323 Second lock element

(I) Open position
 (II) Closed position

Claims

1. A cooling device (10) comprising a body (11) defining a storage space and at least one control unit (20) for controlling an operation of the cooling device, provided on an outer wall surface (12) of the body (11) facing outside, **characterized in that** the cooling device (10) further comprises at least one carrier tray (32) whereon the control unit (20) is positioned, and wherein the carrier tray (32) is configured to be movable between a closed position (II) in which the carrier tray (32) is positioned on the outer wall surface (12), and an open position (I) in which the carrier tray (32) at least partially extends outwardly from the body (11).

2. The cooling device (10) according to claim 1, **wherein** at least one control unit housing (31), fixedly positioned on the body (11), configured so that it at least partially surrounds the carrier tray (32) in the closed position (II).

3. The cooling device (10) according to claim 2 **wherein** the control unit housing (31) comprises an inner gap (312) for at least partially receiving the carrier tray (32).

4. The cooling device (10) according to claim 2 or 3, **wherein** at least one first connection element (311) is provided on the control unit housing (31), and wherein at least one second connection element (321) is provided on the carrier tray (32) so as to be attached to the corresponding first connection element (311).

5. The cooling device (10) according to claim 4, **wherein** the first connection element (311) is being a guide opening, and wherein the second connection element (321) is being a connection protrusion associated with the guide opening.

6. The cooling device (10) according to claim 5, **wherein** the first connection element (311) is being an essentially L-shaped guide opening.

7. The cooling device (10) according to claim 6, **wherein** the first connection element (311) has a first guiding portion (311a) extending longitudinally and a second guiding portion (311b) extending in a direction

perpendicular to the first guiding portion (311a) at an end of the first guiding portion (311a).

8. The cooling device (10) according to claim 7, **wherein** the second guiding portion (311b) is configured so that the carrier tray (32) is being in a rest position in which an angle is provided between the carrier tray (32) and the outer wall surface (12).

9. The cooling device (10) according to any one of the preceding claims, **wherein** at least one first lock element (313) is provided on the control unit housing (31), wherein at least one second lock element (323) is provided on the carrier tray (32), and wherein the lock elements (313, 323) are arranged to be attached to each other, when the carrier tray (32) is in the closed position (II).

10. The cooling device (10) according to any one of the preceding claims, **wherein** the carrier tray (32) comprises at least one handle portion (322) provided at a front wall which is in a perpendicular plane with respect to the outer wall surface (12) of the body (11).

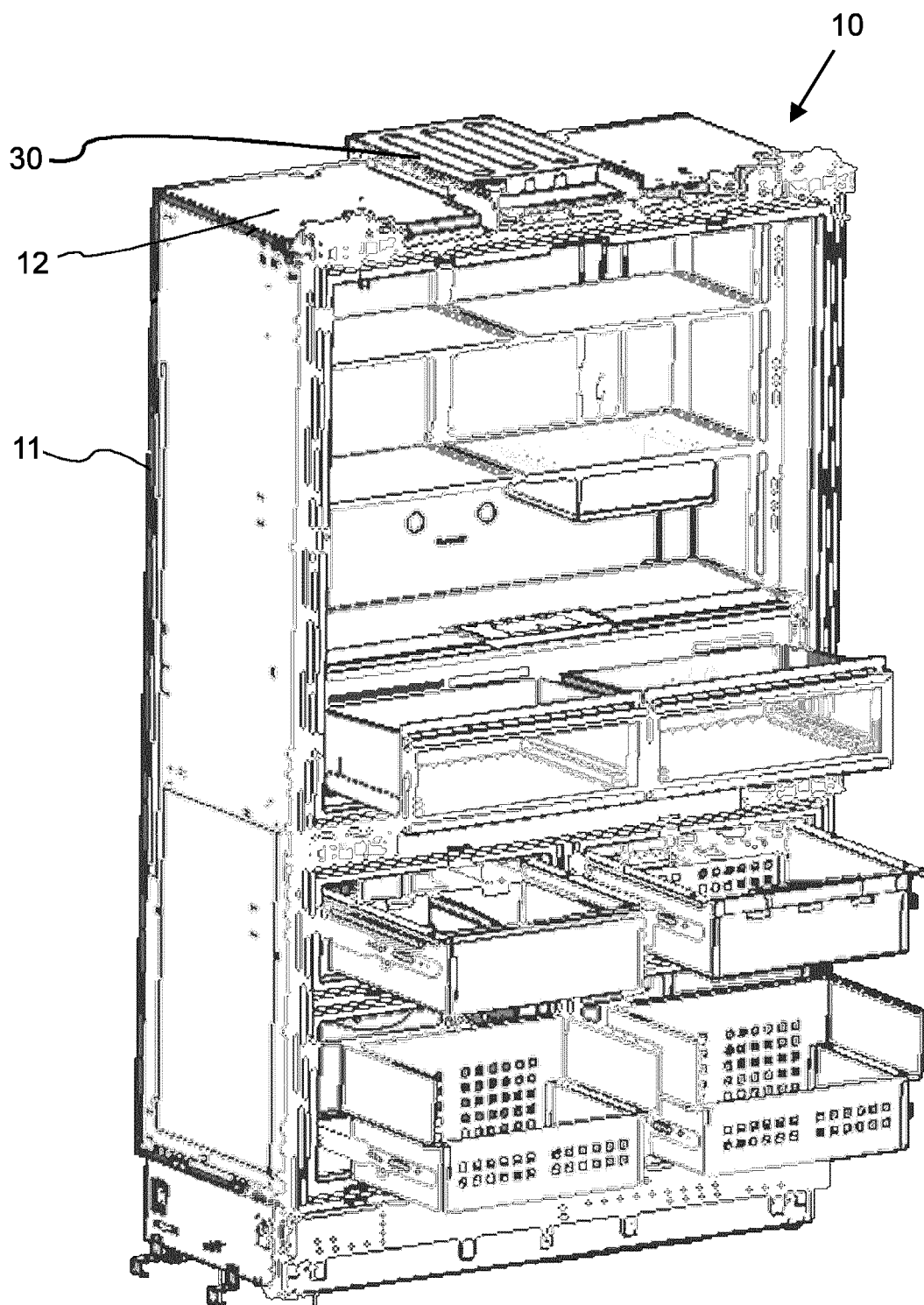


Figure 1

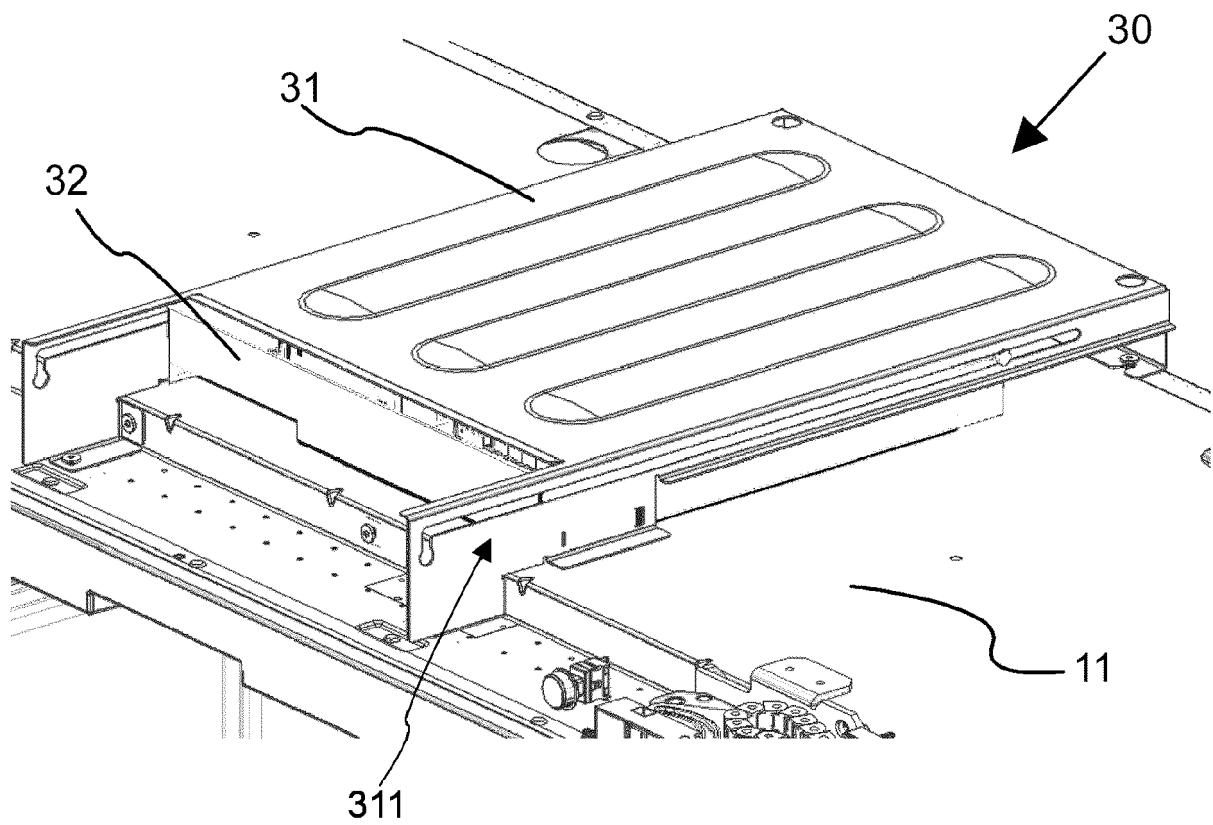


Figure 2

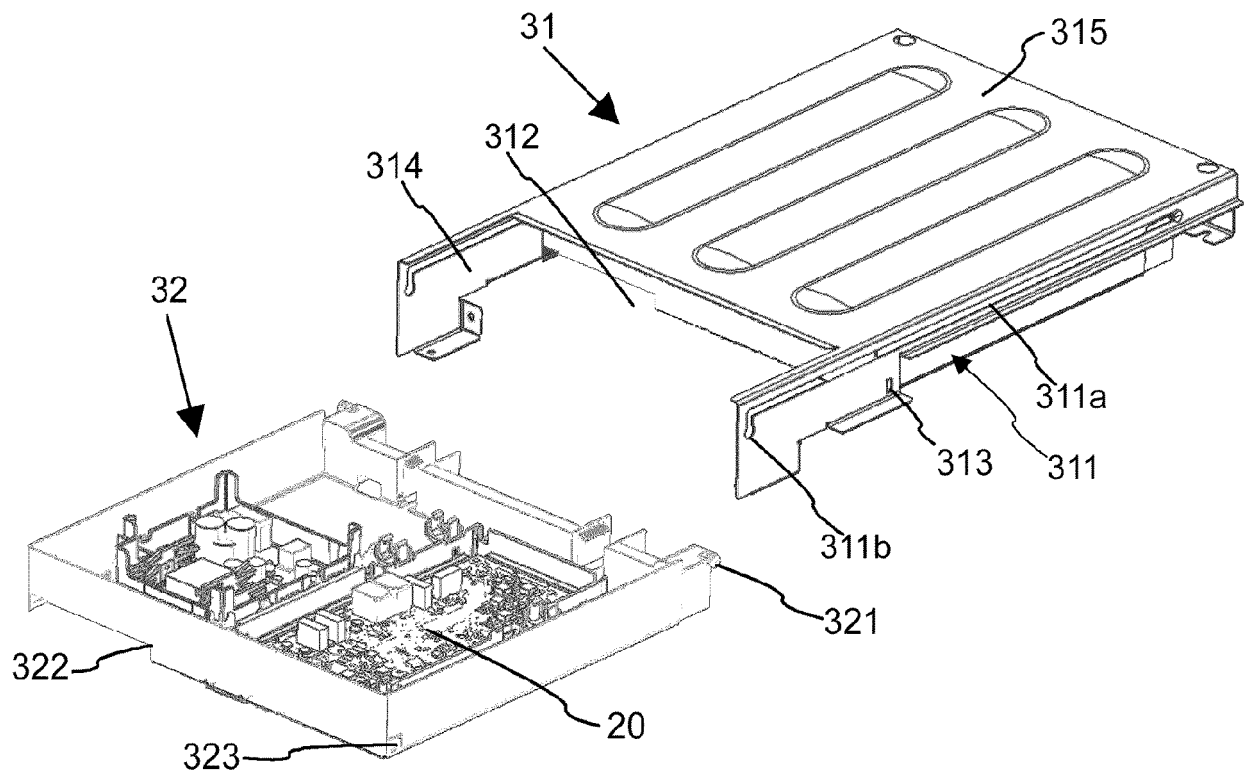


Figure 3

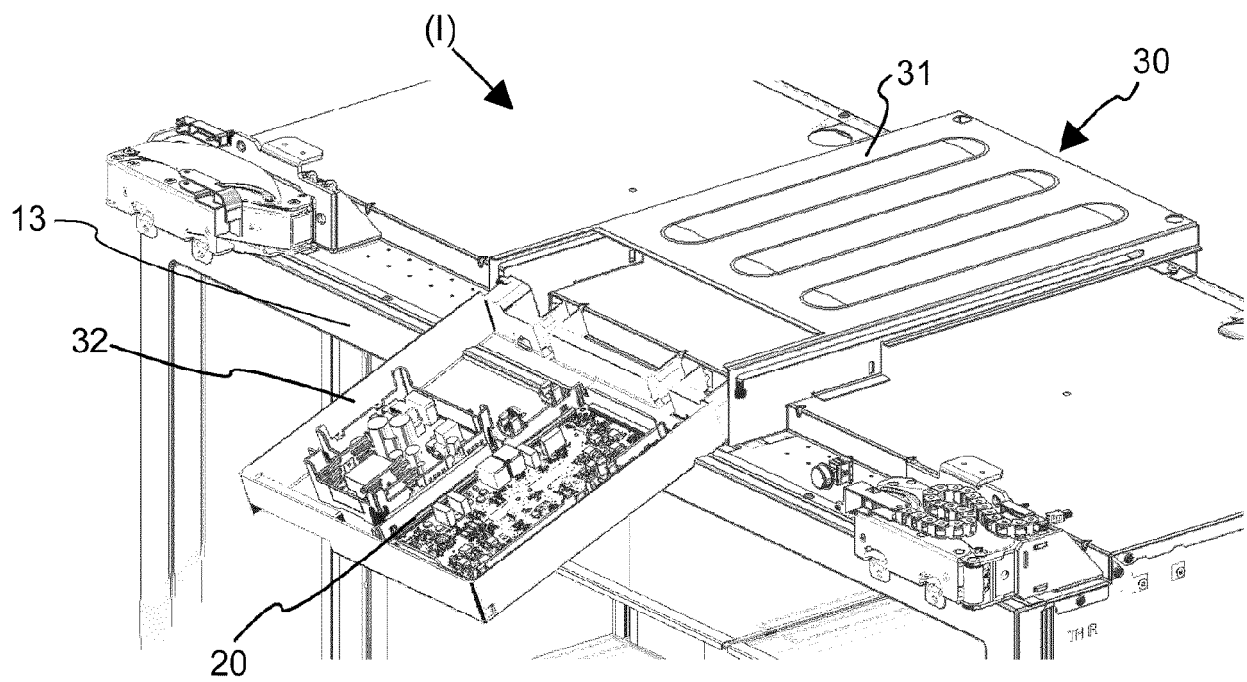


Figure 4

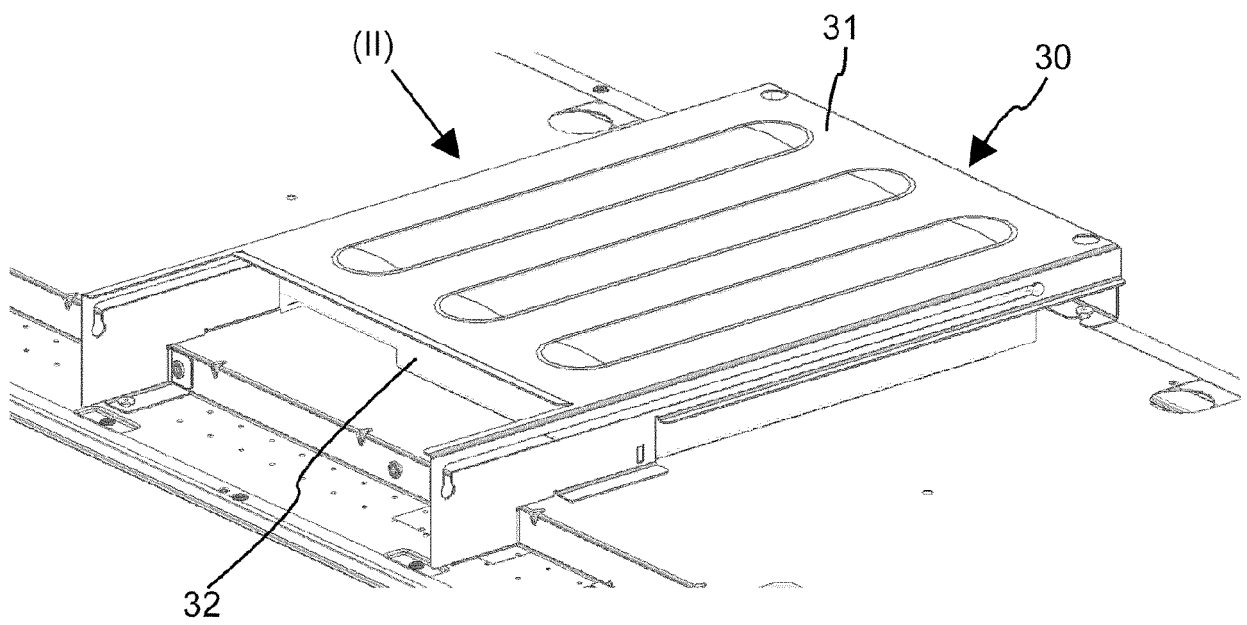


Figure 5



EUROPEAN SEARCH REPORT

Application Number

EP 22 20 9934

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	KR 2021 0112188 A (LG ELECTRONICS INC [KR]) 14 September 2021 (2021-09-14) * abstract; figures 1-14 * * paragraph [0135] * -----	1-10	INV. F25D29/00
X,P	WO 2022/220374 A1 (SAMSUNG ELECTRONICS CO LTD [KR]) 20 October 2022 (2022-10-20) * figures 1-15 * -----	1-10	TECHNICAL FIELDS SEARCHED (IPC) F25D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		12 April 2023	Yousufi, Stefanie
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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ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 22 20 9934

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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12-04-2023

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
	KR 20210112188 A	14-09-2021	NONE	

15	WO 2022220374 A1	20-10-2022	NONE	

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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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