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(54) INDUCTIVE HEATING COOKER

INDUKTIONSHERD

CUISINIÈRE À INDUCTION

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EP 3 048 860 B1

Description

TECHNICAL FIELD

[0001] The present invention is related to a holding configuration of an operation board of an induction-heating cooker.

BACKGROUND ART

[0002] Patent Document 2 shows an induction heating cooker according to the preamble of the independent claim.

[0003] Conventionally, in this type of induction-heating cooker, an operation board is housed inside a bottomed, substantially box-shaped holder and this holder is fixed to an outer frame (see, e.g., Patent Document 1).

[0004] Fig. 12 depicts an operation board holding configuration of a conventional induction-heating cooker described in Patent Document 1. As shown in Fig. 12, an operation board 113 arranged below a top plate 111 is housed inside a bottomed, substantially box-shaped operation board holder 117. This operation board holder 117 is formed, for example, of resin and is fixed to an outer frame 118. By this, the operation board 113, with its entire circumference surrounded by the operation board holder 117 in the horizontal direction, is fixed to the outer frame 118.

[0005] Patent Document 3 forming the closest prior art discloses a household appliance device having at least one operator interface unit, at least one operating interface element and at least one carrier unit having a base body which is provided for holding at least one touch-operating element of operator interface unit at operating interface element. In order to achieve a secure and play-free mounting of touch-operating element at operating interface element, at least one spring unit intended to generate a spring force which presses operator interface unit against operating interface element is provided.

PATENT DOCUMENTS

[0006]

Patent Document 1: JP2006-202623 A
Patent Document 2: EP 2 427 032 A2
Patent Document 3: EP 2 578 949 A1

SUMMARY OF THE INVENTION

PROBLEM TO BE SOLVED BY THE INVENTION

[0007] Recently, a smaller size and a thinner size of this type of induction-heating cooker have become one of requirements from the market. According to the conventional configuration described above, however, since the operation board 113 is housed inside the bottomed, substantially box-shaped operation board holder 117, the operation board holder 117 is required to have a configuration of a larger box shape than the external shape of the operation board 113. For this reason, the conventional operation board holder 117 becomes a factor inhibiting the realization of the smaller size and the thinner size of the induction-heating cooker.

[0008] The operation board holder 117 is formed to correspond to a certain particular operation board 113 and to achieve higher density of internal components packaging, generally, when the shape of the operation board 113 is changed, the shape of the operation board holder 117 is also changed. When the induction-heating cooker comes to have a wide variety of operation part layout variations, there are many variations in the shape of the operation board 113. Accordingly, there is a problem that many shapes are required for the operation board holder 117, resulting in a great burden in terms of costs such as development man-hour and investment for molds and dies.

[0009] The present invention is intended to solve the conventional problems described above and the object thereof is to provide an induction-heating cooker capable of holding an operation board with a simple configuration and utilizing a space effectively.

MEANS FOR SOLVING PROBLEM

[0010] In order to solve the problems inherent in the conventional art, an induction-heating cooker as defined in claim 1 comprises, inter alia, an outer frame having an opening in its upper part and being formed in a bottomed box shape; a top plate that covers the opening of the outer frame and on which an object to be heated is placeable; a coil unit that is arranged below the top plate for induction-heating the object to be heated; and an operation board that is located below the top plate composing a terminal that accepts an operation from a user, wherein an operation board holding part that supports and holds the operation board from the lower surface side of the operation board is disposed on an outer frame side surface of the outer frame, and at least a part of a space surrounding the operation board is opened in the horizontal direction inside the outer frame.

EFFECT OF THE INVENTION

[0011] The induction-heating cooker of the present invention, capable of fixing an operation board to an outer frame side surface with a simple configuration, can realize a lower cost and a thinner size of a main body by making a space occupied by an operation board holding part within the main body small.

BRIEF DESCRIPTION OF DRAWINGS

[0012]

Fig. 1 is a principal part cross-sectional view of an

induction-heating cooker in a first embodiment of the present invention.

Fig. 2 is a principal part cross-sectional view of an operation board attached by a locking mechanism to an operation board holding member of the induction-heating cooker of the first embodiment.

Fig. 3 is a principal part cross-sectional view of the operation board attached by a screw to the operation board holding member of the induction-heating cooker of the first embodiment.

Fig. 4 is a perspective view of the operation board holding member of the induction-heating cooker of the first embodiment.

Fig. 5 is a perspective view of the induction-heating cooker of a second embodiment of the present invention, with its top plate unit removed.

Fig. 6 is a partial exploded perspective view of the induction-heating cooker of the second embodiment, with its top plate unit and coil unit removed.

Fig. 7 is a partial exploded perspective view of the induction-heating cooker of the second embodiment, with its top plate unit removed, as viewed from the rear side of a main body.

Fig. 8 is a principal part cross-sectional view of the induction-heating cooker of the second embodiment.

Fig. 9 is a perspective view of the induction-heating cooker of the second embodiment (variation example), with its top plate unit removed, in the case of arranging the operation board on the outer side (corner part).

Fig. 10 is a principal part cross-sectional view of a convex part for attaching the operation board of the induction-heating cooker of the second embodiment (variation example).

Fig. 11 is a top view indicative of a positional relationship between the operation board and an outer frame of the induction-heating cooker of the second embodiment, with its top plate unit removed.

Fig. 12 is a principal part cross-sectional view of the operation board and its surroundings of a conventional induction-heating cooker.

EMBODIMENT(S) FOR CARRYING OUT THE INVENTION

[0013] An induction-heating cooker as defined in claim 1 comprises, inter alia, an outer frame having an opening in its upper part and formed in a bottomed box shape; a top plate that covers the opening of the outer frame and on which an object to be heated is placed; a coil unit that is arranged below the top plate and that induction-heats the object to be heated; and an operation board that is located below the top plate and that accepts an operation from a user, wherein an operation board holding part that supports and holds the operation board from the lower surface side is disposed on an outer frame side surface of the outer frame, and at least a part of a space surrounding the operation board is opened in the horizontal direction inside the outer frame. According to such a configuration, since the operation board can be held by the outer frame side surface with a simple configuration, it is made possible to effectively utilize a space in the upper part of the main body as a space for disposing the operation board and to make a space occupied by the operation board holding part small. Therefore, since other parts such as a control board to supply a high-frequency current to the coil unit can be arranged at the open space formed thereby, the space inside the main body can be utilized effectively and for example, the thinner size of the main body can be realized.

[0014] In the induction-heating cooker according to the first invention, the operation board holding part is fixed to the outer frame side surface. This makes it possible to support the operation board from the lower surface side by the holding member going through the outer frame throughhole at the outer frame side surface and fixed to the outer frame side surface and to make the space occupied by the operation board holding part inside the main body small.

[0015] In the induction-heating cooker according to the first or second invention, the third invention is characterized in that the induction-heating cooker comprises a metallic support member arranged between a left outer frame side surface and a right outer frame side surface of the outer frame and connecting a front outer frame side surface and a rear outer frame side surface, wherein a part of the lower surface side of the operation board is held by the operation board holding part while the other part of the lower surface side of the operation board is held by the support member by interposing an electrically insulating material. This makes it possible to support the operation board by the support member in addition to the operation board holding part and to cope with the holding of the operation boards having a wide variety of sizes and shapes. Since the support member connects the front and the rear of the outer frame, resulting in an increase in the rigidity of the outer frame, the thickness of the outer frame can be made thinner and an inexpensive induction-heating cooker can be provided.

[0016] In the induction-heating cooker according to the first or second invention, the fourth invention is characterized in that the induction-heating cooker comprises a support member made of resin as an electrically insulating material arranged between a left outer frame side surface and a right outer frame side surface of the outer frame and connecting a front outer frame side surface and a rear outer frame side surface, wherein a part of the lower surface side of the operation board is held by the operation board holding part while the other part of the lower surface side of the operation board is held by the support member. This makes it possible to support the operation board by the support member in addition to the operation board holding part and to cope with the holding of the operation boards having a wide variety of sizes and shapes. Since the support member connects the front and the rear of the outer frame, resulting in an

increase in the rigidity of the outer frame, the thickness of the outer frame can be made thinner and an inexpensive induction-heating cooker can be provided. Since the support member itself is formed of the electrically insulating material, the necessity of separately disposing an electrically insulating material can be eliminated.

[0017] In the induction-heating cooker according to the third or fourth invention, the fifth invention is characterized in that the support member supports the coil unit. This makes it possible to hold the operation board, using the support member that supports the coil unit and to decrease the parts count as well as achieving the effective utilization of the space in the induction-heating cooker.

[0018] In the induction-heating cooker according to the third or fourth invention, the sixth invention is characterized in that the induction-heating cooker further comprises a fixing member passing through a throughhole disposed on the support member and fixed to the support member, wherein the fixing member supports and holds the operation board from the lower surface side. This makes it possible to support and hold the operation board from the lower surface side by the fixing member passing through the throughhole of the support member and fixed to the support member, resulting in the holding of the operation board with a simple configuration.

[0019] In the induction-heating cooker according to the first or second invention, the seventh invention is characterized in that the outer frame side surface has a horizontal plane part as a horizontal plane formed substantially horizontally between a lower end of a first side surface and an upper end of a second side surface formed on the inner side than the first side surface, and the operation board holding part is disposed on the horizontal plane part. Since the operation board holding part is disposed on the horizontal plane part, the operation board can be held reliably though the shape of the operation board holding part is simply configured. Assembly can be made easy and an inexpensive induction-heating cooker can be provided.

[0020] In the induction-heating cooker according to the seventh invention, the eighth invention is characterized in that the outer frame has the horizontal plane part on a front outer frame side surface, and on a left outer frame side surface or a right outer frame side surface, and the operation board is held by the operation board holding part disposed on the horizontal plane part of the front outer frame side surface, and the operation board holding part disposed on the horizontal plane part of the left outer frame side surface or the right outer frame side surface. This makes it possible to arrange the operation board at the right corner or the left corner of the outer frame or at both of them and for example, it is made possible to enrich commodity variations by changing of arrangement of an operation part.

[0021] In the induction-heating cooker according to the seventh or eighth invention, the ninth invention is characterized in that the operation board is held by the operation board holding part on the horizontal plane part so that a wiring pattern of the operation board is not overlap the horizontal plane part on which the operation board holding part is disposed, as viewed from above. Since this makes it possible to increase a space distance between the horizontal plane part and the wiring pattern, enhancing the insulation performance, the induction-heating cooker with high reliability can be provided.

[0022] In the induction-heating cooker according to the third or fourth invention, the tenth invention is characterized in that the front outer frame side surface and the rear outer frame side surface have a horizontal plane part as a horizontal plane formed substantially horizontally between a lower end of a first side surface and an upper end of a second side surface formed on the inner side than the first side surface, and both ends of the support member are placed on the horizontal plane part of the front outer frame side surface and the horizontal plane part of the rear outer frame side surface. Since this causes the support member to be installed on the horizontal plane part of the front outer frame side surface and on the horizontal plane part of the rear outer frame side surface, the rigidity of the outer frame can be increased. Accordingly, the thickness of the outer frame can be made thinner and further, assembly efficiency is enhanced and an inexpensive induction-heating cooker can be provided.

[0023] In the induction-heating cooker according to the first invention, the eleventh invention is characterized in that the outer frame side surface has a horizontal plane part as a horizontal plane formed substantially horizontally between a lower end of a first side surface and an upper end of a second side surface formed on the inner side than the first side surface, and an upwardly protruding convex part is formed on the horizontal plane part, and the convex part supports and holds the operation board from the lower surface side as the operation board holding part. By this, the convex part formed on the outer frame side surface can be used as the operation board holding part, without using a separate member as the operation board holding part, and the parts count can be decreased.

[0024] In the induction-heating cooker according to any one of the first to eleventh invention, the twelfth invention is characterized in that the operation board has an attachment hole, and the operation board is fixed to the operation board holding part by using the attachment hole.

[0025] Embodiments of the present invention will now be described with reference to drawings. The present invention is not to be limited by these embodiments.

(First Embodiment)

[0026] Fig. 1 is a principal part cross-sectional view of the induction-heating cooker in a first embodiment of the present invention and Fig. 2 is a principal part cross-sectional view of the operation board attached by a locking

mechanism to the operation board holding member of the induction-heating cooker. Fig. 3 is a principal part cross-sectional view of the operation board attached by a screw to the operation board holding member of the induction-heating cooker of the first embodiment and Fig. 4 is a perspective view of the operation board holding member of the induction-heating cooker.

[0027] As shown in Figs. 1 to 4, in an induction-heating cooker 100 of this first embodiment, a main body (chassis) to house parts includes an outer frame 4 having an opening 4c in its upper part and formed in a bottomed box shape and a top plate 1 to cover the opening 4c of the outer frame 4 and on which to place an object P to be heated. A top plate unit 13 includes the top plate 1 on which the object P to be heated is placed and a top plate support metal fitting 12 having its upper surface bonded to the lower surface of the top plate 1 and having a substantially L-letter cross-sectional shape. The top plate unit 13 is fixed to the side surface of the outer frame 4.

[0028] A coil unit 2 to induction-heat the object P to be heated, an operation board 3 arranged in front of the coil unit 2, and a control board 5 arranged on an outer frame bottom surface 4b are arranged below the top plate unit 13. The operation board 3 has a terminal 14 making up a capacitance type touch control that accepts an operation from a user. The control board 5 supplies the high-frequency current to the coil unit 2. The control board 5 is held by a control board holding member 11 and the operation board 3 is supported and held from the lower surface side of the operation board 3 by an operation board holding member 6. One end of the operation board holding member 6 goes through an outer frame throughhole 7 disposed on an outer frame side surface 4a (the hole penetrating, from inside to outside, through the outer frame side surface). The operation board holding member 6 is thereby attached to the outer frame side surface 4a. In this first embodiment, the operation board holding member 6 (holding member) becomes an example according to the invention of the operation board holding part that supports and holds the operation board 3 from the lower surface side.

[0029] As shown in Fig. 2, the operation board 3 has an attachment hole 8 disposed that penetrates in the thickness direction and the other end of the operation board holding member 6 passes through this attachment hole 8. By this, the operation board holding member 6 supports the operation board 3 from the lower surface side as well as holding the operation board 3. At the other end of the operation board holding member 6, a locking mechanism 6e may be provided at the edge that has passed through the attachment hole 8 of the operation board 3. The locking mechanism 6e may have a larger diameter than that of the attachment hole 8 to prevent the operation board 3 from being released upward. As shown in Fig. 3, the other end of the operation board holding member 6 may be mechanically fixed to the operation board 3 by a screw 9.

[0030] One example according to the invention will be described of the configuration of fixing the operation board holding member 6 to the outer frame 4 with reference to Fig. 4. As shown in Fig. 4, the operation board holding member 6 has a horizontal holding part 6a, a fixing part 6b formed at one end of the horizontal holding part 6a, and a vertical holding part 6c extended vertically from the other end of the horizontal holding part 6a. The fixing part 6b has an external shape larger than the diameter of the outer frame throughhole 7 and has an attachment hole 6bb disposed that penetrates in the thickness direction. At the upper end of the vertical holding part 6c, a protruding part 6d is disposed that has the external shape smaller than the diameter of the vertical holding part 6c and that extrudes upward and at the upper end of the protruding part 6d, the locking mechanism 6e is disposed. On the side surface of the horizontal holding part 6a in the vicinity of the fixing part 6b, a rotation preventing part 6f is disposed that protrudes outwardly from the side surface in the radial direction. The outer frame throughhole 7 and a screw hole 4d are formed on the outer frame side surface 4a. The locking mechanism 6e, the protruding part 6d, the vertical holding part 6c, and the horizontal holding part 6a, in that order, are caused to pass through the outer frame throughhole 7. Thereafter, by tightening the screw 9 that has passed through the attachment hole 6bb into the screw hole 4d of the outer frame side surface 4a and fastening it to the outer frame side surface 4a, the operation board holding member 6 can be fixed to the outer frame side surface 4a. In this case, because of the disposition of the rotation preventing part 6f, positioning of the screw hole 4d of the outer frame 4 and the attachment hole 6bb of the fixing part 6b is made easy. Such a rotation preventing part 6f may be omitted. The operation board holding member 6 may be fixed to the outer frame 4 by shaping the operation board holding member 6 so that it will not rotate with respect to the outer frame throughhole 7 and by further disposing a locking mechanism (not shown) to prevent the operation board holding member 6 from coming off.

[0031] With respect to the induction-heating cooker 100 of this first embodiment configured as above, the operation and the action thereof will be described.

[0032] At the time of assembling the induction-heating cooker 100 of this first embodiment, the control board holding member 11 is fixed to the outer frame bottom surface 4b and the control board 5 is placed on the upper surface of the control board holding member 11 and is held thereby. Then, the operation board holding member 6 is inserted into the outer frame throughhole 7 disposed on the outer frame side surface 4a and the operation board holding member 6 is fixed to the outer frame side surface 4a so that the operation board holding member 6 does not rotate. Thereafter, the operation board 3 is placed on the operation board holding member 6 and is fixed thereto. Then, the coil unit is attached, the top plate unit 13 and the outer frame 4 are fixed, and the induction-heating cooker 100 is completed.

[0033] Fixing of the operation board holding member

6 of such a simple configuration to the outer frame side surface 4a makes it possible to reduce the space occupied by the member to hold the operation board 3 inside the outer frame 4 and to arrange the control board 5 and other parts around and below the space occupied by the member. For this reason, in the induction-heating cooker 100, parts can be arranged efficiently within a limited space of the main body. Therefore, the configuration to hold the operation board can be made compact, as compared with the conventional one, for example, the resin case, etc., holding the operation board (e.g., the operation board holder 117 of Fig. 12). Consequently, the height of the main body can be further reduced and the operation board holding configuration can be realized with an inexpensive configuration.

[0034] The operation board holding member 6 holds the operation board 3, with the space surrounding the operation board 3 opened in the horizontal direction inside the outer frame 4. Namely, the operation board holding member 6 holds the operation board 3, opening the space in the horizontal direction, without surrounding the operation board 3 by the box-shaped member, etc. Accordingly, the operation board holding member 6 can hold the operation boards of various forms irrespective of the external shape of the operation board. Therefore, the operation board holding member 6 can be used commonly irrespective of the form of the operation board and the burden in respect of costs such as development manhour and investment for molds and dies can be reduced. Since the space surrounding the operation board 3 is opened in the horizontal direction inside the outer frame 4, the cooling effect can be heightened, as compared with the conventional state of being enclosed.

[0035] While the control board 5 is arranged below the operation board 3, insulation performance can be secured by designing the operation board holding member 6 so as to secure the space distance with the control board 5. Since the operation board holding member 6 has a simple configuration, as compared with the resin case (e.g., the operation board holder 117, etc.) that conventionally held the operation board, the operation board holding member 6 can be made inexpensively.

[0036] As above, in the induction-heating cooker 100 of this first embodiment, by adopting the above configuration, the induction-heating cooker capable of making the main body thinner and achieving a lower cost can be realized while recently there is a demand in the market for the thinner size and the lower cost of the induction-heating cooker.

(Second Embodiment)

[0037] Fig. 5 is a perspective view of an induction-heating cooker 200 of a second embodiment of the present invention, with its top plate unit removed and Fig. 6 is a partial exploded perspective view of the induction-heating cooker, with its top plate unit and coil unit removed. Fig. 7 is a partial exploded perspective view of the induction-heating cooker of this second embodiment, with its top plate unit removed, as viewed from the rear side of the main body and Fig. 8 is a principal part cross-sectional view of the induction-heating cooker. Fig. 9 is a perspective view of the induction-heating cooker in a variation example of this second embodiment, with its top plate unit removed, in the case of arranging the operation board on the outer side (corner part). Fig. 10 is a principal part cross-sectional view of a convex part for attaching the operation board of the induction-heating cooker in another variation example and Fig. 11 is a top view indicative of a positional relationship between the operation board and the outer frame of the induction-heating cooker of this second embodiment, with its top plate unit removed.

[0038] In Figs. 5 to 11, an outer frame 15 constitutes a chassis as an exterior part of the main body, has an opening 15c in its upper part, and is formed in a bottomed, box-shape. As shown in Fig. 8, the opening 15c of the outer frame 15 is covered by a top plate unit 13. An outer frame side surface 15a has a stepped shape with a horizontal plane part 15ac formed halfway (see, in particular, Fig. 8). This stepped shape includes a first side surface 15aa formed by being bent upward outside the horizontal plane part 15ac and a second side surface 15ab formed by being bent downward inside the horizontal plane part 15ac. Namely, the outer frame side surface 15a has the stepped shape, with the horizontal plane part 15ac formed as a horizontal plane formed substantially horizontally between the lower end of the first side surface 15aa and the upper end of the second side surface ab formed inner than the first side surface 15aa. The outer frame 15 has a flange 15d extending substantially horizontally by being bent outwardly at the upper end of the first side surface 15aa. The second side surface 15ab is formed by being bent upward at the end of an outer frame bottom surface 15b. "Substantially horizontally" means the direction crossing the vertical direction and includes the direction slightly slanted with respect to the horizontal direction if it is roughly a lateral direction.

[0039] As shown in Figs. 5 to 7, a metallic support member 18 is arranged in an anteroposterior direction between the left-side outer frame side surface 15a (also called a left outer frame side surface) and the right-side outer frame side surface 15a (also called a right outer frame side surface) of the outer frame 15 (namely, substantially center in lateral direction). The support member 18 is fixed to the horizontal plane part 15ac formed on the front-side outer frame side surface 15a (also called a front outer frame side surface) and the rear-side outer frame side surface 15a (also called a rear outer frame side surface) of the outer frame 15. Namely, the support member 18 connects the front outer frame side surface 15a and the rear outer frame side surface 15a so as to bridge these two surfaces. Figs. 6 and 7 depict an operation board 16 and an insulation plate 19 in a disassembled state.

[0040] As shown in Fig. 8, below the operation board

16, the insulation plate 19 (an example of electrically insulating member) is placed on the upper surface of the support member 18. An outer frame throughhole 15e is disposed on the horizontal plane part 15ac of the outer frame side surface 15a (e.g., front outer frame side surface) and plural operation board holding members 17 pass through their respective outer frame throughholes 15e and are fixed to the horizontal plane part 15ac, namely, the outer frame 15. Likewise, the support member 18 has a support member throughhole 18a disposed and plural fixing members 17a pass through their respective support member throughholes 18a and are fixed to the support member 18. The insulation plate 19 has an insulation plate throughhole 19a disposed and the fixing member 17a passes through the insulation plate throughhole 19a. Thus, the insulation plate 19 has its horizontal movement regulated by the fixing member 17a. The operation board 16 has attachment holes 16a formed so as to correspond to each of the operation board holding members 17 and the fixing members 17a.

[0041] As shown in Fig. 11, the operation board 16 has no wiring pattern 26 arranged on such part of its back surface at which the operation board 16 and the horizontal plane part 15ac overlap as seen from the above. Namely, the operation board 16 is held by the operation board holding member 17 fixed to the horizontal plane part 15ac so that the wiring pattern 26 of the operation board 16 will not overlap the horizontal plane part 15ac as seen from the above.

[0042] As shown in Fig. 5, in the induction-heating cooker 200, a coil unit 2a, a coil unit 2b, a coil unit 2c, and a coil unit 2d differ in arrangement location and some of them differ in size or shape from others but all of them are of almost same configuration. Therefore, the configuration will be described of the coil unit 2a and its surroundings as their representative. As shown in Fig. 8, projections 20 are formed on the horizontal plane part 15ac of the left outer frame side surface 15a and the right outer frame side surface 15a and on the support member 18, a spring 25 is inserted into each projection 20, and the coil unit 2a is placed on the springs 25. Positioning of the coil unit 2a is performed by having a positioning projection 21 formed on a shield plate 24 inserted into the spring 25. The shield plate 24 has a flange 22 formed by being bent upward at its outer circumferential part and the end surface of the flange 22 abuts against a metallic frame 23c that makes up a top plate unit 23 and that is bonded and fixed to the back surface of a top plate 23a. With respect to the configuration of supporting the coil unit 2a, many other configurations may be adopted and for example, the configuration of supporting the coil unit 2a without using the spring 25 may be adopted.

[0043] With respect to the induction-heating cooker 200 of this second embodiment configured as above, the operation and the action thereof will be described.

[0044] At the time of assembling the induction-heating cooker 200 in this second embodiment, in the same manner as in the induction-heating cooker 100 in the first embodiment, the control board holding member 11 is fixed to the outer frame 15 and the control board 5 is fixed to the control board holding member 11. This fixing method is the same as in the first embodiment and the description thereof is omitted.

[0045] The operation board 16 and the horizontal plane part 15ac formed on the outer frame side surface 15a are in parallel with each other. Therefore, in the fixing of the operation board to the outer frame 15, by using the horizontal plane part 15ac, the operation board holding member 17 is not required to have a curved shape and, for example, can be formed in a vertically linear shape. This makes it possible to further simplify the shape of the operation board holding member 17 and at the same time, makes the assembly easy. The operation board holding member 17 may be fixed to the horizontal plane part 15ac by the screw, etc., or by using the locking mechanism, in the same configuration as shown in Fig. 4. The operation board 16 may be fixed to the operation board holding member 17 by the same member as the locking mechanism 6e of Fig. 2 or the screw 9 of Fig. 3.

[0046] Since the insulation plate 19 is placed on the support member 18 and the insulation plate 19 intervenes between the operation board 16 and the support member 18, necessary insulation performance can be secured easily between the back surface of the operation board 16 and the support member 18. Below the operation board 16, at the portion where the support member 18 is not present, it is unnecessary to dispose the insulation plate 19 below the operation board 16 when an insulation distance can be secured by securing a space distance between the operation board 16 and the control board 5. In this case, insulating parts of the operation board 16 can be configured further inexpensively by reducing an area of the insulation plate 19 to less than an area of the operation board 16.

[0047] With the support member 18 erected between, and fixed to, the front outer frame side surface 15a and the rear outer frame side surface 15a formed at the front part and the rear part of the outer frame 15, the front outer frame side surface 15a and the rear outer frame side surface 15a are connected and the rigidity of the outer frame 15 is increased against the load and impact from the front and the rear. At the time of installation in the kitchen, when the main body is taken out of a package box, the man carries it, usually holding the right and left outer frame side surfaces 15a. At this moment, the front and rear outer frame side surfaces 15a can hit the kitchen or furniture. According to the configuration of this second embodiment, however, since the rigidity of the front and rear outer frame side surfaces 15a has been increased, it is made possible to reduce the possibility of deformation of the outer frame 15 even in the case of hitting and to provide the induction-heating cooker of high reliability.

[0048] The operation board 16 has no wiring pattern 26 arranged on such part of its back surface at which the operation board 16 and the horizontal plane part 15ac overlap as viewed from straight above. For this reason,

a larger insulation distance can be secured between the horizontal plane part 15ac and a charging part of the operation board 16 and the induction-heating cooker can be provided with high reliability.

[0049] At least a part of the support member 18 may be composed of an electrically insulating material such as resin and in this case, since the insulation plate 19 is no longer necessary, a further inexpensive configuration of holding the operation board 16 can be realized. A whole of the support member may be composed of the electrically insulating material such as resin.

[0050] In place of the configuration of holding the operation board 16 by the operation board holding member 17 inserted into the outer frame throughhole 15e disposed on the horizontal plane part 15ac, a convex part 27 disposed in the horizontal plane part 15ac may be used as an example of the operation board holding part, as shown in the variation example of Fig. 10. Specifically, in the horizontal plane part 15ac, by deforming it to an upwardly protruding convex shape and disposing a screw hole 27a on the upper surface of the convex shape, the convex part 27 is formed. With a screw 10 caused to pass through the attachment hole 16a disposed on the operation board 16 and driven into the screw hole 27a, the operation board 16 is fixed to the horizontal plane part 15ac. Namely, the operation board holding part may be configured by inwardly forming the convex shape on the outer frame 15. In this case, as described above, with no wiring pattern 26 arranged above the horizontal plane part 15ac, the insulation distance can be secured between the wiring pattern 26 as the charging part and the outer frame 15 as a non-charging part. Since this configuration can omit the operation board holding member 17 inserted into the horizontal plane part 15ac, the induction-heating cooker can be configured inexpensively.

[0051] In the case of desiring to arrange the operation board 16 to the right and left sides, as shown in the variation example of Fig. 9, a reliable holding can be made by fixing the operation board holding member 17 to the horizontal plane part 15ac disposed on the front-side outer frame side surface 15a and the right and left outer frame side surfaces 15a and holding two sides of the operation board 16 by the horizontal plane part 15ac. This makes it possible to respond flexibly even in the case of desiring to change the layout of an operation part (not shown) depending on the destination and to provide the induction-heating cooker excellent in development of variations. In this case as well, the wiring pattern 26 on the back surface of the operation board 16 is not arranged above the horizontal plane part 15ac. By arranging so as to secure the insulation distance between the wiring pattern on the back surface of the operation board 16 and the control board 5, the resin-made case to house the operation board 16 becomes unnecessary that was used in the conventional induction-heating cooker. Therefore, the inexpensive and thin induction-heating cooker can be provided.

[0052] The coil unit 2a is placed on the spring 25 and the positioning of the coil unit 2a is performed by having the positioning projection 21 formed on the shield plate 24 inserted into the spring 25. This prevents the coil unit 2a from getting out of alignment at the time of assembly or during transportation. The coil unit 2a is caused to abut against the frame 23c by a restoring force of the spring 25. For this reason, the distance between the coil unit 2a and the back surface of the top plate 23a can be kept constant even when a measurement between the back surface of the top plate 23a and the horizontal plane part 15ac changes due to variations in size of the parts, when the outer frame 15 or the support member 18 deflects under weight so that the distance between the support member 18 and the back surface of the top plate 23a is widened, or when the top plate 23a itself is curved. Accordingly, heating performance of the induction-heating cooker and the heat generation amount of internal parts can be stabilized that are heavily dependent on the distance between the coil unit 2a and the object P to be heated. This makes it possible to provide the induction-heating cooker with small quality variation and high reliability.

[0053] The coil units 2a to 2d adopt the configuration of being supported by the outer frame side surface 15a and the support member 18. For this reason, by adjusting the arrangement of the support member 18 bridging the outer frame side surfaces 15a, it is made possible to cope with supporting of the coil units of various sizes and shapes. Therefore, the common use of parts in the induction-heating cooker becomes easy to achieve.

[0054] Usually, the outer frame 15 is formed of metal to secure the rigidity. In this second embodiment, since the horizontal plane part 15ac is disposed in the outer frame 15a, the outer frame bottom surface 15b can be configured to have a small area. Further, since the operation board 16, the coil units 2a to 2d, etc., are supported by the horizontal plane part 15ac, the load due to heavy objects can be distributed. For this reason, even if the outer frame side surface 15a extending below the horizontal plane part 15ac (second side surface 15ab) and the outer frame bottom surface 15b are formed of, for example, a resin-made member, strength can be kept. In this case, the weight of the induction-heating cooker as a whole can be reduced and at the same time, effect can be obtained in respect of enhancement of processability and reduction of material costs.

[0055] The spring 25 may be substituted by an elastic body such as rubber. If only the elastic body energizes the coil unit upward and constantly presses it against the top plate unit, likewise, variations in size of the parts can be absorbed to stabilize the distance between the coil unit 2a and the object P to be heated.

[0056] With the frame 23c fixed to a top plate support metal fitting 23b, the upward load created by pressing the flange 22 against the frame 23c is transmitted to the top plate support metal fitting 23b. For this reason, the upward load does not directly apply in such a direction that will peel off the top plate 23a from the top plate sup-

port metal fitting 23b. Therefore, even in a long-term usage, there is no separation between the top plate 23a and the top plate support metal fitting 23b, resulting in unstable state and the induction-heating cooker with high long-term reliability can be provided.

[0057] The frame 23c and the top plate support metal fitting 23b may be configured by one piece of parts. This reduces the parts count and makes it possible to configure the induction-heating cooker of high productivity.

[0058] The above description was made citing as an example the case of the space surrounding the operation board being opened in the horizontal direction inside the outer frame 4 but, in the operation board held by the operation board holding member, at least a part of the space surrounding the operation board may be opened in the horizontal direction.

[0059] Out of the various embodiments described above, arbitrary embodiments can appropriately be combined to exhibit their respective effects.

INDUSTRIAL APPLICABILITY

[0060] As described above, the induction-heating cooker according to the present invention, capable of fixing the operation board to the outer frame side surface with a simple configuration and therefore, capable of reducing the space occupied by the operation board holding part within the main body, can be applied to all types of applications of the induction-heating cooker.

EXPLANATIONS OF LETTERS OR NUMERALS

[0061]

P	object to be heated
1	top plate
2	coil unit
2a, 2b, 2c, 2d	coil unit
3	operation board
4	outer frame
4a	outer frame side surface
4b	outer frame bottom surface
4c	opening
4d	screw hole
5	control board
6	operation board holding member (holding member (operation board holding part))
6a	horizontal holding part
6b	fixing part
6bb	attachment hole
6c	vertical holding part
6d	protruding part
6e	locking mechanism
6f	rotation preventing part
7	outer frame throughhole
8	attachment hole
9	screw
10	screw
11	control board holding member
12	top plate support metal fitting
13	top plate unit
14	terminal
15	outer frame
15a	outer frame side surface
15aa	first side surface
15ab	second side surface
15ac	horizontal plane part
15b	outer frame bottom surface
15c	opening
15d	flange
15e	outer frame throughhole
16	operation board
16a	attachment hole
17	operation board holding member (holding member (operation board holding part))
17a	fixing member
18	support member
18a	support member throughhole
19	insulation plate
19a	insulation plate throughhole
20	projection
21	positioning projection
22	flange
23	top plate unit
23	top plate
23b	top plate support metal fitting
23c	frame
24	shield plate
25	spring
26	wiring pattern
27	convex part
27a	screw hole

Claims

1. An induction-heating cooker comprising:

an outer frame (4; 15) having an opening (4c; 15c) in its upper part and being formed in a bottomed box shape;

a top plate (1; 23) that covers the opening (4c; 15c) of the outer frame (4; 15) and on which an object to be heated (P) is placeable;

a coil unit (2, 2a, 2b, 2c, 2d) that is arranged below the top plate (1; 23) for induction-heating the object to be heated (P);

a control board (5) that is arranged on an outer frame bottom surface (4b, 15b) and that is arranged below the top plate (1; 23), the control board (5) is held by a control board holding member (11), wherein the control board (5) supplies high-frequency current to the coil unit (2, 2a, 2b, 2c, 2d);

an operation board (3, 16) that is located below the top plate (1; 23) and that is arranged in front of the coil unit (2, 2a, 2b, 2c, 2d), the operation board (3, 16) composes a terminal (14) that accepts operation input from a user, and
an operation board holding part (6; 17) that supports and holds the operation board (3; 16) from the lower surface side of the operation board is disposed on an outer frame side surface (4a; 15a) of the outer frame (4; 15),
wherein at least a part of a space surrounding the operation board (3; 16) is opened in the horizontal direction inside the outer frame (4; 15);
wherein an outer frame throughhole (7; 15e) is disposed on the outer frame side surface (4a; 15a); and
wherein one end of the operation board holding part (6; 17) is disposed so as to go through the outer frame throughhole (7; 15e);
characterized in that the other end of the operation board holding part (6; 17) is fixed to the operation board (3; 16), and
the operation board holding part (6; 17) is configured so that a portion from the one end to the other end is enabled to go through the outer throughhole (7; 15e).

2. The induction-heating cooker according to claim 1, wherein the operation board holding part (6; 17) is fixed to the outer frame side surface (4a; 15a).

3. The induction-heating cooker according to claim 1 or 2, comprising a metallic support member (18) arranged between a left outer frame side surface (15a) and a right outer frame side surface (15a) of the outer frame (15) and connecting a front outer frame side surface (15a) and a rear outer frame side surface (15a), wherein
a part of the lower surface side of the operation board (16) is held by the operation board holding part (17) while the other part of the lower surface side of the operation board (16) is held by the support member (18) by interposing an electrically insulating material.

4. The induction-heating cooker according to claim 1 or 2, comprising a support member (18) made of resin as an electrically insulating material arranged between a left outer frame side surface (15a) and a right outer frame side surface (15a) of the outer frame (15) and connecting a front outer frame side surface (15a) and a rear outer frame side surface (15a), wherein
a part of the lower surface side of the operation board (16) is held by the operation board holding part (17) while the other part of the lower surface side of the operation board (16) is held by the support member (18).

5. The induction-heating cooker according to claim 3 or 4, wherein the support member (18) supports the coil unit (2, 2a, 2b, 2c, 2d).

6. The induction-heating cooker according to claim 3 or 4, further comprising a fixing member (17a) passing through a throughhole disposed on the support member (18) and fixed to the support member (18), wherein
the fixing member (17a) supports and holds the operation board (16) from the lower surface side.

7. The induction-heating cooker according to claim 1 or 2, wherein the outer frame side surface (15a) has a horizontal plane part (15ac) as a horizontal plane formed substantially horizontally between a lower end of a first side surface (15aa) and an upper end of a second side surface (15ab) formed on the inner side than the first side surface (15aa), and the operation board holding part (17) is disposed on the horizontal plane part (15ac).

8. The induction-heating cooker according to claim 7, wherein the outer frame (15) has the horizontal plane part (15ac) on a front outer frame side surface (15a), and on a left outer frame side surface (15a) or a right outer frame side surface (15a), and
the operation board (16) is held by the operation board holding part (17) disposed on the horizontal plane part (15ac) of the front outer frame side surface (15a), and the operation board holding part (17) disposed on the horizontal plane part (15ac) of the left outer frame side surface (15a) or the right outer frame side surface (15a).

9. The induction-heating cooker according to claim 7 or 8, wherein the operation board (16) is held by the operation board holding part (17) on the horizontal plane part (15ac) so that a wiring pattern (26) of the operation board (16) is not overlapping the horizontal plane part (15ac) on which the operation board holding part (17) is disposed, as viewed from above.

10. The induction-heating cooker according to claim 3 or 4, wherein the front outer frame side surface (15a) and the rear outer frame side surface (15a) have a horizontal plane part (15ac) as a horizontal plane formed substantially horizontally between a lower end of a first side surface (15aa) and an upper end of a second side surface (15ab) formed on the inner side than the first side surface (15aa), and both ends of the support member (18) are placed on the horizontal plane part (15ac) of the front outer frame side surface (15a) and the horizontal plane part (15ac) of the rear outer frame side surface (15a).

11. The induction-heating cooker according to claim 1, wherein the outer frame side surface (15a) has a

horizontal plane part (15ac) as a horizontal plane formed substantially horizontally between a lower end of a first side surface (15aa) and an upper end of a second side surface (15ab) formed on the inner side than the first side surface (15aa), and an upwardly protruding convex part (27) is formed on the horizontal plane part (15ac), and the convex part (27) supports and holds the operation board (16) from the lower surface side as the operation board holding part (17).

12. The induction-heating cooker according to any one of claims 1 to 11, wherein the operation board (3, 16) has an attachment hole (6bb, 8, 16a), and the operation board (3, 16) is fixed to the operation board holding part (6, 17) by using the attachment hole (6bb, 8, 16a).

Patentansprüche

1. Induktionsherd, umfassend:

einen Außenrahmen (4; 15), der in seinem oberen Teil eine Öffnung (4c; 15c) aufweist und die Form eines Kastens mit Boden hat;
eine obere Platte (1; 23), die die Öffnung (4c; 15c) des Außenrahmens (4; 15) bedeckt und auf der ein zu erwärmender Gegenstand (P) platziert werden kann;
eine Spuleneinheit (2, 2a, 2b, 2c, 2d), die zum Induktionserwärmen des zu erwärmenden Gegenstands (P) unter der oberen Platte (1; 23) angeordnet ist;

eine Steuerplatine (5), die auf einer Außenrahmenbodenfläche (4b, 15b) angeordnet ist und die unter der oberen Platte (1; 23) angeordnet ist, wobei die Steuerplatine (5) von einem Steuerplatinenhalteelement (11) gehalten wird, wobei die Steuerplatine (5) die Spuleneinheit (2, 2a, 2b, 2c, 2d) mit Hochfrequenzstrom versorgt;
eine Bedienungsplatine (3, 16), die sich unter der oberen Platte (1; 23) befindet und die vor der Spuleneinheit (2, 2a, 2b, 2c, 2d) angeordnet ist, wobei die Bedienungsplatine (3, 16) ein Endgerät (14) bildet, das Bedieneingaben von einem Benutzer akzeptiert, und
wobei ein Bedienungsplatinenhalteteil (6; 17), das die Bedienungsplatine (3; 16) von der Unterseite der Bedienungsplatine her trägt und hält, auf einer Außenrahmenseitenfläche (4a; 15a) des Außenrahmens (4; 15) angeordnet ist,
wobei zumindest ein Teil eines die Bedienungsplatine (3; 16) umgebenden Raums in der horizontalen Richtung innerhalb des Außenrahmens (4; 15) geöffnet ist;

wobei ein Außenrahmendurchgangsloch (7; 15e) auf der Außenrahmenseitenfläche (4a; 15a) angeordnet ist; und
wobei ein Ende des Bedienungsplatinenhalteteils (6; 17) derart angeordnet ist, dass es durch das Außenrahmendurchgangsloch (7; 15e) verläuft;
dadurch gekennzeichnet, dass das andere Ende des Bedienungsplatinenhalteteils (6; 17) an der Bedienungsplatine (3; 16) befestigt ist und
das Bedienungsplatinenhalteteil (6; 17) derart gestaltet ist, dass ein Abschnitt von dem einen Ende zu dem anderen Ende durch das äußere Durchgangsloch (7; 15e) verlaufen kann.

2. Induktionsherd nach Anspruch 1, wobei das Bedienungsplatinenhalteteil (6; 17) an der Außenrahmenseitenfläche (4a; 15a) befestigt ist.

3. Induktionsherd nach Anspruch 1 oder 2, umfassend ein metallisches Tragelement (18), das zwischen einer linken Außenrahmenseitenfläche (15a) und einer rechten Außenrahmenseitenfläche (15a) des Außenrahmens (15) angeordnet ist und eine vordere Außenrahmenseitenfläche (15a) und eine hintere Außenrahmenseitenfläche (15a) verbindet, wobei ein Teil der Unterseite der Bedienungsplatine (16) von dem Bedienungsplatinenhalteteil (17) gehalten wird, während der andere Teil der Unterseite der Bedienungsplatine (16) von dem Tragelement (18) durch Dazwischenfügen eines elektrisch isolierenden Materials gehalten wird.

4. Induktionsherd nach Anspruch 1 oder 2, umfassend ein aus Harz als einem elektrisch isolierenden Material bestehendes Tragelement (18), das zwischen einer linken Außenrahmenseitenfläche (15a) und einer rechten Außenrahmenseitenfläche (15a) des Außenrahmens (15) angeordnet ist und eine vordere Außenrahmenseitenfläche (15a) und eine hintere Außenrahmenseitenfläche (15a) verbindet, wobei ein Teil der Unterseite der Bedienungsplatine (16) von dem Bedienungsplatinenhalteteil (17) gehalten wird, während der andere Teil der Unterseite der Bedienungsplatine (16) von dem Tragelement (18) gehalten wird.

5. Induktionsherd nach Anspruch 3 oder 4, wobei das Tragelement (18) die Spuleneinheit (2, 2a, 2b, 2c, 2d) trägt.

6. Induktionsherd nach Anspruch 3 oder 4, ferner umfassend ein Befestigungselement (17a), das durch ein auf dem Tragelement (18) angeordnetes Durch-

gangsloch verläuft und an dem Tragelement (18) befestigt ist, wobei
das Befestigungselement (17a) die Bedienungsplatine (16) von der Unterseite her trägt und hält.

7. Induktionsherd nach Anspruch 1 oder 2, wobei die Außenrahmenseitenfläche (15a) einen horizontalen ebenen Teil (15ac) als eine horizontale Ebene aufweist, die im Wesentlichen horizontal zwischen einem unteren Ende einer ersten Seitenfläche (15aa) und einem oberen Ende einer zweiten Seitenfläche (15ab) ausgebildet ist, die auf der Innenseite bezogen auf die erste Seitenfläche (15aa) ausgebildet ist, und wobei das Bedienungsplatinenhalteteil (17) auf dem horizontalen ebenen Teil (15ac) angeordnet ist.

8. Induktionsherd nach Anspruch 7, wobei der Außenrahmen (15) den horizontalen ebenen Teil (15ac) auf einer vorderen Außenrahmenseitenfläche (15a) und auf einer linken Außenrahmenseitenfläche (15a) oder einer rechten Außenrahmenseitenfläche (15a) aufweist, und
wobei die Bedienungsplatine (16) von dem Bedienungsplatinenhalteteil (17), das auf dem horizontalen ebenen Teil (15ac) der vorderen Außenrahmenseitenfläche (15a) angeordnet ist, und dem Bedienungsplatinenhalteteil (17) gehalten wird, das auf dem horizontalen ebenen Teil (15ac) der linken Außenrahmenseitenfläche (15a) oder der rechten Außenrahmenseitenfläche (15a) angeordnet ist.

9. Induktionsherd nach Anspruch 7 oder 8, wobei die Bedienungsplatine (16) von dem Bedienungsplatinenhalteteil (17) auf dem horizontalen ebenen Teil (15ac) derart gehalten wird, dass ein Verdrahtungsmuster (26) der Bedienungsplatine (16) den horizontalen ebenen Teil (15ac), auf dem das Bedienungsplatinenhalteteil (17) angeordnet ist, von oben betrachtet nicht überlagert.

10. Induktionsherd nach Anspruch 3 oder 4, wobei die vordere Außenrahmenseitenfläche (15a) und die hintere Außenrahmenseitenfläche (15a) einen horizontalen ebenen Teil (15ac) als eine horizontale Ebene aufweisen, die im Wesentlichen horizontal zwischen einem unteren Ende einer ersten Seitenfläche (15aa) und einem oberen Ende einer zweiten Seitenfläche (15ab) ausgebildet ist, die auf der Innenseite bezogen auf die erste Seitenfläche (15aa) ausgebildet ist, und wobei beide Enden des Tragelements (18) auf dem horizontalen ebenen Teil (15ac) der vorderen Außenrahmenseitenfläche (15a) und dem horizontalen ebenen Teil (15ac) der hinteren Außenrahmenseitenfläche (15a) platziert sind.

11. Induktionsherd nach Anspruch 1, wobei die Außenrahmenseitenfläche (15a) einen horizontalen ebenen Teil (15ac) als eine horizontale Ebene aufweist, die im Wesentlichen horizontal zwischen einem unteren Ende einer ersten Seitenfläche (15aa) und einem oberen Ende einer zweiten Seitenfläche (15ab) ausgebildet ist, die auf der Innenseite bezogen auf die erste Seitenfläche (15aa) ausgebildet ist, und wobei ein nach oben vorstehender konvexer Teil (27) auf dem horizontalen ebenen Teil (15ac) ausgebildet ist und wobei der konvexe Teil (27) die Bedienungsplatine (16) von der Unterseite her als das Bedienungsplatinenhalteteil (17) trägt und hält.

12. Induktionsherd nach einem der Ansprüche 1 bis 11, wobei die Bedienungsplatine (3, 16) ein Befestigungsloch (6bb, 8, 16a) aufweist und wobei die Bedienungsplatine (3, 16) an dem Bedienungsplatinenhalteteil (6, 17) unter Verwendung des Befestigungslochs (6bb, 8, 16a) befestigt ist.

Revendications

1. Taque de cuisson à chauffage par induction comprenant :

un cadre externe (4 ; 15) présentant une ouverture (4c ; 15c) dans sa partie supérieure et formé dans une forme de boîte à fond ;
une plaque supérieure (1 ; 23) qui recouvre l'ouverture (4c ; 15c) du cadre externe (4 ; 15) et sur laquelle un objet à chauffer (P) peut être placé ;
une unité de bobine (2, 2a, 2b, 2c, 2d) qui est agencée au-dessous de la plaque supérieure (1 ; 23) pour chauffer par induction l'objet à chauffer (P) ;
une carte de commande (5) qui est agencée sur une surface de fond (4b, 15b) de cadre externe et qui est agencée au-dessous de la plaque supérieure (1 ; 23), la carte de commande (5) étant maintenue par un élément de maintien (11) de carte de commande, la carte de commande (5) fournissant un courant haute fréquence à l'unité de bobine (2, 2a, 2b, 2c, 2d) ;
une carte de fonctionnement (3, 16) qui est située au-dessous de la plaque supérieure (1 ; 23) et qui est agencée devant l'unité de bobine (2, 2a, 2b, 2c, 2d), la carte de fonctionnement (3, 16) composant un terminal (14) qui accepte une entrée de fonctionnement provenant d'un utilisateur et
une partie de maintien (6 ; 17) de carte de fonctionnement, qui supporte et maintient la carte de fonctionnement (3 ; 16) à partir du côté de surface inférieure de la carte de fonctionnement, est disposée sur une surface latérale (4a ; 15a) de cadre externe du cadre externe (4 ; 15),

au moins une partie d'un espace entourant la carte de fonctionnement (3 ; 16) étant ouverte dans la direction horizontale à l'intérieur du cadre externe (4 ; 15) ;
un trou traversant (7 ; 15e) de cadre externe étant disposé sur la surface latérale (4a ; 15a) de cadre externe ; et
une extrémité de la partie de maintien (6 ; 17) de carte de fonctionnement étant disposée de façon à passer à travers le trou traversant (7 ; 15e) de cadre externe ;
caractérisée en ce que l'autre extrémité de la partie de maintien (6 ; 17) de carte de fonctionnement est fixée à la carte de fonctionnement (3 ; 16) et
la partie de maintien (6 ; 17) de carte de fonctionnement est conçue de telle sorte qu'une partie allant de ladite une extrémité vers l'autre extrémité peut passer à travers le trou traversant externe (7 ; 15e).

2. Taque de cuisson à chauffage par induction selon la revendication 1, la partie de maintien (6 ; 17) de carte de fonctionnement étant fixée à la surface latérale (4a ; 15a) de cadre externe.

3. Taque de cuisson à chauffage par induction selon la revendication 1 ou 2, comprenant un élément support métallique (18) agencé entre une surface latérale gauche (15a) de cadre externe et une surface latérale droite (15a) de cadre externe du cadre externe (15) et reliant une surface latérale avant (15a) de cadre externe et une surface latérale arrière (15a) de cadre externe,
une partie du côté de surface inférieure de la carte de fonctionnement (16) étant maintenue par la partie de maintien (17) de carte de fonctionnement tandis que l'autre partie du côté de surface inférieure de la carte de fonctionnement (16) est maintenue par l'élément support (18) par interposition d'un matériau électriquement isolant.

4. Taque de cuisson à chauffage par induction selon la revendication 1 ou 2, comprenant un élément support (18) constitué de résine en tant que matériau électriquement isolant, agencé entre une surface latérale gauche (15a) de cadre externe et une surface latérale droite (15a) de cadre externe du cadre externe (15) et reliant une surface latérale avant (15a) de cadre externe et une surface latérale arrière (15a) de cadre externe,
une partie du côté de surface inférieure de la carte de fonctionnement (16) étant maintenue par la partie de maintien (17) de carte de fonctionnement tandis que l'autre partie du côté de surface inférieure de la carte de fonctionnement (16) est maintenue par l'élément support (18).

5. Taque de cuisson à chauffage par induction selon la revendication 3 ou 4, l'élément support (18) supportant l'unité de bobine (2, 2a, 2b, 2c, 2d).

6. Taque de cuisson à chauffage par induction selon la revendication 3 ou 4, comprenant en outre un élément de fixation (17a) passant à travers un trou traversant disposé sur l'élément support (18) et fixé à l'élément support (18),
l'élément de fixation (17a) supportant et maintenant la carte de fonctionnement (16) à partir du côté de surface inférieure.

7. Taque de cuisson à chauffage par induction selon la revendication 1 ou 2, la surface latérale (15a) de cadre externe présentant une partie de plan horizontal (15ac) en tant que plan horizontal formé sensiblement horizontalement entre une extrémité inférieure d'une première surface latérale (15aa) et une extrémité supérieure d'une seconde surface latérale (15ab) formée sur le côté interne par rapport à la première surface latérale (15aa) et la partie de maintien (17) de carte de fonctionnement étant disposée sur la partie de plan horizontal (15ac).

8. Taque de cuisson à chauffage par induction selon la revendication 7, le cadre externe (15) présentant la partie de plan horizontal (15ac) sur une surface latérale avant (15a) de cadre externe et sur une surface latérale gauche (15a) de cadre externe ou une surface latérale droite (15a) de cadre externe et
la carte de fonctionnement (16) étant maintenue par la partie de maintien (17) de carte de fonctionnement disposée sur la partie de plan horizontal (15ac) de la surface latérale avant (15a) de cadre externe et la partie de maintien (17) de carte de fonctionnement disposée sur la partie de plan horizontal (15ac) de la surface latérale gauche (15a) de cadre externe ou de la surface latérale droite (15a) de cadre externe.

9. Taque de cuisson à chauffage par induction selon la revendication 7 ou 8, la carte de fonctionnement (16) étant maintenue par la partie de maintien (17) de carte de fonctionnement sur la partie de plan horizontal (15ac) de telle sorte qu'un motif de câblage (26) de la carte de fonctionnement (16) ne chevauche pas la partie de plan horizontal (15ac) sur laquelle la partie de maintien (17) de carte de fonctionnement est disposée, en vue de dessus.

10. Taque de cuisson à chauffage par induction selon la revendication 3 ou 4, la surface latérale avant (15a) de cadre externe et la surface latérale arrière (15a) de cadre externe présentant une partie de plan horizontal (15ac) en tant que plan horizontal formé sensiblement horizontalement entre une extrémité inférieure d'une première surface latérale (15aa) et une extrémité supérieure d'une seconde surface la-

térale (15ab) formée sur le côté interne par rapport à la première surface latérale (15aa) et les deux extrémités de l'élément support (18) étant placées sur la partie de plan horizontal (15ac) de la surface latérale avant (15a) de cadre externe et la partie de plan horizontal (15ac) de la surface latérale arrière (15a) de cadre externe.

11. Taque de cuisson à chauffage par induction selon la revendication 1, la surface latérale (15a) de cadre externe présentant une partie de plan horizontal (15ac) en tant que plan horizontal formé sensiblement horizontalement entre une extrémité inférieure d'une première surface latérale (15aa) et une extrémité supérieure d'une seconde surface latérale (15ab) formée sur le côté interne par rapport à la première surface latérale (15aa) et une partie convexe (27) faisant saillie vers le haut étant formée sur la partie de plan horizontal (15ac) et la partie convexe (27) supportant et maintenant la carte de fonctionnement (16) à partir du côté de surface inférieure en tant que partie de maintien (17) de carte de fonctionnement.

12. Taque de cuisson à chauffage par induction selon l'une quelconque des revendications 1 à 11, la carte de fonctionnement (3, 16) présentant un trou de fixation (6bb, 8, 16a) et la carte de fonctionnement (3, 16) étant fixée à la partie de maintien (6, 17) de carte de fonctionnement à l'aide du trou de fixation (6bb, 8, 16a).

Fig. 1

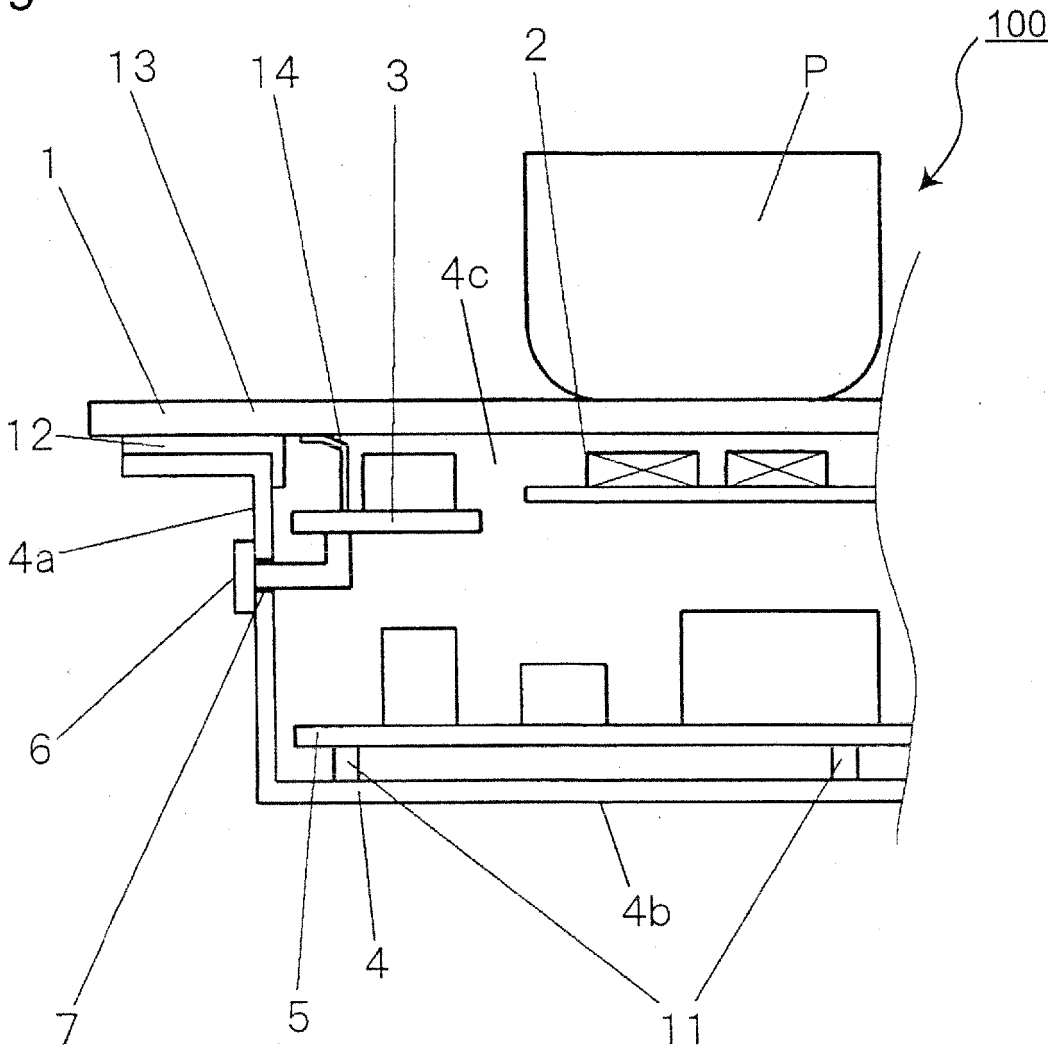


Fig. 2

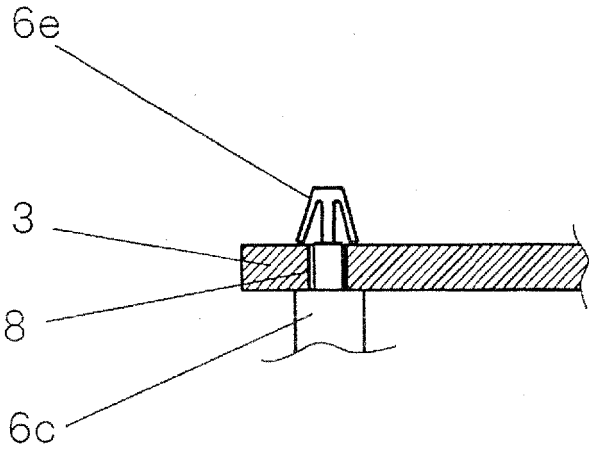


Fig. 3

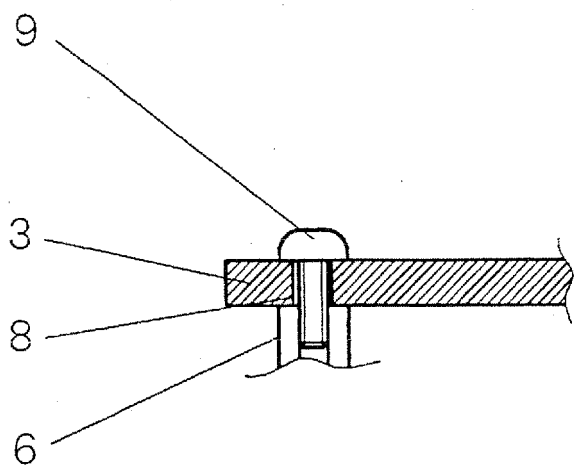


Fig. 4

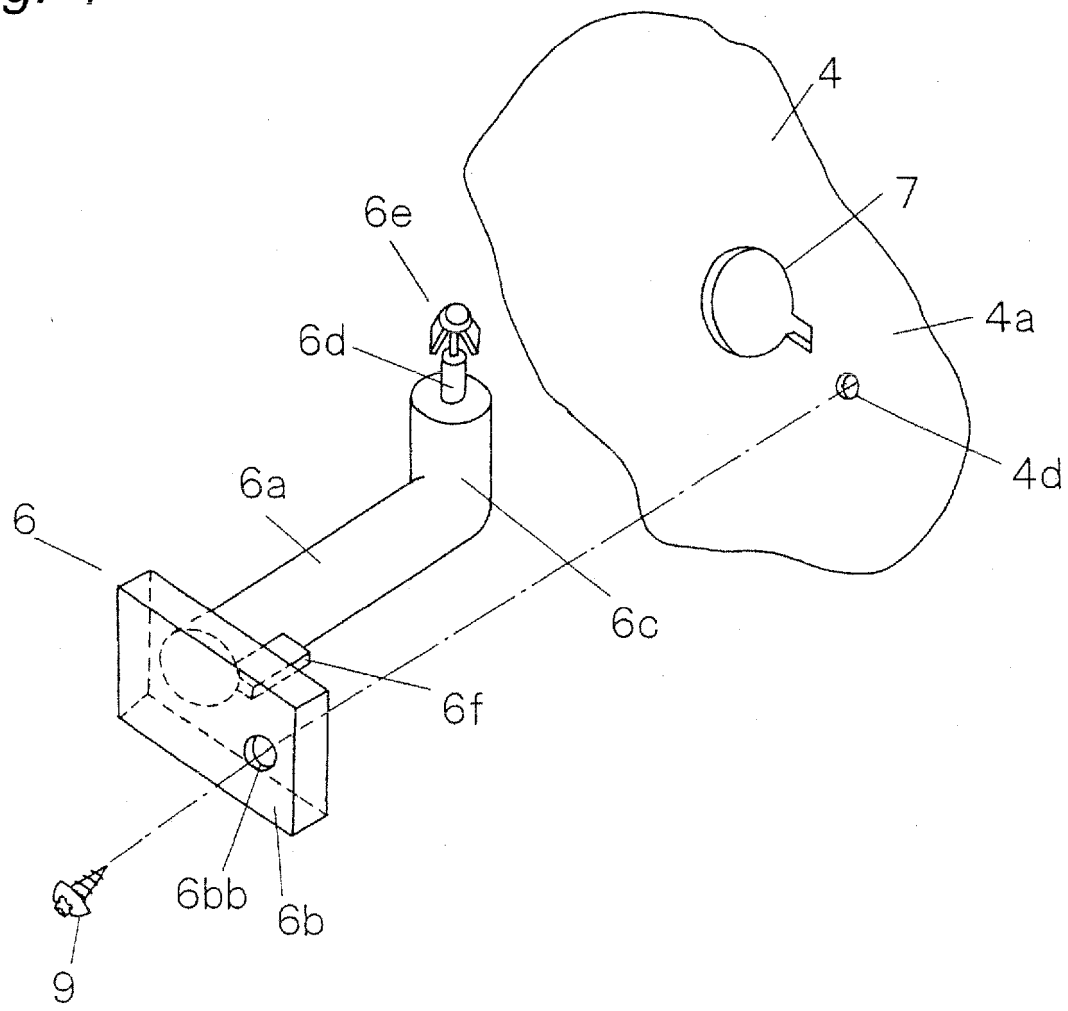


Fig.5

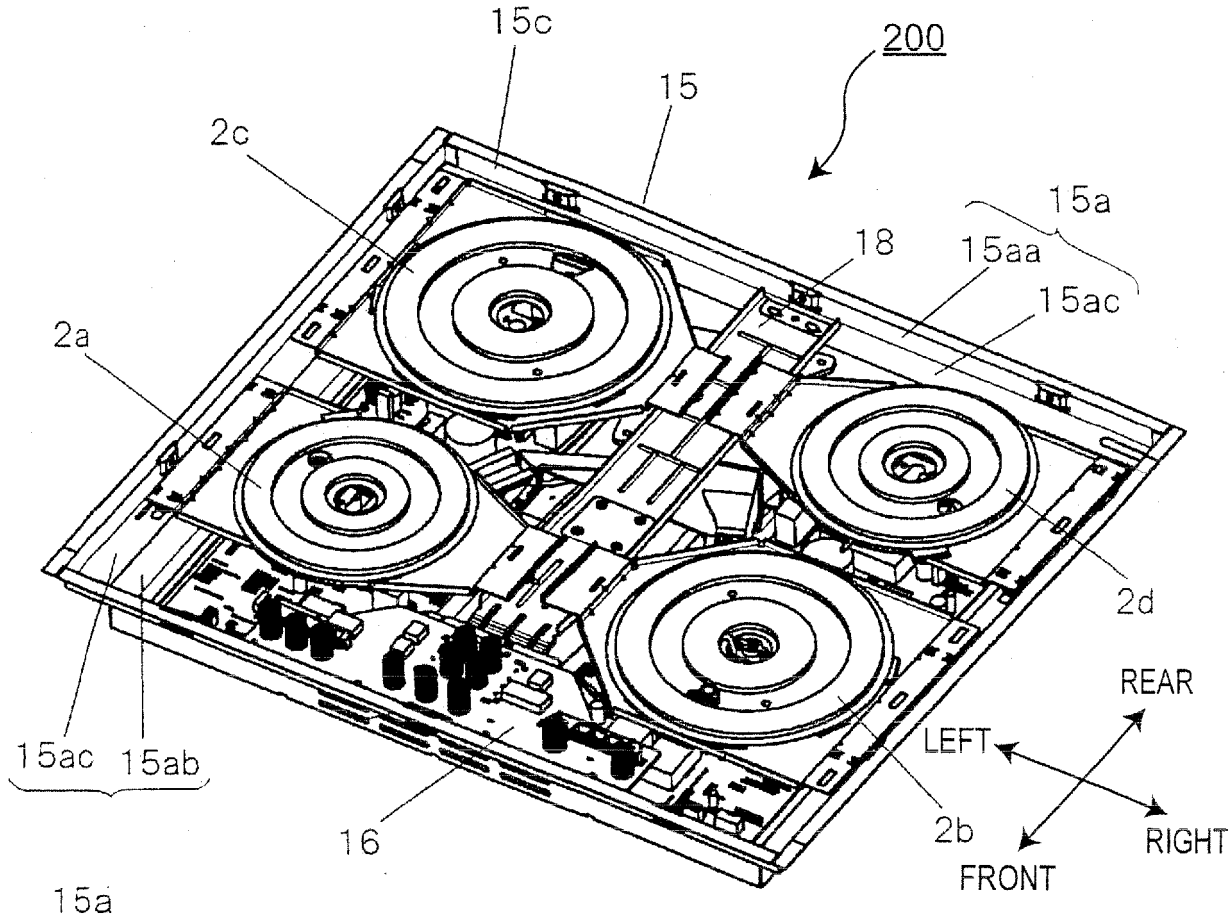

15c
200
15
2c
15a
18
15aa
15ac
2a
2d
REAR
LEFT
RIGHT
FRONT
15ac
15ab
16
2b
15a

Fig.6

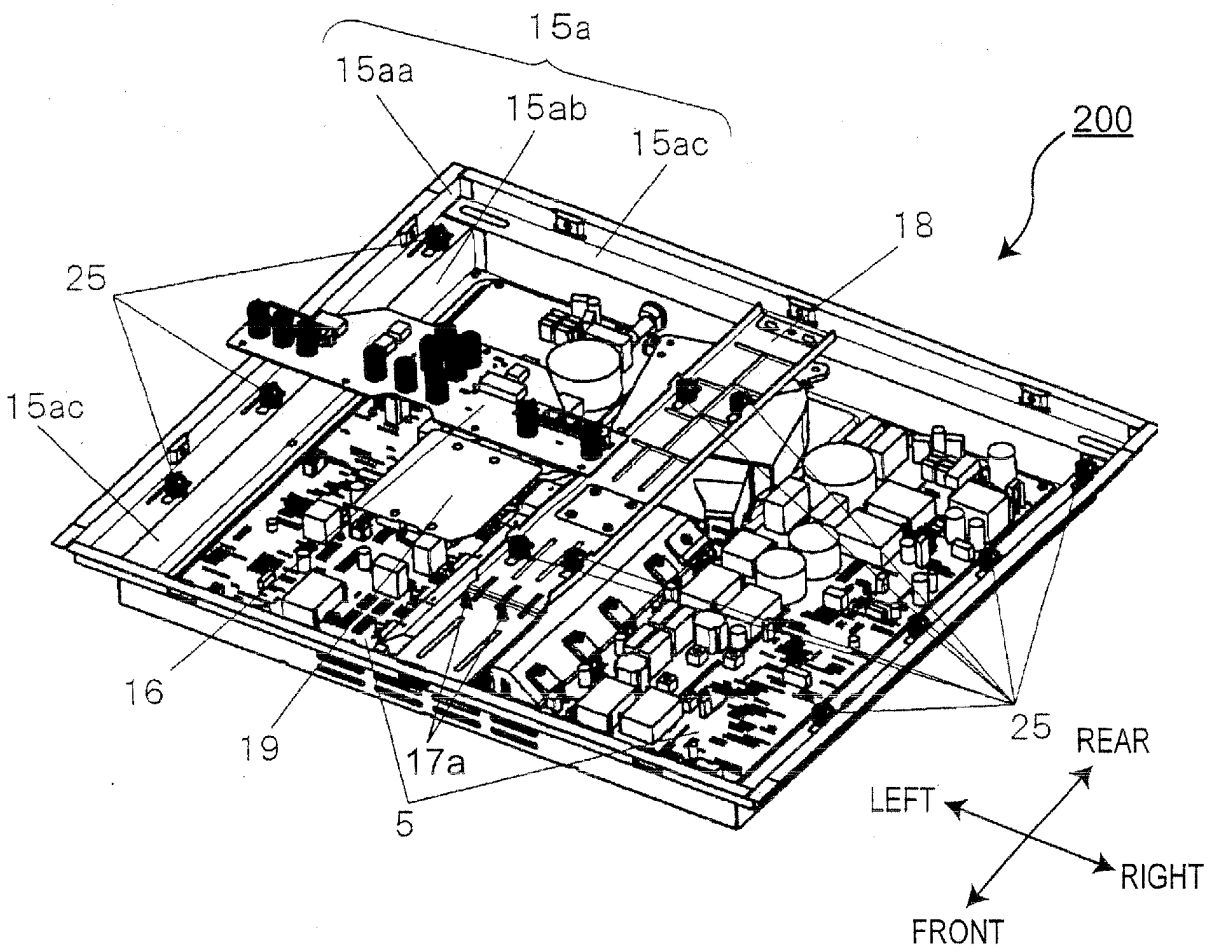

15a
15aa
15ab
15ac
200
18
25
15ac
16
19
17a
5
25
REAR
LEFT
RIGHT
FRONT

Fig.7

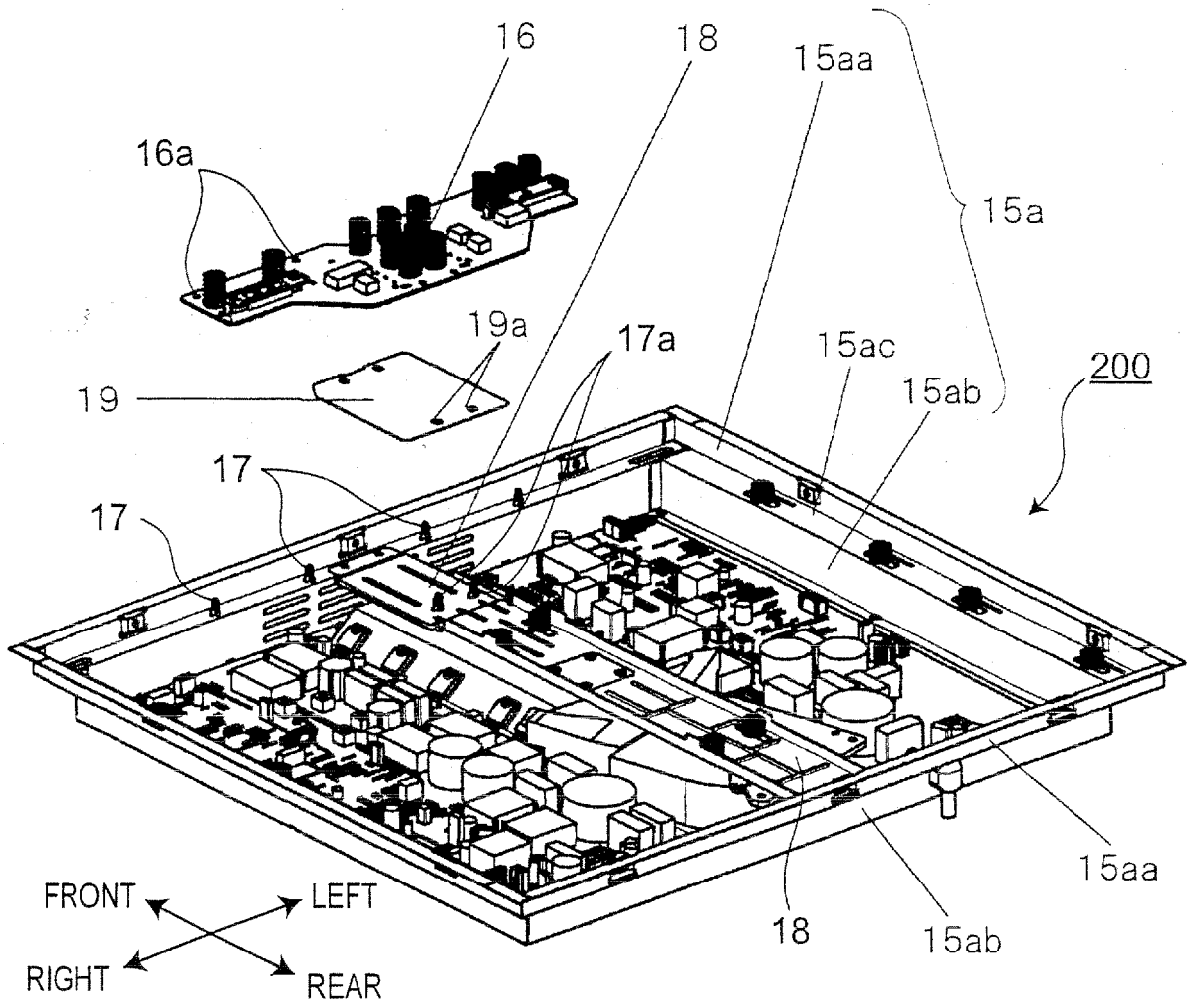

16
18
15aa
16a
15a
19a
17a
15ac
19
15ab
200
17
17
FRONT
LEFT
RIGHT
REAR
18
15ab
15aa

Fig. 8

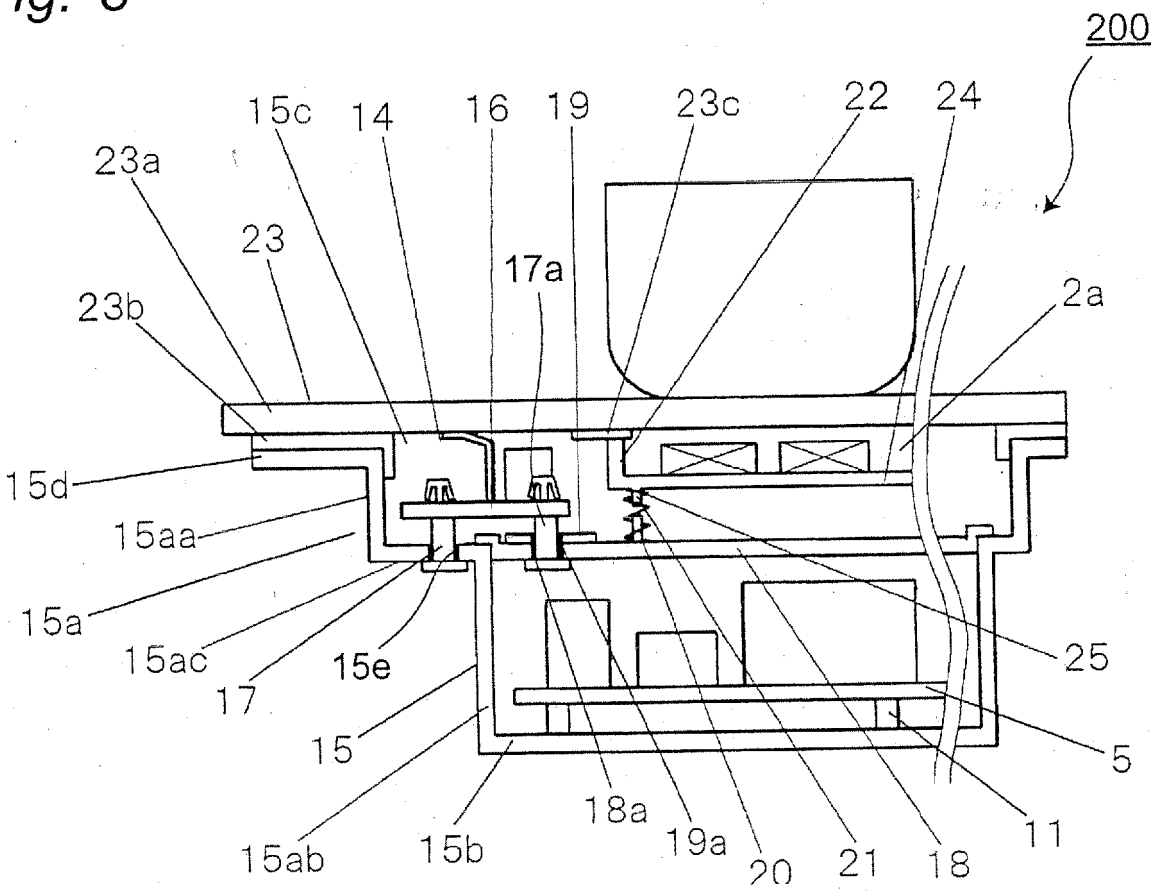

200
15c
14
16
19
23c
22
24
23a
23
17a
2a
23b
15d
15aa
15a
15ac
17
15e
25
15
5
18a
11
15ab
15b
19a
20
21
18

Fig.9

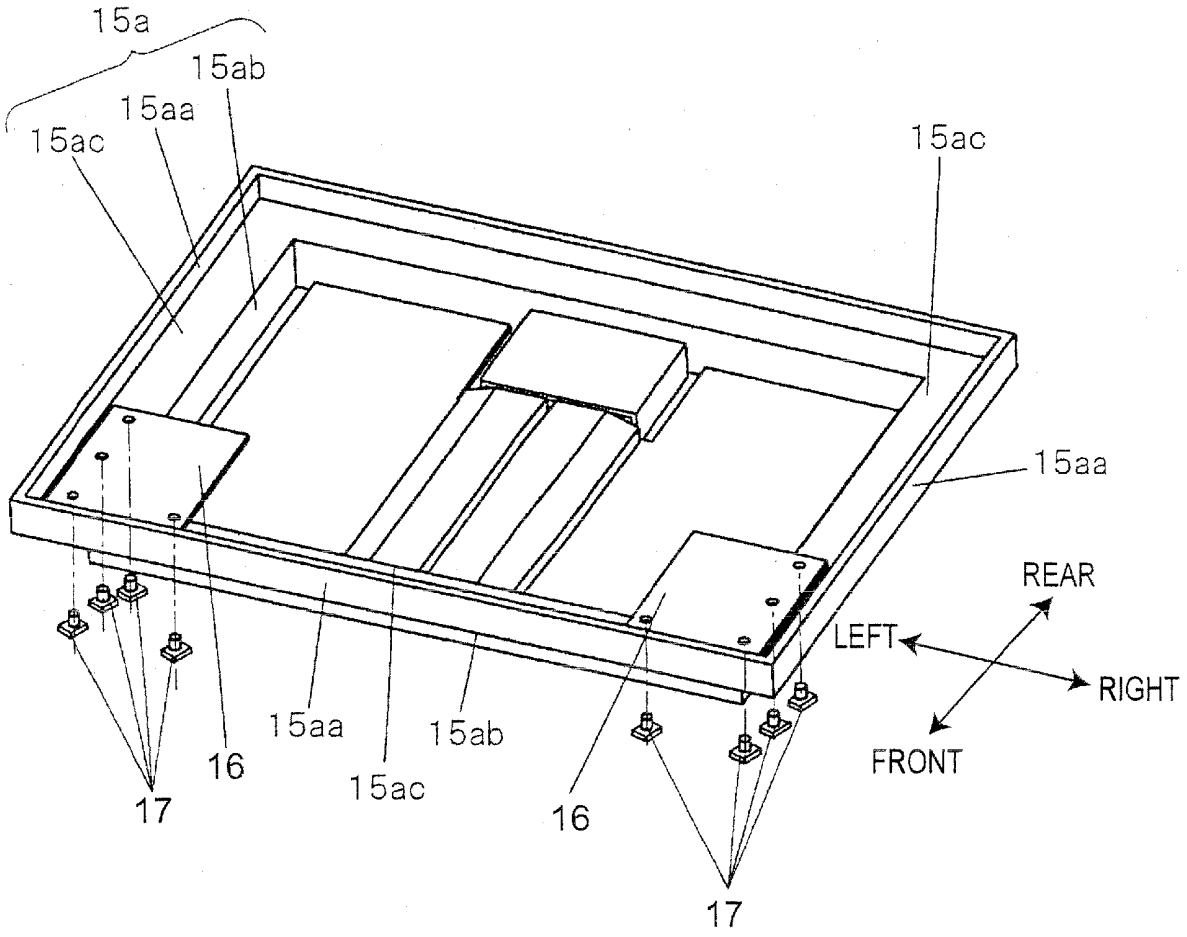

15a
15ab
15aa
15ac
15ac
15aa
REAR
LEFT
RIGHT
FRONT
15aa
15ab
16
15ac
17
16
17

Fig. 10

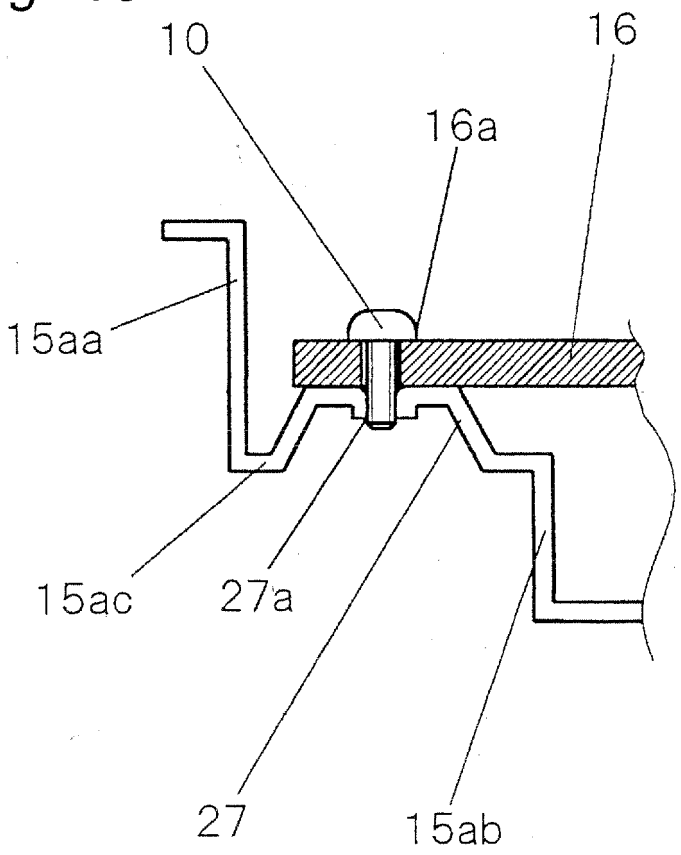


Fig.11

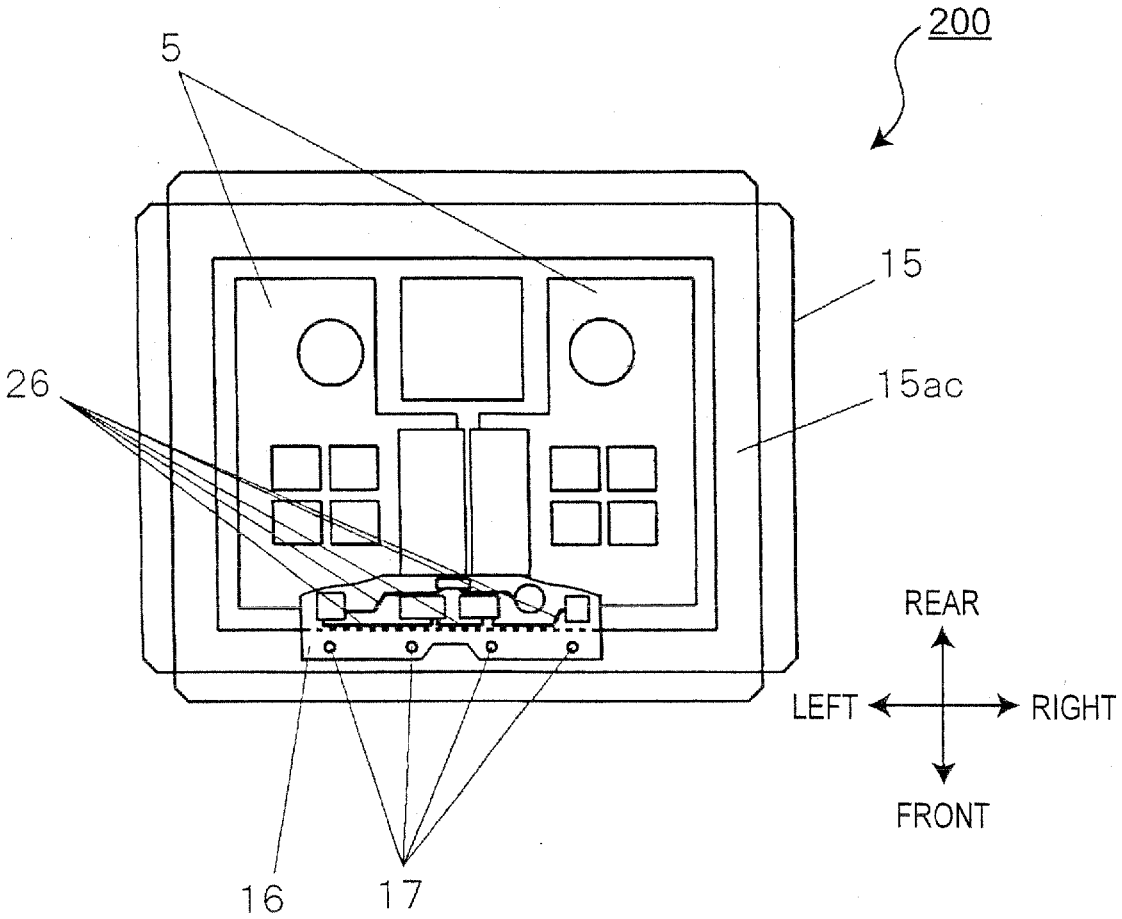
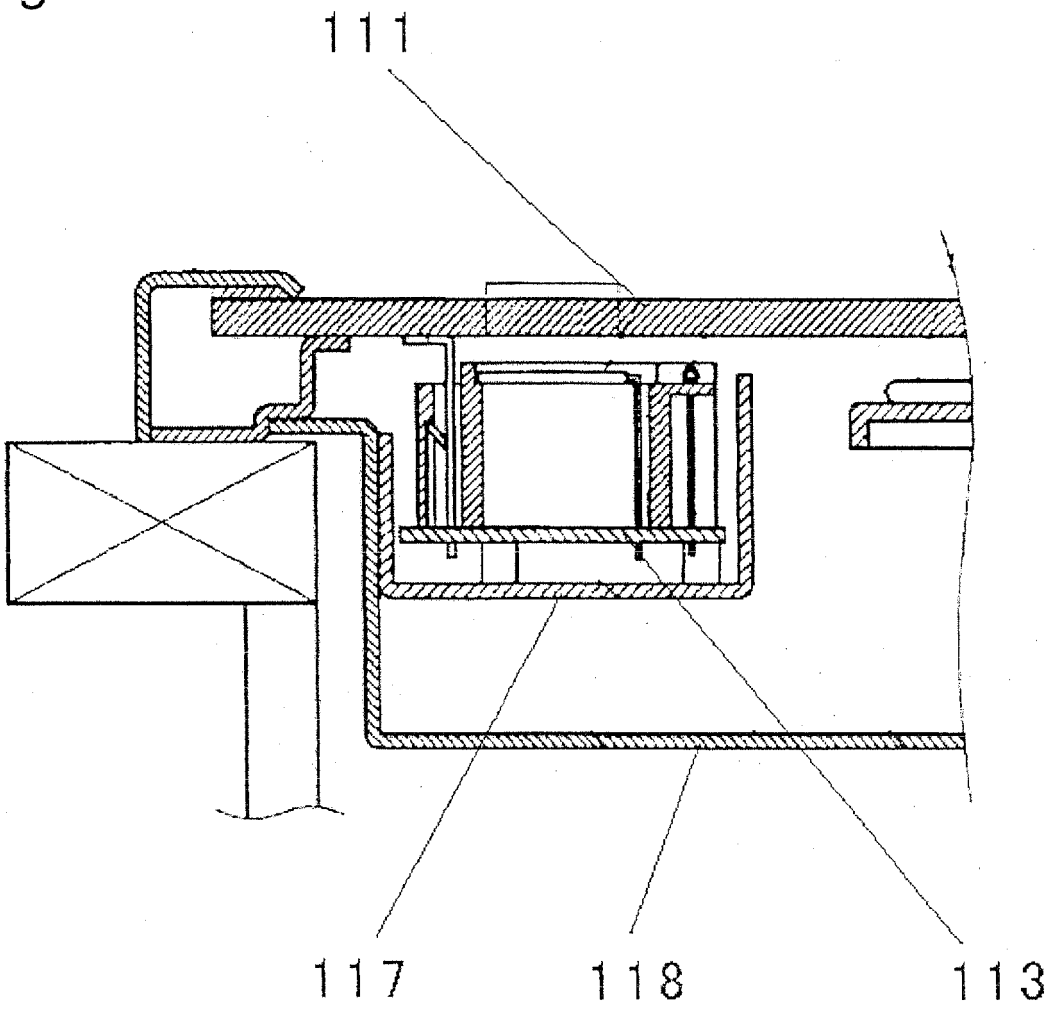


Fig. 12



REFERENCES CITED IN THE DESCRIPTION

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- EP 2427032 A2 **[0006]**
- EP 2578949 A1 **[0006]**