(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 284 118 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
**29.11.2023 Bulletin 2023/48**

(21) Application number: **22781459.7**

(22) Date of filing: **22.03.2022**

(51) International Patent Classification (IPC):
***H05B 6/12*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
**H05B 6/12**

(86) International application number:
**PCT/KR2022/003885**

(87) International publication number:
**WO 2022/211339 (06.10.2022 Gazette 2022/40)**

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

(30) Priority: **29.03.2021 KR 20210040732**
**21.05.2021 KR 20210065680**

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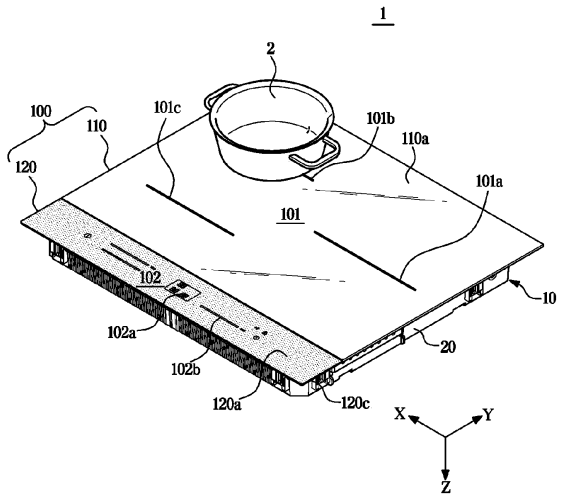
# (54) COOKING APPLIANCE

(57) Disclosed is a cooking apparatus in which a plurality of glasses may be partially replaced by a disclosed glass structure.

The cooking apparatus includes a main body having a heater, a first glass disposed on an upper side of the heater and arranged for a food container to be disposed on the upper side, a second glass disposed in the same line as the first glass, and a coupling device arranged for the first glass and the second glass to be detachably coupled, the coupling device, a first coupling member including a first coupling portion secured to a lower portion of the first glass to support at least a portion of the first glass and the second glass, and a second coupling member including a second coupling portion secured to a lower portion of the second glass, and arranged to be detachably coupled with the first coupling portion.

**FIG. 1**

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## Description

[Technical Field]

**[0001]** The present disclosure relates to a cooking apparatus, and more particularly to a cooking apparatus in which a plurality of glasses may be partially replaced by an improved glass structure.

[Background Art]

**[0002]** Induction devices (induction heating devices) are being used as heat sources to generate heat. In particular, an induction heating cooking apparatus is used as a cooking apparatus for heating food using an induction heating apparatus.

**[0003]** In general, an induction heating cooking apparatus is a cooking apparatus that heats and cooks a food container using the principle of induction heating. The induction heating cooking apparatus may include a glass on which the food container is placed, and an induction heating coil that is arranged below the glass and generates a magnetic field when an electric current is applied.

**[0004]** When a current is applied to the induction heating coil and a magnetic field is generated, a secondary current is induced in the food container, and Joule heat is generated by the electrical resistance component of the food container itself. Joule heat heats the food container and heats the food in the food container.

**[0005]** Compared to gas stoves and kerosene furnaces that burn fossil fuels such as gas or oil and heat the food container through the heat of combustion, such induction cooking apparatus has the advantages of rapid heating, no harmful gases, and no risk of fire.

**[0006]** The glass of the induction heating cooking apparatus not only has a cooking area where the food container is placed, but also has a control area where various information is displayed and control commands are input from the user.

**[0007]** However, when a single glass is equipped with a cooking area where the food container is placed and a control area that displays various information and receives control commands from the user, each area is not physically separated, and problems such as the user accidentally touching the hot cooking area may occur.

**[0008]** In addition, it is difficult to realize various designs because it is composed of a single glass of a single material, and only a single color of a unified product may be produced, resulting in a limited design.

**[0009]** In addition, partial replacement of the product is not possible, and the entire upper part of the product must be disassembled for replacement.

[Disclosure]

[Technical Problem]

**[0010]** One aspect of the present disclosure provides a cooking apparatus including a replaceable plurality of glasses.

**[0011]** One aspect of the present disclosure provides a cooking apparatus wherein the plurality of glasses are partially replaceable due to an improved glass structure.

**[0012]** One aspect of the present disclosure provides a cooking apparatus that enables partial replacement of a manipulation portion to achieve a variety of colors.

**[0013]** One aspect of the present disclosure provides a cooking apparatus in which glasses of various materials may be applied, and the stability of the product may be improved by the partially replaceable structure.

[Technical Solution]

**[0014]** According to an embodiment of the disclosure, there is provided a cooking apparatus comprising: a main body having a heater; a first glass disposed on an upper side of the heater, arranged for a food container to be placed thereon; a second glass disposed in line with the first glass; and a coupling device arranged for the first glass and the second glass to be detachably coupled; wherein the coupling device includes a first coupling member comprising a first coupling portion secured to a lower portion of the first glass to support at least a portion of the first glass and the second glass, and arranged to be detachably coupled with the second glass; and a second coupling member comprising a second coupling portion secured to a lower portion of the second glass, and arranged to be detachably coupled with the first coupling portion.

**[0015]** The coupling device further comprises a fixing member arranged to fix at least one of the first coupling member and the second coupling member to the main body.

**[0016]** The coupling device further comprising a through hole formed in a front of the main body for the fixing member to penetrate the main body and fix at least one of the first coupling member and the second coupling member, and a fixing hole formed in at least one of the first coupling member and the second coupling member to correspond to the through hole.

**[0017]** The first coupling member includes a first bracket arranged to support the first glass and the second glass, a first contact portion arranged on one side of the first bracket to be coupled to a bottom side of the first glass, and a first fixing portion formed extending downwardly from the other side of the first bracket to be coupled to the fixing member.

**[0018]** The first coupling portion includes a supporting hole in which at least a portion of the first bracket is incised and formed.

**[0019]** The second coupling member includes a second bracket arranged to support the second glass, and a second fixing portion formed by extending downwardly from the second bracket to engage the fixing member.

**[0020]** The second coupling portion includes a supporting projection extending from the second bracket and

formed to be inserted into the supporting hole.

**[0021]** The first coupling member further comprises an overflow prevention portion projecting upwardly between the first bracket and the first contact portion.

**[0022]** The overflow prevention portion is formed higher than the upper surface of the first bracket and the first contact portion.

**[0023]** The fixing hole includes a first fixing hole formed in plurality in the first fixing portion, and a second fixing hole formed in plurality in the second fixing portion.

**[0024]** The supporting projection is inserted into the supporting hole and is rotatably arranged, and the supporting projection is supported on the first contact portion of the first coupling member by rotational movement of the second glass.

**[0025]** The coupling device further comprises a sealing member for sealing between the first glass and the second glass.

**[0026]** The sealing member includes a first portion arranged to contact a vertical surface of the first glass and the second glass, and a second portion extending horizontally from the first portion and arranged to support a bottom surface of the second glass.

**[0027]** The sealing member further comprises a third portion projecting from a lower portion of the first portion for engagement with the first coupling member, the first coupling member further comprising a corresponding coupling hole for engagement of the third portion.

**[0028]** The sealing member further comprises a plurality of protrusions projecting upwardly from the second portion.

**[0029]** According to an embodiment of the disclosure, there is provided a cooking apparatus comprising: a main body having a heater; a glass forming an upper surface of the main body; a cooking apparatus comprising: a first glass disposed on an upper surface of the heater and arranged for a food container to be placed on the upper surface; and a second glass disposed in a line with the first glass and formed of a material different from the first glass, and fixed to a lower surface of the first glass so as to support at least a portion of the first glass and the second glass, a first coupling member comprising a first coupling portion to which the second glass is arranged to be detachably coupled, and a second coupling member comprising a second coupling portion arranged at the lower end of the second glass and detachably coupled to the first coupling portion, and a fixing member arranged to fix at least one of the first coupling member and the second coupling member to the main body.

**[0030]** A second coupling member comprising a through hole formed in a front of the main body for the fixing member to penetrate through the main body and fix with at least one of the first coupling member and the second coupling member, and a fixing hole formed in at least one of the first coupling member and the second coupling member to correspond to the through hole.

**[0031]** The first coupling member includes a first bracket arranged to support the first glass and the second glass, a first contact portion arranged on one side of the first bracket to be coupled to a bottom side of the first glass, and a first fixing portion formed extending downwardly from the other side of the first bracket to be coupled to the fixing member.

**[0032]** The first coupling portion includes a supporting hole in which at least a portion of the first bracket is incised and formed.

**[0033]** The second coupling member includes a second bracket arranged to support the second glass, a second fixing portion extending downwardly from a downward side of the second bracket to which the fixing member is engaged, and a supporting projection extending from the second bracket to be inserted into the supporting hole.

[Advantageous Effects]

**[0034]** According to the idea of the present disclosure, the improved glass structure enables partial replacement of a plurality of glasses, which has the effect of facilitating replacement and after-sales service of the glasses.

**[0035]** Furthermore, by enabling partial replacement of the operation part, various colors may be realized.

**[0036]** Furthermore, the glass of various materials may be applied and the partial replacement structure has the effect of improving the stability of the product.

[Description of Drawings]

**[0037]**

FIG. 1 is a drawing illustrating a cooking apparatus according to one embodiment of the present disclosure,

FIG. 2 is an exploded perspective view of a cooking apparatus according to one embodiment of the present disclosure,

FIG. 3 is a drawing illustrating a first glass and a first coupling member of a coupling device according to one embodiment of the present disclosure,

FIG. 4 is a bottom view of the first glass and the first coupling member according to one embodiment of the present disclosure,

FIG. 5 is a bottom view showing a second glass and a second coupling member according to one embodiment of the present disclosure,

FIG. 6 is a drawing showing a state before coupling of the first glass and the second glass by a coupling device according to one embodiment of the present disclosure,

FIG. 7 is a partially enlarged view illustrating a coupling device of a first glass and a second glass according to one embodiment of the present disclosure,

FIG. 8 is a drawing illustrating a state before coupling of the first glass and the second glass according to one embodiment of the present disclosure,

FIG. 9 is a diagram illustrating the coupling operation of the first glass and the second glass according to one embodiment of the present disclosure,

FIG. 10 is a cross-sectional view illustrating a bonded state of the first glass and the second glass according to one embodiment of the present disclosure,

FIG. 11 is an enlarged view of part A of FIG. 10, showing an enlarged portion of the engagement of the first glass and the second glass equipped with a sealing member according to one embodiment of the present disclosure,

FIG. 12 is a drawing illustrating a sealing member according to another embodiment of the present disclosure,

FIG. 13 is an enlarged view of a joining portion of a first glass and a second glass equipped with a sealing member according to another embodiment of the present disclosure.

[Modes of the Disclosure]

**[0038]** The embodiments described herein and the configurations illustrated in the drawings are merely preferred examples of the disclosed disclosure, and there are many variations that may be made in place of the embodiments and drawings described herein at the time of filing of this application.

**[0039]** In addition, identical reference numerals or symbols in each drawing of this specification designate parts or components that perform substantially the same function.

**[0040]** Further, the terminology used herein is for the purpose of describing embodiments and is not intended to limit and/or define the disclosed disclosure. Expressions in the singular include the plural unless the context clearly indicates otherwise. As used herein, the terms "includes" or "has" are intended to designate the presence of the features, numbers, steps, actions, components, parts, or combinations thereof recited, and do not preclude the presence or addition of one or more other features, numbers, steps, actions, components, parts, or combinations thereof.

**[0041]** Further, as used herein, ordinal terms such as "first," "second," and the like may be used to describe various components, but the components are not limited by the terms, and the terms are used only to distinguish one component from another. For example, without departing from the scope of the present disclosure, a first component may be named as a second component, and similarly, a second component may be named as a first component. The term "and/or" includes a combination of a plurality of related recited items or any of a plurality of related recited items.

**[0042]** Embodiments will be described in more detail below with reference to the accompanying drawings.

**[0043]** FIG. 1 is a drawing illustrating a cooking apparatus according to one embodiment of the present disclosure, and FIG. 2 is an exploded perspective view of a cooking apparatus according to one embodiment of the present disclosure.

**[0044]** As shown in FIGS. 1 and 2, a cooking apparatus 1 may include a main body 10, a heater (hereinafter referred to as an induction heating coil 11), a circuit board 12, and a coil seating plate 15, and a glass assembly (hereinafter referred to as "glass") positioned on top of the main body 10.

**[0045]** The main body 10 may form the exterior of the cooking apparatus 1. An induction heating coil 11 may be received within the main body 10 and may generate a magnetic field to inductively heat the food container 2. The induction heating coil 11 may be electrically connected to a main board (not shown) provided inside the main body 10 via a wire 11a.

**[0046]** The circuit board 12 may be disposed below the second glass 120. The circuit board 12 may include a display portion 13 and a touch portion 14. The display portion 13 may be disposed below the display portion 102a formed in the second region 102. The display portion 13 may indicate whether the food container 2 is being heated by the induction heating coil 11. Thus, a user may check whether the food container 2 is heated through the display portion 102a. The touch portion 14 may be disposed below the input portion 102b formed in the second region 102. The touch portion 14 may receive a touch signal from the input portion 102b. For example, the touch portion 14 may receive the input in a capacitive touch manner. However, by way of limitation, the touch portion 14 may also receive input via a pressure sensitive touch method. The user may adjust the current flowing to the induction heating coil through the input portion 102b, and may determine the degree to which the food container 2 is heated.

**[0047]** The induction heating coil 11 may be mounted on the coil mounting plate 15. The coil mounting plate 15 may be provided with a coil mounting hole 15a for mounting the induction heating coil 11. The coil mounting holes 15a may be plurally provided.

**[0048]** The main body 10 may further comprise a first frame 16 provided for supporting the glass 100. The first frame 16 may be arranged for the glass 100 to be supported on top. The first frame 16 may be formed by extending upwardly from all four ends of the coil seating plate 15. The first frame 16 is arranged to allow the glass 100 to be secured to and supported by the main body 10.

**[0049]** The first frame 16 may include a front portion 16a formed at the front of the main body 10 and a rear portion 16c formed at the rear of the main body 10, and side portions 16b connected between the front portion 16a and the rear portion 16c and formed on either side of the main body 10.

**[0050]** A fastening hole 18 may be formed in the first frame 16 for fastening with the second frame 130 of the glass 100 described later. The fastening hole 18 formed in the first frame 16 is referred to as the first fastening hole 18a. The first fastening hole 18a may be formed in a front portion 16a, a rear portion 16c, and a side portion

16b of the first frame 16, respectively. The front portion 16a and the back portion 16c of the first frame 16 may be formed extending in a first direction (X). The first direction may be an X direction and an -X direction. A side portion 16b of the first frame 16 may extend in a second direction Y. The second direction Y may be a Y-direction and a -Y-direction. The first frame 16 may be formed by extending in the first direction X and the second direction Y on an outer border of the main body 10.

**[0051]** The main body 10 may be provided with a through hole 220 for engaging a fixing member 210 for fixing the coupling device 200 described later. In the first frame 16 of the main body 10, a through hole 220 may be formed through which the fixing member 210 may be engaged with the coupling device 200. In the front portion 16a of the first frame 16, a through hole 220 may be formed for the fixing member 210 to be engaged through. The through hole 220 may be formed in a plurality.

**[0052]** The glass 100 may include a first glass 110 forming a first region 101, and a second glass 120 forming a second region 102.

**[0053]** The first glass 110 may include heating area guides (101a, 101b, 101c) and may support the food container 2. The food container 2 may be disposed in the first area 101.

**[0054]** The second glass 120 includes a second region 102, and the second region 102 may include a display portion 102a and an input portion 102b. The display portion 102a may be formed in the second region 102 to display various information regarding the cooking apparatus 1, and the input portion 102b may be formed in the second region 102 to receive control commands from a user.

**[0055]** The first glass 110 and the second glass 120 are physically separated and may be detachably coupled by the coupling device 200. The first glass 110 and the second glass 120 may be detachably coupled by the coupling device 200. A detailed description of the coupling device 200 will be described later.

**[0056]** The first glass 110 forms a first region 101, and a food container 2 may be disposed in the first region 101. The food container 2 disposed in the first glass 110 may be inductively heated by a magnetic field generated by the induction heating coil 15.

**[0057]** The second glass 120 forms a second region 102 separated from the first region 101, and cooking information of the cooking apparatus 1 including a temperature of the food container 2, a cooking elapsed time, and/or a date/time may be displayed in the second region 102 via the display portion 102a.

**[0058]** In addition, the second region 102 may be provided with an input portion 102b for receiving control commands from a user to turn the cooking apparatus 1 on/off and/or control the temperature of the food container 2. The input portion 102b may receive the input by touch of the user.

**[0059]** The second glass 120 may be a tempered glass. Further, the second glass 120 may be a heat-resistant glass. The first glass 110 and the second glass 120 may be formed from different materials. For example, the first glass 110 may have properties that make it impermeable to light, and the second glass 120 may have properties that make it capable of transmitting a touch signal to transmit a signal to the circuit board 12 arranged on the lower surface through touch.

**[0060]** The first glass 110 may include a top surface 110a, a bottom surface 110b, and a side surface 110c. The first glass 110 may be arranged to have a first color. The first glass 110 may not be light transmissive.

**[0061]** The second glass 120 may include a top surface 120a, a bottom surface 120b, a side surface 120c, and a painted surface 120d. The second glass 120 may be arranged to have a second color. The second painted surface 120d may represent the second color. According to embodiments of the present disclosure, the first color and the second color may be different. By doing so, the cooking apparatus 1 of various designs may be realized. However, the first color and the second color may be the same.

**[0062]** The first glass 110 and the second glass 120 may be detachably coupled to each other by the coupling device 200. Specifically, the second glass 120 may be detachably coupled to the first glass 110 by the coupling device 200. The second glass 120 may be coupled to a front of the first glass 110. The second glass 120 may cover one side of the first glass 110 when coupled to the first glass 110.

**[0063]** The coupling device 200 may include a first coupling member 300 arranged to support at least a portion of the first glass 110 and the second glass 120, and a second coupling member 400 arranged to be detachable from the first coupling member 300 and arranged on a lower portion of the second glass 120.

**[0064]** The first coupling member 300 may be formed of a steel material. The second coupling member 400 may be formed of a plastic material. The first coupling member 300 and the second coupling member 400 may be formed of different materials. The first coupling member 300 and the second coupling member 400 may be formed of the same material as each other.

**[0065]** The first glass 110 and the second glass 120 may be detachably coupled to each other by the first coupling member 300 and the second coupling member 400. The second coupling member 400 may be detachably coupled to the first coupling member 300. The second glass 120 may be separated from the first glass 110 when the second coupling member 400 is separated from the first coupling member 300.

**[0066]** Accordingly, the colors of the second area 102 in which the second glass 120 is formed, that is, the input portion 102b and the display portion 102a, which are arranged to receive control commands from a user, may be varied.

**[0067]** In addition, the second glass 120 corresponding to the second area 102 may be removed and replaced in the event of repair or failure of the circuit board 12 or

the like located in the second area 102, thereby facilitating after-sales service.

**[0068]** FIG. 3 is a drawing showing a first glass and a first coupling member of a coupling device according to one embodiment of the present disclosure, FIG. 4 is a bottom view of the first glass and the first coupling member according to one embodiment of the present disclosure, and FIG. 5 is a bottom view of the second glass and the second coupling member according to one embodiment of the present disclosure.

**[0069]** As shown in FIGS. 3 through 5, the glass 100 includes a first glass 110 and a second glass 120. The first glass 110 and the second glass 120 may be detachably coupled to each other by a coupling device 200.

**[0070]** The coupling device 200 may include a first coupling member 300, and a second coupling member 400 detachably coupled to the first coupling member 300. The coupling device 200 may further include a fixing member 210 for fixing the first coupling member 300 and the second coupling member 400 to the main body 10.

**[0071]** The first coupling member 300 may be arranged to be fixed to the first glass 110 on one side and to support at least a portion of the second glass 120 on the other side. The first coupling member 300 may be secured to a bottom side 110b of the first glass 110. The first coupling member 300 may be secured to the first glass 110 via heat-resistant silicone. At least a portion of the first coupling member 300 may be attached to the first glass 110. At least a portion of the first coupling member 300 may be attached to the first glass 110 via heat-resistant silicone.

**[0072]** The first glass 110 may further include a second frame 130. The first glass 110 is arranged to be supported on the first frame 16 of the main body 10. A bottom side 110b of the first glass 110 may be provided with a second frame 130 corresponding to the first frame 16.

**[0073]** The second frame 130 is arranged to be in contact with the first frame 16 of the main body 10. The second frame 130 may be arranged to allow the first glass 110 to rest on the main body 10. The second frame 130 may be provided on the periphery of the bottom side 110b of the first glass 110. The second frame 130 may be secured to the bottom surface 110b of the first glass 110. The second frame 130 may be attached to the periphery of the first glass 110b via heat-resistant silicone. There may be a plurality of second frames 130. The second frame 130 may be disposed on both sides and the rear of the first glass 110.

**[0074]** The second frame 130 may be arranged to correspond to a side portion 16b and a rear portion 16c of the first frame 16, respectively. The side portion 16b of the second frame 130 may be disposed in a first direction X of the first glass 110, and the back portion 16c may be disposed in a second direction Y of the first glass 110.

**[0075]** A fastening hole 18 may be formed in the second frame 130 for fastening with the first frame 16 of the main body 10. The fastening hole 18 formed in the second frame 130 is referred to as the second fastening hole 18b. The second fastening hole 18b may be formed at a location corresponding to the first fastening hole 18a. The second fastening holes 18b may be formed in a plurality on each side and at the rear of the second frame 130.

**[0076]** The first glass 110 may be secured to the upper part of the main body 10 by the coupling of the second frame 130 fixed to the lower part of the first glass 110 and the first frame 16 of the main body 10.

**[0077]** The first coupling member 300 may be arranged to support at least a portion of the first glass 110 and the second glass 120. The first coupling member 300 may include a first bracket 310 arranged to support the first glass 110 and the second glass 120.

**[0078]** The first bracket 310 may be formed in the shape of a plate. The first bracket 310 may be formed in a size and shape that roughly corresponds to the second glass 120. The first bracket 310 may be arranged to support a lower portion of the second glass 120. The first bracket 310 may include a first mounting hole 312 formed through which the circuit board 12 of the main body 10 is installed at its center. The first installation hole 312 may be formed by at least a portion of the first bracket 310 being open. The first bracket 310 may further include a seating surface 311 formed to allow at least a portion of the second coupling member 400 to be seated and supported. The seating surface 311 may be formed at a lower location than the first bracket 310. The first mounting hole 312 may be formed with at least a portion of the resting surface 311 open. In an embodiment of the present disclosure, the first mounting hole is shown in a T-shaped configuration to correspond to a circuit board, but the ideas of the present disclosure are not limited to this. For example, the shape of the first bracket and the first installation hole formed in the first bracket may be changed by the size and shape of the circuit board forming the second region.

**[0079]** The first coupling member 300 may include a first contact portion 320 provided for fixation with the first glass 110. The first contact portion 320 may be provided on one side of the first bracket 310. The first contact portion 320 may be provided on a first side of the first bracket 310 extending in a second direction (Y). The first contact portion 320 is arranged to be secured to a front side of the first glass 110. The first contact portion 320 is arranged to be disposed below a front side 110b of the first glass 110 and to be secured to the first glass 110. The first contact portion 320 may be bonded to the front surface 110b of the first glass 110. The first contact portion 320 may be bonded to the first glass 110 via heat-resistant silicone.

**[0080]** The first coupling member 300 may include a first coupling portion 340 to which the second coupling member 400 is arranged to be detachably coupled. The first coupling portion 340 may be arranged on the first bracket 310. The first coupling portion 340 may include a supporting hole 341 formed in a portion of the first bracket 310. The supporting hole 341 may be formed by an incision in a first direction (X). The supporting hole 341

may be formed so that the supporting projection 441 of the second coupling member 400, which will be described later, may be inserted and rotated.

**[0081]** The first coupling portion 340 of the first coupling member 300 may be positioned ahead of the first contact portion 320. The supporting hole 341 of the first coupling member 300 may be positioned ahead of the first contact portion 320. The first coupling portion 340 of the first coupling member 300 is preferably positioned forward by a length L1 of the second coupling portion 440 so that the second coupling portion 440 of the second coupling member 400 may be inserted and moved by a predetermined length so that the second glass 120 may be coupled to the first glass 110 (see FIG. 9).

**[0082]** The first coupling member 300 may further include a first fixing portion 330 extending from and provided at the other end of the first bracket 310. The first fixing portion 330 may be formed by extending to a lower side of the first bracket 310. In the first fixing portion 330 of the first coupling member 300, a first fixing hole 231 corresponding to the through hole 220 may be formed. The first fixing portion 330 may be provided with a first fixing hole 231 formed to engage the fixing member 210.

**[0083]** The first coupling member 300 may further include an overflow prevention portion 350 formed between the first bracket 310 and the first contact portion 320. The overflow prevention portion 350 may be formed with at least a portion of the first bracket 310 projecting upwardly. The overflow prevention portion 350 may be positioned posterior to the first coupling portion 340. The overflow prevention portion 350 may be positioned between the first bracket 310 and the first contact portion 320, and may be formed to project upwardly from the first bracket 310 and the first contact portion 320. The overflow prevention portion 350 may be positioned higher than the top surface of the first bracket 310 and/or the first contact portion 320. The overflow prevention portion 350 may be arranged to prevent foreign matter entering between the first glass 110 and the second glass 120 from migrating to the second glass 120 side.

**[0084]** The coupling device 200 may include a second coupling member 400 that is detachably coupled to the first coupling member 300. The second coupling member 400 may include a second bracket 410 arranged to support the second glass 120. The second bracket 410 is arranged to be coupled to a bottom surface 120b of the second glass 120. The second bracket 410 may be formed in the shape of a plate. The second bracket 410 is arranged to be attached to the bottom side 120b of the second glass 120, and is preferably formed in a size smaller than the second glass 120. The second bracket 410 may be arranged to support a lower portion of the second glass 120. At least a portion of the second bracket 410 may include a second mounting hole 412 that is formed by an incision. The second bracket 410 may include a second mounting hole 412 formed through which the circuit board 12 of the main body 10 is installed in its center. The second installation hole 412 may be formed at a location corresponding to the first installation hole 312 of the first bracket 310.

**[0085]** The second mounting hole 412 may be formed in a position overlapping the first mounting hole 312 of the first bracket 310.

**[0086]** The second bracket 410 is arranged to be fixed with the second glass 120. The second bracket 410 is arranged to be bonded to the bottom surface 120b of the second glass 120. The second bracket 410 may have its top surface bonded to the bottom surface 120b of the second glass 120 via heat-resistant silicone.

**[0087]** The second coupling member 400 may include a second coupling portion 440 arranged to be detachably coupled to the first coupling member 300. The second coupling portion 440 may be arranged on the second bracket 410. The second coupling portion 440 may include a supporting projection 441 formed by a portion of the second bracket 410 projecting therefrom. The supporting projection 441 may be formed by projecting in a second direction (Y). The supporting projection 441 is formed in a corresponding shape and size so that it may be inserted into the supporting hole 341 of the first coupling member 300.

**[0088]** The supporting projection 441 of the second coupling member 400 may be formed by protruding a first length L1 from the second bracket 410. The supporting projection 441 of the second coupling member 400 may be formed by being spaced apart from the second glass 120 by a predetermined distance D1. The supporting projection 441 may be formed at a predetermined distance d1 from the bottom surface 120c of the second glass 120. The supporting projection 441 may be inserted into the supporting hole 341 of the first bracket 310 and formed to be rotatable (see FIG. 8).

**[0089]** The second coupling member 400 may further include a second fixing portion 430 extending from and provided on the other end of the second bracket 410. The second fixing portion 430 may be formed by extending to a lower side of the second bracket 410. In the second fixing portion 430 of the second coupling member 400, a second fixing hole 232 corresponding to the through hole 220 of the main body 10 may be formed. The second fixing portion 430 may be provided with a second fixing hole 232 formed to engage the fixing member 210.

**[0090]** The coupling device 200 may include a fixing member 210 arranged to fix at least one of the first coupling member 300 and the second coupling member 400 to the main body 10.

**[0091]** The fixing member 210 may include a screw or the like. The fixing member 210 is arranged to be coupled to a first fixing hole 231 of the first coupling member 300 and/or a second through hole 220 of the second coupling member 400 through a through hole 220 formed in the front portion 16a of the first frame 16 of the main body 10, thereby fixing the first coupling member 300 and the second coupling member 400 to the main body 10.

**[0092]** The first coupling portion 340 of the first cou-

pling member 300 may be positioned ahead of the first contact portion 320. A supporting hole 341 of the first coupling member 300 may be positioned ahead of the first contact portion 320. The first coupling portion 340 of the first coupling member 300 is preferably positioned forward by a length L1 of the second coupling portion 440 so that the second coupling portion 440 of the second coupling member 400 may be inserted and moved by a predetermined length so that the second glass 120 may be coupled to the first glass 110 (see FIG. 9).

**[0093]** The glass 100 may further include a sealing member 500 arranged to seal between the first glass 110 and the second glass 120. The sealing member 500 is arranged to be mounted to the first coupling member 300. The first coupling member 300 is arranged to be fitted with the sealing member 500, which is arranged to seal between the first glass 110 and the second glass 120. A coupling hole 360 may be formed in the first coupling member 300 to which the sealing member 500 may be coupled. In the first contact portion 320 of the first coupling member 300, a coupling hole 360 may be formed so that the sealing member 500 may be coupled. The coupling hole 360 may be formed in which at least a portion of the first contact portion 320 is penetrated. The coupling hole 360 may be positioned rearward of the first coupling portion 340 of the first coupling member 300.

**[0094]** The sealing member 500 may be installed between the first glass 110 and the second glass 120 such that the first glass 110 and the second glass 120 may be sealed. The sealing member 500 may be disposed in a spacing between the first glass 110 and the second glass 120. The sealing member 500 may be formed of a rubber material.

**[0095]** The sealing member 500 may include a first portion 510 positioned between the first glass 110 and the second glass 120, a second portion 520 extending from the first portion 510 and arranged to support the bottom surface 120c of the second glass 120, and a third portion 530 projecting from the bottom of the first portion 510.

**[0096]** The first portion 510 of the sealing member 500 may be formed to contact a side 110c of the first glass 110 and a side 120c of the second glass 120. The first portion 510 may be formed to contact a vertical surface of the first glass 110 and the second glass 120. The first portion 510 is arranged to be contacted between a side 110c of the first glass 110 and a side 120c of the second glass 120 that faces it. The first portion 510 may be attached to the side 110c of the first glass 110 or the side 120c of the second glass 120 via a separate adhesive.

**[0097]** A second portion 520 of the sealing member 500 may extend horizontally from the first portion 510 and may be arranged to support the bottom side 120c of the second glass 120. The second portion 520 may be formed by extending in a first direction (X) from the first portion 510. The second portion 520 may be formed to be in contact with the bottom surface 120c of the second glass 120. The second portion 520 of the sealing member 500 may prevent foreign matter entering between the first glass 110 and the second glass 120 from being moved to a side of the circuit board 12 located on the lower side of the second glass 120.

**[0098]** The third portion 530 of the sealing member 500 may be formed by projecting from the bottom of the first portion 510. The third portion 530 may be arranged to secure the sealing member 500 to the first coupling member 300. The third portion 530 may be formed in the shape of a hook. The third portion 530 may be correspondingly arranged to be coupled to the coupling hole 360 of the first coupling member 300. In an embodiment of the present disclosure, four third portions are shown spaced apart from each other, but the idea of the present disclosure is not limited to this. For example, the number and shape of the third portions may be varied.

**[0099]** FIG. 6 is a drawing illustrating a state before coupling of the first glass and the second glass by a coupling device according to one embodiment of the present disclosure, FIG. 7 is a partial enlarged view illustrating a coupling device of the first glass and the second glass according to one embodiment of the present disclosure, and FIG. 8 is a drawing illustrating a state before coupling of the first glass and the second glass according to one embodiment of the present disclosure, FIG. 9 is a diagram illustrating a coupling operation of the first glass and the second glass according to one embodiment of the present disclosure; FIG. 10 is a cross-sectional view illustrating a coupling state of the first glass and the second glass according to one embodiment of the present disclosure; and FIG. 11 is an enlarged view of part A of FIG. 10, illustrating a coupling portion of the first glass and the second glass equipped with a sealing member according to one embodiment of the present disclosure. The same components as in the preceding embodiments are given the same drawing symbols and the description may be omitted.

**[0100]** As shown in FIGS. 6 through 11, the first glass 110 and the second glass 120 may be detachably coupled by a coupling device 200.

**[0101]** The coupling device 200 may include a first coupling member 300 arranged to support the first glass 110 and the second glass 120, a second coupling member 400 arranged to support the second glass 120, and a fixing member 210 arranged to fix the first coupling member 300 and the second coupling member 400 to the main body 10.

**[0102]** The first coupling member 300, which is fixed to the first glass 110, may be bonded to the bottom side 110c of the first glass 110 via a first contact portion 320 extending from the first bracket 310 and secured to the main body 10.

**[0103]** A through hole 220 formed in the front portion 16a of the first frame 16 of the main body 10 is positioned correspondingly to a first fixing hole 231 formed in the first fixing portion 330 of the first coupling member 300.

**[0104]** A first installation hole 312 formed in the first bracket 310 of the first coupling member 300 is positioned to correspond to the circuit board 12 mounted on the

main body 10, so that the circuit board 12 positioned lower than the first bracket 310 may be exposed.

**[0105]** *With the first coupling member 300 fixed to the first glass 110, the third portion 530 of the sealing member 500 may be mounted by inserting it into the coupling hole 360 of the first coupling member 300.

**[0106]** With the first glass 110 secured to the first frame 16 of the main body 10 with the first coupling member 300 fixed, and with the sealing member 500 mounted on the first coupling member 300, the second glass 120 may be detachably coupled to the first glass 110.

**[0107]** The first coupling portion 340 of the first coupling member 300 is positioned ahead of the sealing member 500 mounted in the coupling hole 360.

**[0108]** The second side 120c of the second glass 120 is provided with a second coupling member 400 attached thereto. A second bracket 410 of the second coupling member 400 may couple the second coupling portion 440 formed on one side to the first coupling portion 340 of the first coupling member 300 to couple the second coupling member 400 to the first coupling member 300.

**[0109]** The supporting projection 441 of the second bracket 410, which is fixed to the bottom surface 120c of the second glass 120, may be inserted into the supporting hole 341 of the first coupling member 300, and the second glass 120 may be rotationally moved downward to couple.

**[0110]** A second installation hole 412 formed in the second bracket 410 of the second coupling member 400 is positioned to correspond to the circuit board 12 mounted on the main body 10, so that the circuit board 12 positioned lower than the second bracket 410 may be exposed.

**[0111]** In the first bracket 310 of the first coupling member 300, an overflow prevention portion 350 is formed, which is located ahead of the coupling hole 360 for mounting the first coupling portion 340 and the sealing member 500, and is formed higher than the position of the coupling hole 360 and the first coupling portion 340, so that foreign matter entering between the first glass 110 and the second glass 120 may be prevented from entering the side of the circuit board 12.

**[0112]** The second fixing hole 232 formed in the second fixing portion 430 of the second coupling member 400 may correspond to the through hole 220 of the main body 10 and the first fixing hole 231 formed in the first fixing portion 330 of the first coupling member 300.

**[0113]** The first fixing hole 231 of the first coupling member 300 and the second fixing hole 232 of the second coupling member 400, which are positioned correspondingly to the through hole 220 of the main body 10, may be penetrated and fixed by the fixing member 210.

**[0114]** With the coupling of the first coupling member 300 and the second coupling member 400, the second glass 120 may be coupled to the first glass 110 along the same line.

**[0115]** The sealing member 500, which is positioned between the first glass 110 and the second glass 120, has a first portion 510 arranged to seal between the side 100b of the first glass 110 and the side 120b of the second glass 120 to prevent foreign matter from entering between the first glass 110 and the second glass 120.

**[0116]** In addition, the second portion 520 of the sealing member 500 is provided to extend to the second glass 120 side, which may prevent foreign matter entering between the first glass 110 and the second glass 120 from moving to the second glass 120 side.

**[0117]** Also, although not shown, a sealing member may be additionally applied to the upper portion 510 of the first portion of the sealing member 500, that is, between the first glass 110 and the second glass 120, to prevent dust or liquid/foreign matter or the like from entering between the first glass 110 and the second glass 120.

**[0118]** FIG. 12 is a drawing illustrating a sealing member according to another embodiment of the present disclosure, and FIG. 13 is an enlarged view of a joining portion of the first glass and the second glass equipped with a sealing member according to another embodiment of the present disclosure. For components identical to the foregoing embodiments, the same drawing symbols may be given and the description may be omitted.

**[0119]** As shown in FIGS. 12 and 13, a sealing member 500A may be arranged to seal between the first glass 110 and the second glass 120.

**[0120]** The sealing member 500A may be mounted between the first glass 110 and the second glass 120. The sealing member 500A may be formed of a rubber material. The sealing member 500A may be mounted on the coupling device 200, which is arranged to detachably couple the first glass 110 and the second glass 120.

**[0121]** The sealing member 500A may be mounted to a first coupling member 300 that is secured to a bottom surface 110b of the first glass 110. The sealing member 500A may include a first portion 510A positioned between the first glass 110 and the second glass 120, a second portion 520A extending from the first portion 510A and arranged to support a bottom surface 120c of the second glass 120, and a third portion 530A projecting from a bottom of the first portion 510A.

**[0122]** The first portion 510A may be formed to contact between a side 110b of the first glass 110 and a side 120b of the second glass 120. The first portion 510A may be formed to contact a vertical surface of the first glass 110 and the second glass 120. The first portion 510A is arranged to be contacted between a side 110b of the first glass 110 and a side 120b of the facing second glass 120. The first portion 510A may be attached to the side 110b of the first glass 110 or the side 120b of the second glass 120 via a separate adhesive.

**[0123]** The third portion 530A of the sealing member 500A may be formed by protruding from the bottom of the first portion 510A. The third portion 530A may be arranged to secure the sealing member 500A to the first coupling member 300. The third portion 530A may be formed in the shape of a hook. The third portion 530A

may be correspondingly arranged to be coupled to the coupling hole 360 of the first coupling member 300.

**[0124]** A second portion 520A of the sealing member 500A may be arranged to extend horizontally from the first portion 510A to support a bottom surface 120c of the second glass 120. The second portion 520A may be formed by extending in a first direction (X) from the first portion 510A. The second portion 520A may be formed to contact the bottom surface 120c of the second glass 120. The second portion 520A may further include a protrusion 540A formed to protrude upwardly. The protrusion 540A may be formed in plurality. The protrusions 540A may be formed to be sloped to prevent foreign objects entering from the rear from traveling forward. The protrusions 540A may be formed in a plurality spaced apart at predetermined intervals to prevent foreign matter entering through the first portion 510A from moving forward.

**[0125]** The second portion 520A of the sealing member 500A may prevent foreign matter entering between the first glass 110 and the second glass 120 from moving to the side of the circuit board 12 located at the bottom of the second glass 120. The protrusion 540A formed in the second portion 520A of the sealing member 500A may prevent foreign matter entering between the first glass 110 and the second glass 120 from moving to the side of the circuit board 12 located at the lower end of the second glass 120. In an embodiment of the present disclosure, four protrusions formed in the second portion of the sealing member are shown as an example, but the ideas of the present disclosure are not limited thereto. The protrusions are intended to prevent the entry of foreign matter moving in a horizontal direction, and the shape and number of protrusions may be formed in various ways.

**[0126]** The scope of the disclosure is not limited to the specific embodiments described. Various other embodiments that can be modified or adapted by one of ordinary skill in the art without departing from the technical idea of the disclosure as set forth in the claims will be deemed to fall within the scope of the disclosure.

## Claims

**1.** A cooking apparatus comprising:

a main body comprising a heater;
a first glass disposed on an upper surface of the heater, arranged so that a food container is disposed on the upper surface;
a second glass disposed to be collinear with the first glass;
a coupling device allowing the first glass and the second glass to be detachably coupled to each other,
wherein the coupling device comprises:

a first coupling member secured to a lower portion of the first glass to support at least a portion of the first glass and the second glass, and comprising a first coupling portion to which the second glass is detachably coupled; and
a second coupling member comprising a second coupling portion arranged at a lower end of the second glass, and arranged to be detachably coupled with the first coupling portion.

**2.** The cooking apparatus according to claim 1, wherein the coupling device further comprises a fixing member arranged to fix at least one of the first coupling member or the second coupling member to the main body.

**3.** The cooking apparatus according to claim 2, further comprising a through hole formed to pass through a front side of the main body such that the fixing member secures at least one of the first coupling member or the second coupling member by passing through the main body, and
a fixing hole formed in at least one of the first coupling member or the second coupling member to correspond to the through hole.

**4.** The cooking apparatus according to claim 3, wherein the first coupling member comprising:

a first bracket arranged to support the first glass and the second glass;
a first contact portion arranged on one side of the first bracket to be coupled to a bottom side of the first glass, and
a first fixing portion extending downwardly from an other side of the first bracket and to which the fixing member is coupled.

**5.** The cooking apparatus according to claim 4, wherein the first coupling portion comprises a supporting hole formed by incising at least a portion of the first bracket.

**6.** The cooking apparatus according to claim 5, wherein the second coupling member comprising:

a second bracket arranged to support the second glass,
a second fixing portion extending downwardly from the second bracket and to which the fixing member is coupled.

**7.** The cooking apparatus according to claim 6, wherein the second coupling portion comprises a supporting projection extending from the second bracket and projecting to be inserted into the supporting hole.

**8.** The cooking apparatus according to claim 6, wherein the first coupling member further comprises an overflow prevention portion projecting upwardly between the first bracket and the first contact portion.

**9.** The cooking apparatus according to claim 8, wherein the overflow prevention portion is formed higher than an upper surface of the first bracket and the first contact portion.

**10.** The cooking apparatus according to claim 6, wherein the fixing hole comprising:

a first fixing hole formed in plurality in the first fixing portion; and
a second fixing hole formed in the second fixing portion in plurality.

**11.** The cooking apparatus according to claim 7, wherein the supporting projection is inserted into the supporting hole to be rotatable,
wherein the supporting projection is supported on the first contact portion of the first coupling member by rotational movement of the second glass.

**12.** The cooking apparatus according to claim 8, wherein the coupling device further comprises a sealing member for sealing between the first glass and the second glass.

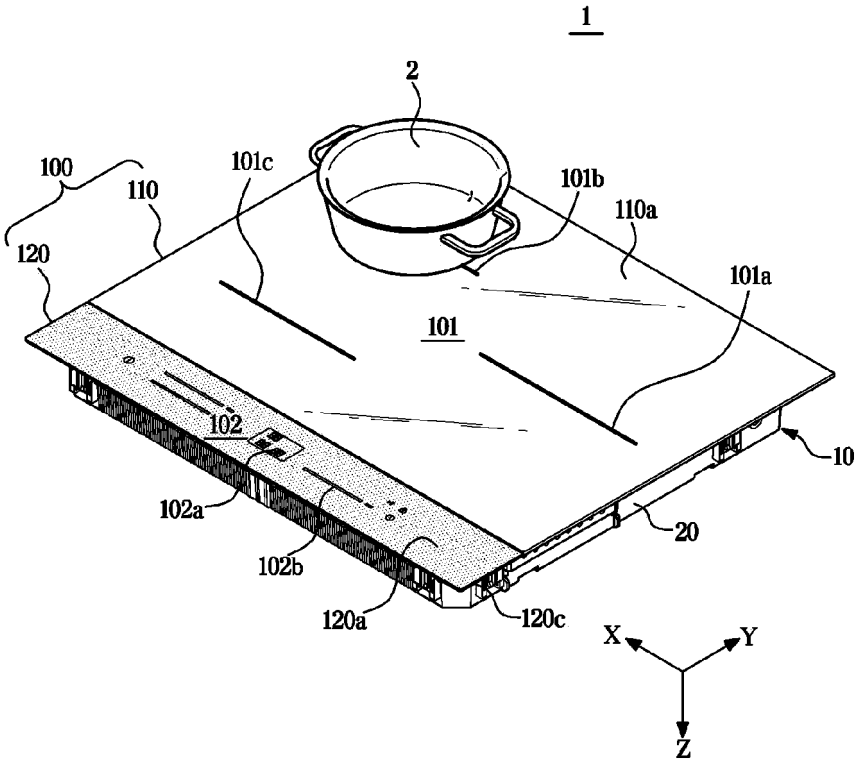
**13.** The cooking apparatus according to claim 12, wherein the sealing member comprises:

a first portion arranged to contact a vertical surface of the first glass and the second glass; and
a second portion extending horizontally from the first portion and arranged to support a bottom surface of the second glass.

**14.** The cooking apparatus according to claim 13, wherein the sealing member further comprises a third portion projecting from a lower portion of the first portion for engagement with the first coupling member,
wherein the first coupling member further comprises a corresponding coupling hole to which the third portion is coupled.

**15.** The cooking apparatus according to claim 14, wherein the sealing member further comprises a plurality of protrusions formed to project upwardly of the second portion.

FIG. 1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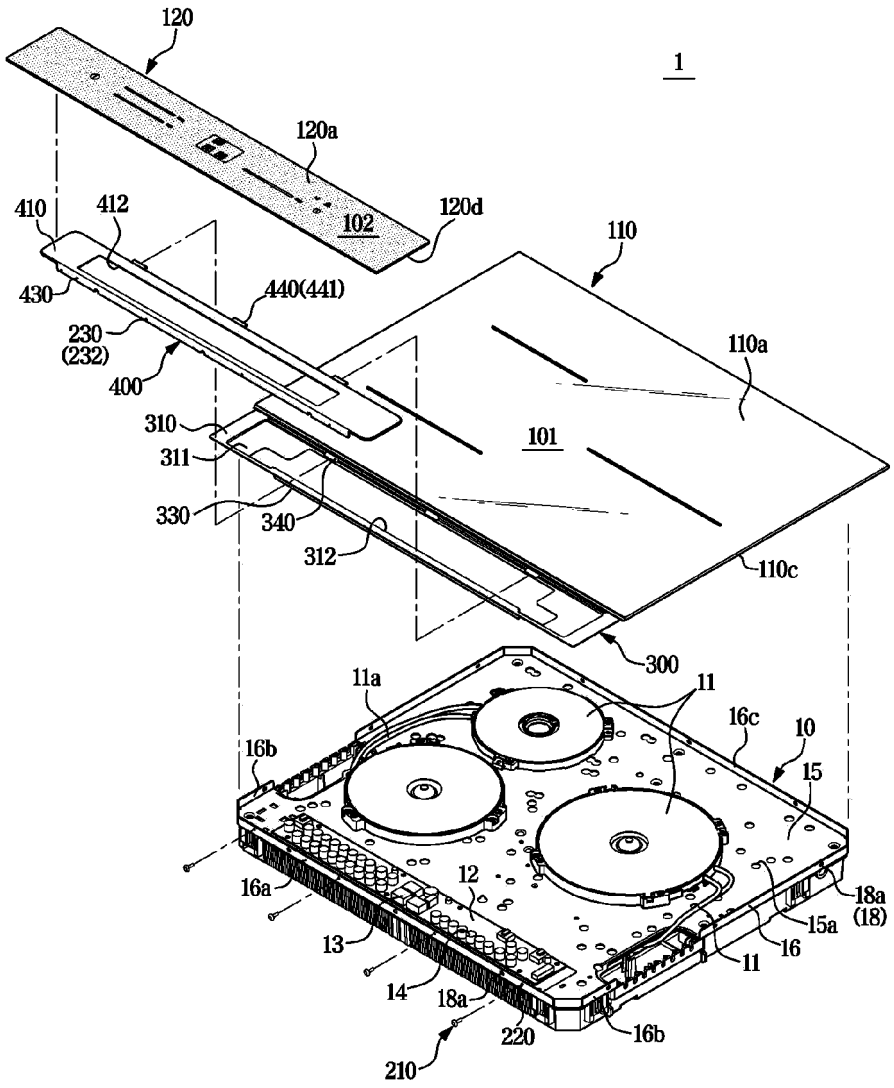
Z

# FIG. 2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11
16c
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16
11
14
18a
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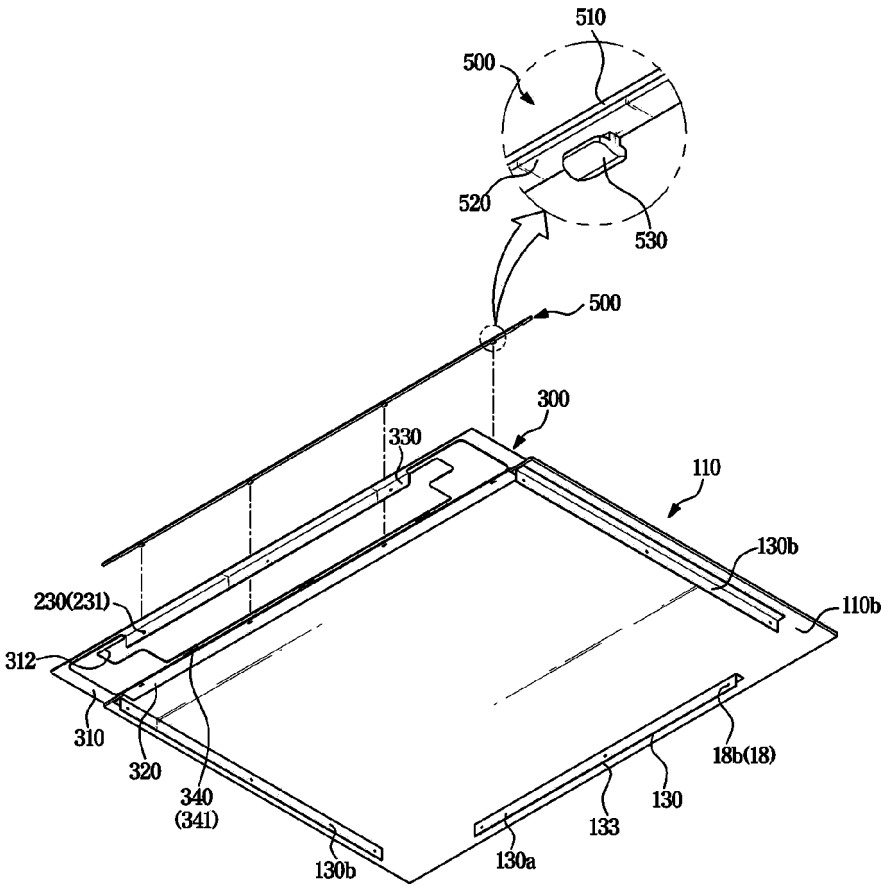
16b
210

FIG. 3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530
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320
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(341)
130b
130a
133
130
18b(18)

FIG. 4

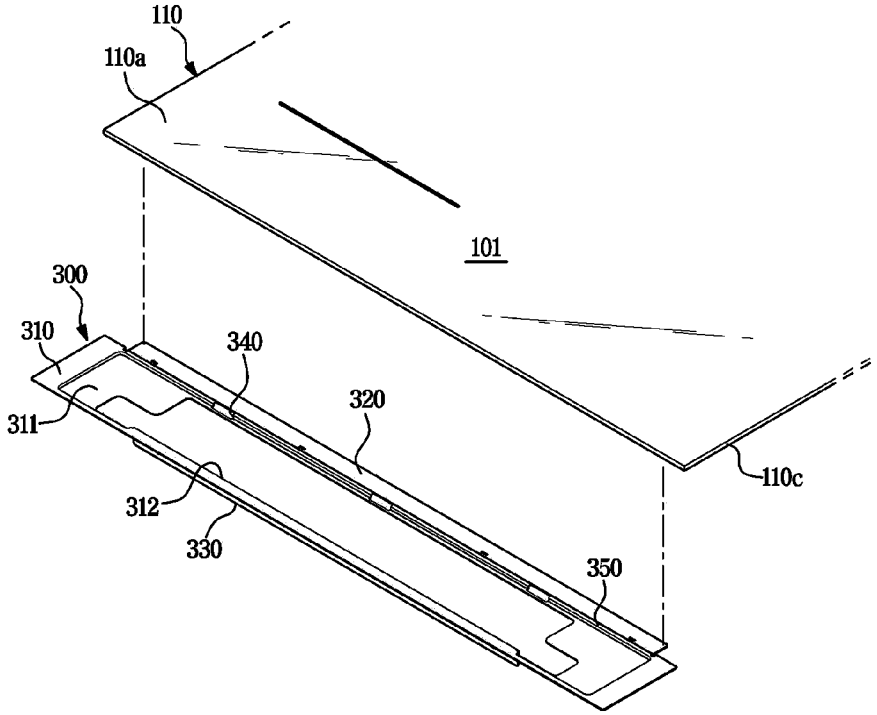


FIG. 5

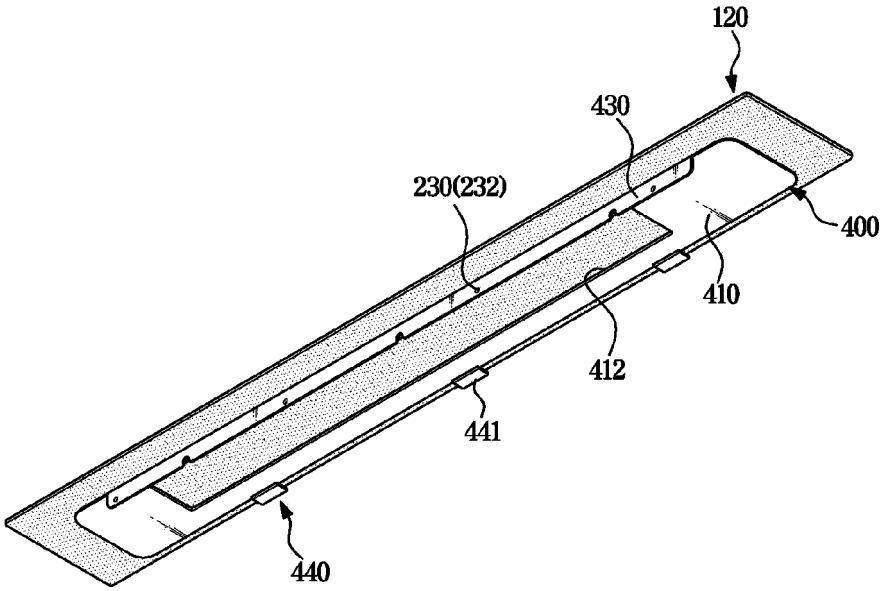


FIG. 6

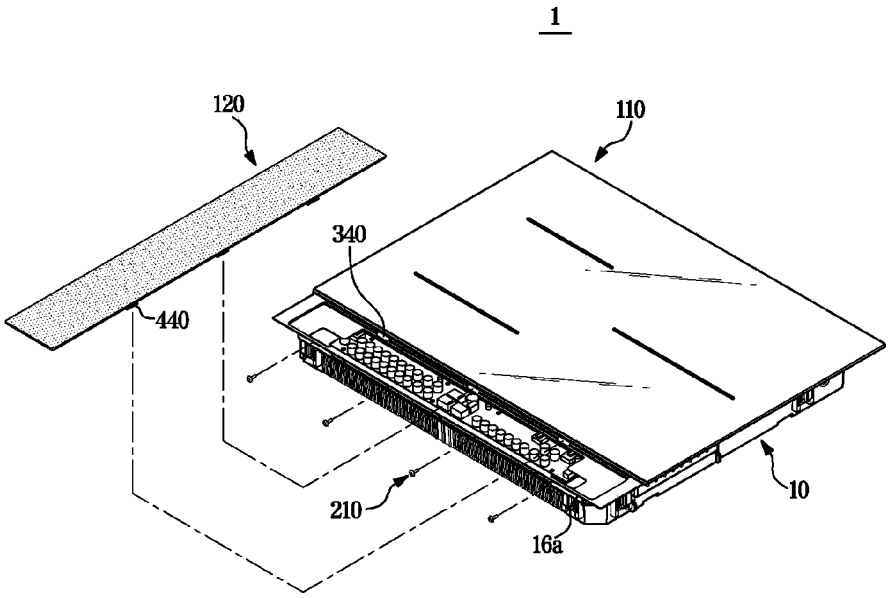


FIG. 7

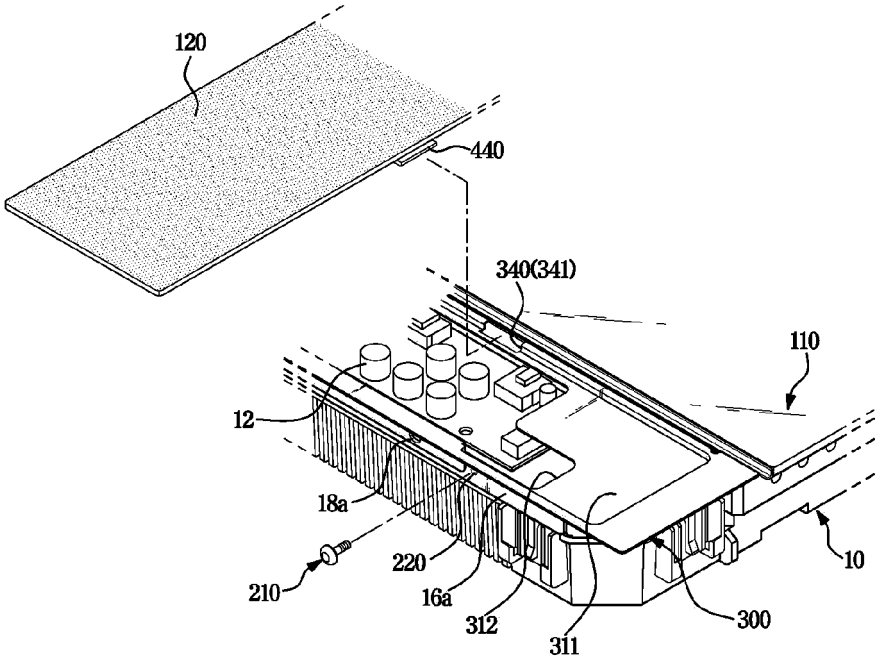
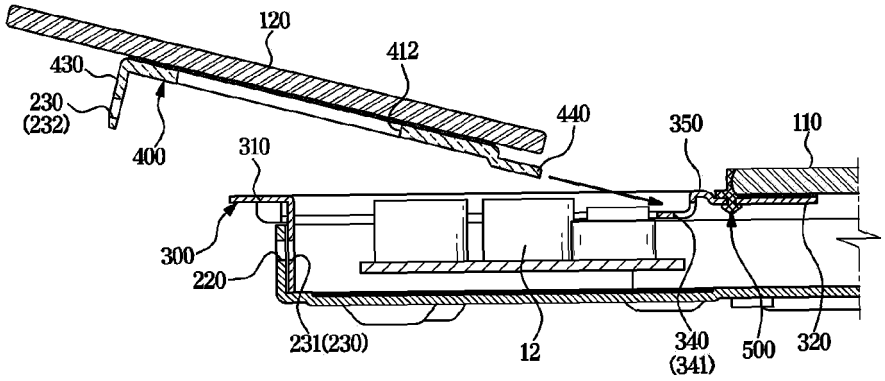


FIG. 8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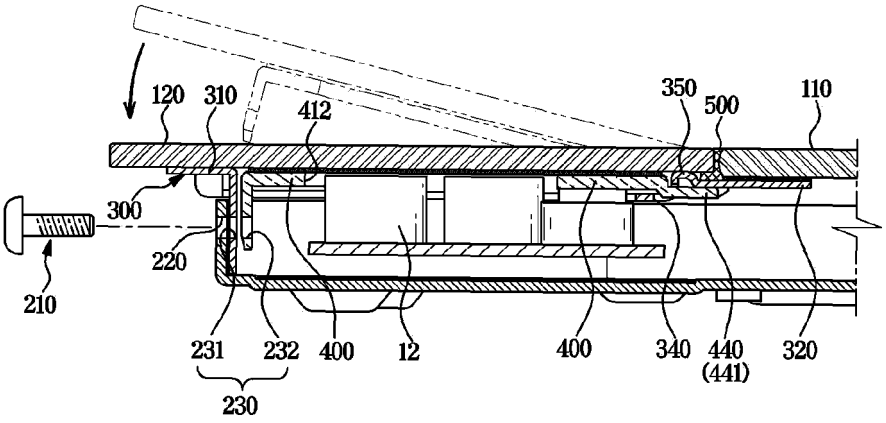
12
340
(341)
500
320

FIG. 9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(441)
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FIG. 10

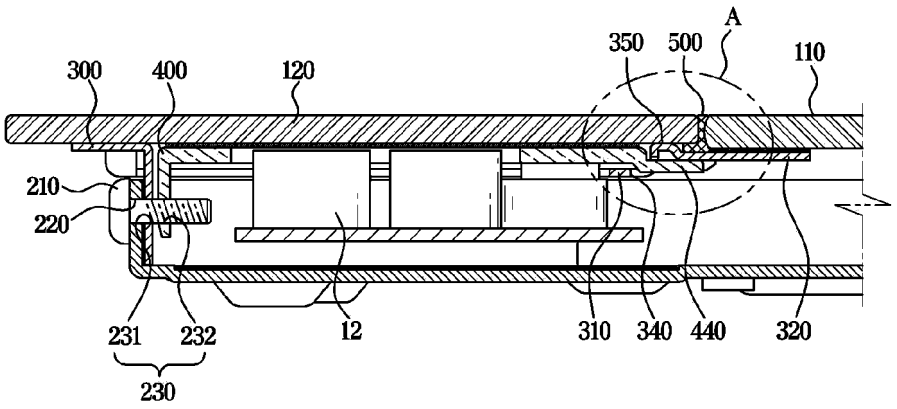


FIG. 11

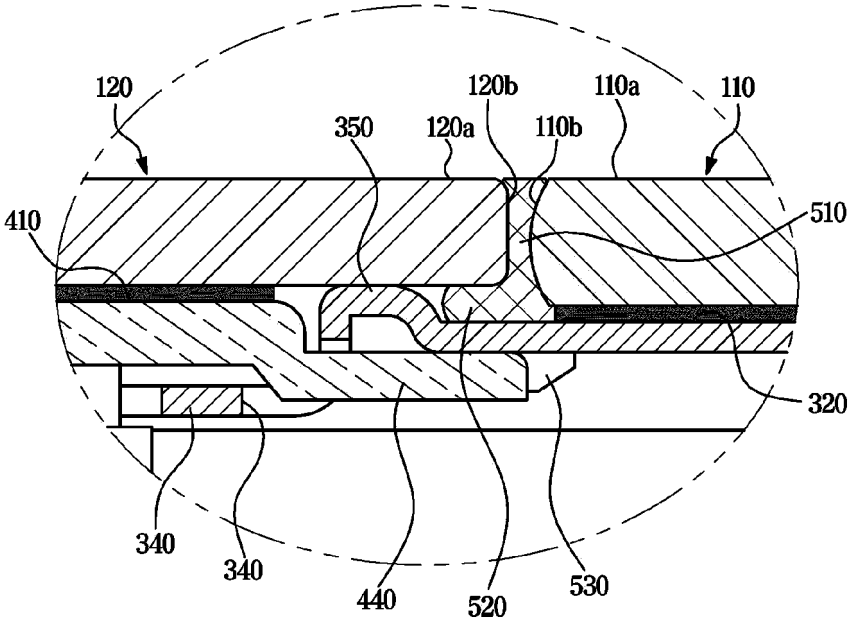


FIG. 12

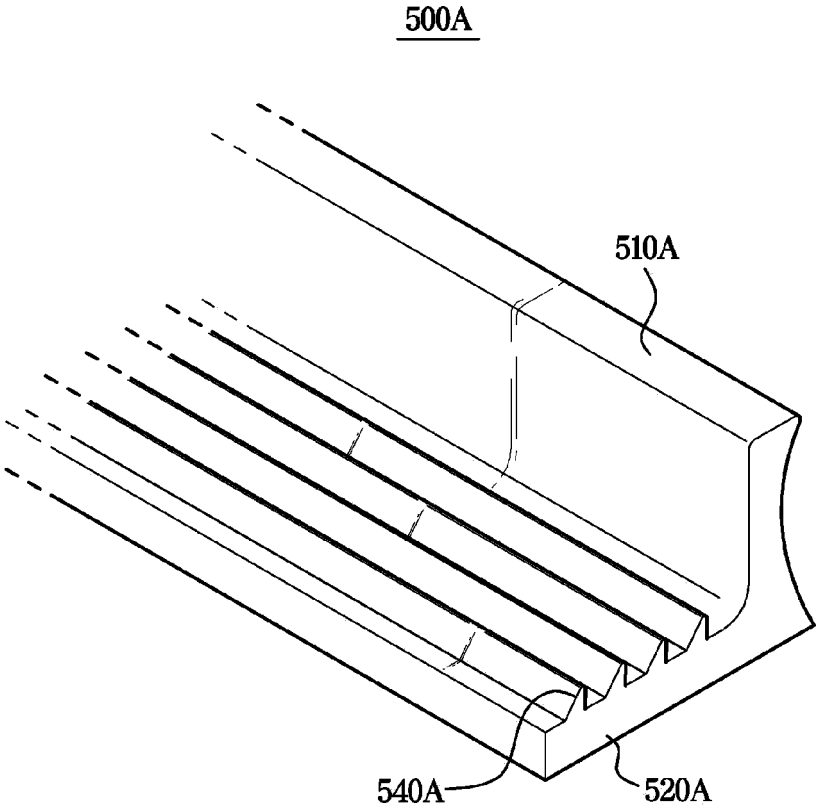
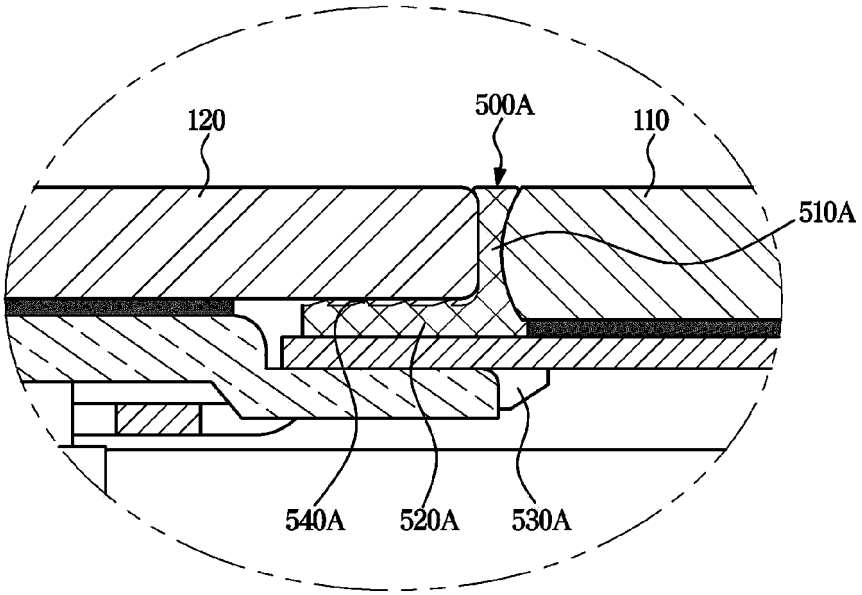


FIG. 13



## INTERNATIONAL SEARCH REPORT

International application No.
**PCT/KR2022/003885**

**A. CLASSIFICATION OF SUBJECT MATTER**

**H05B 6/12**(2006.01)i

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

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

H05B 6/12(2006.01); F24C 15/10(2006.01); F24C 3/00(2006.01); H05B 3/68(2006.01); H05B 6/04(2006.01)

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

Korean utility models and applications for utility models: IPC as above
Japanese utility models and applications for utility models: IPC as above

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

eKOMPASS (KIPO internal) & keywords: 조리(cook), 글라스(glass), 결합(join), 고정(fix), 히터(heater)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | KR 10-2021-0030728 A (SAMSUNG ELECTRONICS CO., LTD.) 18 March 2021 (2021-03-18)<br>See paragraph [0044]; claims 1-20; and figures 1-4. | 1-15 |
| A | US 5530224 A (SASSMAN, Mark S.) 25 June 1996 (1996-06-25)<br>See claim 1; and figures 3 and 7. | 1-15 |
| A | KR 10-2002-0056277 A (LG ELECTRONICS INC.) 10 July 2002 (2002-07-10)<br>See claims 1-3; and figure 3. | 1-15 |
| A | KR 10-1702660 B1 (LG ELECTRONICS INC.) 03 February 2017 (2017-02-03)<br>See paragraphs [0026]-[0027]; and figures 3-4. | 1-15 |
| A | KR 10-2163259 B1 (SU CON CO., LTD.) 08 October 2020 (2020-10-08)<br>See paragraph [0035]; claim 1; and figure 4. | 1-15 |

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
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"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| **08 July 2022** | **08 July 2022** |
| Name and mailing address of the ISA/KR<br>**Korean Intellectual Property Office**<br>**Government Complex-Daejeon Building 4, 189 Cheongsa-ro, Seo-gu, Daejeon 35208**<br>Facsimile No. **+82-42-481-8578** | Authorized officer<br><br>Telephone No. |

Form PCT/ISA/210 (second sheet) (July 2019)

**INTERNATIONAL SEARCH REPORT**
**Information on patent family members**

International application No.
**PCT/KR2022/003885**

| Patent document cited in search report | Publication date (day/month/year) | Patent family member(s) | Publication date (day/month/year) |
|---|---|---|---|
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| | | US 2021-0071872 A1 | 11 March 2021 |
| | | WO 2021-049796 A1 | 18 March 2021 |
| US 5530224 A | 25 June 1996 | US 6029592 A | 29 February 2000 |
| KR 10-2002-0056277 A | 10 July 2002 | None | |
| KR 10-1702660 B1 | 03 February 2017 | KR 10-2011-0079007 A | 07 July 2011 |
| KR 10-2163259 B1 | 08 October 2020 | KR 10-2020-0095701 A | 11 August 2020 |

Form PCT/ISA/210 (patent family annex) (July 2019)