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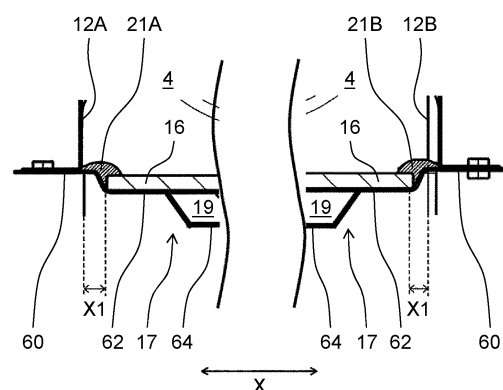
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(54) **HEATING COOKER**

(57) A heating cooker according to the present disclosure includes: a housing including a pair of left and right side walls, an upper wall, a lower wall, and a back wall to have a heating chamber; a support wall including a first wall part joined to and supporting one of the left and right side walls from below, a second wall part downwardly recessed on an inner side of the first wall part in a plan view and receiving the lower wall, and a bottom wall downwardly recessed on an inner side of the second wall part in a plan view; and an adhesive part joining a peripheral border of the lower wall and the support wall together. The adhesive part includes a first area extending from the peripheral border of the lower wall to a left gap between the left side wall and the first wall part and a second area extending from the peripheral border of the lower wall to a right gap between the right side wall and the first wall part.

FIG. 12



Description

TECHNICAL FIELD

[0001] The present disclosure relates to a heating cooker.

BACKGROUND ART

[0002] Conventionally proposed heating cookers use microwaves to cook heating targets, that is to say, foods (refer to, for example, PTL 1).

[0003] The heating cooker described in PTL 1 includes a heating chamber for accommodating a heating target, and a partition plate separating the heating chamber and a power supply chamber adjacently provided below the heating chamber. An adhesive is applied along a periphery of the partition plate, fixing the partition plate to walls of the heating chamber.

Citation List

Patent Literature

[0004] PTL 1: Unexamined Japanese Patent Publication No. 2010-261695

SUMMARY

[0005] However, there are interwall gaps not filled with the adhesive in the heating chamber, and steam and others that are produced in the heating chamber may leak through these gaps. Internal components that are disposed below the partition plate, such as a motor and a circuit, in particular may fail if steam and droplets contact these internal components. This may lead to degraded reliability of the heating cooker.

[0006] An object of the present disclosure is, therefore, to solve the above problem by providing a heating cooker with improved reliability.

[0007] A heating cooker according to an aspect of the present disclosure includes: a housing including a pair of left and right side walls, an upper wall, a lower wall, and a back wall that form a heating chamber for accommodating a heating target, with each of the left and right side walls spaced from the lower wall in a side to side direction; a support wall supporting the left and right side walls and the lower wall from below and including a first wall part joined from below to one of the left and right side walls, a second wall part downwardly recessed on an inner side of the first wall part in a plan view and receiving the lower wall, and a bottom wall downwardly recessed on an inner side of the second wall part in a plan view and forming a power supply chamber between the lower wall and the bottom wall; and an adhesive part joining a peripheral border of the lower wall and the support wall together. The adhesive part includes a first area extending from the peripheral border of the lower wall to

a left gap between the left side wall and the first wall part and a second area extending from the peripheral border of the lower wall to a right gap between the right side wall and the first wall part.

[0008] The heating cooker according to the present disclosure has improved reliability.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

FIG. 1 is a perspective view of a heating cooker according to an exemplary embodiment.

FIG. 2 is a perspective view of the heating cooker according to the exemplary embodiment.

FIG. 3 is a schematic view of a heating chamber according to the exemplary embodiment as seen from in front.

FIG. 4 is a plan view of a lower wall for the heating chamber according to the exemplary embodiment.

FIG. 5 is an enlarged view of a part of a menu display according to the exemplary embodiment.

FIG. 6 is a front view of a door according to the exemplary embodiment.

FIG. 7 is a rear view of the door according to the exemplary embodiment.

FIG. 8 is a sectional view taken along A-A of FIG. 7. FIG. 9A is a sectional view illustrating a state of a gasket according to the exemplary embodiment (when the door is open).

FIG. 9B is a sectional view illustrating a state of the gasket according to the exemplary embodiment (when the door is in the process of closing).

FIG. 9C is a sectional view illustrating a state of the gasket according to the exemplary embodiment (when the door is closed).

FIG. 10 is a sectional view of a gasket variation.

FIG. 11 is a sectional view of another gasket variation.

FIG. 12 illustrates a section including side walls, the lower wall, and a support wall according to the exemplary embodiment.

FIG. 13 is a plan view illustrating the support wall according to the exemplary embodiment with the lower wall placed on the support wall.

FIG. 14A illustrates an enlarged section of a (left) portion around an adhesive part according to the exemplary embodiment.

FIG. 14B illustrates an enlarged section of the (left) portion around the adhesive part according to the exemplary embodiment.

FIG. 14C illustrates an enlarged section of the (left) portion around the adhesive part according to the exemplary embodiment.

FIG. 15 illustrates an enlarged section of a (right) portion around an adhesive part according to the exemplary embodiment.

FIG. 16 illustrates an enlarged section of a (front)

portion around an adhesive part according to the exemplary embodiment.

DESCRIPTION OF EMBODIMENT

[0010] A heating cooker according to a first aspect includes: a housing including a pair of left and right side walls, an upper wall, a lower wall, and a back wall that form a heating chamber for accommodating a heating target, with each of the left and right side walls spaced from the lower wall in a side to side direction; a support wall supporting the left and right side walls and the lower wall from below and including a first wall part joined from below to one of the left and right side walls, a second wall part downwardly recessed on an inner side of the first wall part in a plan view and receiving the lower wall, and a bottom wall downwardly recessed on an inner side of the second wall part in a plan view and forming a power supply chamber between the lower wall and the bottom wall; and an adhesive part joining a peripheral border of the lower wall and the support wall together. The adhesive part includes a first area extending from the peripheral border of the lower wall to a left gap between the left side wall and the first wall part and a second area extending from the peripheral border of the lower wall to a right gap between the right side wall and the first wall part.

[0011] In this structure, the gap between the left side wall and the first wall part of the support wall and the gap between the right side wall and the first wall part of the support wall are sealed up with the adhesive part, so that steam that is produced in the heating chamber is prevented from leaking through the gaps and falling onto internal components provided in a lower space of the heating cooker. Therefore, failures of the internal components of the heating cooker are preventable, and the heating cooker has improved reliability.

[0012] A heating cooker according to a second aspect is based particularly on the first aspect and is as follows. The adhesive part also includes a third area extending in a side to side direction and connecting the first area and the second area. The first area and the second area each have a greater width than the third area.

[0013] In this structure, the gap between the left side wall and the first wall part of the support wall and the gap between the right side wall and the first wall part of the support wall are more reliably sealed up.

[0014] A heating cooker according to a third aspect is based particularly on the first or second aspect and is such that a surface of the first wall part includes a drawn guide line showing where the adhesive part is to be applied.

[0015] In this structure, the gap between the left side wall and the first wall part of the support wall and the gap between the right side wall and the first wall part of the support wall are more reliably sealed up.

EXEMPLARY EMBODIMENT

[0016] With reference to the drawings, a detailed description is hereinafter provided of an exemplary embodiment according to the present disclosure.

[0017] FIGS. 1 to 3 schematically illustrate structure of heating cooker 2 according to the exemplary embodiment. FIGS. 1 and 2 are perspective views of heating cooker 2 as seen from different angles. FIG. 3 is a schematic sectional view of heating chamber 4 as seen from in front.

[0018] Heating cooker 2 illustrated in FIGS. 1 and 2 is an appliance that uses heat to cook a heating target, that is to say, food (not illustrated). Heating cooker 2 according to the present exemplary embodiment includes a heating unit that heats the heating target. The heating unit includes a magnetron, a heater, and a steam generator (none of these is illustrated). The magnetron generates microwaves and supplies the microwaves to heating chamber 4 via an antenna (microwave radiation unit) provided in power supply chamber 19 (described later). The heater performs radiation heating on the heating target in heating chamber 4. The steam generator supplies steam to heating chamber 4. Since heating cooker 2 according to the present exemplary embodiment has the function of using the microwaves to cook the heating target, heating cooker 2 is referred to as a microwave oven.

[0019] As illustrated in FIGS. 1 and 2, heating cooker 2 includes housing 6, door 8, and operation part 10. Housing 6 includes heating chamber 4.

[0020] Heating chamber 4 is a space where the heating target is placed. As FIGS. 1 and 2 illustrate, heating chamber 4 is formed by a plurality of inner wall surfaces of housing 6. Specifically, as illustrated in FIG. 3, a pair of left and right side walls 12A and 12B, upper wall 14, lower wall 16, and back wall 18 form heating chamber 4, which is roughly of rectangular-parallelepiped shape. Side walls 12A and 12B may be referred to as "left and right side walls" or "sides". Upper wall 14 may be referred to as "top side" or "upper side". Lower wall 16 may be referred to as "bottom side" or "lower side". Back wall 18 may be referred to as "back side".

[0021] As illustrated in FIG. 3, support wall 17 is provided as a member that supports side walls 12A and 12B and lower wall 16. Support wall 17 supports lower wall 16 from below while forming power supply chamber 19 (refer to FIG. 12) with lower wall 16. Adhesive parts 21A and 21B are provided as members joining lower wall 16 and support wall 17 together. Descriptions of adhesive parts 21A and 21B and support wall 17 are provided later.

[0022] A return is made to FIGS. 1 and 2. Door 8 is a member for opening and closing heating chamber 4. Door 8 is rotatably fixed to front face 40 of housing 6. In the present exemplary embodiment, door 8 is a "drop-down" door that swings up and down on a horizontally extending pivot.

[0023] Operation part 10 is a member that a user operates when selecting cooking menu items. In the present

exemplary embodiment, front face 40 of housing 6 is provided with operation part 10 in a position not facing door 8. In the present exemplary embodiment, operation part 10 includes a liquid-crystal display, buttons, and a dial, among others.

Menu Display

[0024] As FIG. 2 illustrates, heating cooker 2 according to the present exemplary embodiment is provided with a plurality of displays 20, 22, and 24 on lower wall 16 of heating chamber 4. With reference to FIGS. 4 to 6, a description is provided of these displays.

[0025] FIG. 4 is a plan view of lower wall 16 for heating chamber 4. As illustrated in FIG. 4, first display 20, second display 22, and third display 24 are provided in order in a direction from back Y1 to front Y2 of heating chamber 4.

[0026] First display 20 is a guide display showing where the heating target should be placed. Second display 22 is a caution display showing cautions and warnings about use of heating cooker 2. Third display 24 is a menu display showing cooking menus.

[0027] Putting third display 24 in particular on lower wall 16 of heating chamber 4 enables the user to see the cooking menus with door 8 open. Since above-mentioned operation part 10 (FIGS. 1 and 2) is provided in the position not facing door 8, the user can select a cooking menu item by operating operation part 10 while looking at the cooking menus of third display 24 with door 8 open.

[0028] As illustrated in FIG. 4, third display 24 is located near front Y2 of heating chamber 4 compared with first display 20, which is located in a center of lower wall 16 of heating chamber 4. This particular third display 24 is closer to front Y2 of heating chamber 4 than the other displays, namely, first and second displays 20 and 22 are. With this arrangement, the menu display is more conspicuous, enabling improved user convenience.

[0029] In the present exemplary embodiment, an oven light (not illustrated) is also provided to illuminate heating chamber 4. The oven light of the present exemplary embodiment is slantingly provided at side wall 12A or 12B to illuminate lower wall 16 of heating chamber 4. The oven light of the present exemplary embodiment is controlled by a controller (not illustrated) to automatically turn on as door 8 is opened. Since the oven light in this configuration automatically turns on as door 8 is opened, third display 24 becomes easily seen, facilitating the menu item selection even in the dark.

[0030] Next, FIG. 5 illustrates an enlarged part of third display 24. As illustrated in FIG. 5, third display 24 includes menu item names 32 and marks 34. Menu item names 32 are names of cooking menu items. Marks 34 correspond to the cooking menu items, respectively. In the present exemplary embodiment, marks 34 corresponding respectively to the cooking menu items are numbers. Menu item names 32 and marks 34 are shown

together in third display 24. This enables the user to readily select the cooking menu items.

[0031] Next, FIG. 6 illustrates front side 26 of door 8. FIG. 6 is a front view of door 8. As illustrated in FIG. 6, front side 26 of door 8 includes transparent part 28 and non-transparent part 30. Transparent part 28 is made of a transparent material, while non-transparent part 30 has a coating of non-transparent material. Transparent part 28 enables the user to see an interior of heating chamber 4. Non-transparent part 30 defines a border of front side 26 of door 8.

[0032] As FIG. 6 illustrates, transparent part 28 does not have any displays such as characters and symbols. Some conventional heating cookers have transparent parts 28 with printed menu displays. However, since heating cooker 2 according to the present exemplary embodiment has third display 24 on lower wall 16 of heating chamber 4, transparent part 28 has no menu display. Transparent part 28 thus has an increased view area, making the interior of heating chamber 4 more visible through transparent part 28. Moreover, door design improvements are possible.

[0033] As described above, heating cooker 2 according to the exemplary embodiment includes housing 6, which includes heating chamber 4 for accommodating a heating target, door 8 for opening and closing heating chamber 4, and operation part 10 provided in the position of front face 40 of housing 6 that does not face door 8. In this configuration, lower wall 16, which is the bottom side of heating chamber 4, has third display 24, which is the menu display.

[0034] Providing the menu display on the bottom side of heating chamber 4 enables the user to select the cooking menu item by operating operation part 10 while looking at the menu display with door 8 open. This enables the improved user convenience. Since front side 26 of door 8, unlike conventional ones, does not need to have a printed menu display, the interior of heating chamber 4 is more visible through door 8, and the door design improvements are also possible.

Gasket

[0035] A return is made to FIG. 1. Back side 36 of door 8 is provided with gasket 38. With reference to FIGS. 7 to 9C, a description is provided of gasket 38 used in heating cooker 2 according to the present exemplary embodiment.

[0036] FIG. 7 is a rear view of door 8, illustrating back side 36 of door 8. Gasket 38 illustrated in FIG. 7 is a seal member attached to back side 36 of door 8 and provides sealing between door 8 and housing 6. With heating chamber 4 closed with door 8, that is to say, with door 8 closed, a gap where back side 36 of door 8 and front face 40 of housing 6 face each other is sealed with gasket 38. In this way, steam and others that are produced in heating chamber 4 are prevented from leaking out of heating cooker 2.

[0037] As illustrated in FIG. 7, gasket 38 according to the present exemplary embodiment is a loop-shaped member extending without breaks along the border of door 8.

[0038] FIG. 8 is a sectional view taken along A-A of FIG. 7. FIG. 8 illustrates opened door 8, that is to say, door 8 in an open state. A bottom-to-top direction in FIG. 8 refers to a front-to-back direction of door 8. Front side 26 of door 8 is illustrated as a lower side in FIG. 8, while back side 36 of door 8 is illustrated as an upper side in FIG. 8. Front side 26 corresponds to an outer side of door 8, while back side 36 corresponds to an inner side of door 8.

[0039] As illustrated in FIG. 8, back side 36 of door 8 includes door body 41 and choke cover 42.

[0040] Door body 41 is a main body of door 8 and is made of metal. Door body 41 includes, along its outer periphery, a loop-shaped groove and choke structure 44. Choke structure 44 prevents transmission of the micro-waves and includes a plurality of metal plates arranged like comb teeth.

[0041] Choke structure 44 is loop-shaped and is covered by choke cover 42 serving as a cover member. Choke cover 42 is attached in position to door body 41, covering choke structure 44.

[0042] Groove 46 is formed between door body 41 and choke cover 42. Gasket 38 is fitted in groove 46. Gasket 38 fitted in groove 46 provides sealing between door body 41 and choke cover 42. Gasket 38 projects in direction C away from door 8 and thus is capable of contacting front face 40 of housing 6.

[0043] With reference to FIGS. 9A to 9C, a detailed description is provided of structure of gasket 38. FIGS. 9A to 9C are sectional views illustrating different states of gasket 38. FIGS. 9A corresponds to door 8 in the open state, and FIGS. 9B and 9C correspond to closing door 8 and closed door 8, respectively. FIG. 9B illustrates door 8 in the process of closing, while FIG. 9C illustrates door 8 in a closed state.

[0044] As illustrated in FIG. 9A, gasket 38 includes fitting part 48, first rising part 50, and second rising part 52.

[0045] Fitting part 48 is where gasket 38 is fitted to door 8. In the present exemplary embodiment, fitting part 48 is fitted over a leading end of choke cover 42.

[0046] First rising part 50 and second rising part 52 both rise from fitting part 48. First rising part 50 and second rising part 52 rise in direction C away from door 8.

[0047] First rising part 50 rises from first position P1 of fitting part 48. First rising part 50 faces counterpart wall 54 of door body 41. Counterpart wall 54 is a curved part formed at the intermediate part of door body 41 so as to be disposed inside door 8

[0048] First rising part 50 includes first extending part 50A and second extending part 50B. First extending part 50A extends from fitting part 48, and second extending part 50B slantingly extends from first extending part 50A.

[0049] First extending part 50A extends along counterpart wall 54 in spaced relation to counterpart wall 54.

In other words, first extending part 50A does not touch counterpart wall 54. Second extending part 50B slantingly extends from first extending part 50A toward counterpart wall 54 and has its leading end in contact with counterpart wall 54. In this structure, space S1 is formed between first rising part 50 and counterpart wall 54.

[0050] Fitting part 48 similarly includes, on a part facing counterpart wall 54, a plurality of projections 56. Projections 56 touch counterpart wall 54, but otherwise fitting part 48 does not touch counterpart wall 54. As with above-described first rising part 50, fitting part 48 forms space S2 with counterpart wall 54.

[0051] Second rising part 52 rises from second position P2 of fitting part 48 that is different from first position P1. Second rising part 52 includes connective part 52A, first slope part 52B, second slope part 52C, and bend 52D.

[0052] Connective part 52A rises from fitting part 48. In the present exemplary embodiment, connective part 52A rises vertically from fitting part 48. Connective part 52A connects with first slope part 52B.

[0053] First slope part 52B slantingly extends from connective part 52A. First slope part 52B slopes in direction D1, that is to say, toward above-described first rising part 50. In the present exemplary embodiment, direction D1 is a direction toward a center of back side 36 of door 8.

[0054] Second slope part 52C slantingly extends from first slope part 52B. Second slope part 52C slopes in an opposite direction from first slope part 52B, that is to say, in direction D2 away from first rising part 50. In the present exemplary embodiment, direction D2 is opposite to direction D1.

[0055] Having first slope part 52B and second slope part 52C, second rising part 52 is of dogleg shape. A point where first slope part 52B connects with second slope part 52C is referred to as bending point 53. When door 8 is open as illustrated in FIG. 9A, neither first slope part 52B nor second slope part 52C is in contact with first rising part 50. Space S3 is formed between first rising part 50 and second rising part 52. Space S3 is a bag-shaped space that is not closed but exposed to the outside in the open state of door 8.

[0056] As dotted lines indicate in FIG. 9A, first rising part 50 and second rising part 52 overlap each other when viewed in a direction perpendicular to door 8.

[0057] Bend 52D is an inward bend extending from second slope part 52C. Provided with this bend 52D, second rising part 52 is prevented from rising excessively in direction C away from door 8.

[0058] As door 8 is closed toward housing 6 as illustrated in FIG. 9B, second rising part 52 of gasket 38 comes into contact with front face 40 of housing 6. Second rising part 52 is compressed by being pressed by front face 40 of housing 6 and bends. Since second rising part 52 is of dogleg shape as described above, the bending is such that first slope part 52B and second slope part 52C approach each other, while bending point 53 approaches first rising part 50. Accordingly, first slope part 52B contacts first rising part 50 as illustrated in FIG. 9B

and closes space S3.

[0059] As described above, second rising part 52 does not contact first rising part 50 when door 8 is open. When door 8 closes, second rising part 52 comes into contact with first rising part 50 and closes space S3. Before second rising part 52 contacts first rising part 50, repelling force of gasket 38 is weak. In stages after the contact, the repelling force grows stronger. Gasket 38 is thus capable of exhibiting stepwise cushioning functionalities.

[0060] Although space S3 is closed, space S3 is not tightly closed because first rising part 50 and second rising part 52 are not an integral member. Therefore, the repelling force of gasket 38 does not become excessively strong even after the contact between first rising part 50 and second rising part 52. Thus the cushioning functionality that gasket 38 exhibits is the desired one.

[0061] Integrally forming first rising part 50 and second rising part 52 to have space S3 as an always closed hollow space is a conceivable comparative example here. However, since the hollow space is always closed in this comparative example, the hollow space could have increased internal pressure due to temperature increase, thus causing gasket 38 to exhibit excessively strong repelling force. Moreover, a method of manufacturing gasket 38 with the hollow space is limited to extrusion molding, so that other manufacturing methods cannot be used. By contrast, gasket 38 according to the present exemplary embodiment has space S3 that is not always closed, so that the repelling force of gasket 38 is prevented from becoming excessively strong. Moreover, since no hollow space needs to be formed in gasket 38, methods of manufacturing gaskets 38 can include not only extrusion molding but also other methods such as press working and injection molding.

[0062] Since first rising part 50 and second rising part 52 have overlapping areas when viewed in a direction perpendicular to door 8 as illustrated in FIG. 9A, second rising part 52 more reliably comes into contact with first rising part 50 as illustrated in FIG. 9B.

[0063] As gasket 38 illustrated in FIG. 9B is compressed further, first rising part 50 is pressed by second rising part 52 and moves in direction D1 toward counterpart wall 54 as illustrated in FIG. 9C. As described earlier, first rising part 50 forms space S1 with counterpart wall 54. Space S1 becomes smaller as first rising part 50 moves. Such space S1 enables first rising part 50 to absorb compressive force caused by housing 6 pressing second rising part 52. In this way, gasket 38 is capable of gradually increasing its repelling force to exhibit the desired cushioning functionality.

[0064] In the present exemplary embodiment, connective part 52A of second rising part 52 promotes the absorption of the compressive force caused by housing 6 pressing second rising part 52.

[0065] In the state illustrated in FIG. 9C, gasket 38 provides sealing between housing 6 and door 8 and prevents steam and others from leaking out of heating chamber 4.

[0066] As described above, heating cooker 2 accord-

ing to the exemplary embodiment includes housing 6, which includes heating chamber 4 for accommodating a heating target, door 8 for opening and closing heating chamber 4, and gasket 38. Gasket 38 is an elastic member that is attached to door 8 to provide sealing between closed door 8 and front face 40 of housing 6 that faces door 8. Gasket 38 includes fitting part 48 fitted to back face 36, which is the inner side of door 8, first rising part 50, and second rising part 52. First rising part 50 and second rising part 52 rise in direction C away from door 8 respectively from first position P1 and second position P2 of fitting part 48 that are spaced from each other. Second rising part 52 includes first slope part 52B and second slope part 52C. First slope part 52B slopes in direction D1 toward first rising part 50, while second slope part 52C slantingly extends from first rising part 52B in direction D2 away from first rising part 50. When door 8 closes, second rising part 52 is pressed by front face 40 of housing 6 and contacts first rising part 50.

[0067] With this structure, second rising part 52 does not contact first rising part 50 when door 8 is open and contacts first rising part 50 when door 8 closes. Thus gasket 38 is capable of exhibiting the desired cushioning functionalities.

[0068] Door 8 of heating cooker 2 according to the exemplary embodiment includes door body 41 and choke cover 42. Door body 41 includes choke structure 44 that prevents microwave leakage. Choke cover 42 is attached to door body 41, covering the loop-shaped groove along choke structure 44. Gasket 38 is disposed in groove 46 between door body 41 and choke cover 42. In this structure, choke structure 44 prevents the microwave leakage, while gasket 38 disposed in groove 46 between choke cover 42 and door body 41 provides sealing.

[0069] In the above description, each of first slope part 52B and second slope part 52C of second rising part 52 is of linear cross-section; however, this case is not limiting. For example, as FIGS. 10 and 11 illustrate, second slope part 58 of curved cross-section may be used. As illustrated in FIG. 11, curved bend 59 may be used.

Adhesive Parts

[0070] With reference to FIGS. 12 to 16, the descriptions are provided next of adhesive parts 21A and 21B and support wall 17 that are illustrated in FIG. 3.

[0071] FIG. 12 illustrates a section including side walls 12A and 12B, lower wall 16, and support wall 17. FIG. 13 is a plan view illustrating support wall 17 with lower wall 16 placed on support wall 17.

[0072] As illustrated in FIG. 12, support wall 17 includes first wall parts 60, second wall part 62, and bottom wall 64.

[0073] First wall parts 60 are a left and a right end of support wall 17. First wall parts 60 support side walls 12A and 12B from below. Positioned on an inner side between first wall parts 60, second wall part 62 is a downwardly recessed part relative to first wall parts 60. Second wall

part 62 supports lower wall 16 from below. Bottom wall 64 is an even more downwardly recessed part on an inner side of second wall part 62. Bottom wall 64 forms power supply chamber 19 with lower wall 16.

[0074] Power supply chamber 19 is a space housing those including the antenna (not illustrated), which stirs the microwaves in radiation toward heating chamber 4. Lower wall 16 is a partition vertically separating heating chamber 4 and power supply chamber 19.

[0075] As illustrated in FIG. 12, each of left and right side walls 12A and 12B in the present exemplary embodiment is spaced distance X1 from lower wall 16 in a side to side direction that line X indicates. Adhesive part 21A is provided between side wall 12A and lower wall 16. Adhesive part 21B is provided between side wall 12B and lower wall 16.

[0076] Adhesive parts 21A and 21B are the members joining lower wall 16 and support wall 17 together. A silicone rubber adhesive, for example, is used to form adhesive parts 21A and 21B.

[0077] With reference to FIGS. 14A to 14C, a description is provided of an application method for forming adhesive parts 21A and 21B. FIGS. 14A to 14C illustrate enlarged sections of a left portion around adhesive part 21A as seen from in front of heating chamber 4.

[0078] As illustrated in FIG. 14A, lower wall 16 is placed on support wall 17 first. Specifically, lower wall 16 is placed on second wall part 62 of support wall 17.

[0079] Next, application is performed to form adhesive part 21A. Specifically, the application is performed so that adhesive part 21A fills a gap between peripheral border 27 of lower wall 16 and support wall 17 as illustrated in FIG. 14B. FIG. 14B corresponds to FIG. 13.

[0080] Here the application is performed so that one edge 66 of adhesive part 21A is positioned on an upper surface of lower wall 16. At the same time, another edge 67 of adhesive part 21A reaches a predetermined position of first wall part 60 of support wall 17 in the application. Two guide lines 68A and 68B have been drawn on a surface of first wall part 60, showing where edge 67 of adhesive part 21A should be. When the application is performed to form adhesive part 21A on first wall part 60, an application amount is controlled so that edge 67 of adhesive part 21A will be between two guide lines 68A and 68B. This enables adhesive part 21A to reach the predetermined position in the application.

[0081] As FIG. 14B illustrates, adhesive part 21A has width or side-to-side dimension W1.

[0082] Next, side wall 12A is joined to support wall 17. Specifically, side wall 12A is placed on first wall part 60 of support wall 17 as illustrated in FIG. 14C and is joined. In the present exemplary embodiment, side wall 12A is mechanically joined to support wall 17, using protruding flange holes 70. Specifically, screwing is performed, inserting screws in protruding flange holes 70. The screwing is not limiting, and any other joining method such as riveting or welding may be adopted.

[0083] As FIG. 14C illustrates, gap 72 is formed be-

tween side wall 12A and first wall part 60. Respective positions of above-mentioned guide lines 68A and 68B have been predetermined in order that adhesive part 21A reaches gap 72 between side wall 12A and first wall part 60. Therefore, gap 72 is sealed up with adhesive part 21A as illustrated in FIG. 14C.

[0084] Sealing up gap 72 with adhesive part 21A strengthens the joining between side wall 12A and first wall part 60. Moreover, steam and others that are produced in heating chamber 4 of heating cooker 2 in operation are prevented from leaking out of heating chamber 4 through gap 72. Internal components (not illustrated) that are disposed below support wall 17, such as a motor and a control circuit, may fail if droplets of steam contact the internal components. Sealing up gap 72, therefore, prevents the droplets from contacting the internal components through gap 72. Consequently, such failures of the internal components of heating cooker 2 are preventable, and heating cooker 2 has improved reliability.

[0085] FIGS. 14A to 14C have been used to describe adhesive part 21A and side wall 12A in the left portion seen from in front of heating chamber 4; however, the same application method is used for forming adhesive part 21B in a right portion. Specifically, the application is performed so that adhesive part 21B joins peripheral border 27 of lower wall 16 and support wall 17 together while reaching a position where adhesive part 21B fills up gap 74 between side wall 12B and first wall part 60 as illustrated in FIG. 15. In this way, joining between side wall 12B and support wall 17 that uses screws inserted in protruding flange holes 76 is strengthened, and leakage of steam and others through gap 74 is prevented. Consequently, the failures of the internal components of heating cooker 2 are preventable, and heating cooker 2 has the improved reliability.

[0086] As FIG. 15 illustrates, adhesive part 21B has width or side-to-side dimension W2.

[0087] Above-described adhesive part 21A of heating cooker 2 according to the present exemplary embodiment covers a first (left) area extending from peripheral border 27 of lower wall 16 to gap 72 between left side wall 12A and first wall part 60, while above-described adhesive part 21B covers a second (right) area extending from peripheral border 27 of lower wall 16 to gap 74 between right side wall 12B and first wall part 60. Therefore, the failures of the internal components of heating cooker 2 are preventable, and heating cooker 2 has the improved reliability.

[0088] A return is made to FIG. 13. Support wall 17 includes fourth wall part 65 along its front (that is to say, on a front side in the drawing). Fourth wall part 65 is closest to door 8 and continuously extends from above-described first wall parts 60. As with first wall parts 60, fourth wall part 65 is joined to lower wall 16 by an adhesive part.

[0089] FIG. 16 illustrates an enlarged section of a portion around adhesive part 77 joining fourth wall part 65 and lower wall 16 together. As illustrated in FIG. 16, ad-

hesive part 77 joins peripheral border 27 of lower wall 16 and support wall 17 together and has width or side-to-side dimension W3.

[0090] Above-described adhesive parts 21A and 21B correspond respectively to the first area and the second area, while adhesive part 77 corresponds to a third area that extends in a side to side direction, connecting the first area and the second area. In the present exemplary embodiment, width W1 of the first area and width W2 of the second area are equally set greater than width W3 of the third area. Securing the sufficient side-to-side dimensions for adhesive parts 21A and 21B enables more reliable sealing of gap 72 between side wall 12A and first wall part 60 and more reliable sealing of gap 74 between side wall 12B and first wall part 60.

[0091] The present disclosure has been described with reference to the above exemplary embodiment; however, the above exemplary embodiment is not restrictive of the present disclosure.

[0092] Although the present disclosure has been fully described in conjunction with the preferred embodiment with reference to the accompanying drawings, various changes and modifications are apparent to those skilled in the art. Such changes and modifications are to be understood as included within the scope of the present disclosure as defined by the appended claims, unless they depart therefrom. Moreover, combinations of the constituting elements and rearrangements are possible in the exemplary embodiment without departing from the scope and spirit of the present disclosure.

[0093] The present disclosure is applicable to any heating cooker that uses heat to cook a heating target.

REFERENCE MARKS IN THE DRAWINGS

[0094]

2:	heating cooker
4:	heating chamber
6:	housing
8:	door
10:	operation part
12A, 12B:	side wall (left or right side wall)
14:	upper wall (top side)
16:	lower wall (bottom side)
17:	support wall
18:	back wall (back side)
19:	power supply chamber
20:	first display
21A, 21B:	adhesive part
22:	second display
24:	third display (menu display)
26:	front side (outer side)
28:	transparent part
30:	non-transparent part
32:	menu item name
34:	mark
36:	back side (inner side)

38:	gasket
40:	front face
41:	door body
42:	choke cover
5 44:	choke structure
46:	groove
48:	fitting part
50:	first rising part
50A:	first extending part
10 50B:	second extending part
52:	second rising part
52A:	connective part
52B:	first slope part
52C:	second slope part
15 52D:	bend
53:	bending point
54:	counterpart wall
56:	projection
58:	second slope part
20 59:	bend
60:	first wall part
62:	second wall part
64:	bottom wall
65:	fourth wall part
25 66:	one edge
67:	another edge
68A,	68B: guide line
70:	protruding flange hole
72:	gap
30 74:	gap
76:	protruding flange hole
77:	adhesive part
P1:	first position
P2:	second position
35 S1, S2, S3:	space
W1, W2, W3:	width
X1:	distance
Y1:	back
Y2:	front

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Claims

1. A heating cooker comprising:

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a housing including a pair of left and right side walls, an upper wall, a lower wall, and a back wall, the pair of left and right side walls, the upper wall, the lower wall, and the back wall forming a heating chamber configured to accommodate a heating target, each of the left and right side walls being spaced from the lower wall in a side to side direction;

a support wall including:

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a first wall part joined to and supporting one of the left and right side walls from below;
a second wall part downwardly recessed on

an inner side of the first wall part in a plan view and receiving the lower wall; and
a bottom wall downwardly recessed on an inner side of the second wall part in a plan view and forming a power supply chamber between the lower wall and the bottom wall; and

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an adhesive part joining a peripheral border of the lower wall and the support wall together, wherein
the adhesive part includes:

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a first area extending from the peripheral border of the lower wall to a left gap between the left side wall and the first wall part; and
a second area extending from the peripheral border of the lower wall to a right gap between the right side wall and the first wall part.

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2. The heating cooker according to claim 1, wherein

the adhesive part further includes a third area extending in the side to side direction and connecting the first area and the second area, and the first area and the second area each have a greater width than the third area.

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3. The heating cooker according to claim 1 or 2, wherein a surface of the first wall part includes a drawn guide line showing where the adhesive part is to be applied.

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FIG. 1

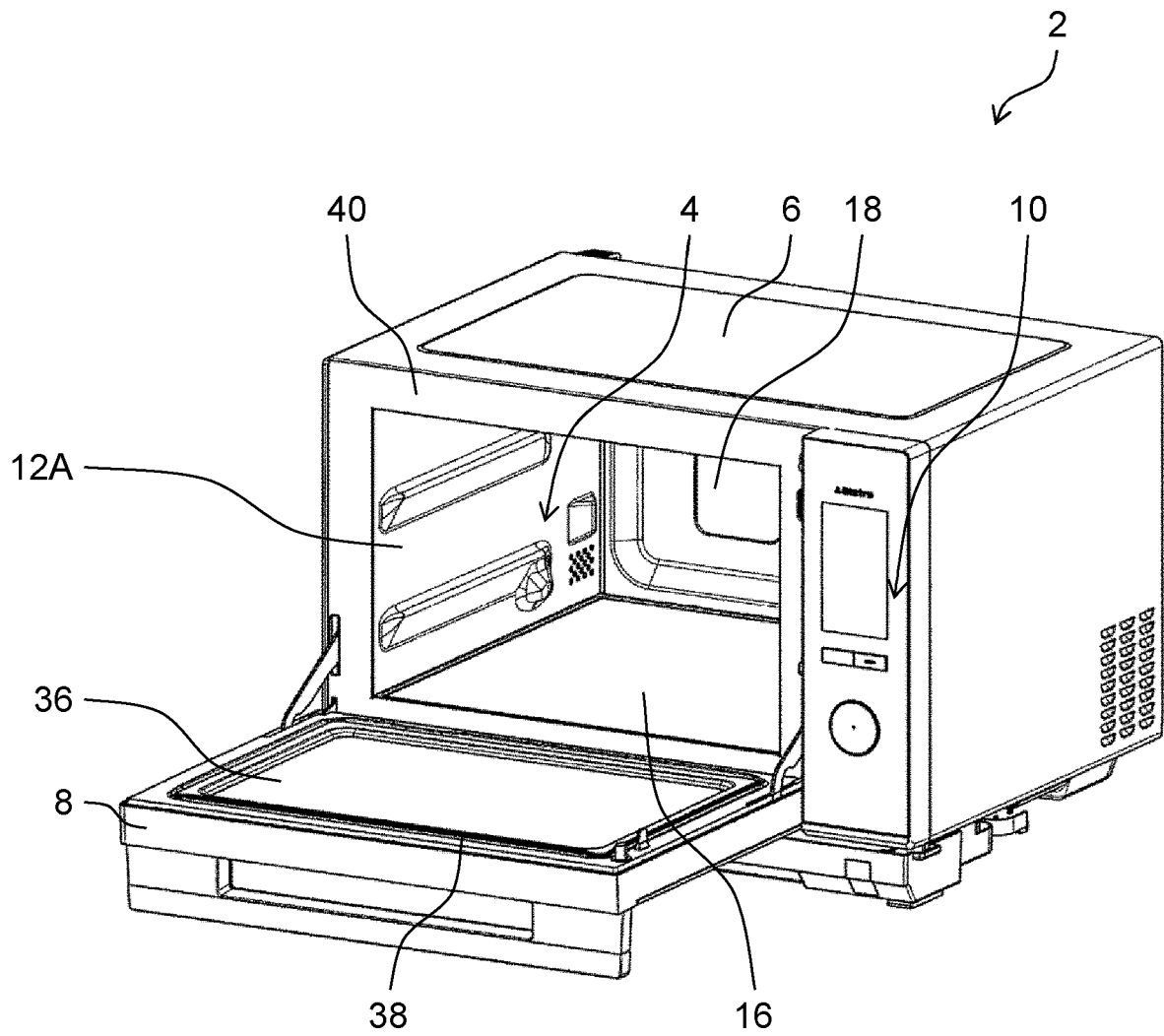


FIG. 2

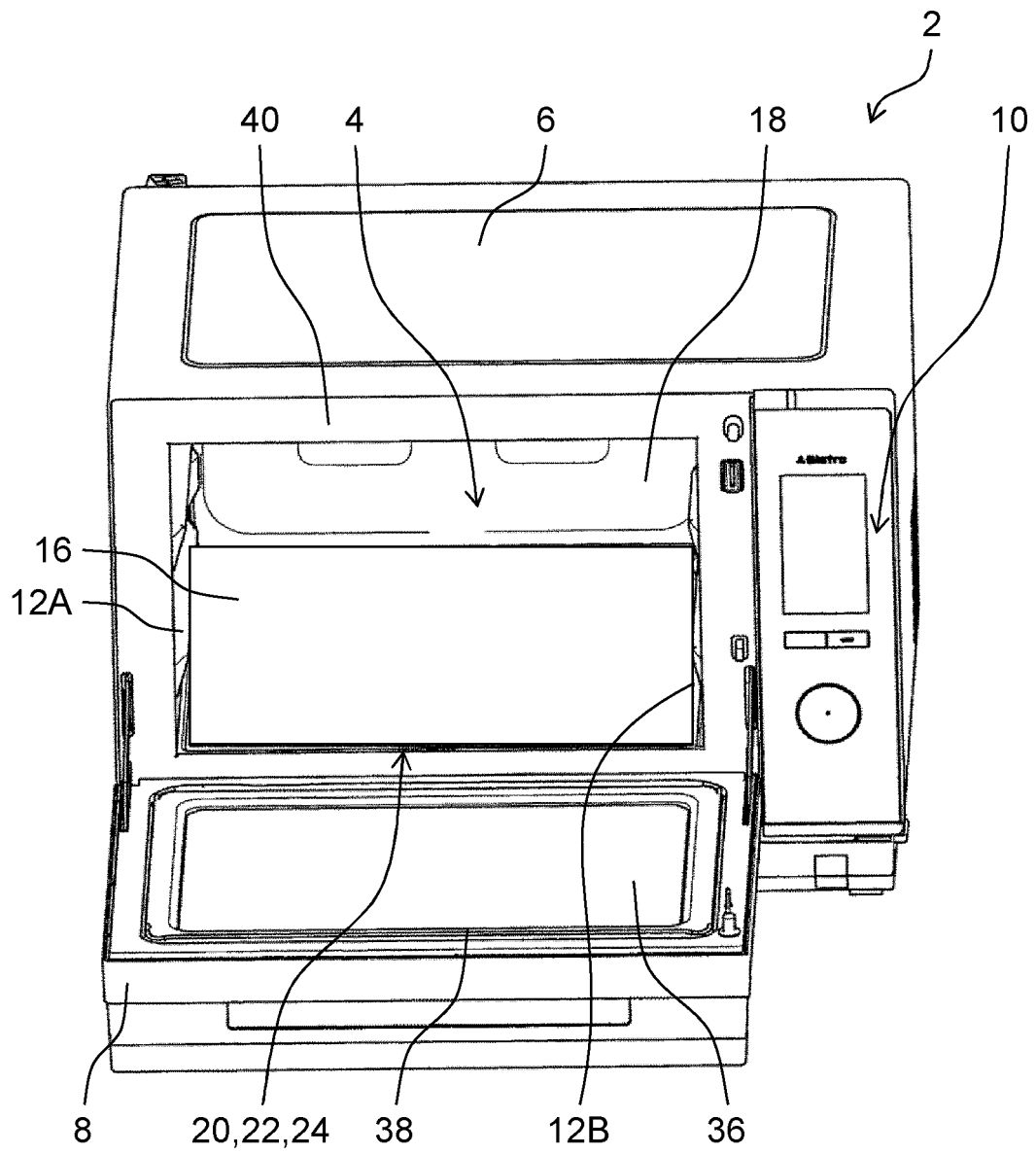


FIG. 3

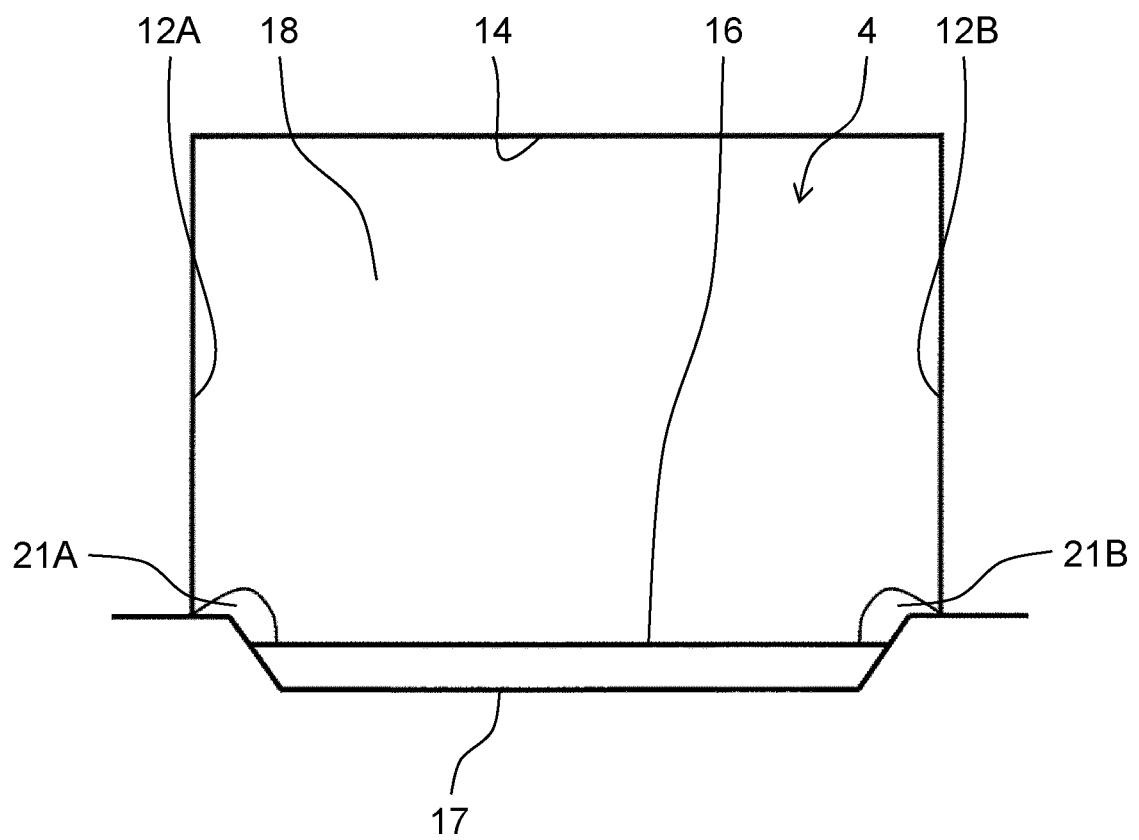


FIG. 4

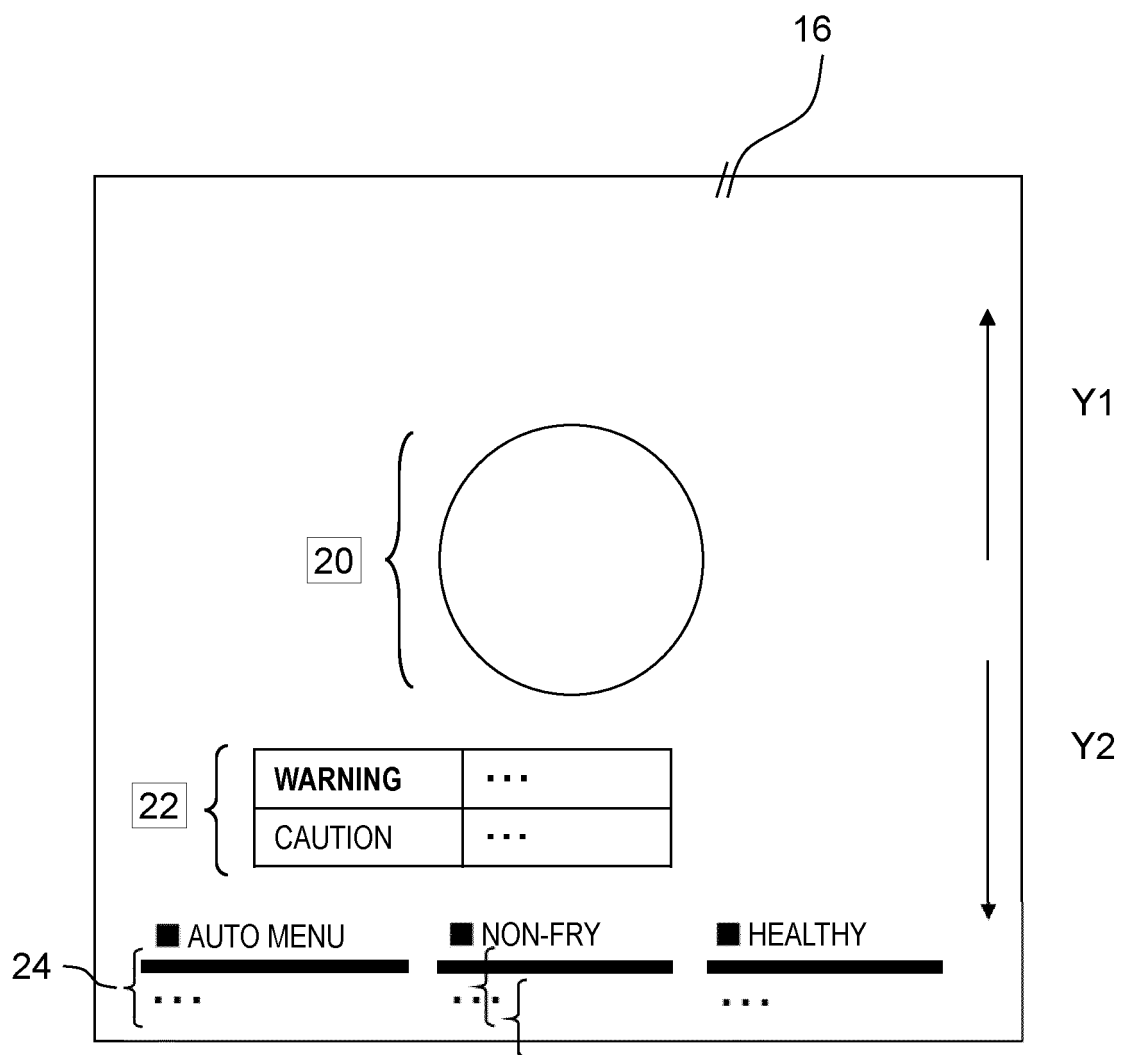


FIG. 5

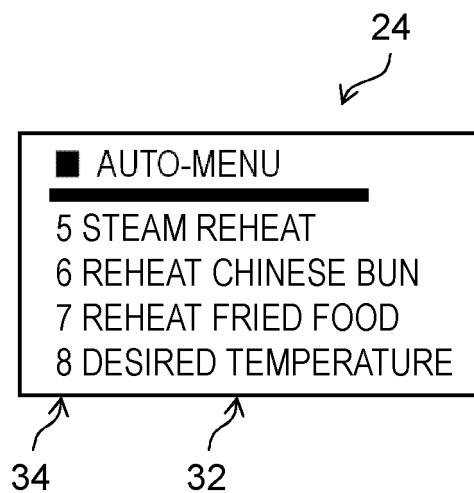


FIG. 6

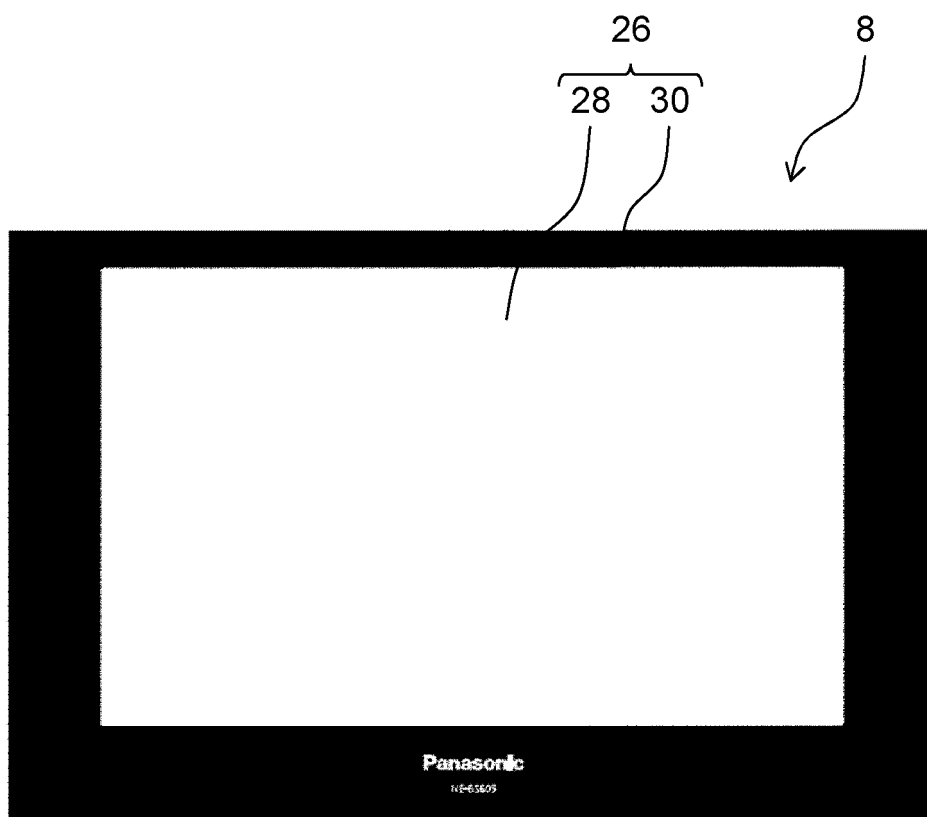


FIG. 7

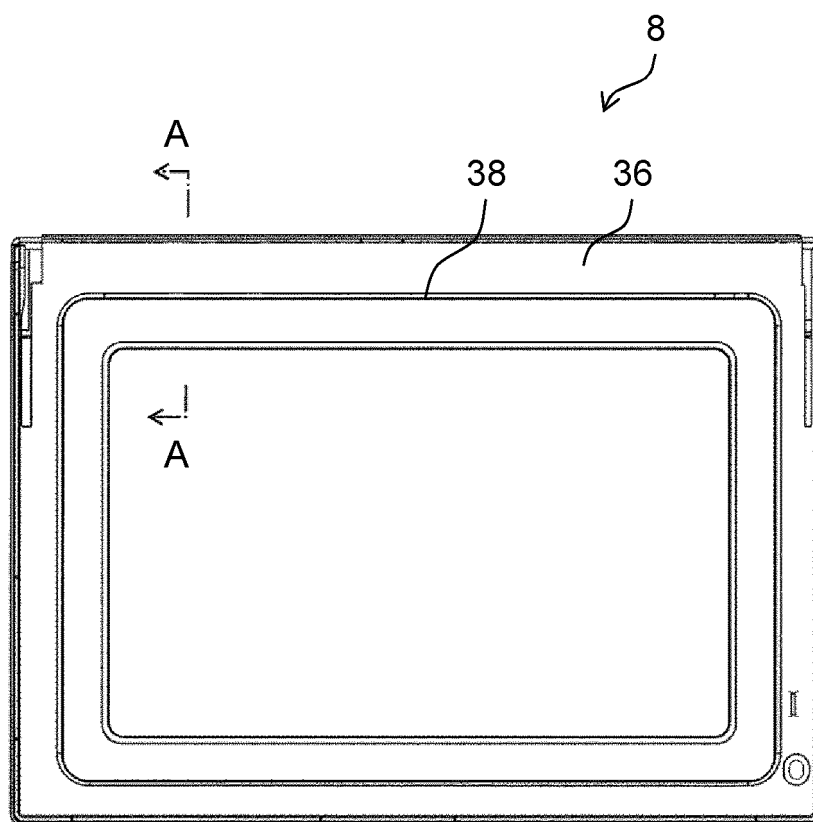


FIG. 8

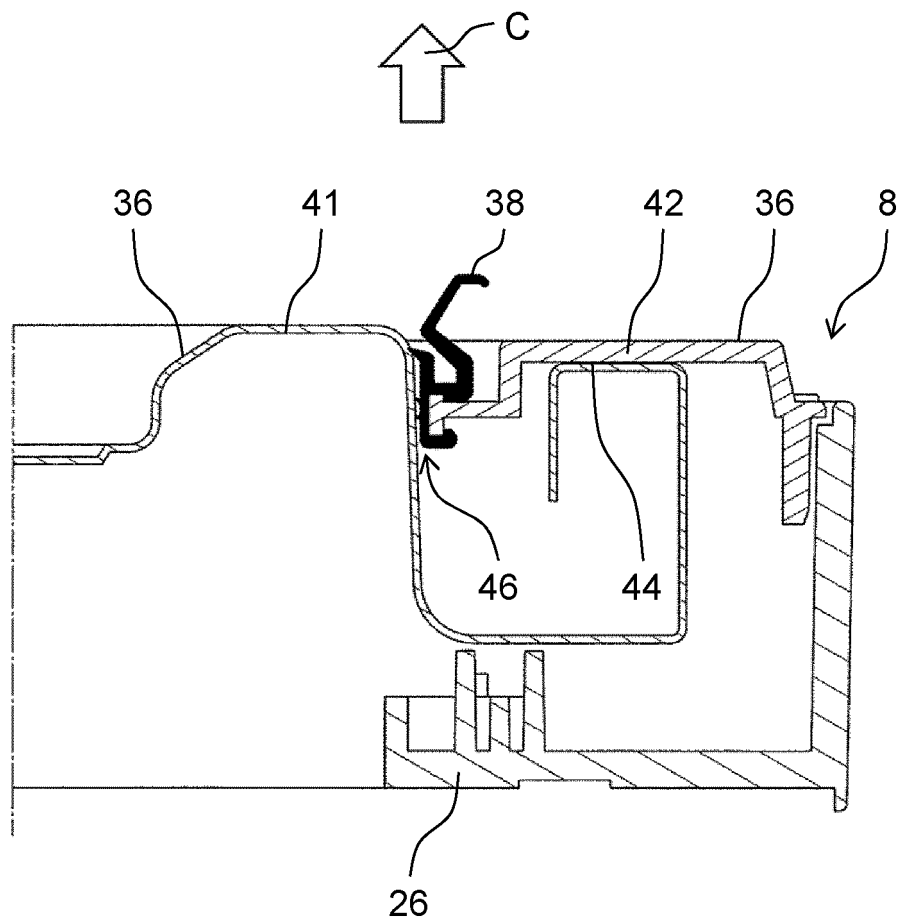


FIG. 9A

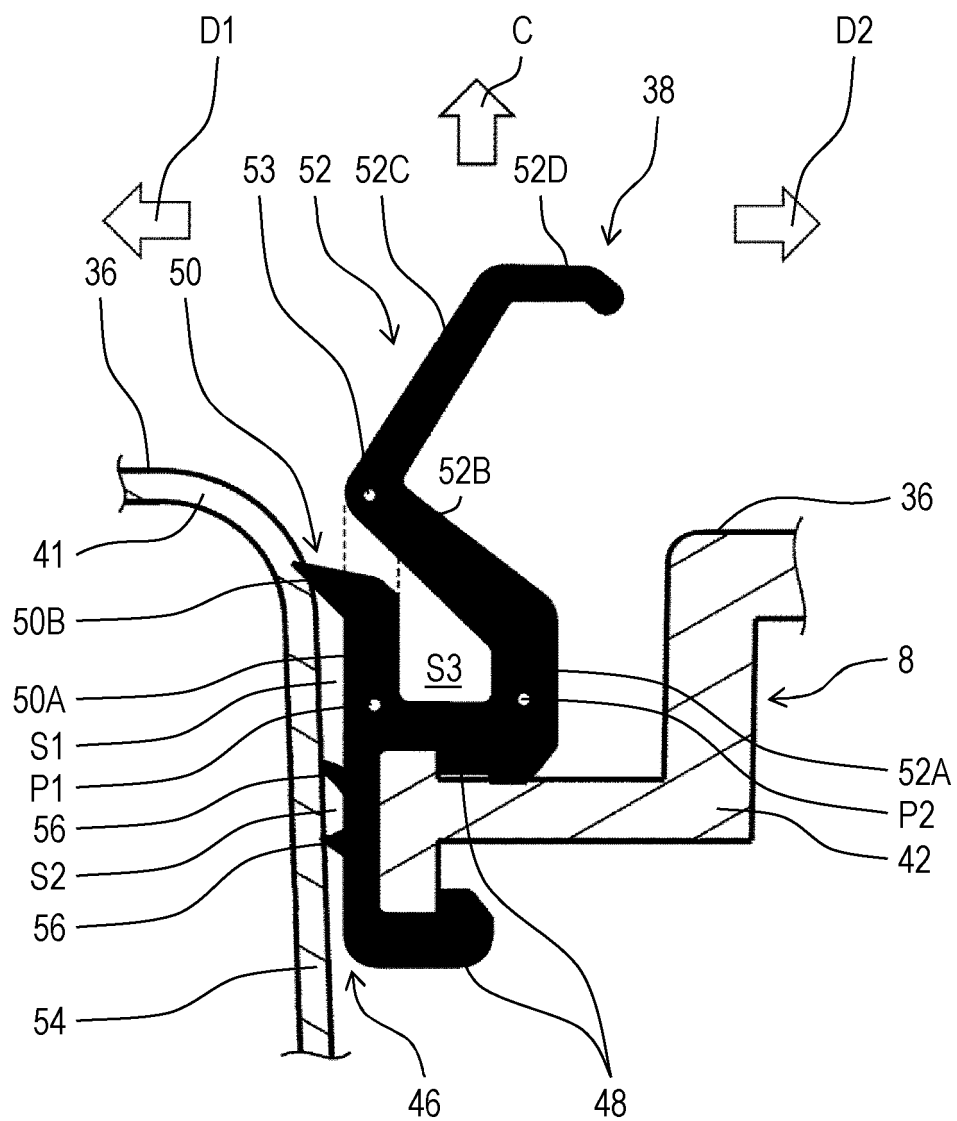


FIG. 9B

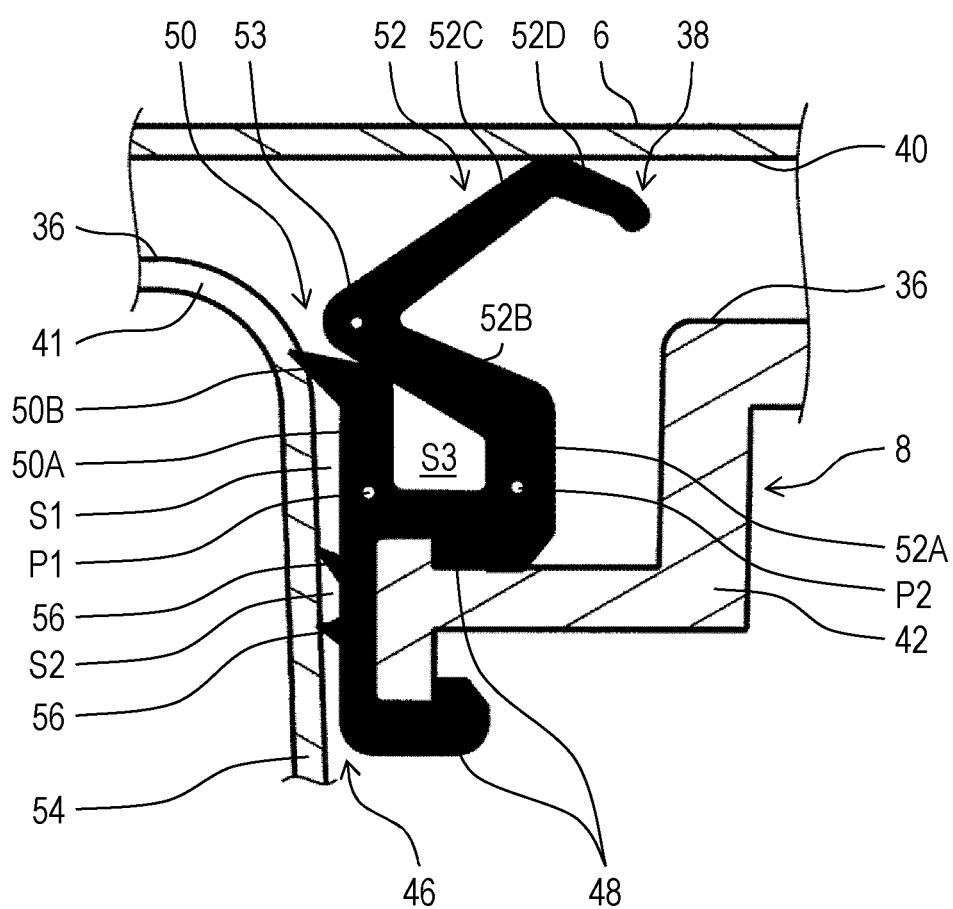


FIG. 9C

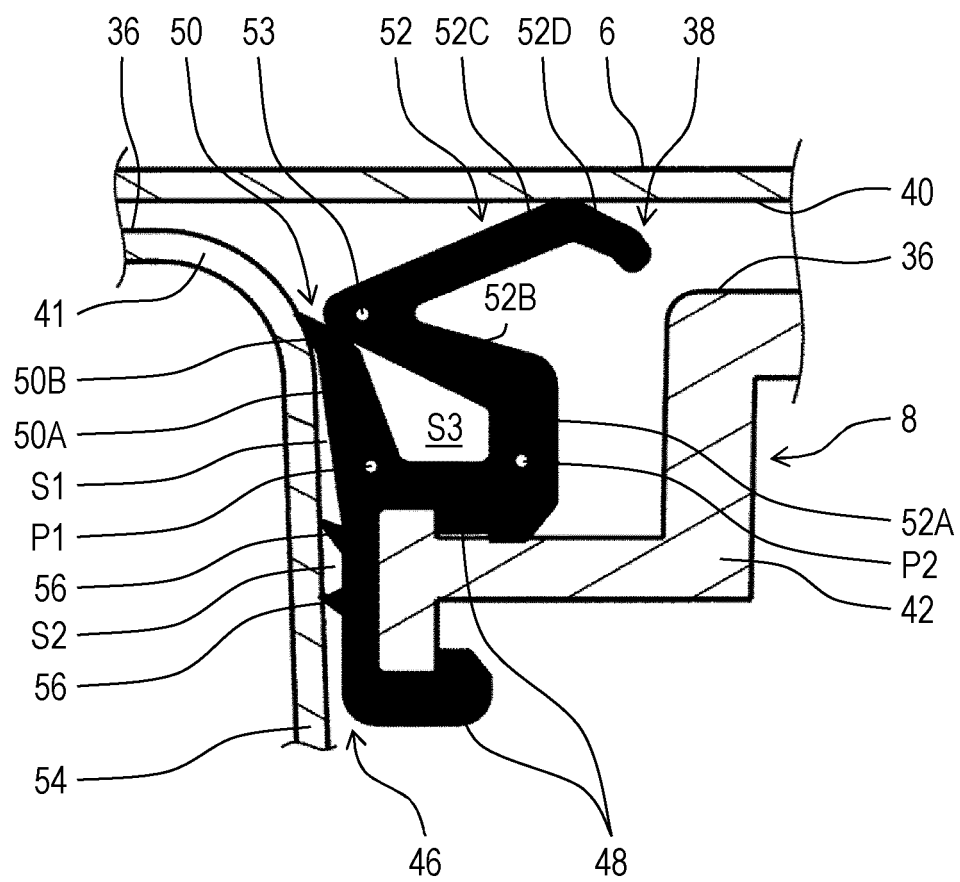


FIG. 10

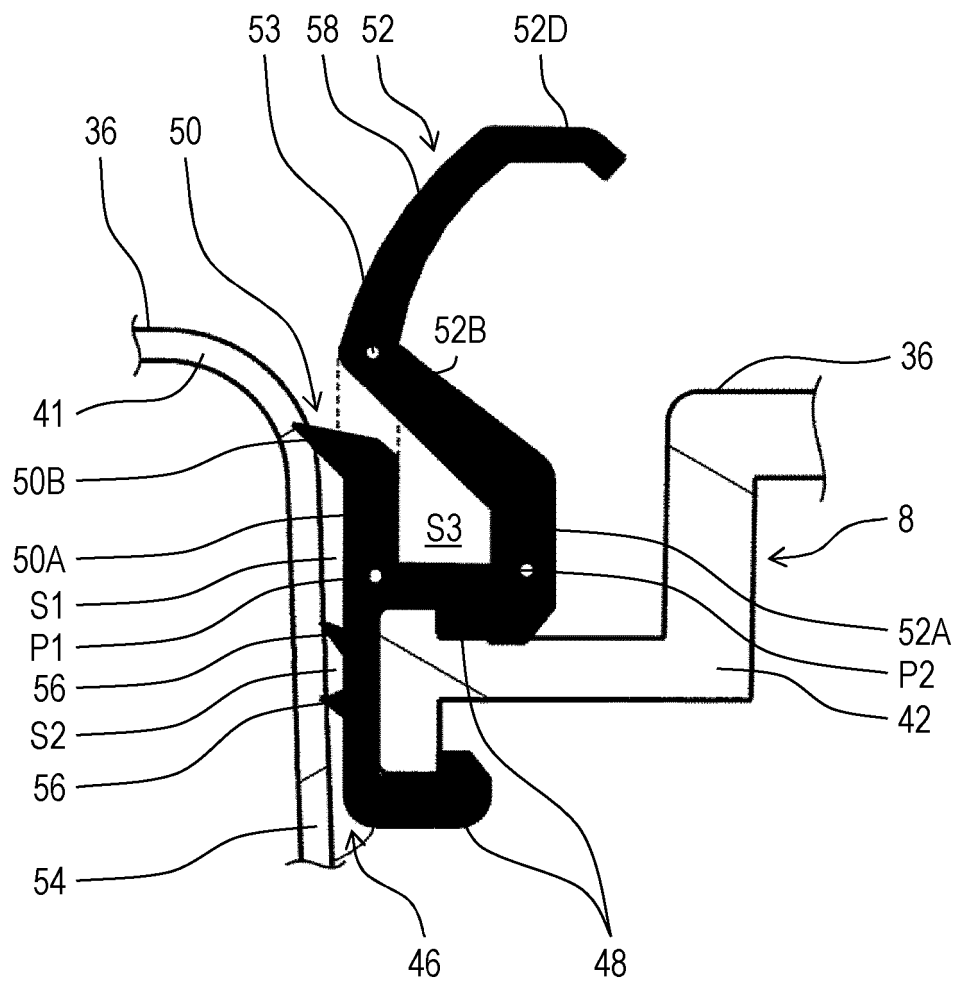


FIG. 11

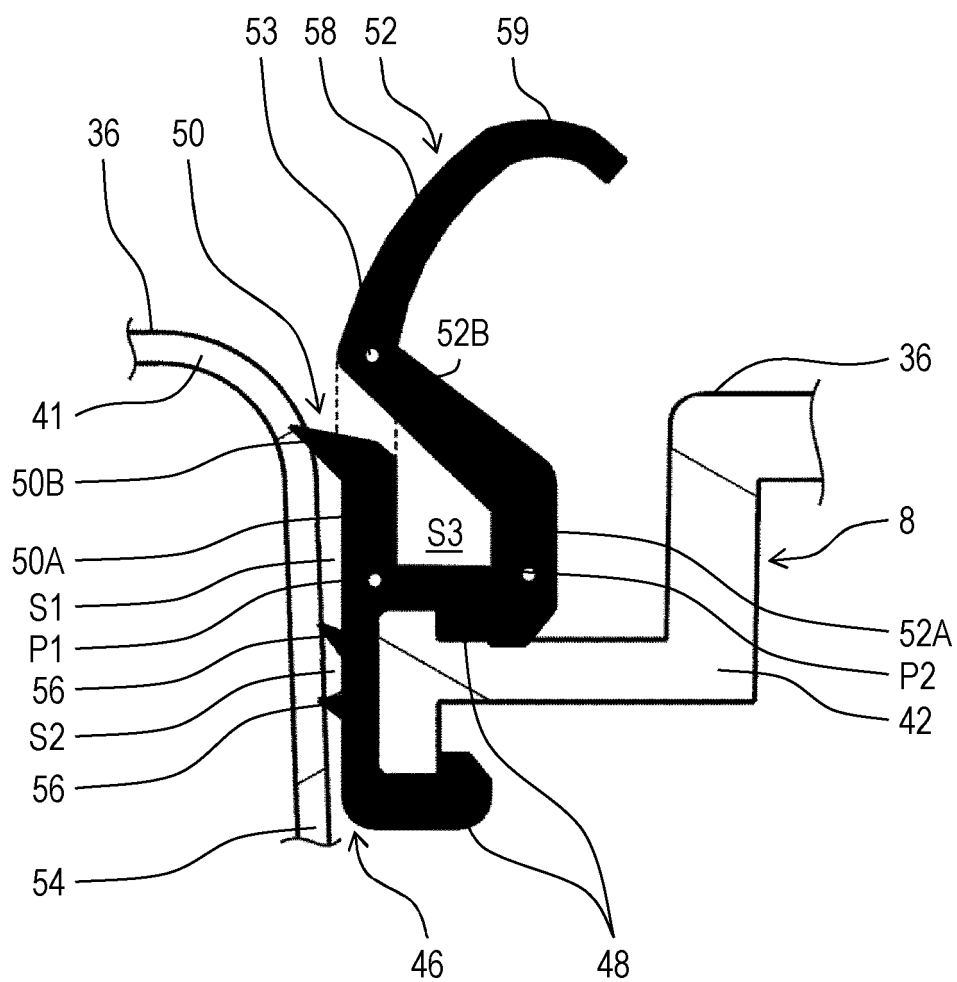


FIG. 12

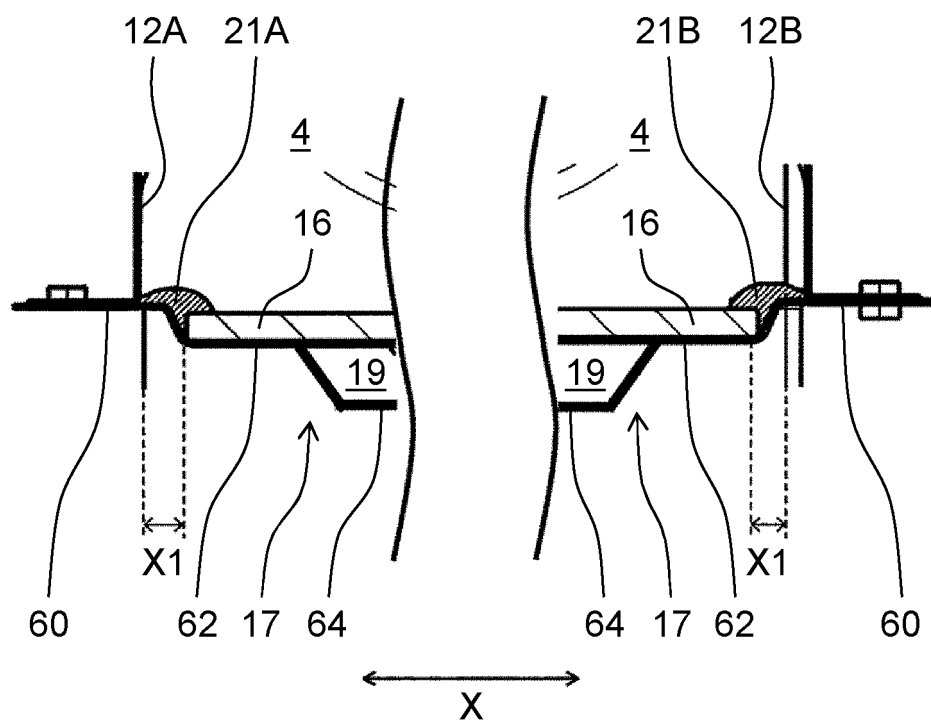


FIG. 13

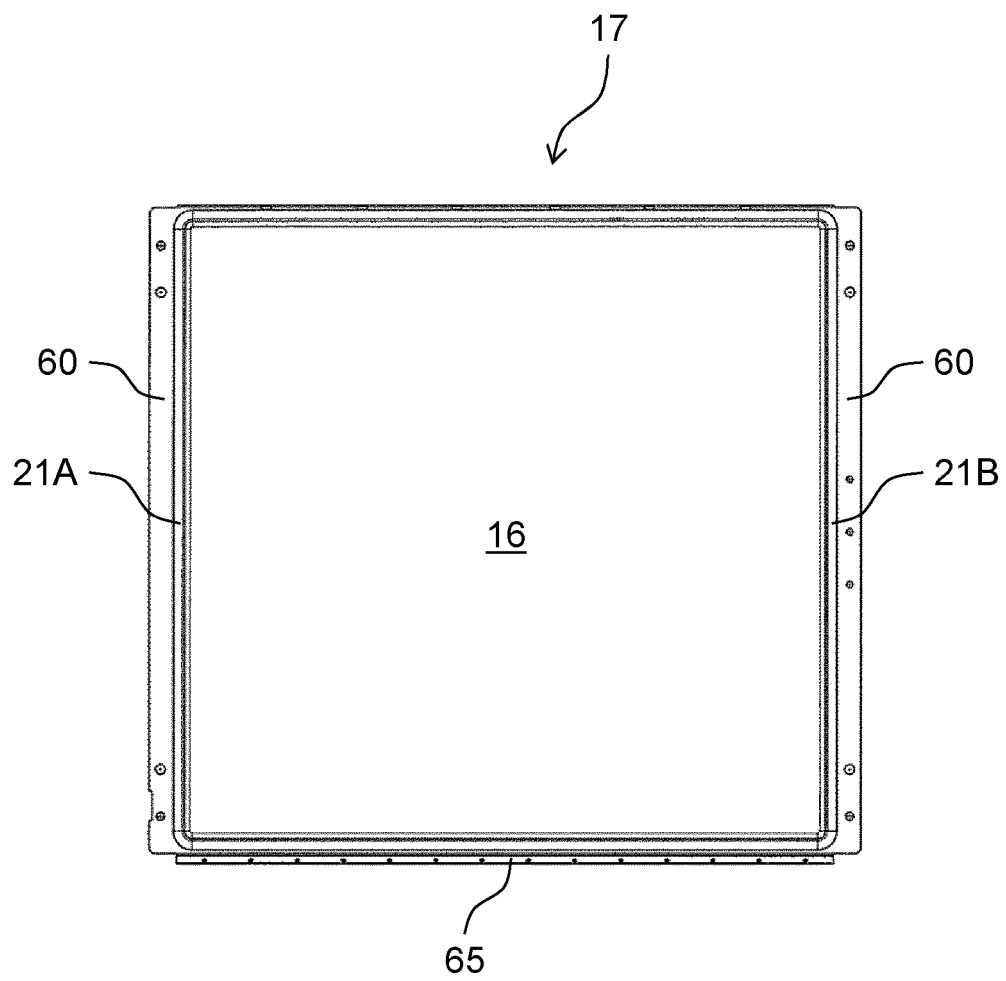


FIG. 14A

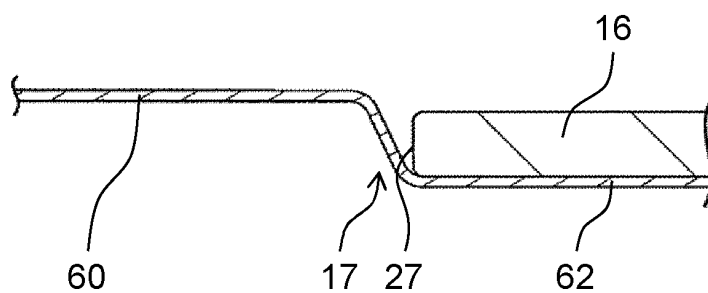


FIG. 14B

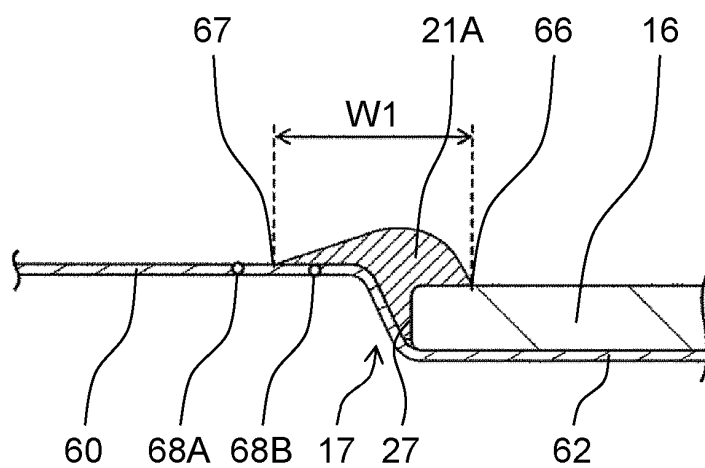


FIG. 14C

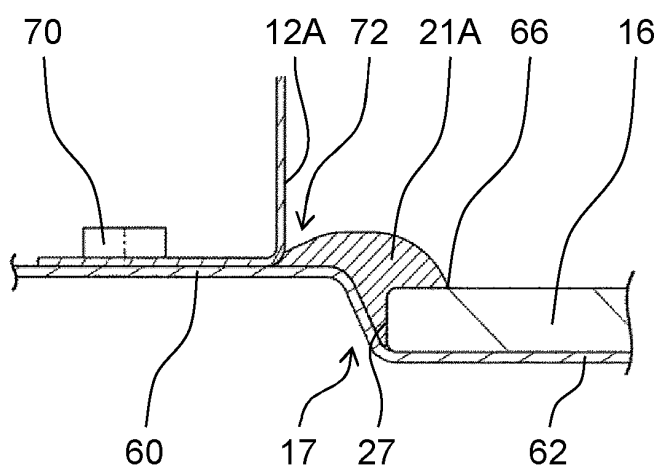


FIG. 15

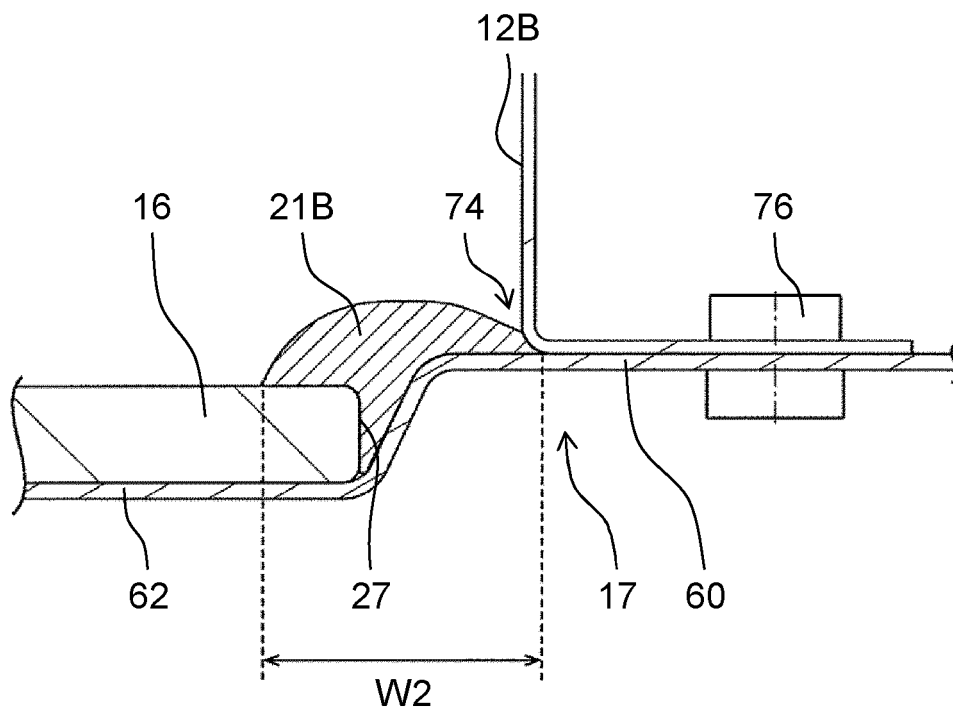
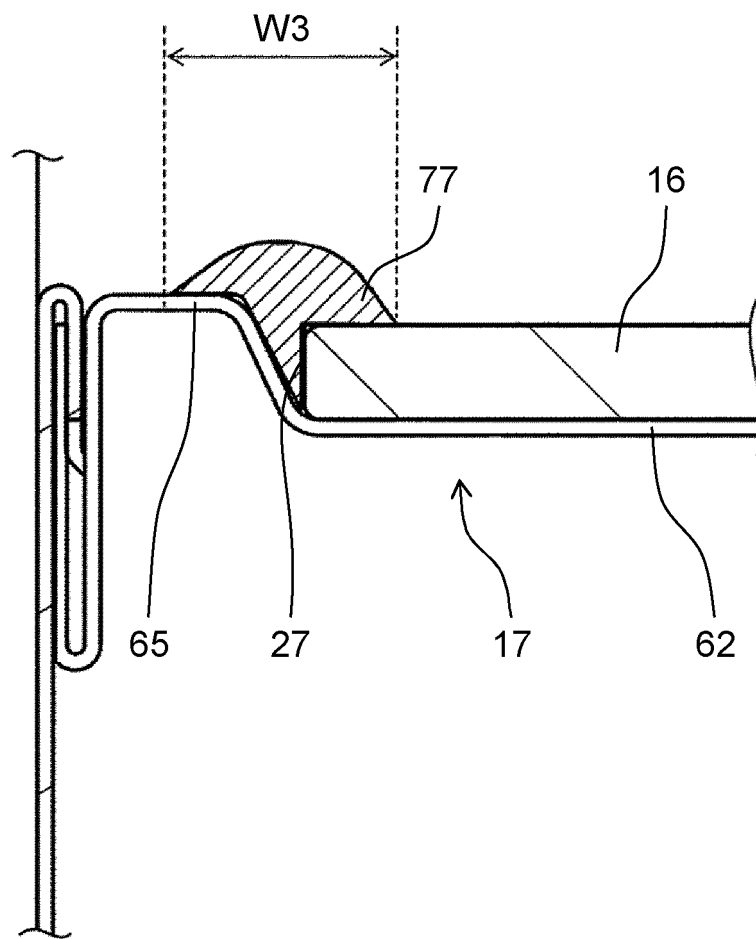


FIG. 16



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2019/043529

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl. F24C7/02 (2006.01) i, F24C15/00 (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)

Int.Cl. F24C7/02, F24C15/00

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

Published examined utility model applications of Japan 1922-1996

Published unexamined utility model applications of Japan 1971-2019

Registered utility model specifications of Japan 1996-2019

Published registered utility model applications of Japan 1994-2019

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	JP 2002-327926 A (SANYO ELECTRIC CO., LTD.) 15 November 2002, paragraphs [0022]-[0052], fig. 4-11 (Family: none)	1-2 3
A	JP 2009-216282 A (MITSUBISHI ELECTRIC CORPORATION) 24 September 2009, entire text, all drawings (Family: none)	1-3
A	JP 2009-236414 A (TOSHIBA CORPORATION) 15 October 2009, entire text, all drawings (Family: none)	1-3



Further documents are listed in the continuation of Box C.



See patent family annex.

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"P" document published prior to the international filing date but later than the priority date claimed

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"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

29.11.2019

Date of mailing of the international search report

10.12.2019

Name and mailing address of the ISA/

Japan Patent Office

3-4-3, Kasumigaseki, Chiyoda-ku,

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Authorized officer

Telephone No.

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Patent documents cited in the description

- JP 2010261695 A [0004]