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(54) **Cooking apparatus**

Kochvorrichtung

Appareil de cuisson

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Description

BACKGROUND

1. Field

[0001] Embodiments relate to a cooking apparatus having an improved mounting structure of a heat source to heat food.

2. Description of the Related Art

[0002] A cooking apparatus refers to an apparatus to process or cook food by heating the food. A halogen heater may be used for a heat source to heat the food in the cooking apparatus. The halogen heater transmits heat using a visible ray or an infrared ray and thereby cooks food.

[0003] A cooking apparatus using such a halogen heater uses electricity and therefore does not consume oxygen nor exhaust toxic gas. Furthermore, the aesthetic appearance of the cooking apparatus may be improved. Differently from a cooking apparatus using gas, the halogen heater cooking apparatus has a simple appearance with a flat top side and therefore is convenient to install in a built-in manner. Accordingly, the halogen heater is getting spotlighted as a heat source for cooking apparatuses.

[0004] Reference US 4,489,234 A relates to a cooking apparatus comprising a cover plate with a lower and an upper member and a honeycomb structure therebetween, a radiant energy producing means which are surrounded by a reflector means. The reflector means are formed parabolically in order to collect and concentrate radiance towards an open mouth region of the reflector means.

[0005] Reference DE 17 53 176 A1 describes heating means comprising a heater which is disposed between an upper and a lower plate, wherein in both plates openings are formed. Through the openings the generated heat by the heater can escape to the outside of the heating means.

[0006] It is the object of the present invention to provide a cooking apparatus which comprises simple constructive features which are able to enhance energy transmission efficiency.

[0007] This object can be solved with the technical features of claim 1.

[0008] Improved embodiments can be provided by the technical features of the dependent claims.

SUMMARY

[0009] Therefore, it is an aspect to provide a cooking apparatus to enhance the energy transmission efficiency by improving a mounting structure of a heater.

[0010] It is another aspect to provide a cooking apparatus enabling uniform distribution of energy by improving

a mounting structure of a heater.

[0011] Additional aspects will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the invention.

[0012] In accordance with one aspect, a cooking apparatus includes a plate to put a cooker thereon, a heater disposed under the plate, and a guide member disposed between the plate and the heater to induce energy emitted from the heater toward the plate.

[0013] The guide member may include a plurality of tunnels partitioned from one another, and the tunnels pass and reflect the energy being emitted from the heater.

[0014] The tunnels may have a predetermined length.

[0015] The tunnels may include a material capable of reflecting an image of the heater.

[0016] The guide member may have a lattice structure having a predetermined thickness.

[0017] The heater may include a halogen heater.

[0018] The cooking apparatus may further include a reflection member disposed under the heater to reflect energy from the heater toward the guide member.

[0019] In accordance with another aspect, a cooking apparatus includes a plate to put a cooker thereon, a heater disposed under the plate, and a reflection member disposed under the heater, wherein the reflection member includes at least one uneven surface part to reflect the energy emitted from the heater in several directions.

[0020] The uneven surface part may include at least one plane surface.

[0021] A guide member may be further provided between the plate and the heater, and the reflection member may include a peripheral part supporting the guide member.

[0022] The peripheral part may enclose a lateral side of the heater.

[0023] In accordance with another aspect, a cooking apparatus includes a plate to put a cooker thereon, a heater disposed under the plate to emit energy, a reflection member disposed under the heater to reflect the energy toward the plate, and a guide member disposed above the heater to induce the energy toward the plate.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] These and/or other aspects of the invention will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is a perspective view showing the external appearance of a cooking apparatus according to an embodiment;

FIG. 2 is a view showing the structure of the cooking apparatus shown in FIG. 1;

FIG. 3 is a sectional view showing the structure of a cook top of the cooking apparatus of FIG. 1; and

FIG. 4 is a perspective view showing the structure of the cook top shown in FIG. 1.

DETAILED DESCRIPTION

[0025] Reference will now be made in detail to the embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to the like elements throughout.

[0026] FIG. 1 is a perspective view showing the external appearance of a cooking apparatus according to an embodiment. FIG. 2 is a view showing the structure of the cooking apparatus shown in FIG. 1. FIG. 3 is a sectional view showing the structure of a cook top of the cooking apparatus of FIG. 1, and FIG. 4 is a perspective view showing the structure of the cook top shown in FIG. 1.

[0027] As shown in FIG. 1 through FIG. 4, a cooking apparatus 1 according to the embodiment includes an oven 10 to heat and cook food under a hermetic state, a cook top 30 disposed at the upper part of the oven 10 to put a cooker thereon and thereby cook food in the cooker, a control unit 50 provided at the rear part of the cook top 30 to control the operations of the oven 10 and the cook top 30, and a drawer unit 70 disposed at the lower part of the oven 10 to serve as a storage space and perform simple cooking.

[0028] The oven 10 cooks food by convection of heat. To this end, the oven 10 includes a cooking chamber 18 defined by an upper plate 12, a bottom plate 14, both sidewall plates (not shown) and a rear plate 16, and an oven door 20 opening and closing an opened front side of the cooking chamber 18.

[0029] A fan cover 22 is connected at the outside of the rear plate 16. A convection fan 24 is mounted to the fan cover 22 to circulate the inner air of the cooking chamber 18. A convection heater 26 is mounted at an outer circumference of the convection fan 24. In addition, a fan motor 28 is mounted at the rear part of the fan cover 22 to drive the convection fan 24.

[0030] A plurality of suction holes 16a are formed around the center of the rear plate 16 facing the convection fan 24, so as to draw in the inner air of the cooking chamber 18. Also, a plurality of discharge holes 16b are formed at peripheral parts of the rear plate 16 to supply heat into the cooking chamber 18.

[0031] After food is put in the cooking chamber 18 and the oven door 20 is closed, when the oven 10 is turned on, the convection heater 26 is heated. Accordingly, the convection fan 24 is rotated by the fan motor 28. The inner air of the cooking chamber 18 is drawn in through the suction holes 16a, thereby being heated by the convection heater 26, and then supplied into the cooking chamber 18 through the discharge holes 16b. The heated air cooks the food as circulating through the cooking chamber 18.

[0032] The control unit 50 is equipped with a display

52 to display the operational state of the cooking apparatus 1 and operation knobs 54 to control the operation of the cooking apparatus 1. The drawer unit 70, being in the form of a drawer, dedicatedly includes a heater to reheat cooked food or perform simple cooking.

[0033] The cook top 30 is disposed at the upper part of the oven 10. The cook top 30 includes a cooking hob 32 to put a cooker thereon, and a heating device 34 disposed under the cooking hob 32 to heat the cooker put on the cooking hob 32.

[0034] The cooking hob 32 includes a solid-body plate. In the drawing, first to fourth cooking areas 32a, 32b, 32c and 32d are defined by circular lines on the cooking hob 32. However, it is noted that the cooking hob 32 is not limited to have such a solid-body plate. A user puts a cooker containing food on at least one of the cooking areas 32a, 32b, 32c and 32d and operates the corresponding heating device 34 disposed under the cooking area. Hereinafter, more specifically, the heating device 34 disposed under the first cooking area 32a will be explained representatively.

[0035] The heating device 34 includes a heater 35, a reflection member 40, and a guide member 36. Here, the heater 35 may include a halogen heater.

[0036] The heater 35 is used as a heat source, that is, a heat generating medium to heat the food. The heater 35 may have various forms, for example a round form as shown in FIG. 3. The heater 35 being disposed under the first cooking area 32a transmits energy in a vertical direction or a horizontal direction. The reflection member 40 is disposed at a lower part of the heater 35 to reflect the energy being transmitted to the lower part of the heater 35. The guide member 36 is disposed at an upper part of the heater 35 to induce the energy being transmitted to the upper part of the heater 35 toward the first cooking area 32a. Here, the energy refers to heat or light emitted from the heater 35.

[0037] The reflection member 40 encloses the heater 35. As shown in FIG. 3, for example, the heater 35 may have a round form while the reflection member 40 has a bowl form enclosing the heater 35. That is, the reflection member 40 reflects the energy emitted toward the lateral sides or the lower part of the heater 35, to the first cooking area 32a by having the bowl form enclosing the heater 35.

[0038] The reflection member 40 may include at least one uneven surface part 41 disposed in the center thereof. The uneven surface part 41 may prevent the energy emitted from the heater 35 from concentrating on any specific spot and help evenly distribute the energy, such that the energy is uniformly transmitted through the first cooking area 32a. The uneven surface part 41 may include at least one plane surface 41 a. As the uneven surface part 41 has a more complicated form, the reflection and distribution efficiency of the energy would be more improved. For example, whereas the uneven surface part 41 having one plane surface reflects the energy incident to the plane surface to the opposite direction, the uneven surface part 41 having a plurality of plane

surfaces reflects the energy in several directions. In addition, as the uneven surface part 41 has the more complicated form, a diffused reflection degree is maximized, thereby achieving uniform distribution of heat transmitted the first cooking area 32.

[0039] The guide member 36 is mounted to a peripheral part 42 of the reflection member 40. The peripheral part 42 is extended higher than the heater 35, enclosing the lateral side of the heater 35. The guide member 36 is disposed at the upper part of the heater 35, being supported by the peripheral part 42. The guide member 36 guides, toward the first cooking area 32a, the energy emitted upward from the heater 35 and the energy reflected upward by the reflection member 30. Since the guide member 36 has a honeycomb lattice structure of a predetermined thickness, that is, including a plurality of tunnels 36a partitioned from one another, the energy may be evenly transmitted in certain directions.

[0040] The energy emitted from the heater 35 is passed through the plurality of tunnels 36a and transmitted to the first cooking area 32a. Here, the energy while passing through the tunnels 36a is totally reflected and then induced to the first cooking area 32a. That is, as the energy that may dazzle the user's eyes is induced to the first cooking area 32a by the guide member 36, dazzling of the user's eyes may be restrained.

[0041] The guide member 36 may be formed of aluminum or stainless steel. Especially, the plurality of tunnels 36a may be formed of an image reflecting material. In this case, the plurality of tunnels 36a all reflect an image of the heater 35 and therefore the user visually recognizes as if a plurality of heaters were provided. Such a phenomenon occurs more effectively because the tunnels 36a have the lattice structure. The user may be able to check whether the heat is being uniformly distributed through the first cooking area 32a and thereby determine that the apparatus is normally operating.

[0042] As is apparent from the above description, a cooking apparatus according to the embodiments may greatly improve the energy reflection efficiency while achieving uniform distribution of the energy.

[0043] In addition, dazzling by emitted energy may be prevented since the energy is induced to a predetermined direction.

[0044] Although a few embodiments have been shown and described, it would be appreciated by those skilled in the art that changes may be made in these embodiments without departing from the principles, the scope of which is defined in the claims and their equivalents.

Claims

1. A cooking apparatus (1) comprising:

a plate (32a) to put a cooker thereon;
a heater (35) disposed under the plate (32a);
a guide member (36) disposed between the

plate (32a) and the heater (35) to induce energy emitted from the heater (35) toward the plate (32a); and

a reflection member (40) disposed under the heater (35) to reflect energy from the heater (35) toward the guide member (36),

characterized in

that the reflection member (40) includes at least one uneven surface part (41) disposed in a center of the reflection member (40).

2. The cooking apparatus according to claim 1, wherein the guide member (36) comprises a plurality of tunnels (36a) partitioned from one another, and the tunnels (36a) pass and reflect the energy being emitted from the heater (35).
3. The cooking apparatus according to claim 2, wherein the tunnels (36a) have a predetermined length.
4. The cooking apparatus according to claim 2 or 3, wherein the tunnels (36a) comprise a material capable of reflecting an image of the heater (35).
5. The cooking apparatus according to one of the claims 1 to 4, wherein the guide member (36) has a lattice structure having a predetermined thickness.
6. The cooking apparatus according to one of the claims 1 to 5, wherein the heater (35) comprises a halogen heater.
7. The cooking apparatus according to one of the claims 1 to 6, wherein the guide member (36) is mounted to a peripheral part (42) of the reflection member (40).
8. The cooking apparatus according to claim 7, wherein the peripheral part (42) encloses a lateral side of the heater (35).
9. The cooking apparatus according to one of the claims 1 to 8, wherein the uneven surface part (41) comprises at least one plane surface (41 a).

Patentansprüche

1. Kochvorrichtung (1), die umfasst:

eine Platte (32a) zum Aufsetzen eines Kochgerätes;
eine Heizeinrichtung (35), die unter der Platte (32a) angeordnet ist;
ein Führungselement (36), das zwischen der Platte (32a) und der Heizeinrichtung (35) angeordnet ist und von der Heizeinrichtung (35) in Richtung der Platte (32a) emittierte Energie in-

- duziert; und
 ein Reflexionselement (40), das unter der Heizeinrichtung (35) angeordnet ist, um Energie von der Heizeinrichtung (35) in Richtung des Führungselementes (36) zu reflektieren,
 5 **dadurch gekennzeichnet, dass**
 das Reflexionselement (40) wenigstens einen Teil (41) mit ungleichmäßiger Oberfläche enthält, der in einer Mitte des Reflexionselementes (40) angeordnet ist.
2. Kochvorrichtung nach Anspruch 1, wobei das Führungselement (36) eine Vielzahl voneinander getrennter Tunnel (36a) umfasst und die Tunnel (36a) die von der Heizeinrichtung (35) emittierte Energie leiten und reflektieren.
3. Kochvorrichtung nach Anspruch 2, wobei die Tunnel (36a) eine vorgegebene Länge haben.
4. Kochvorrichtung nach Anspruch 2 oder 3, wobei die Tunnel (36a) ein Material umfassen, das ein Bild der Heizeinrichtung (35) reflektieren kann.
5. Kochvorrichtung nach einem der Ansprüche 1 bis 4, wobei das Führungselement (36) eine Gitterstruktur mit einer vorgegebenen Dicke hat.
6. Kochvorrichtung nach einem der Ansprüche 1 bis 5, wobei die Heizeinrichtung (35) eine Halogen-Heizeinrichtung umfasst.
7. Kochvorrichtung nach einem der Ansprüche 1 bis 6, wobei das Führungselement (36) an einem Randteil (42) des Reflexionselementes (40) angebracht ist.
8. Kochvorrichtung nach Anspruch 7, wobei der Randteil (42) eine Längsseite der Heizeinrichtung (35) einschließt.
9. Kochvorrichtung nach einem der Ansprüche 1 bis 8, wobei der Teil (41) mit ungleichmäßiger Oberfläche wenigstens eine plane Fläche (41 a) umfasst.

Revendications

1. Appareil de cuisson (1) comprenant :

une plaque (32a) pour que l'on place sur celle-ci un appareil de cuisson,
 un élément chauffant (35) placé sous la plaque (32a),
 un élément de guidage (36) placé entre la plaque (32a) et
 l'élément chauffant (35) afin de provoquer l'induction de l'énergie émise depuis l'élément chauffant (35) vers la plaque (32a), et

un élément réfléchissant (40) placé en dessous de l'élément chauffant (35) afin de réfléchir l'énergie provenant de l'élément chauffant (35) vers l'élément de guidage (36),

caractérisé en ce que

l'élément réfléchissant (40) inclut au moins une pièce de surface inégale (41) placée au centre de l'élément réfléchissant (40).

2. Appareil de cuisson selon la revendication 1, dans lequel l'élément de guidage (36) comprend une pluralité de tunnels (36a) séparés l'un par rapport à l'autre, et les tunnels (36a) transmettent et réfléchissent l'énergie émise depuis l'élément chauffant (35).
3. Appareil de cuisson selon la revendication 2, dans lequel les tunnels (36a) présentent une longueur prédéterminée.
4. Appareil de cuisson selon la revendication 2 ou 3, dans lequel les tunnels (36a) comprennent un matériau capable de réfléchir une image de l'élément chauffant (35).
5. Appareil de cuisson selon l'une des revendications 1 à 4, dans lequel les éléments de guidage (36) possèdent une structure en treillis présentant une épaisseur prédéterminée.
6. Appareil de cuisson selon l'une des revendications 1 à 5, dans lequel l'élément chauffant (35) comprend un élément chauffant halogène.
7. Appareil de cuisson selon l'une des revendications 1 à 6, dans lequel l'élément de guidage (36) est monté sur une partie périphérique (42) de l'élément réfléchissant (40).
8. Appareil de cuisson selon la revendication 7, dans lequel la partie périphérique (42) contient un côté latéral de l'élément chauffant (35).
9. Appareil de cuisson selon l'une des revendications 1 à 8, dans lequel la pièce de surface inégale (41) comprend au moins une surface plane (41a).

FIG. 1

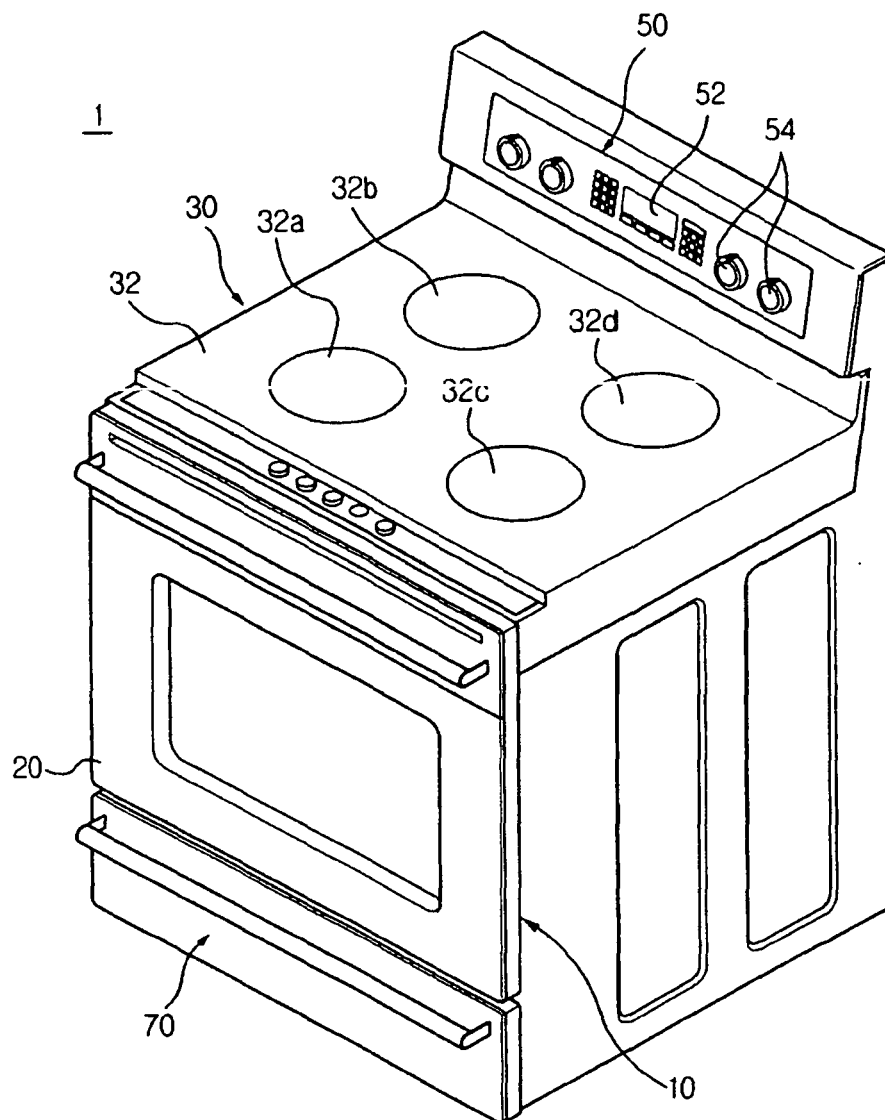


FIG. 2

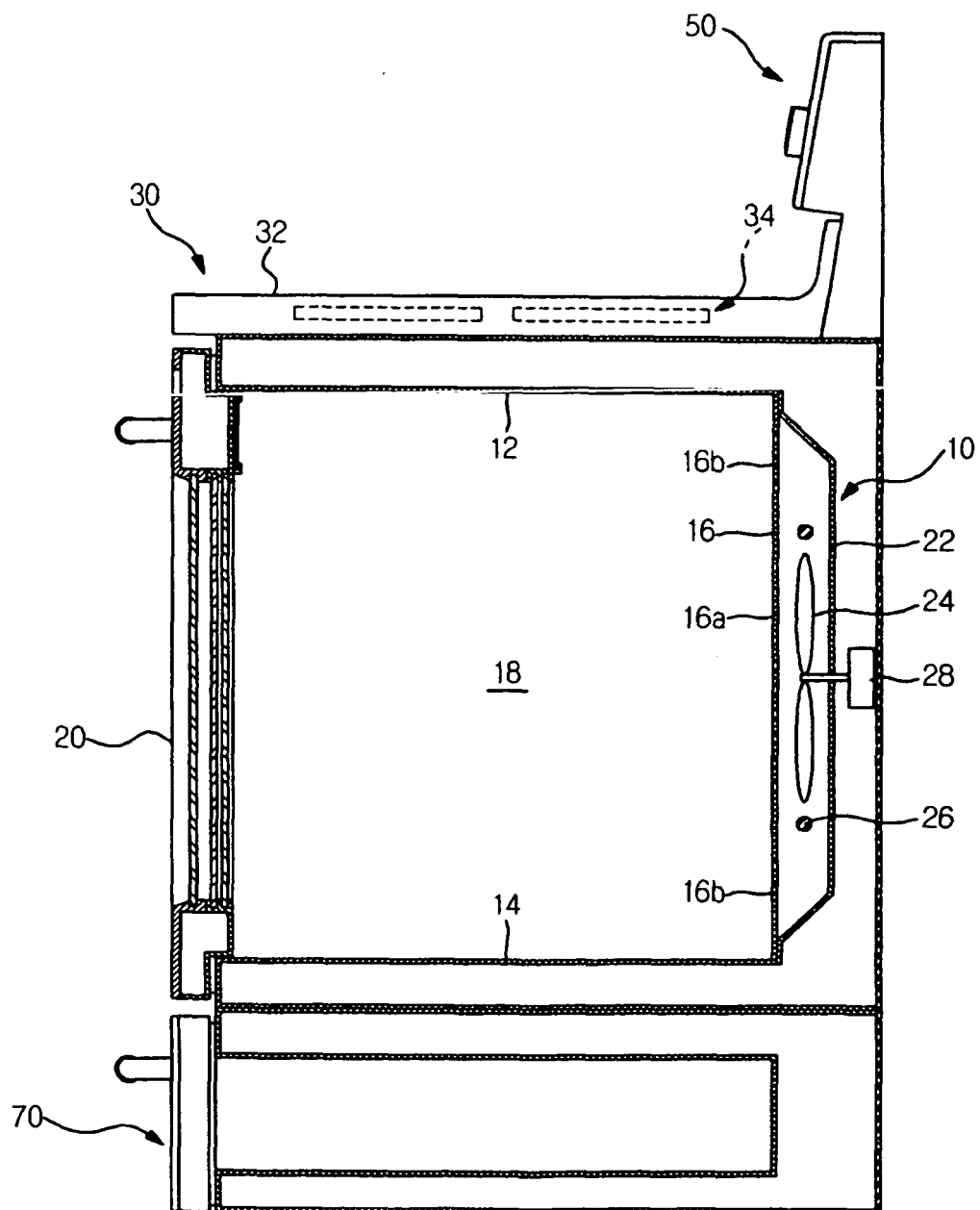


FIG. 3

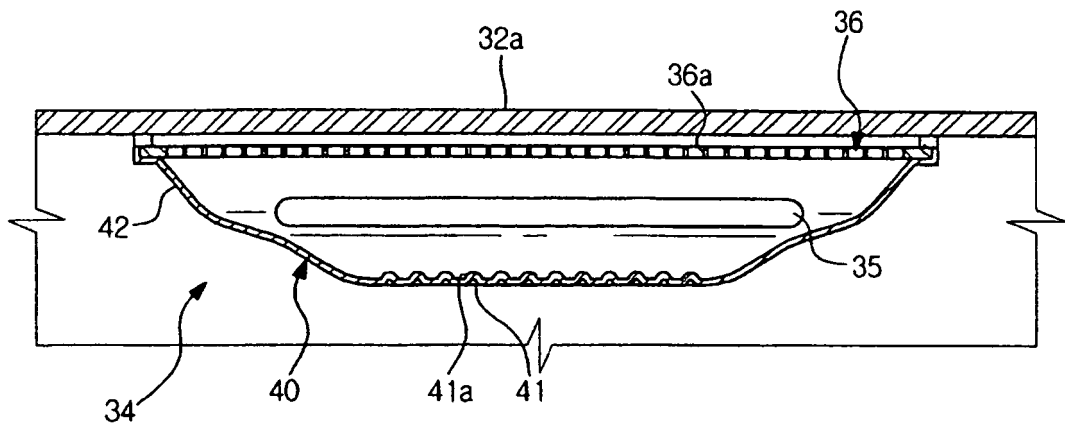
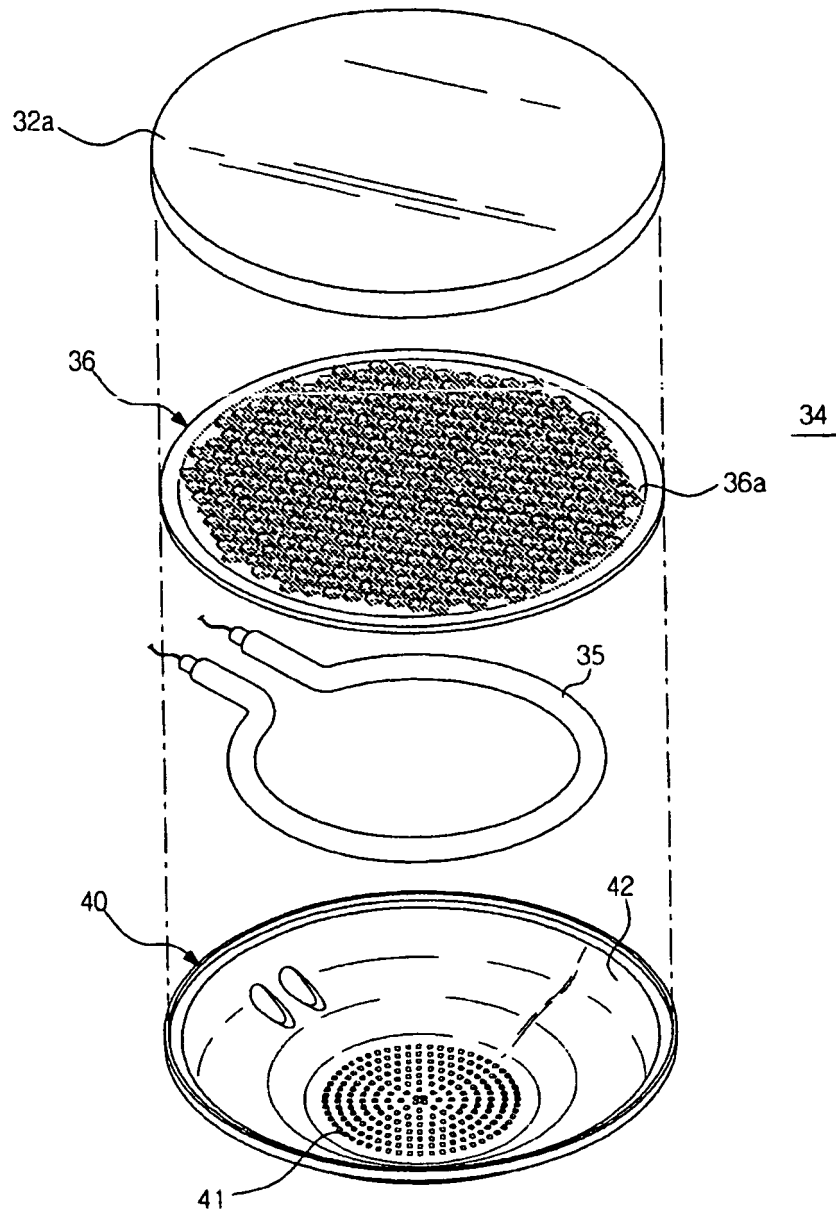


FIG. 4



REFERENCES CITED IN THE DESCRIPTION

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