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(54) **COOKING APPLIANCE WITH IMPROVED FLEXIBILITY AND ENERGY EFFICIENCY**

KOCHGERÄT MIT VERBESSERTER FLEXIBILITÄT UND ENERGIEEFFIZIENZ

APPAREIL DE CUISSON À FLEXIBILITÉ ET EFFICACITÉ ÉNERGÉTIQUE AMÉLIORÉES

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(56) References cited:

WO-A1-2014/106960

DE-A1- 3 619 762

US-A- 3 215 817

US-A1- 2011 253 693

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Description

[0001] The present invention relates to a cooking appliance with a glass cooktop. The present invention more particularly relates to a built-in type cooking appliance.

[0002] Cooking appliances with glass cooktops are commonly known in the art. In order to allow the user to cook more flexibly, various household manufactures now provide the cooking appliances with glass cooktops on which the cooking utensils can be randomly placed by the user. This type of a cooking appliance has a plurality of resistance heaters which are arranged into a matrix of rows and columns below the glass cooktop for heating the food. During its operation, first the location of the cooking utensil on the glass cooktop is detected, thereafter the resistance heaters under the cooking utensil are determined and energized so as to heat the cooking utensil and cook the food therein.

[0003] EP1206164A2 discloses a cooking appliance with a cooktop as specified above. In this prior art cooking appliance the location of the cooking utensil is determined through the electromagnetic coupling which is affected through the presence/absence of the metal cooking utensil WO2014/106960 discloses another cooking appliance according to the prior art.

[0004] A problem with the prior art cooking appliance is that the use of a cooking utensil increases the energy consumption and the overall cooking time due to its mass which also stores and radiates the heat. The energy consumption and the cooking time increases even more when the user selects for a comparatively small amount of food such as a small piece of meat, a cooking utensil which covers an unnecessarily large amount of area on the glass cooktop, and thus an increased number of resistance heaters below the glass cooktop are involved in the cooking process. Moreover, the use of a cooking utensil may under the circumstances reduce the flexibility of the cooking appliance.

[0005] An objective of the present invention is to provide a cooking appliance which solve the aforementioned problems of the prior art in a cost-effective way and which enables the user to cook more flexibly, more energy efficiently and more quickly.

[0006] This objective has been achieved by the cooking appliance as defined in claim 1, and the method of cooking as defined in claim 7. Further achievements have been attained by the subject-matters respectively defined in the dependent claims.

[0007] The cooking appliance of the present invention comprises: a glass cooktop on which the food to be cooked can be randomly placed without a cooking utensil by the user; a plurality of resistance heaters which are arranged in rows and columns below the glass cooktop and adapted to cook the food which is randomly placed on the glass cooktop without a cooking utensil by the user; and a control unit which comprises: a first detecting means which is adapted to directly detect the location of the food placed on the glass cooktop without a cooking

utensil; a determining means which is adapted to determine based on the detection result of the first detecting means the resistance heaters which are immediately below the food; and a driving means which is adapted to drive based on the determination result of the determining means the resistance heaters which are below the food so as to cook the same.

[0008] A major advantageous effect of the present invention is that the flexibility of the cooking appliance has been increased as the user can cook the food, for instance, a piece of meat without a cooking utensil such as a pan or a pot randomly on any location of the glass cooktop. Another major advantageous effect of the present invention is that the energy efficiency of the cooking appliance has been improved since the resistance heaters which would have been otherwise positioned under the cooking utensil but not necessarily under the food can be turned off, and thus the energy consumption can be reduced. Thereby, the food can be cooked more energy efficiently and more quickly as the energy which would have been otherwise consumed by the cooking utensil can be saved.

[0009] In a first alternative embodiment, the first detecting means is disposed above the glass cooktop and acoustically detects the location of the food which is randomly placed on the glass cooktop without a cooking utensil by the user. Thereby, the shape of the food such as a piece of meat can be detected, and the resistance heaters which are immediately below the piece of meat can be determined and energized for the cooking process. The detection process can be conducted in parallel to the cooking process, and thus the cooking appliance can be more smoothly operated. This embodiment is particularly advantageous as the acoustical detection is cost effective and reliable.

[0010] In a further version not covered by the claims, the cooking appliance further has an input/output device disposed above the glass cooktop for projecting a virtual keyboard onto an area of the glass cooktop and/or onto an area in the vicinity of the glass cooktop. The control unit controls the cooking appliance based on the user inputs made through the virtual keyboard by the user. The first detecting means, as part of the input output device, also detects the user inputs made through the virtual keyboard. This embodiment is particularly advantageous as the input/output device obviates the need for a capacitive touch-button user-interface, and thus the production costs can be saved both in terms of labor and material. Thereby, also the area of the glass cooktop for cooking the food can be more efficiently used.

[0011] In a second alternative embodiment, the first detecting means has a plurality of load cells which are arranged in rows and columns below the glass cooktop in spatial one-to one correspondence with the resistance heaters. Thereby, the shape of the food such as a piece of meat can be detected, and the resistance heaters which are immediately below the piece of meat can be determined and energized for the cooking process. The

detection process can be similarly conducted in parallel to the cooking process, and thus the cooking appliance can be more smoothly operated. In a further version of the second alternative embodiment, the load cells have spring loaded micro switches. This embodiment is particularly advantageous as the load cells are environment-friendly and reliable.

[0012] In a further version of covered by the claims, the cooking appliance further has an input/output device disposed above the glass cooktop for projecting a virtual keyboard onto an area of the glass cooktop and/or onto an area in the vicinity of the glass cooktop. The control unit controls the cooking appliance based on the user inputs made through the virtual keyboard by the user. A second detecting means of the input/output device detects the user inputs made through the virtual keyboard. This embodiment is particularly advantageous as the input/output device obviates the need for the capacitive touch-button user-interface, and thus the production costs can be saved both in terms of labor and material. Thereby, also the area of the glass cooktop for cooking the food can be more efficiently used.

[0013] In further versions not covered by the claims, the cooking appliance has an extractor hood, wherein the input/output device is disposed onto the extractor hood. These embodiments are particularly advantageous as extractor hood is an ideal support that can center the input/output device above the glass cooktop.

[0014] In further versions of the first/second alternative embodiments, the cooking appliance are provided as built-in type appliances. These embodiments are particularly advantageous as the cooking appliance and the extractor hood can be integrated into the kitchen furniture.

[0015] In further versions of the first/second alternative embodiments, the resistance heaters overlap the entire lower surface of the glass cooktop. This embodiment is particularly advantageous as the use efficiency of the glass cooktop area can be maximally increased up to the edges thereof.

[0016] In further versions of the first/second alternative embodiments, the resistance heaters have comparatively small sizes. For instance, the resistance heater may cover an area which is smaller than 5 square centimeters. The resistance heater may alternatively cover an area which ranges between 5 to 10 square centimeters. These embodiments are particularly advantageous as the energy efficiency and the cooking performance of the cooking appliance can be further improved, and thus a small piece of food can be energy efficiently and uniformly cooked.

[0017] Additional features and additional advantageous effects of the cooking appliance of the present invention will become more apparent with the detailed description of the embodiments with reference to the accompanying drawings in which:

Figure 1 - is a schematic partial perspective view of

a cooking appliance with an extractor hood according to a first alternative embodiment of the present invention;

Figure 2 - is a schematic partial perspective exploded view of the cooking appliance of Fig. 1;

Figure 3 - is a schematic partial perspective view of a cooking appliance with an extractor hood according to a second alternative embodiment of the present invention;

Figure 4 - is a schematic partial perspective exploded view of the cooking appliance of Fig. 3;

[0018] The reference signs appearing on the drawings relate to the following technical features.

1. Cooking appliance
2. Glass cooktop
3. Food
4. Resistance heater
5. Control unit
6. First detecting means
7. Load cell
8. Spring
9. Micro switch
10. Input/output device
11. Projecting means
12. Virtual keyboard
13. Second detecting means
14. Extractor hood
- R: Row
- C: Column

[0019] The cooking appliance (1) of the present invention comprises: a glass cooktop (2) on which the food (3) to be cooked can be randomly placed without a cooking utensil by the user; a plurality of resistance heaters (4) which are arranged in rows (R) and columns (C) below the glass cooktop (2) and adapted to cook the food (3) which is randomly placed on the glass cooktop (2) without a cooking utensil by the user; and a control unit (5) which comprises: a first detecting means (6) which is adapted to directly detect the location of the food (3) placed on the glass cooktop (2) without a cooking utensil; a determining means which is adapted to determine, based on the detection result of the first detecting means (6) the resistance heaters (4) which are immediately below the food (3); and a driving means which is adapted to drive, based on the determination result of the determining means the resistance heaters (4) which are below the food (3) so as to cook the same (Fig. 1 to Fig. 4).

[0020] In a first alternative embodiment, the first detecting means (6) is disposed above the glass cooktop (2) and is further adapted to acoustically detect the location of the food (3) which is randomly placed on the glass cooktop (2) without a cooking utensil by the user (Fig. 1 and Fig. 2).

[0021] In a further version not covered by the claims, the cooking appliance (1) further comprises: an input/out-

put device (10) which is disposed above the glass cooktop (2) and which comprises: a projecting means (11) which is adapted to project a virtual keyboard (12) onto an area of the glass cooktop (2) and/or onto an area in the vicinity of the glass cooktop (2); and the first detecting means (6) which is further adapted to detect the user inputs made through the virtual keyboard (12), wherein the control unit (5) is further adapted to control the cooking appliance (1), in particular the driving means based on the user inputs made through the virtual keyboard (12) by the user (Fig. 1 and Fig. 2).

[0022] In a second alternative embodiment, the first detecting means (6) comprises: a plurality of load cells (7) which are arranged in rows (R) and columns (C) below the glass cooktop (2) and adapted to detect the weight of the food (3), wherein the load cells (7) are arranged in spatial one-to-one correspondence with the resistance heaters (4) (Fig. 3 and Fig. 4).

[0023] In a further version of the second alternative embodiment, the load cells (7) each comprises: a spring (8) which is adapted to be locally compressed by the weight of the food (3); and a micro switch (9) which is arranged below the spring (8) and adapted to be activated through the compression of the springs (8) and to output to the control unit (5) an ON/OFF signal which is indicative of the activation/deactivation thereof (Fig. 3 and Fig. 4).

[0024] In a further version not covered by the claims, the cooking appliance (1) further comprises: an input/output device (10) which is disposed above the glass cooktop (2) and which comprises: a projecting means (11) which is adapted to project a virtual keyboard (12) onto an area of the glass cooktop (2) and/or an area in the vicinity of the glass cooktop (2); and a second detecting means (13) which is adapted to detect the user inputs made through the virtual keyboard (12), wherein the control unit (5) is further adapted to control the cooking appliance (1), in particular the driving means based on the user inputs made through the virtual keyboard (12) (Fig. 3 and Fig. 4).

[0025] In further versions not covered by the claims, the cooking appliance (1) further comprises: an extractor hood (14) for extracting the fume rising from the food (3) that is cooked on the glass cooktop (2), wherein the input/output device (10) is disposed onto the extractor hood (14) at a position above the glass cooktop (2) (Fig. 1 and Fig. 3).

[0026] In further versions not covered by the claims, the extractor hood (14) is provided as built-in type extractor hood (14).

[0027] In further versions of the first and the second alternative embodiments, the plurality of resistance heaters (4) overlaps the entire lower surface of the glass cooktop (2).

[0028] In further versions of the first and the second alternative embodiments, each resistance heater (4) covers an area which is smaller than 5 square centimeters.

[0029] In further versions of the first and the second alternative embodiments, each resistance heaters (4)

covers an area which ranges between 5 to 10 square centimeters.

[0030] In further versions of the first and the second alternative embodiments, the cooking appliance (1) is provided as a built-in type cooking appliance (1).

[0031] The present invention also provides a method of operating the cooking appliance (1) for cooking the food (3) without a cooking utensil such as a pot or a pan or the like. The method comprises a step of randomly placing the food (3) to be cooked without a cooking utensil onto a glass cooktop (2) under which a plurality of resistance heaters (4) are arranged in rows (R) and columns (C) for heating the food (3); a step of directly detecting the location of the food (3) placed on the glass cooktop (2) without a cooking utensil; a step of determining, based on the detection result in the detecting step, the resistance heaters (4) which are immediately below the food (3); and a step of driving, based on the determination result in the determining step, the resistance heaters (4) which are immediately below the food (3).

[0032] In the first alternative embodiment, in the detecting step the location of the food (3) which is randomly placed on the glass cooktop (2) without a cooking utensil is acoustically detected by using the first detecting means (6).

[0033] In the second alternative embodiment, in the detecting step the weight of the food (3) is detected by the plurality of load cells (7) which are arranged in rows (R) and columns (C) below the glass cooktop (2) and in spatial one-to-one correspondence with the plurality of resistance heaters (4).

[0034] A major advantageous effect of the present invention is that the flexibility of the cooking appliance (1) has been increased as the user can cook the food (3), for instance, a piece of meat without a cooking utensil such as a pan or a pot randomly on any location of the glass cooktop (2). Another major advantageous effect of the present invention is that the energy efficiency of the cooking appliance (1) has been improved since the resistance heaters (4) which would have been otherwise positioned under the cooking utensil but not necessarily under the food (3) can be turned off, and thus the energy consumption can be reduced. Thereby, the food (3) can be cooked more energy efficiently and more quickly as the energy which would have been otherwise consumed by the cooking utensil can be saved. Other advantageous effects of the present invention can be taken from the above described embodiments.

Claims

1. A cooking appliance (1) comprising:

- a glass cooktop (2) on which the food (3) to be cooked can be randomly placed without a cooking utensil by the user;
- a plurality of resistance heaters (4) which are

arranged in rows (R) and columns (C) below the glass cooktop (2) and adapted to cook the food (3) which is randomly placed on the glass cooktop (2) without a cooking utensil by the user; and

a control unit (5) which comprises:

- a first detecting means (6) which is adapted to directly detect the location of the food (3) placed on the glass cooktop (2) without a cooking utensil;
 - a determining means which is adapted to determine based on the detection result of the first detecting means (6) the resistance heaters (4) which are immediately below the food (3); and
 - a driving means which is adapted to drive based on the determination result of the determining means the resistance heaters (4) which are below the food (3) so as to cook the same;
- characterized in that:**
- the first detecting means (6) is disposed above the glass cooktop (2) and further adapted to acoustically detect the location of the food (3) which is randomly placed on the glass cooktop (2) without a cooking utensil by the user; or
 - the first detecting means (6) comprises: a plurality of load cells (7) which are arranged in rows (R) and columns (C) below the glass cooktop (2) and adapted to detect the weight of the food (3), wherein the load cells (7) are arranged in spatial correspondence with the resistance heaters (4).

2. The cooking appliance (1) according to claim 1, **characterized in that** each of the plurality of load cells (7) comprises: a spring (8) which is adapted to be locally compressed by the weight of the food (3); and a micro switch (9) which is arranged below the spring (8) and adapted to be activated through the compression of the springs (8) and to output to the control unit (5) an ON/OFF signal which is indicative of the activation and the deactivation thereof.
3. The cooking appliance (1) according to claim 1 or 2, **characterized in that** the plurality of resistance heaters (4) overlap the entire lower surface of the glass cooktop (2).
4. The cooking appliance (1) according to any one of claims 1 to 3, **characterized in that** each resistance heater (4) covers an area which is smaller than 5 square centimeters.
5. The cooking appliance (1) according to any one of claims 1 to 3, **characterized in that** each resistance heaters (4) covers an area which ranges between 5 to 10 square centimeters.

6. The cooking appliance (1) according to any one of claims 1 to 5, **characterized by** being provided as a built-in type cooking appliance (1).

7. A method of cooking food (3), comprising:

- a step of randomly placing the food (3) to be cooked without a cooking utensil onto a glass cooktop (2) under which a plurality of resistance heaters (4) are arranged in rows (R) and columns (C) for heating the food (3);
- a step of directly detecting the location of the food (3) placed on the glass cooktop (2) without a cooking utensil,
- a step of determining, based on the detection result in the detecting step, the resistance heaters (4) which are immediately below the food (3); and
- a step of driving, based on the determination result in the determining step, the resistance heaters (4) which are immediately below the food (3); **characterised in that** the detecting

step comprises:

- acoustically detecting by a first detecting means (6) disposed above the glass cooktop (2), the location of the food (3) which is randomly placed on the glass cooktop (2) without a cooking utensil; or
- detecting, by a plurality of load cells (7) which are arranged in rows (R) and columns (C) below the glass cooktop (2) and in spatial correspondence with the plurality of resistance heaters (4), the weight of the food (3).

Patentansprüche

1. Ein Kochgerät (1) umfasst:

- ein Glaskochfeld (2), auf dem das zu kochende Lebensmittel (3) vom Benutzer ohne Kochgeschirr zufällig gestellt werden kann;
- eine Vielzahl von Widerstandsheizungen (4), die in Reihen (R) und Spalten (C) unterhalb des Glaskochfelds (2) angeordnet sind und zum Kochen der Lebensmittel (3) geeignet sind, die zufällig auf das Glaskochfeld (2) vom Benutzer aus ohne Kochgeschirr abgestellt wurden; und

eine Steuereinheit (5), die umfasst:

- ein erstes Erfassungsmittel (6), das dazu ausgelegt ist, die Fläche des Lebensmittels (3), das auf dem Glaskochfeld (2) ohne Kochgeschirr angeordnet ist, direkt zu erfassen;
- ein Bestimmungsmittel, das angepasst ist, um

- basierend auf dem Erfassungsergebnis des ersten Erfassungsmittels (6) die Widerstandsheizungen (4) zu bestimmen, die sich unmittelbar unter dem Lebensmittel (3) befinden; und
- ein Antriebsmittel, das angepasst ist, um basierend auf dem Bestimmungsergebnis des Bestimmungsmittels die Widerstandsheizungen (4) anzutreiben, die sich unter dem Lebensmittel (3) befinden, um das gleiche Gericht zu kochen; gekennzeichnet ist es durch:
 - das erste Erfassungsmittel (6), der über dem Glaskochfeld (2) angeordnet und ferner angepasst ist, um den Ort des Lebensmittels (3), das zufällig auf dem Glaskochfeld (2) platziert ist, ohne ein Kochgerät durch den Benutzer akustisch zu erfassen; oder
 - der erste Erfassungsmittel (6) umfasst: mehrere Wägezellen (7), die in Reihen (R) und Spalten (C) unterhalb des Glaskochfelds (2) angeordnet und angepasst sind, um das Gewicht des Lebensmittels (3) zu erfassen, wobei die Wägezellen (7) in räumlicher Entsprechung zu den Widerstandsheizungen (4) angeordnet sind.
2. Das Kochgerät (1), wie in Anspruch 1 aufgeführt, ist **dadurch gekennzeichnet, dass** jede der mehreren Wägezellen (7) folgendes umfasst: eine Feder (8), die angepasst ist, um durch das Gewicht des Lebensmittels (3) lokal zusammengedrückt zu werden; und einen Mikroschalter (9), der unterhalb der Feder (8) angeordnet ist und dazu ausgelegt ist, durch Zusammendrücken der Federn (8) aktiviert zu werden und an die Steuereinheit (5) ein EIN / AUS-Signal auszugeben, dass die Aktivierung und deren Deaktivierung anzeigt.
3. Das Kochgerät (1), wie in Anspruch 1 oder 2 aufgeführt, ist **dadurch gekennzeichnet, dass** die mehreren Widerstandsheizungen (4) die gesamte Unterseite des Glaskochfelds (2) überlappen.
4. Das Kochgerät (1), wie in den Ansprüchen 1 bis 3 aufgeführt, ist **dadurch gekennzeichnet, dass** jede Widerstandsheizung (4) einen Bereich abdeckt, der kleiner als 5 Quadratzentimeter ist.
5. Das Kochgerät (1), wie in den Ansprüchen 1 bis 3 aufgeführt, ist **dadurch gekennzeichnet, dass** jede Widerstandsheizung (4) einen Bereich abdeckt, der zwischen 5 und 10 Quadratzentimetern liegt.
6. Das Kochgerät (1), wie in den Ansprüchen 1 bis 5 aufgeführt, ist **dadurch gekennzeichnet, dass** es als eingebautes Kochgerät (1) vorgesehen ist.
7. Eine Methode zum Kochen von Lebensmittel (3) umfasst:

- ein Schritt des zufälligen Platzierens des zu kochenden Lebensmittels (3) ohne Kochgeschirr auf einem Glaskochfeld (2), unter dem mehrere Widerstandsheizungen (4) in Reihen (R) und Spalten (C) zum Erhitzen des Lebensmittels angeordnet sind (3);
- ein Schritt des direkten Erfassens der Fläche des Lebensmittels (3), das auf dem Glaskochfeld (2) ohne Kochgeschirr platziert ist,
- einen Schritt des Bestimmens der Widerstandsheizungen (4), die sich unmittelbar unter dem Lebensmittel (3) befinden, basierend auf dem Erfassungsergebnis im Erfassungsschritt; und
- ein Schritt des Fahrens, basierend auf dem Bestimmungsergebnis im Bestimmungsschritt, der Widerstandsheizungen (4), die sich unmittelbar unter dem Lebensmittel (3) befinden; gekennzeichnet ist es dadurch, dass der Erfassungsschritt folgendes umfasst:

- ein akustisches Erfassen durch ein erstes Erfassungsmittel (6), das über dem Glaskochfeld (2) angeordnet ist, die Position des Lebensmittels (3), das ohne Kochgeschirr zufällig auf das Glaskochfeld (2) gelegt wird; oder
- ein Erfassen des Gewichts des Lebensmittels durch mehrere Wägezellen (7), die in Reihen (R) und Spalten (C) unterhalb des Glaskochfelds (2) und in räumlicher Entsprechung mit der Vielzahl von Widerstandsheizgeräten (4) angeordnet sind (3).

Revendications

1. Un appareil de cuisson (1) comprenant :

- une table de cuisson en verre (2) sur laquelle les aliments (3) à cuire peuvent être placés au hasard, sans ustensile de cuisson, par l'utilisateur ;
- une pluralité de résistances chauffantes (4) qui sont disposées en rangées (R) et en colonnes (C) sous la table de cuisson en verre (2) et adaptées pour cuire les aliments (3) qui sont placés au hasard sur la table de cuisson en verre (2) sans ustensile de cuisson par l'utilisateur ; et

une unité de contrôle (5) qui comprend :

- un premier moyen de détection (6) qui est adapté pour détecter directement l'emplacement des aliments (3) placés sur la table de cuisson en verre (2) sans ustensile de cuisson ;
- un moyen de détermination qui est adapté pour déterminer, sur la base du résultat de la détec-

- tion du premier moyen de détection (6), les résistances chauffantes (4) qui se trouvent immédiatement sous la denrée alimentaire (3) ; et
- un moyen de commande qui est adapté pour commander, en fonction du résultat de la détermination du moyen de détermination, les résistances chauffantes (4) qui se trouvent sous les aliments (3) afin de les cuire ; est **caractérisé en ce que** :
 - le premier moyen de détection (6) est disposé au-dessus de la table de cuisson en verre (2) et adapté en outre pour détecter acoustiquement l'emplacement de l'aliment (3) qui est placé au hasard sur la table de cuisson en verre (2) sans ustensile de cuisson par l'utilisateur ; ou
 - le premier moyen de détection (6) comprend : une pluralité de cellules de charge (7) qui sont disposées en lignes (R) et en colonnes (C) sous la table de cuisson en verre (2) et adaptées pour détecter le poids des aliments (3), dans lequel les cellules de charge (7) sont disposées en correspondance spatiale avec les résistances chauffantes (4).
2. L'appareil de cuisson (1) selon la déclaration 1, est **caractérisé en ce que** chacune des cellules de charge (7) comprend : un ressort (8) qui est adapté pour être comprimé localement par le poids de l'aliment (3) ; et un micro-interrupteur (9) qui est disposé sous le ressort (8) et adapté pour être activé par la compression des ressorts (8) et pour émettre vers l'unité de commande (5) un signal MARCHE/ARRET qui est indicatif de l'activation et de la désactivation de celui-ci.
3. L'appareil de cuisson (1) selon la déclaration 1 ou 2, est **caractérisé en ce que** la pluralité de résistances chauffantes (4) chevauche toute la surface inférieure de la table de cuisson en verre (2).
4. L'appareil de cuisson (1) selon l'une quelconque des déclarations 1 à 3, est **caractérisé en ce que** chaque résistance chauffante (4) couvre une surface inférieure à 5 centimètres carrés.
5. L'appareil de cuisson (1) selon l'une quelconque des déclarations 1 à 3, est **caractérisé en ce que** chaque résistance chauffante (4) couvre une surface qui varie entre 5 et 10 centimètres carrés.
6. L'appareil de cuisson (1) selon l'une quelconque des déclarations 1 à 5, est **caractérisé en ce qu'il** est fourni comme un appareil de cuisson de type encastrable (1).
7. Une méthode de cuisson des aliments (3), comprenant :

- une étape consistant à placer au hasard les aliments (3) à cuire sans ustensile de cuisson sur une table de cuisson en verre (2) sous laquelle une pluralité de résistances chauffantes (4) sont disposées en lignes (R) et en colonnes (C) pour chauffer les aliments (3) ;
- une étape consistant à détecter directement l'emplacement des aliments (3) placés sur la table de cuisson en verre (2) sans ustensile de cuisson,
- une étape consistant à déterminer, sur la base du résultat de l'étape de détection, les résistances chauffantes (4) qui se trouvent immédiatement sous la denrée alimentaire (3) ; et
- une étape de commande, basée sur le résultat de la détermination dans l'étape de détermination, des résistances chauffantes (4) qui se trouvent immédiatement en dessous de l'aliment (3) ; est **caractérisé en ce que** l'étape de détection comprend :

- détecter acoustiquement, par un premier moyen de détection (6) disposé au-dessus de la table de cuisson en verre (2), l'emplacement de l'aliment (3) qui est placé au hasard sur la table de cuisson en verre (2) sans ustensile de cuisson ; ou
- détecter, par une pluralité de cellules de charge (7) qui sont disposées en lignes (R) et en colonnes (C) sous la plaque de cuisson en verre (2) et en correspondance spatiale avec la pluralité de résistances chauffantes (4), le poids des aliments (3).

Fig. 1

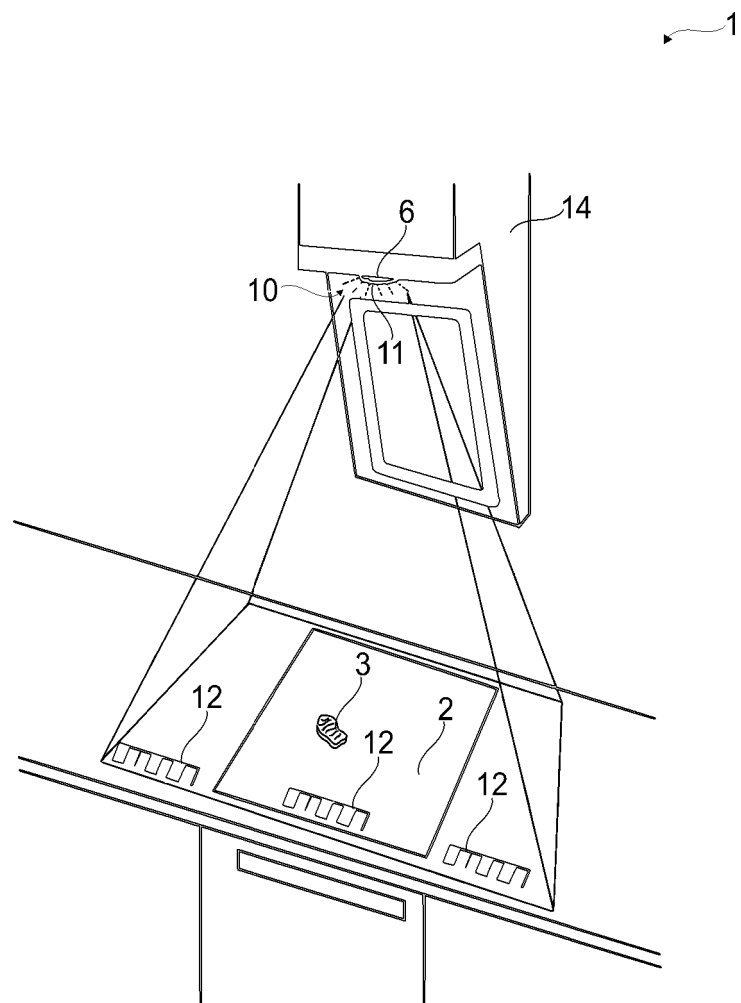


Fig. 2

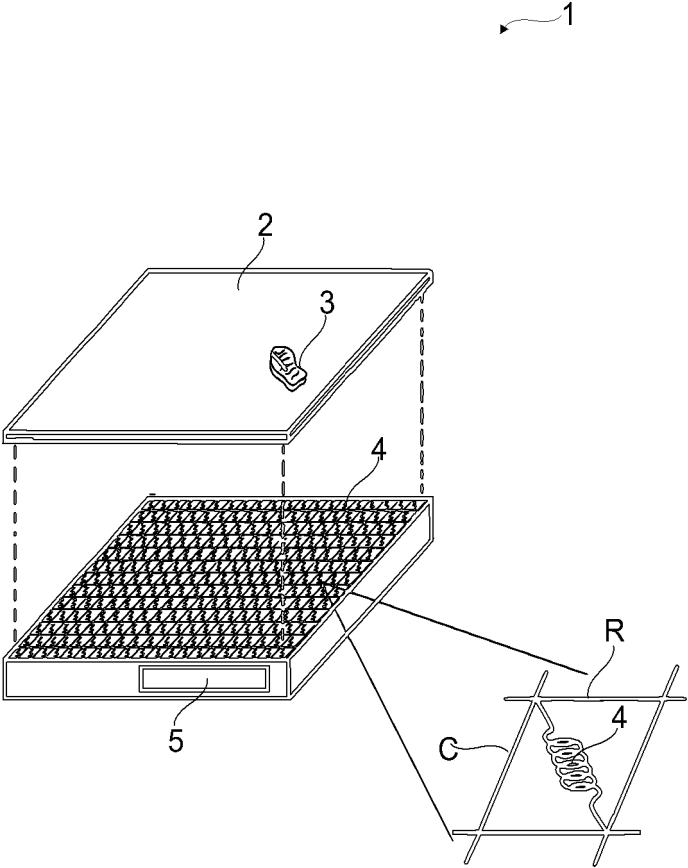


Fig. 3

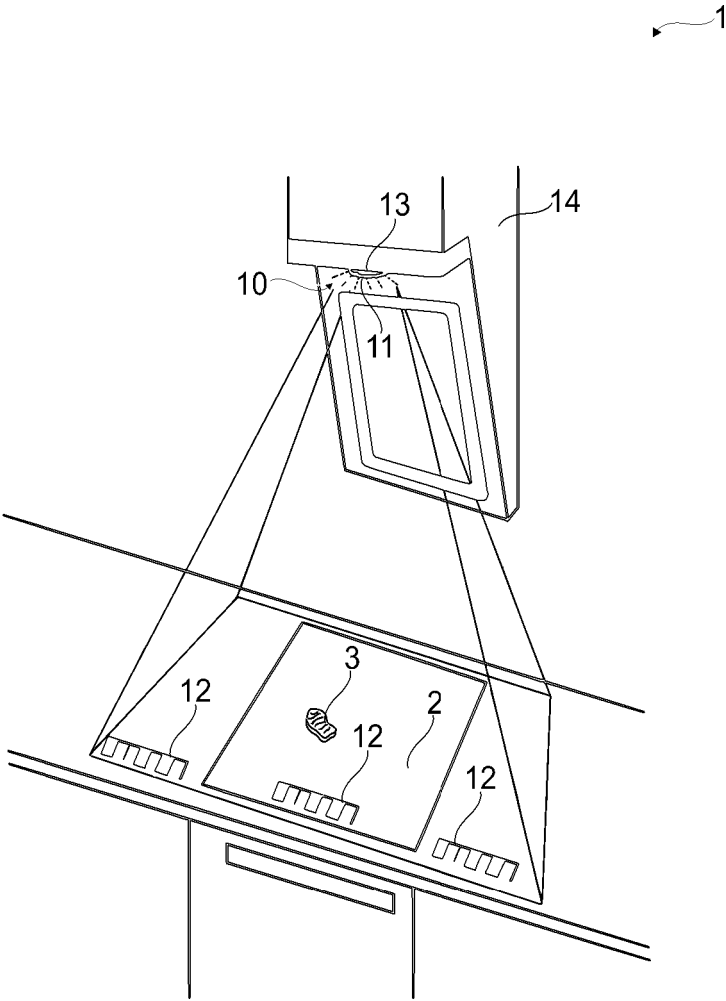
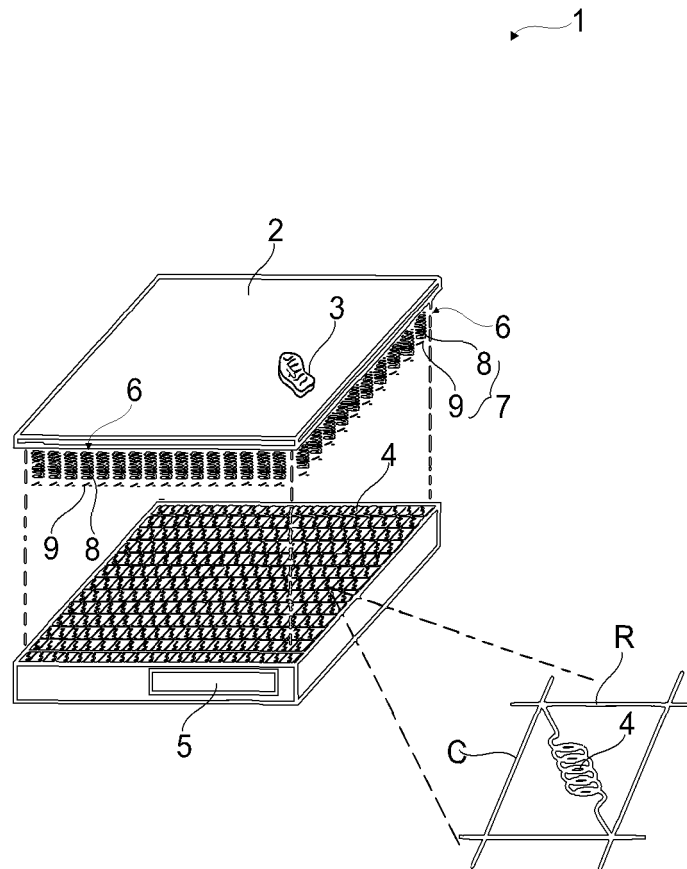


Fig. 4



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1206164 A2 [0003]
- WO 2014106960 A [0003]