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(54) INDUCTION COOKER WITH IMPROVED USABILITY

INDUKTIONSKOCHER MIT VERBESSERTER BEDIENBARKEIT

CUISINIÈRE À INDUCTION DOTÉE D'UNE CAPACITÉ D'UTILISATION AMÉLIORÉE

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EP 3 372 053 B1

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Description

[0001] The present invention relates to an induction cooker.

[0002] Induction cookers are commonly known in the art. An induction cooker generally comprises glass top which includes one or more cooking zones each for inductively heating a ferromagnetic cooking utensil at the heating level that is respectively selected by the user and a user-interface for allowing the user to select for each heating zone the heating level from a range of heating levels.

[0003] WO2015096928(A1) discloses an induction cooker. EP2876976 discloses another prior art induction cooker.

[0004] A problem with the prior art induction cooker is that the user cannot easily recognize the operational states of the cooking zones from the user-interface.

[0005] An objective of the present invention is to provide an induction cooker which solves the aforementioned problem of the prior art in a cost-effective way and which enables the user to easily and quickly obtain an improved overview of the operational states of the cooking zones.

[0006] This objective has been achieved by the induction cooker as defined in claim 1. Further achievements have been attained by the subject-matters respectively defined in the dependent claims.

[0007] The induction cooker of the present invention comprises one or more optical devices each adapted to project an image onto the circumferential wall of the cooking utensil that is placed on the respective cooking zone, wherein the image shows information which relates to the operational state of the respective cooking zone.

[0008] A major advantageous effect of the present invention is that the user can immediately recognize the operational state of each cooking zone from the image which is projected onto the respective cooking utensil. Thereby, the user can quickly ascertain whether the cooking zone is in the desired operational state and thus the food inside the cooking utensil can be prevented from undercooking or overcooking. Another major advantageous effect of the present invention is that the user can more easily and precisely operate the induction cooker by individually viewing the the images. Thereby, the complaints can be eliminated or reduced as much as possible. Another major advantageous effect of the present invention is that the optical devices can be used for illuminating the respective cooking utensils and/or for providing the user with useful information and instructions so as to interactively assist the user in cooking a particular recipe in accordance with the user-selection via the user-interface.

[0009] The image projected onto the circumferential wall of the cooking utensil shows the temperature of the respective cooking zone as sensed through the sensing unit and/or as accordingly set through the user-interface by way of selecting the heating level. These embodi-

ments are particularly advantageous as the user can immediately see the temperature of each cooking zone and prevent the food from undercooking or over cooking by increasing/decreasing the heating level. Thereby, the user can precisely adjust the temperature for the cooking zone by selecting the corresponding heating level and cook the food at the optimum temperature. Thereby, the user is enabled to correctly select the heating level that is most favorable for the food being cooked. Thereby, the user complaints can be eliminated or reduced as much as possible.

[0010] In one embodiment, the image projected onto the circumferential wall of the cooking utensil additionally shows the current operating power of the respective cooking zone. This embodiment is particularly advantageous as the user can immediately see the current operating power of the cooking zone and correctly select the optimum heating level for the food being cooked.

[0011] In another embodiment, the optical device is provided as an image projector such as an LCD projector or the like. Other image projectors known to those skilled in the art may be alternatively used. These embodiments are particularly advantageous as a high quality image can be easily projected onto the circumferential wall of the cooking utensil.

[0012] In other alternative embodiments, the optical device has a plurality of laser diodes which are arranged to form one or more multiple segment displays that project the image onto the circumferential wall of the cooking utensil. These embodiments are particularly advantageous as the production and assembly costs can be reduced both in terms of material and labor.

[0013] In other alternative embodiments, the optical device is arranged in close proximity to the respective cooking zone and either under the glass top or above the glass top. In the former case, the glass top is entirely or partly transparent so as to transmit the projected image. In the latter case, the glass top may be opaque. The images are projected onto the circumferential wall of the cooking utensil that substantially faces the front side of the induction cooker.

[0014] In other alternative embodiments, the image projected onto the circumferential wall of the cooking utensil comprises signs, including symbols and/or words.

[0015] In another embodiment, the image projected onto the circumferential wall of the cooking utensil comprises instructions to the user for a particular recipe that has been selected through the user-interface.

[0016] Additional features and additional advantageous effects of the induction cooker according to 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 perspective view of an induction cooker according to an embodiment of the present invention;

Figure 2 - is a schematic perspective partially ex-

ploded view of an induction cooker according to an embodiment of the present invention;

[0017] The reference signs appearing on the drawings relate to the following technical features.

1. Induction cooker
2. Glass top
3. Cooking zone
4. Cooking utensil
5. User-interface
6. Optical device
- 6a. Imaging unit
- 6b. Control unit
- 6c. Printed circuit board
7. Image
8. Circumferential wall
9. Laser diode
10. Multiple segment display

[0018] The induction cooker (1) comprises a glass top (2) which includes one or more cooking zones (3) each for inductively heating a cooking utensil (4) at the heating level that is respectively selected by the user, wherein each cooking zone (3) has one or more induction coils (not shown) and a user-interface (5) for allowing the user to select for each heating zone (3) the heating level from a range of heating levels (Fig. 1 and Fig. 2).

[0019] The induction cooker (1) of the present invention further comprises one or more optical devices (6) each adapted to project an image (7) onto the circumferential wall (8) of the cooking utensil (4) that is placed on the respective cooking zone (3), wherein the image (7) shows information which relates to the operational state of the respective cooking zone (3) (Fig. 1). The optical device (6) includes an imaging unit (6a) which generates and projects the image (7) and a control unit (6b) which controls the imaging unit (6a) (Fig. 2).

[0020] The image (7) shows the temperature of the respective cooking zone (3) (Fig. 1).

[0021] In one embodiment, each cooking zone (3) has a sensing unit (not shown) which is adapted to sense the temperature of the cooking zone (3). In this embodiment, the temperatures of the cooking zones (3) as sensed are sent to the control unit (6b) of the optical device (6).

[0022] In another embodiment, the sensing unit is further adapted to sense the temperature of the induction coil of the respective cooking zone (3) by means of an NTC temperature sensor (not shown) or the like.

[0023] In another embodiment, the temperatures of the cooking zones (3) which respectively correspond to the heating levels as selected by the user are sent to the control units (6b) of the optical devices (6).

[0024] In another embodiment, the image (7) shows the current operating power of the respective cooking zone (3). In this embodiment, the current operating powers of the cooking zones (3) which respectively correspond to the heating levels as selected by the user are

sent to the control units (6b) of the optical devices (6).

[0025] In another embodiment, each optical device (6) comprises a plurality of laser diodes (9) which are arranged to form at least a pair of seven segment displays (10). In this embodiment, the laser diodes (9) are mounted onto a printed circuit board (6c) (Fig. 2).

[0026] In another embodiment, each optical device (6) is arranged under the glass top (2) in close proximity to the respective cooking zone (3). In this embodiment, the glass top (2) is transparent so as to transmit the image (7) being projected (Fig. 1 and Fig. 2).

[0027] A major advantageous effect of the present invention is that the user can immediately recognize the operational state of each cooking zone (3) from the image (7) which is projected onto the respective cooking utensil (4) (Fig. 1). Thereby, the user can quickly ascertain whether the cooking zone (3) is in the desired operational state and thus the food inside the cooking utensil (3) can be prevented from undercooking or overcooking. Another major advantageous effect of the present invention is that the user can more easily and precisely operate the induction cooker (1) by individually viewing the images. Thereby, the complaints can be eliminated or reduced as much as possible. Another major advantageous effect of the present invention is that the optical devices (6) can be used for illuminating the respective cooking utensils (3) and/or for providing the user with useful information and instructions so as to interactively assist the user in cooking a particular recipe in accordance with the user-selection via the user-interface (5).

Claims

1. An induction cooker (1) comprising a glass top (2) which includes one or more cooking zones (3) each for inductively heating a cooking utensil (4) at the heating level that is respectively selected by the user, a user-interface (5) for allowing the user to select for each heating zone (3) the heating level from a range of heating levels, one or more optical devices (6) each adapted to project an image (7) onto the circumferential wall (8) of the cooking utensil (4) that is placed on the respective cooking zone (3), wherein the image (7) shows information which relates to the operational state of the respective cooking zone (3), **characterised in that** the image (7) shows the temperature of the respective cooking zone (3).
2. The induction cooker (1) according to claim 1, wherein each cooking zone (3) comprises a sensing unit adapted to sense the temperature of the respective cooking zone (3).
3. The induction cooker (1) according to claim 2, wherein the image (7) shows the temperature of the respective cooking zone as sensed through the sensing unit.

4. The induction cooker (1) according to any one of preceding claims, wherein the image (7) shows the current operating power of the respective cooking zone (3).
5. The induction cooker (1) according to any one of preceding claims, wherein the image (7) comprises instructions to the user for a particular recipe selected through the user-interface (5).
6. The induction cooker (1) according to any one of preceding claims, wherein one or more optical devices (6) each comprises one or more laser diodes (9) which are arranged to form one or more multiple segment displays (10).
7. The induction cooker (1) according to any one of preceding claims, wherein one or more optical devices (6) are each arranged under the glass top (2) in close proximity to the respective cooking zone (3).

Patentansprüche

1. Ein Induktionsherd (1) umfasst eine Glasplatte (2), die jeweils eine oder mehrere Kochzonen (3) zum induktiven Erwärmen eines Kochgeschirrs (4) auf die vom Benutzer jeweils gewählte Heizstufe aufweist; eine Benutzerschnittstelle (5), mit der der Benutzer für jede Heizzone (3) die Heizstufe aus einem Bereich von Heizstufen auswählen kann; eine oder mehrere optische Einrichtungen (6), die jeweils dazu eingerichtet sind, ein Bild (7) auf die Umfangswand (8) des Kochgeschirrs (4) zu projizieren, das auf der jeweiligen Kochzone (3) angeordnet ist, wobei das Bild (7) Informationen zeigt, die sich auf den Betriebszustand der jeweiligen Kochzone (3) beziehen, er ist **dadurch gekennzeichnet, dass** das Bild (7) die Temperatur der jeweiligen Kochzone (3) zeigt.
2. Der Induktionsherd (1), wie in Anspruch 1 aufgeführt, wobei jede Kochzone (3) eine Erfassungseinheit besitzt, die dazu angepasst ist, die Temperatur der jeweiligen Kochzone (3) zu erfassen.
3. Der Induktionsherd (1), wie in Anspruch 2 aufgeführt, wobei das Bild (7) die Temperatur der jeweiligen Kochzone zeigt, wonach sie durch die Erfassungseinheit erfasst wird.
4. Der Induktionsherd (1), wie in einem der vorherigen Ansprüche aufgeführt, wobei das Bild (7) die aktuelle Betriebsleistung der jeweiligen Kochzone (3) zeigt.
5. Der Induktionsherd (1), wie in einem der vorherigen Ansprüche aufgeführt, wobei das Bild (7) Anweisungen an den Benutzer für ein bestimmtes Rezept

enthält, das über die Benutzerschnittstelle (5) ausgewählt wurde.

6. Der Induktionsherd (1), wie in einem der vorherigen Ansprüche aufgeführt, wobei eine oder mehrere optische Vorrichtungen (6) jeweils eine oder mehrere Laserdioden (9) umfassen, die dafür angeordnet sind, um eine oder mehrere Mehrfachsegmentanzeigen (10) zu bilden.
7. Der Induktionsherd (1), wie in einem der vorherigen Ansprüche aufgeführt, wobei eine oder mehrere optische Einrichtungen (6) jeweils unter der Glasplatte (2) in unmittelbarer Nähe zur jeweiligen Kochzone (3) angeordnet sind.

Revendications

1. Un appareil de cuisson à induction (1) comprenant une plaque de verre (2) qui comporte une ou plusieurs zones de cuisson (3), chacune pour chauffer par induction un ustensile de cuisson (4) au niveau de chauffage qui est sélectionné respectivement par l'utilisateur, une interface utilisateur (5) pour permettre à l'utilisateur de sélectionner pour chaque zone de chauffage (3) le niveau de chauffage parmi une gamme de niveaux de chauffage, un ou plusieurs dispositifs optiques (6) chacun adapté pour projeter une image (7) sur la paroi circonférentielle (8) de l'ustensile de cuisson (4) qui est placé sur la zone de cuisson correspondante (3), dans lequel l'image (7) montre des informations qui se rapportent à l'état de fonctionnement de la zone de cuisson correspondante (3), **caractérisé en ce que** l'image (7) montre la température de la zone de cuisson correspondante (3).
2. L'appareil de cuisson à induction (1) selon la déclaration 1, dans lequel chaque zone de cuisson (3) comprend une unité de détection adaptée pour détecter la température de la zone de cuisson correspondante (3).
3. L'appareil de cuisson à induction (1) selon la déclaration 2, dans lequel l'image (7) montre la température de la zone de cuisson correspondante telle qu'elle est détectée par l'unité de détection.
4. L'appareil de cuisson à induction (1) selon l'une quelconque des déclarations précédentes, dans laquelle l'image (7) montre la puissance de fonctionnement actuelle de la zone de cuisson correspondante (3).
5. L'appareil de cuisson à induction (1) selon l'une quelconque des déclarations précédentes, dans lequel l'image (7) comprend des instructions destinées à l'utilisateur pour une recette particulière sélection-

née par l'intermédiaire de l'interface utilisateur (5).

6. L'appareil de cuisson à induction (1) selon l'une quelconque des déclarations précédentes, dans lequel un ou plusieurs dispositifs optiques (6) comprennent chacun une ou plusieurs diodes laser (9) qui sont agencées pour former un ou plusieurs affichages à segments multiples (10). 5
7. L'appareil de cuisson à induction (1) selon l'une quelconque des déclarations précédentes, dans lequel un ou plusieurs dispositifs optiques (6) sont chacun disposés sous la plaque de verre (2) à proximité immédiate de la zone de cuisson correspondante (3). 10

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Fig. 1

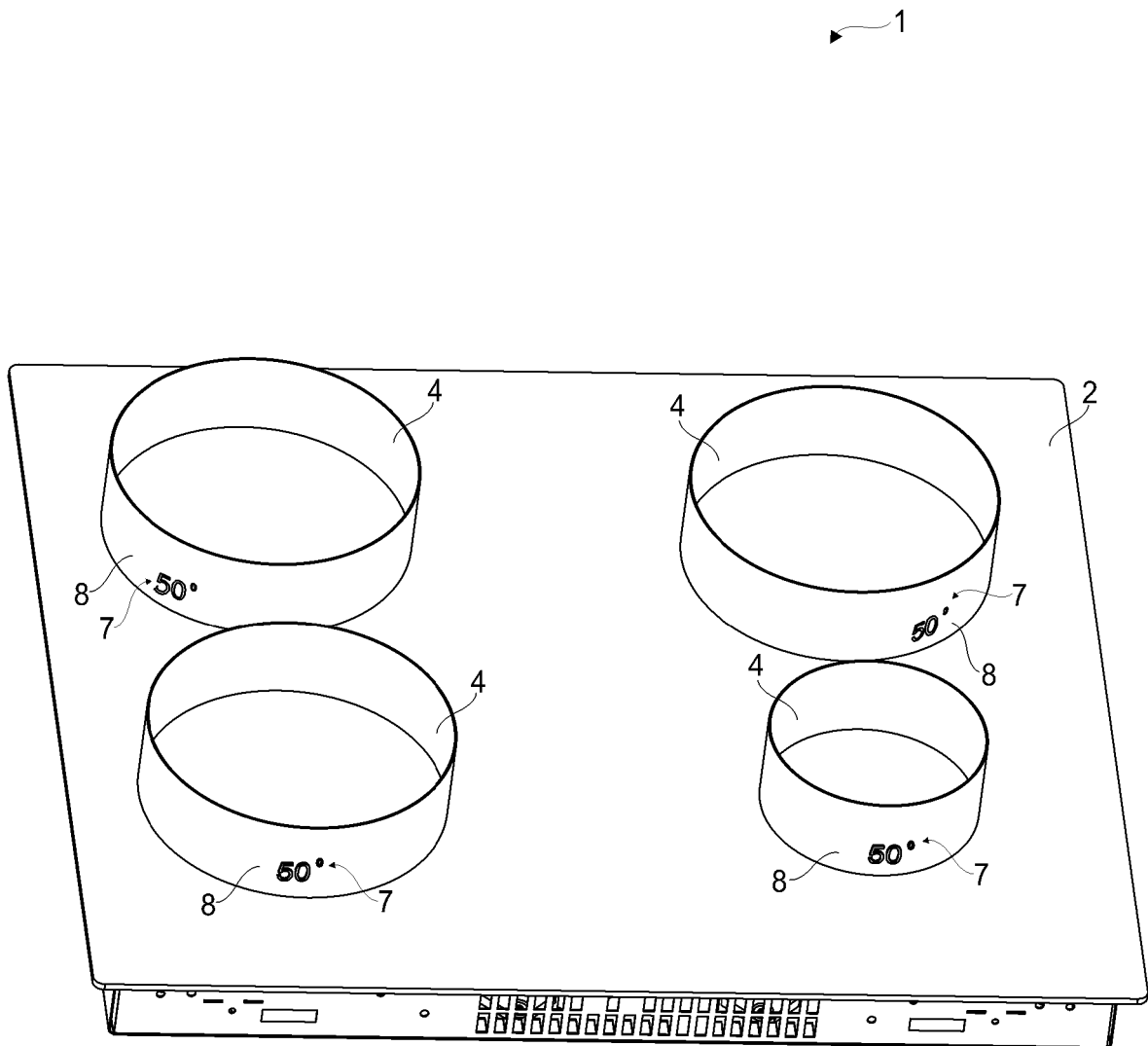
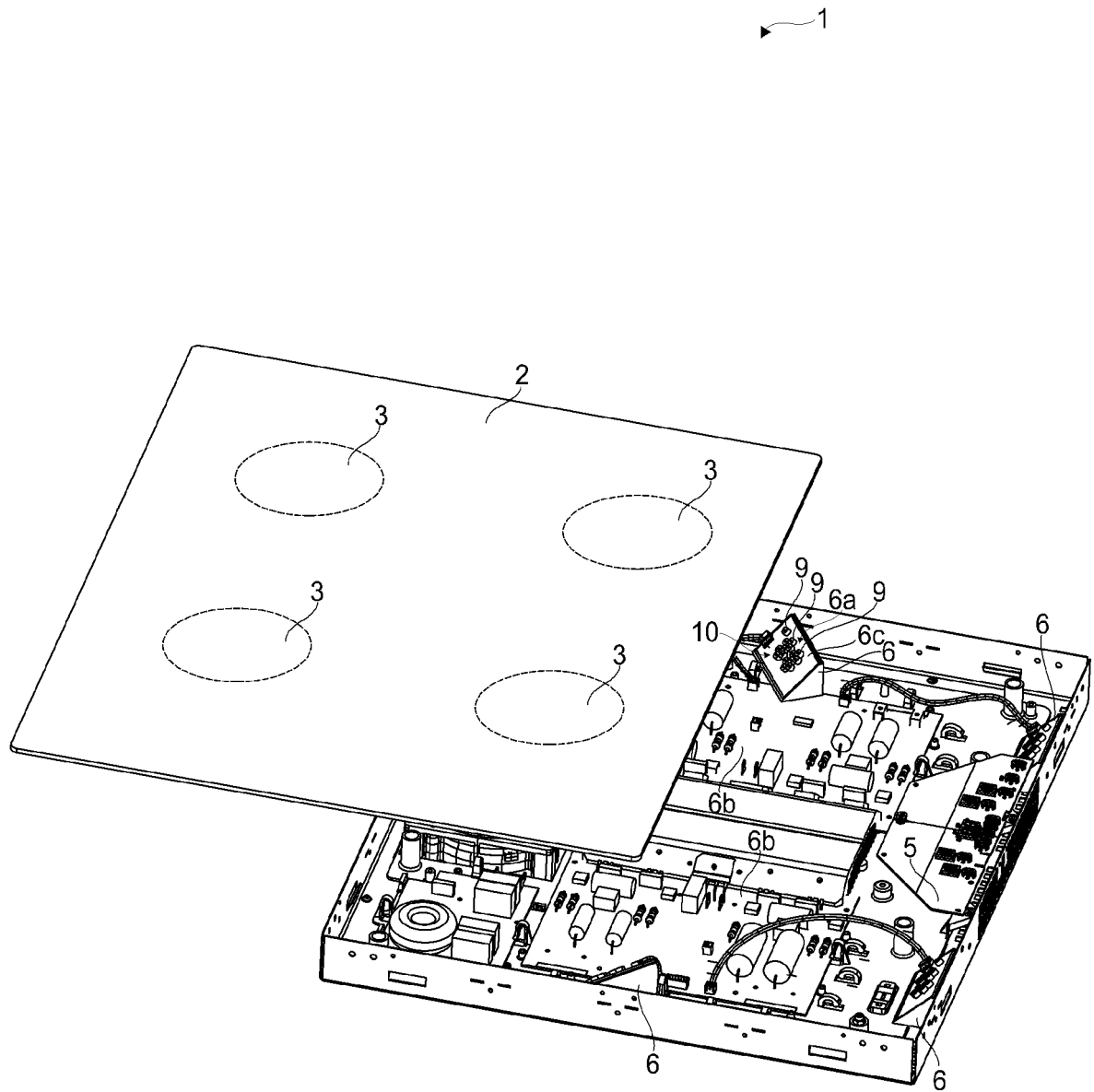


Fig. 2



REFERENCES CITED IN THE DESCRIPTION

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