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(54) A STEAM APPARATUS FOR A CONVENTIONAL OVEN

(57) The present invention refers to a steam apparatus (2) for converting a conventional oven (1) to a steam oven. The steam apparatus (2) comprises of an external power supply, a water tank (7), a steam generator, a control unit and a user interface (5). The external power supply is provided for supplying power to said apparatus (2). The water tank (7) is provided for storing water that is required for generating steam. The steam generator is provided for generating the hot steam (9) from water that is stored in the water tank (7). The control unit is configured for controlling the apparatus (2). The user interface (5) is configured for allowing a user to execute control signal to the apparatus (2). The steam generator includes a heat transfer element (10). The heat transfer element (10) acquires heat generated at the conventional oven (1) and transfer the acquired heat to the stored water for generating the steam.

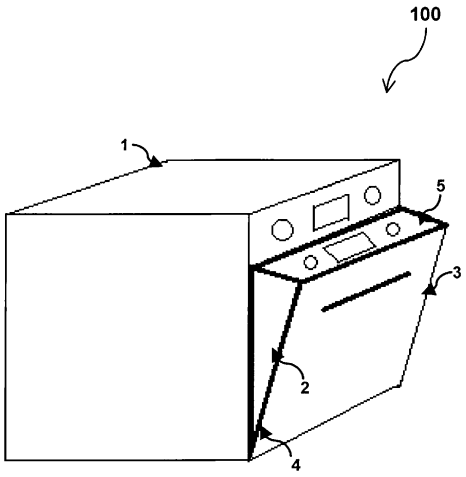

Fig. 1

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Description

[0001] This invention refers to a steam apparatus for converting a conventional oven to steam oven according to claim 1.

Background of the Invention

[0002] Steam ovens are the healthy alternative to conventional ovens. Since steaming retains the flavor, vitamins and nutrients in food. Further, vegetables also keep their shape, appealing natural color and also healthy. Vegetables cooked in steam ovens have a significantly higher appeal to the senses (taste, texture, color, structure) then those cooked using traditional methods. Conventional stand alone or built-in ovens may not have these facility to steam the food items. To utilize this steaming facility in the conventional oven, the user has to change the entire conventional oven with steam function.

[0003] In the prior art WO2004104483 (A1), the invention provides an oven and its combination with a steam module. The oven comprising a preparation space and a device for heating the content thereof, and further provided with means for releasable connecting steam module to the heating device. In this way a convection oven may be converted into a steam oven. The heating device may be arranged in housing, and the connecting means may comprise attachment points arranged on an outer wall of the housing for parts of the steam module, like a condenser, supply and discharge valves and a pressure sensor. In these steam ovens, steam is formed by injecting water on heating elements and thus evaporating it, is used for heating. This steam is generally also introduced into the preparation space and led along the food to be heated by means of a fan.

[0004] In another prior art WO200187074 (A1), the invention provides a module for producing hot humid air for a proofing or holding operation. More particularly, the module of this type adapted to operate in conjunction either with a proofing chamber in which dough pieces are raised prior to baking, or to operate in conjunction with a holding chamber in which cooked food is maintained in a hot and moist state suitable for serving, and to a module having a removable water pan with integrated electrical connection, and so a module having a humidity control.

[0005] In one more prior art US3639725A, the invention provides a steam-generating apparatus. Particularly, the invention describes an apparatus for converting dry heat ovens and the like into units capable of steam cooking either individually or in combination with the existing source of dry heat. Specifically, the invention takes the form of a self-contained electrically heated water chamber which generates steam under controlled pressure and disperses this steam within the existing dry heat chamber of an oven.

[0006] The subject-matter of the above mentioned prior arts does not provide an appropriate add-on steam appartus for a conventional oven. Further, an external or internal heating element is required for generating steam for cooking process.

Object of the Invention

[0007] It is therefore the object of the present invention to provide an apparatus, in particular a steam apparatus for converting a convnetional oven to a steam oven and that can be operated with the help of heat transfer element.

Description of the Invention

[0008] The before mentioned object is solved by a steam appartus according to claim 1. Particularly, the steam apparatus is provided for converting a conventional oven to a steam oven. The steam apparatus comprises of an external power supply, a water tank, a steam generator, a control unit and a user interface. The external power supply is provided for supplying power to said apparatus. The water tank is provided for storing water that is required for generating steam. The steam generator is provided for generating the steam from water that is stored in the water tank. The control unit is configured for controlling the apparatus. The user interface is configured for allowing a user to execute control signal to the apparatus. The steam generator includes a heat transfer element. The heat transfer element acquires heat generated at the conventional oven and transfer the acquired heat to the stored water for generating the steam.

[0009] Further preferred embodiments are subject-matter of dependent claims and/or of the following specification parts.

[0010] According to a preferred embodiment of the present invention, the steam apparatus further includes a thermal isolation on mounting points of the steam apparatus. The steam apparatus is mounted between the conventional oven door and a body with necessary thermal isolation structures.The amount of steam generated by the steam generator is adjusted with a distance between the heat transfer element and water tank by mechanical or electrical actuators. The apparatus further includes a steam outlet is provided for homogeneous and synchronous steam distribution. The shape of the steam outlet is designed as a chimney shaped structure. The apparatus further includes a supporter fan for faster steam distribution inside the conventional oven.

[0011] Further benefits, goals and features of the present invention will be described by the following specification of the attached figures, in which components of the invention are exemplarily illustrated. Components of the devices and method according to the inventions, which match at least essentially with respect to their function can be marked with the same reference sign, wherein such components do not have to be marked or described in all figures.

[0012] The invention is just exemplarily described with respect to the attached figures in the following.

Brief Description of the Drawings

[0013]

Fig. 1 illustrates an external perspective view steam apparatus attached with a conventional oven, according to an embodiment of the present invention;

Fig.2 illustrates an internal perspective view of steam apparatus attached with a conventional oven according to an embodiment of the present invention;

Fig.3a illustrates a side view of the steam apparatus, according to an embodiment of the present invention; and

Fig.3b illustrates a side perspective view of the steam apparatus, according to an embodiment of the present invention.

Detailed Description of the Drawings

[0014] Fig.1 illustrates an external perspective view 100 steam apparatus 2 attached with a conventional oven 1, according to an embodiment of the present invention. The steam apparatus 2 is provided for converting a conventional oven 1 to a steam oven. The steam apparatus 2 comprises of an external power supply, a water tank 7, a steam generator, a control unit and a user interface 5. The external power supply is provided for supplying power to said steam apparatus 2 (herein after 'apparatus'). The user interface 5 is configured for allowing a user to execute control signal to the apparatus 2. The control unit is configured for controlling the apparatus 2. That is when a user gives input from the user interface 5 the apparatus 2 can respond according to the control signal transferred from the control unit. The steam apparatus 2 further includes a thermal isolation 4 on mounting points of the steam apparatus 2. Hence, the steam apparatus 2 is mounted between the conventional oven door 3 and a body 1 with necessary thermal isolation structures 4.

[0015] Fig.2 illustrates an internal perspective view 200 of steam apparatus 2 attached with a conventional oven 1 according to an embodiment of the present invention. The internal view of the steam apparatus 2 depicts the water tank 7, a steam outlet 6, a steam vent 8 and hot steam 9 flow path. The water tank 7 is provided for storing water that is required for generating hot steam 9. The steam generator is provided for generating the hot steam 9 from water that is stored in the water tank 7. The steam generator includes a heat transfer element 10. The heat transfer element 10 acquires heat generated at the conventional oven 1 and transfer the acquired heat to the stored water for generating the hot steam 9. That is, the heat transfer element 10 has got high heat conductivity that takes the heat of the conventional oven 1 to water tank 7 where hot steam 9 is generated. The generated hot steam 9 can flow through a steam outlet 6 which is immediately next to the water tank 7. From the steam outlet 6, the hot steam 9 air flow pass through a steam vent 8. The steam vent 8 is connected with an inner chamber of the conventional oven 1. The amount of hot steam 9 generated by the steam generator is adjusted with a distance between the heat transfer element 10 and water tank 7 by mechanical or electrical actuators.

[0016] Fig.3a illustrates a side view 300a of the steam apparatus 2, according to an embodiment of the present invention. The side view of the steam apparatus 2 depicts the position of the heat transfer element 10. The heat transfer element 10 is placed near to the water tank 7 to transfer the heat by conduction and convection heat transfer techniques. The steam outlet 6 is a closed portion designed as a chimney shaped structure to pass the hot steam 9 from water tank 7 to the steam vent 8.

[0017] Fig.3b illustrates a side perspective view 300b of the steam apparatus 2, according to an embodiment of the present invention. The side perspective view clearly depicts the shape of the apparatus 2 and the water tank 7 position. Further, the steam outlet 6 is provided for homogeneous and synchronous hot steam 9 distribution. The shape of the steam outlet 6 is designed as a chimney shaped structure. The steam apparatus 2 further includes a supporter fan (not shown in figure) for faster hot steam 9 distribution inside the conventional oven 1.

[0018] According to the preferred embodiment, the end user can add steam function easily to a conventional oven 1 with this portable apparatus 2 without any hardware or software modification. Further, the apparatus 2 can work independently from the conventional oven 1 without any performance or efficiency loss and controlling by its own user interface 5.

[0019] Thus, the present invention refers to a steam apparatus 2 for converting a conventional oven 1 to a steam oven. The steam apparatus 2 comprises of an external power supply, a water tank 7, a steam generator, a control unit and a user interface 5. The external power supply is provided for supplying power to said apparatus 2. The water tank 7 is provided for storing water that is required for generating steam. The steam generator is provided for generating the hot steam 9 from water that is stored in the water tank 7. The control unit is configured for controlling the apparatus 2. The user interface 5 is configured for allowing a user to execute control signal to the apparatus 2. The steam generator includes a heat transfer element 10. The heat transfer element 10 acquires heat generated at the conventional oven 1 and transfers the acquired heat to the stored water for generating the steam.

List of reference numbers

[0020]

1	conventional oven or conventional oven body
2	steam apparatus or apparatus
3	conventional oven door
4	isolation points or thermal isolation
5	user interface
6	steam outlet
7	water tank
8	steam vent
9	hot steam or flow of hot steam
10	heat transfer element
100	an external perspective view steam apparatus attached with a conventional oven
200	an internal perspective view of steam apparatus attached with a conventional oven
300a	side view of the steam apparatus
300b	side perspective view of the steam apparatus

Claims

1. A steam apparatus (2) for converting a conventional oven (1) to a steam oven comprises:

an external power supply provided for supplying power to said apparatus (2);
a water tank (7) provided for storing water that is required for generating hot steam (9);
a steam generator is provided for generating the hot steam (9) from water that is stored in the water tank (7);
wherein the apparatus (2) further comprises of a control unit and a user interface (5);
wherein the control unit is configured for controlling the apparatus (2);
wherein the user interface (5) is configured for allowing a user to execute control signal to the steam apparatus (2);
characterized in that
the steam generator includes a heat transfer element (10); and
wherein the heat transfer element (10) acquires heat generated at the conventional oven (1) and transfers the acquired heat to the stored water for generating the hot steam (9).

2. The steam apparatus of claim 1, wherein the steam apparatus (2) further includes a thermal isolation (4) on mounting points of the steam apparatus (2).

3. The steam apparatus of claim 2, wherein the steam apparatus (2) is mounted between the conventional oven door (3) and a body (1) with necessary isolation structures (4).

4. The steam apparatus of claim 1, wherein the amount of hot steam (9) generated by the steam generator is adjusted with a distance between the heat transfer element (10) and water tank (7) by mechanical or electrical actuators.

5. The steam apparatus of claim 1, wherein the steam apparatus (2) further includes a steam outlet (6) provided for homogeneous and synchronous hot steam (9) distribution.

6. The steam apparatus of claim 5, wherein the shape of the steam outlet (6) is designed as a chimney shaped structure.

7. The steam apparatus of claim 1, wherein the steam apparatus (2) further includes a supporter fan for faster hot steam (9) distribution inside the conventional oven (1).

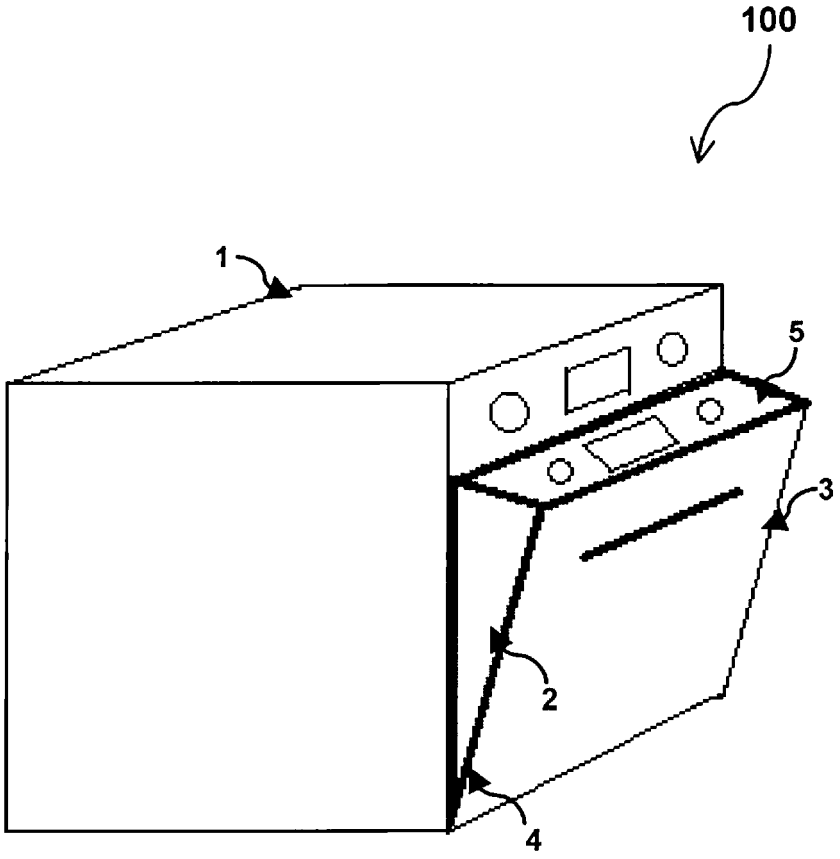

Fig. 1

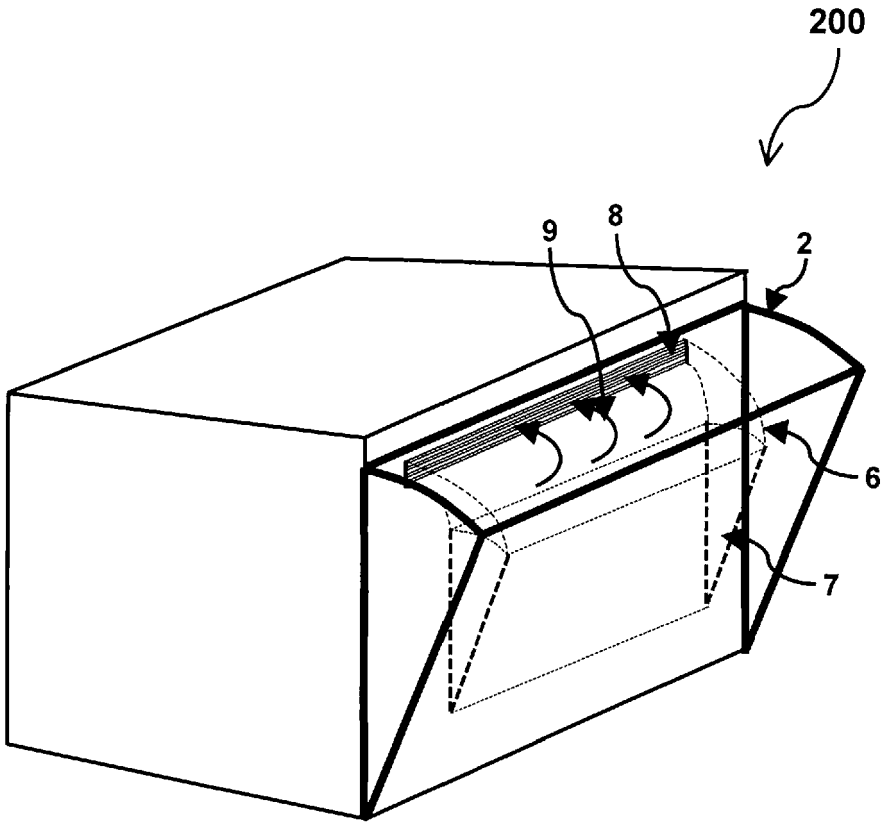

Fig. 2

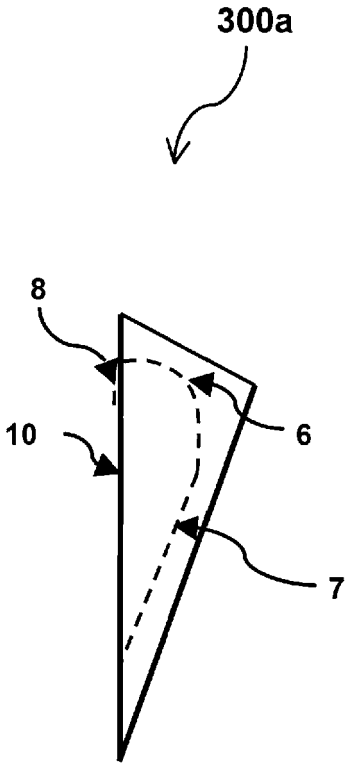

Fig. 3a

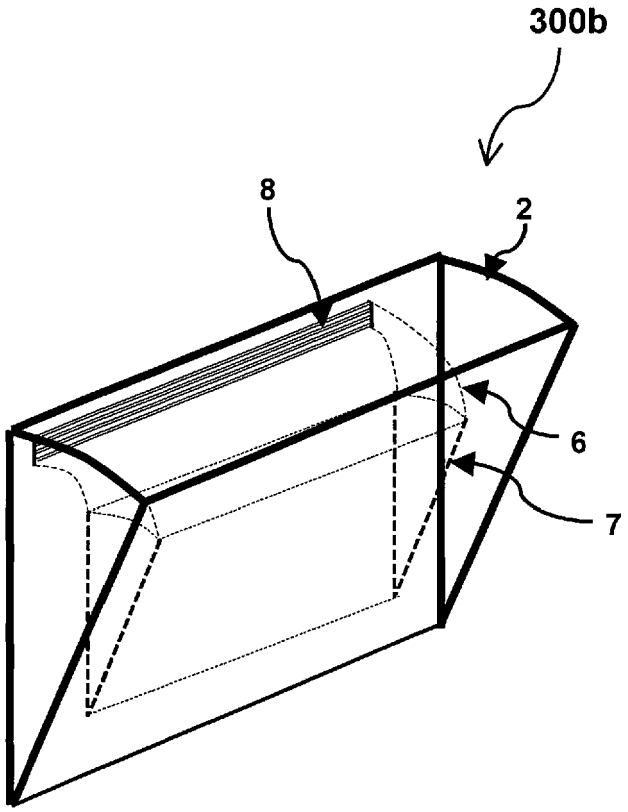

Fig. 3b

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EUROPEAN SEARCH REPORT

Application Number
EP 17 16 3480

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	14 September 2017	Adant, Vincent

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

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