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(54) **Automatic temperature boosting system**

(57) Automatic heat boosting system, developed for a cooking device comprising at least one cooking compartment; at least two heating elements (5a, 5b, 5c, 5d) that heat this cooking compartment; at least one temperature sensor (3) that senses the cooking compartment temperature; at least one switching element (6) that has more than one position and controls the operation of said heating elements (5a, 5b, 5c, 5d) depending on the po-

sition selected from said positions; comprises a control unit (1) which is connected to said temperature sensor (3), to said heating elements (5a, 5b, 5c, 5d) and to said switching element (6), and which powers all of the heating elements (5a, 5b, 5c, 5d) independently from the position of the switching element (6) when at least one of the heating elements (5a, 5b, 5c, 5d) is started by changing the position of the switching element (6).

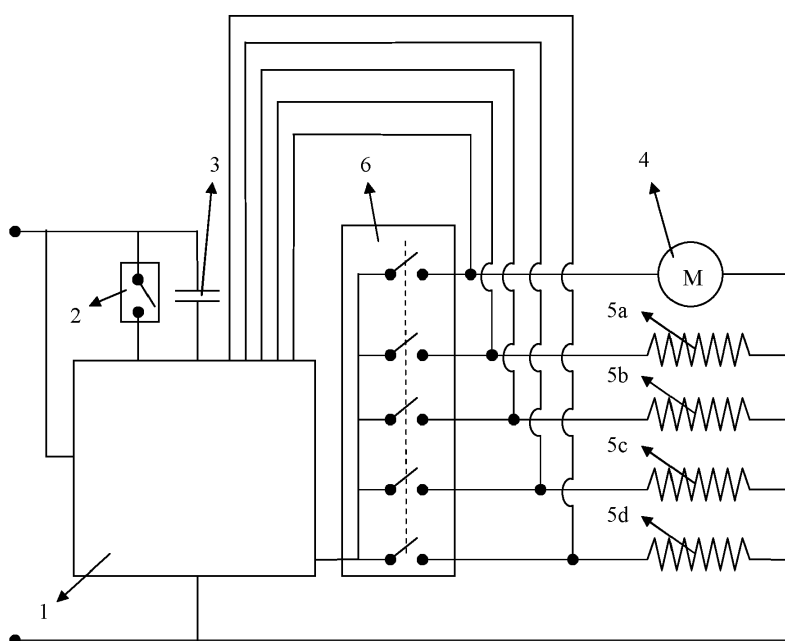


Figure 1

Description

Technical Field

[0001] Present invention relates to an automatic temperature boosting system employed in cooking appliances.

Prior Art

[0002] In order to cook a food in a cooking device, cooking devices are preferred to be heated to a certain temperature before cooking begins. To this end, such devices are preferably used after a preheating.

[0003] Said preheating can be performed by switching the device on when the compartment of the device is empty. For the foods which are preferred to be stewed, however, preheating may take time in the low-heat modes of the device.

[0004] Therefore, the cooking devices of the prior art comprise a selective preheating system. This system is provided with additional heating elements. A preheating function is activated depending on the user selection when the device is switched on; the additional heating elements are started by the preheating function and it is ensured that the temperature of the cooking compartment is rapidly increased during the preheating.

[0005] However, the preheating systems employed in the known devices are controlled manually, wherein the user manually activates the preheating every time he/she starts the device; checks whether the cooking compartment has reached the desired temperature or not; and deactivates the preheating system manually. As a consequence, these systems require a continuous user monitoring, and may affect cooking performance if the preheating system remains on in the case that the user is unaware of the situation.

[0006] Patent document US 2010/0147825 A1, where one of the known preheating systems is disclosed, discloses a cooking appliance which, depending on a preheating mode selected by the user, controls the air blowing units and the heating elements in the cooking compartment and performs a predetermined preheating sequence.

[0007] Another related patent document US 2002/0066724 A1 discloses a system comprising a preheating option, wherein the system runs the air blowing unit, which blows air to the cooking compartment, at a low speed and ensures that high temperature is attained regionally. The system in question, however, cannot provide an efficient preheating function.

Brief Description of the Invention

[0008] Automatic heat boosting system of the invention, developed for a cooking device comprising at least one cooking compartment; at least two heating elements that heat this cooking compartment; at least one temper-

ature sensor that senses the cooking compartment temperature; at least one switching element that has more than one position and controls the operation of said heating elements depending on the position selected from said positions; comprises a control unit which is connected to said temperature sensor, to said heating elements and to said switching element, and which powers all of the heating elements independently from the position of the switching element when at least one of the heating elements is started by changing the position of the switching element.

[0009] The system provided by the invention presents a device which provides, every time the user switches the device on, an automatic preheating function by starting all the heating elements that heat the cooking compartment, and which also assumes a regular operating mode by automatically deactivating the preheating function when desired temperature is attained in the cooking compartment. Thus, the device gets ready for cooking in a short time and improves cooking performance without needing user intervention.

Objective of the Invention

[0010] The aim of the present invention is to develop an automatic temperature boosting system for a cooking device.

[0011] Another aim of the present invention is to develop an automatic temperature boosting system which automatically activates a preheating mode.

[0012] Another aim of the present invention is to develop an automatic temperature boosting system which deactivates the preheating mode when the cooking compartment comprised by the cooking device reaches a desired temperature.

Description of the Figure

[0013] An exemplary embodiment of the automatic temperature boosting system which is the subject matter of the present invention is illustrated in the annexed figure wherein:

Figure 1 is an exemplary block diagram of the system developed by the present invention.

[0014] The parts in the figure are individually enumerated and the corresponding terms of these reference numbers are as follows:

| | |
|--------------------|------------------|
| Control unit | (1) |
| Boosting switch | (2) |
| Temperature sensor | (3) |
| Air blowing unit | (4) |
| Heating element | (5a, 5b, 5c, 5d) |
| Switching element | (6) |

Disclosure of the Invention

[0015] Automatic temperature boosting system of the invention, an exemplary embodiment of which is illustrated in Figure 1, can be used in a cooking device which comprises at least one cooking compartment (not shown); at least two heating elements (5a, 5b, 5c, 5d) that heat this cooking compartment; at least one temperature sensor (3) that senses the cooking compartment temperature; at least one switching element (6) that has more than one position and selectively controls the operation of said heating elements (5a, 5b) depending on the position selected from said positions. Said system comprises at least one control unit (1).

[0016] In the system; the switching element (6), the temperature sensor (3) and the heating elements (5a, 5b, 5c, 5d) are connected to the control unit (1). When at least one of the heating elements (5a, 5b, 5c, 5d) is started by changing the position of the switching element (6), the control unit (1), independently from the position of the switching element (6), powers all of the heating elements (5a, 5b, 5c, 5d). Thus, all of the heating elements (5a, 5b, 5c, 5d) are started during the initial heating to boost the cooking compartment to the desired temperature within the shortest possible time.

[0017] When the cooking compartment has reached the desired temperature, the control unit (1) turns off the power supplied to the heating elements (5a, 5b, 5c, 5d) by the control unit (1) and ensures that the cooking compartment is heated by the heating elements only selected by the switching element (6). Thus, the cooking device is operated in accordance with the position selected by means of the switching element (6) after the initial heating.

[0018] In an embodiment of the invention, the system comprises at least one boosting switch (2) connected to the control unit (1). The operation of the control unit (1) can be controlled by means of the boosting switch (2). Thus, the user optionally deactivates the automatic heat boosting system, ensuring that the device is operated under a mode selected by means of the switching element (6).

[0019] The device preferably comprises at least one air blowing unit (4) in order to move the air within the cooking compartment. The air blowing unit (4) is also connected to the control unit (1) in the system developed by the invention. Thus, air circulation in the cooking compartment is ensured during the heat boosting to level the temperature across the cooking compartment.

[0020] Rapid and automatic heating of the cooking compartment is ensured by means of the system, thereby ensuring, without delay, the temperature required for cooking in the cooking compartment.

comprising at least one cooking compartment; at least two heating elements (5a, 5b, 5c, 5d) that heat this cooking compartment; at least one temperature sensor (3) that senses the cooking compartment temperature; at least one switching element (6) that has more than one position and controls the operation of said heating elements depending on the position selected from said positions **characterized by** comprising a control unit (1)

- which is connected to said temperature sensor (3), to said heating elements (5a, 5b, 5c, 5d) and to said switching element (6);

- which powers all of the heating elements (5a, 5b, 5c, 5d) independently from the position of the switching element (6) when at least one of the heating elements (5a, 5b, 5c, 5d) is started by changing the position of the switching element (6);

- which turns off the power when the temperature sensed by the temperature sensor (3) has reached a desired value.

2. An automatic heat boosting system according to Claim 1 **characterized by** comprising at least one boosting switch (2) connected to the control unit (1), which controls the operation of the control unit (1).

3. An automatic heat boosting system according to Claim 1 **characterized in that** the control unit (1) is connected to at least one air blowing unit (4) comprised by the cooking device.

Claims

1. Automatic heat boosting system for a cooking device

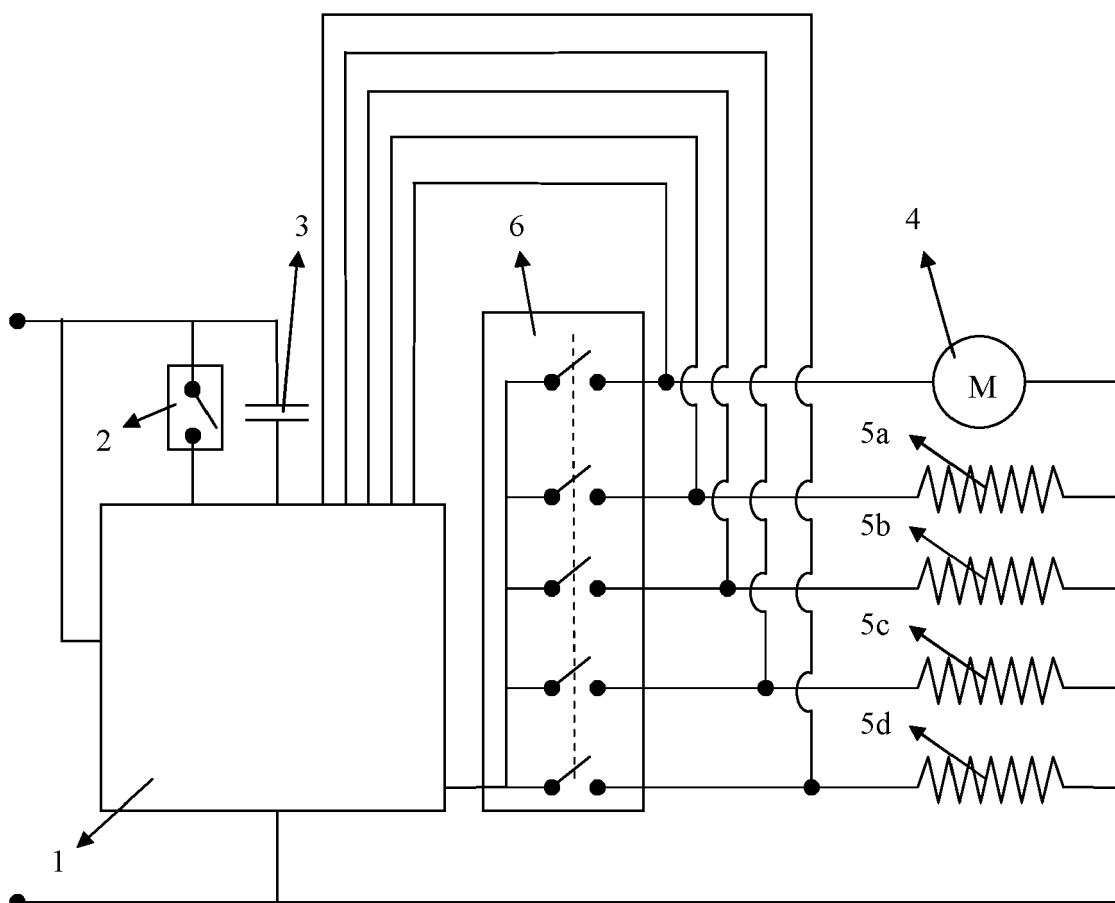


Figure 1



EUROPEAN SEARCH REPORT

Application Number
EP 11 18 9210

| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|---|--|---|---|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
| X | WO 2008/118639 A2 (ELECTROLUX HOME PROD INC [US]; BLACKSON CHRISTOPHER R [US]; PERREAULT) 2 October 2008 (2008-10-02) * paragraphs [0014], [0017] - [0018]; figures * | 1-3 | INV. F24C7/08 |
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| | | | TECHNICAL FIELDS SEARCHED (IPC) |
| | | | F24C |
| The present search report has been drawn up for all claims | | | |
| Place of search The Hague | | Date of completion of the search 25 April 2012 | Examiner Verdoodt, Luk |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p> | | | |

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EPO FORM 1503 03-02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 18 9210

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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25-04-2012

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- US 20100147825 A1 [0006]
- US 20020066724 A1 [0007]