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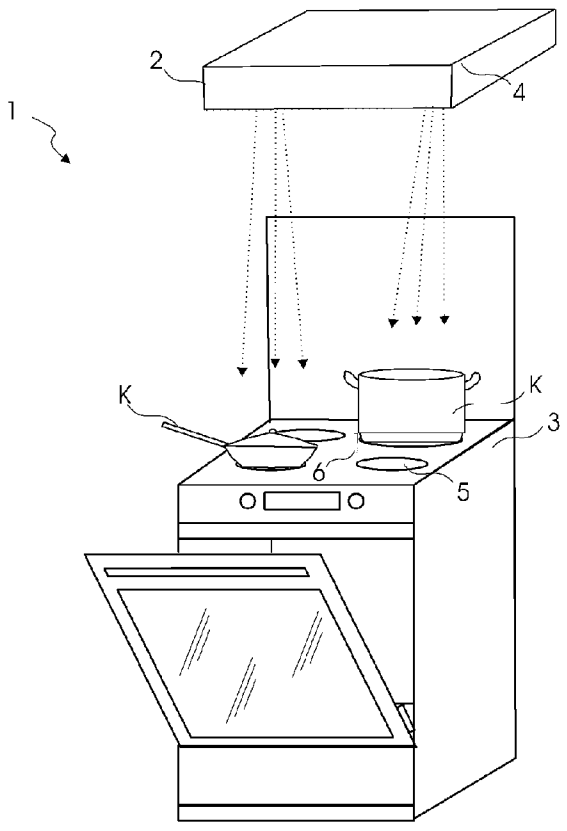
(54) Title: A COMBINED COOKING DEVICE



(57) Abstract: The present invention relates to a combined cooking device (1) comprising a hob (3) and an extractor hood (2) that blows cool air for cooling the pot (K) or pots (K) emplaced on the hob (3) containing food items.

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Description

A COMBINED COOKING DEVICE

[0001] The present invention relates to a combined cooking device.

[0002] The users may forget the pot or pots containing food, nutrients etc. on the hob before or after cooking. The pot containing food cools down depending on the ambient temperature while on the hob. In the research done on the subject, matter of nutrients show that when the temperature of the nutrient gets lower than e.g. 60°C, microorganism formation starts in the food and toxic substances are produced depending on the type of bacteria. At the end of 3 hours, the food in the pots forgotten on the hob under e.g. 60°C, the rate of bacteria and bacteria related toxic substances reach a dangerous level. The amount of bacteria and microorganism in the food multiplies geometrically, doubling every 20 minutes as per observations. This situation is critical particularly for protein based nutrients. When the food is reheated, even if the amount of bacteria formed due to waiting is relatively reduced a little, the toxic substances originating from bacteria stay without decaying since they are chemical substances and can harm the user. Therefore, the food in the pots forgotten on the hob by the user should be cooled immediately and kept within the temperature range of 4±2°C wherein bacteria formation is slowed down.

[0003] In the international patent application no. WO03014626, a solution pertaining to the integration of an extractor hood and an air-conditioner is explained. A modular unit connected to the extractor hood positioned over the hob comprises a heater and a cooler. The air heated or cooled within an air channel is directed into the kitchen via the exhaust shafts of the extractor hood and the kitchen air is acclimatized.

[0004] In the Swiss application no. CH682512, air is sent onto the hob from the slit apertures formed on peripheral edge of an extractor hood containing an extractor fan, screening is provided by means of this air, forming an isolation between environment and the air containing features like smoke, odor, etc. released from the pots on the hob. In this invention a solution is developed for restraining the dispersion of smoke and odor from the cooked food in the kitchen environment.

[0005] The object of the present invention is the realization of a combined cooking device that provides cooling of the pot emplaced on it.

[0006] The cooking device realized in order to fulfill the objectives of the present invention is explicated in the attached claims.

[0007] In the combined cooking device of the present invention, an extractor hood

comprising a fan activating the air, a hob situated under the extractor hood comprising a burner group for heating the pot emplaced on the hob, a sensing means that can detect the presence and/or the temperature of a pot on the hob, detecting whether burner group is turned off and a control unit that regulates the cooling of the pot on the hob by means of the extractor hood are used. By means of this control unit, the fan is operated to cool the pot on the hob by blowing air depending on the condition detected by the sensing means.

[0008] In the embodiment of the present invention, the deterioration of the food in the pots affected by the ambient air temperature and the starting of bacterial formation which might affect the user is prevented by means of an air blowing extractor hood when the burner group is turned off to cool the pots on the hob.

[0009] In another embodiment of the present invention, a cooling apparatus is utilized for cooling the air blown over the pot on the hob to certain temperature values. By means of this cooling apparatus, the air blown by the extractor hood over the pots positioned on the hob is cooled to predetermined temperature values.

[0010] In another embodiment of the present invention, one or more deflectors are utilized to direct the air over the pot or pots on the hob in the suitable direction.

[0011] In yet another embodiment of the present invention, a curtain that can preferably move between the extractor hood and the hob is used, providing isolation of the cooking device from the ambient surroundings. By means of the curtain, cooling efficiency is increased providing the blown cool air to stay around the pot.

[0012] In another embodiment of the present invention, one or more buttons are used in order for the user to manually intervene in the functions that the cooking device can possess, like starting the air blowing, operating the deflectors, opening-closing the curtain etc.

[0013] In yet another embodiment of the present invention, at least one audio and/or visual warning indicator is used for informing the user of the functional state of the cooking device.

[0014] The combined cooking device realized in order to fulfill the objectives of the present invention is illustrated in the attached figures, where:

[0015] Figure 1 – is the perspective view of a combined cooking device.

[0016] Figure 2 – is the schematic view of an embodiment of the combined cooking device.

[0017] Figure 3 – is the schematic view of an embodiment of the combined cooking device comprising a cooling apparatus.

[0018] Figure 4 – is the perspective view of an embodiment of the combined cooking device comprising a curtain and a deflector.

[0019] Figure 5 – is the schematic view of an embodiment of the combined cooking device comprising a movable curtain and a cooling apparatus.

[0020] The elements shown in figures are numbered as follows:

1. Combined cooking device
2. Extractor hood
3. Hob
4. Fan
5. Burner group
6. Sensing means
7. Control unit
8. Cooling apparatus
9. Deflector
10. Evaporator
11. Compressor
12. Condenser
13. Curtain
14. Movement mechanism
15. Button
16. Warning indicator

[0021] The combined cooking device (1) of the present invention comprises an extractor hood (2) having at least one fan (4) that activates the air by forced circulation, a hob (3) situated under the extractor hood (2), having a burner group (5) providing heat for the pots (K) emplaced on it for effectuation of cooking and/or heating, at least one sensing means (6) providing to detect whether or not the burner group (5) is turned off, if there is a pot (K) on the hob (3) and measuring the temperature of the detected pot (K) and a control unit (7) that provides the extractor hood (2) to blow air over the pot (K) to cool the pot (K) when the sensing means (6) detects that the burner group (5) is turned off and that there is a pot (K) on the hob (3) having a predetermined temperature value (Figure 1).

[0022] In this embodiment of the present invention, the control unit (7) detects that there is a pot (K) on the hob (3) by means of one or more sensing means (6) when the said pot (K) is emplaced on the hob (3). As per this detection the burner group (5) is detected whether or not it is turned off by the sensing means (6). The sensing means (6)

preferably also detects the temperature of the pot (K) in order to cool the pot (K) on the hob (3) to a predetermined temperature. Immediately afterwards, the data detected by the sensing means (6) is transferred to the control unit (7) in order to start blowing of air by the extractor hood (2). Subsequently the fan (4) is operated by the control unit (7) to perform cooling by blowing air and consequently the cooling of the pot (K) is achieved. In the present invention, the sensing means (6) used for detecting the presence of the pot (K), detects if the user has lifted off the pot (K) from the hob (3) or if the temperature of the pot (K) is lower than a predetermined value and the control unit (7) turns off the air blowing fan (4) (Figure 2).

[0023] In an embodiment of the present invention, the sensing means (6) is selected as an optic/infrared/ultrasonic type positioned at a point on the extractor hood (2) and/or the hob (3) or a weight/pressure sensor type, positioned in the region wherein the pot (K) is positioned on the hob (3) at a distance to detect the pot (K). If this sensing means (6) does not detect a pot (K) on the hob (3), the control unit (7) does not start cooling. If there is a pot (K) on the hob (3), the control unit (7) decides whether or not the burner group (5) is turned off by evaluating the data received from another sensing means (6) emplaced on the hob (3) as one of the prerequisite conditions for starting the cooling. In this embodiment, also another sensing means (6) for specifying the temperature is selected as a type that measures the temperature by optical/infrared/ultrasonic method, and is preferably situated in the vicinity of the pot (K) such that the temperature of the pot (K) can be detected. When this sensing means (6) detecting the temperature of the pot (K), detects that the temperature of the pot (K) is lower than a certain temperature value, e.g. 60°C, the control unit (7) starts cooling by providing the extractor hood (2) to blow air in view of this data. Later on when the heat sensing means (6) transfers the data that the pot (K) temperature is about e.g. 10°C to the control unit (7), the air blowing fan (4) is turned off and after this phase, the fan (4) preferably operates intermittently such that the temperature is kept within the range of 10 to 4°C (Figure 2).

[0024] In an embodiment of the present invention, the control unit (7) deciding for cooling according to data received from the sensing means (6) is situated on the extractor hood (2) or the hob (3) and is in communication with the extractor hood (2) or the hob (3) by means of or without cables (Figure 2, Figure 3).

[0025] In an embodiment of the present invention, the combined cooking device (1) comprises a cooling apparatus (8) that provides to cool the air blown for cooling the pot (K) situated on the hob (3) to predetermined temperature values, by passing over itself. In this embodiment, while the pot (K) on the hob (3) is being cooled, the cooling

apparatus (8) can be operated, if desired, to shorten the cooling duration.

[0026] In another embodiment of the present invention, the cooling apparatus (8) comprises a compressor (11) for compressing the refrigerant fluid, a condenser (12) providing to condense the refrigerant fluid delivered from the compressor (11), one or more capillary tubes (not shown in figures) , situated after the condenser (12) providing the expansion of the refrigerant fluid, and an evaporator (10) to which the condensed fluid is delivered, to provide cooling by absorbing heat (Figure 3 and Figure 5).

[0027] In yet another embodiment of the present invention, the cooling apparatus (8) comprises a thermoelectric element having a cold surface and a hot surface. In this embodiment, the cold surface of the thermoelectric element is in contact with the blown air. If the temperature of the pot (K) is within a certain temperature range, voltage is applied on the thermoelectric element by the control unit (7), one surface of the thermoelectric element cools by losing heat due to the applied voltage. The thermoelectric element thus cooled, contacts with air, providing to also cool the blown air.

[0028] In yet another embodiment of the present invention, the extractor hood (2) comprises one or more deflectors (9) that provide to direct the air blown by the fan (4) over the pot (K). In the present invention, the direction of the deflectors (9) arranged in the extractor hood (2) can be adjusted according to the position of the pot (K) (Figure 4).

[0029] In an alternative embodiment of the present invention, the combined cooking device (1) comprises one or more curtains (13), preferably that can move between the extractor hood (2) and the hob (3), providing direct air access between the pot (K) and the cool air blown by means of the extractor hood (2), and to keep the temperature of the cooled pot (K) within a certain temperature range by keeping the cooled pot (K) isolated from the exterior surroundings (Figure 4, Figure 5).

[0030] In another alternative embodiment of the present invention, the combined cooking device (1) comprises a movement mechanism (14) that provides the movement of the curtain (13) between the extractor hood (2) and the hob (3) (Figure 5).

[0031] In yet another alternative embodiment of the present invention, the said movement mechanism (14) is situated inside the extractor hood (2) and preferably is operated by the drive unit actuating the fan (4).

[0032] In an embodiment of the present invention, the combined cooking device (1) comprises one or more buttons (15) for the user to operate manually at least one of the combinations within the different implementations of the combined cooking device (1)

of the present invention, like operating the air blowing fan (4), the cooling apparatus (8), the deflector (9), and the curtain (13) (Figure 4).

[0033] In another embodiment of the present invention, the combined cooking device (1) comprises at least one audio and/or visual warning indicator (16) that informs the user that the pot (K) is within the predetermined temperature range and/or of the functions like the curtain (13) starting to move (Figure 4)

[0034] By way of the present invention, the multiplication of bacteria or toxins originating from bacteria in the pots (K) forgotten on the hob (3) is prevented. The cooling of the pot (K) on the hob (3) to a predetermined temperature is provided. Consequently, the temperature of the food in the pot (K) on the hob (3) is lowered to temperatures suitable for the health of the user in a short period of time.

[0035] By way of the curtain (13) that can move between the extractor hood (2) and the hob (3), the isolation milieu created between the environment and the combined cooking device (1) of the present invention can be kept at certain temperature values.

Claims

[0001] A combined cooking device (1) comprising an extractor hood (2) having at least one fan (4) that activates the air by forced circulation, a hob (3) situated under the extractor hood (2) having a burner group (5) providing heat to the pots (K) emplaced on it for effectuation of cooking and/or heating, at least one sensing means (6) providing to detect whether or not the burner group (5) is turned off, if there is a pot (K) on the hob (3) and measuring the temperature of the detected pot (K) **characterized by** a control unit (7) that provides the extractor hood (2) to blow air over the pot (K) to cool the pot (K) when the sensing means (6) detects that the burner group (5) is turned off and that there is a pot (K) on the hob (3) having a predetermined temperature value.

[0002] A combined cooking device (1) as in Claim 1, characterized by at least one cooling apparatus (8) that provides to cool the air blown for cooling the pot (K) situated on the hob (3) to predetermined temperature values, by passing it over itself.

[0003] A combined cooking device (1) as in Claim 2, characterized by the cooling apparatus (8) comprising at least one compressor (11) for compressing the refrigerant fluid, at least one condenser (12) providing to condense the refrigerant fluid delivered from the compressor (11), and at least one evaporator (10).

[0004] A combined cooking device (1) as in Claim 2, characterized by the cooling apparatus (8) comprising a thermoelectric element.

[0005] A combined cooking device (1) as in any one of the above claims, characterized by the extractor hood (2) comprising one or more deflectors (9) to provide the air to be directed by the fan (4) over the pot (K) in the desired direction.

[0006] A combined cooking device (1) as in any one of the above claims, characterized by one or more curtains (13) that can move between the extractor hood (2) and the hob (3), providing direct air access between the said pot (K) and the cool air blown by means of the extractor hood (2), and to keep the temperature of the cooled pot (K) within a certain temperature range by keeping the cooled pot (K) isolated from the exterior surroundings.

[0007] A combined cooking device (1) as in Claim 6, characterized by a movement mechanism (14) that provides the movement of the curtain (13) between the extractor hood (2) and the hob (3).

[0008] A combined cooking device (1) as in Claim 6, characterized by at least one audio

and/or visual warning indicator (16) that informs the user that the pot (K) temperature is within the predetermined temperature range for starting of cooling and/or that the curtain (13) begins moving as cooling starts.

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[Fig.]

Figure 1

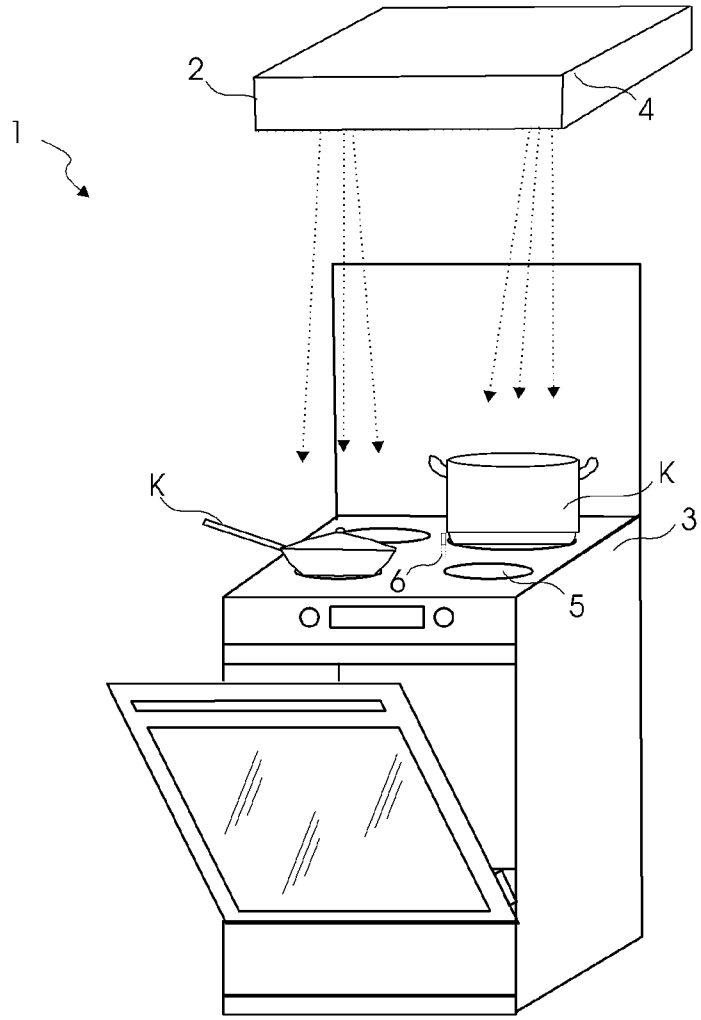
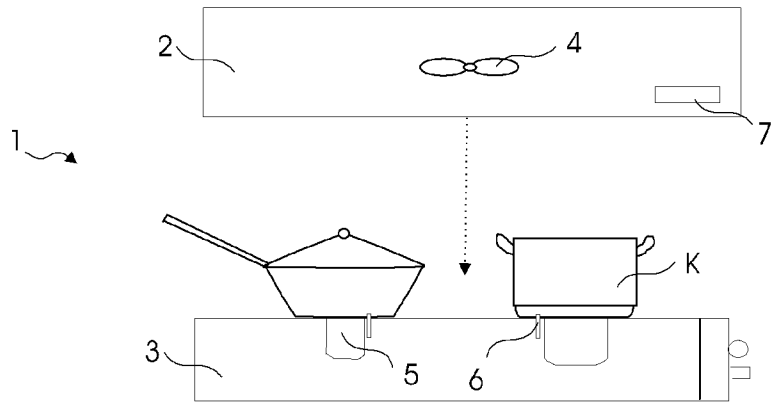
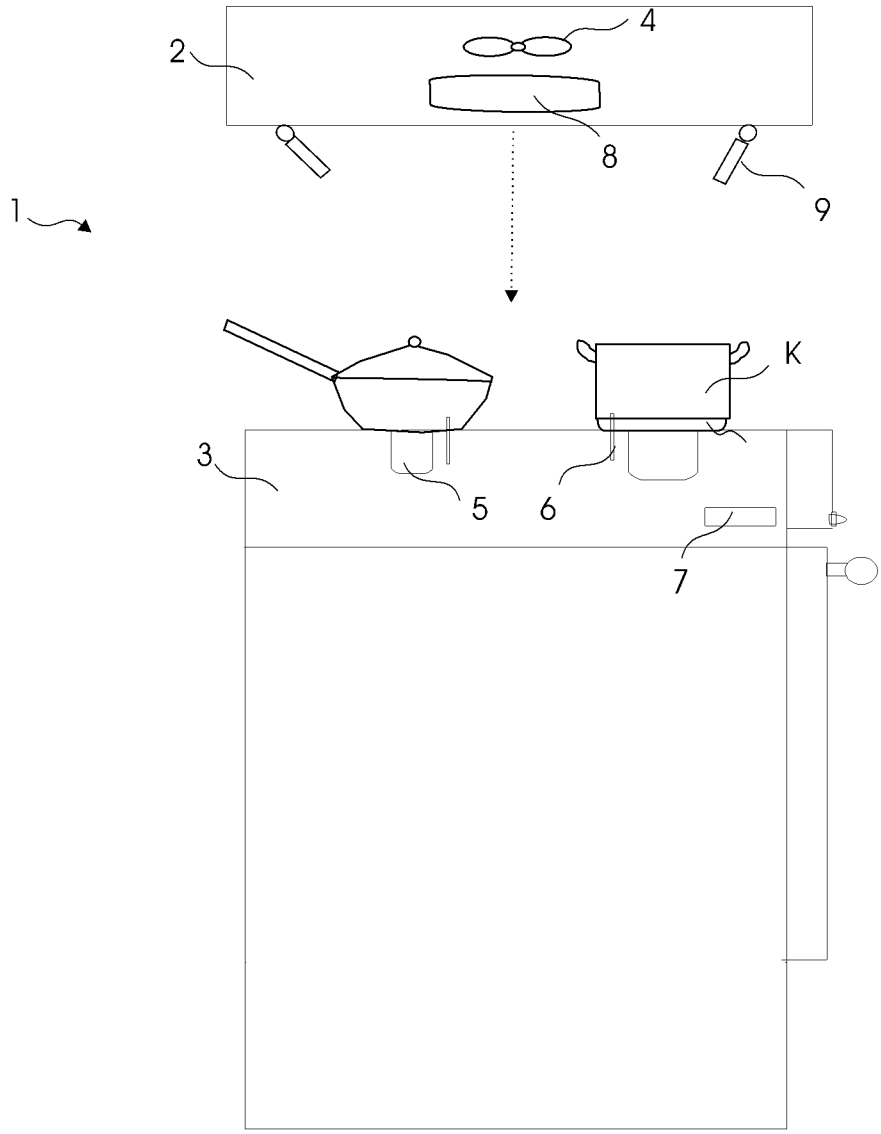


Figure 2



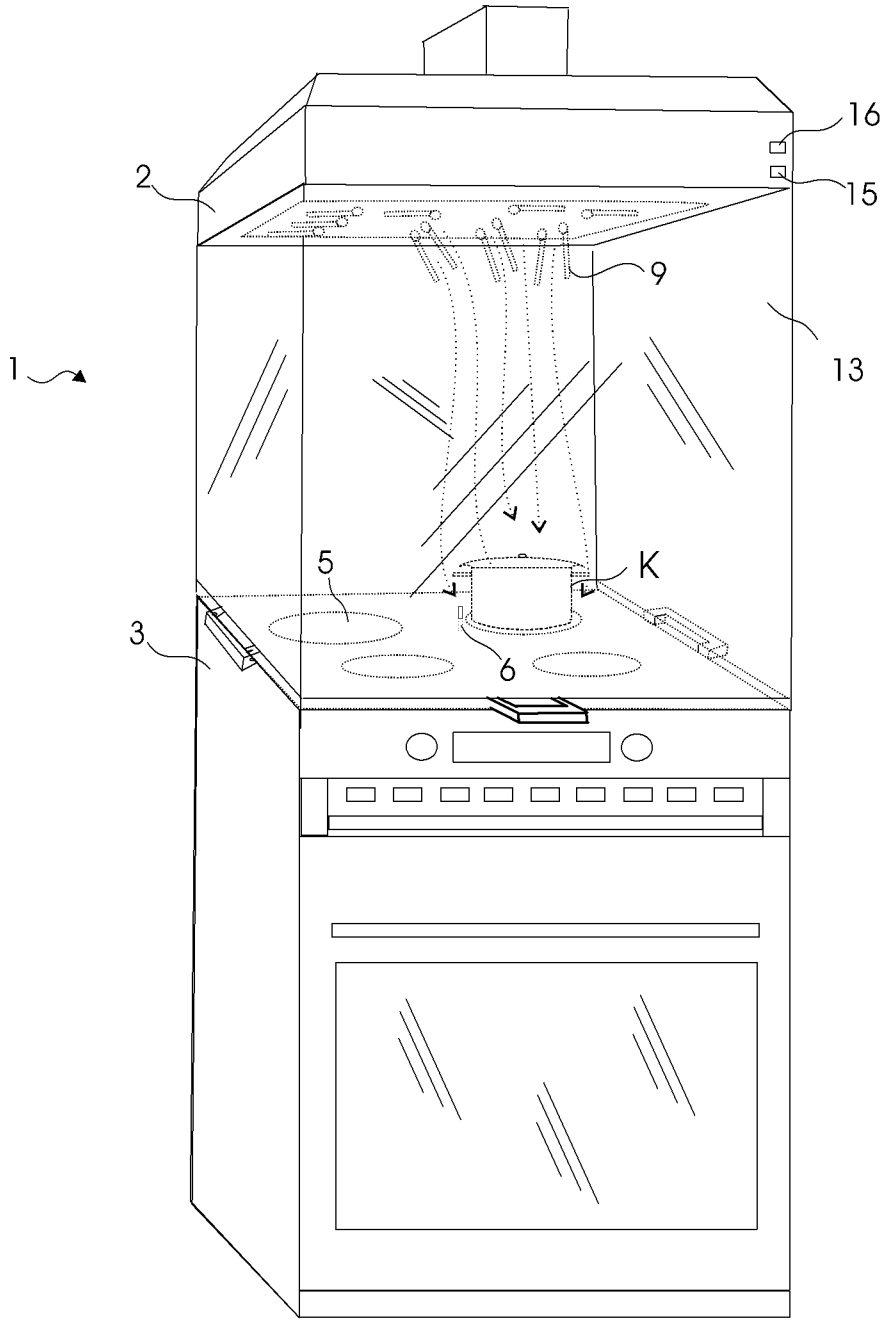
[Fig.]

Figure 3



[Fig.]

Figure 4



[Fig.]

Figure 5