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(54) Control system of an appliance

(57) Control system of an appliance comprising: a work top (10), at least one heat generator (11) placed on said work top (10); at least one corresponding command element (12) of said at least one heat generator (11); characterized in that it comprises a guide (13) fixed along one side of said work top (10) of a length substantially equal to said side of said work top (10); said at least one corresponding command element (12) is connected so that it can slide upon said guide (13), a control center (34) connected to said at least one heat generator (11); said at least one corresponding command element (12) transmits information to said control center (34). (Fig. 1)

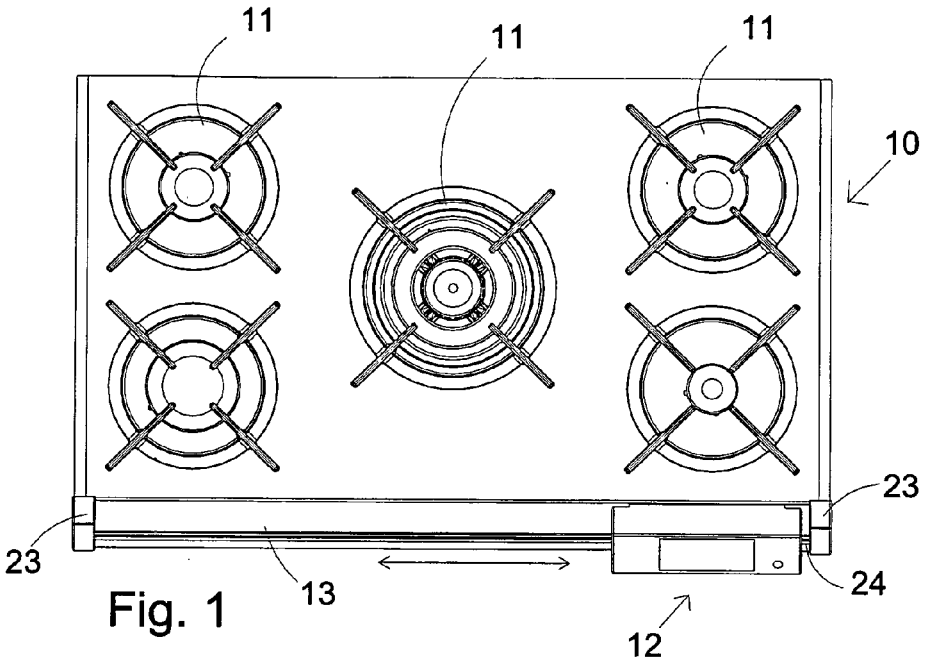

Fig. 1

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Description

[0001] The present invention refers to a control system of an appliance and a method for controlling a cook top, and more particularly to a control system of a cook top.

[0002] The present invention is typically applied to a cook top for domestic use, of the type comprising a plurality of gas fed heat generators, electric ones or otherwise, for cooking food in containers.

[0003] But this application may be extended to other appliances.

[0004] To each of the heat generators corresponds a command element, usually a knob, adapt to be operated by a user either for turning on and/or turning off the generator or for regulating the heat generated by the same.

[0005] Normally, the knobs are placed aside of the heat generators and receive heat from the same and are often an obstacle for positioning the pots upon the heat generators.

[0006] The aim of the present invention is to provide a control system of an appliance that has the command elements properly positioned with respect to the heat generators.

[0007] In accordance with the present invention, these and further aims are achieved by a control system of an appliance comprising: a work top; at least one heat generator placed on said work top; at least one corresponding command element of said at least one heat generator; characterized in that it comprises a guide fixed along one side of said work top of a length substantially equal to said side of said work top; said at least one corresponding command element is connected so that it may slide upon said guide; a control center connected to said at least one heat generator, said at least one corresponding command element transmits information to said control center.

[0008] These aims are also achieved by a method of controlling a cook top comprising a plurality of burners placed upon a cook top and a plurality of command elements corresponding to said plurality of burners; comprising the steps of electrically coupling said plurality of burners to said plurality of command elements; fixing a guide along the entire length of said cook top where said plurality of command elements can slide.

[0009] Additional features of the invention are described in the dependent claims.

[0010] There are many advantages of this solution compared to known prior art solutions.

[0011] A cook top is controlled by a command device (preferably a touch-screen) anchored upon the frontal side.

[0012] The position of the device is not fixed, but it can slide along the entire width of the surface in order to be placed in the area less susceptible to heat from the burners.

[0013] The device is equipped with a rechargeable battery able to work from any area, however a designated position exists on the guide where charging takes place.

[0014] It may be planned that the device can be operative upon the cook top if and only if it is anchored to the guide, any possible "detachment" inhibits all controls and turns off the work top bringing it to a safe state.

[0015] The characteristics and advantages of the present invention will be apparent from the following detailed description of one of its practical embodiments, illustrated by way of a non limitative example in the attached drawings, in which:

Figure 1 shows a cook top, in accordance with the present invention;
Figure 2 shows a detail of a cook top relative to the section of the guides of the command element, in accordance with the present invention;
Figure 3 shows a detail of a cook top relative to the command element, in accordance with the present invention;
Figure 4 shows a detail of a cook top relative to the power connector of the command element, in accordance with the present invention;
Figure 5 shows a diagram of the control system of a cook top in accordance with the present invention;
Figure 6 shows a cook top comprising an oven and a vent hood, according to the present invention.

[0016] Referring to the attached figures, a cook top 10, according to the present invention comprises a plurality of heat generators 11, such as gas burners, of different sizes and calorific powers. According to the invention a cook top 10 comprising five heat generators 11.

[0017] It also comprises a command element 12, which incorporates a command for each generator 11, for starting and/or turning off the heat generators 11, and for regulating the heat generated by the same.

[0018] Upon the cook top 10, a section bar 13 is provided (which may also be defined as a command element guide 12) which is in a raised position with respect to the cook top 10, and is fixed along the whole width of the cook top 10, preferably along its front side. The section bar 13 comprises an edge 14 which delimits the front of the cook top 10. Therefore, continuing along the external part of the cook top 10 there is a first surface 15, substantially horizontal, preferably slightly inclined (outwards) at an angle of about 5°, and a second surface 16 inclined downwards at an angle of about 40°.

[0019] On the second surface 16, across the whole width of the cook top 10 a rail 17 is located.

[0020] The command element 12, has a substantially parallelepiped shape, except for its rear portion that has a shape that is realized in order to be opposed to surfaces 15 and 16, and in correspondence to the rail 17 a sliding carriage 18 cooperating therewith is provided.

[0021] The sliding carriage 18 is constructed (as is known) in such a way that it can slide along the rail 17 but cannot be detached from it if not after pushing a button or according to another command. The command element 12 can then slide along the section bar 13 from one

side to the other of the cook top.

[0022] The command element 12 is positioned so that its front surface 19 is placed inclined with respect to the cook top 10 at about 40°.

[0023] The front surface 19 preferably comprises a touch screen 20 and a switch 21. The switch 21 may be positioned on the same touch screen or in other positions on the cook top.

[0024] The command element 12 laterally comprises a power connector 22.

[0025] On both sides of the section bar 13 stops 23 are placed constituted by plates arranged perpendicular to the section bar 13, which block the sliding of the command element 12. On a stop 23, in correspondence to the power connector 22, located on the command element 12, is provided a socket 24 of the power connector 22.

[0026] Alternatively, it can be provided that the section bar 13 is made of metal (conductive) and connected to the negative pole of the charging element. The electrode, connected to the positive pole, can be placed on one of the stops 23. Corresponding electrodes cooperating with those described above are placed on the command element 12.

[0027] In another alternative embodiment an additional section bar is provided in the back (or lateral) position of the cook top 10, of the same type of the section bar 13, so that the command element 12, may be moved from one section bar to the other, according to specific needs.

[0028] The control system of the cook top 10 comprises a main solenoid valve 30 connected to a gas distribution system.

[0029] The solenoid valve 30 is in turn connected to a plurality of solenoid valves 31 with a stepper motor, one for each heat generator 11, in the case represented in the figures, there are five solenoid valves 31.

[0030] The control system further comprises for each heat generator 11, a spark plug 32 and an electrode 33 as a flame sensor.

[0031] The electric commands of the above mentioned elements of the control system are connected and operated from a control center 34, made by way of an electronic card, supplied by the mains line.

[0032] The control center 34 also comprises a first transceiver device 36, e.g. an infrared device adapt for communicating with a similar second transceiver device 37, placed in the command element 12.

[0033] The control center 34 is then connected to and controls the plurality of solenoid valves 31, the spark plugs 32 and receives signals from the electrodes. Once the command element 12 is positioned at one end of the guide 13, so that the power connector 22 is plugged into its socket 24, the battery 12 in the command element charges. During the battery charging the command element 12 is already operative since it is directly powered.

[0034] The switch 21 is turned on and the control system is operative.

[0035] Using the touch screen 20 it is possible to switch on and off and adjust the heat generated by the heat generators 11.

[0036] The electronics necessary for the above operations can be achieved in a known way for one skilled in the art and is not further described herein.

[0037] On the touch screen 20 information on the different heat generators 11 and their status will be displayed thanks to feedback information from the first transceiver device 36.

[0038] The command element 12 receives commands from the user and sends them through the second transceiver device 37 to the control center 34, that receives them via the first transceiver device 36, preferably via an infrared system. Wireless sending of information allows the command element 12 to be in any position along the section bar 13.

[0039] In particular, in order to prevent the command element 12 from being positioned near a heat generator 11, and therefore being in a hot or dangerous position for the user, it may be moved to another position by sliding it along the section bar 13.

[0040] It can also be moved when it hinders the placement of a pot on a heat generator 11 placed nearby.

[0041] The transmission of commands between the command element 12 and the cook top 10 can also be done via radio, for example through Wi-Fi and Bluetooth, as well as by cable by way of electric cables extended along the section bar 13 and sliding elements placed beneath the command element 12. In the latter case the recharge station is no longer necessary for the battery as the command element 12 can be powered directly from the electric cables extending along the section bar 13.

[0042] It may be planned that in case of removal of the command element 12, the cook top will turn off completely reducing the unit to a safe state. This solution can be achieved by placing a button under the command element 12, in the proximity of the section bar 13.

[0043] The control system of an appliance (cook top), according to the present invention is susceptible to numerous modifications and changes, all falling within the inventive concept; furthermore all details can be replaced by technically equivalent elements.

[0044] As an alternative to a cook top, such a system of remote control can be used for any other appliance.

[0045] The command element is preferably of the touch screen type 20, but other types of command elements such as on/off switches and electrical control knobs for adjusting the gas can be used.

[0046] In a further embodiment, the command element 12 can be arranged according to technical techniques known to one skilled in the art, to control, in addition to the cook top 10 on which it is located, both an oven 40, normally placed below the cook top, and the vent hood 41 of the cook top.

[0047] The oven 40 and the vent hood 41 should be provided with means for wireless communication, able

to be recognized and controlled by the command element 12.

[0048] Therefore a single element of ergonomic control is obtained for three appliances simultaneously.

Claims

1. A control system of an appliance comprising: a work top (10), at least one heat generator (11) placed upon said work top (10), at least one corresponding command element (12) of said at least one heat generator (11), **characterized in that** it comprises a guide (13) fixed along one side of said work top (10) of a length substantially equal to said side of said work top (10), said at least one corresponding command element (12) is connected so that it can slide upon said guide (13), a control center (34) connected to said at least one heat generator (11), said at least one corresponding command element (12) transmits information to said control center (34).

2. The system according to claim 1, **characterized in that** said at least one corresponding command element (12) transmits information to said control center (34) via a wireless communication system.

3. The system according to claim 1, **characterized in that** said guide (13) comprises electrical connections for connecting said at least one corresponding command element (12) to said control center (34).

4. The system according to claim 1, **characterized in that** said at least one corresponding command element (12) comprises a rechargeable battery, said control system comprises a charging station (24) of said rechargeable battery placed in a predefined position along said guide.

5. The system according to claim 1, **characterized in that** said at least one corresponding command element (12) comprises a power connector (22) connectable to a corresponding socket (24) placed at one end of said guide (13).

6. The system according to claim 1, **characterized in that** said guide (13) comprises stops (23) placed at the ends of said guide (13).

7. The system according to claim 1, **characterized in that** said command element communicates with and controls also another appliance.

8. A method for controlling a cook top comprising a plurality of burners (11) placed on a cook top (10) and a plurality of command elements (12) corresponding to said plurality of burners (11), comprising the steps of electrically coupling said plurality of burners (11) to said plurality of command elements (12), fixing a guide (13) for the entire length of said cook top (10) where said plurality of command elements (12) can slide.

9. The method according to claim 8 **characterized in that** said step of electrically coupling said plurality of burners (11) to said plurality of command elements (12) comprises the step of transmitting information from said plurality of command elements (12) to said plurality of burners (11) by means of infrared signals.

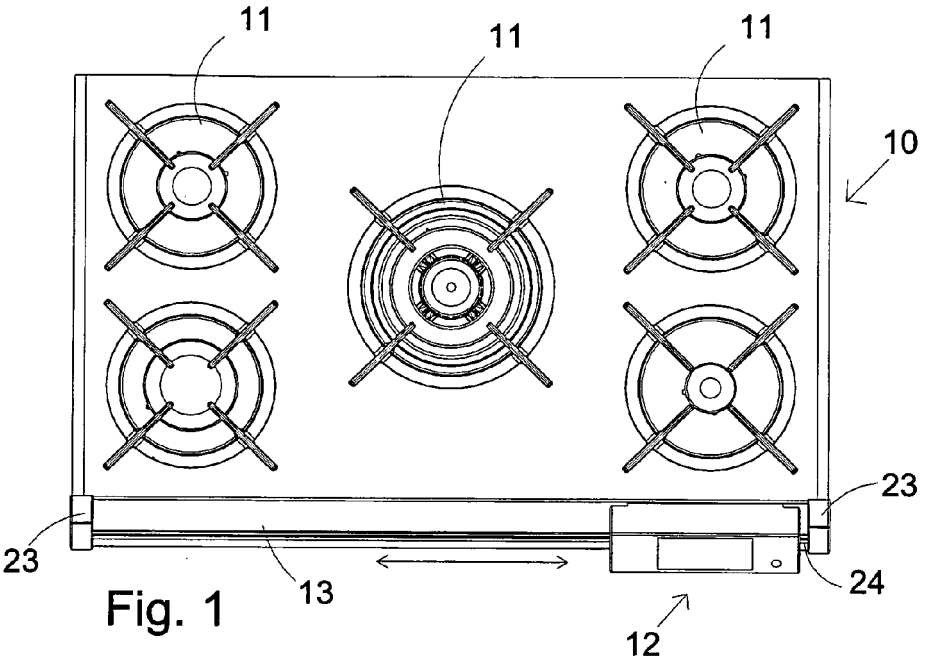

Fig. 1

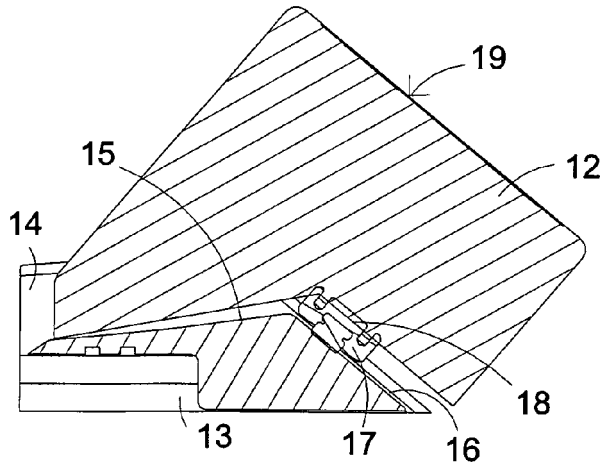

Fig. 2

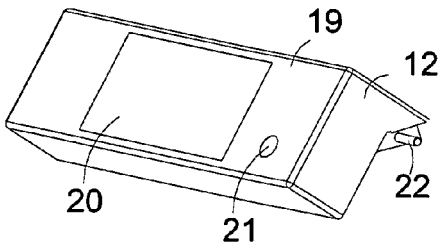

Fig. 3

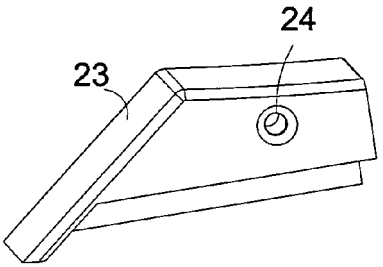

Fig. 4

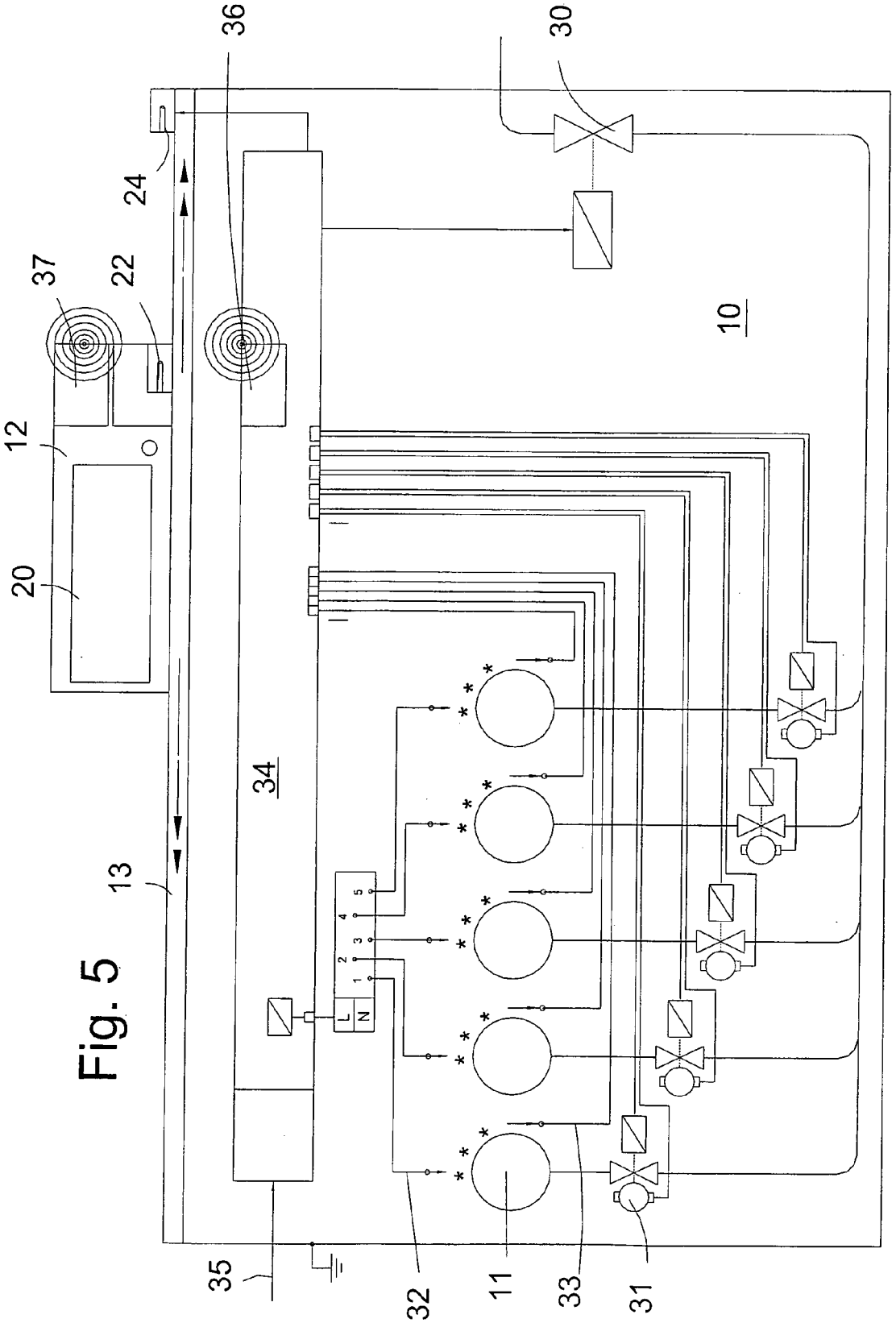

Fig. 5

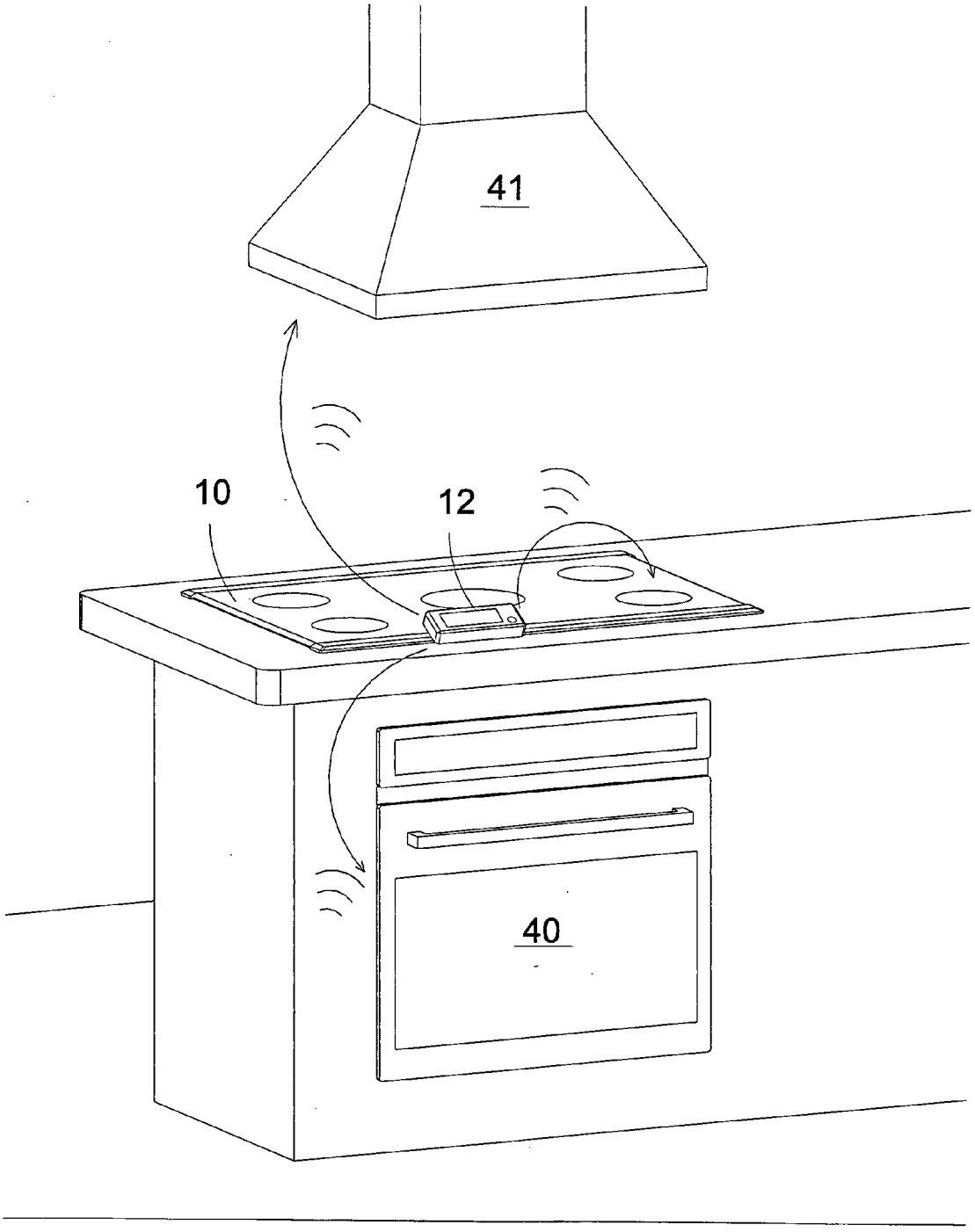

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 11 00 1446

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 2006/136762 A1 (INDUCED ENERGY LTD [GB]; FORSYTH BRIAN [GB]) 28 December 2006 (2006-12-28)	1,3,5,6, 8	INV. F24C7/08
Y	* the whole document *	2,4,7,9	
Y	US 2001/008237 A1 (ESSIG WILLY [DE]) 19 July 2001 (2001-07-19)	2,4,7,9	
A	* paragraphs [0023], [0037] - [0046], [0050]; figures 1,2,7 *	1,3,5,6, 8	
A	DE 40 17 629 A1 (BOSCH SIEMENS HAUSGERAETE [DE]) 5 December 1991 (1991-12-05) * the whole document *	1-9	

TECHNICAL FIELDS SEARCHED (IPC)

F24C
H05B
G05D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 May 2011	Vañó Gea, Joaquín

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 00 1446

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19-05-2011

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