(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 405 203 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
11.01.2012 Bulletin 2012/02

(51) Int Cl.:
F24C 3/12 *(2006.01)* ***F24C 15/10*** *(2006.01)*

(21) Application number: **11169660.5**

(22) Date of filing: **13.06.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **07.07.2010 TR 201005534**

(71) Applicant: **Vestel Beyaz Esya Sanayi Ve Ticaret A.S.**
45030 Manisa (TR)

(72) Inventor: **Tosun, Mehmet Kerem**
45030 Manisa (TR)

(74) Representative: **Cayli, Hülya**
Paragon Consultancy Incorporated
Koza Sokak No: 63/2
GOP 06540 Ankara (TR)

(54) **A cooking device**

(57) The cooking device (A) of the invention comprises at least one heating element (2), disposed on a working plate (7), on which a cooking vessel (1) can be placed and at least one sensor (4) which detects, by measuring temperature and / or weight from the bottom surface (8) of the cooking vessel (1), whether the liquid food in the cooking vessel has boiled or not. The position of the sensor (4) in this cooking device (A) is adjustable; temperature and / or weight measurement from the bottom surfaces of cooking vessels which have different dimensions is possible.

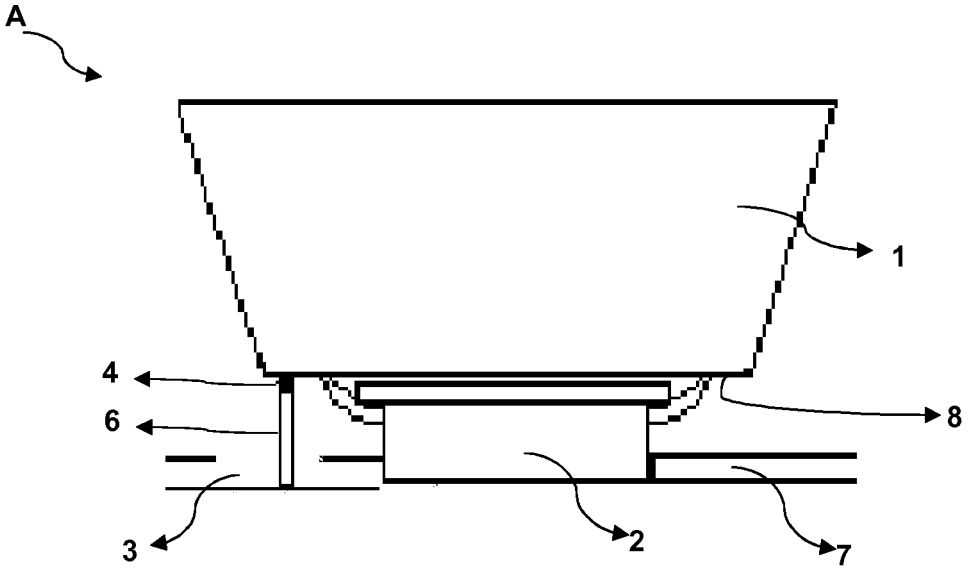


Figure – 1

EP 2 405 203 A1

Description

Technical Field

[0001] This invention relates to cooking devices which sense whether liquid food heated in cookware on the cook top has boiled or not.

Prior Art

[0002] In the state of the art, a sensor which is in contact with the bottom of cooking vessel senses whether the liquid food in the said cooking vessel on the cook top has boiled or not, and the sensor as well as the system connected thereto turn down the burner flame down to half and turns off the gas at the end of a period predetermined by the user.

[0003] In cooking devices that bear the mentioned feature, said sensors are provided at a fixed position on the cook top. In the published patent application No US5310110, for instance, the sensor is placed at the center of the gas burner. However, use of a sensor on the gas burner requires a special design and also increases costs.

[0004] The other examples of the prior art disclose that the sensors are fixed around the gas burner on the working plate as in the published patent application No EP1258683 or they are built in the grid as in the published patent application No GB969096. However, the sensor having a fixed position may not always function in the case that vessels having different diameters are used.

[0005] Published patent application No DE102004059159, which is another example of the prior art, discloses a temperature sensor used together with a hot plate. This application teaches that the temperature sensor is placed underneath the hot plate to control the heating element. Therefore, the heater does not directly sense the temperature of the cooking vessel.

Brief Description of the Invention

[0006] The cooking device of the invention comprises at least one heating element, disposed on a working plate, on which a cooking vessel can be placed and at least one sensor which detects, by measuring temperature and / or weight from the bottom surface of the cooking vessel, whether the liquid food in the cooking vessel has boiled or not. Since the position of sensor of the cooking device of the invention is adjustable, temperature and / or weight measurement from the bottom surfaces of cooking vessels which have different dimensions is also possible.

Objective of the Invention

[0007] The aim of the invention is to provide a cooking device comprising sensors which sense whether liquid food heated in cookware on the cook top has boiled or not.

[0008] Another aim of the invention is to ensure that cooking vessels of different diameters can be used on said cooking device thanks to the movable position of the sensor.

[0009] Another aim of the invention is to provide a reliable cooking device which is easy and inexpensive to produce.

Description of the Drawings

[0010] An exemplary cooking device of the invention is illustrated in the annexed drawings wherein

Figure 1 is a side view of the cooking device.
Figure 2 is a top view of the cooking device.
Figure 3 is a side view of the cooking device while the sensor is at a position.
Figure 4 is a side view of the cooking device while the sensor is at another position.
Figure 5 is a side view of the sensor.

[0011] The parts in the drawings are individually enumerated and corresponding meanings of these reference numbers are as follows:

Cooking device	(A)
Cooking vessel	(1)
Heating element	(2)
Track	(3)
Sensor	(4)
Grid	(5)
Body	(6)
Working plate	(7)
Bottom surface	(8)

Disclosure of the Invention

[0012] Figures 1-5 show details of the cooking device which is the subject matter of the invention. Although said cooking device (A) is illustrated as cook top in the figures, the invention is also applicable to the other types of cooking devices (hot plates, for instance).

[0013] As shown in Figure 1, the cooking device (A) of the invention comprises at least one heating element (2) (illustrated as a gas burner of a cook top), disposed on a working plate (7), on which a cooking vessel (1) can be placed and at least one sensor (4) which is in contact with the bottom surface (8) of the cooking vessel (1) and which detects, by measuring temperature and / or weight from the bottom surface of the cooking vessel, whether

the liquid food in the cooking vessel has boiled or not. (At least one spring (not shown) may be used for boosting the sensor (4) in the device (A)). Depending on the value measured by the sensor (4) (the sensor (4) might be a temperature sensor and / or weight sensor); the device (A) can turn down and / or turn off the heating element (2) of the device (A). It is also possible to notify the users audibly and / or visually by means of the various signaling elements (not shown) with which the device (A) is associated. Thus, boiling over of the liquid in the cooking vessel (1) can be prevented.

[0014] Position of the sensor (4) in the device (A) is adjustable. To this end, the body (6) of the sensor (4) is arranged so as to be movable in a track (3) (the track (3) may be straight, curved or zigzagged etc.). The track (3) may be laid only into the working plate (7) as shown in Figure 1 and 5, or into both the working plate (7) and the grid (5) (cook top grid, for instance) on which a cooking vessel (1) can be placed. Alternatively, it is also possible to lay the track (3) into the grid (5) only. The crucial point here is that the body (6) of the sensor (4) is movable within this track (3).

[0015] As shown in the example of Figure 2-4, the body (6) of the sensor (4) can be set to a desired position (the user can start the device (A) after setting the device (A) to a position appropriate for the diameter of the vessel (1)) within the tracks (3) which are embedded into the grid (5) and the working plate (7) and can be kept at this position. Thus, it is ensured that the sensor (4) can perform temperature and / or weight measurement from the bottom surfaces (8) of cooking vessels (1) having different diameters.

[0016] Figure 5 shows a side view of the track (3) within the working plate (7). The track (3) is in the form of an upside down "T", and the portion of the body (6), which remains in the track (3), is adapted thereto in order to ensure that the body (6) moves only forward and backward in the track (3).

[0017] One of the alternative embodiments of the invention is to actuate said sensor (4) by a motor mechanism (not shown). The motor may be actuated in accordance with user preferences (by an on / off button to start the motor) or by another sensor (not shown) which senses the dimensions of a vessel (1) placed on the device (A) and starts the motor accordingly. This sensor can also set the sensor, depending on the values measured, to a desired position by means of the motor mechanism.

Claims

1. A cooking device (A) comprising at least one heating element (2), disposed on a working plate (7), on which a cooking vessel (1) can be placed **characterized by** comprising at least one sensor (4) having an adjustable position, which measures temperature and / or weight from the bottom surface (8) of the cooking vessel (1).

2. A cooking device (A) according to claim 1 **characterized by** comprising at least one track (3) in which the body (6) of the sensor (4) can be moved forward and backward.

3. A cooking device (A) according to claim 2 **characterized in that** the track (3) is embedded into the working table (7).

4. A cooking device (A) according to claim 2 **characterized in that** the track (3) is embedded into a grid (5) on which a cooking vessel can be placed.

5. A cooking device (A) according to claim 1 **characterized by** comprising a motor mechanism which actuates the sensor (4).

6. A cooking device (A) according to claim 5 **characterized by** comprising an on / off button which starts the motor.

7. A cooking device (A) according to claim 5 **characterized by** comprising another sensor which senses the dimensions of a cooking vessel (1) placed on the device (A) and starts the motor accordingly.

8. A cooking device (A) according to claim 1 **characterized in that** the device (A) is provided with at least one spring which boosts the sensor (4).

9. A cooking device (A) according to claim 3 **characterized in that** the track (3) is in the form of an upside down "T" and **that** the portion of the body (6), remaining in the track (3), is adapted to this track (3).

10. A cooking device (A) according to claim 1 **characterized in that** the device (A) can turn down and / or turn off the heating element (2) in accordance with the value measured by the sensor (4).

11. A cooking device (A) according to claim 1 **characterized by** comprising signaling elements associated with the temperature sensor (4), which notify the users with audio and / or visual warnings.

12. A cooking device (A) according to claim 1 **characterized in that** the sensor (4) is a temperature and / or weight sensor.

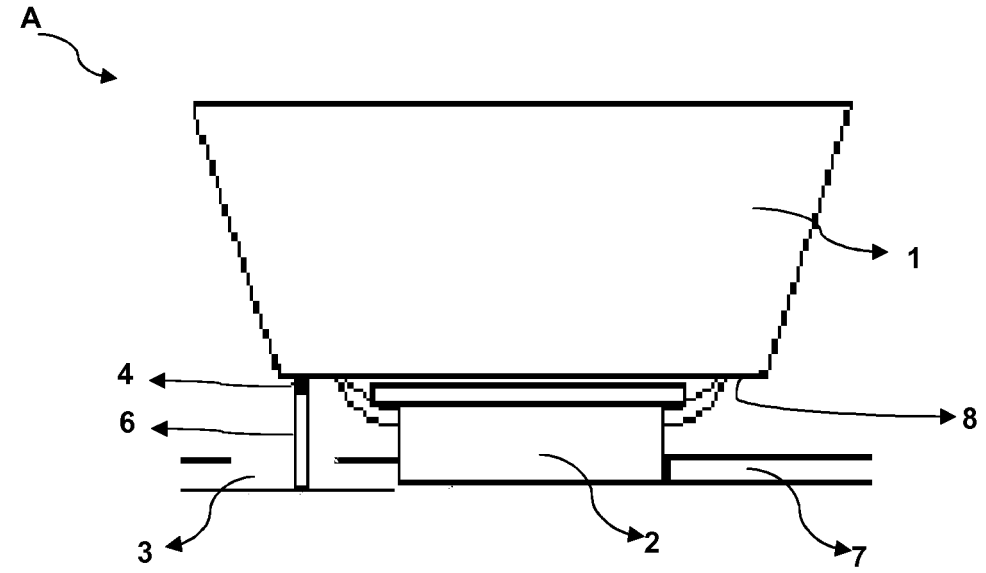


Figure – 1

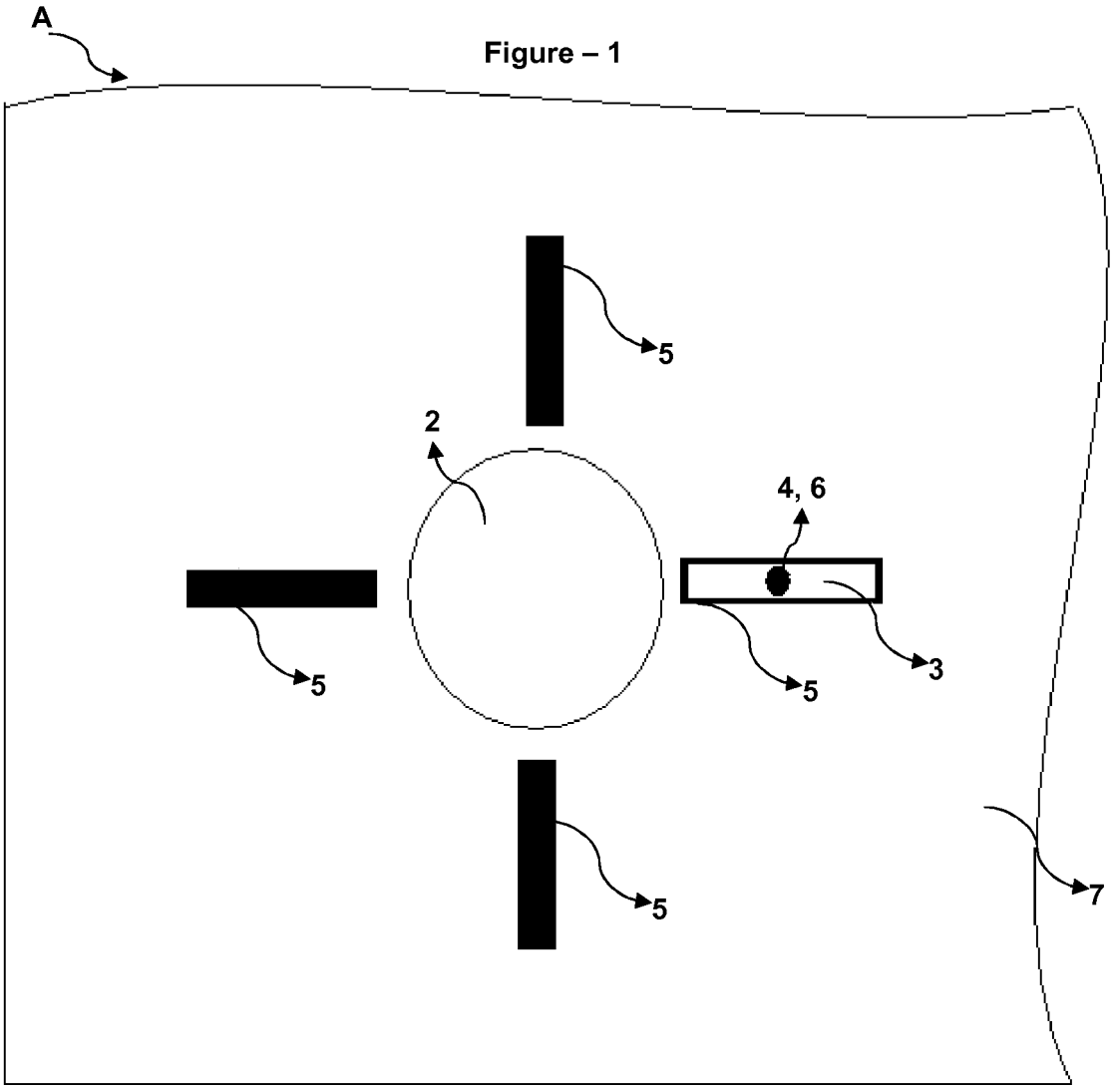


Figure – 2

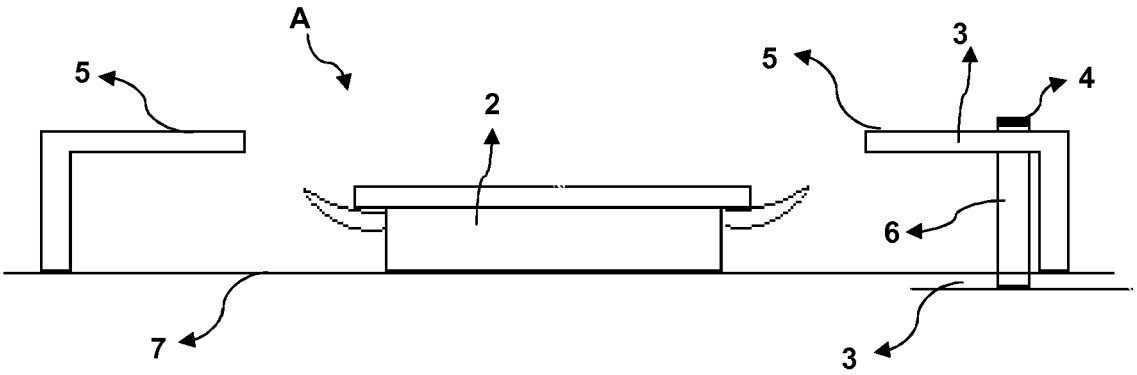


Figure – 3

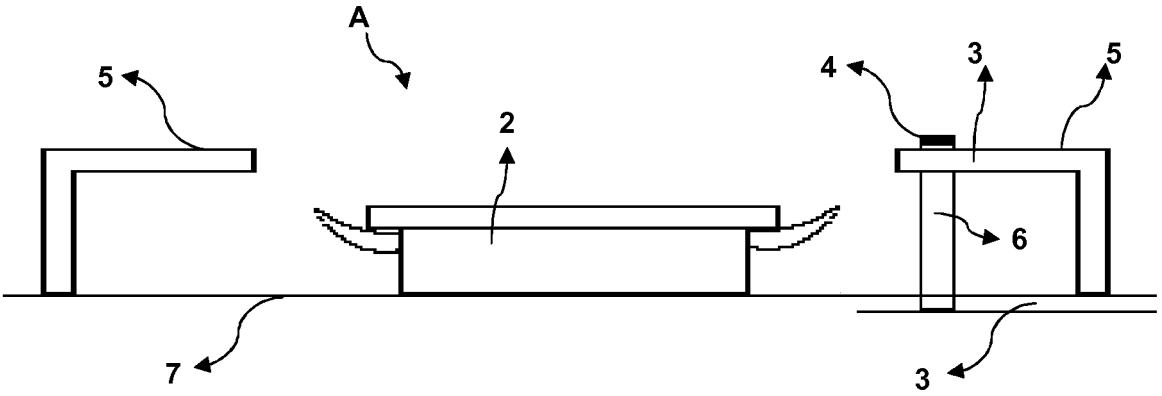


Figure – 4

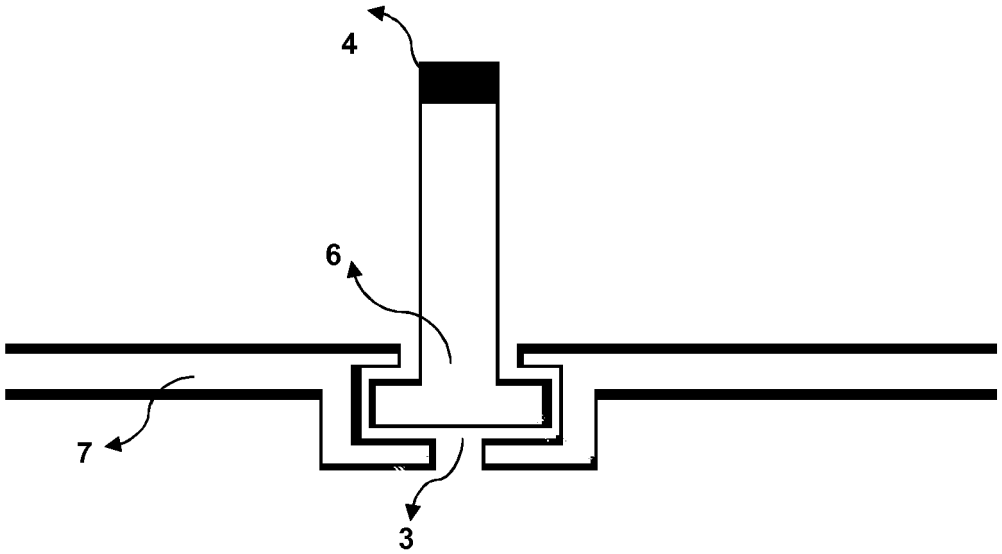


Figure – 5

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 11 16 9660

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 Y	FR 2 558 239 A1 (INDESIT [IT]) 19 July 1985 (1985-07-19) * abstract; figures * -----	1,8, 10-12 2-7,9	INV. F24C3/12 F24C15/10
X	JP 62 069021 A (RINNAI KK) 30 March 1987 (1987-03-30) * abstract; figures * -----	1,12	
Y	EP 0 843 132 A1 (GAZ DE FRANCE [FR]) 20 May 1998 (1998-05-20) * abstract; figures * -----	2,3,5,6, 9	
Y	JP 2005 291560 A (OSAKA GAS CO LTD) 20 October 2005 (2005-10-20) * abstract; figures * -----	4	
Y	WO 2006/070334 A1 (ARCELIK AS [TR]; ARSLANTEKIN IHSAN [TR]) 6 July 2006 (2006-07-06) * abstract; figures * -----	4	
Y	JP 2006 242481 A (OSAKA GAS CO LTD) 14 September 2006 (2006-09-14) * abstract; figure 10 * -----	7	TECHNICAL FIELDS SEARCHED (IPC) F24C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	23 November 2011	Verdoodt, Luk

CATEGORY OF CITED DOCUMENTS

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

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

EPO FORM 1503 03.82 (P04C01)

2

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 16 9660

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-11-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2558239 A1	19-07-1985	DE 3500748 A1	25-07-1985
		FR 2558239 A1	19-07-1985
		IT 1178820 B	16-09-1987
		US 4646963 A	03-03-1987
JP 62069021 A	30-03-1987	JP 1818519 C	27-01-1994
		JP 5019050 B	15-03-1993
		JP 62069021 A	30-03-1987
EP 0843132 A1	20-05-1998	EP 0843132 A1	20-05-1998
		FR 2756038 A1	22-05-1998
JP 2005291560 A	20-10-2005	JP 4502685 B2	14-07-2010
		JP 2005291560 A	20-10-2005
WO 2006070334 A1	06-07-2006	AT 412357 T	15-11-2008
		EP 1845825 A1	24-10-2007
		ES 2314752 T3	16-03-2009
		WO 2006070334 A1	06-07-2006
JP 2006242481 A	14-09-2006	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 5310110 A **[0003]**
- EP 1258683 A **[0004]**
- GB 969096 A **[0004]**
- DE 102004059159 **[0005]**