



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
12.10.2011 Bulletin 2011/41

(51) Int Cl.:
F24C 7/08 (2006.01)

(21) Application number: **10002667.3**

(22) Date of filing: **13.03.2010**

(84) Designated Contracting States:
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 SE SI SK SM TR
Designated Extension States:
AL BA ME RS

(71) Applicant: **Electrolux Home Products Corporation N.V.**
1130 Brussel (BE)

(72) Inventors:
• **Bunzel, Volkmar**
73432 Aalen (DE)
• **Käser, Erhard**
91598 Colmberg (DE)

• **Dänzer, Stefan**
91631 Wettringen (DE)
• **Feurlein, Gülsüm**
91616 Neusitz (DE)
• **Baschke, Jessica-Constanze**
91541 Rothenburg o.d. Tauber (DE)
• **Horn, Friedrich**
91637 Wörnitz (DE)

(74) Representative: **Hochmuth, Jürgen**
Electrolux Rothenburg GmbH
Factory and Development
90327 Nürnberg (DE)

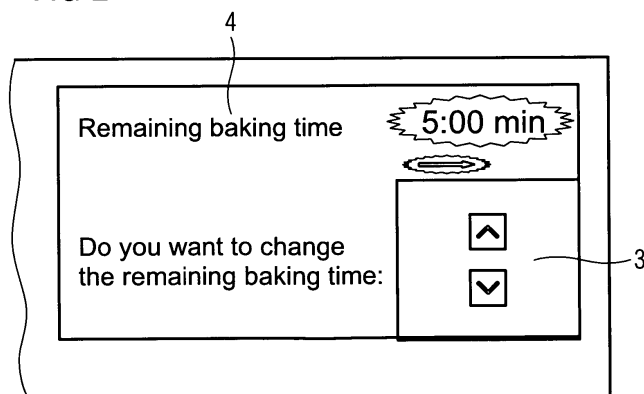
Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) **Method for preparing a dish in an oven, especially in a domestic oven**

(57) The invention relates to a method for preparing a dish in an oven (1), especially in a domestic oven, wherein the oven (1) has a cavity (2) for placing the dish and a control unit which is connected with an input unit (3) and a display unit (4), wherein the method comprises the steps of: a) Placing the dish to be prepared in the cavity (2), b) Inputting data defining the heating of the dish in the oven (1) comprising a desired basic heating time (t_B) via the input unit (3), c) Starting the operation of the heating process of the dish; d) Termination of the heating process when an inputted heating time (t_T) has

expired and e) Taking out of the prepared dish from the cavity (2) after the heating operation of the dish is finished. To obtain better baking results, the invention proposes that the method comprises the further steps between step c) and step d): c1) Outputting a signal before (Δt) the termination of the basic heating time (t_B) by the control unit when a remaining heating time is reached, c2) Asking via the display unit (4) if the stored remaining heating time ($t_{R \text{ orig}}$) or if a different remaining heating time ($t_{R \text{ new}}$) is desired by the user, c3) Continuation of the operation of the heating process in dependence on the reaction to the question according to step c2).

FIG 2



Description

[0001] The invention relates to a method for preparing a dish in an oven, especially in a domestic oven, wherein the oven has a cavity for placing the dish and a control unit which is connected with an input unit and a display unit.

[0002] It is known in the state of the art to run such a typical cooking and especially baking process by carrying out the following steps: In a first step the dish to be prepared is placed in the cavity of the oven. Then, data are inputted via the input unit defining the heating of the dish in the oven; those data comprising a desired basic heating time. Afterward, the operation of the heating process of the dish is started. The termination of the heating process takes place when an inputted heating time has expired. Finally, the prepared dish can be taken out from the cavity after the heating operation of the dish is finished.

[0003] It has been found that not always the result of the cooking and especially baking process is satisfying. After having checked the result of the baking process it is sometimes necessary to elongate the baking time to improve the baking result.

[0004] It is therefore known that the control unit offers via the display unit to input a certain time by which the baking process is elongated. This facilitates it for the user to prolong the baking time; it is thus not necessary to enter again in the whole baking program and to input the desired additional baking time.

[0005] Also this method has drawbacks. It is sometimes not easy to judge by which time the baking process should be prolonged after the basic heating time has expired. Also, it is possible that after the termination of the basic heating time it is found that the baking process did already last too long.

[0006] Thus, it is an object of the present invention to propose a further developed method of preparing a dish in an oven, especially in a domestic oven, which allows an easier judgement to find the right final cooking or baking time for the dish. By this method it should be possible that better cooking and especially baking results can be obtained.

[0007] The solution of this object according to the invention is characterized in that the method comprises the further steps between the start of the operation of the heating process of the dish and the termination of the heating process when an inputted heating time has expired:

- Outputting a signal before the termination of the basic heating time by the control unit when a remaining heating time is reached,
- Asking via the display unit if the stored remaining heating time or if a different remaining heating time is desired by the user,

- Continuation of the operation of the heating process in dependence on the reaction to the question according to last mentioned step.

[0008] The continuation of the operation of the heating process according to the last of the above mentioned step is preferably carried out corresponding to the basic heating time, if no data was inputted via the input unit after a defined time expired after the asking via the display.

[0009] The continuation of the operation of the heating process according to the last of the above mentioned steps is preferably carried out corresponding to a new inputted data, if such data was inputted via the input unit after asking via the display.

[0010] The mentioned signal is preferably outputted before the basic heating time corresponding to a stored value. This stored value is preferably between 2 und 15 minutes.

[0011] The mentioned signal can be an acoustic signal. Also, the signal can be an optical signal; specifically, the signal can comprise the switch-on of a LED at the display unit. Also, a suitable possibility to alert the user is that the signal comprises the switch-on of an illumination of the cavity.

[0012] The method is preferably employed for baking pastries in a domestic oven.

[0013] By the proposed improved process it becomes possible to obtain better baking results.

[0014] A specific advantage is that it can substantially be avoided that a too long baking time is operated and the pastries char. The check of the baking process before the expiration of the basic heating time allows a reduction of the baking time if the user means that the regular baking time would be too long.

[0015] A further advantage is that the equipment of the oven 1 needs normally not to be enlarged. The proposed method can easily be established by a respective software simply by using it as all device elements are normally existing in a normal modern domestic oven.

[0016] Preferably, in case the user changes the remaining heating time at a time t_M to the new remaining heating time t_{Rnew} , the termination time t_T where the heating process terminates is obtained in the following way:

$$t_T = t_B - t_M + t_{Rnew},$$

50

wherein t_B is the desired basic heating time.

[0017] In the drawings an embodiment of the invention is depicted.

55 FIG 1 shows a perspective view of a domestic oven,

FIG 2 shows a view of the input and display unit of the oven,

FIG 3 shows a time diagram of a baking process according to a first possible operation mode and

FIG 4 shows a time diagram of a baking process according to a second possible operation mode.

[0018] In FIG 1 a domestic baking oven 1 is shown which has a cavity 2 for receiving a dish which is to be prepared, i. e. to be cooked or baked. The controlling of the operation process in the oven 1 is done by a (not depicted) control unit. The control unit is in communication with an input unit 3 and a display unit 4 of the oven 1.

[0019] The normal mode for baking pastries is known as such. At first the pastry is placed in a respective baking pan in the cavity 2. Afterwards, the necessary data are inputted via the input unit 3 for defining the baking process. Evidently, the oven temperature as well as the baking mode (hot air etc.) is highly relevant. Also, of course the baking time must be provided, i. e. a basic heating time t_B which defines the duration of the baking process. Normally, for each receipt of pastries an optimum baking time and baking temperature is known which is then inputted via the input unit 3 into the control unit. Of course, respective data can also be taken from stored data for a plurality of receipts.

[0020] Then, the operation of the heating process of the pastries can be started. Accordingly, the oven heats up according to the inputted temperature data and heat is applied to the paste for the basic heating time t_B .

[0021] To optimize the baking result and to give the user of the oven an opportunity to influence the baking process to reach this aim the following process is proposed (reference is made to Fig. 3 where a time diagram for such a process is depicted):

The baking process starts at a time t_0 . Also the control unit has the basic baking time t_B as inputted. Furthermore, in the control unit of the oven 1 a certain time Δt is stored, e. g. this time is 5 minutes. This time is subtracted from the inputted basic baking time t_B to obtain a signal time t_S . At this time a signal is caused by the control unit. The signal will normally be an acoustic signal, i. e. the oven will emit a noise to alert the user that an action from him or her is required. Preferably, an illumination of the cavity is switched on together with the emitting of the noise. Furthermore, at the display unit 4 a comment is shown as can be seen in FIG 2.

[0022] In the present case of the described embodiment a text is displayed in the display unit 4 saying that the remaining baking time t_S is 5:00 minutes; this time is counted back as time is running. Before the remaining baking time of 5:00 minutes is reached, the symbols and characters in the display are illuminated in a steady way. In FIG 2 a situation is shown, where a remaining heating time t_R of five minutes is reached. It can be provided, that the characters representing minutes and seconds and/or

a specific symbol, e.g. an arrow, indicating the remaining heating time t_R , start blinking to draw the user's attention on the display. This has an additional effect to the acoustic signal. Blinking is illustrated by serrated circles in FIG 2.

[0023] Furthermore, the question is brought forward to the user if he or she wants to change the remaining baking time. A change of the remaining baking time can easily be made by using "up" or "down" buttons in the input unit 3. E.g. the remaining baking time might be increased by one minute for each actuation of the "up" button. Of course, the increasing and decreasing step to be carried out at each actuation can be adapted to the users wishes.

[0024] Consequently, the user has the chance now to check the baking result reached insofar and to evaluate if the stored remaining baking time (5:00 min in the example) seems to be the optimum time.

[0025] If the pastries seem to be finished earlier as when baked the remaining baking time this time can be reduced by pressing the "down" button accordingly. On the other hand, sometimes it will be the case that the user judges that more baking time seems to be necessary as corresponding to the remaining baking time stored in the control unit. Consequently, he or she will increase the remaining baking time by pressing the "up" button.

[0026] In FIG 3 it is illustrated that the remaining baking time was increased to a new remaining baking time t_{Rnew} after checking the result of the baking process. The termination time t_T of the baking process is thus prolonged and expires after the original basic heating time t_B .

[0027] Of course it is possible that the user does not respond to the signal of the oven to examine the remaining baking time, e. g. because he or she did not hear the signal. The process which is operated in this case is depicted in FIG 4. Here - as in FIG 3 - a certain reaction time t_{Reac} is shown (shaded area) which starts to run after the signal was emitted. The reaction time can be e. g. 1 minute. If the user does not react within the reaction time t_{Reac} the process is continued as originally defined, i. e. the baking process terminates when the basic heating time t_B is reached. In other words the new remaining heating time is the original remaining heating time t_{Rorig} .

[0028] It is also possible, which is not shown in the figures, that the reaction time t_{Reac} expires when the basic heating time t_B or the new remaining baking time t_{Rnew} is reached. Thus, the user is enabled at any moment to increase or decrease the basic heating time t_B or the new remaining baking time t_{Rnew} by means of the input unit 3 and to define the termination time t_T , until heating of the oven is stopped. Also the user is enabled to do so several times.

[0029] The heating process is terminated after the termination time t_T , i. e. after the inputted heating time has expired.

[0030] The inputted heating time depends on the desired basic heating time as well as the amendments of the remaining heating time. After the termination, the finished pastries can be taken out from the cavity 2.

[0031] In case the user changes the remaining heating time at a time t_M to the new remaining heating time $t_{R_{new}}$, the termination time t_T where the heating process terminates is obtained in the following way:

$$t_T = t_B - t_M + t_{R_{new}},$$

wherein t_B is the desired basic heating time.

[0032] The modification of the remaining heating time $t_{R_{orig}}$ is inputted before the termination of the desired basic heating time t_B .

List of reference numerals

[0033]

1 Oven (domestic oven)

2 Cavity

3 Input unit

4 Display unit

t_B Basic heating time

t_T Termination time

Δt Signal output time before basic heating time

t_R Remaining heating time

$t_{R_{orig}}$ Original remaining heating time

$t_{R_{new}}$ New remaining heating time

t_{Reac} Reaction time

Claims

1. Method for preparing a dish in an oven (1), especially in a domestic oven, wherein the oven (1) has a cavity (2) for placing the dish and a control unit which is connected with an input unit (3) and a display unit (4), wherein the method comprises the steps of:

- a) Placing the dish to be prepared in the cavity (2),
- b) Inputting data defining the heating of the dish in the oven (1) comprising a desired basic heating time (t_B) via the input unit (3),
- c) Starting the operation of the heating process of the dish;
- d) Termination (t_T) of the heating process when

an inputted heating time has expired and

e) Taking out of the prepared dish from the cavity (2) after the heating operation of the dish is finished,

characterized in that

the method comprises the further steps between step c) and step d) :

- c1 Outputting a signal before (Δt) the termination of the basic heating time (t_B) by the control unit when a remaining heating time (t_R) is reached,
- c2) Asking via the display unit (4) if the stored remaining heating time ($t_{R_{orig}}$) or if a different remaining heating time ($t_{R_{new}}$) is desired by the user and
- c3) Continuation of the operation of the heating process in dependence on the reaction of the user to the question according to step c2).

2. Method according to claim 1, **characterized in that** the continuation of the operation of the heating process according to step c3) of claim 1 is carried out corresponding to the basic heating time ($t_{R_{orig}}$), if no data was inputted via the input unit (3) after a defined time (t_{Reac}) expired after asking according to step c2) of claim 1.

3. Method according to claim 1, **characterized in that** the continuation of the operation of the heating process according to step c3) of claim 1 is carried out corresponding to a new inputted data ($t_{R_{new}}$), if such data was inputted via the input unit (3) after asking according to step c2) of claim 1.

4. Method according to one of claims 1 to 3, **characterized in that** the signal is outputted according to step c1) of claim 1 before the basic heating time corresponding to a stored value (Δt).

5. Method according to claim 4, **characterized in that** the stored value (Δt) is between 2 and 15 minutes.

6. Method according to one of claims 1 to 5, **characterized in that** in case the user changes the remaining heating time at a time t_M to the new remaining heating time $t_{R_{new}}$, the termination time t_T where the heating process terminates is obtained in the following way:

$$t_T = t_B - t_M + t_{R_{new}},$$

wherein t_B is the desired basic heating time.

7. Method according to one of claims 1 to 6, **characterized in that** the signal according to step c1) of

claim 1 is an acoustic signal.

8. Method according to one of claims 1 to 6, **characterized in that** the signal according to step c1) of claim 1 is an optical signal. 5
9. Method according to claim 8, **characterized in that** the signal comprises the switch-on of a LED at the display unit (3). 10
10. Method according to claim 8, **characterized in that** the signal comprises the switch-on of an illumination of the cavity (2). 15
11. Method according to one of claims 1 to 10, **characterized in that** it is used for baking pastries in a domestic oven. 20

Amended claims in accordance with Rule 137(2) EPC. 20

1. Method for preparing a dish in an oven (1), especially in a domestic oven, wherein the oven (1) has a cavity (2) for placing the dish and a control unit which is connected with an input unit (3) and a display unit (4), wherein the method comprises the steps of: 25

- a) Placing the dish to be prepared in the cavity (2), 30
- b) Inputting data defining the heating of the dish in the oven (1) comprising a desired basic heating time (t_B) via the input unit (3),
- c) Starting the operation of the heating process of the dish, 35
- d) Outputting a signal before (Δt) the termination of the basic heating time (t_B) by the control unit when a remaining heating time (t_R) is reached,
- e) Termination (t_T) of the heating process when an inputted heating time has expired, and 40
- f) Taking out of the prepared dish from the cavity (2) after the heating operation of the dish is finished,

characterized in that 45
the method comprises the further steps between step d) and step e):

- d1) Asking via the display unit (4) if the stored remaining heating time ($t_{R\text{ orig}}$) or if a different remaining heating time ($t_{R\text{ new}}$) is desired by the user, wherein the user has the chance to increase or decrease manually the remaining heating time ($t_{R\text{ new}}$), and 50
- d2) Continuation of the operation of the heating process in dependence on the reaction of the user to the question according to step d1). 55

2. Method according to claim 1, **characterized in that** the continuation of the operation of the heating process according to step c3) of claim 1 is carried out corresponding to the basic heating time ($t_{R\text{ orig}}$), if no data was inputted via the input unit (3) after a defined time (t_{Reac}) expired after asking according to step c2) of claim 1.

3. Method according to claim 1, **characterized in that** the continuation of the operation of the heating process according to step c3) of claim 1 is carried out corresponding to a new inputted data ($t_{R\text{ new}}$), if such data was inputted via the input unit (3) after asking according to step c2) of claim 1.

4. Method according to one of claims 1 to 3, **characterized in that** the signal is outputted according to step c1) of claim 1 before the basic heating time corresponding to a stored value (Δt).

5. Method according to claim 4, **characterized in that** the stored value (Δt) is between 2 and 15 minutes.

6. Method according to one of claims 1 to 5, **characterized in that** in case the user changes the remaining heating time at a time t_M to the new remaining heating time $t_{R\text{ new}}$, the termination time t_T where the heating process terminates is obtained in the following way:

$$t_T = t_B - t_M + t_{R\text{ new}},$$

wherein t_B is the desired basic heating time.

7. Method according to one of claims 1 to 6, **characterized in that** the signal according to step c1) of claim 1 is an acoustic signal.

8. Method according to one of claims 1 to 6, **characterized in that** the signal according to step c1) of claim 1 is an optical signal.

9. Method according to claim 8, **characterized in that** the signal comprises the switch-on of a LED at the display unit (3).

10. Method according to claim 8, **characterized in that** the signal comprises the switch-on of an illumination of the cavity (2).

11. Method according to one of claims 1 to 10, **characterized in that** it is used for baking pastries in a domestic oven.

FIG 1

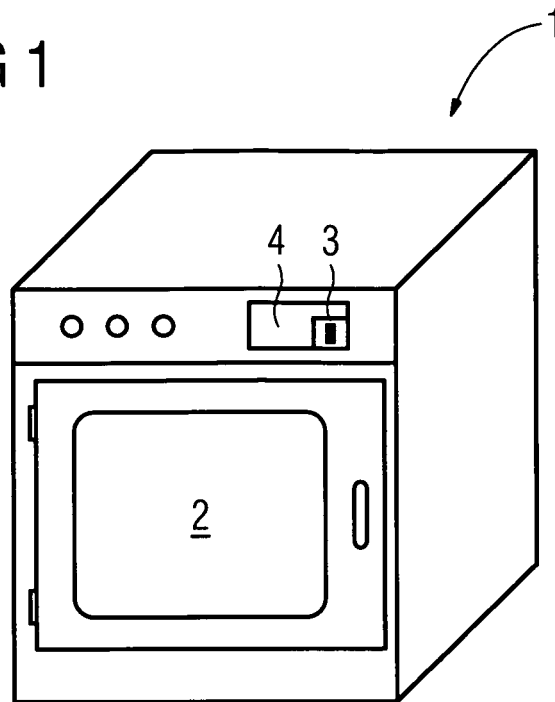


FIG 2

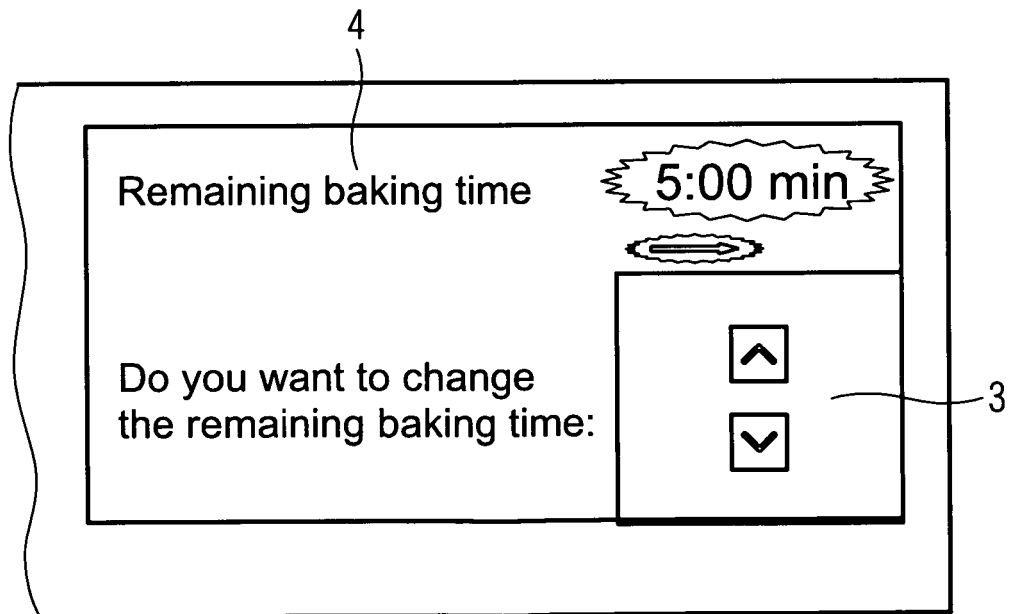


FIG 3

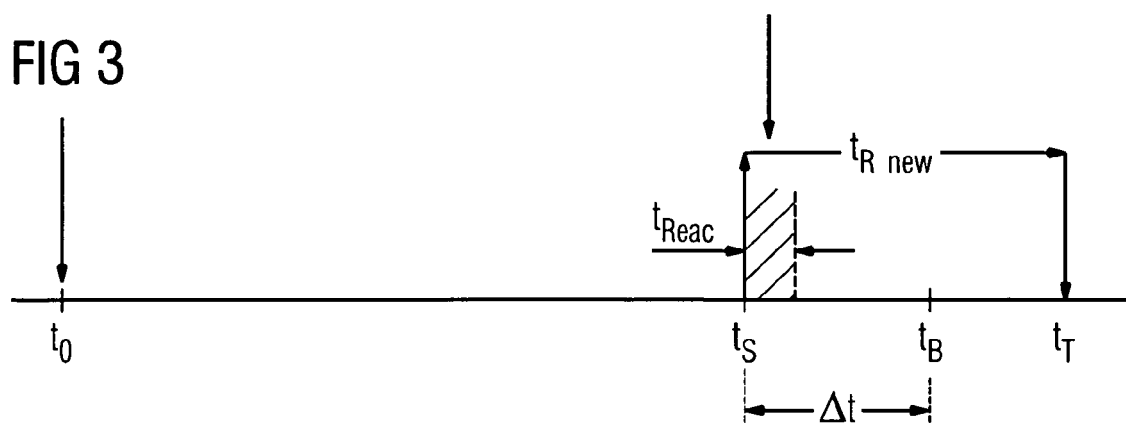
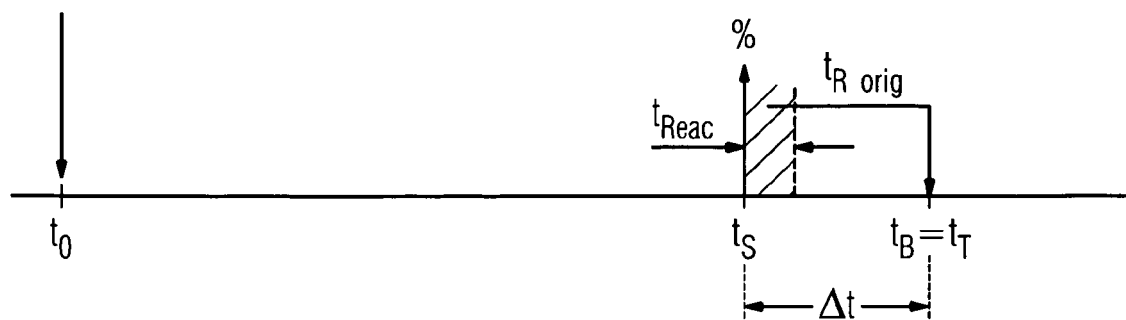


FIG 4





EUROPEAN SEARCH REPORT

Application Number
EP 10 00 2667

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	US 2006/113295 A1 (FISHER GARY W [US] ET AL FISHER GARY W [US] ET AL) 1 June 2006 (2006-06-01) * abstract; figures 3,4 * * paragraphs [0007], [0009], [0010], [0012], [0013], [0019], [0023], [0030], [0034], [0035], [0042], [0044], [0048] * -----	1-11	INV. F24C7/08
X	US 6 777 651 B1 (BOYER MARK A [US]) 17 August 2004 (2004-08-17) * abstract * * paragraphs [0008], [0012], [0030] * -----	1-3,7,8	
X	US 5 620 624 A (WESTERBERG EUGENE R [US]) 15 April 1997 (1997-04-15) * abstract; figure 5 * * column 2, lines 1-17 * * column 3, line 64 - column 4, line 58 * -----	1-3	
A	US 4 222 037 A (SCHAAP DAVID J ET AL) 9 September 1980 (1980-09-09) * abstract * * column 1, lines 11-60 * -----	1-11	TECHNICAL FIELDS SEARCHED (IPC) F24C
A	EP 1 600 694 A2 (ELECTROLUX HOME PROD CORP [BE]) 30 November 2005 (2005-11-30) * abstract * * paragraphs [0002], [0014] * -----	1-11	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 6 October 2010	Examiner Moreno Rey, Marcos
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	

1
EPO FORM 1503 03.92 (P04C01)

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

EP 10 00 2667

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.

06-10-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006113295 A1	01-06-2006	NONE	
US 6777651 B1	17-08-2004	CA 2461047 A1	10-10-2004
US 5620624 A	15-04-1997	NONE	
US 4222037 A	09-09-1980	NONE	
EP 1600694 A2	30-11-2005	DE 102004026319 A1	29-12-2005
		RU 2382947 C2	27-02-2010