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Datasheet for the decision of 14 March 2017

Case Number: T 0978/12 - 3.5.02

Application Number: 01128753.9

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Language of the proceedings: EN

Title of invention:
Pulsed sequence burner control with valve

Patent Proprietor:
BSH Hausgeräte GmbH

Opponent:
Electrolux Rothenburg GmbH Factory and Development

Relevant legal provisions:
EPC Art. 54, 56
RPBA Art. 12(4)

Keyword:
Novelty - (yes)
Inventive step - (yes)
Late-filed evidence - admitted (no)

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Case Number: T 0978/12 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 14 March 2017

Appellant: (Opponent)	Electrolux Rothenburg GmbH Factory and Development Fürther Strasse 246 90429 Nürnberg (DE)
Representative:	Schröer, Gernot H. Meissner Bolte Patentanwälte Rechtsanwälte Partnerschaft mbB Bankgasse 3 90402 Nürnberg (DE)
Respondent: (Patent Proprietor)	BSH Hausgeräte GmbH Carl-Wery-Strasse 34 81739 München (DE)
Representative:	BSH Hausgeräte GmbH Zentralabteilung Gewerblicher Rechtsschutz Carl-Wery-Strasse 34 81739 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 29 February 2012 rejecting the opposition filed against European patent No. 1215441 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	R. Lord
Members:	M. Léouffre
	R. Cramer

Summary of Facts and Submissions

I. The opponent appealed against the decision of the opposition division, posted on 29 February 2012, to reject the opposition against the European patent No. 1 215 441. The statement of grounds of appeal was received on 29 June 2012.

II. In the statement of grounds of appeal and further to the objection that the subject-matter of claim 1 was known from document
- GB 2 027 536 A (D7),
or at least rendered obvious in the light of the combination of document D7 with document
- EP 0 773 409 B1 (D9),
the appellant cited two new documents
- US 4 360 338 A (D10) and
- DE 200 02 223 U1 (D11)
and argued that D10 was prejudicial to the novelty of the subject-matter of claim 1.

III. In a communication accompanying the summons to oral proceedings the board expressed its preliminary opinion that the subject-matter of claim 1 was novel having regard to D7, and indicated that it tended to the opinion that that subject-matter involved an inventive step in the light of the combination of D7 with D9.

IV. Oral proceedings took place before the board as scheduled on 14 March 2017.

V. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

VI. The respondent requested that the appeal be dismissed.

VII. Claim 1 of the granted patent reads as follows (numbering of the features added by the Board):

(1) "A cooktop control (18) for a cooking appliance (10)
(2) including a cooktop having at least one gas burner (14)
(3) having a plurality of ports,
(4) at least one ignitor (28) adjacent to at least one port on the burner (14); and
(5) a control (32) for delivering gas to the burner ports and igniting the gas at burner ports,
said control comprising:
(6) a valve (30) and a responsive element (36) in said valve (30) for controlling gas flow through a passageway coupled in fluid communication with said plurality of ports;
(7) an ignition module (26) for generating a drive signal to the at least one ignitor (28);
(8) an electronic controller (24) interfacing with said ignition module (26) and coupled to a driver (34) for actuating said responsive element;
(9) wherein said driver (34) enables said responsive element (36) to default to a status that closes said passageway,
(10) wherein said driver (34) comprises a pick-up actuator (58) that enables said responsive element (36) to initiate an open position status that opens said passageway (16), and a holding actuator (52) that enables said responsive element (36) to maintain an open position status;
(11) a sensor (50) for detecting the presence of flame at said burner port and coupled to said holding actuator (52) and said electronic controller (24); and
(12) wherein said driver (34) is responsive to each of said controller (24) and said sensor (50) to displace said responsive element (36) from said default status to said open position status,

(13) wherein the control (32) sequentially delivers gas to the burner ports."

VIII. The appellant argued essentially as follows:

Not only features (4) to (12) were known from D7, as accepted by the board in its summons to oral proceedings, but also features (1), (2), (3) and (13). A gas-fired domestic cooker together with its control according to document D7 (see page 1, lines 5 to 7) could be used as a cooktop and a cooktop control, so that features (1) and (2) were disclosed in D7. It was also standard practice to distribute the flame of a cooker in a uniform manner under the pot to be heated, so that feature (3) was also implicitly disclosed in D7. Finally, as far as the term "sequentially" could be interpreted as implying a time sequence, the sequential delivering of gas to the burner ports was disclosed in D7, because the cooktop control of D7 foresaw three different gas supplying periods, an initial one to ignite the flame, one to heat the pot for cooking and a subsequent one during which the gas supply was reduced to keep the pot warm. The subject-matter of claim 1 was therefore known from D7.

Following the negative decision of the opposition division, the appellant became aware of the need for further evidence and searched for further documents illustrating the prior art, in particular the prior art related to the two coils and their control. Documents D10 and D11 were subsequently cited with the statement of grounds of appeal. D10 as well as D11 disclosed many features of the present claim 1 and were therefore *prima facie* relevant. The fact that it could not be determined *prima facie* if all the features of claim 1 were disclosed in D10 or D11 was due to the many

features of that claim. It did not mean D10 and D11 were not *prima facie* relevant.

Even if it were considered that features (1), (2), (3) and (13) were not disclosed in D7, the subject-matter of claim 1 lacked an inventive step.
Features (1) to (3) bore no synergetic effect with feature (13). Features (1) to (3) were well-known features of a cooktop and a person skilled in the art, without exercising any inventive skill, would have thought of applying the control of the gas-fired cooker known from D7 to a cooktop having at least one burner with a plurality of burner ports. Controlled gas-fired cooktops were known, for instance, from D9.
Feature (13) solved the problem of reducing the heating level by reducing the gas flow below the minimum required for keeping a flame alight. The solution was to control the valve with pulses. Such a measure, which according to the contested patent was well known (see paragraph [0023], lines 49 to 52), would have been implemented in D7 as an obvious improvement.
Furthermore, a pulse sequencing gas flow was not mentioned in claim 1, and the three sequential supplying periods of D7 could be seen as sequentially delivering gas to the burner ports.

The subject-matter of claim 1 also lacked an inventive step having regard to the combination of D9, taken as a starting point, with D7.
The subject-matter of claim 1 differed from the cooktop disclosed in D9 by the features (10) to (12). These features were disclosed in D7. Starting from D9, the problem was that of how to implement the control device 3 shown in the figure of D9. D9 taught in paragraph [0009] that different regulation devices could be used to regulate the gas flow, among which a pulse-duration

modulation controlled solenoid. The person skilled in the art would have therefore used the valve known from D7 as the control device 3 and arrived thereby at the subject-matter of claim 1.

IX. The respondent argued essentially as follows:

D7 did not disclose a cooktop but a burner for an oven (see D7, page 1, line 115). A cooktop control was consequently also not disclosed in D7. Following decision T 651/92, a general teaching relating to cooking appliances could not take away the novelty of a claim for a particular cooking appliance like a cooktop.
Features (3) and (4) were also not explicitly disclosed in D7, and it should be understood from feature (12) that the driver comprised the coils 52 and 58, as the appellant correctly recognised in the letter dated 13 February 2017 at page 6, first paragraph. Feature (12) recited that the driver was able to act on the valve such as to move it from off to on. This was not disclosed in D7.
Since clarity was not a reason for opposition, feature (13) had to be interpreted in the light of the description, which disclosed that the valve was actuated in a time-sequential manner. A sequential movement of the valve in the sense of the contested patent was not disclosed in D7. Thus the subject-matter of claim 1 was novel having regard to D7.

Documents D10 and D11 were late filed and their admission into the proceedings would signify the start of a new opposition procedure. The devices shown in D10 and D11 did not reveal the features (1) to (3) which were not disclosed with the cooker of D7. These documents were therefore *prima facie* not sufficiently

relevant to justify their late admission into the proceedings. The discussion in the statement of grounds of appeal of documents D10 and D11 revealed that the appellant was aware that the gas burners disclosed therein did not include features (1) to (3). D10 and D11 should therefore not be admitted into the proceedings.

A combination of D7, which did not disclose features (1) to (4) and (12) and (13), with D9 which did not disclose features (10) to (13) would not lead to the subject-matter of claim 1. In particular, D9 did not disclose a driver responsive to a controller and a sensor i.e. feature (12), which feature should be understood in the light of claims 2 and 7.
D9 did not disclose a sequential gas supply either. Paragraph 12 of D9 indicated that the minimum supply values for the gas were stored in the memory. The gas was therefore not supplied sequentially during normal operation of the burners but at most during calibration.
Finally, a person skilled in the art could have implemented a pulse sequencing supply of gas in a cooktop control as disclosed in D7 or D9, but the question remained as to why they would do so.

Reasons for the Decision

1. The appeal is admissible.

2. Novelty (Article 54 EPC)

2.1 D7 was considered by the appellant as anticipating the granted claim 1. It discloses:
(1) A control for a cooking appliance (see page 1, lines 111 to 124)
(2) having at least one gas burner 1.
(3) The gas burner has at least one port (implicit).
(4) The cooking appliance has at least one ignitor 12 adjacent to at least one port of the burner 1;
(5) and a control (the whole circuit shown in the figure) for delivering gas to the at least one burner port and igniting the gas at the burner port.
(6) The control comprises a valve 3 and a responsive element (see the interior of the valve in document GB 2 001 747 A cited in D7 at page 1, lines 127 and 128 and on file as D3) in said valve 3 for controlling gas flow through a passageway coupled in fluid communication with said at least one port.
(7) The control comprises an ignition module 13 for generating a drive signal to the at least one ignitor 12 (see page 2, lines 7 to 12).
(8) The control comprises an electronic controller (clock 16 and circuit 23 together with relay 24) interfacing with said ignition module 13 and coupled to a driver (coils 10 and 11) for actuating said responsive element (see page 2, lines 77 to 83).
(9) The driver 10, 11 enables said responsive element to default to a status that closes said passageway (when relay 24 is not energised, contact 24a is in the OFF position and coil 10 not energised whereby it enables the responsive element to close said passageway

inside the valve 3).
(10) Said driver 10, 11 comprises a pick-up actuator 10 that enables said responsive element to initiate an open position status that opens said passageway, and a holding actuator 11 that enables said responsive element to maintain an open position status (see page 3, lines 59 to 69).
(11) The control comprises a sensor 14 for detecting the presence of flame at said burner port and coupled to said holding actuator 11 and said electronic controller 16, 24.
(12) The driver 10, 11 is responsive to each of said controller 16, 24 and said sensor 14 to displace said responsive element from said default status to said open position status.

2.2 The respondent argued that the driver 10, 11 of D7 does not drive the valve to change status from a closed position to an open position. This is however effectuated by the coil 10 which initiates the open position (see e.g. page 3, lines 50 to 69).

2.3 With the valve of the cooker of D7 the gas is also not sequentially delivered to the burner ports in the sense of the patent in suit (feature 13).
Feature 13, which is ambiguous, has to be interpreted in the light of the whole patent specification, in which paragraphs [0012] and [0023] are particularly relevant. Paragraph [0012] mentions that the invention provides "the advantage of using the valve as the cycling valve for the pulsed sequence burner operating feature", and paragraph [0023] recites that "the controller 24 may provide a drive signal to the pickup coil 58 with a power whose magnitude is equivalent to that produced by the holding coil 53 but opposite in polarity so that an opposite force magnetic field will

negate the magnetic field produced in the coil by the current from the thermocouple 50". It follows that the valve is controlled back and forth i.e. pulsed, by the combined effect of the energised pickup coil 58 and the spring 54. Paragraph [0023] recites further that "the controller 24 permits pulsed sequencing of the gas flow in a well known manner when electrical power is available", this operating principle being known from the Thermador XLO burner (see paragraphs [0004] and [0005] of the contested patent).

2.4 The valve of D7 is operated differently. Its solenoid 10 is first energised to give the initial supply of gas to the burner, and the heat of the ignited flame causes a thermo-electric flame sensing device 14 electrically connected by lead 15 to the secondary solenoid 11 to produce an electric current which energises the secondary solenoid 11 (see page 2, lines 2 to 19). At the end of the desired cooking period, the solenoid 11 is de-energised while the solenoid 10 may still be energised to allow a restricted gas flow to keep the food warm (see page 3, lines 75 to 85). These two different periods are not considered as characterising a control that sequentially delivers gas to the burner ports in the sense of the contested patent.

2.5 Thus the subject-matter of claim 1 differs from the device of D7 in that:

- D7 does not mention a cooktop control and a cooktop (features 1 and 2) but rather a burner for an oven (cf. page 1, line 115);
- D7 does not disclose a burner with a plurality of burner ports (feature 3);
- D7 does not disclose that "the control (32) sequentially delivers gas to the burner ports" (feature 13).

2.6 Consequently the subject-matter of claim 1 is novel having regard to D7.

3. Admissibility of documents D10 and D11

Filed with the statement of grounds of appeal, documents D10 and D11 were late-filed. The appellant argued that the unexpected decision of the opposition division led the appellant to search for further prior art.
Features 1 to 3 and 13 constituted the main differences between the subject-matter of claim 1 and the cooker control disclosed in document D7. These features are not disclosed in either of documents D10 and D11. These documents are therefore not *prima facie* more relevant than D7. Moreover, the appellant's submission that it had expected the patent to be revoked by the opposition division on the basis of the evidence submitted in the first instance is as such not a convincing argument why the documents could not have been filed before the first instance. The board therefore exercised its discretion under Article 12(4) RPBA not to admit these documents into the proceedings.

4. Inventive step (Article 56 EPC)

4.1 The board agrees with the appellant that the cooker control of D7 is not limited to a burner of an oven as recited in page 1, line 115 but may be applied to any kind of gas-fired domestic cookers as mentioned in page 1, lines 5 to 7, and that cooktop controls are known e.g. from D9. Hence a person skilled in the art would not have exercised any inventive skill when adapting the gas cooker control of D7 to a cooktop. Features 1 to 3 cannot therefore contribute to an inventive step.

4.2 The board also agrees that there is no synergetic effect between features 1 to 3 and feature 13.
Feature 13 reads "wherein the control (32) sequentially delivers gas to the burner ports".
As discussed in section 2.3 above, this feature has to be interpreted in the light of the description in the sense that the control delivers gas to the burner in a pulsed sequential manner as is allegedly known from the Thermador XLO burner (see paragraphs [0004] and [0005] of the contested patent). The prior art is said to be pulsed when electrical power is available and not operational during power outage because the solenoid valve is closed when not energised (last sentence of paragraph [0005]). With the holding actuator 52 of the invention the responsive element of the valve is maintained in an open position even during power outage if the thermocouple 50 has detected a flame (see last sentence of paragraph [0023]).

4.3 The structure of the valve used in D7 is shown in document GB 2 001 0747 A which is mentioned in page 1 lines 125 to 128 of D7. The control of D7 does not operate this valve in a pulsed manner (see item 2.3 above) and there is even doubt that it could be operated in such a way. Since D9 also does not disclose pulsed sequential operation, it also does not provide any teaching relevant to this issue.

4.4 The appellant argued in writing that "the feature of sequentially delivering gas to the burner ports is used in order to reduce the amount of gas and therefore heat delivered to the pot below a minimum level which can be a constant flame" (see appellant's letter dated 13 February 2017, page 12, paragraph 2.a)). The appellant did however not provide any evidence related to the

allegedly known Thermador XLO burner and did not indicate how a pulse control according to the Thermador XLO burner could be implemented in D7, or how the control of D7 could be modified to operate the valve in a pulsed sequential manner for sequentially delivering gas, in particular given the different nature of the oven control described in D7 compared to that of the contested patent. Starting from D7 the appellant's argument relating to the lack of inventive step is, in the opinion of the board, based on hindsight.

4.5 Concerning the appellant's alternative argument on inventive step starting from D9, the board agrees that features 10 to 12 are not disclosed in document D9. The board therefore also agrees with the appellant that starting from D9, one of the problems to be solved could be that of how to implement the valve 3 shown in the figure of D9, and that a person skilled in the art could be tempted to use the valve of D7 for this purpose. Nevertheless the valve of D7 is not controlled in a pulsed sequential manner, and D9 does not disclose or suggest to control the valve in a pulsed sequential manner (feature 13).

Paragraph [0009] of D9 specifies that the gas flow rate control device 3 shown in the figure may be a pulse-duration modulation controlled solenoid valve enabling the gas flow rate to be regulated non-manually. This does not necessarily imply that the valve itself is controlled in a pulsed sequential manner. Paragraphs [0013] and [0014] recite that the microprocessor slowly reduces the power delivered by the burner till the extinction of the flame, before relighting the flame and acting on the flow rate control device 3 to obtain a flow rate which facilitates burner ignition. The flow rate value is then memorised in the memory of the

microprocessor. According to paragraph [0012] "a certain number ... of preset flame power levels is memorized in the microcontroller 4, the lowest level being that which enables the flame to remain alight at the minimum gas pressure prescribed by regulations". Thus, in D9, the valve is slowly closed and reopened for calibration purposes on request of the user or following a flame extinction (see paragraphs [0015] to [0017]). During normal operation the burner ports are supplied with a constant gas flow. Nothing in D9 suggests that the valve should be controlled such that it sequentially delivers gas to the burner ports, in the sense of the patent, i.e controlled in a pulsed sequential manner during normal operation.
A combination of the teachings of D7 with D9 would therefore not lead to a cooktop control comprising feature 13. The subject-matter of claim 1 is therefore considered as non-obvious having regard to the available prior art (Article 56 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

U. Bultmann R. Lord

Decision electronically authenticated