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# Datasheet for the decision of 8 July 2020

**Case Number:** T 2017/16 - 3.2.03

**Application Number:** 10720591.6

**Publication Number:** 2433066

**IPC:** F25D21/08, F25D17/06

**Language of the proceedings:** EN

**Title of invention:**
A COOLING DEVICE HEATED TO PREVENT FROSTING

**Patent Proprietor:**
Arçelik Anonim Sirketi

**Opponent:**
Whirlpool EMEA S.p.A.

**Headword:**

**Relevant legal provisions:**
EPC Art. 100(b), 111(1)
RPBA 2020 Art. 11

**Keyword:**
Sufficiency of disclosure - (yes)
Remittal to the department of first instance - (yes)

**Decisions cited:**

**Catchword:**

Europäisches Patentamt
European Patent Office
Office européen des brevets

**Beschwerdekammern**

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**Case Number: T 2017/16 - 3.2.03**

# D E C I S I O N
# of Technical Board of Appeal 3.2.03
# of 8 July 2020

| | |
|---|---|
| **Appellant:** (Patent Proprietor) | Arçelik Anonim Sirketi<br>Sutluce Karaagac Caddesi No: 2/6<br>Beyoglu<br>34445 Istanbul (TR) |
| **Representative:** | Grünecker Patent- und Rechtsanwälte<br>PartG mbB<br>Leopoldstraße 4<br>80802 München (DE) |
| **Respondent:** (Opponent) | Whirlpool EMEA S.p.A.<br>Via Carlo Pisacane 1<br>20016 Pero (MI) (IT) |
| **Representative:** | Baroni, Matteo<br>Metroconsult S.r.l.<br>Foro Buonaparte, 51<br>20121 Milano (IT) |
| **Decision under appeal:** | **Decision of the Opposition Division of the European Patent Office posted on 17 June 2016 revoking European patent No. 2433066 pursuant to Article 101(3)(b) EPC.** |

**Composition of the Board:**

| | |
|---|---|
| **Chairman** | C. Donnelly |
| **Members:** | V. Bouyssy |
| | N. Obrovski |

## Summary of Facts and Submissions

I. European patent No. 2 433 066 (in the following: "the patent") concerns a cooling device and a method of operating it.

II. The patent as a whole was opposed on the grounds that its subject-matter was insufficiently disclosed (Article 100(b) EPC), and that it lacked an inventive step (Article 100(a) EPC).

III. The opposition division held that the ground of opposition under Article 100(b) EPC prejudiced the maintenance of the patent as granted, as well as in amended form according to the first and second auxiliary requests filed with letter dated 24 March 2016. Thus, the opposition division decided to revoke the patent.

IV. This decision was appealed by the patent proprietor.

V. In the statement setting out the grounds of appeal, the patent proprietor (in the following: the "appellant") requested that the appealed decision be set aside and the patent be maintained as granted, alternatively as amended on the basis of one of the first and second auxiliary requests. The appellant also made a conditional request for oral proceedings.

VI. In its reply to the statement of appeal grounds, the opponent (in the following: the "respondent") requested that the appeal be dismissed. The respondent also made a conditional request for oral proceedings.

VII. The parties were summoned to oral proceedings scheduled for 14 May 2020.

VIII. In a response dated 10 September 2019 to the summons, the respondent stated that it would not attend the oral proceedings.

IX. In a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA 2007) dated 13 September 2019, the Board indicated its preliminary opinion of the case. In particular, the Board expressed its intention to set aside the appealed decision and remit the case to the opposition division for further prosecution.

X. With a communication under Rule 100(2) EPC dated 21 April 2020 the Board informed the parties that:

- due to current precautionary measures against the spread of the coronavirus (COVID-19), the oral proceedings could not take place and had to be postponed,
- the respondent's statement that it would not attend the oral proceedings should normally be treated as equivalent to a withdrawal of the request for oral proceedings,
- a decision on the merits of the case in line with that expressed in the communication pursuant to Article 15(1) RPBA 2007 could be issued in writing, should the appellant withdraw its request for oral proceedings.

XI. With a response dated 23 June 2020, the appellant withdrew its request for oral proceedings.

XII. Claims of the appellant's main request

Independent apparatus claim 1 as granted reads as follows (the feature numbering is introduced by the Board for ease of reference):

A cooling device (1) comprising
(a) at least one cooling compartment (2) and at least one freezing compartment (3),
(b) an insulator intermediate wall (4) which separates the compartments (2 and 3) from each other,
(c) at least one evaporator (5) which provides the cooling of the air circulated in the compartments (2 and 3),
(d) a compressor (6) which compresses the refrigerant passing through the evaporator (5) and circulates it in the refrigeration cycle,
(e) a channel (7) through which the air passes returning from the cooling compartment (2) to the volume (H) containing the evaporator (5),
(f) a fan (8) which blows the cooled air towards the compartments (2 and 3), and
characterized by
(g) a defrost heater (9) situated on the evaporator (5) and
(h) a control unit (10) which detects the fan (8) operation time ($t_{7a}$), the fan (8) stop time ($t_{7b}$), the cooling compartment (2) temperature ($T_2$) and the evaporator (5) temperature ($T_5$),
(i) wherein the control unit (10) operates the fan (8) if the ratio (Γw) of the fan (8) operation time ($t_{7a}$) to the total of fan (8) operation and stop times ($t_{7a}+t_{7b}$) is lower than a predetermined limit operation ratio ($\Gamma w_t$), the cooling compartment (2) temperature ($T_2$) is lower than a predetermined compressor (6) activation temperature ($T_{2t}$), and the evaporator (5) temperature ($T_5$) is higher than a predetermined temperature ($T_{5t}$), and

(j) wherein the control unit (10) operates the defrost heater (9) if the ratio (Γw) of the fan (8) operation time ($t_{7a}$) to the total of fan (8) operation and stop times ($t_{7a}+t_{7b}$) is lower than a predetermined limit operation ratio ($\Gamma w_t$), the cooling compartment (2) temperature ($T_2$) is lower than a predetermined compressor (6) activation temperature ($T_{2t}$), and the evaporator (5) temperature ($T_5$) is not higher than a predetermined temperature ($T_{5t}$).

Independent method claim 4 as granted reads as follows:

A method of operating a cooling device (1) as in any one of the above claims, said method comprising the following steps:

- starting the refrigeration cycle (1000),
- inquiring whether or not the fan (8) has stopped (1001),
- if the fan (8) operates then continuing the cycle (1000),
- if the fan (8) has stopped (1002), then inquiring whether or not the ratio (Γw) of the fan (8) operation time ($t_{7a}$) to the total of fan (8) operation and stop times ($t_{7a}+t_{7b}$) is lower than the limit operation ratio ($\Gamma w_t$) continuing to control the operation ratio (Γw) if the fan (8) operation ratio (Γw) is not lower than the limit operation ratio ($\Gamma w_t$) (1001),
- inquiring whether or not the cooling compartment (2) temperature ($T_2$) is lower than the compressor (6) activation temperature ($T_{2t}$) if the fan (8) operation ratio (Γw) is lower than the limit operation ratio ($\Gamma w_t$) (1003),

- if the cooling compartment (2) temperature ($T_2$) is not lower than the compressor (6) activation temperature ($T_{2t}$), then operating the compressor (6) (2003),
- if the cooling compartment (2) temperature ($T_2$) is lower than the compressor (6) activation temperature ($T_{2t}$), then inquiring whether or not the evaporator (5) temperature ($T_5$) is higher than defrost temperature value ($T_{5t}$) (1004),
- if the evaporator (5) temperature ($T_5$) is higher than the defrost temperature value ($T_{5t}$), then operating the fan (8) (3004),
- if the evaporator (5) temperature ($T_5$) is not higher than the defrost temperature value ($T_{5t}$) then operating the defrost heater (9) (2004),
- inquiring whether or not the evaporator (5) temperature ($T_5$) is higher than the defrost temperature value ($T_{5t}$) (1005),
- if the evaporator (5) temperature ($T_5$) is higher than the defrost temperature value ($T_{5t}$) then returning to step 1003,
- if the evaporator (5) temperature ($T_5$) is not higher than the defrost temperature value ($T_{5t}$) then operating the defrost heater (9) (2004).

XIII. Prior art

The following prior art documents were filed in the opposition proceedings and are cited in the decision under appeal:

D1: WO 2008/120862 A1;
D2: EP 0 740 809 B1;
D3: US 4,843,831;
D4: EP 1 752 724 A2;

D5: WO 2006/092759 A1;
D6: US 2002/0166331 A1;
D7: US 2007/0283706 A1; and
D8: US 2007/0068180 A1.

Of these, D6 to D8 were filed by the respondent after expiry of the opposition period, and the opposition division decided not to admit them into the proceedings, using its discretionary power under Article 114(2) EPC.

XIV. The arguments of the parties, insofar as relevant for the present decision, can be summarised as follows:

(a) Appellant's case

The opposition division erred in deciding that the claimed invention was insufficiently disclosed in the patent. In fact, in light of the entire teaching of the patent and their common general knowledge, the skilled person would have no difficulty in reproducing the invention as claimed.

It is the aim of the invention to realise a cooling device which comprises a control unit for preventing frosting (paragraph 8 of the patent specification). It is clear that defrosting has to be started when it is likely that frost will occur, but not much earlier in order not to unnecessarily heat the internal space of the cooling device and waste energy. The criteria for defining the appropriate moment in time to start the defrosting operations (i.e. switching on the defrost heater and possibly the fan to support defrosting) are defined in the independent claims and explained in the description.

The opposition division argues that it is insufficiently disclosed in the patent when the defrost heater and the fan are switched off to end the defrosting operations. However, for the skilled person it is merely a matter of choice to reasonably set the duration of the defrosting operations or appropriate criteria for stopping them. They are aware of such choices. Moreover, should the defrosting operations be performed for too short a period of time, the criteria check defined in the claims will, when performed again, result in a repeated performing of the defrosting operations. Finally, the patent gives clear indications as to when to switch off the defrost heater, see Figure 3 and the respective description. Specifically, in step 1005, while the defrost heater is operating (step 2004), it is checked whether the evaporator temperature ($T_5$) has become higher than the defrost temperature threshold ($T_{5t}$). If not, operation of the defrost heater continues (step 1005 -> step 2004). Although not expressly stated, this gives a clear indication not to continue, but to stop operation of the defrost heater in the contrary case. As far as the fan is concerned, it does not generate heat and is used not only for supporting defrosting, but also during the refrigeration cycle, together with the compressor. It is clear that the fan may remain in operation until the compressor is switched on once more, thereby starting the next refrigeration cycle. This may be a waste of energy, but it is not in conflict with the claimed solution.

The opposition division also argues that the invention is insufficiently disclosed because the patent does not disclose any appropriate value for the defrost temperature threshold ($T_{5t}$). However, this value is strongly dependent on the constructive details of the

cooling device as well as the environmental conditions, such as outside temperature and humidity and the goods to be cooled, for which it is being used. Therefore, it is difficult to indicate values by way of example or according to a general rule. At any rate, when seeking to implement the invention, the skilled person would have no practical difficulty in choosing an appropriate value for $T_{5t}$.

Finally, the opposition division argues that the invention is insufficiently disclosed because it is unclear whether the fan operating ratio (Γw) is reset and, if so, when and to what value. However, this would not hinder the skilled person from carrying out the invention. Since the patent does not mention any resetting of the fan operating ratio, it may be assumed that one way of carrying out the invention operates without resetting the fan operating ratio. This does not lead to any contradictions. While at some initial point (start of the first refrigeration cycle) the fan operates (together with the compressor), the ratio remains at 100%. Then, after the fan has stopped, the ratio decreases. Depending on the circumstances, a next refrigeration cycle may follow without defrosting, meaning that the ratio again increases (without once more reaching 100%), and so on. Alternatively, the ratio decreases down to the threshold value, and a defrosting operation is performed before the next refrigeration cycle. Since this time is not calculated as an operation time for determining the ratio, upon starting the next refrigeration cycle, the ratio value again starts increasing from the threshold value and decreases after the end of the next refrigeration cycle, and so on. Of course, it is not excluded that other implementations of the invention may operate with a resetting of the ratio, for instance, after each

defrosting cycle or a certain number of defrosting cycles. Since a reset means nothing other than going back to the above mentioned initial point, no contradiction occurs either, independently of the resetting time.

The additional arguments, which the respondent had submitted in the opposition proceedings but which had not been addressed by the opposition division in its decision, were not persuasive either.

Firstly, the respondent had submitted in the opposition proceedings that the patent failed to provide any concrete values for the temperature thresholds and the threshold fan operation ratio. However, this would not hinder the skilled person from reproducing the invention. They would choose appropriate temperature threshold values according to the specific circumstances, in particular the construction of the cooling device and the goods for which it is foreseen. Regarding the threshold fan operation ratio, this again depends on the circumstances. A simple series of tests with different values, such as starting with 0.3 (30%) and further trying 0.4 (40%) and 0.5 (50%) would reveal a tendency with which value the best protection from frost can be achieved. In view of the air circulation by means of the fan, an occurrence of frost immediately after closing a refrigeration cycle is unlikely so that it is meaningful to wait for a considerable time and start with a threshold ratio that is below 0.5, such as 0.3.

Secondly, the respondent had submitted in the opposition proceedings that the patent provides contradictory informations as to when frost occurs (column 2, lines 10 to 13 and column 3, line 57 to

column 4, line 8 in the patent specification). However, the passages cited by the respondent only formulate general prerequisites for frost to occur, such as a frequent opening of the door. For the actual forming of frost it is necessary that the fan has not been operated for a long time, resulting in low convection. As long as the compressor and the fan are working (i.e. during a refrigeration cycle), relatively warm air flows towards the evaporator. When the compressor and the fan are not working, however, the evaporator continues to supply cold air to the air channel and this leads to a high frosting risk. Finally, the patent does not exclude operating the defrost heater or the fan also in other situations that the defrosting operations to which the claim relates. For the fan, such a situation is explicitly mentioned in column 4, lines 17 to 19 of the patent specification.

(b) Respondent's case

The respondent has only made a general reference to its submissions in the opposition proceedings.

## Reasons for the Decision

1. The revised version of the Rules of Procedure of the Boards of Appeal (RPBA 2020) came into force on 1 January 2020 (Articles 24 and 25(1) RPBA 2020). Subject to the transitional provisions (Article 25 RPBA 2020), the revised version also applies to appeals pending on the date of the entry into force.

2. Article 100(b) EPC

2.1 In its communication under Article 15(1) RPBA 2007, the Board set out and reasoned its intention to allow the appellant's main request, as follows (point 7):

*"7.1 According to Article 100(b) EPC, the patent shall disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. According to the settled case law of the Boards of Appeal, this provision is to be understood as meaning that the claimed subject-matter must be reproducible without undue burden, taking into account the entire teaching of the patent and the common general knowledge of the skilled person. The burden of proof of insufficiency is as a general rule placed on the opponent, who is required to prove that there are serious doubts, substantiated by verifiable facts, as to whether the skilled person can carry out the invention as claimed. In general, the mere fact that a claim is broadly formulated is not in itself enough to conclude that its subject-matter is not sufficiently disclosed.*

*7.2 In the present case, the aim of the invention as defined in the claims is the provision of a cooling device which comprises a control unit for preventing frosting (paragraph 8 of the patent specification). The preferred embodiment of the cooling device shown in figure 1 comprises cooling and freezing compartments (2, 3), an evaporator (5) for cooling the air circulated therein, a heater (9) mounted just above the evaporator (5) and a fan (8) mounted just above the heater for blowing air towards the compartments, whereby – if defrosting of the evaporator is deemed necessary, i.e. if the fan has been stopped for a long*

*time ($\Gamma w < \Gamma w_t$) and the evaporator temperature is below a predefined threshold ($T_5 < T_{5t}$),*

- *the control unit operates the heater to heat and thus defrost the evaporator, if the cooling compartment (2) is sufficiently cold ($T_2 < T_{2t}$) (see feature (i) of claim 1; see paragraphs 11 and 21 of the patent specification and step 2004 in figure 3), and*
- *as soon as the evaporator temperature has become higher than the predefined threshold ($T_5 > T_{5t}$), the control unit operates the fan, if the cooling compartment (2) is still sufficiently cold ($T_2 < T_{2t}$) (see feature (j) of claim 1; paragraphs 11, 13, 21, 23 and 27 of the patent specification and step 3004 in figure 3).*

*7.3 The opposition division concluded that the patent insufficiently disclosed:*

- *when the defrost heater and the fan are switched off to end the defrost cycle; and*
- *whether the fan operating ratio ($\Gamma w$) is reset and, if yes, when and to what value.*

*7.4 The Board shares the appellant's view that these objections are not persuasive.*

*7.4.1 For a skilled reader of the patent it is clear that the heater is switched off as soon as it has fulfilled its function, i.e. as soon as the evaporator temperature has become higher than the threshold again ($T_5 > T_{5t}$). This is implicitly indicated in Figure 3 of the patent, as argued by the appellant (paragraph 4 on page 5 of the statement setting out the grounds of appeal). This understanding is confirmed by the statement in paragraph 23 of the patent specification that the control unit operates the defrost heater until*

*the evaporator temperature ($T_5$) reaches the preset threshold ($T_{5t}$). In fact, there is no need to heat the evaporator any further, and further heating would inevitably waste energy and possibly damage food stored in the freezing compartment.*

*7.4.2 In the defrost cycle, the fan is used to circulate air heated by the heater and thus to support defrosting of the evaporator as well as to defrost other places, such as the channel (7) between the compartments. For the skilled person it is merely a matter of choice to set an appropriate operation time for the fan to achieve these effects. There is no evidence that this is anything other than a straightforward process. In fact, it is apparent that the fan may be operated for a short period of time only. Alternatively, as explained by the appellant, the fan may remain in operation until the compressor is switched on again, thereby starting the next refrigeration cycle.*

*7.4.3 Finally, the mere fact that the patent does not disclose whether the fan operating ratio (Γw) is reset and, if yes, when and to what value, does not imply that the claimed invention cannot be reproduced. In fact, as submitted by the appellant, it appears to be possible to carry out the invention either without resetting of the fan operating ratio, or with resetting of the ratio, for instance after one or more defrost cycles.*

*7.5 The decision under appeal mentions further objections of lack of sufficient disclosure raised by the respondent in the opposition proceedings (page 3), as well as the appellant's arguments to counter these objections (page 4). In the absence of any indication*

*to the contrary in the decision reasoning (page 5), it must be assumed that the opposition division did not find any of these objections convincing.*

*7.6 The respondent has not indicated, and the Board cannot find any reason, why these further objections would indeed be persuasive:*

*7.6.1 With regard to frosting, it is common ground that it may occur for different reasons. However, the invention specifically aims to eliminate frost accumulated on the evaporator when the fan has not been working for some time, i.e. after a refrigeration cycle.*

*7.6.2 With regard to the setting of the three thresholds $\Gamma w_t$, $T_{5t}$ and $T_{2t}$, there is no evidence that this step would require an enormous amount of work, let alone an undue burden. In fact, the Board shares the appellant's view that the selection of appropriate values is a matter of routine by trial and error. $T_{5t}$ has to be set to a value such that defrosting is likely to be necessary if the temperature is lower, but defrosting is no longer necessary if the temperature is higher again. $T_{2t}$ has to be set sufficiently low to prevent the food stored in the cooling compartment from being damaged upon exposure to heat (step 1003 in figure 3), but sufficiently high to avoid excessive cooling (step 2003). $\Gamma w_t$ can be set to any value between 0 and 1, for instance 0.3, 0.4 or 0.5. In this respect, the Board notes that in prior art document D5, which is cited in paragraph 4 of the patent specification, the threshold for a similar parameter, namely the compressor operating ratio, is preferably set to 30-40 % (paragraph 14).*

*7.7 The Board shares the appellant's opinion that, in the patent, a way is clearly indicated enabling the skilled person to carry out the invention. The mere fact that the patent fails to mention any specific values for $\Gamma w_t$, $T_{5t}$ and $T_{2t}$ does not prejudice sufficiency of disclosure. These values are strongly dependent on the constructive details of the cooling device, the environmental conditions and the food stored in the compartments.*

*7.8 In summary, the Board is not persuaded that the ground of opposition of Article 100(b) EPC prejudices the maintenance of the patent as granted."*

2.2 In the absence of any new counter-arguments submitted by the respondent in response to the Board's preliminary opinion, these conclusions continue to apply. Hence, the Board is still not persuaded that the ground of opposition of Article 100(b) EPC prejudices the maintenance of the patent as granted.

3. Remittal of the case

3.1 In the opposition proceedings, in addition to objections of insufficient disclosure, the respondent contended that the subject-matter of claim 1 as granted does not involve an inventive step in view of the following documents:

(a) D1 alone or in combination with D5;
(b) D2 alone or in combination with D5;
(c) D3 alone;
(d) D4 in combination with D1 or D2;
(e) D6 in combination with D7;
(f) D8 in combination with D7.

3.2 These objections are not dealt with in the decision under appeal nor have the parties submitted their case on these issues in the appeal proceedings.

3.3 In its communication under Article 15(1) RPBA 2007, the Board set out and reasoned its intention to remit the case to the opposition division, as follows (point 8):

*"8.1 In the decision under appeal, the opposition division only dealt with the opposition ground of Article 100(b) EPC. So far, the opposition division has not addressed the opposition ground of lack of inventive step also invoked by the respondent (Article 100(a) EPC). In the summons to oral proceedings, the opposition division expressed its view that the claimed subject-matter differed from D1 by features (e), (h) (in part), (i) and (j), but it refrained from giving its opinion as to whether the provision of these features would be obvious for the skilled person (point 2b of the communication dated 13 October 2015).*

*8.2 Should the Board decide that Article 100(b) EPC does not prejudice the maintenance of the patent as granted, the Board does not consider it appropriate to carry out the first and last examination of this further opposition ground in the opposition (appeal) proceedings, without a decision of the opposition division. Instead, the Board would currently be inclined to remit the case to the opposition division for consideration of the opposition ground of lack of inventive step (Article 111(1) EPC), even though this will inevitably lengthen the proceedings and cause additional costs to the parties."*

3.4 In the absence of any counter-arguments submitted by the parties in response to the Board's preliminary

opinion, this conclusion continues to apply. It is the primary object of the appeal proceedings to review the appealed decision in a judicial manner (Article 12(2) RPBA 2020), not to conduct a complete examination of issues which were not dealt with by the opposition division. Even though a board should normally not remit a case (Article 11 RPBA 2020), there are special reasons in the present case for doing so, as explained above. Hence, the case is remitted to the opposition division for further prosecution on the basis of the claims of the appellant's main request.

4. In light of this conclusion there is no need to consider the first and second auxiliary requests of the appellant.

5. Cancellation of the oral proceedings

5.1 Both parties had requested oral proceedings, albeit conditionally.

5.2 In response to the summons to oral proceedings, the respondent stated that it would not attend them. It is established case law that such a statement should normally be treated as equivalent to a withdrawal of the request for oral proceedings (see Case Law of the Boards of Appeal, 9th edition, 2019, Chapter III.C. 4.3.2, page 620).

5.3 Due to precautionary measures against the spread of the coronavirus (COVID-19), the oral proceedings scheduled for 14 May 2020 could not take place and had to be postponed.

5.4 After being informed of this the appellant withdrew its request for oral proceedings.

5.5 In view of the state of the file, the Board considered it expedient and appropriate to issue a decision on the basis of the parties' written submissions.

**Order**

**For these reasons it is decided that:**

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division for further prosecution.

The Registrar: The Chairman:

C. Spira C. Donnelly

Decision electronically authenticated