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**Datasheet for the decision
of 24 September 2018**

Case Number: T 1129/15 - 3.3.05

Application Number: 07812273.6

Publication Number: 2076605

IPC: B01L7/00

Language of the proceedings: EN

Title of invention:

COOLING IN A THERMAL CYCLER USING HEAT PIPES

Patent Proprietor:

Applied Biosystems, LLC

Former Opponent:

Eppendorf AG
Roche Diagnostics International AG

Headword:

Sample processing/APPLIED BIOSYSTEMS

Relevant legal provisions:

EPC Art. 54(1), 54(2), 56, 84, 123(2), 123(3)

Keyword:

Amendments - allowable (yes)

Claims - clarity (yes)

Novelty - (yes)

Inventive step - (yes)

Decisions cited:

Catchword:



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Case Number: T 1129/15 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 24 September 2018

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 1 April 2015
revoking European patent No. 2076605 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman E. Bendl
Members: A. Haderlein
 R. Winkelhofer

Summary of Facts and Submissions

- I. The present appeal lies from the decision of the opposition division to revoke European patent EP 2 076 605. The patent in suit concerns a device for performing biological sample processing.
- II. The opposition division found in particular that claim 1 of the then pending main and auxiliary requests 1 to 9 did not comply with Article 123(2) EPC because of the omission of the feature "wherein the cooling system is configured to minimize a physical disturbance associated with the fan during cooling" contained in claim 81 as originally filed. The alleged public prior use of the LightCycler[®] 480 system was found not to be proven.
- III. In the decision under appeal the following documents, *inter alia*, are referred to:
- E1: WO 01/51209 A1
E12: EP 1 127 619 A2
R8: WO 01/24930 A1
R20: "Arbeitsanweisung"
R21: "Laufkarte für die Montage und Prüfung von Baugruppen"
- IV. With its grounds of appeal, the proprietor (appellant) filed a main and 22 auxiliary requests, auxiliary request 1 corresponding to auxiliary request 4 before the opposition division.
- V. Opponent 2 (respondent 2) filed a reply to the grounds of appeal. No reply was received from opponent 1 (respondent 1).

- VI. In the course of the appeal proceedings both opponents and respondents withdrew their oppositions.
- VII. In a telephone conversation between the rapporteur and the appellant's representative, the appellant was informed that apart from minor changes the board considered auxiliary request 1 allowable.
- VIII. By submission dated 24 August 2018, the appellant filed a new main request based on the previous auxiliary request 1, withdrew previous auxiliary request 1 and made the previous main request the new auxiliary request 1.
- IX. The sole independent claim 1 of this main request reads as follows:

"1. A device for performing biological sample processing, the device comprising:
an enclosure configured to receive a biological sample for processing;
a thermoelectric device (360);
a sample block (112);
a heat sink (480);
a locating frame (482) positioned around the thermoelectric device (360) and configured to align the thermoelectric device (360) with the sample block (112) and the heat sink (480); and
a thermal system configured to modulate a temperature of the biological sample, the thermal system comprising a cooling system (124; 524; 624; 724; 1024) configured to lower a temperature of the biological sample, wherein the cooling system (124; 524; 624; 724; 1024) comprises a fan (590; 690; 790; 1090; 1290; 1790) and is characterized by at least one heat pipe (592; 692; 792; 1092; 1292; 1792) that includes a condenser end

and an evaporator end."

- X. The appellant's arguments as far as relevant for the present decision may be summarised as follows:

The claims of the main request complied with the requirements of the EPC.

- XI. The former respondent 2's arguments as far as considered relevant for the present decision may be summarised as follows:

Amendments

Claim 1 was based on claims 81 and 87 as originally filed. The deletion of the feature relating to the minimisation of a physical disturbance contained in originally filed claim 81 led to added subject-matter. Features were taken from the description, i.e. based on originally filed page 14, lines 3 to 5, where they were disclosed along with the feature "to maximize temperature uniformity across the sample block" and only in the context of a heat sink with a thermal mass which was "considerably larger" than the thermal mass of the sample block and samples combined. Also the wording "positioned to align" was changed to "positioned and configured to align". Article 123(2) EPC was not complied with.

Clarity/support

The expression "configured to align" was not clear. In particular, it was not clear whether the embodiment depicted in Figure 12 was still covered by claim 1.

Novelty

The subject-matter of claim 1 lacked novelty over R8.

Inventive step

The subject-matter of claim 1 lacked an inventive step in view of the public prior use of the LightCycler[®] 480 system in combination with E12 or R8, in view of E12 in combination with E1 or R8, or in view of E1 in combination with R8. In particular, the subject-matter of claim 1 differed from the LightCycler[®] 480 system only by the locating frame and from E12 only by a heat pipe including a condenser end and an evaporator end.

- XII. The appellant requests that the decision under appeal be set aside and the patent be maintained based on the main request filed with submission dated 24 August 2018. In the alternative it requests the maintenance of the patent based on auxiliary request 1, originally submitted as main request with the grounds of appeal, or one of auxiliary requests 2 to 22 also filed with its grounds of appeal.

Reasons for the Decision

1. Main request - amendments
- 1.1 Claim 1 is based on claims 81 and 87 as originally filed. It is true that independent claim 81 as originally filed contains the feature "wherein the cooling system is configured to minimize a physical disturbance associated with the fan during cooling" which is absent from claim 1 of the present main request. The application as originally filed teaches

that a physical disturbance can be "noise" and that by using heat pipe cooler and fan combinations the noise can be minimised at relatively low thermal resistances in comparison with conventional heat sink fan combinations not comprising a heat pipe (see claim 82 and page 21, lines 7 to 19, and Fig. 16). Since present claim 1 comprises such a heat pipe cooler and fan combination, claim 1 inherently comprises the omitted feature (cf. also page 16, lines 27 to 29 of the application as filed).

- 1.2 The features relating to the thermoelectric device, the sample block, the heat sink and the locating frame can be found on page 14, lines 1 et seq. of the application as filed. The argument that claim 1 needs also to include the feature that the thermal mass of the heat sink is considerably larger than the thermal mass of the sample block is not convincing because in the above passage the locating frame is disclosed in order to maximise temperature uniformity by alignment and this effect is achieved even if the thermal mass of the heat sink is not considerably larger than the thermal mass of the sample block. Also, the objection with regard to "configured to align" (claim 1) compared to "positioned to align" (page 14, lines 3 to 5) is rather semantic. "Positioned to align" certainly implies that the frame is also configured to align. Also the alleged omission of "to maximize temperature uniformity across the sample block" does not add matter because this is not a functional feature but the result of the feature relating to the alignment and is therefore inherently present in claim 1.

Concerning the feature relating to the condenser end and evaporator end, this can be found on page 19, lines 1 et seq.

1.3 The dependent claims correspond to their granted counterparts and were not objected to by the former respondents. The board sees no reason to find them to be noncompliant with Article 123(2) EPC.

1.4 The requirement of Article 123(2) EPC is thus found to be met. The same applies to the requirement of Article 123(3) EPC.

2. Main request - clarity/support

2.1 There is no lack of clarity with respect to the expression "configured to align". Moreover, the former respondent's objection in this respect boils down to an objection of lack of support because the embodiment in Figure 12 did not show an alignment as required by present claim 1. While this embodiment is explicitly said in the description of the patent not to be according to present claim 1 (see column 16, lines 17 et seq.), this is a matter of adaptation of the description and will need to be dealt with in the proceedings before the opposition division after remittal (see point 2 of the Order below).

The board concludes that the requirement of clarity of the claims (see Article 84 EPC, first half of second sentence) is complied with.

3. Main request - novelty

3.1 R8 is not novelty-destroying because it does not disclose a fan in combination with a heat pipe since it

only discloses "air cooling" instead ("anstelle") of a liquid cooling medium (page 15, lines 18 et seq.). Moreover, the frame 25 in R8 is not positioned "around" the thermoelectric device 7 (see Figure 11).

3.2 Thus, the subject-matter of claim 1 is new (Article 54(1), (2) EPC).

4. Main request - inventive step

4.1 The patent concerns a device for performing biological sample processing.

4.2 As to the closest prior art, the former respondent 2 considered the LightCycler[®] 480 system, E1 or E12 as the closest prior art.

4.2.1 Concerning the LightCycler[®] 480 system and E1 as potential closest prior art, the board observes as follows:

According to the former respondent 2, the LightCycler[®] 480 system's "Thermabase" referred to in R20 and R21 corresponded to the heat pipe called for in claim 1 (see respondent 2's reply to the grounds of appeal, 3.4.1). Notwithstanding the question as to whether the alleged public prior use was sufficiently proven, these documents, when referring to "Thermabase", show some sort of plate comprising bore holes (see for instance R20, pages 3 and 4). There is no indication whatsoever that would suggest that this plate could constitute a heat pipe that includes a condenser and an evaporator end as required by claim 1.

Since E12 does not disclose a heat pipe having the aforementioned features, the combination of the

LightCycler[®] 480 system and E12 cannot lead to the subject-matter of claim 1.

Likewise, the combination of the LightCycler[®] 480 system and R8 cannot lead to the subject-matter of claim 1, because the LightCycler[®] 480 system does not disclose a locating frame having the claimed feature and neither does R8 (see 3.1 above). Furthermore, the same holds true for the combination of E1 and R8.

- 4.2.2 It remains to be investigated whether the subject-matter of claim 1 was obvious when starting from E12.

E12 does not disclose a heat pipe as required by claim 1.

- 4.3 According to the patent, the problem to be solved was the provision of a device for performing biological sample processing, which is configured to minimise "a physical disturbance associated with the fan during cooling", e.g. minimisation of its noise level (cf. paragraph [0025] and Fig. 16).

- 4.4 As a solution to this problem, the patent in suit proposes a device according to claim 1 of the main request characterised by the cooling system comprising a heat pipe that includes a condenser and an evaporator end.

- 4.5 It is credible that the problem is solved. In particular, using an additional cooling means will normally require the fan to rotate at a lower speed. Also, as can be seen from Figure 16, the examples comprising a heat pipe (heat sinks 4 to 7) perform better either in terms of noise (heat sinks 4 and 6) or in terms of thermal resistance at the same noise level

(heat sinks 5 and 7) than the heat sinks using a fan only (heat sinks 1 to 3). It is therefore credible that the claimed device can generally be operated at lower noise levels.

- 4.6 According to the former respondent 2, E1 taught to use a heat pipe in E12 (see also the impugned decision, point 77 et seq. of the grounds). Likewise, the proposed solution was obvious in view of R8.
- 4.6.1 The board is not persuaded by this argument. While E1 indeed discloses a heat pipe in the sense of claim 1 (Fig. 1, numeral 11; Fig. 2), there is no teaching in E1 to use a heat pipe in order to minimise the noise of the fan used in E12. Instead E1 is only concerned with the simplification of the device's construction and with the improvement of the temperature modulation performance (page 3, last paragraph). Thus, it was not obvious to use the heat pipe of E1 in E12 in order to solve the problem posed.
- 4.6.2 R8 explicitly teaches to use only one cooling medium, i.e. either a heat pipe or air cooling. Moreover, R8 does not address the problem of minimising noise. Therefore the skilled person would not combine the teachings of E12 and R8 when attempting to solve the problem set out in 4.4 *supra*.
- 4.7 In conclusion, it was not obvious to arrive at the subject-matter of claim 1. The requirement of inventive step set forth in Article 56 EPC is thus met for the main request.
5. As the appellant's main request is allowable, there is no need to address the pending auxiliary requests.

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 with the order to maintain the patent with the claims according to the main request filed with submission dated 24 August 2018, and the description to be adapted where necessary.

The Registrar:

The Chairman:



C. Vodz

E. Bendl

Decision electronically authenticated