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**Datasheet for the decision
of 6 September 2018**

Case Number: T 1985/16 - 3.4.02

Application Number: 99945647.8

Publication Number: 1114302

IPC: G01K13/00

Language of the proceedings: EN

Title of invention:
TEMPORAL ARTERY TEMPERATURE DETECTION

Patent Proprietor:
EXERGEN CORPORATION

Opponent:
Microlife AG

Relevant legal provisions:
EPC 1973 Art. 54(1), 56, 100(a), 100(c), 113(1)
EPC Art. 52(2)
EPC R. 103(1)(a), 111(2)
RPBA Art. 11, 12(4)

Keyword:

Added subject-matter (no)

Admission of documents (no)

Novelty and inventive step (yes)

Procedural violations: Remittal (no), reimbursement of the appeal fee (no)

Decisions cited:

T 0914/02



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Case Number: T 1985/16 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 6 September 2018

Appellant: Microlife AG
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Representative: Hepp Wenger Ryffel AG
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Respondent: EXERGEN CORPORATION
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 30 June 2016
rejecting the opposition filed against European
patent No. 1114302 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman R. Bekkering
Members: F. J. Narganes-Quijano
G. Decker

Summary of Facts and Submissions

- I. The appellant (opponent) lodged an appeal against the decision of the opposition decision rejecting the opposition against European patent No. 1114302.

The opposition filed by the appellant against the patent as a whole was based on the grounds for opposition of added subject-matter (Article 100(c) EPC 1973), and of lack of novelty and of inventive step (Article 100(a) together with Articles 54(1) and 56 EPC 1973).

Among the documents cited during the first-instance proceedings, the following documents have been considered by the parties during the appeal proceedings:

- D1: US 5 653 238 A
- D3a: "Mother and Baby", Vol. 260, June 1998, Taiwan; 3 pages
- D3b: "Mother and Baby", Vol. 261, July 1998, Taiwan; 3 pages
- D3c: "Mother and Baby", Vol. 262, August 1998, Taiwan; 3 pages
- D7: "Doc. Thermo - Instant Thermometer", manual, model HD-11, COMDEK
- D7a: English language translation of document D7
- D7b: Warranty card, COMDEK Industrial Corp., model HD-11
- D8a to D8d: Letters by M. Pompei dated 13 June 1997, 15 June 1997, 20 July 1997 and 10 August 1997
- D9: US 5 386 831 A

- D10: "Temperature Assessment via the Temporal Artery: Validation of a New Method", M. Pompei; EXERGEN Corporation, 9:26 Rev. 5, 1999; pages 1 to 41
- D11: Certificate of excellence, "Doc. Thermo Instant Thermometer HD-11", 4 December 1998; 1 page
- D12: Overview of "Doc. Thermo" Series models, COMDEK Industrial Corp.; undated
- D13: "Arterial Thermometry Via Heat Balance at the Ear", F. Pompei; Medical Electronics, reprinted from October 1996 issue; pages 1 to 7
- D14: CETRA - Taipei Int'l Medical equipment & Pharmaceuticals Show - Exhibition Extra; Issue 1, 8 November 1997; 1 page
- D15: Excerpt from Trademark register Taiwan, Trademark "Doc. Thermo", 8 August 1998
- D16: "Überwachung der Körpertemperatur", R. Kramme; Medizintechnik - Verfahren, Systeme und Informationsverarbeitung, Springer-Verlag, 1997; 2 pages
- D17: Excerpt from taiwantrade.com, "Doc. Thermo", model HD-11, 5 February 2015
- D18: Deposition of F. Pompei, Exergen v. Wal-Mart, "Exhibit 8", 8 December 2002
- D19: Letter by F. Pompei dated 8 February 2006
- D20: US 6 030 342 A
- D21: "Low Uterine Bloodflow Treatment", Steiner-Victorin et al.; Human Reproduction, Vol. 11(6), June 1996, 8 pages
- D22: "D-series Handheld IR Scanners", EXERGEN Corporation
- D23: "Non-Invasive Arterial Thermometry", F. Pompei; Physics and Physiology to Physicians and Nurses, 16 September 1997; 1 page

D24: "Merton Bernfield", memorial minutes;
2 pages.

- II. In its decision the opposition division held that none of the grounds for opposition invoked by the opponent opposed to the maintenance of the patent as granted. The opposition division held *inter alia* that
- the subject-matter of claim 1 did not extend beyond the content of the application as originally filed (Article 100(c) EPC 1973);
 - the patent validly claimed priority from application US 151482 of 11 September 1998;
 - document D7 represented state of the art within the meaning of Article 54(2) EPC 1973;
 - document D13, although late filed, was admitted into the proceedings;
 - documents D3a to D3c, D8a to D8d, D9 to D12 and D14 to D24 had been filed late and were not admitted into the proceedings;
 - the subject-matter of claim 1 was new, in particular over the disclosure of document D1; and
 - the subject-matter of claim 1 involved an inventive step, in particular over a combination of document D13 as closest state of the art with document D7, and also over document D7 as closest state of the art, either alone or in combination with document D13.
- III. With the statement setting out the grounds of appeal the appellant requested that the decision under appeal be set aside and the patent be revoked, and that the appeal fee be reimbursed pursuant to Rule 103(1)(a) EPC. The appellant also requested oral proceedings on an auxiliary basis.

With the statement setting out the grounds of appeal the appellant filed the following documents:

A1: copy of the communication of the opposition division dated 9 September 2014

A2: English translation of document D7b.

- IV. With its letter dated 10 March 2017 the respondent (patent proprietor) filed submissions in reply to the statement of grounds of appeal. The respondent requested that none of documents D3a to D3c, D8a to D8d, D9 to D12, and D14 to D24 be admitted into the proceedings, and that the case be remitted to the opposition division in the event that any of these documents would be admitted into the proceedings.
- V. In a communication annexed to summons to oral proceedings the board gave a preliminary assessment of the case.
- VI. With its letter dated 17 July 2018 the appellant withdrew the request for oral proceedings and informed the board that it would not attend the oral proceedings.
- VII. With the respective letters dated 3 August 2018, 20 August 2018, and 4 September 2018 the respondent, the appellant, and the respondent again filed further submissions.
- VIII. Oral proceedings were held before the board on 6 September 2018 in the absence of the appellant.

The chairman noted that the appellant had requested that the decision under appeal be set aside and the patent be revoked, and that the appeal fee be reimbursed.

The respondent requested as a main and sole request that the appeal be dismissed, and the appeal fee not be reimbursed.

At the end of the oral proceedings the chairman announced the decision of the board.

IX. Claim 1 as granted reads as follows:

"A method of detecting human body temperature by scanning a temperature detector across a region of a forehead to measure a peak temperature reading of skin over a temporal artery and computing a body temperature as a function of the peak temperature based on a model of heat balance".

The claims of the patent as granted also include dependent claims 2 to 9 all referring back to the method defined in claim 1.

Reasons for the Decision

1. The appeal is admissible.
2. *Article 100(c) EPC 1973*
 - 2.1 The opposition division held in the decision under appeal that the objections raised by the appellant in support of the grounds for opposition under Article 100(c) EPC 1973 were not persuasive. With the statement of grounds of appeal the appellant has disputed specific aspects of the opinion of the

opposition division according to which the two following features of claim 1:

a) "scanning a temperature detector across a region of a forehead to measure a peak temperature reading of skin over a temporal artery", and

b) "computing a body temperature"

did not extend beyond the content of the application as originally filed.

As regards feature a), the appellant has submitted that there was no clear and unambiguous disclosure in the application as originally filed of scanning the temperature detector "across a region of a forehead" as claimed. In particular, the appellant has submitted that the forehead region was a larger region than only the forehead itself, and that the application as originally filed disclosed scanning the detector across the forehead including a temporal artery, i.e. to scan across the complete forehead, and has referred in this respect to claim 1 and dependent claim 10, and the passages on page 2, lines 26 to 28, and page 5, line 18 to page 16, line 1, of the application as originally filed (see publication WO 0016051).

However, none of the passages of the application as originally filed referred to by the appellant (see in particular claim 1 : "scanning a temperature detector across a forehead"; dependent claim 10; "the temperature detector is scanned across a temporal artery"; page 2, lines 26 to 28: "detecting the temperature of the forehead directly over the superficial temporal artery"; and page 5, lines 18 and 19: "the temporal arteries [...] extend upwardly toward the side of the human face and bifurcate [...] in the forehead region") require scanning the complete forehead, or the complete forehead region (identified

by the appellant as a larger region than the forehead itself). On the contrary, the application as originally filed focuses on the temporal artery passing through the forehead region (page 5, lines 18 to 21 together with Fig. 1) for carrying out the scanning operation with the temperature detector (dependent claim 10, and page 5, line 28 to page 6, line 1) and for subsequently determining the temperature (page 2, lines 26 to 28, and page 5, lines 21 to 27). The skilled reader would therefore understand that - as submitted by the respondent - what is required in the application as originally filed is scanning the temperature detector across the temporal artery in a corresponding region of the forehead, and therefore scanning the detector across a region of the forehead as claimed.

2.2 As regards feature b), the appellant has referred to several passages of the application as originally filed (page 6, lines 1 to 3, and page 13, second paragraph), and has submitted that the application as originally filed only disclosed the computation of the internal body temperature, and that there was no disclosure in support of the computation of a general body temperature as claimed, which would also cover the external body temperature, and more particularly the skin temperature.

The respondent, for its part, has submitted that the patent specification discloses consistently that a skin temperature is measured for the purposes of computing the temperature of the body, i.e. the internal temperature of the body, and that the skilled person would construe the claimed computed body temperature as referring to the internal body temperature.

The board agrees with the appellant that the disclosure of the original application is consistently directed to the computation of the internal body temperature (see claims 4, 11, 21, 29 and 35, and the passages on page 4, lines 12 to 19, page 6, lines 1 to 3, page 10, lines 9 to 12, page 11, lines 10 to 12, and page 13, second paragraph, of the description of the application as originally filed), the skin temperature being disclosed in the application as originally filed only as a value to be taken into account when computing the internal body temperature (see page 4, lines 12 to 16, and page 10, line 6 to page 11, line 12). The board also agrees with the appellant in as much as the expression "body temperature", when taken in isolation, may refer to the internal body temperature, but also to the external body temperature.

However, the claimed expression "body temperature" is to be construed in the technical context of the claimed subject-matter. Claim 1 is directed to the detection of the "human body temperature" by first scanning a temperature detector across a specific region of the forehead to obtain a peak temperature reading of skin, and then computing "a body temperature" as a function of the peak temperature based on a model of heat balance, and therefore pertains to a technical field in which the pertinent skilled person to be considered is an engineer in the specific area of medical instruments. In the opinion of the board, this skilled person reading the claim would understand that the body temperature to be computed refers, in the technical context of the claim, to the body temperature of interest in the general medical field, i.e. to the internal body temperature - and in particular to the core, oral or rectal temperature, see for instance page 1, lines 15 to 17, page 6, lines 1 to 3, and

page 13, lines 12 to 15 of the application as originally filed, and the corresponding passages of the description of the patent specification. This construction of the claimed expression is confirmed by the fact that, while the temperature detector itself would be sufficient to read and determine the external body temperature at a specific external region of the body, i.e. at a specific region of the skin, the claimed method requires the computation of the temperature based on a heat-balance approach, thus indicating that the body temperature to be computed refers to the temperature of a region of the body that is generally not directly accessible - or at least not easily or conveniently directly accessible. In addition, this construction of the claimed subject-matter is consistent with the description of the patent specification (see the passages of the description corresponding to the passages of the description of the original application cited in the previous paragraph above).

For these reasons, the board is of the opinion that, as submitted by the respondent, the claimed expression "body temperature" refers in the technical context of the claimed subject-matter to the internal temperature of the body, and that therefore the claimed subject-matter does not constitute an unallowable generalization of the content of the application as originally filed.

- 2.3 For these reasons, in the board's view the objections raised by the appellant under Article 100(c) EPC 1973 are not persuasive.
3. *Documents D3a to D3c, D8a to D8d, D9 to D12, and D14 to D24 - Admissibility*

None of documents D3a to D3c, D8a to D8d, D9 to D12, and D14 to D24 submitted by the appellant during the first-instance proceedings after the opposition period were admitted by the opposition division into the proceedings.

- 3.1 Documents D3a to D3c, D8a to D8d, D9, D11, D12, D14, D15, D17 to D20, and D22 to D24

In the communication annexed to the summons to oral proceedings the board noted the following:

- Except for the question of whether or not the decision of the opposition division not to admit documents D8a to D8d, D9, D12, D15, D17 to D20, and D22 to D24 into the proceedings was tainted by a procedural violation (see point 7.2 below, paragraphs c) and d), and points 7.2.3 and 7.2.4 below), none of these documents played a role in the submissions filed by the parties during the appeal proceedings and relating to the substantive issues under consideration (in particular, novelty and inventive step).

- Documents D3a to D3c, D11 and D14 have been referred to by the appellant in respect of its objection that the non-admission of the same into the proceedings was tainted by a procedural violation (see point 7.2 below, paragraphs c) and d), and points 7.2.3 and 7.2.4 below) and, as regards the content of the same, they have been referred to during the appeal proceedings only as evidence in support of the public availability of the device shown in the manual D7 and also of the manual itself. However, in its decision the opposition division found that the content of document D7 constituted prior art within the meaning of Article 54(2) EPC, and in the present appeal proceedings the respondent has expressly stated that

this finding of the opposition division was not contested (letter dated 10 March 2017, point 40).

In the mentioned communication the board expressed its preliminary opinion that, in view of the mentioned circumstances, the board saw no reason for addressing during the appeal proceedings the question of whether any of documents D8a to D8d, D9, D12, D15, D17 to D20, and D22 to D24, or any of documents D3a to D3c, D11 and D14, should be admitted into the appeal proceedings. However, during the oral proceedings the board noted that with its submissions relating to the procedural violations alleged by the appellant in respect of the non-admission of documents the appellant disputed the non-admission of the same, and that therefore the corresponding submissions were to be interpreted as implicitly requesting the admission of the documents into the proceedings. Accordingly, the board addressed the issue of the admissibility of these documents into the appeal proceedings.

In view of the fact that, as already mentioned above,

- the content of documents D8a to D8d, D9, D12, D15, D17 to D20, and D22 to D24 played no role in the submissions filed by the parties during the appeal proceedings and relating to the substantive issues under consideration, and

- the content of documents D3a to D3c, D11 and D14 had only been referred to in support of a finding that is no longer contested in the present appeal proceedings, namely that the manual shown in document D7 constitutes state of the art within the meaning of Article 54(2) EPC 1973,

during the oral proceedings the board saw no reason to reverse the decision of the opposition division in this respect, and decided not to admit documents D3a to D3c,

D8a to D8d, D9, D11, D12, D14, D15, D17 to D20, and D22 to D24 into the appeal proceedings (Article 12(4) RPBA).

3.2 Documents D10, D16 and D21 - Admissibility

The appellant has contested the decision of the opposition division not to admit documents D10, D16 and D21 into the proceedings. In addition, the appellant has presented lines of arguments of lack of inventive step based on the application of the teaching of these documents to the disclosure of documents D1 and D13, and has therefore implicitly requested that these documents be admitted into the proceedings. The respondent has disputed the admissibility of these documents.

- 3.2.1 Document D10 has been published in 1999, and therefore after the priority date (11 September 1998) of the patent in suit. It has been undisputed during the appeal proceedings that, as held by the opposition division in its decision, the priority date has been validly claimed. Therefore, the content of document D10 itself does not constitute state of the art (Article 54(2) 1973 EPC). The document, however, has been referred to by the appellant as evidence of an allegation of public prior use conducted by the respondent before the priority date of the patent.

More particularly, document D10 originates from the respondent itself and reports on the tests carried out with infrared thermometers "designed to measure human body temperature at the skin surface over the temporal artery" in a large number of patients "over the period from April through August 1998 at four major academic teaching hospitals in the Boston and New York City

areas" (document D10, page 13, third to sixth paragraphs). However, there is no evidence that all the information reported in document D10 was rendered available to the public during the tests reportedly carried out before the priority date. In particular, the board adheres to the appellant's view that a number of the patients "at least recognized that a device was measuring on the forehead across the skin surface" (grounds of appeal, page 8, second paragraph), but, as submitted by the respondent, there is no evidence that the same patients obtained specific information on the tests, in particular that what was being measured was temperature at a particular location, and more specifically "human body temperature at the skin surface over the temporal artery" as reported in document D10.

In view of the absence of evidence that the measurement of the "human body temperature at the skin surface over the temporal artery" by means of a thermometer disclosed in post-published document D10 was rendered available to the public in the circumstances reported in the document, and since the case presented by the appellant in respect of the alleged prior use focused during the appeal proceedings on this feature - in particular, as a teaching to be applied to document D13 as closest state of the art in the assessment of inventive step -, the board concluded during the oral proceedings that the alleged public prior use was not sufficiently substantiated, at least not as regards the relevant facts submitted by the appellant, and decided not to admit document D10 into the appeal proceedings (Article 12(4) RPBA).

3.2.2 Document D16 pertains to the field of monitoring the temperature of the human body, and discloses the

forehead as a location of the body for carrying out the measurement of temperature with a temperature detector and subsequently determining the body temperature (Table 1 on the second page, second paragraph). Document D21 is a medical search article disclosing the measurement of the skin temperature on the forehead with a digital infrared thermometer (page 3, section "Skin temperature").

During the appeal proceedings the appellant has submitted that documents D16 and D21 were filed in reply to the communication of the opposition division dated 9 September 2014 (see document A1), and has referred to the teaching of documents D16 and D21 relating to the measurement of the temperature on the forehead in the lines of argument of lack of inventive step submitted in relation to the combination of the closest state of the art represented by either one of documents D1 and D13 with the teaching of document D16 or D21. These same lines of arguments, however, involved the combination of any of documents D1 and D13 with the teaching of document D7 also disclosing the measurement of the temperature on the forehead (see point 4.2 below). It follows that none of the documents D16 and D21 goes beyond the disclosure of document D7 in respect of the appellant's submissions. For these reasons, the board concluded during the oral proceedings that none of the documents D16 and D21 was more relevant than document D7 already present in the proceedings, and decided not to admit documents D16 and D21 into the appeal proceedings (Article 12(4) RPBA).

4. *Novelty*

In its decision the opposition division held that the subject-matter of claim 1 was new over the prior art

under consideration, and in particular over document D1. This finding of the opposition division has not been contested in appeal, and the board sees no reason for doing otherwise. The parties, however, have expressed different views in the identification of the distinguishing features of the claimed method over the documents considered by the appellant as representing the closest state of the art, i.e. over each of documents D1, D7 and D13.

4.1 Document D1

It is undisputed by the parties that document D1 (claim 27, together with column 3, lines 6 to 10, lines 20 to 25, and lines 39 to 41, and column 17, lines 40 to 55) discloses a method of detection of the human body temperature by scanning the ear canal with a temperature detector, measuring a peak temperature value, and computing a core body temperature as a function of the peak temperature based on a model of heat balance, and that the document does not disclose scanning a region of the forehead.

In addition, in the board's view, and contrary to the appellant's submissions and to the opposition division's view, the peak temperature value measured according to the method of document D1 does not constitute "a peak temperature reading of skin over a temporal artery" as claimed. In particular, as submitted by the respondent, no such temperature reading of "skin over a temporal artery" appears to be anatomically possible in the ear canal, at least not to a degree comparable to that achievable when scanning the temperature detector across a region of the forehead as claimed. Furthermore, there is no evidence in support of the appellant's submission that in

document D1 the peak temperature would be measured through the skin within the ear canal over the temporal artery due to the anatomical proximity of the temporal artery to the ear canal, especially as such measurement would be at variance with the disclosure of document D1 that the peak radiation, and therefore the peak temperature, relates to the tympanic temperature (D1, column 3, lines 1 to 10, and column 5, lines 19 to 30). In addition, the scan operation disclosed in document D1 for the purpose of detecting the peak radiation is carried out only over the part of the ear canal adjacent to and including the tympanic membrane (column 9, lines 20 to 29), and not over the whole ear canal as the submissions of the appellant appear to assume.

For these reasons, the board concludes that claim 1 differs from the disclosure of document D1 in that the temperature detector is scanned across a region of a forehead to measure a peak temperature reading of skin over a temporal artery.

4.2 Document D7

It has been undisputed during the appeal proceedings that, as found by the opposition division (see point 3.1 above, second paragraph, second sub-paragraph), the manual of the ear temperature detector "COMDEK Doc. Thermo" shown in document D7 (see the English language translation D7a, together with document D7b showing a warranty card and a translation thereof in document A2) represents state of the art. Document D7 discloses the detection of the human body temperature by means of the ear temperature detector. The temperature detector is primarily used to scan the interior of the ear, and the document also proposes the use of the detector to

measure the skin temperature, in particular at a location behind the ear ("ear posterior") or at the forehead, more particularly by aiming the detector at the temple, by continuously scanning the detector and detecting the highest temperature (document D7a, paragraph bridging pages 1 and 2, paragraph bridging pages 6 and 7, section "Page 10", and the second of the pictures on the last page of the document).

The appellant has submitted that the scanning operation of the forehead disclosed in document D7 necessarily included scanning of the temporal artery and that, in addition, the highest value of the temperature during the scanning of the forehead was only detected if the scan passed over the temporal artery, so that document D7 implicitly disclosed scanning of the skin over a temporal artery. However, as submitted by the respondent, there is no clear and unambiguous disclosure in document D7 that the scanning of the forehead would specifically involve scanning of the skin over a temporal artery. In particular, document D7 does not require scanning the whole forehead, and the mere detection of a highest value of the temperature during a specific scanning of the skin does not necessarily imply that the highest value corresponds to the value measured during scanning the forehead over a temporal artery.

Therefore, as found by the opposition division in its decision, the method of claim 1 differs from the disclosure of document D7 in that the scanning operation of the forehead for the purpose of detecting the highest temperature value is carried out across a region of the forehead to measure a peak temperature reading of the skin over a temporal artery. Already for

this reason, the subject-matter of claim 1 is new over document D7.

In addition, document D7 does not disclose the determination of the body temperature as a function of the detected highest temperature value in terms of a computation based on a model of heat balance as claimed. The appellant has submitted that this feature is not technical and would therefore not contribute to inventive step. This issue is addressed in detail in point 5.1.1 below and, since claim 1 is already new over the disclosure of document D7 by virtue of the distinguishing feature identified in the former paragraph, there is no need to address the question of whether the mentioned feature contributes to novelty of the claimed method.

4.3 Document D13

It is undisputed by the parties that document D13 discloses a method of detecting human body temperature by scanning a temperature detector in the ear canal, measuring the highest temperature value, and computing the body temperature as a function of the highest temperature value based on a model of heat balance (title, page 3, first paragraph of the right column, page 6, paragraph bridging the left and the right columns, and the second and fifth paragraphs of the right column, and paragraph bridging pages 6 and 7, together with equation 10 on page 5 and the corresponding disclosure). It is also undisputed by the parties that document D13 does not disclose scanning the temperature detector across a region of the forehead.

In addition, the board is of the opinion that, contrary to the appellant's submissions and to the view expressed by the opposition division in its decision, the temperature value measured in the interior of the ear according to the method of document D13 does not correspond to "a peak temperature reading of skin over a temporal artery" as claimed for reasons analogous to those given in point 4.1 above in respect of document D1.

The board concludes that claim 1 differs from the disclosure of document D13 in that the temperature detector is scanned across a region of a forehead to measure a peak temperature reading of skin over a temporal artery.

4.4 The board concludes that the subject-matter of claim 1, and therefore also that of dependent claims 2 to 9, is new over the prior art considered by the appellant (Article 54(1) EPC 1973).

5. *Inventive step*

During the appeal proceedings the appellant has submitted alternative lines of argument of lack of inventive step based on each of documents D1, D7 and D13 as closest state of the art.

5.1 Document D1 in combination with document D7

5.1.1 The respondent has submitted that the objective problem solved by the claimed method over document D1 is the provision of a more convenient method for accurately measuring body temperature which does not require insertion of a measurement probe into the ear. The appellant has argued that the distinguishing features

identified in point 4.1 above had no influence on the accuracy, in particular in view of the fact that claim 1 does not specify the empirically determined values involved in the claimed model of heat balance, and has submitted that the objective problem should only be formulated as the provision of a method of measuring temperature which is convenient for the patient.

The method of document D1 already involves the computation of a core body temperature based on a model of heat balance on the basis of a peak temperature measured by scanning the ear canal, and this method already provides a predetermined level of accuracy, and the board does not see in the appellant's submissions any reason why the fact of carrying out the mentioned computation on the basis of a peak temperature measured by scanning a region of a forehead over a temporal artery instead of a peak temperature measured by scanning the ear canal would be detrimental to the level of accuracy in the determination of the body temperature achieved by the method of document D1. For these reasons, the board agrees with the formulation of the objective problem submitted by the respondent and recited above.

- 5.1.2 The board concurs with the appellant that the skilled person, confronted with the problem of providing a more convenient method for accurately measuring body temperature which does not require insertion of a measurement probe into the ear, would consider document D7. This document discloses an ear temperature detector, and it also discloses as an alternative the use of the detector for measuring the skin temperature at the forehead, and in particular at the temple (see point 4.2 above). The application of the teaching of

document D7 to the method disclosed in document D1 would, however, lead to carrying out the measurement of the temperature at the forehead, and specifically at the temple. However, neither document D7, nor the application of the teaching of this document to the method of document D1, would lead to carrying out the measurement by scanning the temperature detector across a region of the forehead specifically including a temporal artery as required by the claimed method.

The appellant has submitted that the temperature measured in the ear canal according to the method of document D1 would intrinsically relate to a peak temperature reading of skin over a temporal artery, and that consequently the application of the teaching of document D7 to the method of document D1 would lead the skilled person to scan the region of the forehead including a temporal artery. However, as already concluded in point 4.1 above, second paragraph, in the board's opinion the peak temperature value measured according to the method of document D1 does not constitute "a peak temperature reading of skin over a temporal artery". Incidentally, the board notes that even assuming that this would have intrinsically been the case, the knowledge that a peak temperature reading of skin over a temporal artery would intrinsically be measured when scanning the ear canal was not disclosed or taught in document D1; consequently, the assessment of inventive step could not be based on the skilled person being aware of this knowledge.

- 5.1.3 The board concludes that the combination of the disclosure of document D1 and the teaching of document D7 does not render obvious the claimed invention.

5.2 Document D7 in combination with one of documents D1 and D13

5.2.1 In the line of argument of lack of inventive step based on document D7 as closest state of the art the appellant has submitted that the feature of the claimed method relating to the computation of a body temperature based on a model of heat balance was not disclosed in document D7 (see point 4.2 above), but that this feature constituted a purely mental act or mathematical solution and was therefore not technical as such, with the consequence that the corresponding claimed feature did not contribute to inventive step.

The respondent has contested the appellant's view in this respect and has submitted that the term "computing" of claim 1 implied the use of physical, computational means to carry out the computing, that the step of "computing a body temperature" constituted at least part of the technical solution for solving a technical problem, that the computation was carried out on a measured physical parameter and not on an abstract entity, and that, in view of the equations shown in the patent specification (see in particular equation (6) and the mathematical expression in paragraph [0047]), the computations to be carried out on the basis of the model of heat balance were too complex to be carried out by a pure mental act.

In the board's view the "model of heat balance" defined in claim 1 encompasses a purely mathematical algorithm, i.e. an entity which, by itself, is excluded from patentability (Article 52(2)(a) EPC). Furthermore, the claimed expression "computing a body temperature [...] based on a model of heat balance" encompasses carrying out the computation as a mental act, i.e. as an

activity excluded, by itself, from patentability (Article 52(2)(c) EPC), and - contrary to the respondent's view - it does not necessarily imply the use of computational means, i.e. of some physical, technical means, for carrying out the determination of the body temperature. In addition, the mere fact that the values being computed have a technical meaning is not a sufficient condition to conclude that the computation is itself technical or requires technical means (see, for instance, decision T 914/02, point 2.3.3 of the reasons for the decision). As regards the degree of complexity that might be involved in the computation of the body temperature on the basis of the model of heat balance, the board notes that methods for performing mental acts are excluded according to Article 52(2)(c) EPC independently of any specific criteria such as the degree of complexity of the methods, and that in the board's view the possible high degree of complexity or difficulty involved in carrying out a specific method for performing a mental act is - contrary to the respondent's submissions - not a valid reason for excluding the method from the exclusions listed in Article 52(2)(c) EPC (see in this respect decision T 914/02, *supra*, point 2.3.4 of the reasons for the decision).

Consequently, the claimed step relating to "computing a body temperature as a function of the peak temperature based on a model of heat balance" encompasses a purely mathematical algorithm carried out as a purely mental act excluded from patentability under Article 52(2)(c) EPC. Therefore, computing based on a model of heat balance as claimed cannot, by itself, contribute to inventive step.

However, where a claim consists of technical and non-technical features, if the non-technical feature interacts with the technical features so as to provide a technical effect and thus contributes to the technical character of the claimed subject-matter, the non-technical feature is to be taken into account in the assessment of inventive step (see "Case Law of the Boards of Appeal", EPO 8th edition 2016, section I.D.9.1, in particular section I.D.9.1.3). In the present case the claimed step of "computing a body temperature as a function of the peak temperature based on a model of heat balance" contributes to the technical character of the claimed method in that it results in the body temperature being provided, and therefore is to be taken into account in the assessment of inventive step.

5.2.2 While the appellant has submitted that, in view of the distinguishing features of claim 1 over document D7 as closest state of the art, the objective problem solved by the claimed method would be the determination of the core body temperature from a value of the skin surface temperature, the respondent has submitted that the objective problem should be formulated in terms of enabling a convenient measurement with higher accuracy relative to the temperature reading at the forehead over the eyebrow.

In the opinion of the board the reading of the temperature across a region of a forehead over a temporal artery provides a value of the temperature that is closer to that of the internal body than just a reading of the temperature across a region of a forehead, for instance over the eyebrow, thus rendering the determination of the temperature according to the claimed method more accurate. For this reason, the board is of the opinion that the objective problem

formulated by the respondent and including a reference to the higher accuracy is more appropriate than that formulated by the appellant.

Both documents D1 and D13 disclose the determination of the body temperature as a function of a value of the temperature measured by scanning the ear canal with a temperature detector (see points 4.1 and 4.3 above). The application of the teaching of any of these two documents to the method disclosed in document D7 in order to solve the objective problem would then suggest basing the determination of the body temperature, not on a value of the skin temperature measured at the forehead (and in particular at the temple, or alternatively at a location behind the ear as also disclosed in document D7), but at the ear canal, a possibility that is also disclosed in document D7, see point 4.2 above, first paragraph. Consequently, neither document D1, nor document D13, nor the application of the teaching of these documents to the disclosure of document D7 would suggest basing the determination of the body temperature on the value of a peak temperature reading of skin over a temporal artery measured by scanning a region of the forehead as claimed.

5.2.3 The board concludes that the combination of the disclosure of document D7 and the teaching of any of documents D1 and D13 does not render obvious the claimed invention.

5.3 Document D13 in combination with document D7

The appellant has submitted that, in view of the distinguishing features of claim 1 over document D13 as closest state of the art (see point 4.3 above), the objective problem solved by the claimed method is only

to find an alternative measuring site which is more convenient for the patient. The respondent has disputed this formulation and has submitted that the objective problem is to be seen in enabling a convenient measurement without any loss of accuracy relative to the ear-canal measurement approach of document D13.

The board considers that the distinguishing feature of claim 1 over document D13, i.e. scanning the temperature detector across a region of the forehead over a temporal artery (see point 4.3 above), enables a more convenient measurement than the ear-canal measurement disclosed in document D13. In addition, by virtue of the distinguishing feature, the accuracy in the determination of the body temperature would at least be maintained. Therefore, the board adheres to the formulation of the objective problem by the respondent.

The skilled person, confronted with the objective problem under consideration, would consider the teaching of document D7 relating to measuring the skin temperature instead of the temperature in the interior of the ear (see point 4.2 above). However, the application of the teaching of document D7 would lead the skilled person to consider scanning the temperature detector of document D13 across the forehead, in particular over the temple, or behind the ear, but neither the teaching of document D7, nor the application of the teaching of this document to document D13 would lead the skilled person to consider specifically scanning the temperature detector across the forehead over a temporal artery in order to obtain a peak temperature reading of skin over the same as claimed.

The appellant has also submitted in respect of document D13 - as it was the case in respect of document D1, see point 4.1 above, second paragraph - that the temperature measured in the ear canal according to the method of document D13 would intrinsically relate to a peak temperature reading of skin over a temporal artery, and that this feature should be taken into account in the assessment of inventive step over document D13. This argument, however, is not found persuasive by the board for similar reasons to those given in the last paragraph of point 5.1.2 above in respect of document D1.

Therefore, also the line of argument of lack of inventive step based on the application of the teaching of document D7 to the disclosure of document D13 fails to convince the board.

- 5.4 The board concludes that the subject-matter of claim 1, and also that of dependent claims 2 to 9, involves an inventive step (Article 56 EPC 1973).
6. In view of the conclusions in points 2, 4 and 5 above, the board concludes that none of the grounds for opposition raised by the appellant prejudice the maintenance of the patent as granted.
7. *Alleged procedural violations - Request for reimbursement of the appeal fee, and question of remittal of the case to the department of first instance*
- 7.1 The appellant has requested the reimbursement of the appeal fee pursuant to Rule 103(1)(a) EPC and, in support of this request, has alleged a series of violations of the right to be heard (Article 113(1) EPC

1973 and Rule 111(2) EPC). The board has considered whether the alleged procedural violations would have justified the reimbursement of the appeal fee under Rule 103(1)(a) EPC and/or the remittal of the case under Article 111(1), second sentence, EPC together with Article 11 RPBA.

7.2 The procedural violations alleged by the appellant can be summarised as follows:

a) The appellant was not allowed to present during the first-instance oral proceedings arguments in support of the line of argument of lack of inventive step previously presented in writing and based on document D1 as the closest state of the art.

b) The decision contained no reasoning (Rule 111(2) EPC) as to why the line of argument submitted in writing and based on the combination of document D1 as closest state of the art with document D7 was not convincing.

c) During the first-instance oral proceedings the appellant was not allowed to present arguments in support of the admissibility of documents D3a to D3c, D8a to D8d, D9, D11, D12, and D14 to D24.

d) The sole reason given in the decision for the non-admission of documents D3a to D3c, D8a to D8d, D9, D11, D12 and D14 to D24 into the proceedings was that these documents did not appear to be more relevant than documents D1, D7 and D13, and therefore the decision was not properly reasoned (Rule 111(2) EPC).

7.2.1 According to the minutes of the first-instance proceedings (see page 3, first paragraph), the opposition division referred to the large number of lines of arguments of lack of inventive step presented in writing by the appellant and, after inviting the appellant "to argue only the strongest case", the

opposition division acceded to the appellant's intention "to present at least two such attacks", as it subsequently did. The board notes in this respect that the attempt by the opposition division to focus the appellant's case on the most relevant lines of argument was in conformity with the principle of economy and efficiency of the proceedings, especially in a case as the present one in which a big number (sixteen, see communication dated 21 October 2015, page 7) of lines of argument based on different combinations of documents had been submitted by the appellant in writing.

Furthermore, during the oral proceedings, after a discussion on the admissibility of document D13, on the status as prior art of document D7, and on the issue of inventive step over a combination of document D13 with document D7, the appellant "requested a possibility to present two further lines of argumentation" on the issue of inventive step, and the opposition division also acceded to this request (see minutes, last paragraph on page 5, and first paragraph on page 6). In addition, there is no indication in the minutes of the oral proceedings that the appellant was not allowed to address any further specific issue that the appellant considered pertinent and, more particularly, to present comments on the line of argument based on document D1 as the closest state of the art. The board also notes that according to the decision under appeal (see reasons for the decision, point 5, second paragraph) the appellant had submitted - presumably during the discussion on the admissibility of document D13 - that document D13 "appeared to be more relevant than D1" and "it was more detailed than D1".

In view of these considerations, the board sees no procedural violation in the allegation under paragraph a) of point 7.2 above.

- 7.2.2 As submitted by the appellant, the decision contains no reasoning in respect of the line of argument of lack of inventive step presented in writing and based on the combination of document D1 with document D7. However,
- the decision (see point 4 of the reasons) contains a detailed reasoning on the issue of novelty over document D1, and the opposition division identified the scanning across a region of the forehead as the sole distinguishing feature of the method of claim 1 over document D1 (see page 11, second paragraph of the decision) and also over document D13 (page 15 of the decision, third paragraph from the bottom);
 - the decision contains a reasoning as to why the combination of document D13 with the teaching of document D7 did not render obvious the claimed method (point 7.1 of the reasons);
 - the opposition division had already expressed in the communication dated 21 October 2015 (see page 7, last paragraph) its opinion that "D1 and D13 provide a similar disclosure of the closest prior art"; and
 - the opponent had acknowledged that D13 was "more relevant than D1" and "more detailed than D1" (reasons for the decision, point 5).

In these circumstances, although the decision contains no explicit reasoning in respect of the combination of document D1 with document D7, document D1 was not considered to be more pertinent than document D13 and therefore the combination of document D1 with document D7 was implicitly considered less promising than the combination of document D13 with document D7. Therefore, the line of argument based on a combination

of document D1 with document D7 can be considered to have been implicitly refuted in the decision under appeal in view of the reasoning concerning the combination of document D13 with document D7. The board also notes that during the oral proceedings the appellant did not identify the line of argument of lack of inventive step based on document D1 as the closest state of the art among the relevant ones, and in particular as going beyond the line of argument based on the combination of document D13 with document D7.

In view of the above considerations, the board is of the opinion that the lack of reasoning in the decision under appeal in respect of the combination of document D1 with document D7 (allegation b) in point 7.2 above) did not amount to a procedural violation, at least not to a substantial procedural violation that would justify for reasons of equity the reimbursement of the appeal fee under Rule 103(1)(a) EPC.

7.2.3 According to the minutes of the oral proceedings before the opposition division,

- after the opposition division had admitted document D13 into the proceedings (minutes, page 3, middle paragraphs), the appellant "requested a decision on the admissibility of the documents that had been late filed, which included documents D8-D12, and D14-D23" (minutes, page 5, fourth paragraph from the bottom);

- after the discussion on the admissibility of document D10 the opposition division decided not to admit document D10 into the proceedings (minutes, page 7, fourth paragraph); and

- subsequently, the opposition division informed the parties that documents "D3a-D3c, D8a-D8d, D9, D11, D12 and D14-D24 were not admitted into the proceedings

since they seemed not to contain disclosures that would have allowed more relevant attacks against inventive step of claim 1" (minutes, page 7, third paragraph from the bottom).

There is no indication in the minutes of the oral proceedings in support of the appellant's allegation that it was not allowed to present arguments in support of the admissibility of documents D3a to D3c, D8a to D8d, D9, D11, D12 and D14 to D24. At least at the time the appellant requested a decision on the admissibility of the documents, and possibly also later on when the opposition division informed the parties of the non-admission of the documents, the appellant could have invoked the right to be heard in order to have the opportunity to comment on the decision that it was requesting, and there is no evidence that the opposition division denied such an opportunity. In addition, the opposition division already commented in its communication dated 21 October 2015 (see point 5.1.3) on the admissibility of these documents and the appellant already had an opportunity to react to these comments in writing, as it actually did in its letter dated 29 April 2016.

Therefore, the board sees no procedural violation in the allegations under paragraph c) of point 7.2 above.

7.2.4 As regards the allegations under paragraph d) in point 7.2 above, the board notes the following:

During the oral proceedings the opposition division mentioned the reason why documents D3a to D3c, D8a to D8d, D9, D11, D12 and D14 to D24 were not admitted into the proceedings (see point 8.1.3 above), and in the

written decision the opposition division justified the non-admission of these documents on the grounds that "they were not submitted in due time and do not appear, prima facie, to be more relevant than the documents D1, D7/D7a and D13 which were chosen by the opponent as most suitable for preparing the strongest argumentation against the novelty and inventive step of the subject-matter of claim 1" (reasons for the decision, point 9). Therefore, the decision contained the corresponding reasons within the meaning of Rule 111(2) EPC. However, as submitted by the appellant, these reasons do not appear to constitute "a proper reasoning". More particularly, the mentioned reasoning contains no analysis of the submissions of the appellant relating to the content of the documents under consideration, and no details on the comparison of the content of the documents with the content of documents D1, D7 and D13.

As regards documents D3a to D3c, D8a to D8d, D9, D11, D12, D14, D15, D17 to D20, D23 and D24, the deficiencies mentioned above would amount to a deficient or incomplete reasoning in the written decision, but in the board's opinion they do not amount, in the specific circumstances of the case, to a substantial procedural violation that would justify for reasons of equity the reimbursement of the appeal fee for the following reasons:

- The opposition division already presented in point 5.1.3 of the communication dated 21 October 2015 annexed to the summons to the oral proceedings a detailed analysis of the reasons why it considered that documents D3a to D3c, D8a to D8d, D9, D11, D12, D14, D15, D17 to D20, and D23 were not more relevant than the remaining documents on file.

- Document D24 was only cited by the appellant for the purpose of indicating the professional profile of

Merton Bernfield, i.e. the addressee of the letter shown in document D8c, without the document itself having been identified during the proceedings as containing any substantive matter of relevance for the appellant's case (see appellant's letter dated 29 April 2016, second page, second paragraph).

As regards documents D16, D21 and D22, the board notes the following:

- On the one hand, there is no indication in the file as to the specific reasons of the opposition division for considering documents D16, D21 and D22 less relevant than the documents admitted into the proceedings and addressed in the opposition division's reasoning of lack of inventive step, and the fact that the decision is also silent as to such specific reasons constitutes a procedural violation.

- On the other hand, in point 5.1.3 of the communication dated 21 October 2015 the opposition division referred to document D16, and to document D21 together with document D22, as documents used in the plurality of lines of argument of the appellant (see items ii), vi), ix) and xv) on page 7, and point 5.2.2 of the communication), and none of the lines of argument involving either document D16 ("D1 + D16", and "D13 + D16"), or document D21 together with document D22 ("D1 + D21 + D22", and "D13 + D21 + D22") were subsequently identified by the appellant during the oral proceedings as being of a particular relevance over the lines of argument explicitly referred to by the appellant and discussed during the oral proceedings. In addition, during the oral proceedings the opposition division informed the parties that none of a series of documents, including documents D16, D21 and D22, appeared "to contain disclosures that would have allowed more relevant attacks" of inventive step

(minutes of the oral proceedings, page 7, third paragraph from the bottom), and there is no record in the minutes that the appellant reacted to this announcement of the opposition division, for instance by identifying any specific fact in support of the relevance of documents D16, D21 and D21 over the remaining documents considered during the oral proceedings.

In these circumstances, and in the specific context under consideration (see points 7.2.1 and 7.2.3 above), the fact that the appellant omitted consideration of documents D16, D21 and D22 during the oral proceedings can be seen as an implicit indication from the part of the appellant that the corresponding lines of argument were less relevant than the lines of argument addressed and discussed during the oral proceedings, and in particular the line of argument based on the combination of document D13 with document D7. The board also notes that at no point during the first-instance proceedings the appellant submitted that the teaching of document D16, or of document D21 together with document D22, would go beyond that of document D7 in respect of the application of the teaching of these documents to either one of documents D1 and D13 (compare, in particular, sections "(2)" and "(6)" with section "(1)" of point 4.1 of the letter dated 16 March 2015, and the corresponding arguments in point 4.2 of the same letter).

In view of the above considerations, the reimbursement of the appeal fee would not be equitable in the circumstances of the case. More particularly, the appellant failed to contest the opposition division's view that documents D16, D21 and D22 would be of no particular pertinence for the outcome of the case and,

in addition, the deficient reasoning in the decision in respect of the non-admission of these three documents into the proceedings was not the immediate and only cause of the need to appeal.

7.3 In addition, in view of the considerations in points 7.2.1 to 7.2.4 above, none of the allegations made by the appellant constitute a fundamental deficiency that would, in the circumstances of the case, justify the remittal of the case under Article 111(1), second sentence, EPC together with Article 11 RPBA. Moreover, apart from the fact that the patent (filing date of 10 September 1999) will expire in the near future, a remittal under Article 11 RPBA would have already been procedurally inappropriate because it would have compelled the opposition division to re-open examination of the same lines of argument identified by the appellant during the first-instance oral proceedings as the most relevant ones, these lines of argument having already been found not convincing in the decision under appeal and not being affected by the procedural violations alleged by the appellant.

7.4 The request for reimbursement of the appeal fee cannot be allowed under Rule 103(1)(a) EPC already because the appeal is not allowed - neither in substance (see point 6 above), nor in view of a procedural deficiency justifying the remittal of the case under Article 111(1), second sentence, EPC together with Article 11 RPBA (see point 7.3 above). In any case, even if the appeal had been allowed in substance, the reimbursement of the appeal fee would not have been justified in the circumstances of the case for the reasons given in points 7.2.1 to 7.2.4 above.

Order

For these reasons it is decided that:

1. The appeal is dismissed.
2. The request for reimbursement of the appeal fee is refused.

The Registrar:

The Chairman:



M. Kiehl

R. Bekkering

Decision electronically authenticated