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**Datasheet for the decision
of 10 December 2024**

Case Number: T 0441/22 - 3.4.03

Application Number: 15836637.7

Publication Number: 3196950

IPC: H01L35/32, H01L37/00, H02N11/00

Language of the proceedings: EN

Title of invention:

THERMOELECTRIC MATERIAL, THERMOELECTRIC CONVERSION ELEMENT,
AND MODULE GROUP COMPOSED OF COMBINATION OF THERMOELECTRIC
CONVERSION ELEMENTS AND -TYPE MODULE GROUP MADE OF
THERMOELECTRIC MATERIAL AND -TYPE MODULE GROUP MADE OF
THERMOELECTRIC MATERIAL OTHER THAN SUCH -TYPE MODULE GROUP

Applicant:

Mabuchi, Mahito

Headword:

Relevant legal provisions:

EPC Art. 84
EPC R. 103(4)(c)

Keyword:

Claims - clarity (no)

Stated non-appearance at summoned oral proceedings treated as
withdrawal of request for oral proceedings

Reimbursement of appeal fee at 25% - (yes)

Decisions cited:

T 0104/23

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

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Case Number: T 0441/22 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 10 December 2024

Appellant: Mabuchi, Mahito
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 8 October 2021
refusing European patent application No.
15836637.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman T. Häusser
Members: M. Papastefanou
T. Bokor

Summary of Facts and Submissions

- I. The appeal is against the decision of the examining division refusing European patent application No. 15 836 637 on the ground that the claims of the main and auxiliary requests then on file were neither clear nor concise, contrary to the requirements of Article 84 EPC.
- II. The appellant - applicant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims filed with the statement of the grounds of appeal.
- III. Claim 1 of the sole request on file reads as follows:

A thermoelectric conversion element, and/or a system made from thermoelectric conversion element being characterized as follow [sic]:
thermoelectric conversion elements connecting with one or more reservoirs of hot temperature and one or more reservoirs of low temperature determined from thermoelectric conversion element and reservoirs which are other structures,
having coating (15, 16, 24, 25, 34, 35, 43, 44, 84, 85, 105, 106, 137) on surface [sic] of the thermoelectric conversion elements (10, 11, 20, 21, 23, 30, 31, 40, 41, 80, 81, 90, 91, 100, 101, 130, 131, 133, 136) including coating material made from atom [sic] and/or molecules in which working substance can move smoothly and/or coating, so as to prevent accumulation of localized charge and/or working substance in the thermoelectric conversion elements and,
being an aggregation (139) recursively made from plural of thermoelectric conversion element [sic] or

thermoelectric material (130, 131, 132, 136) whose electromotive force is less than a predetermined threshold and material (133, 134, 138) in which working substance can move smoothly, insulation (136) of working substance, and whose dimensionless figure-of-merit is larger than original thermoelectric conversion elements or thermoelectric materials (130, 131, 132, 136) by creating a space (12, 22, 32, 42, 102, 112, 132) between thermoelectric conversion elements and/or thermoelectric materials or by bridging thermoelectric conversion elements and/or thermoelectric materials across space by a fine structure (83, 93), or furthermore whose efficiency [sic] close to the Carnot efficiency.

- IV. After the board issued its preliminary opinion in a communication under Article 15(1) RPBA, the appellant declared in a letter dated 15 November 2024 that it would not attend the scheduled oral proceedings. Thereafter the board cancelled the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.
2. Procedural matters: consequences of the appellant's stated non-attendance at the oral proceedings
 - 2.1 In the statement of the grounds of appeal, the appellant requested oral proceedings in the event the board did not intend to allow its request to grant a patent based on the submitted claims (see statement of the grounds of appeal, first page, penultimate paragraph). The board summoned the appellant to oral

proceedings as per this request. In a communication under Article 15(1) RPBA, the board expressed its preliminary opinion that the admittance of the claims filed with the statement of grounds of appeal was questionable and that claim 1 of the sole request on file was not clear (Article 84 EPC).

- 2.2 In reaction to this communication, the appellant informed the board that he would not attend the oral proceedings (letter dated 15 November 2024).
- 2.3 According to established case law and practice, the board interpreted this declaration by the appellant as an effective withdrawal of the request for oral proceedings (see *Case Law of the Boards of Appeal*, 10th edition 2022, III.C.4.3.2). Since the oral proceedings without the presence of the appellant would have served no purpose, the board decided to cancel them.
- 2.4 Pursuant to Article 12(8) RPBA, the decision is issued in writing, and the appellant is treated as relying on its written arguments (Article 15(3) RPBA).
- 2.5 According to Rule 103(4)(c) EPC, the appeal fee must be reimbursed at 25% if the request for oral proceedings is withdrawn within one month of notification of the communication issued by the Board of Appeal in preparation for the oral proceedings, and no oral proceedings take place. In the present case therefore the question may arise whether there is room for reimbursement of the appeal fee.
- 2.6 The board's communication was dated 6 November 2024 and the appellant's letter declaring that he would not attend the oral proceedings was dated 15 November 2024 (received on the same day by the EPO). The time limit

set by the rule has thus been respected. Since the oral proceedings were cancelled, the condition that no oral proceedings take place has also been met.

2.7 The only question which remains is whether the appellant's declaration that he would not attend the oral proceedings can be considered a withdrawal of the request for oral proceedings within the meaning of Rule 103(4)(c) EPC.

2.8 The board is aware that there seems to be no definite, consistent answer to that question in the case law of the Boards of Appeal at present.

2.9 The board considers that, since it interprets the appellant's declaration of non-attendance at the oral proceedings as a withdrawal of the corresponding request allowing it thus to cancel the scheduled oral proceedings, it is only fair to interpret that declaration in the same way in the application of Rule 103(4)(c) EPC. The board thus concurs with the reasoning of decision T 0104/23 (Reasons, point 11).

2.10 The appeal fee is therefore to be reimbursed at 25%.

3. Admittance and clarity of the sole request on file

3.1 Admittance

The appellant did not respond to the board's preliminary opinion on the admittance and the allowability of the sole request (cf. points 2.1 and 2.2 above). The board, after reviewing the case, sees no reason to deviate from it.

In view of its conclusion regarding clarity (see below), the board considers that the question of admittance of the submitted claims may be left open.

3.2 Clarity

- 3.2.1 Claim 1 defines, among others, a *thermoelectric conversion element ... made from thermoelectric conversion element being characterized [by] ... thermoelectric conversion elements connecting with one or more reservoirs of hot temperature and one or more reservoirs of low temperature determined from thermoelectric conversion element and reservoirs which are other structures.*
- 3.2.2 In other words, claim 1 defines a thermoelectric conversion element made from [a] thermoelectric conversion element wherein several thermoelectric conversion elements are connected to a number of reservoirs. For the skilled person it is unclear how a thermoelectric conversion element can comprise several thermoelectric conversion elements. It is also unclear what a "thermoelectric conversion element ... made from thermoelectric conversion element" is supposed to mean. It is not clear, for example, whether the two thermoelectric conversion elements mentioned in that expression are different or refer to the same entity.
- 3.2.3 The above definition also refers to reservoirs of *hot temperature* and reservoirs of *low temperature determined from thermoelectric conversion element*. The terms "hot" and "low" are relative terms which, in the absence of any other indication, do not clearly define any temperatures or temperature ranges. The expression "determined from thermoelectric conversion element" might be understood to indicate that the "hot" and

"low" temperatures relate to the temperature of the thermoelectric conversion element. However, this is still unclear since there is no indication of any comparison, e.g. "hotter" or "lower" temperatures than the temperature of the thermoelectric conversion element. Thus, the skilled person cannot derive any specific temperature values or ranges of values from such a definition in order to delimit the claimed scope. These features are therefore considered to be unclear, as well.

- 3.2.4 The same is valid for the definition of reservoirs of *other structures*. In the absence of any indication about what type of structures these "other structures" can be, the skilled person is not in a position to derive a clear meaning for this term, either.
- 3.2.5 Claim 1 defines further the coating to be used for the thermoelectric conversion elements: *having coating ... including coating material made from atom and/or molecules in which working substance can move smoothly and/or coating, so as to prevent accumulation of localized charge and/or working substance in the thermoelectric conversion elements*.
- 3.2.6 In the board's view, these features are formulated as results to be achieved and not as properties of the coating material. There is no information, for example, which material or which properties of a material can allow the working substance to move smoothly or can prevent accumulation of localized charge and/or working substance. These features are therefore considered unclear, as well.
- 3.2.7 Claim 1 also defines that the claimed thermoelectric conversion element is *an aggregation ... recursively*

made from plural of thermoelectric conversion element or thermoelectric material.

3.2.8 As with the first feature of the claim, this feature is unclear because it defines that the claimed thermoelectric conversion element is an aggregation of a plurality of thermoelectric conversion elements (see also point 3.2.2 above).

3.2.9 In the claimed specification that the thermoelectric material has *electromotive force ... less than a predetermined threshold and material ... in which working substance can move smoothly, insulation ... of working substance*, the expression "insulation ... of working substance" is unconnected to any of the other features and does not make any sense.

Regarding the specification of a material in which the working substance can move smoothly, reference is made to point 3.2.6 above. These features are found to be lacking clarity, as well.

3.2.10 The claim also contains the terms "fine structure" and "close to the Carnot efficiency" (*whose efficiency [is] close to the Carnot efficiency*, see last line of claim 1).

3.2.11 As with the terms "hot" and "low" temperatures (see point 3.2.3 above), the terms "fine" and "close" are relative terms, which, in the absence of any further information, do not provide the skilled person with a clear meaning. The skilled person would not be in a position to assess which structure can be considered "fine" or how close to the Carnot efficiency the efficiency must be in order to be considered "close" within the meaning of the claim. Therefore, these terms

are not clear, either.

3.2.12 The board's conclusion is, hence, that claim 1 of the sole request on file does not fulfil the clarity requirement of Article 84 EPC.

4. Since there is no allowable request on file, the appeal cannot succeed (Articles 97(2) and 111(1) EPC).

Order

For these reasons it is decided that:

1. The appeal is dismissed.
2. The appeal fee is to be reimbursed at 25%.

The Registrar:

The Chairman:



S. Sánchez Chiquero

T. Häusser

Decision electronically authenticated