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D E C I S I O N
of 7 July 1995

Case Number: T 0520/94 - 3.4.1

Application Number: 90106813.0

Publication Number: 0392437

IPC: H01L 39/24

Language of the proceedings: EN

Title of invention:
Method for annealing thin film superconductors

Applicant:
MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 96, 113, 123
EPC R. 67

Keyword:
"Communication under Article 96(2) EPC raising objection under Article 123(2) EPC but containing unclear reasoning"
"Applicant had no opportunity to comment (Article 113(1) EPC)"
"Necessity for further communication under Article 96(3) EPC"
"Allowable amendment (yes)"
"Novelty inventive step (yes)"
"Appeal allowed"
"Substantial procedural violation (yes)
"Reimbursement of appeal fee (yes)"

Decisions cited:
T 0084/82, T 0162/82, T0640/91, T 0951/92

Catchword:
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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0520/94 - 3.4.1

D E C I S I O N
of the Technical Board of Appeal 3.4.1
of 7 July 1995

Appellant: MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office dated 7 February 1994 refusing European patent application No. 90 106 813.0 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: G. D. Paterson
Members: U. G. O. Himmler
Y. J. F. van Henden

Summary of Facts and Submissions

I. This European application was filed on 10 April 1990 including Claim 1 reading as follows:

"1. Method for annealing thin film superconductors each formed on a substrate and made of an oxide having a layered structure including at least Cu-O layer being characterised by heating said thin film superconductor partially by a heating means and moving the heating portion of said thin film superconductor at a predetermined speed."

The Examining Division issued a communication on 24 May 1993, which cited:

D1= EXTENDED ABSTRACTS OF THE 20TH CONFERENCE ON SOLID STATE DEVICES AND MATERIALS, August 1988, pages 435-438, Tokyo, JP; Y. YONEZAWA et al.: "Preparation of high Tc oxide superconducting films by laser annealing"

and stated that the application lacked unity of invention under Article 82 EPC having regard to the presence of Claims 1 and 7. The communication suggested that the objection could be overcome by substituting a single independent claim comprising the features of Claims 1 and 7. It was also stated that such a claim "would probably also be acceptable as to novelty and inventive step." Suggestions were included as to the redrafting of the description and claims.

II. In reply, on 24 September 1993 the Applicant filed a new Claim 1 as the basis for further examination, reading as follows:

"1. A method for annealing thin film superconductors comprising a substrate and an oxide thin film formed on the substrate, the method comprising irradiating a zone on the oxide thin film with a high energy beam to heat said zone, wherein the high energy beam is scanned and the oxide thin film is moved at a predetermined speed relative to the scan direction to scan a predetermined area of the oxide thin film, c h a r a c t e r i z e d i n t h a t, said oxide thin film has the structure of multiple layers formed on and in parallel to the substrate and including at least two different layers deposited alternatingly, one of which being a Cu-O layer."

The Applicant explained that the new claim is supported by specific identified passages of the description, and that it intended to make the original Claim 7 dependent on the new main claim in order to overcome the non-unity objection. The Applicant submitted that the new claim was novel over document D1, because D1 solely discloses annealing of amorphous films, whereas the present invention deals with films having a multiple layer structure, as claimed. Furthermore, the Applicant explained why the claimed invention involves an inventive step, with reference to D1.

III. A further communication was issued by the Examining Division on 10 November 1993, raising the following objections to the new Claim 1:

(a) Lack of clarity under Article 84 EPC, having regard to the form of the claim, and stating that "A method can however not be characterised only by device features."

(b) Added subject-matter contrary to Article 123(2) EPC. In this respect the communication stated that

"According to the characterising portion of present claim 1, the oxide thin film has the structure of multiple layers. From the original documents it can however only be gathered that the crystallites of said film have a layered structure, which is normal for all oxide superconductors."

(c) Lack of novelty (Article 54 EPC) having regard to document D1, which was stated to describe a method for annealing thin film superconductors each formed on a substrate and made of an oxide ($Ba_2YCu_3O_x$) whose crystallites have a layered structure including at least a Cu-O layer.

IV. In a reply, dated 19 January 1994, the Applicant filed a new Claim 1, in which the characterising part of the claim was amended to read:

"Said oxide thin film has the structure of multiple crystal layers formed on and in parallel to the substrate and including at least two different layers deposited alternatingly, one of which (being) including a Cu-O layer" (amendments underlined).

The Applicant replied to the objections in the communication of 10 November 1993 as follows:

(a) Article 84 EPC: This objection was contested as having no proper basis.

(b) Article 123(2) EPC: The Applicant explained that the word "crystal" had been inserted into the claim to meet this objection, and that the basis for this insertion was found in specified passages of the description, where it is outlined that the oxide thin film has a layered crystal structure.

(c) Article 54 EPC: The Applicant again emphasised that the claimed invention concerns films "having the structure of multiple crystal layers whereas document D1 discloses annealing of amorphous films", and pointed out that the statement of the Examining Division (see III(c) above) was not true.

The Applicant also submitted evidence in relation to the question of inventive step, intended to establish that the claimed invention leads to superconductors exhibiting superior properties.

V. The Examining Division then issued a decision dated 7 February 1994, in which it held that Claim 1 as filed on 19 January 1994 was not acceptable under Article 123(2) EPC, on two points:

(i) The decision states at page 2, last three lines, that in the communication dated 10 November 1993, the Applicant had been informed that the feature that "the oxide thin film has the structure of multiple layers" could not be gathered from the documents as originally filed. Thus what had been objected to was the feature that "the oxide thin film had the structure of multiple layers", and the Applicant had not indicated any place in the original documents which shows this feature.

(ii) The decision also states that the Applicant had not explained wherein the original documents it was stated that the layers are deposited alternatingly.

No other grounds of objection were mentioned in the decision.

VI. In the Statement of Grounds of Appeal, the Appellant explained with reference to the file history that it was only when reading the passages in the decision which are quoted in section V(i) above that he knew that it must have been the word "multiple" that constituted the basis for the Article 123 EPC objection, and that the actual reason for this objection had not been evident from the reasoning contained in the communication dated 10 November 1993. Thus the reasoning in such communication was said to be vague and unclear, and the decision was said to be based on grounds on which the Applicant did not have an opportunity to present his comments, contrary to Article 113(1) EPC, which was a substantial procedural violation justifying refund of the appeal fee under Rule 67 EPC.

The Appellant further submitted that it had been apparent from his letter dated 19 January 1994 in reply to the above communication that the amendment proposed for Claim 1 (insertion of the word "crystal") was concerned with a feature which the Examining Division did not intend to object to, and that it would have been in accordance with good faith to issue a short further communication clarifying the real objection under Article 123 EPC, instead of issuing a decision of rejection immediately.

As to the objection concerning the word "multiple", the Appellant stated that "a structure of multiple crystal layers" is a structure of crystal layers having multiple

crystal layers, "multiple" meaning more than one, and that this meaning is further clarified in the rest of Claim 1 where the oxide thin film is stated to have "at least two different layers" which are deposited alternatingly, one of which including a Cu-O layer. Such a configuration is shown in Figure 1 and described in the associated description.

As the main request in the appeal proceedings, the Appellant requested grant on the basis of the claims as filed on 19 January 1994. An auxiliary request with a slightly modified Claim 1 was also submitted.

Reasons for the Decision

1. *Substantial procedural violation*

1.1 In the Board's view, the text of the communication from the Examining Division dated 10 November 1993 (the relevant part of which being set out in section III(b) above) gives the clear impression, especially having regard to the wording which was underlined, that the Examining Division objected to the proposed wording of Claim 1 as filed on 24 September 1993 because of the lack of reference to the crystal structure of the thin oxide film.

Thus no clear indication could be derived from this communication that the Examining Division objected to the word "multiple" in connection with the term "multiple crystal layers."

The reasoning set out in the decision dated 7 February 1994 explained this basis for the Article 123(2) EPC objection for the first time in a way which was clear

and understandable to the Applicant. In Decision T 951/92 dated 15 February 1995 (to be published in OJ EPO) the headnote states that in the context of examining procedure, "Article 113(1) EPC is intended to ensure that before a decision refusing an application for non-compliance with a requirement of the EPC is issued, the Applicant has been **clearly** informed by the EPO of the essential legal and factual reasons on which the finding of non-compliance is based, so that he knows in advance of the decision both that the Application may be refused and why it may be refused, and so that he may have a proper opportunity to comment upon such reasons and/or to propose amendments so as to avoid refusal of the application" (emphasis added).

When issuing the communication dated 10 November 1993, the Examining Division probably thought that its contents were clear, and that such communication clearly identified the feature of "multiple" layers as the basis for an objection under Article 123(2) EPC. However, in assessing whether Article 113(1) EPC has been complied with, what matters is whether the legal and factual reasons underlying the objection of non-compliance with the EPC have been **clearly** put to the Applicant in a communication, when such communication is considered on an objective basis.

As set out above, in the Board's view an objective reading of the communication dated 10 November 1993 would not have clearly indicated to the reader that an objection under Article 123(2) EPC would be based upon the word "multiple" in the context of the phrase "structure of multiple layers" in Claim 1 as filed on 24 September 1993. For this reason, in the Board's judgment the decision dated 7 February 1994 was issued in violation of Article 113(1) EPC.

1.2 Furthermore, even if the communication dated 10 November 1993 was thought to be clear when it was issued, and was thought to clearly identify the word "multiple" as the basis for an Article 123(2) EPC objection, nevertheless it must have been quite clear to the Examining Division from an objective reading of the Applicant's reply dated 19 January 1994 that the Applicant had not properly understood the intention underlying such communication, and had missed the point under Article 123(2) EPC which the Examining Division had intended to make. In such circumstances, the Examining Division should have issued a further communication clarifying the situation, instead of immediately issuing a decision, because there was a reasonable prospect that the issue of such a further communication and invitation to the Applicant to reply could lead to the grant of the application - see decisions T 84/82, (OJ EPO 1983, 451), T 162/82, (OJ EPO 1987, 533) and T 640/91 (OJ EPO 1994, 918).

1.3 Thus the sending of a further communication before issuing a decision in the present case was legally "necessary" within the meaning of Article 96(2) EPC, both in order to comply with Article 113(1) EPC, and also in the proper exercise of the Examining Division's discretion.

1.4 In the above circumstances, in the Board's judgment there was a substantial procedural violation during the proceedings before the Examining Division, and it is equitable that the appeal fee should be reimbursed under Rule 67 EPC, since for the reasons set out below the appeal is allowable.

2. *Allowability of the amendments under Article 123(2) EPC*

2.1 "structure of multiple crystal layers"

The Application as filed refers to "Related Art", and states in this context that Tl-Ba-Ca-Cu-O and Bi-Sr-Ca-Cu-O material exhibiting the highest critical temperature needs a high temperature process higher than 850°C which causes grain growth, and states that no method of forming thin films with a low temperature process has so far been realised.

A preferred embodiment of the invention is described with reference to the drawings. Figure 1 is stated at page 7, line 5 to be a schematic view showing a crystal structure of a layered oxide thin film superconductor including Cu-O layers, and at page 8, line 3 to show a schematic layered crystal structure of thin film oxide superconductor of $Bi_2Sr_2Ca_2Cu_3O_y$. This system is explained as an example. The individual elements and/or compounds are deposited from evaporation sources alternatively on a substrate at a temperature lower than 800°C in a gas including oxygen, so as to stack them periodically on the substrate, and thus to obtain thin film oxide superconductors.

Subsequently the annealing method is carried out so as to improve the superconducting properties of the oxide thin film superconductor - see Figures 5a and 5b.

In the Board's view, the combination of Figure 1 and the accompanying description discloses to a skilled reader an "oxide thin film" which "has the structure of multiple crystal layers." As submitted by the Appellant, although the word "multiple" is not in fact used in the description, an "oxide thin film including several

different layers" is specifically described and shown, and such layers are "crystal layers."

It appears to be suggested in the final passage of the Examining Division's decision that the application as filed contained no disclosure of "at least two different layers deposited alternatingly."

However, in the Board's view the description identified above with reference to Figure 1 of the application clearly discloses different layers deposited alternatingly, that is, one after the other.

2.2 In the Board's judgment, therefore, the amended Claim 1 of the main request does not contravene Article 123(2) EPC.

3. *Novelty and inventive* step

The decision under appeal did not raise objections to the application other than under Article 123(2) EPC, even though an objection under Article 54 EPC was put forward in the communication dated 10 November 1993, and replied to by the Applicant on 19 January 1994 (see paragraphs III and IV above). It therefore appears that the Examining Division was satisfied that there were no objections under Articles 54 and 56 EPC.

In any event the Board has considered the relevant submissions of the Appellant as set out in the file, and is satisfied that the claimed invention is novel and involves an inventive step, in particular having regard to the Appellant's submissions filed on 19 January 1994; and that all the other requirements of the EPC are satisfied.

Order

For these reasons it is decided that:

1. The appeal is allowed.

2. The case is remitted to the first instance with the order to grant a patent on the basis of Claims 1 to 6 filed on 8 June 1994 as the main request accompanying the Statement of Grounds of Appeal.

3. The appeal fee is to be reimbursed.

The Registrar: The Chairman:

J. Rückerl G. D. Paterson