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Case Number: T 2234/13 - 3.3.05

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Title of invention:
OXIDE MAGNETIC MATERIAL

Applicant:
Hitachi Metals, Ltd.

Headword:
Magnetic ferrite/HITACHI

Relevant legal provisions:
EPC Art. 123(2)

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Amendments - allowable (no)

Decisions cited:

Catchword:

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Case Number: T 2234/13 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 10 July 2018

Appellant: (Applicant)	Hitachi Metals, Ltd. 2-1, Shibaura 1-chome Minato-ku Tokyo 105-8614 (JP)
Representative:	Grünecker Patent- und Rechtsanwälte PartG mbB Leopoldstraße 4 80802 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 7 June 2013 refusing European patent application No. 06843243.4 pursuant to Article 97(2) EPC**

Composition of the Board:

Chairman	E. Bendl
Members:	J.-M. Schwaller
	S. Fernández de Córdoba

Summary of Facts and Submissions

I. This appeal lies from the decision of the examining division to refuse European patent application No. 06 843 243.4 on the ground that claim 1 of both requests then on file did not meet the requirements of Article 123(2) EPC.

II. In a communication expressing its preliminary opinion, the board confirmed the opposition division's findings. It also held that the four sets of claims filed as auxiliary requests 2 to 5 by letter of 21 December 2016 infringed the requirements of Article 123(2) EPC.

III. By letter of 29 November 2017, the appellant filed six sets of amended claims as new main and first to fifth auxiliary requests. Claim 1 of the different requests on file read as follows (differences compared to the main request emphasised by the board):

Main request:

"1. An oxide magnetic material including a ferrite with a hexagonal structure as its main phase, wherein metallic elements included in the oxide magnetic material are represented by the formula: $Ca_{1-x-x'}La_xSr_{x'}Fe_{2n-y}Co_yO_\alpha$*, wherein α represents the number of moles of oxygen, where atomic ratios x, x' and y and a molar ratio n satisfy*

$0.4 \leq x \leq 0.55$,

$0.01 \leq x' \leq 0.2$,

$0.2 \leq y \leq 0.4$,

$x/y \geq 1.3$, *and*

$5.2 \leq n \leq 5.8$, *respectively,*

with a proviso that, if x is equal to or greater than 0.47, the range in which 0.17 x' ≥ -0.25 x + 0.1367 is satisfied, is excluded."

First auxiliary request:

"1. An oxide magnetic material including a ferrite with a hexagonal structure as its main phase, wherein metallic elements included in the oxide magnetic material are represented by the formula: $Ca_{1-x-x'}La_xSr_{x'}Fe_{2n-y}Co_yO_\alpha$*, ~~wherein α represents the number of moles of oxygen~~, where atomic ratios x, x' and y and a molar ratio n satisfy*

*0.4**5*** ≤ x ≤ 0.5**8**,*
0.01 ≤ x' ≤ 0.2,
0.2 ≤ y ≤ 0.4,
x/y ≥ 1.3, and
5.2 ≤ n ≤ 5.8, respectively,

with a proviso that, if x is equal to or greater than 0.47, the range in which 0.17 x' ≥ -0.25 x + 0.1367 is satisfied, is excluded."

Second auxiliary request

"1. An oxide magnetic material including a ferrite with a hexagonal structure as its main phase, wherein metallic elements included in the oxide magnetic material are represented by the formula: $Ca_{1-x-x'}La_xSr_{x'}Fe_{2n-y}Co_yO_\alpha$*, wherein α represents the number of moles of oxygen, where atomic ratios x, x' and y and a molar ratio n satisfy*

0.4 ≤ x ≤ 0.55,
0.01 ≤ x' ≤ 0.2,
0.2 ≤ y ≤ 0.4,
x/y ≥ 1.3, and
*5.2 ≤ n ≤ 5.**5**, respectively,*

with a proviso that, if x is equal to or greater than 0.47, the range in which 0.17 x' ≥ -0.25 x + 0.1367 is satisfied, is excluded."

Third auxiliary request

"1. An oxide magnetic material including a ferrite with a hexagonal structure as its main phase, wherein metallic elements included in the oxide magnetic material are represented by the formula: $Ca_{1-x-x'}La_xSr_{x'}Fe_{2n-y}Co_yO_\alpha$*, ~~wherein α represents the number of moles of oxygen~~, where atomic ratios x, x' and y and a molar ratio n satisfy*

$0.4\underline{\mathbf{5}} \leq x \leq 0.5\underline{\mathbf{8}}$,

$0.01 \leq x' \leq 0.2$,

$0.2 \leq y \leq 0.4$,

$x/y \geq 1.3$, and

$5.2 \leq n \leq 5.\underline{\mathbf{5}}$, respectively,

with a proviso that, if x is equal to or greater than 0.47, the range in which 0.17 x' ≥ -0.25 x + 0.1367 is satisfied, is excluded."

Fourth auxiliary request

"1. An oxide magnetic material including a ferrite with a hexagonal structure as its main phase, wherein metallic elements included in the oxide magnetic material are represented by the formula: $Ca_{1-x-x'}La_xSr_{x'}Fe_{2n-y}Co_yO_\alpha$*, wherein α represents the number of moles of oxygen, where atomic ratios x, x' and y and a molar ratio n satisfy*

$0.4 \leq x \leq 0.55$,

$0.01 \leq x' \leq 0.\underline{\mathbf{1}}$,

$0.2 \leq y \leq 0.4$,

$x/y \geq 1.3$, and

$5.2 \leq n \leq 5.\underline{\mathbf{5}}$, respectively,

with a proviso that, if x is equal to or greater than 0.47, the range in which 0.17 x' ≥ -0.25 x + 0.1367 is satisfied, is excluded."

Fifth auxiliary request

"1. An oxide magnetic material including a ferrite with a hexagonal structure as its main phase, wherein metallic elements included in the oxide magnetic material are represented by the formula: $Ca_{1-x-x'}La_xSr_{x'}Fe_{2n-y}Co_yO_\alpha$*, ~~wherein α represents the number of moles of oxygen~~, where atomic ratios x, x' and y and a molar ratio n satisfy*

$0.4\mathbf{5} \leq x \leq 0.5\mathbf{8}$,

$0.01 \leq x' \leq 0.\mathbf{1}$,

$0.2 \leq y \leq 0.4$,

$x/y \geq 1.3$, and

$5.2 \leq n \leq 5.\mathbf{5}$, *respectively,*

with a proviso that, if x is equal to or greater than 0.47, the range in which 0.17 x' ≥ -0.25 x + 0.1367 is satisfied, is excluded."

IV. At the oral proceedings, the issues discussed essentially concerned the requirements of Articles 123(2) and 84 EPC (discrepancy between the expression "metallic elements" and the oxidic entity "O_α" defined in the formula in claim 1 of the main, second and fourth auxiliary requests).

V. The appellant's final request was that a patent be granted on the basis of the claims according to the main request or, alternatively, according to one of the first to fifth auxiliary requests, all requests as filed by letter of 29 November 2017.

Reasons for the Decision

1. Main request - amendments

1.1 The restriction in claim 1 of the originally claimed range $0.4 \leq x \leq 0.6$ to the range $0.40 \leq x \leq 0.55$ has a basis in example 3 of the application as filed, but only with respect to the oxidised product $Ca_{1-x-x'}La_xSr_{x'}Fe_{2n-y}Co_yO_\alpha$, in which x', y and n have the specific values 0.1, 0.3 and 5.4 respectively.

As example 3 specifies that said oxidised product leads to the production of sintered magnets having different magnetic properties (certain magnets are identified as having "good magnetic properties" and others "excellent magnetic properties"), there is undoubtedly a strong interdependence between the amounts and ratios of each of the elements of the composition, such that the skilled person would not directly and unambiguously extrapolate from this specific disclosure the broader subject-matter currently claimed, which therefore appears to equate to an intermediate generalisation which encompasses embodiments which were not disclosed in the application as originally filed.

1.2 The appellant argued that the claimed combination could be derived from original claims 1, 3, 4 and 7 in combination with part of claim 2, while taking into account the teaching of original paragraphs [0053], [0054], [0064] and [0072] and claims 8 and 10.

While it is true that the cited claims and paragraphs each refer to (part of) the ranges for one parameter, it cannot be concluded that the combination as

currently claimed has an unambiguous basis in this multitude of cited passages.

The board therefore holds claim 1 of this request to infringe the requirements of Article 123(2) EPC.

1.3 The amendment by which the feature "...O_α, *wherein* α *represents the number of moles of oxygen*" currently supplements the formula in claim 1 at issue raises a clarity problem under Article 84 EPC, because claim 1 refers to "metallic elements ... represented by the formula ...", which is in contradiction with the formula, which defines an oxide.

2. First auxiliary request - amendments

2.1 Claim 1 of this request is distinguished from claim 1 of the main request in that the range $0.4 \leq x \leq 0.55$ has been changed to $0.45 \leq x \leq 0.58$ and feature O_α has been omitted.

2.2 Although the first of the cited amended features per se has a basis in dependent claim 2 as originally filed, there is no basis for the combination of this range individually disclosed with the other ranges currently defined in claim 1 at issue, namely $0.01 \leq x' \leq 0.2$ and $0.2 \leq y \leq 0.4$, which are individually disclosed in dependent claims 3 and 4 as filed; nor is there any basis for the combination of these ranges with the specific ratio $x/y \geq 1.3$, which is originally disclosed in dependent claim 7. Since in the application as filed each of the three dependent claims identified above was dependent only on claim 1, there is no direct and unambiguous disclosure of a combination of these claims.

Nor is there such a disclosure in the description as filed (paragraphs [0016] to [0033] as originally filed are identical to the claims as originally filed, including the dependencies).

2.3 The appellant argued that the combination of the claimed ranges was derivable from paragraphs [0052] to [0055], where in particular the ranges for x, x' and y were described as "more preferred".

The board cannot accept this argument, because each of said paragraphs [0052] to [0055] offers a number of alternatives with different levels of preference, but not the combination of differently preferred alternatives. The ranges $x/y \geq 1.3$ (paragraph [0054]) and $5.2 \leq n \leq 5.8$ (paragraph [0055]) are not disclosed as "more preferred" but merely as "preferred", so it is not possible to conclude that the combination of features, in particular the combination of some "more preferred" (i.e. x, x', y) with some "preferred" ranges (i.e. x/y, n), was directly and unambiguously disclosed.

2.4 It follows from the above considerations that the subject-matter of claim 1 of this request is not directly and unambiguously derivable from the application documents as filed; so this claim infringes the requirements of Article 123(2) EPC.

3. Second auxiliary request - amendments

3.1 Claim 1 of this request is distinguished from claim 1 of the main request in that the range $5.2 \leq n \leq 5.8$ is restricted to $5.2 \leq n \leq 5.5$.

3.2 Apart from the fact that claim 1 of this request suffers from the same deficiency under Article 84 EPC as claim 1 of the main request, the same remarks as in points 1.1 and 1.2 above apply to the combination of the restricted range $0.40 \leq x \leq 0.55$ with the other ranges currently defined in claim 1, which therefore likewise infringes the requirements of Article 123(2) EPC.

4. Third auxiliary request - amendments

4.1 Claim 1 of this request is distinguished from claim 1 of the first auxiliary request in that the range $5.2 \leq n \leq 5.8$ is restricted to $5.2 \leq n \leq 5.5$.

4.2 For the board, although this amendment has a basis in dependent claim 5 as originally filed, for the same reasons as indicated in points 2.2 and 2.3 above the combination of this individual range with the other ranges is not directly and unambiguously derivable from the application as filed, and so claim 1 of this request likewise infringes Article 123(2) EPC.

5. Fourth auxiliary request - amendments

5.1 Apart from the fact that claim 1 of this request suffers from the same deficiency under Article 84 EPC as claim 1 of the main request, the same remarks as in points 1.1 and 1.2 above apply to the combination of the restricted range $0.40 \leq x \leq 0.55$ with the other ranges currently defined in claim 1.

5.2 Furthermore, the amendment by which the range $0.01 \leq x' \leq 0.2$ is restricted to $0.01 \leq x' \leq 0.1$ has no basis in the application as filed.

Apart from a disclosure of the specific value x' = 0.1 in certain examples and in paragraph [0056], there is no disclosure of the whole range currently defined, let alone the combination of this range with the other ranges and the ratio x/y now defined in claim 1 at issue.

5.3 Therefore claim 1 of this request likewise infringes Article 123(2) EPC.

6. Fifth auxiliary request - amendments

Claim 1 of this request corresponds to claim 1 of the third auxiliary request, with the range $0.01 \leq x' \leq 0.2$ being further restricted to $0.01 \leq x' \leq 0.1$.

Concerning the restriction to this range, the same remarks as in points 5.1 and 5.2 above apply, with the consequence that claim 1 of this request does not meet the requirements of Article 123(2) EPC either.

7. As none of the sets of claims underlying the proposed requests meets the requirements of the EPC, the appeal cannot succeed and the decision to reject the application is upheld.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Magliano E. Bendl

Decision electronically authenticated