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D E C I S I O N
of 23 January 2003

Case Number: T 1027/01 - 3.2.3

Application Number: 96118398.5

Publication Number: 0774315

IPC: B22F 1/02, C22C 1/04

Language of the proceedings: EN

Title of invention:
Tungsten-copper composite powder

Applicant:
OSRAM SYLVANIA INC.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Novelty (yes) - third auxiliary request"
"Inventive step (yes) - third auxiliary request"

Decisions cited:
-

Catchword:
-



Case Number: T 1027/01 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 23 January 2003

Appellant: OSRAM SYLVANIA INC.
100 Endiott Street
Danvers, MA 01923 (US)

Representative: Grünecker, Kinkeldey, Stockmair & Schwanhäusser
Anwaltssozietät
Maximilianstrasse 58
D-80538 München (DE)

Decision under appeal: Decision of the Examining Division 2.3.09.0115 of
the European Patent Office dated 26 March 2001,
posted on 23 April 2001, refusing European patent
application No. 96 118 398.5 pursuant to
Article 97(1) EPC.

Composition of the Board:

Chairman: C. T. Wilson
Members: F. Brösamle
J. P. Seitz

Summary of Facts and Submissions

I. With decision of 26 March 2001 the examining division refused European patent application 96 118 398.5 in the light of:

- (D1) PATENT ABSTRACTS OF JAPAN, vol. 017, No. 252 (M-1412), 19 May 1993 & JP 04 371 373 A (ISUZU MOTORS LTD), 24 December 1992;
- (D2) CHEMICAL ABSTRACTS, vol. 99, No. 26, 26 December 1983 Columbus, Ohio, US; abstract No. 216925, SKOROKHOD, V.V. ET AL: "Sintering of tungsten-copper compositions of various origins" XP002063729 & POROSHK. METALL. (KIEV) (1983), (9), 9-13 CODEN: PMANAI; ISSN: 0032-4795, 1983, and
- (D3) JP 01078684 A (24 March 1989) and corresponding PAJ abstract.

The written decision was posted on 23 April 2001.

II. Claim 1 underlying the above decision reads as follows:

"1. A tungsten-copper composite powder comprising individual particles having a tungsten phase and a copper phase wherein the tungsten phase substantially encapsulates the copper phase."

III. Against the above decision of the examining division the applicant - appellant in the following - lodged an appeal on 21 May 2001 paying the fee on the same day and filing the statement of grounds of appeal on 30 August 2001 requesting to grant a patent on the basis of above claim 1 as **main request**.

IV. Following the board's Communication pursuant to Article 11(2) RPBA in which the board gave its provisional opinion the appellant filed two new **auxiliary requests 1 and 2**, claims 1 thereof read as follows:

(a) **first auxiliary request:**

as claim 1 of the **main request** plus the following feature: "and the copper content of each composite particle is 2-25 wt%".

(b) **second auxiliary request:**

as claim 1 of the **main request** plus the following feature: "and said composite particles have a Fisher Sub-Sieve Sizer (FSSS) particle size ranging from 0.5 μm to 2.0 μm ."

V. Thereafter oral proceedings before the board were held in which the appellant submitted a further claim 1 according to his **third auxiliary request** in which the features according to his **first** and **second auxiliary request** are added to claim 1 of the **main request**.

VI. In the oral proceedings the appellant essentially argued as follows:

- according to Article 69(1) EPC an independent claim, see for instance claim 1 of the main request, has to be interpreted on the basis of the description making it clear that in contrast to the teaching of (D1) the tungsten particles are not only bound to the copper particles by electrostatic forces but rather by forces created

during the production process by rendering the copper particles liquid and thereafter cooling the composite powder;

- since claim 1 of the main request is based on a pseudoalloy the deficiencies of the prior art with respect to binding of particles are clearly overcome so that bleeding out of copper is obviated;
- in contrast to what is claimed (D1) and (D3) relate to agglomerates with small binding forces between the particles of the composite powder;
- with respect to the third auxiliary request it has to be pointed out that claim 1 thereof is limited in its copper content and the diameters of its particles so that the objects to be solved, namely enhanced thermal and electrical conductivity without bleedout of copper, however, with a high degree of dimensional control of the composite powder, are clearly achieved rendering the teaching of claim 1 novel and inventive; with respect to the particle's diameter between 0.5 and 2.0 μm it has to be observed that submicron particles were achieved by a spraying and a quick cooling process as preliminary steps to sintering;
- summarising, the subject-matter of claim 1 of the third auxiliary request is seen as being novel and not rendered obvious by the available prior art.

VII. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of either his:

Main request: with claims 1 to 9 dated 3 July 2000;

First auxiliary request: with claim 1 filed on 19 December 2002 and claims 2 to 9 dated 3 July 2000;

Second auxiliary request: with claim 1 filed on 19 December 2002 and claims 2 to 9 dated 3 July 2000;

Third auxiliary request: with claims 1 to 7 filed during the present oral proceedings; Description: page 2 as amended during the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.
2. *Amendments*
 - 2.1 Claim 1 of the **main request** corresponds to claim 1 as originally filed. In claims 2, 3, 5 and 9 the words "about" are deleted rendering the claimed parameters narrower without extending the teaching of the originally filed documents.
 - 2.2 Claim 1 of the **first auxiliary request** is based on a copper content of each composite particle between 2 and 25 wt% being disclosed in EP-A2-0 774 315, page 4, line 3.
 - 2.3 Claim 1 of the **second auxiliary request** is based on composite particles ranging from 0.5 μm to 2.0 μm according to Fisher Sub-Sieve Sizer (FSSS) as disclosed on page 4, line 3 of the published patent application.

- 2.4 Claim 1 of the **third auxiliary request** is a combination of features according to above remarks 2.2 and 2.3.
- 2.5 Summarising, the above requests are not open to an objection under Article 123(2) EPC.

Main request

- 3.1 In claim 1 thereof a composite powder is defined comprising individual particles having a tungsten phase and a copper phase wherein the tungsten phase substantially encapsulates the copper phase.
- 3.2 In the Communication pursuant to Article 11(2) RPBA the board set out in remarks 3 to 5 that the system W-Cu exhibited only a very small intersolubility, which excludes the creation of an alloy, but leads rather to a pseudoalloy with clearly defined phases of W and Cu. The appellant agrees.
- 3.3 The board's findings in remark 4 of the above communication are based on (D1) and its English translation (D1-EN) underlying the decision under appeal. With letter of 19 December 2002 the appellant filed a further English translation (D1-EN-A) of (D1) and pointed to differences in remark [0012] thereof. Even if (D1-EN-A) was considered, a skilled person would be taught that a copper particle would be encapsulated *inter alia* by tungsten to exclude the effect of bleed out. Since claim 1 is not limited to one single particle of copper and tungsten, see "comprising individual particles having a tungsten... and a copper phase" (stress added) the document (D1) and its English translation according to (D1-EN-A) has to be seen as a **novelty destroying prior art** read by a

skilled person.

- 3.4 The appellant defended claim 1 by referring to Article 69(1) EPC and contending that claim 1 had to be interpreted in the light of the description. This means nothing else than relying on features not clearly comprised by claim 1 itself, for instance the process step(s) in which the composite powder was generated.
- 3.5 In contrast to the appellant the board expressed the opinion that in an *ex parte* case (refusal of an application) it is clearly not allowable nor appropriate to turn to Article 69(1) EPC since in an *ex parte* case the scope of protection can be changed by modifying the claim's wording. It follows therefore that claim 1 has to be read as it is comparing feature by feature with the prior art. This comparison results in the finding that the combination of features laid down in claim 1 is completely anticipated by (D1) so that its subject-matter is not novel, Article 54 EPC. The **main request** is therefore not allowable.

First and second auxiliary request

- 4.1 With respect to claim 1 of the **main request** features with respect to the copper content of each composite particle and to the particle size range (FSSS) are added to claim 1 in the first and second auxiliary requests respectively.
- 4.2 A copper content of 20% falling within the claimed range can, however, be seen from (D2) fifth line from the bottom of the cover sheet (Abstract) or from page 696, second paragraph, so that the subject-matter of claim 1 of the **first auxiliary request** cannot be

seen as inventive since (D2) originating from the technical field of W-Cu pseudoalloys would be directly combined with (D1) by the person skilled in the art to achieve the claimed composite powder, Article 56 EPC.

- 4.3 The subject-matter of claim 1 of the **second auxiliary request** is based on small composite particles (0.5 μm to 2.0 μm) without, however, setting out the way in which these particles are obtained, in which ratio the starting materials are present (more copper or more tungsten?) and for what purpose they are used. (D1) clearly deals with a composite powder, see its English version and its page headed "WPI", with tungsten particles of "ca. 1 micron **or less** in dia." (stress added) and with copper particles **preferably cirka** 40 μm in diameter. Under these circumstances it can be followed that (D1) is not restricted to big copper particles rather embraces smaller copper particles depending on the individual requirements of the article to be formed from the claimed composite powder - not defined in claim 1 of the **second auxiliary request**.

Summarising, the subject-matter of this independent claim has to be seen as novel, however, not inventive within the meaning of Article 56 EPC so that the **second auxiliary request** is also unallowable.

Third auxiliary request

- 5.1 Claim 1 thereof is based on a specific ratio of copper/tungsten, namely more tungsten than copper, and on the range of sizes of the **composite particles**.
- 5.2 Starting from (D1) the objects to be solved by the invention are to produce a composite powder without

bleedout of copper, however, with an enhanced thermal and electrical conductivity and a high degree of dimensional control of the composite powder, see new page 2 submitted during the oral proceedings before the board.

5.3 The objects are solved by the combination of features laid down in claim 1, namely that the composite powder is rich in tungsten and poor in copper (only 2 to 25 wt% of copper) and is extremely fine, namely having composite particles in the range of 0.5 μm to 2.0 μm (FSSS-value).

5.4 **In contrast** to the claimed subject-matter (D1) discloses a composite powder which is **rich in copper**, see particle size of 40 μm compared with tungsten particles of 1 μm or less and the disclosure in (D1) that the **coating grains** account for 1 wt% or less of the base copper grains (see page headed "WPI", second paragraph). It follows therefrom that the subject-matter of claim 1 is novel and could not be rendered obvious by the teaching of (D1).

5.5 (D2), see page 696, fourth paragraph, cannot lead a skilled person to the subject-matter of claim 1 either, since already the **starting** materials (tungsten and copper) are by far too big, namely 12.5 and 30 μm in diameter so that it is impossible to achieve a **composite powder** on this basis having **composite** particles as defined in claim 1.

(D3) is completely silent about the ratio between tungsten and copper to be used and about the particle size of the composite powder produced from these starting materials.

5.6 Under these circumstances (D2) and (D3) singly or in combination with (D1) could not render obvious the subject-matter of claim 1 either so that claim 1 is allowable.

5.7 Claims 2 to 7 relate to embodiments of the composite powder of claim 1 and are likewise allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a patent with the following documents:
 - claims 1 to 7 of the **third auxiliary request** filed during the oral proceedings held on 23 January 2003;
 - description: page 2 filed during the oral proceedings held on 23 January 2003 and pages 3 to 17 of the published application;
 - Figures 1 to 9 of the published application.

The Registrar:

The Chairman:

A. Counillon

C. T. Wilson