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**Datasheet for the decision
of 14 June 2019**

Case Number: T 1520/14 - 3.4.03

Application Number: 07844348.8

Publication Number: 2081729

IPC: H05K3/34, H01L31/02

Language of the proceedings: EN

Title of invention:

MATERIALS FOR USE WITH INTERCONNECTS OF ELECTRICAL DEVICES AND
RELATED METHODS

Applicant:

Alpha Assembly Solutions Inc.

Headword:

Relevant legal provisions:

EPC R. 137(3), 137(5)
EPC 1973 Art. 123(2), 82
EPC Art. 92

Keyword:

Amendments of application - amended claims relating to
unsearched subject-matter
Amendments - consent of examining division (no)
Remittal to the department of first instance

Decisions cited:

T 0631/97, T 0708/00

Catchword:



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Case Number: T 1520/14 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 14 June 2019

Appellant: Alpha Assembly Solutions Inc.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 26 February
2014 refusing European patent application No.
07844348.8 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman S. Ward
Members: M. Stenger
C. Heath

Summary of Facts and Submissions

- I. The appeal concerns the decision of the Examining Division to refuse European application no. 07844348 according to Article 113(2) EPC in combination with Article 78(1)(c) EPC for lack of any claim on file, following the non-admission of the claim set filed on 7 January 2014 as main and only request according to Rule 137(3) EPC.

- II. The appellant requested that the decision be set aside and that the application be allowed on the basis of a main request and a first auxiliary request filed with the grounds of appeal.
The main request corresponds to the request on which the contested decision is based. The claims of the first auxiliary request correspond to claims 1 to 4 of the claim set on which the Supplementary European Search Report was based.
Alternatively, the appellant requested remittal to the first instance for further consideration (points 16. and 32. of the grounds of appeal).
Further, oral proceedings were requested on an unconditional basis.

- III. In a communication, the Board set out its preliminary opinion that the case should be remitted to the Examining Division for further prosecution based on the requests on file. The Board noted that the oral proceedings could be cancelled if the appellant agreed that they were not required in that case.

- IV. In reply to that communication, the appellant withdrew its previous request for oral proceedings on the condition that the case was remitted to the Examining Division as set out in that communication.

V. Claim 1 of the main request has the following wording:

*A method of producing an electrical connection in a solar cell, the method comprising:
disposing a solder mixed with a zero CTE material on a joint to be soldered, the solder mixed with the zero CTE material in an effective amount to reduce mismatch of the coefficient of thermal expansion of the solder and a material in the joint to be soldered, in which the solder comprises a low melt solder component disposed on a base solder, and the zero CTE material is beta-eucryptite; and
soldering the joint to provide an electrical connection,
characterised in that the low melt solder component flows at an assembly temperature that is less than 150°C.*

VI. The reasons of the Examining Division for exercising its discretion according to Rule 137(3) EPC not to admit the claims filed on 7 January 2014 (point 3.4 of the impugned decision) may be summarised as follows:

- (a) Claim 1 contravened the requirements of Article 123(2) EPC (section 3.2 of the contested decision), because
 - (i) the original application only disclosed a connection between a solar cell and another object, but not a method of producing an electrical connection *in a solar cell* in general (point 3.2.1 of the contested decision), and because

(ii) the original application disclosed a *low melt solder disposed on a base solder* (i.e., a two-step solder) only in the context of connecting a solar cell to a printed circuit board, but not in a solar cell in general (point 3.2.2 of the contested decision).

(b) The features concerning the *two-step solder* and the electrical connection *in a solar cell (assembly)* in claim 1 related to a second and a third invention, respectively, as identified in the supplementary search report/opinion and the first communication of the Examining Division dated 6 July 2011 (points 3.3.1 and 3.3.4 of the contested decision).

Thereby, the examination of more than one invention was requested which was not acceptable for reasons of procedural efficiency according to G 2/92 (points 3.3, 3.3.8 and 3.3.9 of the contested decision).

In addition, neither the second nor the third invention had been searched, whereby claim 1 did not fulfill the requirements of Rule 137(5) EPC (points 3.3.3 and 3.3.5).

VII. The arguments of the appellant, as far as they are relevant to the present decision, may be summarised as follows

(a) Article 123(2) EPC

(i) The feature that the claim was directed at *a method of producing an electrical connection in a solar cell* had a basis in original claim 22 and paragraphs [5 - 17]

and [41 - 48] of the original description (point 18. of the grounds for appeal).

- (ii) According to original paragraph 3, the concept of having a *low melt solder disposed on a base solder / having a two-step solder* was applicable to the invention as a whole, including the context of a solar cell in general (point 19. of the grounds for appeal).

(b) Searched subject-matter

Search reports should be drawn up on the basis of the claims with due regard to the description and should in principle cover the entire subject-matter to which the claims might reasonable be expected to be directed after they have been amended.

Thus, the mere fact that the features *a method of producing an electrical connection in a solar cell and in which the solder comprises a low melt solder component disposed on a base solder* were not contained in the searched claims does not mean that they (when combined with features of searched claim 1) can be considered as not having been searched for the purposes of Rule 137(5) EPC (points 13. to 15. of the grounds for appeal).

Reasons for the Decision

1. The appeal is admissible.
2. The matter to be decided

- 2.1 The sole request on which the contested decision was based comprised claims 1-7 filed with letter dated 7 January 2014 (referred to as "L3"). The application was refused on the following basis:

"The application is refused because the requirements of Article 113(2) EPC in combination with Article 78(1)(c) EPC are not met. The amendments filed with L3 are not admitted in accordance with Rule 137(3) and (5) EPC. For this reason, there are no claims on file for examination" (Grounds for the Decision, Point 3.1).

Two reasons were given why the request was not admitted. Firstly, it contravened Article 123(2) EPC, and secondly, the Examining Division had maintained the non-unity objection raised by the Search Division, and the sole request failed to limit the claimed subject-matter to the invention covered by the supplementary European search report and for which a search fee had been paid.

3. It therefore falls to the Board to decide whether, in refusing to admit the request into the proceedings, the Examining Division exercised its discretion in an appropriate and reasonable way.
4. Article 123(2) EPC (see points IV.(a) and V.(a) above)
- 4.1 The original description mentions that a solar cell typically includes a plurality of PV cells and that interconnections between PV cells suffer from CTE differences (see paragraph 42). It is further explicitly pointed out that the solders disclosed in the application reduce the CTE mismatch between the

various components *in the or of* a solar cell(s) (paragraphs 43 and 44).

Thus, in line with the arguments of the appellant, paragraphs [42] to [44] of the application as filed provide a basis in the sense of Article 123(2) EPC for the general feature of *producing an electrical connection in a solar cell*, although the claims as filed mentioning solar cells only relate to connections between a solar cell and a circuit board.

The Board notes that the Examining Division states, in point 3.2.1 of the contested decision, that there is no basis in the original application for a *method of producing an electrical connection in a solar cell* and cites in a general manner paragraphs [41] to [48] in support of that statement. However, the Examining Division fails to explain how this conclusion is consistent with the actual content of paragraphs [42] to [44] which explicitly disclose just such methods.

- 4.2 As pointed out by the appellant, paragraph [3] of the original application discloses the use of a two-step solder in an electrical device in general. Moreover, the use of a two-step solder in connection with solar cells in general is explicitly disclosed in paragraph [43], which does not mention a circuit board.

The skilled person would thus understand that according to the original application, the use of a *low melt solder disposed on a base solder / of a two-step solder* in the context of solar cells is not limited to connections between a solar cell and a circuit board, contrary to the arguments of the Examining Division with respect to Article 123(2) EPC in point 3.2.2 of the contested decision.

- 4.3 It follows from the above that the arguments in the contested decision relating to Article 123(2) EPC do not justify the non-admission of the claims filed 7 January 2014 according to Rule 137(3) EPC.
5. The question of unity of the invention (see points IV.(b) and V.(b) above)
- 5.1 The supplementary European search report was based on claims 1-15 filed with letter dated 13 July 2009 (hereinafter: "the claims at the search stage"). The Search Division, raising an objection according to Article 82 EPC, considered that the application did not comply with the requirements of unity of invention (see "Sheet B") as it related to the following three inventions:
- (a) claims 1-4 (first invention): *a method of producing an electrical connection in an electrical device with a low melt solder;*
 - (b) claims 5, 6 (second invention): *a method of producing an electrical connection in an electrical device in [sic] with a low melt solder and a base solder; and*
 - (c) claims 7-15 (third invention): *a method of connecting a solar cell to a circuit board.*

The supplementary European search report was drawn up "for those parts of the European patent application which relate to the invention first mentioned in the claims", pursuant to the version of Rule 164(1) EPC then in force, which did not provide any opportunity to pay additional search fees for the other inventions.

5.2 On entering examination the appellant filed new claims 1-8 with letter dated 17 June 2011 (hereinafter "the claims on entering examination"). Claims 1-6 were identical to those at the search stage, claim 7 was similar to previous claim 7, but now dependent on claim 1, and claim 8 was a new dependent claim similar to previous claim 13.

5.3 According to T 631/97:

"pursuant to Article 97 EPC, the responsibility for establishing whether the application as filed meets the requirements of the Convention, including the requirement of unity of invention under Article 82 EPC, ultimately rests with the examining division, the search division's opinion on lack of unity of invention cannot be regarded as final and binding to the examining division" (T 631/97, Reasons, point 3.6).

It therefore fell to the Examining Division to review the finding on non-unity in the supplementary European search report, and to choose either to maintain the position of the Search Division, which would require deletion of all the inventions other than that which had been searched, or to decide that the opinion on unity at the search stage was incorrect, which would require an additional search to be performed for that part of the subject-matter which was judged to be unitary with the searched invention (see Guidelines, C-III, 3.1.1, second paragraph, corresponding essentially to the Guidelines C-III, 7.10, third paragraph as in force at the completion of the supplementary European search report and on entering examination).

5.4 The Examining Division decided to confirm the position of the Search Division that the application related to

three inventions, and maintained that position throughout the subsequent examination proceedings, including in the contested decision, albeit with minor variations in the manner in which these inventions were described (see Grounds for the Decision, points 3.3.4 and 3.3.5). Accordingly, it was not permissible to amend the first invention to include elements of the second and third inventions, as they had not been searched.

5.5 Hence, while no appeal lies from decisions of the Search Division *per se* (Article 106(1) EPC), the Board is required to decide whether it was reasonable for the Examining Division to confirm the non-unity finding of the Search Division which led to the second and third inventions not being covered by the supplementary European search report.

5.6 The second invention (b)

5.6.1 Dependent claim 5 (at the search stage and on entering examination) comprised the feature "further comprising mixing a base solder with the low melt solder component or the low melt solder alloy component". In the communication dated 6 July 2011 the Examining Division set out an analysis of non-unity *a posteriori* starting from D2, according to which all features of claim 1 were disclosed in D2, and hence "the subject-matter of claim 1 does not contribute over the art" (point 1.1). The above-mentioned feature of dependent claim 5 constituted one of the "non-trivial technical features [which] are considered to contribute over the art" (point 1.2).

5.6.2 The appellant filed a new set of claims (with letter dated 16 January 2012) in which essentially the same

feature (now formulated as "in which the solder comprises a base solder and a low melt solder component") was incorporated into claim 1. In the following communication (dated 15 October 2013), the Examining division again held that this feature was one of the "non-trivial technical features [which] are considered to contribute over the art" (point 5.2).

5.6.3 However, under point 6.1 the Examining Division went on to state that this feature was in fact *disclosed* in D2.

5.6.4 With respect to the second invention, the Examining Division thus based its a posteriori non-unity objection starting from D2 on a (special technical) feature that according to its own opinion was actually disclosed in that same document.

The Board finds this analysis inconsistent and contradictory, and it was not therefore reasonable for the Examining Division to pursue the non-unity objection based on this feature being a second invention or to persist in arguing that this feature was justifiably excluded from the search.

5.7 The third invention (c)

5.7.1 Claim 1 (both at the search stage and on entering examination) concerns a method of producing an electrical connection in an electrical device. According to the supplementary European search report this subject-matter (and that of claims 2-4) was fully searched.

At the search stage, independent claim 7 comprised the additional feature that the electrical connection was in a solar cell assembly, between a circuit board and a solar cell (on entering examination claim 7 was recast as a dependent claim with additional feature, "in which

the electrical device is a solar cell"). According to the supplementary European search report this subject-matter had not been searched. This approach was maintained by the Examining Division.

5.7.2 Article 92 EPC states the following:

"The European Patent Office shall, in accordance with the Implementing Regulations, draw up and publish a European search report in respect of the European patent application on the basis of the claims, with due regard to the description and any drawings."

5.7.3 In decision T 708/00 (OJ, 2004, 160), which concerned the refusal of an application on the basis of Rule 86(4) EPC 1973 (now Rule 137(5) EPC) and referred to the then valid Article 92(1) EPC (instead of Article 92 EPC as valid in the present case), the Board noted the following:

"the provisions of Article 92(1) EPC ... must not have the effect of limiting the search solely to the subject-matter of the claims, even if this would simplify matters for the search division ..."

"the search should be concerned with what appear to be the essential features of the invention and cover the entire subject-matter to which the claims relate or to which they might reasonably be expected to relate after they have been amended" (T 708/00, Reasons, point 4, second and third paragraphs).

5.7.4 The Board notes that the provisions of Article 92 EPC and the findings of T 708/00 mentioned above essentially correspond to the submissions of the appellant in point 14. of the grounds for appeal.

5.7.5 The Board therefore accepts that there is no obligation on the Search Division to extend the search to a feature mentioned in the description where there is no objective reason to expect that future amendments might be directed to precisely this feature.

However, where the description repeatedly stresses the utility of the invention for a particular purpose or in a particular technical area, it is clearly foreseeable that the invention may ultimately be claimed in relation to this purpose or technical area, even if this is not the case for (all of) the independent claims on which the search is based, and the search should fully cover this possibility.

5.7.6 In the present case, the very first paragraph of the description mentions "the assembly of electrical devices such as, for example, printed circuit board, photovoltaic cells and solar panels." In a description of 21 pages the term "solar cell" appears more than eighty times, and of the 6 examples, the only one concerned with a device (Example 6) relates to a solar cell assembly. It was therefore entirely foreseeable that the method of producing an electrical connection of claim 1 at the search stage might well be amended during prosecution to specify that the electrical connection was in a solar cell assembly or in a solar cell itself (see paragraphs [0043] and [0044]), and the search should have been extended to cover this possibility. The position of the Search Division that claim 1 was fully searched, but that the search did not extend to what is repeatedly presented in the description as the principal area of application, is not reasonable and not in conformity with the requirements of Article 92 EPC. It was equally

unreasonable for the Examining Division to confirm the correctness of this position.

5.8 It follows from the above that the non-unity findings of the Search Division with respect to the second and third inventions (b) and (c) as well as their confirmation by the Examining Division do not justify the non-admission of the claims filed 7 January 2014 according to Rule 137(3) EPC. In the opinion of the Board, the Examining Division should have arranged for an additional search to cover all claims.

6. The Board thus comes to the conclusion that the Examining Division did not exercise its discretion in an appropriate and reasonable way when not admitting the request filed 7 January 2014 into the proceedings.

7. During the whole first instance proceedings, the Examining Division never gave an opinion on novelty and inventive step concerning the features that were attributed to the second and third inventions (b) and (c).

It is thus appropriate to remit the case to the first instance for further prosecution as requested by the appellant. This implies that it is neither necessary nor useful to take position on the auxiliary request in this decision.

The Board notes that the Examining Division explicitly mentions in the contested decision that no search was carried out for what they considered to be inventions b) and c) (see the last sentences of points 3.3.7, 3.3.10 and 3.3.12, respectively). An additional search may thus be necessary.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division for further prosecution based on the requests currently on file.

The Registrar:

The Chairman:



S. Sánchez Chiquero

S. Ward

Decision electronically authenticated