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Datasheet for the decision of 11 July 2013

Case Number: T 1413/10 - 3.2.05

Application Number: 04821028.0

Publication Number: 1660307

IPC: B29C70/74

Language of the proceedings: EN

Title of invention:
Window skin panel and method of making same

Applicant:
The Boeing Company

Relevant legal provisions:
EPC 1973 Art. 83, 84
EPC Art. 123(2)

Keyword:
Amendments - added subject-matter (yes)
Claims - clarity after amendment (yes)
Sufficiency of disclosure - (yes)
Remittal to the department of first instance - (yes)

Decisions cited:

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Case Number: T 1413/10 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 11 July 2013

Appellant: (Applicant)	The Boeing Company P.O. Box 3707 M.S. 11-XT Seattle, WA 98124-2207 (US)
Representative:	Adrian Chetwynd Hayes Boult Wade Tennant Verulam Gardens 70 Gray's Inn Road London WC1X 8BT (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 17 February 2010 refusing European patent application No. 04821028.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: M. Poock
Members: S. Bridge
M. J. Vogel

Summary of Facts and Submissions

I. The appellant (applicant) lodged an appeal against the decision of the examination division rejecting the European patent application No.04 821 028.0.

II. The examination division held that the invention is not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC 1973)

III. Oral proceedings were held before the board of appeal on 11 July 2013.

IV. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the documents filed with letter of 16 June 2010 as main, first and second auxiliary request, or on the basis of the documents filed with letter of 11 June 2013 as fourth to ninth auxiliary request, or on the basis of the third auxiliary request, filed during the oral proceedings. The third auxiliary request filed with letter of 11 June 2013 was withdrawn.

V. Claims 1 and 13 according to the main request read as follows:

"1. A method of forming a structural panel (10), comprising:
using at least one structural metal sheet to form a frame structure (14), wherein the frame panel defines an opening (34);
applying a generally transparent, fiber pre-impregnated resin tape (30) to the metal sheet (28) to at least

partially cover the metal sheet (28) and fill the opening (34);
heating the metal sheet (28) and the fiber pre—impregnated resin tape (30) such that the resin melts and at least partially covers the metal sheet (28) and fills the opening (34); and
wherein once cured, the generally transparent, fiber pre-impregnated resin forms a see-through window portion (16) in the frame panel (14)".

"13. The method of any of claims 1 to 12, wherein the structural panel (10) is a transparent window skin panel, comprising:
providing a tool (24);
providing a pre—impregnated resin tape (30) comprised of a plurality of fibers impressed into a resin tape (30);
providing a metal structural sheet (26) having a plurality of perforations formed therein;
layering the pre—impregnated resin tape (30) and the structural sheet onto the tool (24) such that the structural sheet and the pre—impregnated resin tape (30) are aligned one atop the other;
heating the tool (24), the structural sheet (26), and the pre-impregnated resin tape (30) such that the resin flows to partially cover the metal sheet (28) and the fibers, the resin and fibers being substantially transparent to form a see-through window portion in the skin panel."

VI. Claim 1 according to the first auxiliary request differs from claim 1 according to the main request in that, the expression "*structural panel*" in the first line of the claim is replaced by "*transparent window skin structural panel*".

Claim 13 according to the first auxiliary request is identical to claim 13 according to the main request.

VII. Claim 1 according to the second auxiliary request differs from claim 1 of the first auxiliary request in that both instances of the expression "*generally transparent*" are replaced by "*transparent*".

Claim 13 according to the second auxiliary request differs from claim 13 of the first auxiliary request in that the expression "*substantially transparent*" in the penultimate line of the claim is replaced by "*transparent*".

VIII. Claim 1 according to the third auxiliary request reads as follows:

"1. A method of forming a transparent window skin structural panel (10) for use in an aircraft as a passenger window, comprising:
using at least one metal sheet to form a frame structure (14), wherein the frame structure defines an opening (34);
applying a generally transparent, fiber pre-impregnated resin tape (30) to the metal sheet (28) to at least partially cover the metal sheet (28) and fill the opening (34);
heating the metal sheet (28) and the fiber pre-impregnated resin tape (30) such that the resin melts and at least partially covers the metal sheet and fills the opening (34);
curing the resin; and
wherein once cured, the generally transparent, fiber pre—impregnated resin forms a see—through window portion (16) in the frame structure (14)".

IX. The following documents are referred to in the present decision:

D2: US-A-5,665,450;

D4: "*Model for the temperature dependent transmission of optically transparent poly(methyl methacrylate) composites*", H.Lin, D.E.Day, J.0.Stoffer, Journal of Materials Research, volume 8, number 2, February 1993;

D7: "*Fabrication and Mechanical Properties of an Optically Transparent Glass Fiber/Polymer Matrix Composite*", J.R.Olson, D.E.Day and J.0.Stoffer, Journal of Composite Materials, volume 26, number 8, 1992, pages 1181 to 1192;

D9: "Fabrication and Optical/Thermal Properties of Class Particle-Epoxy Optically Transparent Composites", Y.Kagawa, H.Iba, M.Tanaka, H.Sato, T.Chang, Acta mater. volume 46, number 1, 1998, pages 265 to 271.

X. The arguments of the appellant in the written and oral proceedings can be summarised as follows:

Main request, first auxiliary request, second auxiliary request - added subject-matter

The skilled person would understand from the patent application (e.g. pages 4 and 5 of the application as published and figure 3) that the layering and heating steps of the respective claims 13 correspond to the applying and heating steps of the respective claims 1 and merely specify additional details of these steps. Therefore, the subject-matter of the respective claims 13 does not introduce added subject-matter.

Third auxiliary request - clarity of the expressions "transparent", "generally transparent" and "see-through" used in claim 1

The application as a passenger window is sufficient to allow the person skilled in the art to determine the degree of transparency implied or required for a transparent, see-through passenger window for use in an aircraft. Similarly, the expression "*generally transparent*", although broad, only serves to characterise the kind of tape suitable for obtaining such a transparent/see-though window. Thus, the expressions "*transparent*", "*generally transparent*" and "*see-through*" as used in claim 1 are clear to the skilled person.

Third auxiliary request - sufficiency of disclosure of the subject-matter of claim 1

The invention primarily concerns a method of forming a panel. The skilled person knows how to carry out the steps for forming the composite panel. The skilled person resorts to his common general knowledge for the choice of materials for the tape. Various such combinations of materials for obtaining a transparent composite are known from, for example:

- document D4: PMMA and glass fibres (first page, left hand column, section "*I. INTRODUCTION*", lines 8 to 10)
- document D7: PMMA with unidirectional borosilicate glass fibres ("*ABSTRACT*", lines 1 to 4) and also glass fibres having the same refractive index as polystyrene (page 1182, third full paragraph, last sentence) and

- document D9: epoxy and glass ("ABSTRACT", lines 1 and 2) and also PMMA and glass (page 265, right hand column, lines 1 to 4).

Furthermore, document D7 concerns transparent canopies for United States Air Force F-16 planes which implies that the materials disclosed therein are necessarily also suitable for less stringent aircraft applications such as passenger windows.

Consequently, a person skilled in the art is readily able to carry out the claimed invention to prepare a panel in which a generally transparent fiber pre-impregnated resin tape issued to form a see-through window portion in a frame panel.

Thus, the invention is disclosed in a manner sufficiently clear and complete for it to be carried out by a skilled person.

Reasons for the Decision

1. *Main request, first auxiliary request and second auxiliary request*

The layering and heating steps of dependent claim 13 respectively according to the main request, first and second auxiliary requests have not been originally disclosed as additional to, and in combination with, the applying and heating steps of the respective claim 1. The method steps of claim 13 thus have not been originally disclosed in combination with the method steps of claim 1, contrary to Article 123(2) EPC.

The appellant's argument, that the skilled person would understand that these steps of the respective claims 13 correspond to those of the respective claims 1 cannot be followed, because the subject-matter of the respective claims 13 is not limited to this interpretation.

As this issue is present in the main request and the first and the second auxiliary requests, none of these requests meet the requirements of Article 123(2) EPC.

2. *Third Auxiliary request*

2.1 The third auxiliary request only contains 12 claims, so that the objections under Article 123(2) EPC raised against the respective dependent claims 13 according to the main request and the first and the second auxiliary requests no longer have cause to be.

2.2 Clarity - Article 84 EPC 1973

Claim 1 according to the third auxiliary request concerns a method of forming a structural panel and involves corresponding steps of a method of manufacture. The resulting panel thereby obtained must be suitable for use as a passenger window in an aircraft.

The terms "*transparent*" and "*see-through*" define an optical quality ranging from "*virtually opaque*" to "*fully transparent*". The latter can be described as the same as "*ordinary window or plate glass*" in the art of transparent fibre reinforced composites (e.g. see document D2, "*BACKGROUND OF THE INVENTION*", column 1, lines 23 to 26). Hence, the board does not share the examining division's view that the term "transparent"

only means "fully transparent" in view of the description.

These terms do not imply an upper limit, since the ideal situation is for the window to be "*fully transparent*" which, as set out in the description, occurs when "*the index of refraction of the fibers 36 is matched to the index of refraction of the resin 38*" (application as published, page 5, lines 26 to 28). The person skilled in the art of transparent fibre reinforced composites knows, as part of his common knowledge, what the term "*matched*" means and that this applies to the cured state of the panel (e.g. see document D4, first page, left hand column, section "*I. INTRODUCTION*", lines 8 to 10; document D7, "*ABSTRACT*", lines 1 to 4 and page 1182, third full paragraph; document D9, page 265, right hand column, lines 4 to 9).

Furthermore, the claimed window skin panel having to be suitable for use as a passenger window in an aircraft provides the skilled person with sufficient context for determining a lower limit of transparency, namely, as that which an aircraft manufacturer would consider tolerable for a passenger window.

In addition, in the context of obtaining a window skin panel which is sufficiently transparent to be suitable for use as a passenger window in an aircraft, the, as such, vague expression "*generally transparent*" applied to the fibre pre-impregnated resin tape does not go beyond stating the obvious, namely, that a fully opaque fibre pre-impregnated resin tape is not suitable for obtaining a "*transparent*"/"*see-through*" window panel.

Hence, the context of obtaining a panel suitable for use as a passenger window in an aircraft allows a skilled person wishing to manufacture a composite window skin panel to determine whether he is practicing a method according to claim 1 or not.

Thus, the expressions "*transparent*", "*generally transparent*" and "*see-through*" as used in claim 1 according to the third auxiliary request do not render the claimed subject-matter unclear for the skilled person. In consequence, the subject-matter of claim 1 according to this request meet the requirements of Article 84 EPC 1973.

2.3 Sufficiency of disclosure of the subject-matter of claim 1 - Article 83 EPC 1973

The invention primarily concerns a method of forming a panel. The person skilled in the art of forming composite panels knows how to carry out the steps for forming such panels. This was not disputed in the contested decision.

With regard to the choice of materials for the generally transparent, fiber pre-impregnated resin tape, the person skilled in the art of forming composite panels would, if necessary, consult a person skilled in the art of transparent composites. In particular, document D7 provides evidence that combinations of resins and fibres suitable for obtaining transparent composites ("*ABSTRACT*", lines 1 to 4) in the context of transparent canopies for United States Air Force F-16 planes (page 1181, section "*I. INTRODUCTION*") are known. Similarly, document D2 discloses the use of such materials in a prepreg (column 3, lines 39 to 65) while being suitable for use

as aircraft windows (column 15, lines 17 to 21). Again the implication is that a skilled person can obtain a generally transparent, fiber pre-impregnated resin tape including any necessary process parameters needed to obtain a transparent window skin structural panel for use in an aircraft as a passenger window in accordance with the method of claim 1.

In consequence, a person skilled in the art is able to carry out the subject-matter of claim 1, namely to prepare a panel in which a generally transparent fiber pre-impregnated resin tape is used to form a see-through window portion in a frame structure.

Thus, the subject-matter of claim 1 is disclosed in a manner sufficiently clear and complete for it to be carried out by a skilled person in accordance with Article 83 EPC 1973.

3. Remittal

In the present case the examining division gave its decision solely upon the particular issue of sufficiency of disclosure (Article 83 EPC 1973) and left other issues undecided.

Since proceedings before the boards of appeal are primarily concerned with the examination of the contested decision, remittal of the case to the examining division in accordance with Article 111(1) EPC 1973 is normally considered by the boards in cases where the examining division issues a decision solely upon a particular issue and leaves other substantive issues, such as novelty (Article 54 EPC 1973) or inventive step (Article 56 EPC 1973) undecided.

Therefore, and in view of the above findings with respect to claim 1 of the third auxiliary request, the board considered it appropriate to remit the case to the first instance for further prosecution (Article 111(1) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance for further prosecution.

The Registrar: The Chairman:

D. Meyfarth M. Poock

Decision electronically authenticated