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Datasheet for the decision of 17 July 2012

Case Number: T 1075/10 - 3.2.06

Application Number: 03253238.4

Publication Number: 1365108

IPC: F01D5/30, F01D5/18, F01D5/28, F01D5/08

Language of the proceedings: EN

Title of invention:
Blade for a gas turbine engine and method for manufacturing such blade

Applicant:
GENERAL ELECTRIC COMPANY

Headword:

Relevant legal provisions:
EPC 1973 Art. 84
RPBA Art. 13(1), Art. 12(2)

Keyword:
sole request submitted during oral proceedings - not admitted - not prima facie allowable - lack of clarity

Decisions cited:

Catchword:

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Case Number: T 1075/10 - 3.2.06

D E C I S I O N
of the Technical Board of Appeal 3.2.06
of 17 July 2012

Appellant: (Applicant)	GENERAL ELECTRIC COMPANY 1 River Road Schenectady, NY 12345 (ETATS-UNIS D'AMERIQUE)
Representative:	Goode, Ian Roy London Patent Operation General Electric International, Inc. 15 John Adam Street London WC2N 6LU (ROYAUME UNI)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted 11 November 2009 refusing European patent application No. 03253238.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: M. Harrison
Members: T. Rosenblatt
W. Sekretaruk

Summary of Facts and Submissions

I. The appeal lies from the decision of the examining division dated 11 November 2009 by which the European Patent application No. 03 253 238.4 was refused.

II. Together with the grounds of appeal the appellant (applicant) submitted a set of amended claims 1 to 4, upon which basis grant of a patent was requested.

III. In a communication in preparation for the oral proceedings, the Board informed the appellant of its preliminary view that the feature added to the independent claims 1 and 3 was seemingly only disclosed in the single embodiment in combination with further features which however had not been added to the claims, whereby the requirement of Article 123(2) EPC was apparently contravened; it also appeared however that this objection could not simply be overcome without introducing further features which themselves would give rise to objections under Article 84 EPC 1973.

IV. Oral proceedings were held on 17 July 2012 during which the appellant replaced all previous requests by a new request having a single claim.

V. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the request filed on 17 July 2012.

VI. The single claim according to the request submitted during the oral proceedings reads as follows:

"*1. A gas turbine engine comprising a plurality of blades, each blade comprising:*

a platform (52);
a shank (54) extending from the platform;
a dovetail (56) extending between an end (101) of the blade and said shank for mounting said blade within the gas turbine engine, said dovetail comprising at least one tang (86);
an airfoil (50) comprising a first sidewall (60) and a second sidewall (62) extending in radial span between said platform and a blade tip (70); and, a cooling cavity (102) in the blade that extends through the airfoil, the platform, the shank, and the dovetail, wherein the portion of the cavity defined within the dovetail includes a root passage section (120) having a first width (D_R), and a transition passage section (122) that extends between the root passage section and the portion (114) of the cavity defined within the shank, and wherein the portion of the cavity defined within the shank has a second width (D_S) that is larger than the root passage section first width (D_R); wherein the root passage section first width (D_R) is substantially constant within the root passage section (120) and the transition passage section (122) is tapered between the root passage section and the portion (114) of the cavity defined within the shank (54), such that the width of the transition passage section (D_T) tapers outwardly between the root passage section and the shank portion; and
a coating on the inner surface (104) of the blade that defines the cooling cavity, the coating being an oxidation resistant environmental coating (105), characterized in that
at least a portion of said cooling cavity has a coating having a thickness greater than 0.0254 mm (0.001 inches), and in that
the inner surface (104) of the cooling cavity (102) is defined with an arcuate interface (156) having a

predefined radius between the transition passage section (122) and the root passage section (120) of the cavity, wherein the combination of transition passage section length (146) and the arcuate interface (156) enables the transition passage section (122) to taper gradually outward between the root passage section (120) and the shank portion (114), and with an arcuate interface (170) between the transition portion (122) and the shank portion (114) of the cavity, and wherein the transition passage length (146) enables the arcuate interface (170) to be defined between the transition passage section (122) and the shank portion (114)."

VII. The arguments of the appellant as far as relevant for the present decision may be summarised as follows.

Claim 1 is based on originally filed device claim 3 in combination with features from original method claim 1, clause 17, and the description pages 6 and 7. The term "gradually" in the expression "*wherein the combination of transition passage section length (146) and the arcuate interface (156) enables the transition passage section (122) to taper gradually outward between the root passage section (120) and the shank portion (114)*" would be construed by the skilled person in the light of the prior art disclosed in Figure 5 as referring to a shallower, less steep or less abrupt taper angle.

Reasons for the Decision

1. Claim 1 of the sole request submitted during the oral proceedings does not meet the requirements of Article 84 EPC 1973. In particular, the feature "*wherein the combination of transition passage section length (146) and the arcuate interface (156) enables the transition passage section (122) to taper gradually outward*

between the root passage section (120) and the shank portion (114)" lacks clarity.

1.1 This feature has been taken almost literally from page 7 of the description of the only preferred embodiment of the invention, illustrated in Figure 3. The relative term "gradually", which has no well-defined meaning in the art, is not further defined in the description of in this embodiment. Its meaning can be understood however in comparison to the abrupt transition between the corresponding sections in the blade of the prior art shown in Figure 5.

1.2 The appellant's construction of the feature "taper gradually outward" relies on a comparison of the taper angles of the transition passage section in a blade of the preferred embodiment of the invention (Fig. 3) with an angle of the corresponding section in a prior art blade (Fig. 5). In these two blades, the respective diameters of the adjacent root passage section D_R, and the shank portion D_S, are shown to be essentially unchanged. The length of the transition passage section is altered and the sharp corners at both ends of the transition passage section of the prior art blade are replaced by arcuate interfaces in the blade according to the embodiment of the invention. By comparing the two blades of these Figures indeed the outwardly tapering transition passage section of the preferred embodiment of the invention is longer and therefore, by joining at their ends the respective root passage section and shank portion, leads to a less abrupt or more shallow taper angle compared to that in Figure 5. However, the subject-matter of the claim does not refer to any prior art blade, so that the feature "taper gradually outward" remains vague and without precise meaning.

1.3 Even if it were assumed that the skilled person would, from the present wording of the claim, understand the feature "to taper gradually outward" in the sense of a more shallow taper angle compared to the prior art disclosed specifically in Figure 5, it would remain entirely unclear where the limit lies, for example in terms of degrees of an angle, between an abrupt transition, of the prior art, and a gradual transition as intended by the claimed subject-matter. The application does not disclose any absolute or relative dimensions of the geometry of the cooling cavities' various sections for the blade according to the embodiment of the invention or the prior art blade. The appellant was also unable to provide any indication where such a limit between the prior art and the claimed subject-matter should be drawn, nor could the Board itself determine any disclosure in the application which would clarify this. The comparison of the length of the transition passage sections and consequently the meaning to be given to the feature "taper gradually outward" relies thus on unspecified dimensional relationships of a non-standardised prior art blade having a particular cooling cavity geometry with an allegedly abrupt transition. The feature consequently does not allow a skilled person to understand with any clarity what is meant by this feature of the claim.

2. According to Article 12(2) of the Rules of the Procedure of the Boards of Appeal (RPBA) the grounds of appeal shall contain a party's complete case. Article 13(1) RPBA sets out that any amendment to the party's case may be admitted and considered at the Board's discretion. The discretion shall be exercised in view of the complexity of the new subject-matter submitted,

the current state of the proceedings and the need for procedural economy. In order to be in line with the requirement of procedural economy, a request filed at a late stage of the procedure should be *prima facie* allowable in the sense that it overcomes the objections raised against previous requests and does not introduce new objections.

Since the claim of the sole request submitted during the oral proceedings does not meet the requirement of Article 84 EPC 1973, this request is not *prima facie* allowable in the aforementioned sense. It was thus not admitted into the proceedings.

3. Since the only request on file was not admitted, the appeal could not be allowed since there was no request in proceedings upon which grant of a patent could be based.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. H. A. Patin M. Harrison

Decision electronically authenticated