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Case Number : T 439/90 - 3.2.2

89

D E C I S I O N
of the Technical Board of Appeal 3.2.2
of 6 November 1991

Appellant : Energy Sciences Inc.
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Woburn
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Representative : Allsop, John Rowland
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Decision under appeal : Decision of Examining Division 2.3.04.087 of the European Patent Office dated 7 February 1989 refusing European patent application No. 84 300 035.7 pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : G.S.A. Szabo
Members : W.D. Weiss
J.H. Van Moer

Summary of Facts and Submissions

I. European patent application No. 84 300 035.7, filed on 4 January 1984, published under No. 0 147 906, was refused by the decision of the Examining Division dated 7 February 1989.

II. The decision was based on Claims 1 to 3 received on 12 August 1988 with a letter dated 10 August 1988 and the Claims 4 to 9 filed on 11 November 1987 with a letter of 09 November 1987, the description pages 1, 2 and pages 6 to 12 (renumerated to 5 to 11) as published, pages 3 and 4 filed on 12 August 1988 with a letter dated 10 August 1988, and the Figures as published.

The independent Claims 1 and 9 of this set of Claims read as follows:

"1. A process for electron beam curing of an adhesive coating upon a radiation-sensitive substrate with a decorative layer adhered to the cured coating, comprising, attaching a decorative layer (5) to the inner surface of a release layer (4) with the decorative layer (5) susceptible of being stripped therefrom by a predetermined stripping force; assembling the release layer decorative layer (4, 5) with a substrate (1) and with an electronbeam-curable adhesive coating (3) carried between the decorative layer (5) and the substrate (1); pressing the assembly together; impinging electron beam radiation upon the pressed-together assembly comprising the substrate (1) with the adhesive coating (3) and decorative layer (5) carried by the release layer (4) and adjusting the beam (7') to concentrate the principal energy within the coating (3) to cure the same with minimal reaction upon the release layer (4), decorative layer (5) and substrate (1) of the assembly; and peeling the release

layer (4') from the substrate (1') with its cured coating (3') and adhered transferred decorative layer (5'); characterised by adjusting the viscosity range of the adhesive coating (3) applied to the substrate such that upon the electron-beam curing of the adhesive layer (3) the decorative layer (5) is bonded to the adhesive layer with an adhering force equal to or greater than said predetermined stripping force as between the release layer (4) and said decorative layer (5).

9. Apparatus for carrying out the method as claimed in claims 1 to 9 comprising an electron-beam radiation processor (7) disposed at a predetermined region of the path of travel of a substrate web (1), means for attaching a decorative layer (5) to the inner surface of a release layer web (4) and feeding the same along said path of travel; means (6) for pressure-laminating an assembly comprising the substrate web (1) to the release-layer-decorative layer (4, 5) with electron-beam-curable adhesive means (3) interposed and for carrying the assembly through said predetermined region to cure the adhesive means (3) and bond the decorative layer (5) thereto with a force greater than that required to strip the decorative layer (5) from its attachment to the said inner surface of the release layer web (4); and peeling the release layer web (4') from the cured assembly to produce a substrate web (1') coated by the cured adhesive (3') with the decorative layer (5') transferred to and bonded thereupon."

The dependent Claims 2 to 8 refer to particular embodiments of the process according to Claim 1.

III. In its decision, the Examining Division held that the subject-matter of the claimed subject-matter failed to

involve an inventive step having regard to US-A-4 215 170, EP-A-9885, US-A-4 246 297, and JP-A-80 163 294.

IV. On 21 March 1989, an appeal was lodged against this decision. The fee for appeal was paid simultaneously. The Statement of the Grounds was transmitted by telecopy on 16 June 1989 and confirmed by a letter received on 20 June 1989.

The Appellant maintained the claims which had been the basis for the decision under appeal and expressed his readiness to restrict the subject-matter to solvent-free varnishes on an auxiliary basis.

V. In a Communication pursuant to Article 110 (2) EPC dated 21 September 1990 the Board expressed as its provisional opinion that there existed at least two reasons why the independent Claims 1 and 9 would not be allowable.

The first reason was that the subject-matter lacked novelty with respect to EP-A-0 130 659 (hitherto called (D6)), which constituted a state of the art according to Article 54(3) EPC. It was expressly pointed out that (D6) also disclosed the use of solvent-free varnishes (point 6 of the communication).

The second and independent reason was that the subject-matter of the independent claims failed to involve an inventive step having regard to a combination JP-A-80 163 294 (D4), as interpreted in the light of its English abstract (D5), published in Abstract Bulletin of Institute of Paper Chemistry, vol. 52, no. 1, July 1981, page 124, with (D3), US-A-4 246 297.

The subject-matter of the application under appeal was also discussed in the light of these objections during an

Oral Proceedings before the Board held on 06 November 1991.

VI. In his written and oral submissions the Appellant contested that (D6) disclosed the use of solvent-free varnishes, and he argued that this document did not disclose that the viscosity of the adhesive coating was adjusted within a range.

Consequently, the Appellant requests that the decision under Appeal be set aside and a patent be granted on the basis of the following requests:

- as Main Request, Claims 1 to 3 as filed on 12 August 1988 and Claims 4 to 9 as filed on 11 November 1987;

- as Auxiliary Request, Claim 1 further amended by adding after the word "characterised" the words "in that said electron beam curable adhesive coating is solvent free and", the other claims remaining unchanged.

Reasons for the decision

1. The appeal is admissible.

2. The amendments made to the application do not contravene Article 123(2) EPC.

4. State of the art according to Article 54 (3) EPC

The originally filed documents of European patent application No. 84 300 108.2, filed on 09 January 1984, claiming the priority of an earlier US application 509095

of 28 March 1983 were published on 09 January 1985 as EP-A-0 130 659 (hitherto called D6). The Contracting States designated in the application under appeal were also designated in the application No. 84 300 108.2 at the publication date of document (D6).

In as far as the content of document (D6) is covered by the content of its priority document, the content of document (D6) constitutes, therefore, a state of the art according to Article 54(3) EPC with respect to the application under appeal.

5. Novelty

5.1 Document (D6), in particular page 4 to page 9, first paragraph thereof, discloses a process for electron beam curing of an adhesive coating upon a radiation-sensitive substrate with a decorative layer adhered to the coating to be cured. This known process comprises:

- attaching a decorative layer to the inner surface of a release layer with the decorative layer susceptible of being stripped therefrom by a predetermined stripping force (page 4, line 12, page 5, line 8, to page 6, line 8);
- assembling the release layer decorative layer with a substrate and with an electronbeam-curable adhesive coating carried between the decorative layer and the coating (page 4, lines 13 and 14; page 6, lines 14 to 18, page 13, second paragraph);
- this assembly is pressed together (page 4, lines 15 and 16, page 7, lines 17 to 23, page 10, line 23, to page 11, line 4);
- impinging electron beam radiation upon the pressed-together assembly comprising the substrate with the

adhesive coating and decorative layer carried by the re-lease layer (page 4, line 17, page 7, lines 24 to 26, page 11, line 5, to page 14, line 5);

- adjusting the beam to concentrate the principal energy within the coating to cure the same with minimal re-action upon the release layer, the decorative layer and the substrate of the assembly (page 13, line 22, to page 14, line 5); and
- peeling the release layer from the substrate with its cured coating and adhered transferred decorative layer (page 4, line 19, page 8, lines 1 to 12).

It is the very nature of a curing (polymerisation) process that the viscosity of the uncured composition is lower than that of the cured (polymerised) product. Having this in mind and considering that the Claim 1 according to the application in suit is silent about an upper limit of the "viscosity range", the characterising feature of the present Claim 1 simply means that the adhesive composition must be chosen such that after electron-beam curing its adhesive force with respect to the decorative layer is equal to or higher than the peeling force between the release layer and the decorative layer. This condition is also met by the known process of (D6), because there the release layer is easily peeled off after curing.

Consequently, document (D6) discloses a process which comprises all the features of Claim 1 according to the Main Request.

5.2 The apparatus disclosed in (D6), see in particular the Figure with the relevant parts of the description, comprises all the elements enumerated in Claim 9 according to the Main Request. In particular, according to (D6), page 11, lines 13 to 16, and page 12, line 24, to page 13, line 3, the same electron radiation processor "Electro

Curtain" as in the application in suit is used, see EP-A-147 906, page 10, first paragraph.

5.3 Document (D6) discloses quite clearly, that solvent-free and solvent-containing varnishes may be used at the discretion of the user, see page 6, last paragraph, page 7, third paragraph, examples 1 and 6 without solvent, examples 3 with evaporable solvent. In particular the examples cited unambiguously exclude any other interpretation of the paragraph bridging the pages 6 and 7 than that solvent-free or solvent containing varnishes may be used at the discretion of the skilled person.

Consequently, also the additional feature by which Claim 1 according to the Auxiliary Request differs from Claim 1 according to the Main Request is clearly and unambiguously derivable from document (D6).

5.4 The Board has checked that all the particular references of document (D6) cited above are also disclosed in the priority document contained in the file of the European patent application No. 84 300 108.2. The originally filed documents of this prior application and, therefore Document (D6), constitute a state of the art according to Article 54(3) EPC. This fact has not been disputed by the Appellant either.

5.5 Consequently, the Board comes to the conclusion that the subject-matter of the Claims 1 and 9 according to the Main Request as well as Claim 1 according to the Auxiliary Request is not novel having regard to document (D6).

6. In the course of the oral proceedings also the objections with respect to lack of inventive step vis-à-vis a combination of the documents (D4)/(D5) and (D3) expressed

in detail by the Board in point 7 of its Communication pursuant to Article 110(2) EPC dated 21 September 1990 could not be refuted by the Appellant. Moreover, Document (D3) explicitly refers to the use of solvent-free adhesives.

Since however, the claimed subject-matter has already proved not to be novel, this decision needs not rely on a second independent ground.

7. Claims 1 and 9 according to the Main Request and Claim 1 according to the Auxiliary Request are not allowable having regard to Article 52(1) EPC.

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar

N. Maslin

The Chairman

G. Szabo

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