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Bezeichnung der Erfindung:
Title of invention:
Titre de l'invention : Process for decorating anodized aluminium

Klassifikation / Classification / Classement : B 41 M 5/02; B 41 M 1/28

ENTSCHEIDUNG / DECISION

vom / of / du 4 November 1986

Anmelder / Applicant / Demandeur : Fromson, Howard A.,

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 56

Kennwort / Keyword / Mot clé :

"Inventive step"

Leitsatz / Headnote / Sommaire

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Case Number : T 16 /84

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 4 November 1986

Appellant : Fromson, Howard A.
15 Rogues Ridge Road
Weston Connecticut 06066 (US)

Representative : Schulze Horn, Stefan, Dipl.-Ing. et al,
Goldstrasse 36
D-4440 Münster (DE)

Decision under appeal: Decision of Examining Division 086 of the European Patent Office dated 23 August 1983 refusing European patent application No. 79 104 492.8 pursuant to Article 97(1) EPC

Composition of the Board :

Chairman : P. Delbecque
Member : C. Maus
Member : P. Ford

Summary of Facts and Submissions

I. European patent application No. 79 104 492.8, filed on 14 November 1979, published under publication number 0 012 831 and claiming the priority of a previous application of 22 December 1978, was refused by the decision of the Examining Division 086 dated 23 August 1983.

The decision was based on Claims 1 to 7 received on 16 November 1982.

II. In the decision, the Examining Division stated that the Applicant filed no comments in reply to its communication dated 18 February 1983 according to which the subject-matter of Claims 1 to 3 did not involve an inventive step. In support of its view the Examining Division had cited British patent specification No. 1 449 974, French publication No. 2 380 901 and USA patent specification No. 3 123 516.

III. On 24 October 1983, the Appellant lodged an appeal against this decision by telex, paying the fee for appeal simultaneously and requesting that the decision under appeal should be set aside and that a patent should be granted on the basis of Claims 1 to 7. A letter reproducing the contents of the telex was received on 25 October 1983 and the Statement of Grounds was submitted on 23 December 1983.

IV. During the procedure before the Board of Appeal, the Appellant substituted new Claims 1 to 5 received on 28 March 1985 for the claims on which the decision was based. At the same time, he submitted a description adapted to the wording of new Claim 1.

Claim 1 reads as follows:

"1. Process for decorating an aluminium substrate (10) with a design, said aluminium substrate (10) having a porous unsealed anodic oxide layer (12) thereon, imprinting said oxide layer (12) with a sublimatable dye, using a carrier (18) carrying a design (16) containing said sublimatable dye, heating said carrier (18) to a temperature and for a time sufficient to cause the dye to sublimate and to migrate into the substrate (10), and letting condense the dye in the pores of the substrate,
characterized by the following steps:
- the aluminium substrate (10) is coated with a polymeric material which is substantive to the sublimatable dye,
- the polymeric coating (14) is contacted with said carrier (18) with design, said carrier (18) is heated to a temperature and for a time sufficient to cause the dye of the design to sublimate and to migrate into and through the polymeric coating (14) and into the oxide layer (12) and letting condense the dye in the pores of the oxide layer (12) and in the polymeric coating (14)."

The Appellant was of the opinion that the process according to this claim involved an inventive step as against the documents cited by the Examining Division.

V. By a letter dated 28 July 1986 the Appellant requested the Board to make some amendments in Claim 1 and the description received on 28 March 1985.

VI. For the original claims and description reference is made to publication No. 0 012 831.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. Claim 1 comprises a combination of the features mentioned in original Claim 7 with features which are disclosed on page 2, lines 3 to 21 of the description.

   Hence its subject-matter does not extend beyond the content of the application as filed (Article 123(2) EPC).

3. The Appellant derived the preamble of Claim 1 from the process disclosed in British patent specification No. 1 449 974. According to the findings of the Board this process is closest to the subject-matter of Claim 1 among the processes described in the cited prior art. As the Appellant has mentioned in the preamble of the claim all those features which, in combination, are part of the process made available to the public by the aforesaid document the claim fulfils Rule 29(1)(a) EPC.

   Consequently, Claim 1 is in these respects not open to objection.

4. It follows from the statements in the foregoing paragraph that the Board, having examined the publications cited in the search report, has come to the conclusion that the process according to Claim 1 is not disclosed in any one of these documents.

   The subject-matter of Claim 1 is, therefore, novel having regard to this state of the art.

5. On the question of whether or not the prior art could suggest the process according to Claim 1 the following should be observed:

5.1 In the process for decorating an aluminium substrate with a design described in British patent specification No. 1 449 974 the sublimatable dye contained on the carrier is applied directly to the anodised oxide layer on the aluminium substrate. As the surface of an anodised layer is unstable, because aluminium-oxide reacts with atmospheric water, it is necessary either that the surface is freshly anodised prior to applying the dye or that precautions are taken to protect it from atmospheric water.

After the dye has been condensed in the pores formed in the anodised surface, the surface is sealed in order to make the designed substrate stable. The nature of the seal obtained by most of the prior art methods is, however, incomplete. In order, therefore, to prevent the colouring agent of the dye in the layer from being liable to attack by external reagents a masking agent is applied prior to treating the layer with a sealant. The use of such an agent requires precautions under very sensitive preparation conditions.

The Appellant regarded this process as complicated and unsatisfactory.

5.2 The problem underlying the invention is, therefore, to create a process by means of which products are achieved which are resistant to chemical and mechanical damage in the state before as well as after the step of decorating.

5.3 According to the findings of the Board the subject-matter of Claim 1 proposed as a solution of the foregoing problem was unobvious having regard to the prior art revealed in the search.

5.3.1 Among the documents cited in the search report USA patent specifications No. 3 484 342 and 3 563 865, like British patent specification No. 1 449 974, concern processes for

decorating aluminium substrates by contacting a porous anodised oxide layer of the substrate with a volatile dye and by sealing the layer subsequent to its decoration. The problems resulting from the above-mentioned instability of an anodised oxide layer and from the incomplete nature of the seals obtained by most of the prior art methods are not discussed in these documents. These patent specifications comprise, therefore, no suggestion which could direct the skilled person towards the subject-matter of Claim 1.

5.3.2 The same applies to USA patent specification No. 3 123 516 discussed in the decision under appeal. The problem underlying the process disclosed in this document results from the fact that in lithographic printing on aluminium surfaces, excess water from the fountain solution accumulates on the surface hindering ink transfer to it. In order to prevent the accumulation of water, the aluminium surface is coated with a vinyl resin which helps to absorb the ink. Hence the coating is provided for a different purpose from the coating of the process according to Claim 1, in which process the coating, furthermore, is penetrable in order that the dye can sublimate into the oxide layer.

5.3.3 French publication No. 2 380 901 also could not suggest the subject-matter of Claim 1 as a solution of the problem mentioned in paragraph 5.2.

Even if one starts from the supposition that the skilled person would search suggestions for solving this problem in the technical field of processes for making rigid decorated panels water-resistant and thus would be informed of the process disclosed in the aforesaid publication, he would come to the conclusion that this process would not be a useful solution to the problem.

According to French publication No. 2 380 901, the panels are coated with a solid transparent polymer-coating which makes them water-resistant. The polymer-coating also serves as a carrier for the decoration. For this reason, its constitution is such that the dye can only penetrate the upper layer of the coating. Hence, it prevents the dye from reaching the panel.

This document does not, therefore, give any hint that a coating is appropriate as a problem-solution provided a polymeric material is selected which on the one hand prevents water from reaching the anodised oxide layer of the aluminium substrate but, on the other hand, allows the dye to migrate through the coating into the oxide layer.

5.3.4 From the foregoing discussion it follows also that a combination of the teachings of the cited documents would not lead the skilled person to the process according to Claim 1.

5.4 The other citations published before the priority date (i.e. Swiss patent specifications No. 409 577 and 561 331, USA patent specification No. 3 906 138, German "Offenlegungsschrift" No. 2 529 893 and German "Auslegeschrift" No. 2 713 484) are much further removed from the subject-matter of Claim 1 than the documents discussed above. They could not, therefore, suggest either alone or in combination with the teachings of the other publications the features specified in Claim 1 for the solution of the problem underlying the invention.

5.5 Hence, the subject-matter of Claim 1 involves an inventive step within the meaning of Article 56 EPC.

6. Consequently, Claim 1 is allowable (Article 52 EPC).

7. Claims 2 to 5 concern particular embodiments of the process according to Claim 1 on which they depend and are likewise allowable.

8. The description is adapted to the wording of Claim 1 and presents now the state of the art from which the invention starts and other relevant documents. Consequently, the amendments are not open to objection.

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 European patent on the basis of the following documents:

Claims 1 to 5, received on 28 March 1985 and amended as requested,
description, received on 28 March 1985 with the amendments as requested,
original drawings.

The Registrar The Chairman

B.A. Norman P. Delbecque