BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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File Number: T 364/90 - 3.3.1

Application No.: 83 112 033.2

Publication No.: 0 111 250

Title of invention: A method for making a glued joint

Classification: C09J 3/14

D E C I S I O N
of 8 August 1991

Proprietor of the patent: A/S F. Heimann & Co

Opponent: Henkel KGaA

Headword: Glue/Heimann

EPC Articles 54 and 56

Keyword: "Novelty (confirmed - assessment of handbook in the light of common general knowledge" -
"Inventive step (confirmed) - unforeseen result"

Headnote

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 364/90 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal - 3.3.1
of 8 August 1991

Appellant : (Opponent)
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Decision under appeal :
Interlocutory decision of the Opposition Division of the European Patent Office dated 7 March 1990 concerning maintenance of European Patent No. 0 111 250 in amended form.

Composition of the Board :

Chairman : K.J.A. Jahn
Members : R.W. Andrews
J.A. Stephens-Ofner

Summary of Facts and Submissions

I. European patent No. 0 111 250 in respect of European patent application No. 83 112 033.2, which was filed on 30 November 1983, was granted on 15 April 1987 (cf. Bulletin 87/16).

II. On 11 January 1988 a notice of opposition was filed in which the revocation of the patent was requested on the grounds that the disclosure of the invention was not sufficient and that its subject-matter lacked novelty and did not involve an inventive step. The opposition was supported, inter alia, by

(3) EP-A-0 046 957.

After expiry of the time allowed for filing notice of opposition the Opponent (Appellant) referred to the following documents:

(5) Handbook of Adhesive Bonding, Edited by Charles V. Cagle, p. 19-1 to 19-15, 1973 and

(6) NMP N-Methyl-2-Pyrrolidone Handbook, GAF Corporation, pp. 35-39, 41, 47, 114 and 115, 1972.

III: By an interlocutory decision dated 7 March 1990, the Opposition Division maintained the patent in amended form on the basis of Claims 1 to 20 submitted during the oral proceedings held on 11 October 1989.

The Opposition Division held that the disclosure of the disputed patent was sufficient and that the subject-matter of the amended Claim 1 was novel.

The Opposition Division also considered that, in the light of the closest prior art as represented by document (3), the technical problem underlying the disputed patent was to provide a method of gluing which permits the gluing of components not previously easy to glue and which obviates or reduces the disadvantages of the known methods, in particular, the careful degreasing of the components to be glued. In the light of the disclosure of document (3) taken alone or combined with the other cited documents, the Opposition Division decided that the proposed solution of totally replacing the solvent mixture of a glue formulation by N-methylpyrrolidone (NMP) was not foreseeable and, therefore, inventive.

IV. An appeal was lodged against this decision on 3 May 1990 with payment of the prescribed fee. In his Statement of Grounds of appeal filed on 9 July 1990, his letter filed on 11 February 1991 and during oral proceedings held on 8 August 1991, the Appellant contended that the subject-matter of Claims 1, 2, 4 to 6, 8, 10 to 17 and 20 lacked novelty in the light of the disclosure in document (6), and that the subject-matter of the remaining claims did not involve an inventive step having regard to this document.

The Appellant also argued that a combination of the Example and description on p. 3, lines 3 to 11 of document (3) actually disclosed a glue consisting of a solution of PVC in a mixture of NMP and methyl ethyl ketone (MEK) since there was nothing in document (3) to stop the skilled person from replacing not only the dimethylformamide but also the other solvents present in the prior art glue. To solve the problem underlying document (3), it was not necessary to replace MEK by NMP. However, if the skilled person was also concerned with the problem of inflammability or the protection of the environment, he would also replace the highly inflammable

MEK by the less inflammable NMP and arrive at the glue used in the present process.

The Appellant also denied that the three advantages alleged to be obtained by the claimed process could be used to support inventive step. Furthermore, he argued that it was not clear from the evidence on file that the process of the disputed patent was, in fact, advantageous in comparison with the process of document (3).

V. The Respondent maintained that the claimed process was novel in the light of the disclosure of document (6).

He also stated that the glue used in the claimed process was of a completely new type which did not rely on film formation to unite the glued items, and thereby, provided three advantages of particular importance, namely, the possibility of adjusting the position of the items to be glued after they have been joined together, the possibility of gluing soft PVC to rigid PVC without later cracking or brittling of the plasticised items; and the possibility of omitting the degreasing of the items to be glued.

With respect to document (3) the Respondent contested the Appellant's allegation that it concretely disclosed a glue solution consisting of PVC dissolved in a mixture of NMP and MEK. The Respondent submitted that the skilled person would not replace much more than the preferred amount of 20% of the conventional solvents by NMP, otherwise the very nature of the glue would be completely changed.

VI. The Appellant requested that the decision under appeal be set aside and the patent revoked. The Respondent requested that the appeal be dismissed and that the patent be

maintained on the basis of the claims and description as amended in the course of opposition proceedings (on 12 December 1989).

Claim 1 of this set of claims reads as follows:

"A method for making a glued joint between surfaces of articles made from a material comprising water-insoluble synthetic organic polymers, said method comprising applying a glue consisting of a solution of at least one water-insoluble synthetic organic polymer selected from the group consisting of PVC, ABS, polyacrylate, polcarbonate, cellulose acetate, polyacrylamide, polymide and polystyrene in a solvent which consists of one or several compounds selected from the group consisting of 5- or 6-membered water-miscible lactones or lactams having a melting point of at the most -10°C, a boiling point of at least 200°C and a flash point of at least 90°C, on at least one of the surfaces to be joined, joining the surfaces and allowing the joint to develop."

VII. At the conclusion of the oral proceedings, the Board's decision to dismiss the appeal was announced.

Reasons for the Decision

1. The appeal is admissible.

2. There are no formal objections under Article 123 EPC to the current version of the claims. Thus, Claim 1 represents a combination of original Claims 22, 1 and 8 (cf. also Claims 1 and 21 as granted for the Contracting States BE, CH, DE, FR, GB, IT, LI, LU, NL and SE). Claims 2 to 20 are based on Claims 2 to 7 and 9 to 21 as filed (cf. Claims 2 to 20 as granted).

3. The disputed patent concerns a method for making a glued joint between surfaces of articles made of water-insoluble synthetic organic polymers using a glue consisting of a solution of at least one specified water-insoluble organic polymer in a solvent consisting of at least one 5- or 6-membered water-miscible lactone or lactam having a melting point of at the most -10°C, a boiling point of at least 200°C and a flash point of at least 90°C.

3.1 Document (3), which is considered to represent the closest state of the art, discloses a similar process wherein the concentration of solvent vapour present during the gluing process is reduced by replacing a part of the solvent present in the glue solvent system by an N-alkylpyrrolidone (cf. Claims 1 and 4 and the example).

However, the danger to the health of the workers using these prior art glues was still too high and their use also constituted too great a fire hazzard.

3.2 Therefore, in the light of this closest prior art, the Board sees the technical problem underlying the disputed patent in providing a process for making glued joints of the specified type of an acceptable standard in which the danger to the workers' health and the risk of fire associated with the prior art method are substantially reduced.

According to the patent in suit, this technical problem is solved by using glue consisting of solutions of water-insoluble synthetic organic polymers in 5- or 6-membered lactones or lactams having the physical properties specified in the present Claim 1.

3.3 In view of the differences between the minimum specified flash points and boiling points of the solvents used in the glues in the method according to the disputed patent and those of the solvent mixtures employed in the prior art glue, the Board is satisfied that this technical problem has been solved.

4. The first question to be decided is whether the method according to the present Claim 1 is novel having regard to document (6).

4.1 In accordance with the established jurisprudence of the Boards of Appeal (cf. Decisions T 124/87 "Dupont/Copolymer", OJ EPO, 1989, 491, paragraph 3.2; T 12/81 "Diastereomers", OJ EPO, 1982, 296, paragraph 5; and T 198/84 "Thiochloroformates", OJ EPO, 1985, 209, paragraph 4), in order to decide this question, it is necessary to consider whether the disclosure of document (6) is such as to make the claimed method available as a technical teaching to the skilled person.

4.2 Therefore, it is necessary to decide the nature and the extent of the information actually imparted to the skilled person by this document as distinct from its literal disclosure.

Document (6) is a handbook relating to N-methyl-2-pyrrolidone (NMP) published in 1972 by the GAF Corporation International Operations. On p. 35, first four lines, it is stated that NMP is an efficient solvent for coating, spinning, laminating, moulding, extruding and stripping and that numerous resins are readily soluble in it. A list of soluble polymers is then given. At the end of the list an obelus directs the reader's attention to a footnote which contains the information that a list of representative polymers dissolving to the extent of 5% or more in NMP is given in the Appendix (pp. 114 and 115).

These pages disclose the solubility of Geon 101 and 102 (polyvinyl chloride, Goodrich), PVC and Vinylite VYNW (vinyl chloride resin, Union Carbide). The sentence immediately following the obelus reads "The solvent improves performance in such applications as:

vinyl coatings .....
rubber and vinyl cements."

Thus, this document clearly discloses solutions of PVC in NMP. However, it is necessary to decide whether this disclosure in combination with the reference to vinyl cements in the above-mentioned context makes available, in the sense laid down in the Decisions cited above, to the skilled person a method of gluing using this solution of PVC.

In the Board's judgment, the skilled person would construe this page of the handbook as meaning that the solvent viz. NMP, improves the performance of vinyl cements known at the publication date of the handbook (1972). Therefore, this passage must be interpreted in the light of the skilled person's common general knowledge regarding vinyl cements at this date as reflected by, for example, document (5). In the paragraph bridging pp. 19.2 and 19.3 of this document, it is stated that individual solvents are rarely used alone in adhesive formulations and that generally several are combined because no single solvent has all the properties desired for a particular formulation. Specifically, one p. 19-14 two typical vinyl cements containing a mixture of at least two solvents, for example, a mixture of four solvents, are described.

Therefore, in the Board's opinion, document (6) makes available to the skilled person an improved gluing process

using a vinyl cement comprising NMP in combination with other solvents.

This interpretation of document (6) is in conformity with document (3) in which an improvement in a conventional gluing process is achieved by replacing part of the solvent system mixture of a vinyl cement by NMP.

4.3 The Appellant also alleged that the claimed subject-matter lacked novelty in the light of the disclosure on p. 38 of document (6). According to the paragraph headed "Thickened Solvent Solutions", in certain applications, including rubber and vinyl cements when a gel-like consistency is desired, NMP can be thickened by the addition of certain thickening agents.

In deciding what information this passage actually makes available to the skilled person, it is also necessary to take into consideration his common general knowledge relating to vinyl cements. In view of this knowledge as discussed above, it is considered that this passage of document (6) discloses a vinyl cement with a thickened solvent system comprising a mixture of NMP and at least one other organic solvent.

4.4 Therefore, in the Board's judgment, the claimed subject-matter is novel with respect to the disclosure of document (6). After examination of the other cited documents, the Board is satisfied that it is also novel with respect to these.

5. It still remains to be decided whether the proposed solution to the above-mentioned technical problem is inventive.

5.1 As mentioned above document (3) discloses a process for making a glued joint using an adhesive containing organic solvents in which part of the organic solvent, preferably 0.1 to 20% by weight is replaced by an N-alkylpyrrolidone (cf. Claims 1 to 4 and the example). Although the object of this earlier invention was to reduce the concentration of the organic solvent vapour in the work place, i.e. to reduce the danger to the worker's health, the replacement of all of the solvents of conventional glues by, for example, NMP, was never contemplated. The reluctance to replace all the solvent system by NMP is in line with the skilled person's common general knowledge in this field that individual solvents are rarely used alone in adhesive formulations, since a single solvent does not in general possess all the desirable properties (cf. for example, pp. 19-3 of document (5)).

Therefore, the teaching of document (3) including the passage on p. 3, lines 3 to 19, coupled with his common general knowledge, would not provide the skilled person with any incentive to consider using a single solvent as defined in Claim 1 to solve the technical problem underlying the disputed part.

5.2 Although it may well be true that the skilled person could have considered making the replacement, in the Board's judgment, the question to be asked and answered is not whether the skilled person could have replaced the solvent system disclosed in document (3) by a solvent as defined, but whether he would actually have done so in the reasonable expectation of obtaining a glued joint of an acceptable standard (cf. T 2/83, "Simethicone Tablet/RIDER", OJ EPO, 1984, 265 particularly paragraph 7). In this respect the Board considers that, having regard to common general knowledge as outlined above and the cited prior art, the skilled person would not be in a

position to foresee that it is possible to obtain a satisfactory glued joint with a glue as defined in the present Claim 1.

5.3 Therefore, in the Board's judgment, the proposed solution to the above-defined technical problem is inventive. Hence, Claim 1 and dependent Claims 2 to 20 are allowable.

6. In view of the above finding it is not necessary to decide whether the three particular advantages (cf. Respondent's submissions) are unique to the present process or whether some or all of these advantages are present in the method making a glued joint using a glue in accordance with document (3).

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar

E. Görgmaier

The Chairman

K.J.A. Jahn

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