Europäisches Patentamt
Beschwerdekammern

European Patent Office
Boards of Appeal

Office européen des brevets
Chambres de recours

Veröffentlichung im Amtsblatt	Ja/Nein
Publication in the Official Journal	~~Yes~~/No
Publication au Journal Officiel	~~Oui~~/Non

Aktenzeichen / Case Number / N° du recours : T 341/89 - 3.3.1

Anmeldenummer / Filing No / N° de la demande : 84 200 303.0

Veröffentlichungs-Nr. / Publication No / N° de la publication : 0 120 528

Bezeichnung der Erfindung: Detergent compositions
Title of invention:
Titre de l'invention :

Klassifikation / Classification / Classement : C11D 3/30

ENTSCHEIDUNG / DECISION

vom / of / du 4 September 1990

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent / Titulaire du brevet : Unilever N.V.
Unilever PLC

Einsprechender / Opponent / Opposant : Proctor & Gamble

Stichwort / Headword / Référence : Detergent compositions/UNILEVER

EPÜ / EPC / CBE Article 56

Schlagwort / Keyword / Mot clé : "Inventive step (confirmed)"

Leitsatz / Headnote / Sommaire

Europäisches Patentamt
Beschwerdekammern

European Patent Office
Boards of Appeal

Office européen des brevets
Chambres de recours

Case Number : T 341/89 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 4 September 1990

Appellant : (Opponent)
Proctor & Gamble
European Technical Center N.V.
Temselaan 10
B-1820 Strombeek-Bever (BE)

Representative :

Respondents : (Proprietors of the patent)
Unilever N.V.
Burgemeester s'Jacobplein 1
P.O. Box 760
NL-3000 DK Rotterdam (NL)

Unilever PLC
Unilever House
Blackfriars
P.O. Box 68
London EC4P 4BQ (GB)

Decision under appeal :
Decision of Opposition Division of the European Patent Office of 6 December 1988, posted on 20 March 1989, rejecting the opposition filed against European patent No. 0 120 528 pursuant to Article 102(2) EPC.

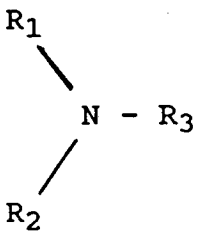
Composition of the Board :

Chairman : K.J.A. Jahn
Members : R.W. Andrews
W. Moser

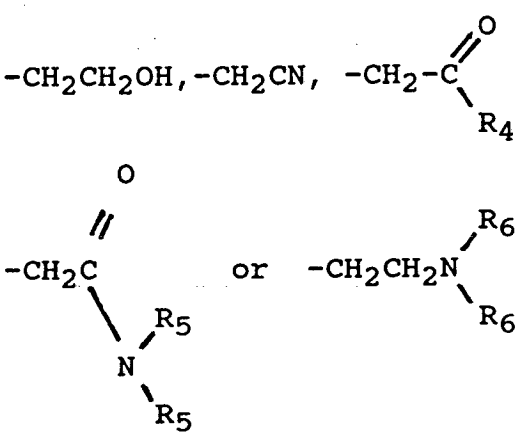
Summary of Facts and Submissions:

I. European patent No. 0 120 528 in respect of European patent application No. 84 200 203.0, which was filed on 2 March 1984, was granted with nine claims, the only independent claim reading as follows:

"A detergent composition for the cleaning and softening of fabrics, comprising 2-50 % by weight of an anionic surfactant and/or a nonionic surfactant and 0.5-15 % by weight of a tertiary amine having the general formula:



wherein R_1 is a C_{10}-C_{26} alkyl or alkenyl group,
R_2 is as R_1 or if R_1 is a C_{20}-C_{26} alkyl or alkenyl group, may be a C_1-C_7 alkyl group and R_3 has the formula $-CH_2-Y$ wherein Y is H, C_1-C_6 alkyl,  , $-CH_2OH$, $-CH=CH_2$,



03496 .../...

wherein R_4 is a C_1-C_4 alkyl group, each R_5 is independently H or C_1-C_{20} alkyl; and each R_6 is independently H or C_1-C_{20} alkyl;

characterized in that it further contains cellulase, which together with said tertiary amine forms the essential fabric softening ingredients."

II. On 24 March 1987 a notice of opposition was filed requesting the revocation of the patent on the ground that its subject-matter did not involve an inventive step. The opposition was supported by the following documents:

(1) FR-A-2 481 712
(2) GB-A-1 368 599
(3) GB-A-1 514 276 and
(4) EP-A-0 011 340.

III. By a decision delivered orally on 6 December 1988, with written reasons posted on 20 March 1989, the Opposition Division rejected the opposition. The Opposition Division held that it would not have been obvious to the skilled person in the light of the cited prior art that a substantial improvement in softening performance of the compositions disclosed in document (3) or (4), whilst maintaining detergency, would be obtained by adding cellulase to these known compositions. The Opposition Division also considered that this improvement would be obtained under all conditions liable to be encountered.

IV. A notice of appeal was filed against this decision on 20 May 1989 with payment of the prescribed fee. In his statement of grounds of appeal filed on 24 July 1989, the Appellant argued that there is no indication in the disputed patent that the pH of the wash liquor should have a certain value to obtain the benefit of the claimed composition.

The Appellant also maintained that his tests filed with the grounds of opposition showing that the performance of a composition falling within the terms of Claim 1 with respect to softness performance was worse than a similar composition, in which cellulase was the only softening agent present, were carried out under perfectly realistic conditions. Therefore, the claimed compositions do not provide the benefits upon which an inventive step could be based. Furthermore, the test conditions were such that deposition of the amine softening agent onto the fabric would occur. In the light of these results, the Appellant contended that the reaction between boric acid and the amine, if any, was not sufficient to balance the negative interaction between the cellulase and the amine.

V. In their response the Respondents contended that there is no suggestion in the prior art that cellulase could be effectively combined with other softening agents in a wash environment.

The Respondents have also argued that the reaction of the skilled person to a failure to achieve softening from a formulation according to the invention would be to increase the pH to delay protonation of the amine until the end of the wash cycle.

With respect to the data submitted by the Appellant on 23 November 1988, the Respondents considered that they were inconclusive since there is a 7 % difference in counts of the compositions before the wash and only a 3 % difference in the radioactivities of fabric washed with the compositions.

VI. The Appellant requests that the decision under appeal be set aside and the patent revoked. The Respondents request that the appeal be dismissed.

Reasons for the Decision

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

2. The patent in suit relates to a detergent composition that cleans and also acts as a fabric softener. Document (3) which is considered to represent the closest prior art, discloses a detergent composition that enables fabric to be cleaned and softened simultaneously. According to this document, the composition comprises a tertiary amine having an isoelectric point of 8.3 to 9.8 and a structure RR^1R^2N, wherein R is an alkyl group having 1 to 6 carbon atoms and R^1 and R^2 are primary linear alkyl or alkenyl groups having from 10 to 26 carbon atoms; an anionic detergent active compound and a detergent builder salt (cf. Claim 1 in combination with Claims 19 and 20 and Examples 33 and 34).

Although these prior art compositions overcome the disadvantage of the necessity of adding a softening composition during the rinse cycle of the washing process, it was considered that the performance of these compositions was not entirely satisfactory.

2.1 In the light of this closest prior art, the technical problem underlying the disputed patent may be seen in providing a detergent composition having a cleaning performance equivalent to these known compositions, combined with an improved softening effect.

According to the disputed patent this technical problem is essentially solved by a detergent composition comprising a mixture of a long chain tertiary amine of the formula in Claim 1 combined with cellulase as the fabric softening ingredients.

2.2 In the light of Example 1 disclosed in the patent in suit and the experimental data filed on 24 November 1988, it appears credible that the claimed compositions solve this technical problem.

Example 1 demonstrates that the softening effect of the claimed tertiary amine/cellulase combination on new cotton and preharshened cotton after both one wash and three washes was better than that of the separate ingredients used alone at double the levels used in the combination. On acrylic fabrics the combination performed better than the separate ingredients used alone at double the levels after one wash. After three washes the combination performance is comparable to that of the tertiary amine used at double the level.

In addition, the experimental data submitted on 24 November 1988 show that the combination of amine and cellulase is not detrimental to detergency.

2.3 According to the Appellant, the experimental results filed with the grounds for oppositions demonstrate that the claimed combination of tertiary amine and cellulase has a poorer softening performance than cellulase used on its own. However, the reason for the failure to obtain the benefits promised by the invention is considered to be due to the fact that these experiments were conducted at too low a pH. Thus, from the discussion of the prior art in column 1, lines 23 to 62, the skilled person would be aware that problems arise in the area of fabric softening due to the interaction of the conventional cationic softening agents with anionic detergents and that, to avoid this surfactant-softener interaction, document (3) taught the use of long chain tertiary amines that are nonionic in character at the wash liquor pH's as softening agents.

Since document (3) is the only prior art document referred to in the patent in suit which relates to the use of long chain tertiary amines as softening agents in the context of avoiding surfactant-softener interaction, the skilled person would deduce that, in order to obtain the full benefits of the use of long chain tertiary amines, such as ditallowylmethylamine, it is essential that the pH of the wash liquor should be above the isoelectric point of the amine to avoid protonation and consequent interaction with the anionic detergent. The skilled person would consider that this would be valid irrespective of whether the amine was used as the sole softening agent or in combination with another softening agent.

Therefore, in the Board's judgement, the skilled person would immediately realise that the reason for the failure of the Appellant's experiments was that the pH of the wash liquor was too low and that an increase in the pH of the wash liquor would bring success. The results of the test report submitted by the Respondents with their reply to the statement of grounds of appeal clearly confirm that this procedure enhances the softening effect.

2.4 The results of the Appellant's tests filed on 29 November 1988 which purport to demonstrate that a greater deposition of ditallowylmethylamine on cotton fabrics occurs at pH 9 than at pH 10 are not considered to be conclusive since the two detergent composition used in the comparison did not have the same composition and the actual softness of the washed cotton fabric was not reported. Therefore, factors other than a change in pH could have caused the difference in the amounts of amine deposited and there is no proof that the amine was deposited in a form in which it could exert a softening effect.

3. After examination of the cited prior art, the Board has concluded that the claimed subject-matter is novel. Since novelty is not in dispute, it is not necessary to consider this matter in detail.

4. It still remains to be examined whether the requirement of inventive step is met by the claimed subject-matter.

4.1 As previously mentioned, document (3) discloses detergent compositions comprising, as the softening ingredient, certain long chain tertiary amines. However, this document makes no reference to the possible combination of these amines with other known softening agents, let alone cellulase. Therefore, the teaching of this document would not lead the skilled person to expect that an improvement in the softening effect as compared to the prior art compositions could be obtained by means of the claimed mixture of softening agents.

4.2 Document (1) discloses a main wash detergent composition comprising detergent ingredients and a harshness reducing amount of a fungal cellulase (cf. Claim 11 in combination with Claim 1). This document does not contain any suggestion regarding the inclusion of other softening ingredients and would not, therefore, provide any assistance to the skilled person seeking to solve the present technical problem.

4.3 Document (2) discloses that treatment with cellulolytic enzymes containing C_1 and C_x cellulases reduces the rate at which new cotton articles become harsh and can partially restore the original softness to already harsh cotton articles (cf. page 1, lines 41 to 46). Compositions suitable for use in this treatment comprising the cellulolytic enzymes and detergent active materials are also described (cf. Claim 8 and page 3, lines 71 to 104).

According to page 3, lines 45 to 51, optimum results in respect of softness can be obtained with a combination of cellulolytic enzyms in a prewash step, and any suitable known rinse conditioning composition in the rinse step after the main wash. This procedure is illustrated in Example 9. Example 8 describes the treatment of preharshened cotton towels with enzymes, or a conventional rinse conditioner containing ditallowdimethylammonium chloride, a cationic fatty and amide derivative, citric acid, colouring material, parfume and water (cf, page 6, lines 10 to 20), or a combination of the enzymes and conventional rinse conditioner. From the results obtained it was concluded that the combination enzyme/conventional rinse conditioner was apparently superior to either alone. However, it must be emphasized that this treatment was not carried out in the presence of a detergent and that the conventional rinse conditioner did not contain a long chain tertiary amine.

Therefore, the teaching of this document would not provide the skilled person with any incentive to consider the use of present combination of tertiary amine/cellulase to solve the problem of improving the softening effect of the compositions disclosed in document (3).

4.4 Document (4) discloses detergent compositions comprising organic surfactants, tertiary amines, impalpable smectite-type clays and water soluble inorganic or organic salts (cf. Claim 1). According to page 18, lines 30 to 36, such compositions had as good a cleaning performance as compositions lacking the clay and amine, whereas cotton test pieces washed with them were softer in feel than similar test pieces washed with the same detergent compositions excluding either the amine or the clay or both. Although Examples 1 to 5 disclose detergent compositions containing ditallowmethylamine and enzyme granules, it is clear from page 36, lines 34 and 35 that

these enzymes are those conventionally added to detergent compositions to enhance the removal of protein stains, carbohydrate-containing and fat-containing soils. Thus, from the teaching of this document, the skilled person would conclude that these compositions provide an alternative solution in the technical problem underlying the disputed patent. However, in view of the difference in the mechanisms by which cellulase and softening agents such as clays and tertiary amines achieve their anti-harshening effect, the skilled person would not expect that replacing the clays of these prior art compositions by cellulase would solve the problem underlying the subject-matter of the patent in suit.

5. Therefore, in the Board's judgement, the cited prior art taken alone or in combination does not render the proposed solution to the technical problem underlying the subject-matter of the patent in suit obvious. Claim 1 and dependent Claims 2 to 9, which relate to preferred compositions in accordance with the invention, are allowable.

Order

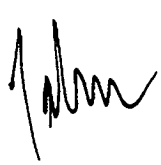
For these reasons, it is decided that:

The appeal is dismissed.

The Registrar

M. Beer

The Chairman



K.J.A. Jahn