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Aktenzeichen / Case Number / N^o du recours : T 362/87 - 3.3.1

Anmeldenummer / Filing No / N^o de la demande : 81 200 388.7

Veröffentlichungs-Nr. / Publication No / N^o de la publication : 0 038 591

Bezeichnung der Erfindung: Detergent compositions containing an aluminosilicate
Title of invention: detergent builder and an unsaturated fatty acid
Titre de l'invention : soap

Klassifikation / Classification / Classement : C11D 3/12

ENTSCHEIDUNG / DECISION

vom / of / du 13 December 1990

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

The Procter & Gamble Company

Einsprechender / Opponent / Opposant :

Unilever PLC

Stichwort / Headword / Référence : Detergent compositions/Procter & Gamble

EPO / EPC / CBE - Articles 56 and 114(2)

Schlagwort / Keyword / Mot clé :-

"Inventive step (denied) - expected improvement"

"Late filed document - admitted as being relevant" -

Leitsatz / Headnote / Sommaire



Case Number : T 362/87 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 13 December 1990

Appellant : The Procter & Gamble Company
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Decision under appeal : Decision of the Opposition Division of the European
Patent Office of 12 May 1987, posted on
14 July 1987, revoking European patent
No. 0 038 591 pursuant to Article 102(1) EPC.

Composition of the Board :

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

Summary of Facts and Submissions

- I. The grant of European patent No. 0 038 591, in respect of European patent application No. 81 200 388.7 filed on 6 April 1981, was published on 30 January 1985 (cf. Bulletin 85/05).
- II. On 21 October 1985 a notice of opposition was filed requesting the revocation of the patent on the ground that its subject-matter lacked novelty and did not involve an inventive step. It was also alleged that the disclosure of the patent was insufficient. The opposition was supported, inter alia, by the following documents:
- (1) GB-A-492 719
 - (2) GB-A-509 343
 - (3) GB-A-730 894
 - (5) DE-A-2 729 995 and
 - (6) GB-A-1 429 143.
- III. By a decision delivered orally on 12 May 1987, with written reasons posted on 14 July 1987, the Opposition Division revoked the patent. The Opposition Division held that the disclosure of the disputed patent was sufficient and the claimed subject-matter was novel. However, the subject-matter did not involve an inventive step in the light of the disclosure of document (5), since the solution to the problem of improving the detergency of compositions comprising synthetic detergents and aluminosilicate builders could have been arrived at by making a selection from the possibilities disclosed in this document. However, since this selection did not lead to any unexpected advantage, the claimed subject-matter was not patentable.

IV. A notice of appeal was filed against this decision on 28 August 1987 with payment of the prescribed fee. In his statement of grounds of appeal filed on 30 October 1987 and during the oral proceedings held on 13 December 1990, the Appellant (the proprietor of the disputed patent) contended that the problem underlying the disputed patent is not the same as the one underlying document (5) and that Examples 1 and 2 of this document are not the technical equivalents of compositions falling within the scope of the present claims. The Appellant agreed with the view of the Rapporteur, expressed in his communication of 28 May 1990, that document (6) represented the closest prior art.

In the light of this document, the Appellant considered that the problem underlying the disputed patent lies in optimising and improving the detergent cleaning performance of aluminosilicate builders in combination with synthetic surfactants. The Appellant maintained that the examples of the disputed patent and the results of the comparative tests submitted with the grounds of appeal and his letter filed on 27 November 1990 demonstrated that the use of soaps comprising predominantly unsaturated fatty acids solved this problem. This was unexpected since there was no hint in the prior art which would have suggested this solution in the context of the present invention.

The Appellant argued that documents (1) to (3) were not really relevant since they did not disclose soap mixtures in combination with zeolites but with builders from a different domain. Therefore, the disclosure of these documents should not be taken out of context and transferred to the present invention.

With respect to the English translation of JP-A-55-12120, (document (7)) which was filed by the Respondent on 5 December 1990, the Appellant considered that this was

not any more relevant than any of the other cited documents. The problem solved by this document was to provide environmentally friendly detergent compositions by replacing the conventional ingredients by less harmful alternatives.

- V. In his reply and during the oral proceedings, the Respondent contended that the claimed subject-matter lacked an inventive step irrespective of which of the three documents (5), (6) or (7) was considered to represent the closest prior art.

The Respondent argued that documents (1) to (3) were relevant since they taught the value of soaps derived from predominantly unsaturated acids combined with a variety of builders. In view of this teaching and that of document (7) the likelihood of success would warrant the investigation of detergent compositions comprising unsaturated fatty acid soaps and zeolites.

With respect to the comparative tests submitted by the Appellant, the Respondent argued that they did not represent a true comparison with the prior art and that the improved results obtained using unsaturated fatty acid soaps compared to those resulting from the use of saturated fatty acids were to be expected either because of the exceptional conditions under which they were carried out or in view of the teaching of the cited prior art.

- VI. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of Claims 1, 2 and 4 filed on 15 April 1987. Claim 1 of this set of claims reads as follows:

"A detergent composition containing:

- (a) from 1% to 20% by weight of a water-soluble synthetic detergent surfactant selected from the group of nonionic, anionic, zwitterionic, amphoteric, semi-polar nonionic detergent surfactants and mixtures thereof;
- (b) from 5% to 50% by weight of a water-insoluble inorganic detergency builder selected from the group consisting of:
 - (1) zeolite A;
 - (2) zeolite X;
 - (3) zeolite P;
 - (4) amorphous hydrated aluminosilicate material of the empirical formula $M_z (zAlO_2 \cdot ySiO_2)$ wherein M is sodium, potassium or ammonium; z is from 0.5 to 2; and y is 1, said zeolites A, X, and P having a particle size diameter of from 0.01×10^{-6} m to 25×10^{-6} m, and a calcium ion-exchange capacity of at least 100 mg $CaCO_3/g$ and containing at least 10% water of hydration and said amorphous material having a particle size diameter of less than 25×10^{-6} m, and magnesium ion exchange capacity of at least 50 milligram of calcium carbonate hardness per gram of anhydrous aluminosilicate, and a magnesium ion exchange rate of at least 0.0045 g/l/minute/g/l (1 grain/gallon/minute/gram/gallon);
 - (5) and mixtures thereof; and

- (c) conventional detergent ingredients and additives inclusive of cobuilders and of fatty acid soaps, characterised in that it contains:
- (d) from 5% to 60% by weight of water-soluble soap of unsaturated fatty acids containing from 16 to 22 carbon atoms; and
- (e) the balance being water, sodium sulphate, C₁₋₄ alcohols, sodium silicate, sodium carbonate and mixtures thereof, whereby the level of the saturated fatty acid soap is less than 50% by weight of the level of the unsaturated fatty acid soap.

The Respondent requested that the appeal be dismissed.

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 present claims since they are adequately supported by the original disclosure and do not extend the protection conferred. Thus, the present Claim 1 finds its basis in Claim 1 as filed and granted, page 4, lines 3 to 6 and page 5, lines 30 to 34 of the published patent application (cf. also page 3, lines 15 and 16 and 52 and 53 of the printed patent specification). The current Claims 2 and 4 correspond to Claims 5 and 6 as filed and granted Claims 2 and 3.

3. The disputed patent relates to detergent compositions comprising synthetic detergents, soaps and aluminosilicate builders. Document (6) discloses detergent compositions comprising 5 to 95% by weight of water-insoluble aluminosilicate ion exchange materials and 5 to 95% by weight of water-soluble organic surface active agents (cf. Claim 1). Example IV of this document discloses a detergent composition comprising a soap comprising 90% tallow and 10% coconut soaps, a mixture of anionic surfactants and an aluminosilicate. Therefore, this composition is only distinguished from the present ones by the fact that the level of saturated fatty acid soap is more than 50% by weight of the level of unsaturated fatty acid soap since tallow is generally recognised as containing about 45% by weight of unsaturated fatty acids and coconut oil is considered to contain only very small amounts of unsaturated fatty acids.

3.1 In the light of this closest prior art, the technical problem underlying the patent in suit may be seen in providing aluminosilicate built detergent compositions having improved cleaning performance, particularly with respect to particulate soils, compared to these known compositions.

According to the disputed patent this technical problem is solved by compositions containing 5 to 60% by weight of water-soluble soap of unsaturated fatty acids containing from 16 to 22 carbon atoms provided that the level of saturated fatty acid soap is less than 50% by weight of the level of the unsaturated fatty acid soap.

3.2 The Board agrees with the Respondent that the results of the comparative test filed with the Appellant's letter of 22 November 1990 cannot be considered to demonstrate that the technical problem as defined above has been solved by

the claimed compositions. The comparison is rendered invalid by the presence of a soap derived completely from saturated fatty acids in the composition used in the comparative Example. Document (6), on the other hand, clearly teaches the use of soaps derived from mixtures of saturated and unsaturated fatty acids (cf. Example IV and page 5, lines 21 to 23).

3.3 Although composition B used in the comparative test submitted by the Appellant with the statement of grounds of appeal is not identical with the composition prepared in Example IV of document (6), nevertheless it falls within the scope of Claim 1 of the earlier patent and the only difference between this composition and composition A in accordance with the disputed patent lies in the fact that the soap in composition B (known) is derived from a mixture of fatty acids containing about 45% by weight of unsaturated fatty acids whereas that of composition A (disputed patent) is prepared from oleic acid. Since the requirement that the level of saturate fatty acid soap should be less than 50% by weight of the level of the unsaturated fatty acid soap is the distinguishing feature of the alleged invention, the Board is satisfied that the results of this comparative test render it plausible that the technical problem underlying the disputed patent has been solved.

3.4 The Respondent alleged that, due to the low wash temperature (30°C) and the extremely high degree of hardness (6m mole/l Ca⁺⁺), the results of this comparative test could be explained in terms of the difference in the building capacity of the two compositions since the amount of zeolite may be insufficient to account for all the hardness ions present and because sodium stearate is much less soluble in water at 30°C than sodium oleate.

To counter this allegation, the Appellant contended that the presence of the anionic surfactant in the composition would increase the solubility of the sodium stearate and that its lower solubility is compensated for by the fact that it is a more efficient builder than sodium oleate.

In the absence of any evidence to support either of these allegations, the Board sees no reason to change its opinion that it is plausible that the technical problem underlying the disputed patent has been solved.

3.5 Document (5) discloses a method for machine washing and cleaning of solid materials in which the water-insoluble builder (aluminosilicate) is maintained out of contact with the soiled material and is used to soften the water to a specified degree of hardness before the addition of the other washing and cleaning compounds (cf. Claim 1). The object of the invention described in this document was to provide a process of this type in which soap is the sole or dominant surface active agent. Thus, the use of the detergent compositions illustrated in Examples 1 and 2 and comparative Example I of this document are only envisaged for use in the claimed method. Therefore, in the Board's judgment document (5) cannot be considered to represent the closest prior art in the light of which the disputed patent should be formulated.

4. After examination of the cited prior art the Board has concluded that the claimed subject-matter is novel. Since the Respondent stated that he no longer considered that the disclosure of document (7) anticipated the present Claim 1, it is not necessary to give detailed reasons.

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

5.1 Document (1) discloses soap products comprising sodium soaps derived from polyethylenic fatty acids such as linolenic acid, or from mixtures of such fatty acids with oleic acid or other monoethylenic fatty acids and alkali metal orthophosphates; the ratio of orthophosphates (calculated as anhydrous salts) to fatty acids being from 1:10 to 1:4 (cf. Claim 1 on page 4). It is stated on page 1, lines 26 to 40 of this document that these compositions when used in hard water give rise to little or no precipitation of insoluble soaps or formation of scum. Moreover, the liquid remains clear or substantially clear when boiled.

According to document (2), compositions having substantially the same behaviour when used in hard water are obtained by incorporating with the specific soaps referred to in document (1) alkali metal polyphosphates in the ratio of polyphosphates (calculated as anhydrous salts) to fatty acids of 1:4 to 1:2 as the water-insoluble inorganic builder in place of the previously used alkali metal orthophosphates (cf. Claim 1 and page 1, lines 49 to 59).

Document (3) describes soap powders comprising soaps, at least 50% by weight are derived from unsaturated soap-forming acids, in admixture with sodium or potassium carbonate and disodium or dipotassium orthophosphate, the carbonate and orthophosphate being in such conditions that, when the products are added to water, they dissolve before an appreciable amount of soap has dissolved (cf. Claim 1). Therefore these three documents clearly teach the skilled person the benefits to be obtained by using unsaturated fatty acids in detergent compositions based on a number of different builder systems.

5.3 Document (7) was only submitted by the Respondent on 5 December 1990. However, in view of its relevance, the Board decided to allow its introduction into the appeal proceedings. The English translation of this Japanese patent application, the accuracy of which was not questioned by the Appellant, discloses a detergent composition comprising 10 to 30% of a soap, 2 to 20% of a sucrose fatty acid ester (nonionic surfactant), 5 to 30% of a zeolite, 5 to 30% of a diatomaceous earth, 5 to 30% of sodium carbonate and 1 to 6% of carboxymethylcellulose (cf. the claim). In Example 1, the sodium salts of beef tallow and rice bran fatty acids were used as the soap (cf. the sentence bridging pages 6 and 7). The compositions should not only be less irritating to the skin and cause less pollution but also perform as well as or better than conventional detergent compositions (cf. Table II on page 9 and the paragraph bridging pages 1 and 2).

Since it is common general knowledge that rice bran oil contains 80 to 85% by weight of unsaturated fatty acids, this document discloses a detergent composition comprising a water-insoluble inorganic detergency builder of the type disclosed in document (6) in which the level of unsaturated fatty acids present in the soap has been increased above that present in the composition of Example IV of this document.

Furthermore, this document demonstrates that the teaching of documents (1) to (3) with respect to the benefits to be obtained by employing unsaturated fatty acid soaps has not been forgotten by the skilled person or superseded or that its teaching was only considered to be relevant for the specifically disclosed builders. Therefore, in searching for a solution to the problem underlying the disputed patent, the skilled person would give serious

consideration to the teaching of these three earlier documents as well as to that of document (7).

5.3 The teaching of documents (1) to (3) and (7) would not only provide the skilled person with the incentive to increase the level of unsaturated fatty acid soaps in the compositions of document (6) but would also lead him to expect that this measure would solve the problem of improving the performance of these prior art compositions.

5.4 Therefore, in the Board's judgment, the invention as defined in Claim 1 of the patent in suit does not involve an inventive step having regard to the aforementioned state of the art.

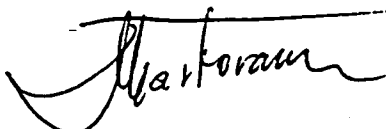
6. Dependent Claims 2 and 4 relate to preferred embodiments of the composition in accordance with Claim 1 and, therefore, fall with it. Furthermore, it was not argued that these claims contain any independent inventive features which could form the basis of an allowable claim.

Order

For these reasons, it is decided that:

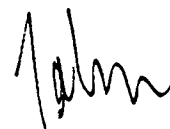
The appeal is dismissed.

The Registrar:



P. Martorana

The Chairman:



K.J.A. Jahn