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**D E C I S I O N**  
of 28 January 1997

**Case Number:** T 0632/93 - 3.3.4

**Application Number:** 86202254.8

**Publication Number:** 0227174

**IPC:** A23L 2/02

**Language of the proceedings:** EN

**Title of invention:**

Beverages and beverage concentrates nutritionally supplemented with calcium

**Patentee:**

THE PROCTER & GAMBLE COMPANY

**Opponent:**

Peter Eckes AG  
Deutsche Granini GmbH & Co. KG

**Headword:**

Calcium supplemented beverage/PROCTER & GAMBLE

**Relevant legal provisions:**

EPC Art. 54, 56

**Keyword:**

"Novelty (yes)"  
"Inventive step (no)"

**Decisions cited:**

T 0666/89

**Catchword:**

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Case Number: T 0632/93 - 3.3.4

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.4  
of 28 January 1997

**Appellant:**  
(Opponent) Peter Eckes AG  
Postfach 50  
D-6501 Nieder-Olm (DE)

**Representative:** Fuchs, Luderschmidt & Partner  
Patentanwälte  
Postfach 46 60  
65036 Wiesbaden (DE)

**Other party:**  
(Opponent) Deutsche Granini GmbH & Co. KG  
Postfach 2023  
D-4800 Bielefeld 1 (DE)

**Representative:** VOSSIUS & PARTNER  
Postfach 86 07 67  
81634 München (DE)

**Respondent:**  
(Proprietor of the patent) THE PROCTER & GAMBLE COMPANY  
One Procter & Gamble Plaza  
Cincinnati  
Ohio 45202 (US)

**Representative:** TER MEER - MÜLLER - STEINMEISTER & PARTNER  
Mauerkircherstrasse 45  
81679 München (DE)

**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office of 16 March 1993,  
dispatched on 24 April 1993 rejecting the  
opposition filed against European patent  
No. 0 227 174 pursuant to Article 102(2) EPC.

**Composition of the Board:**

**Chairman:** F. Antony  
**Members:** D. D. Harkness  
W. Moser

## Summary of Facts and Submissions

I. European patent No. 0 227 174 relating to beverages and beverage concentrates nutritionally supplemented with calcium filed on 12 December 1986 was granted as of 10 April 1991 on the basis of 13 claims. Claim 1 as granted read as follows:

"1. A beverage characterized in that it is substantially free of a sugar alcohol, and further characterized in that it comprises:

- (a) from 0.06 to 0.15% by weight solubilized calcium;
- (b) from 0.24 to 1.05% by weight of an acid component selected from mixtures of citric acid, malic acid and phosphoric acid, said acid mixtures being defined by the area to the left of contour line  $A_1$  of Figure 1;
- (c) the weight ratio of said acid component to said solubilized calcium being from 4 to 7;
- (d) a flavour component which contains a flavor selected from the group consisting of fruit flavours, botanical flavors and mixtures thereof in an amount effective to impart flavor characteristics to the beverage and which contains no more than 40% fruit juice by weight on a single-strength basis; and
- (e) an effective amount of a sweetener other than a sugar alcohol."

II. Oppositions were filed by Peter Eckes AG (Opponent 1) on 7 January 1992 and by Deutsche Granini GmbH & Co KG (Opponent 2) on 10 January 1992.

Opponent 1 raised objections of lack of novelty and inventive step (Article 100(a) EPC) and also on the ground that the invention was not disclosed in a manner sufficiently clear and complete for it to be carried out by a skilled person (Article 100(b) EPC).

Opponent 2 objected on the grounds of lack of novelty and inventive step.

The cited documents were:

- (1) EP-A-0 117 653
- (2) US-A-2 325 360
- (3) JP-A-56-97248 (abstract in English)
- (4) JP-A-79-8767 (abstract in English).

III. In the decision of the Opposition Division dispatched on 24 April 1993, both oppositions were rejected. The opposition under Article 100(b) EPC was held to be inadmissible for lack of substantiation. The subject-matter of Claim 1 was considered to be novel over document (1) because the feature "from 0.06 to 0.15% by weight solubilised calcium" or a specific example falling within this range was not disclosed in document (1), nor was the feature "the weight ratio of said acid component to said solubilized calcium being from 4 to 7". Novelty over documents (2), (3) and (4) was not or no longer contested.

Concerning inventive step, the opposition division considered that documents (2) and (3) were not relevant and regarded document (1) as the closest prior art. The problem to be solved was that of avoiding the precipitation of calcium from the beverages and maintaining its bioavailability. Document (1) was concerned with a different technical problem, which was to impart "body" to a beverage by using a mixture of

cations Ca, Mg and K. The examples in document (1) all employed less calcium than that required by Claim 1 of the patent in suit, and the ratio of calcium to acid component was also not disclosed in this prior art. The notional skilled person would be led to apply high amounts of magnesium and low amounts of calcium.

Document (4) did not render the subject-matter of the opposed patent obvious because the problem of producing a calcium supplemented beverage having good taste and mouthfeel characteristics was not solved in this prior art.

IV. Whilst Opponent 1 did not appeal, the Appellant (Opponent 2) lodged an appeal on 7 July 1993, with payment of the fee, and submitted a statement of grounds on 7 September 1993. Both the novelty and inventive step objections were maintained on the basis of document (1) only. In his written submissions and at oral proceedings he argued essentially as follows:

*Novelty*

The disclosure of a prior art document for novelty purposes was not limited to the content of the individual examples. A skilled person would be able to derive directly and unambiguously further novelty destroying disclosure in accordance with the principles laid down in decision T 666/89 (OJ 1993, 495).

Whilst all of the specific examples of document (1) employed less than the quantity of calcium required by the patent in suit, from line B11 of Figure 1 of document (1) it was seen that the preferred proportions of total cation present (ie, 0.1 to 0.6%; see Claim 17)

led to 20 to 54% of calcium or 0.02 to 0.324% by weight, which was higher than in the examples and covered the whole of the range claimed by the patent in suit as feature (a).

When Figure 2 of document (1) was overlaid on Figure 1 of the patent in suit, there was total overlap of the proportions of the three acids used by the prior art and the patent in suit in feature (b).

Calculations of the weight ratio of solubilised calcium to acid based on the above weight range for calcium gave a ratio of 1 to 60, which included the range 4 to 7 of feature (c) of the patent in suit. The weight ratio of total solubilised cation to acid in all but one of the examples of document (1) taken from the table on page 20 fell within said range of 4 to 7 and therefore this ratio for mixed cations was known.

The constituents which were defined under features (d) and (e) were conventional and also disclosed in document (1). With regard to the use of sugar alcohols the Appellant indicated that the use of such sweeteners was not disclosed, thus the limitation of feature (e) to exclude them was not an effective restriction vis-à-vis the prior art.

*Inventive step*

The problem solved by the patent in suit was to provide a beverage and a concentrate therefor which had a high content of solubilised calcium, high absorbability/bioavailability of calcium and which exhibited a good taste characteristic. This problem was one of the problems already solved by the disclosure of document (1).

Figures 1 and 2 of document (1) disclosed the proportions in which the cations and acids were to be employed, and the disclosure at page 12 lines 19 to 21 would be a pointer for a skilled person to increase the calcium content from levels disclosed in the examples to within the range of document (1).

- V. In contesting the Appellant's position, the Respondent (Patentee) essentially argued as follows:

*Novelty*

The Appellant's arguments were based on calculations using an arbitrary choice of details taken from the figures of document (1) which led to results in themselves not directly and unambiguously disclosed in the citation.

Document (1) described beverages having specific pH values and which were made up from particular acid and cation components, there always being at least two different cations present. There was no specific disclosure of how much calcium was used, and Figure 1 only made available a general range for cation content. None of the examples of document (1) provided a value for calcium which fell within the range claimed by the patent in suit, and the weight ratio of acid to calcium was too high at 8 to 43. Examples 4 and 8 of the citation gave the highest values for calcium at 0.045% by weight and below that required by the patent in suit. At page 14 lines 20 to 21 of document (1) references were made to sorbitol and xylitol and therefore the beverages of this prior art were not necessarily free from sugar alcohols.

*Inventive step*

The problem solved by the patent in suit was to provide a beverage having approximately the same calcium nutritional values as milk, the calcium being in solubilised form. Improved organoleptic and calcium absorbability/bioavailability properties were necessary. This problem was different from that of document (1) which was primarily concerned with the improvement of the beverage characteristic known as "body" developed by varying the amounts of solubilised calcium, magnesium and potassium cations in a mixture of citric, malic and phosphoric acids (see document (1) page 2 lines 20 to 26).

The selection of features (a) to (e) of Claim 1 represented the solution to the problem, and in particular the acid content was responsible for the high calcium absorbability/bioavailability values as shown by the contours A1 and A2 in Figure 1 of the description. The citation included beverages in which phosphoric acid alone was used and this teaching led away from that of the patent in suit which relied on a mixture of three acids. The ratios of the required components were responsible for the desirable characteristics of the claimed beverages.

VI. The Appellant requested that the decision of the opposition division be set aside and that the patent be revoked.

The Respondent requested that the appeal be dismissed.



## Reasons for the Decision

1. The appeal is admissible.
2. *Novelty*

As admitted by the Appellant document (1) does not contain an example realising all of the features which were necessary to prepare the beverages or concentrates of the patent in suit. The novelty attack was therefore based on what was to be directly derived from the description and Figures 1 to 4.

Feature (d) relates to conventional flavourings which were disclosed in document (1) without dispute, hence they cannot contribute to novelty.

As to the combination of items (a), (b) and (c) a comparison of Figure 2 of the citation with Figure 1 of the patent in suit shows that the same acid mixtures were previously used, and this is evident from the two ternary diagrams relating to citric, malic and phosphoric acids and the preferred lower limit of 0.3% acid specified in the citation. However, the Board is not persuaded that the combination of features (a) and (c) was also directly derivable from the prior art, because the specific quantity of calcium in combination with the weight ratio of acid to calcium was only available by employing an ex post facto analysis of the citation which yielded specific limits 0.02-0.324% for a range broader and outside the limits claimed.

Accordingly a combination of all three such features was not available from document (1) and it could not be said that the skilled person would seriously contemplate applying the technical teaching of citation (1) in this way.

Under these circumstances the question whether feature (e) in combination with the phrase "... free of sugar alcohol..." can be said to be anticipated in spite of two such alcohols being mentioned in the citation, may be left open as irrelevant.

3. *Inventive step*

3.1 The closest prior art

It is non-controversial that document (1) which disclosed beverages (and their concentrates) made from the same acid mixture and containing calcium, potassium and magnesium cations, flavourants and sweeteners is the nearest prior art.

3.2 The technical problem

The stated problem underlying the subject matter of the patent in suit, as can be gleaned from page 2 lines 29 to 48 of its specification, is to propose a beverage (or concentrate) with a calcium content approximating to that of milk, the soft drink having desirable taste and mouthfeel qualities, containing the calcium in solubilised form so as to avoid a precipitation problem, and sufficient calcium quantities possessing the necessary absorbability/bioavailability.

Document (1) already provided for beverages possessing such desirable organoleptic qualities and containing certain amounts of calcium in solubilised form, with minimal precipitation (cf, page 6 lines 22 to 23; page 7 lines 31 to 34). It is silent on absorbability/bioavailability, but does mention that the calcium (and magnesium) contained in its soft drinks "provide nutritional supplementation" (page 12 lines 19 to 21). It is out of dispute that absorbability/bioavailability is a prerequisite for

nutritional supplementation. The Board is satisfied that, in the absence of special conditions such as presence of proteins or the like, the absorbability/bioavailability is directly proportional to the solubility of the calcium salts contained in the beverages, and therefore this does not represent a separate independent feature. The objective problem underlying the patent in suit can thus be said to be the provision of beverages (or concentrates) with a calcium content approximating that of milk, in fully solubilised form, the other beverage characteristics being a function of the quantities of the ingredients employed.

3.3 The solution to the problem

The patent in suit proposes to solve the above problem by the provision of beverages having the parameters (a) to (e) of Claim 1 as recited in section I above. The Board has no doubt that these do indeed solve the problem. Absence of sugar alcohols (if accepted to be a feature novel over document (1)) being clearly unrelated to the solution of the problem, and feature (d) being anticipated, it is features (a) to (c) which require closer investigation.

3.4 Assessment of inventive step

3.4.1 As stated on page 2 line 30 of the specification of the patent in suit, milk contains on average about 0,12% calcium by weight. The skilled person confronted with the objective problem defined in section 3.2 above would thus certainly aim at a calcium content such as that in accordance with feature (a) the range of which (0.06 to 0.15%) encompasses the above said value of 0.12%.

- 3.4.2 By way of verification only, the preceding conclusion is fully in line with the following calculation:

The total cation content of the nine embodiments listed on page 20 of document (1) are within a range of 0.10 to 0.22%, and the calcium portion of the total cation content according to Figure 1 of document (1) may be up to 78%; by multiplication, there would result a calcium content of from 0.078 to about 0.17%, which is almost identical to the claimed range of 0.06 to 0.15%. At page 12 lines 19 to 22 of document (1) it is stated that the nutritional values of beverages containing potassium may be improved by increasing the calcium content and reducing the potassium content. This statement gives the skilled person a direct incentive to use a high calcium value and justifies the above calculation made by taking the 78% calcium value from Figure 1 of the citation. (As an aside, it should be noted that the patent in suit, while positively mentioning only calcium, it does not exclude the presence of other cations such as magnesium or potassium).

- 3.4.3 It has been common ground between the Board and both parties that the amount of calcium cations solubilised in the beverage depended upon the acid mixture used, ie, more particularly upon the kind of acids chosen, their total and their relative amounts. Again with the problem to be solved in mind, and starting from the disclosure of document (1), the skilled person would note that the said prior art uses a mixture of citric, malic and phosphoric acids in relative amounts as shown by Figure 2 of document(1), and in absolute amounts as again exemplified in the table on page 20, ie, between 0.3 and 0.9%. The claimed solution of the patent in suit proposes the same three acids; in absolute amounts from 0.24 to 0.15%- a range fully encompassing that following from the said table of document (1), the five

document (1), the five embodiments of the patent in suit as per its table on page 11 being all within the said range of document (1); the relative amounts of the acids being defined by contour line A1 of Figure 1 of the patent in suit. There is a very large overlap between the relevant areas of the two figures compared. There can therefore be no contribution of feature (b) to inventive step.

3.4.4 As to feature (c) referring once again to the table on page 20 of document (1), in all the embodiments listed there with one exception (no. 5) the total-cation/acid ratio is between 4 and 5 which the skilled person confronted with the above problem would therefore most likely choose as his starting point when looking for a suitable calcium/acid ratio. With only a few simple experiments requiring no inventive effort whatsoever he would arrive at the range of feature (c).

3.4.5 In summary, no inventive step can be acknowledged for the claimed beverages.

In the absence of any special arguments advanced in respect of the beverage concentrates also claimed the above reasons apply mutatis mutandis to those compositions.

Order

For these reasons it is decided that:

1. The decision of the opposition division is set aside.
2. The patent is revoked.

The Registrar:

A. Townsend



The Chairman:

F. Antony

Beglaubigt/Certified  
 Certified/Gesamt  
 München/Munich

Geschäftsstelle  
 Registry/Greffe

1. JUNI 1997