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D E C I S I O N
of 20 October 1999

Case Number: T 0049/96 - 3.3.2

Application Number: 89200314.6

Publication Number: 0331222

IPC: A23P 1/02

Language of the proceedings: EN

Title of invention:
Granular beverage material for tea, coffee or cocoa, and method of its preparation

Patentee:
Unilever N.V., et al

Opponent:
Krüger GmbH & Co. KG

Headword:
Granular beverage material/UNILEVER

Relevant legal provisions:
EPC Art. 52(1), 54, 56, 123(2)

Keyword:
"Novelty (yes)"
"Inventive step (no): obvious application of a known compression technique to the granulation of tea or coffee material"
"Auxiliary request - filed late - not clearly allowable"

Decisions cited:
T 0201/83

Catchword:

-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0049/96 - 3.3.2

D E C I S I O N
of the Technical Board of Appeal 3.3.2
of 20 October 1999

Appellant: (Opponent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 20 November 1995 rejecting the opposition filed against European patent No. 0 331 222 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: U. Oswald
Members: G. F. E. Rampold

Summary of Facts and Submissions

I. European patent No. 0 331 222 comprising 7 claims was granted on the basis of European patent application No. 89 200 314.6. The independent claims are worded as follows:

"1. A method for preparing a granular beverage material comprising the steps of:

(a) preparing a dry mix comprising tea or coffee material and having a moisture content of 0-10% by weight,

(b) pressing said mix into sheets at a temperature of 10°C to 40°C under a pressure of up to 2 tons/cm,

and

(c) reducing said sheets in size to form granules."

Dependent claims 2 to 5 relate to specific elaborations of the method according to claim 1.

"6. A granular beverage material comprising compacted non-heat-treated granules comprising tea or coffee material and having a moisture content of 0-10% by weight, the bulk density of the product being more than 100 g/litre."

Dependent claim 7 relates to a beverage material according to claim 6 being an ice-tea mix.

II. The appellant originally filed notice of opposition to the grant of the patent and requested its revocation as a whole on the ground that the subject-matter of the

patent opposed was not patentable (Article 100(a) EPC) because it was not novel (Articles 52(1); 54 EPC) and, independently of the lack of novelty, it did not involve an inventive step (Articles 52(1); 56 EPC).

The opposition was based, *inter alia,* on the following citations:

(1) DE-A-2 402 446

(3) US-A-4 308 288

(4) EP-A-0 204 256

III. In a decision posted on 20 November 1995 the opposition division reached the conclusion that the subject-matter of all claims of the patent opposed met the requirements of both novelty and inventive step and decided to reject the opposition under Article 102(2) EPC. The substance of its reasoning was as follows:

Citation (1) was the only prior art document cited against the novelty of claim 1. The method of preparing a granular coffee product, as described in the first full paragraph on page 3 of citation (1), required the step of sintering the ground coffee material at a temperature of 80 to 120°C, while the dry mix of tea or coffee material was subjected in step (b) of the claimed method in the patent in suit to a high pressure, low temperature treatment in the range of 10°C to 40°C maximum. Since citation (1) did not state that the actual temperature experienced by the coffee material during the heat and pressure treatment (sintering) might be any lower than 80°C, it failed to

anticipate the method of preparing a granular coffee or tea product according to claims 1 to 5 of the patent in suit.

Although citation (4), which was cited against the novelty of the granulated beverage material according to claim 6, disclosed in Example 1 on page 14 a granular coffee product having a moisture content and a bulk density falling within the ranges specified in claim 6 of the contested patent, the product disclosed in (4) was definitely subjected during its preparation to certain heat treatment operations and could therefore not be described as "non-heat-treated granules" as required by claim 6 of the patent in suit for the claimed granular beverage material.

As to inventive step, the closest state of the art, *viz.* citation (1) specifically disclosed the preparation of a granular beverage material for coffee by heating the ground coffee mix under pressure to a temperature of 80 to 120°C. Although citation (1) referred in the first full paragraph on page 3 in merely general terms to the possibility of using a higher or lower temperature and pressure dependent on the particular material being compacted and granulated, the fact remained that (1) did not suggest or encourage dispensing with the heat treatment at all.

Even if it was accepted that the method of producing a granular cocoa disclosed in citation (3) was carried out at ambient temperature, (3) related to the granulation of a fat-based product and was therefore concerned with problems which were different from those occurring in the preparation of a granular beverage

product comprising tea or coffee material. Consequently, the skilled person faced with the problem of producing a granular tea or coffee product had no reason to combine the teachings of citations (1) and (3).

IV. The appellant (opponent) lodged an appeal against the decision of the opposition division and submitted together with the statement of grounds additionally the following citations:

(5) Aufbereitungs-Technik, vol. 11, No. 8, 1970, pages 3 to 7: "Horizontal feeding of products of compactor rollers"

(6) 100 Jahre (1885-1895) Alexanderwerk, Industriemaschinen und Anlagenbau, copies of the front page and pages 4, 10, 12 und 13

V. Oral proceedings were held before the board on 20 October 1999. In their introductory statements, both parties maintained their requests submitted in writing.

After the hearing of the parties on the novelty of product claim 6 the respondents cancelled product claims 6 and 7 and requested as the new main request maintenance of the patent on the basis of process claims 1 to 5 as granted.

Towards the end of the oral proceedings the respondents additionally filed a new set of amended claims 1 to 5, labelled "Auxiliary request I", which differed from the main request by the insertion of the lower limit of the compaction pressure used in the claimed process in the

patent in suit so that step (b) of claim 1 of said auxiliary reqeust reads as follows: "pressing said mix into sheets at a temperature of 10°C to 40°C under a pressure **of 0.4-2 tons/cm**".

VI. The appellant's submissions both in the written procedure and at the oral proceedings can be summarised as follows:

The ranges of temperature of 80 to 120°C and pressure of 5 to 10 kp/m^2, as well as the period of treatment of 10 to 30 seconds indicated in citation (1) merely represented certain specific conditions for the preparation of the particular granular coffee product disclosed in (1). The first full paragraph on page 3 of (1) contained, however, an explicit statement to the effect that the specific values of all the above-mentioned parameters were invariably governed by the kind and nature of the particular material being processed, for example the type of coffee used, and could well be chosen outside the ranges specifically disclosed in (1).

The skilled practitioner having realized that the temperatures used in (1) had some detrimental impact on the taste and flavour of the compressed and granulated coffee or tea product and possibly initiated Maillard reactions would necessarily reduce the temperature and increase the pressure to avoid such detrimental effects during the compacting process. The use of temperatures during the compacting process in the range claimed in step (b) of claim 1 of the patent in suit was moreover particularly obvious to a person skilled in the art because compacting roll presses with coolable rolls

were readily available at the priority date of the patent in suit and were already commonly used for compacting powdered substances at ambient or even lower temperatures as evidenced, for example, by citations (3) and (5).

Citation (3) taught a method of producing a granular cocoa product by passing the partially compressed cocoa powder at ambient temperature through a roller press to produce small plate-like agglomerates and reducing said agglomerates in size to form cocoa granules. Even if it was accepted that certain problems experienced in compacting processes of cocoa would possibly differ from those occurring when tea or coffee materials were subjected to a compacting process, the skilled person would be aware that elevated temperatures had in all the cases considered a detrimental effect on the respective products and would, accordingly, try to avoid elevated temperatures by using a suitable compression technique to achieve agglomeration.

VII. The respondents (proprietors) argued in their written submission and at the oral proceedings in essence as follows:

Citation (1) failed to clearly disclose each and every feature of claim 1 of the patent in suit. In particular (1) did not disclose pressing a dry mix of tea or coffee at a temperature of 10°C to 40°C. Indeed (1) referred to a heat treatment of the ground coffee comprising sintering the coffee preferably at 80 to 120°C. Even if (1) suggested that one might use a higher or lower temperature, depending on the nature of the product being compressed, the citation did not

unmistakably disclose the use of a temperature near the range that was claimed as an essential feature of claim 1 of the patent in suit.

High temperature methods for making tea and coffee granules adversely affected their flavour. Such granules also had the tendency to be hygroscopic and required a flow agent to avoid caking. This problem was successfully solved by the process comprising the steps (a), (b) and (c) according to claim 1 of the contested patent.

Citation (1) suggested that sintering and pressing coffee at the preferred temperature of 80 to 120°C was suitable for making granules. Since (1) taught against low temperature methods of preparing granular coffee products, a skilled person would if anything be led away from choosing a temperature below the preferred range mentioned in (1).

Compacting presses with coolable drums might well have been available for some years. However, the claimed process in the patent in suit was not obvious simply because the technology that could be used to carry it out was well known. This admittedly known technology was used in the state of the art in a different manner. Citation (5) was therefore of no relevance to any substantive matter in this appeal and should be ignored.

Citation (3) taught compressing a cocoa having a fat content of between 12 to 29% in a two stage process to make sufficiently stiff but nevertheless soluble cocoa granules. The invention described in (3) was based on

the discovery that fine particles of cocoa can be forced to agglomerate by initially compressing cocoa powder to a certain extent and then passing the partially compressed cocoa through a roller press to produce small plate-like agglomerates. However, (3) did not disclose any temperature or pressure ranges used for this process. Considering that cocoa powder was the starting material used in citation (3) both the problem and the solution dealt with in (3) had little in common with those of the present invention. A person skilled in the art faced with the problem underlying the patent in suit would not be led to consider the teaching of citation (3) and, in particular, not in combination with that of citation (1).

VIII. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondents requested that the appeal be dismissed and that the patent be maintained on the basis of the main request filed in the oral proceedings. As auxiliary request the respondent requested to maintain the patent on the basis of auxiliary request I filed in the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.

The main request

2. *The closest state of the art*

2.1 Citation (1) discloses a method for converting a powdered material into granules comprising the steps of:

(a) moistening the powdered material

(b) pressing and compacting (sintering) a thin layer of that material into sheets between two horizontally superimposed, heatable pressing plates of a platen press, and

(c) reducing said sheets in size to form granules (see particularly claim 1).

More specifically, according to a preferred embodiment of the general method disclosed in (1) an instant coffee powder is pressed and compacted (sintered) in step (b) into sheets at a temperature in the range of 80 to 120°C under a pressure in the range of 5 to 10 kp/m^2 for a period of 10 to 30 seconds (see especially page 3, first full paragraph, lines 1 to 3). The powdered material being compacted in (1) has preferably a moisture content of 6 to 8% (see page 5, end of the second full paragraph).

2.2 There was general agreement that the above-mentioned disclosure in citation (1) constitutes the closest state of the art available in the proceedings, because it refers already to a method of preparing a granular beverage material for coffee comprising the steps of pressing a ground instant coffee material having a moisture content within the range specified in claim 1 of the patent in suit into sheets and then reducing the sheets in size to obtain a granular coffee product.

3. *The technical problem and its solution*

3.1 Even though the heat treatment of the coffee powder in step (b) of citation (1) is relatively short (10 to 30 seconds), the respondents see a certain drawback of the method disclosed in (1) in the fact that exposing the ground instant coffee even for such a short period to a temperature in the range of 80 to 120°C may have a detrimental influence on the taste and flavour of the granulated coffee product possibly resulting from the loss of volatile flavour and taste components during the heat treatment. This view of the respondents is based, in the bord's judgment, on a reasonable technical background which is explained in more detail in the introductory part of the patent in suit.

The technical problem arising from the disclosure of the closest state of the art may thus be seen as that of providing a method of preparing a granular beverage material for tea or coffee which avoids the loss of volatile flavouring and taste components during compaction and granulation of the particulate material and, accordingly, a negative impact on the taste and flavour quality of the granular tea or coffee product.

3.2 The solution to this problem proposed according to claim 1 of the patent in suit is to replace the method of agglomeration used in step (b) of citation (1) for pressing the ground coffee material into sheets by a different compression technique of size enlargement which is capable of exerting a higher compacting pressure of up to 2 tons/cm onto the powdered dry mixture comprising tea or coffee material so as to avoid the need of exceeding a temperature in the range

of 10°C to 40°C during pressing and compacting said mixture into sheets in step (b) of claim 1.

From the use of the unit **tons/cm** [of the length of the roll] to express the pressure applied in step (b) of claim 1 to compact the dry mix into sheets it becomes immediately clear to a person skilled in the art that the employment of pressure per unit area or surface pressure, for example the employment of a platen press [as used in (1)], is excluded from the claimed process in the patent in suit and that reference is made to a different compression technique of size enlargement using **linear pressure** for agglomeration to effect sheet formation.

The compression technique used in the patent in suit differs from that used in (3) both in the means of pressure application, or expressed differently, the type of the compacting and pressing equipment used and the method employed to confine the powdered material. As indicated on page 3, lines 20 to 23 and in the examples of the patent in suit, particularly suitable means of linear pressure application or compacting machines for pressing the dry mix in step (b) of the claimed process in the patent in suit into sheets are roller presses capable of exerting a linear pressure of up to 2 tons/cm onto the dry mixture.

3.3 On the basis of the examples contained in the patent in suit, the board has no reason to doubt that the technical problem has been adequately solved. Moreover, the effective solution of the stated problem by the claimed process in the patent in suit has not been disputed by the appellant.

4. *Novelty (Article 100(a) in conjunction with Article 54 EPC)*

After examination of the citations available in the proceedings, the board has reached the conclusion that none of them discloses a method of preparing a granular beverage product comprising tea or coffee material and including all the technical features stated in claim 1 of the patent in suit. Since the appellant himself acknowledged during the oral proceedings before the board the novelty of the claimed process in the patent in suit, there is no need for further detailed substantiation of this matter. Therefore, the proposed solution of the technical problem as set forth in claim 1 and dependent claims 2 to 5 is novel within the meaning of Article 54(1) EPC.

5. *Inventive step*

5.1 In order to determine the issue of inventive step, it is necessary to establish whether the skilled person would have expected the technical problem as defined above to be solvable be using the specific compression technique to produce agglomeration referred to in detail in paragraph 5.2 above.

In roll-pressing equipment, the powdered material is compacted by squeezing as it is carried into the gap between two rolls rotating at equal speed. This is probably the most versatile method of mechanical size enlargement because most materials can be agglomerated and compacted by this technique with or without any binding agent and with the application of very high pressures if needed. Compacting roll-pressing equipment

with coolable rolls have also been developed to avoid any detrimental effect on heat-sensitive materials caused by a temperature rise during compaction and pressing (see, for example citation (5), especially page 3, summary; page 6, right hand column, line 39 to page 7, line 8).

5.2 More specifically, citation (3) discloses a method of producing a granular cocoa product which is sufficiently dense and stiff but nevertheless readily soluble in even cold water, without using any binder (see especially claim 1 and column 3, lines 42 to 45) by subjecting a cocoa powder having a fat content of 12 to 29% to compression (pre-compaction), feeding the compressed powder to a roller press thereby forming small plate-like agglomerates, and crushing and sifting the agglomerates to obtain granules of cocoa. Although citation (3) does not disclose any temperature or pressure ranges during pressure compaction, to a person skilled in the art ambient temperature or even lower temperatures, would appear entirely suitable, taking into account that cocoa butter as a component of the cacao powder having a fat content of 12 to 29% used as the starting product in (3) has a melting point below 40°C.

5.3 In the board's judgment there is no technical reason that could have prevented a person skilled in the art from applying the compression technique and method used in (3) for producing granular cocoa likewise to the preparation of a granular beverage material for tea or coffee.

In spite of the fact that (3) explicitly refers to the

possibility of granulating cocoa powder **without the addition of any binder** (*loc. cit.*), the respondents argued that the fat component of the cocoa powder used in (3) acted as a binder and as such favoured the compacting effect, while the tea or coffee material being compressed in the patent in suit did not contain a comparable component acting as a binder. This argument is, in the board's judgment, neither well-founded nor convincing for the following reasons:

Firstly, in the method for preparing a granular beverage material comprising tea or coffee material, as claimed in the patent in suit, the use of a binder is in no way excluded. In the context of the material being pressed and compacted into sheets the patent in suit explicitly refers to "a dry mix comprising tea or coffee material and having a moisture content of 0-10% by weight". This certainly does not exclude the inclusion of a binder as one component in the "dry mix" used as the starting material in the patent in suit, if needed.

Secondly, from the examples and the description (see especially page 2, line 44 to page 3, line 8) it becomes sufficiently clear that the "dry mix" referred to in the patent in suit usually contains a high proportion in the range of 40 to 90% of carbohydrates (see especially page 3, line 8 of the patent specification) in the form of sugar. The board concurs with the appellant's argument that the capability of sugar to function as an excellent binder during compaction and pressing is part of the background knowledge of the person skilled in the art. In this respect reference is made, for example, to the well-

known fact, that sugar is commonly supplied in daily life in **compacted form** without the use of any binder, for example, in the form of cubes (cube sugar).

5.4 Moreover, apart from the fact that citation (5) refers already in the summary to the possibility of compacting powdered substances in roller presses "without any binding agent", the materials used as test substances in (5), i.e. calcinated sodium carbonate and potassium chloride, were fed to the roller press in the form of an entirely dry and free-flowing powder and nevertheless successfully compacted and pressed into sheets without any binding agent (see especially page 6, left hand column, lines 1 to 4).

5.5 The respondents' further argument that the process disclosed in (3) required a pre-compaction step before the cocoa powder is pressed into sheets cannot contribute to the acknowledgment of an inventive step either, since pre-compaction of the dry mix is likewise a feature of the claimed process in the patent in suit (see page 3, line 27: "during pre-compaction and pressing").

5.6 The success of the compaction operation in step (b) of the claimed process in the patent in suit depends partly on the effective utilization and transmission of the applied pressure and partly on the physical properties of the mixture being compressed. As has been shown above, from the state of the art according to (3) and (5) it was known to a person skilled in the art that in roller presses particulate material can be very effectively compacted even at ambient temperatures and even in the absence of a binder as the result of the

utilization of the relatively high linear pressure applied to the powdered material as it is carried into the gap between two rotating rolls. It was moreover shown that the "dry mix" used in the patent in suit as the starting material usually contains at least certain components having physical properties which favour the compacting effect.

Therefore, the board cannot see any sound reason why a skilled person, faced with the technical problem underlying the patent in suit, would not have reasonably expected this problem to be solvable by applying the compacting technique used in (3) for producing granular cocoo and in (5) for producing diverse other granular materials likewise to the preparation of a granular beverage material for tea or coffee.

The respondents argued during oral proceedings that the claimed method would not have been performed by a person skilled in the art because this person was not able to predict on the basis of the combined teachings of citations (1) and (3) that material comprising tea or coffee could likewise be compacted and pressed into sheets at ambient temperature even if a roller press was used. However, in the present situation, this notionally skilled person was provided, in the board's judgment, with a clear hint from the cited prior art pointing him in the direction of the claimed method, and it was only necessary to confirm experimentally that the highly probable result was in fact obtained. The necessity of experimentally confirming a reasonably expected result does not render an invention unobvious.

5.7 In conclusion, once the use of a roller press and linear pressure for compacting and pressing a dry mix comprising tea or coffee material into sheets at ambient temperature became obvious to the skilled practitioner, determination of the suitable range of temperature (10°C to 40°C) and pressure (up to 2 tons/cm) required for this was merely a matter of routine experimentation. Therefore, the claimed process in the patent in suit lacks, in the board's opinion, an inventive step and does thus not fulfil the requirements of Article 52(1) in conjunction with Article 56 EPC.

5.8 In view of the foregoing it is irrelevant for the outcome of the present case and may therefore remain undecided whether or not citation (6) submitted by the appellant together with the grounds of appeal was published before the priority date of the patent in suit.

The auxiliary request

6. The auxiliary request was formulated by the respondent towards the end of the oral proceedings before the board and was thus filed at the latest possible point in time. The admissibility of late-filed requests depends upon the overall circumstances of the case under consideration, the general principle being that the later the request is filed the more clearly allowable it must be. This applies in particular where a request is filed only during oral proceedings in the appeal. The purpose of oral proceedings being to provide for a final discussion of the case so that it is ready for decision at the conclusion of oral

proceedings (Article 11(3) RPBA), according to established jurisprudence amendments filed in the oral proceedings are only admissible if the amended claims are clearly allowable under Article 123(2) EPC (see the jurisprudence cited in: Case Law of the Boards of Appeal of the European Patent Office, 3rd edition 1998, page 504 et seq., in particular page 506).

6.1 The difference between claim 1 as granted (main request) and claim 1 of the auxiliary request resides in the insertion of the lower limit of the pressure or force applied to the mixture being compacted in step (b) of claim 1 so that it reads: "b) pressing said mix into sheets at a temperature of 10°C to 40°C under a pressure of **0.4-2 tons/cm.**"

Claim 1 as amended in the auxiliary request is, in the board's judgment, not clearly allowable for the following reasons. The lower limit of the pressure or force of 0.4 tons/cm indicated in step (b) was disclosed in the application as filed only in the specific context of Examples II and III where a mixture comprising 1.5% wt instant tea powder, 31% wt milk powder and 67.5% wt sugar (Example II) and one comprising 1.7% wt instant tea powder, 2.4% citric acid, 0.3% sodium citrate, 0.8% wt lemon flavour and 94.8% wt sugar (Example III) were compacted into sheets and subsequently ground to form granules.

In decision T 201/83 (OJ EPO 1984, 481) the board took the view that an amendment of a range in a claim was allowable under the terms of Article 123(2) EPC on the basis of a particular value described in a specific example, provided the skilled man could have readily

recognised this value as not so closely associated with the other features of the example as to determine the effect of that embodiment of the invention as a whole in a unique manner and to a significant degree.

However, in the present case the respondents could not convincingly rebut the appellant's objection that the particular value of the lower limit of the pressure of 0.4 tons/cm is indeed so closely associated with the specific composition of the mixtures used in Examples II and III and, in particular, with the high proportion of milk powder (Example II) and sugar (Examples II and III) contained in these mixtures that the introduction of this particular value into claim 1 would represent an entirely unsupported and therefore unacceptable generalisation from certain specific examples. Since the appellant's objection to the proposed amendment of claim 1 is based on arguments which appear reasonable and cannot be ignored, the board was unable to come to the conclusion that the subject-matter of the auxiliary request clearly meets the requirements of Article 123(2) EPC.

In view of the foregoing, the board could not allow the respondents' auxiliary request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

M. Dainese U. Oswald