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D E C I S I O N
of 15 March 2006

Case Number: T 0026/04 - 3.3.06

Application Number: 97923612.2

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Language of the proceedings: EN

Title of invention:
Multiple ply tissue paper

Patentee:
THE PROCTER & GAMBLE COMPANY

Opponent:
SCA Hygiene Products AB

Headword:
Tissue paper/PROCTER

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Inventive step - no"

Decisions cited:
-

Catchword:
-



Case Number: T 0026/04 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 15 March 2006

Appellant: SCA Hygiene Products AB
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 16 October 2003
rejecting the opposition filed against European
patent No. 0904456 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: P. Krasa
Members: G. Dischinger-Höppler
J. Van Moer

Summary of Facts and Submissions

I. This appeal is from the decision of the Opposition Division to reject the opposition and to maintain European patent No. 0 904 456 on the basis of 8 claims as granted, the independent Claim 1 reading:

"1. A heterogeneous multiple ply tissue paper product having n plies joined together, wherein n is an integer greater than or equal to 2, the multiple ply tissue product comprising at least:

a first ply having a texture value; and

a second ply having a texture value which is at least about 1.5 times, more preferably at least about 2.0 times, more preferably at least about 2.5 times, and most preferably at least about 4.0 times the texture value of the first ply,

characterised in that at least the first ply and the second ply are through air-dried."

Dependent Claims 2 to 8 relate to preferred embodiments of the tissue paper of Claim 1.

II. The notice of opposition was based on the ground of lack of novelty and inventive step (Article 100(a), 54 and 56 EPC) and cited inter alia the following documents:

(1) US-A-4 100 017 and

(2) US-A-3 301 746.

III. In its decision, the Opposition Division found that the subject-matter of the claims as granted was novel over D1 which did not disclose a combination in one tissue of two through air-dried (TAD) plies having the particular difference in texture value. It was also based on an inventive step in view of D1 as the closest prior art since no hint was given in the prior art that results obtained for tissues with differently creped plies could be transferred to tissues having different texture values, i.e. different patterns introduced by TAD.

IV. During the appeal proceedings, the Respondent (Proprietor) filed amended sets of claims in two auxiliary requests under cover of a letter dated 2 March 2006.

Claim 1 of the first auxiliary request differs from granted Claim 1 (main request) by adding at the very end of the claim the following feature:

"wherein at least one of the plies comprises a paper web has (sic!) discrete regions of relatively high density dispersed throughout one or more relatively low density regions; or wherein at least one of the plies comprises a paper web having continuous network region having a relatively high density, and a plurality of discrete regions throughout the continuous network region, the discrete regions having relatively low densities".

Claim 1 of the second auxiliary request differs from granted Claim 1 (main request) by adding at the very end of the claim the following feature:

"wherein at least one of the plies comprises a paper web having a continuous network region having a relatively high density, and a plurality of discrete regions throughout the continuous network region, the discrete regions having relatively low densities".

V. Oral proceedings before the Board of Appeal were held on 15 March 2006 in the absence of the Appellant (Opponent) as announced by letter dated 13 February 2006.

VI. The Appellant, in writing, maintained that the claimed subject-matter was

- not novel in view of D1 since according to the patent in suit the texture value was measured on a web having a pattern resulting from a combination of wet- and dry-formed structure and since it was apparent from Figure 6 in D1 that the texture value of the second ply was at least 1.5 times of that of the first ply; and
- not based on an inventive step since it was known from D1 that absorbency of a laminate tissue web was improved if all plies were high bulk webs obtained by the TAD process and if nesting was avoided by using dissimilar plies with different patterns resulting from the application of both, the TAD- and the dry-creping processes.

VII. The Respondent submitted in essence the following:

- The claimed subject-matter was novel if only for the reason that no dimensions or proportions could be derived from Figure 6 in D1.
- The claimed subject-matter was inventive in view of D1 since there was no pointer in the art towards a selection of the texture value feature which only related to and was measured on the wet-formed texture in the surface of the plies with a view to possibly improve the absorbency of the multiply tissue paper product.

VIII. The Appellant requested in writing that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the appeal be dismissed or alternatively that the patent be maintained on the basis of the claims according to the first or second auxiliary requests filed with letter dated 2 March 2006.

Reasons for the Decision

Interpretation of the term "texture value"

1. At the oral proceedings, the Respondent confirmed that the term "texture value" as used in the context of the patent in suit was a new parameter, hitherto unknown in the art. It was however evident from paragraphs 38 and 86 to 88 in the description, so he argued, that the

term stood for the elevation difference between peaks and adjacent valleys in the surface of a tissue paper web as produced by wet formed texture only. Hence, dry formed texture obtainable either by embossing or dry creping was not measured for that purpose. According to the Respondent, a person skilled in the art knew how to obtain only the elevation difference obtained by wet formed textures by measuring only peaks and valleys along any creping ridges possibly produced in a dry creping step parallel to the cross-direction of the web.

In any case, the Respondent agreed, that the texture value was a value smaller than the caliper and that it corresponded to the difference between the caliper and the maximum thickness of the web, the latter including any elevation difference obtained by dry creping, if applied.

Main Request

2. *Novelty*

The Board agrees with the respective findings in the decision under appeal that D1 does not disclose clearly and unambiguously a tissue paper product having two plies obtained by TAD which differ from each other in that the texture value of one ply is 1.5 times that of the other ply. Since the appeal succeeds on the ground of lack of inventive step, no further reasons need to be given.

3. *Inventive step*

3.1 The patent in suit relates to a heterogeneous multiply tissue paper product comprising at least two plies wherein "heterogeneous" means that at least one ply can be distinguished from at least one of the other plies in terms of caliper, macro-density, basis weight and/or texture value (page 1, paragraph [0001], page 2, paragraphs [0014] and [0031]).

With reference to D1, it is stated in the patent in suit that combinations of a high bulk process paper web and a conventional paper web in a heterogeneous two-ply tissue product are known in the art (page 1, paragraph [0009]).

3.2 In paragraph [0010] the patent in suit goes on to state that it was an objective to provide a multiply paper structure having improved absorbency.

3.3 D1 also relates to multi-ply tissue paper and the objective of absorbency (title and column 1, lines 23 to 25 in combination with column 3, lines 8 to 18). The Board therefore agrees with the opinion expressed by both parties and in the contested decision that D1 is a suitable starting point for the assessment of inventive step.

3.4 It is acknowledged in D1 that high bulk process paper webs are generally considered to have better absorbency than conventional paper webs (column 2, lines 13 to 16 and 54 to 59) and that two-ply tissues made from high bulk process webs are known in the art (column 1, lines 10 to 22).

Concerning the high bulk process, the process disclosed in D2 is incorporated in D1 by reference (column 4, lines 16 to 32 and column 1, lines 13 to 18). As was confirmed by the Respondent, this process is known as TAD process (D2, Figures 1 and 2 and corresponding description in columns 3 and 4).

It is apparent from D1 that at the time of its application date the use of two-ply TAD tissues suffered from the problem of supply since the paper machines designed therefore were very expensive and not yet common in the paper industry whilst there was excess capacity available on conventional paper machines (column 2, line 59 to column 3, line 5).

Hence, it was an objective in D1 to provide an absorbent two-ply tissue paper which, in many respects, is equivalent to a laminate of two TAD webs whilst making use of excess capacity of conventional paper machines (column 3, lines 8 to 22).

This objective is achieved in D1 by providing a hybrid laminate of two dissimilar webs, one of conventionally made paper and the other of low density paper made by the TAD process (column 5, lines 14 to 16 and Example III). It is uncontested that the hybrid laminate is a heterogeneous multiply tissue paper product within the definition of the patent in suit since it consists of two webs which differ from each other with regard to the texture value (point 3.1 above). More particularly, in the hybrid laminate of D1 the texture value of the TAD web is at least 1.5 the

texture value of the conventional web since the former has a texture value and the latter not.

In the examples of D1 a comparison is made between two-ply tissue paper products made of two conventional paper webs (Example I), of two TAD webs (Example II) and of a combination of a conventional and a TAD web in a hybrid laminate (Example III). All webs have been dry creped from the surface of a Yankee dryer (Example I in combination with column 4, lines 4 to 15, Example II and Example III). In the Table in column 9 it is shown that the two-ply TAD (all-TAD) tissue product has the best absorptive capacity and that the absorptive capacity of the hybrid laminate is significantly closer to that of the all-TAD laminate than one would expect from the capacities of the all-conventional and the all-TAD laminate (see also column 9, lines 58 to 63).

In columns 5 and 6 of D1 in combination with the corresponding Figures 5 and 6, this effect is explained and illustrated to be due to the very regular creping patterns in the TAD webs with relatively high hills and deep valleys of like amplitude and frequency, so that the two webs in all-TAD laminates tend to mesh together in a way that the valleys and hills of the uppermost web and those of the lower web come into the most stable alignment, i.e. a position of maximum nesting (column 5, lines 40 to 53). In contrast, in the hybrid laminate nesting of the two webs is prevented due to the dissimilarity of the random creping pattern with shallow peaks and hills in the conventional paper web and the regular creping pattern with high hills and deep valleys in the TAD web (column 4, lines 51 to 68 and column 5, lines 54 to 65). It is further explained

- that prevention of nesting or meshing increases the relative size of void spaces between the webs which contributes to the enhanced absorbency properties of the laminate (column 5, line 66 to column 6, line 2).
- 3.5 The Respondent maintained that the technical problem to be solved in view of D1 consists in the provision of a multiply tissue product having higher absorbency than the hybrid laminate of D1. According to Claim 1, this problem is solved by replacing the conventional paper web by a second TAD web such that the texture value of one ply is at least 1.5 times of that of the other.
- 3.6 In the patent in suit, the invention is illustrated in the tables presented on pages 8 and 10. In the table on page 8 it is shown that a heterogeneous two-ply tissue paper product made from a TAD web having a texture value of 0.14 mm ("low TV") and another having a texture value of 0.64 ("high TV") has improved absorption properties as compared with the corresponding homogenous two-ply "low TV" tissue but worse absorption properties than the corresponding homogeneous two-ply "high TV" tissue. In the table on page 10 another heterogeneous two-ply tissue is shown which is made from TAD webs having a texture value of 0.39 mm and 0.68 mm respectively. This hybrid tissue has improved absorption properties as compared with both corresponding homogenous two-ply TAD tissues. However, this table suffers from a lack of clarity in respect of the properties of one of the plies (Ply 32) since in this case the texture value (0.68 mm) largely exceeds the value of the caliper (0.56 mm) (see also point 1 above).

Moreover, in all cases, the plies used in the laminates not only differ with regard to the texture value but also with regard to the caliper and basis weight in a manner which is apparently unrelated to the difference in texture value. Consequently, the tables do not really provide sufficient evidence that any effect is due to the difference in texture value.

- 3.7 However, if it is assumed, nevertheless and in the Respondent's favour, that an improvement in absorbency is obtained by the heterogeneous two-ply tissue product of the patent in suit in relation to the corresponding homogenous two-ply tissues, then it would be credible that an improvement must also be achieved in relation to the embodiments of Example III in D1 since the latter are less absorptive than homogeneous laminates (Example II) made from two TAD plies similar to those used in the hybrid laminate of Example III.

In this case, it could be accepted that the above stated technical problem in view of D1 has been solved by the claimed subject-matter (see point 3.5 above).

- 3.8 It remains to be decided whether, in view of the available prior art documents, it was obvious for someone skilled in the art to solve this problem by the means claimed, i.e. by replacing in the hybrid tissue of D1 the conventional web by a second TAD web such that the texture value of one web is at least 1.5 times that of the other.

- 3.9 The Respondent argued that there was no hint in the available prior art to combine in a multiply TAD tissue paper product webs of different texture value nor was

there any reason for someone skilled in the art to expect that a similar effect as achieved in Example III of D1 by using webs of different creping characteristics could also be achieved by using webs of different texture value.

3.10 The argument is not convincing for the following reasons:

D1 explicitly discloses

- that TAD webs have better absorbency than conventional webs (column 2, lines 13 to 16 and 54 to 59);
- that nesting of the webs should be avoided by different creping patterns in order to create void spaces between the plies which attribute to absorbency (column 5, line 54 to column 6, line 2);
- that laminates of two nesting TAD webs have better absorbency than hybrid laminates even if the latter include void spaces (Examples II and III and corresponding table); and
- that instead of the hybrid laminates made from one conventional and one TAD web, it is also possible to combine two TAD webs which have been treated individually and differently so as to have distinctive creping characteristics (column 10, lines 30 to 34).

It is observed in this respect, that the highly regular patterns produced in the TAD web via a combination of

the TAD process with a subsequent dry creping from the surface of the creping drum (Yankee drier) (column 4, lines 16 to 32) is also called "creping pattern" in D1 (column 5, lines 40 to 42).

3.11 Thus, a person skilled in the art of tissue making learns from D1 that all-TAD laminates would be preferable as far as absorbency of the product is concerned and that the absorbency can still be increased if nesting of the plies is avoided and void spaces are created between the plies. Whilst being apparent from D1 that an improvement in absorbency over the hybrid laminates of Example III can be obtained simply by replacing the conventional web by a second TAD web, a skilled person would not disregard the respective teaching in D1 that it is also possible to increase the absorbency if void spaces are created between the plies. The Board further finds that the skilled person would realise that the void spaces can be created not only by differences in the patterns obtained from dry creping but also by differences obtained by wet texturing via the TAD process.

3.12 The Board does not overlook that apart from preventing meshing or nesting by varying in the patterns of the plies the amplitude of the wrinkles it would also be possible for that purpose to vary the frequencies or shapes of the wrinkles as is suggested in the decision under appeal (point 2.2). However, Figure 6 of D1 illustrates that using different amplitudes actually is a possibility to create the desired void spaces between the plies. The Board wishes to note that it is irrelevant for the present case that in this figure the

frequency and the shape are varied too, since this is not excluded from the claimed subject-matter.

- 3.13 The Board, therefore, finds that the skilled person would have replaced in the two-ply hybrid laminate of D1 the conventional ply by a second TAD web having a different texture value than the first web in the expectation of improving the absorbency not only of the hybrid laminate of D1 but also that of a corresponding nesting two-ply TAD tissue, due to the presence of void spaces between the plies.
- 3.14 Concerning the particular numerical relationship between the texture values of the plies, the Board notes that no evidence is on file showing that this feature is of particular relevance. In any case the finding of the proper minimum texture value difference between the plies (1.5 times) necessary to result in a distinct improvement of absorbency would be merely a matter of routine experimentation rather than of inventive step.
4. For these reasons the Board finds that the subject-matter of Claim 1 of the main request does not comply with the requirements of Articles 52(1) and 56 EPC.
5. The features introduced into Claim 1 of the first and second auxiliary requests do not change the situation since they do not include matter on which an inventive step could be based. This was explicitly confirmed by the Respondent during the oral proceedings.

Therefore, the auxiliary requests must also fail since they too do not meet the requirements of Articles 52(1) and 56 EPC.

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:

G. Rauh

P. Krasa