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D E C I S I O N
of 13 February 2003

Case Number: T 0648/00 - 3.2.6

Application Number: 91903779.6

Publication Number: 0513148

IPC: A61F 13/15

Language of the proceedings: EN

Title of invention:
Absorbent structures containing thermally-bonded stiffened fiber layer and superabsorbent material layer

Patentee:
THE PROCTER & GAMBLE COMPANY

Former Opponent:
Paul Hartmann AG

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
T 0506/95

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0648/00 - 3.2.6

D E C I S I O N
of the Technical Board of Appeal 3.2.6
of 13 February 2003

Appellant: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 4 May 2000 revoking European patent No. 0 513 148 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: P. Alting Van Geusau
Members: G. Pricolo
M. J. Vogel

Summary of Facts and Submissions

I. The appeal is from the decision of the Opposition Division posted on 4 May 2000 to revoke European patent No. 0 513 148, granted in respect of European patent application No. 91 903 779.6.

Independent claims 1 and 3 read as follows:

"1. An absorbent structure (106) for acquisition, distribution, and storage of bodily fluids comprising a fluid acquisition/distribution layer (110, 111) having an average dry density of less than 0.30 g/cc, preferably from 0.02 g/cc to 0.20 g/cc, and an average dry basis weight of from 0.001 to 0.10 g/cm^2, preferably from 0.01 g/cm^2 to 0.08 g/cm^2; a fluid storage layer (108) positioned beneath said acquisition/distribution layer (110, 111) relative to said topsheet, comprising at least 15%, preferably 25%, by weight of said storage layer, of superabsorbent material and from 0% to 85% of a carrier means for said superabsorbent material; characterised in that said acquisition/distribution layer (110, 111) is thermally bonded by comprising from 50% to 90%, dry weight basis, chemically stiffened cellulosic fibers and from 10% to 50%, preferably 25% to 50%, dry weight basis, of a thermoplastic bonding material; said acquisition/distribution layer (110, 111) having been made by preparing a web of a blend of the stiffened fibers and from 10% to 50%, preferably 25% to 50%, by weight of the dry web, of thermoplastic fibrous material, heating the web to melt the thermoplastic fibrous material and to thereby provide said thermoplastic bonding material, and cooling the web, whereby thermoplastic bonding material, upon melting and subsequent cooling, migrates to and forms

bond sites at intersections of said stiffened cellulosic fibers."

"3. An absorbent article (100) for acquisition distribution and storage of bodily fluids, said article characterized by: (a) a fluid pervious topsheet (104); (b) a fluid impervious backsheet (102) affixed to said topsheet (104); and (c) an absorbent structure (106) comprising a fluid acquisition/distribution layer (110, 111) having an average dry density of less than 0.30 g/cc, preferably from 0.02 g/cc to 0.20 g/cc, and an average dry basis weight of from 0.001 to 0.10 g/cm^2, preferably from 0.01 g/cm^2 to 0.08 g/cm^2; a fluid storage layer (108) positioned beneath said acquisition/distribution layer (110, 111) relative to said topsheet, comprising at least 15%, preferably 25%, by weight of said storage layer, of superabsorbent material and from 0% to 85% of a carrier means for said superabsorbent material; whereby said acquisition/distribution layer (110, 111) is thermally bonded by comprising from 50% to 90%, dry weight basis, chemically stiffened cellulosic fibers and from 10% to 50%, preferably 25% to 50%, dry weight basis, of a thermoplastic bonding material; said acquisition/distribution layer (110, 111) having been made by preparing a web of a blend of the stiffened fibers and from 10% to 50%, preferably 25% to 50%, by weight of the dry web, of thermoplastic fibrous material, heating the web to melt the thermoplastic fibrous material and to thereby provide said thermoplastic bonding material, and cooling the web, whereby thermoplastic bonding material, upon melting and subsequent cooling, migrates to and forms bond sites at intersections of said stiffened cellulosic fibers; being disposed between said topsheet (104) and

said backsheet (102)."

II. In the decision under appeal the Opposition Division considered that the subject-matter of these independent claims was novel but did not involve an inventive step having regard to the teaching of documents

D1: EP-A-317 058, and

D3: GB-A-2 215 609.

III. The appellant (patentee) lodged an appeal against this decision, received at the EPO on 30 June 2000, and simultaneously paid the appeal fee. The statement setting out the grounds of appeal was received at the EPO on 24 August 2000.

IV. The opponent did not file any submissions in respect of the appeal and withdrew the opposition with letter dated 21 December 2000.

V. In an annex to the summons for oral proceedings pursuant to Article 11(2) Rules of Procedure of the Boards of Appeal the Board expressed its preliminary opinion that it would appear that the subject-matter of claim 1 was distinguished from the absorbent structure of D1 solely in that the cellulosic fibers were chemically stiffened, and that document D3 already disclosed the use of chemically stiffened cellulosic fibers in order to provide a relatively thin absorbent article.

VI. Oral proceedings took place on 13 February 2003.

The appellant requested that the decision under appeal

be set aside and that the patent be maintained as granted.

VII. In support of its requests the appellant relied essentially on the following submissions:

The patent in suit was concerned with an absorbent structure having an acquisition/distribution layer which was hydrophilic. Although the term "hydrophilic" was not present in the independent claims, they described that chemically stiffened cellulosic fibers were used, and such fibers were hydrophilic. Furthermore, the claims specified that the thermo-plastic bonding material migrated at the intersection of the stiffened cellulosic fibers. Due to this migration, the thermoplastic bonding material did not substantially affect the hydrophilic properties of the cellulosic fibers. Moreover, the patent in suit explicitly disclosed when referring to the prior art, that the provision in an absorbent structure of a hydrophobic transport layer positioned between the topsheet and the absorbent body was disadvantageous because it resulted in limited fluid acquisition and fluid transport due to the hydrophobicity of the transport layer. It was therefore clear that nothing other than a fluid acquisition/distribution layer which was hydrophilic was intended for the absorbent structure claimed in the patent in suit.

In view of the above, the correct starting point for assessing inventive step was document D3, which disclosed an absorbent structure comprising a *hydrophilic* fluid acquisition/distribution layer, and not document D1, as argued by the Opposition Division in the decision under appeal, because D1 specifically

taught the provision of a *hydrophobic* liquid-transfer layer.

Since the teaching of D1 consisted in forming a hydrophobic liquid-transfer layer by providing a blend of wood fluff pulp and thermoplastic fibers and then melting the thermoplastic fibers, the skilled person would not consider applying this teaching to the absorbent structure of D3 because in doing so the hydrophilic properties of the acquisition/distribution layer would be lost. Furthermore, D1 was silent about a migration of the thermoplastic material upon melting. D1 merely disclosed that the melting of the hydrophobic thermoplastic fibers developed a hydrophobic surface, and did not suggest that, if migration took place as in the patent in suit, then a layer being substantially hydrophilic could be obtained even in the presence of such thermoplastic fibers.

Reasons for the Decision

1. The appeal is admissible.

2. *Novelty*

The Board agrees with the findings of the Opposition Division that the claimed subject-matter is novel (see points 2 and 3 of the decision under appeal) since none of the cited documents discloses all the features of claims 1 and 3.

Novelty was in fact not in dispute.

3. *Inventive step*

3.1 The technical problem underlying the patent in suit consists in providing absorbent structures, as well as absorbent articles utilizing such structures, which provide improved fluid distribution and acquisition performance, especially with respect to successive fluid discharges.

3.2 Document D3 generally relates to the problem of effectively and efficiently absorbing and storing the wearer's discharged body fluids (see D3, page 2, lines 28 to 31). The skilled person would consider the absorbent structure of D3 as particularly suitable for the desired purpose of improving fluid distribution and acquisition performance because it comprises, on top of the absorbent core, a hydrophilic fluid acquisition distribution layer which serves to quickly acquire and transport fluid by wicking (see page 7, lines 3 to 22). In contrast thereto, the absorbent structure according to D1 comprises a hydrophobic liquid-transfer layer positioned over the absorbent core, which hydrophobic layer has the purpose of providing a shorter strike-through time and an improved rewet (see page 2, lines 16, 17 and 33 to 40). The teaching of D3 thus consists in providing a hydrophobic layer not for improving fluid distribution and acquisition performance but for allowing liquid to reach as quickly as possible the absorbent core (short strike-through time) and to avoid that liquid flows back from the absorbent core (rewet).

In view of the fact that D3 is directed essentially to the same purpose as the invention claimed in the patent in suit whilst D1 aims at a different objective, the Board concludes that the closest prior art for the purposes of assessing inventive step is represented by

document D3 (see eg T 506/95).

3.3 In its decision (see page 4) the Opposition Division has pointed out that the disclosure of D1 that a hydrophobic layer is obtained does not mean that the layer is absolutely hydrophobic, and that the term hydrophobic is a relative term and as such has no precise meaning.

However, in selecting the closest prior art for the purposes of assessing inventive step, the first consideration is that it must be directed to the same purpose or effect as the claimed invention (see the above-mentioned decision T 506/95, point 4.1). Although the skilled person might consider that the liquid-transfer layer of D1 is not absolutely hydrophobic, the explicit indication in D1 of the hydrophobic properties being essential would constitute an indication that fluid distribution and fluid acquisition only take place to a limited extent as compared to other absorbent articles, such as that of D3, where the presence of a hydrophilic layer on top of the absorbent core is disclosed for the specific purpose, also aimed at by the claimed invention, of distributing and absorbing liquid.

3.4 Using the wording of claim 1, document D3 discloses (see claim 1) an absorbent structure for acquisition, distribution, and storage of bodily fluids comprising a fluid acquisition/distribution layer having an average dry density of less than 0.30 g/cc (D3: from about 0.05 to 0.25 g/ cc) and an average dry basis weight of from 0.001 to 0.10 g/cm^2 (D3: about 0.01 to 0.10 g/cm^2); a fluid storage layer positioned beneath said acquisition/distribution layer relative to said

topsheet, comprising at least 15% (D3: from about 15% to 60%), by weight of said storage layer, of superabsorbent material and from 0% to 85% of a carrier means for said superabsorbent material. The fluid acquisition/distribution layer comprises chemically stiffened cellulosic fibers (page 9, last paragraph).

3.5 The above mentioned technical problem is solved, in accordance with the definition of claim 1, by means of said acquisition/distribution layer (110, 111) being thermally bonded by comprising from 50% to 90%, dry weight basis, chemically stiffened cellulosic fibers and from 10% to 50%, preferably 25% to 50%, dry weight basis, of a thermoplastic bonding material; said acquisition/distribution layer (110, 111) having been made by preparing a web of a blend of the stiffened fibers and from 10% to 50%, preferably 25% to 50%, by weight of the dry web, of thermoplastic fibrous material, heating the web to melt the thermoplastic fibrous material and to thereby provide said thermoplastic bonding material, and cooling the web, whereby thermoplastic bonding material, upon melting and subsequent cooling, migrates to and forms bond sites at intersections of said stiffened cellulosic fibers.

3.6 Document D1 discloses the provision of a liquid-transfer layer which is thermally bonded by comprising cellulosic fibers and a thermoplastic bonding material (see claim 1). The process of thermally bonding the fibers leads to the development of a hydrophobic surface having pores larger than those of the unconsolidated layer (see page 2, lines 33 to 40), which hydrophobic surface provides for a shorter strike-through time and less rewet. However, there is

no indication in D1 that such hydrophobic surface could contribute to an improvement of the fluid distribution within the absorbent article. On the contrary, since the liquid-transfer layer of D1 provides a shorter strike-through time, the skilled person would consider that it does not facilitate fluid distribution, ie transport of fluid from the point of initial contact to other parts of the absorbent structure. Furthermore, D1 is silent about a migration of the thermoplastic material to the intersections of the fibers upon melting. The Board notes that there is no evidence available to reach the conclusion that such a migration takes place also in the process of manufacturing the absorbent article of D1. In particular, although the process of manufacturing the absorbent article of D1 comprises the step of heating the blend of wood fluff pulp and thermoplastic bonding material to melt the thermoplastic bonding material, it is carried out in the absence of the chemically stiffened cellulosic fibers which are present in the acquisition/-distribution layer of the absorbent structure claimed in the patent in suit. Thus, since the conditions are not identical, the result of the above-mentioned process step in D1 is not necessarily a migration of the thermoplastic bonding material. Moreover, in the absence of any evidence to the contrary, the Board accepts that the migration, as submitted by the appellant, plays a substantial role for the solution of the problem, in that it substantially reduces the impact of the thermoplastic bonding material onto the hydrophilic properties of the chemically stiffened cellulosic fibers, which hydrophilic properties are essential for the improvement of fluid acquisition and fluid transport within the acquisition/distribution layer.

The other available prior art documents do not contain any indications leading to the claimed solution of the above-mentioned problem. In particular, none of these documents discloses or suggests the provision of thermoplastic bonding material that has migrated to bond sites at intersections of stiffened cellulosic fibers.

Therefore, the subject-matter of claim 1 is found to be based on an inventive step.

3.7 Claim 3 relates to an absorbent article comprising an absorbent structure having all the features of claim 1. As a consequence its subject-matter, and that of dependent claims 2 and 4 to 6, is also found to be based on an inventive step.

4. Considering the foregoing conclusions of the Board, the grounds for opposition do not prejudice the maintenance of the European patent as granted.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is maintained unamended.

The Registrar: The Chairman:

M. Patin P. Alting van Geusau