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D E C I S I O N
of 5 October 2001

Case Number: T 0016/98 - 3.2.6

Application Number: 91904290.3

Publication Number: 0592401

IPC: A61F 13/46

Language of the proceedings: EN

Title of invention:
An absorbent body incorporating two layers which contain different superabsorbents

Patentee:
Mölnlycke AB

Opponent:
The Procter & Gamble Company

Headword:
-

Relevant legal provisions:
EPC Art. 100(b), 54(2), (3), 56

Keyword:
"Sufficiency of disclosure (yes)"
"Novelty (yes)"
"Inventive step (yes)"

Decisions cited:
T 0292/85, T 0246/92, T 0495/91

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0016/98 - 3.2.6

D E C I S I O N
of the Technical Board of Appeal 3.2.6
of 5 October 2001

Appellant: (Opponent)
The Procter & Gamble Company
One Procter & Gamble Plaza
Cincinnati, OHIO 45202 (US)

Representative:
Lawrence, Peter Robin Broughton
GILL JENNINGS & EVERY
Broadgate House
7 Eldon Street
London EC2M 7LH (GB)

Respondent: (Proprietor of the patent)
Mölnlycke AB
405 03 Göteborg (SE)

Representative:
Kierkegaard, Lars-Olov
Albihns Stockholm AB
Box 5581
114 85 Stockholm (SE)

Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 24 November 1997 rejecting the opposition filed against European patent No. 0 592 401 pursuant to Article 102 (2) EPC.**

Composition of the Board:

Chairman: P. Alting van Geusau
Members: G. Pricolo
M. Tardo-Dino

Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 592 401 in respect of European patent application No. 91 904 290.3, filed on 13 February 1991 and claiming a priority date of 14 February 1990, was published on 23 August 1995.

II. Notice of opposition was filed against the patent as a whole by the appellant (opponent) under Article 100(a) on the grounds that the subject-matter of the claims lacked novelty and inventive step, and under Article 100(b) on the grounds that the patent did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

III. By decision posted on 24 November 1997 the Opposition Division rejected the opposition. The Opposition Division held that the invention was sufficiently disclosed, and that the subject-matter of claim 1 was novel and involved an inventive step over the prior art as disclosed in documents

D1: EP-A-0 401 189;

D2: US-A-4 338 371;

D3: "Ultra diapers by the dozen; war has broken out", Impact 87 International conferences, February 26 to 27, 1987, Section IX, pages 1 to 15;

D4: EP-A-0 254 476;

D5: EP-A-0 339 461.

IV. The appellant (opponent) lodged an appeal, received at the EPO on 2 January 1998, against this decision. Payment of the appeal fee was recorded on 5 January 1998. The statement setting out the grounds of appeal was received at the EPO on 1 April 1998.

V. Oral proceedings took place on 5 October 2001.

As previously announced by letter dated 7 September 2001, the appellant did not attend the oral proceedings. The proceedings continued without him (Rule 71(2) EPC). During the written proceedings, the appellant requested that the patent be revoked.

The respondent (patentee) requested that the appeal be dismissed and that the patent be maintained in the form as granted or, subsidiarily, in amended form on the basis of the claims in accordance with the first or second auxiliary request filed with letter dated 6 October 1997.

VI. Claim 1 as granted reads as follows:

"1. An absorbent body for use in diapers, incontinence guards or like articles, characterized in that the absorbent body includes a first layer of fluff (1) which lies nearest the wearer's body in use, a first superabsorbent (3) which is mixed in said layer and which has a high degree of cross-linking and therewith the ability to swell without being affected substantially by normally occurring pressure forces, whereby the fluff which collapses when absorbing liquid will be loosened and therewith again form an air-containing, voluminous fluff layer, and in that the absorbent body includes a second layer containing a

second superabsorbent (2) having a higher liquid absorbency than the first superabsorbent."

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

There was no teaching in the patent as to how much of any particular superabsorbent should be used, and there was no teaching as to what effects were intended to be achieved. Since there was no clear indication of what products were being claimed, it was not possible to make them. Therefore, the invention was not sufficiently disclosed.

In order to assess whether the claimed subject-matter was novel and involved an inventive step, it was necessary to attempt to give a meaning to the wording of the claim. The claimed product had no structural features indicating which layer was to be considered as being nearest to the wearer's body, and thus, what was claimed was a product which could be either way up. Furthermore, the expression "highly cross-linked" did not define any clear limitation for the first superabsorbent, and therefore, it could only be interpreted with reference to the functional explanation given in the patent. In accordance therewith, the superabsorbent had to swell without being affected substantially by normally occurring pressure forces, without changing shape, and in such a manner that the fluff was loosened to become an air containing voluminous fluff layer. However, there was no suggestion in the patent of what was intended by "substantially affected" and of what were "normally occurring pressure forces". Moreover, all modern superabsorbents were capable of maintaining their

physical integrity during use without flattening out into a soft gel, i.e. without changing shape, and were consequently capable of loosening the fluff. Hence, the definition of claim 1 referring to the high degree of cross-linking had to be ignored as it was incapable of being given a sufficiently clear meaning. The same applied to the definition referring to the second superabsorbent as having a higher liquid absorbency than the first superabsorbent, because it was not clear what was meant by the term "absorbency". There was no basis in the patent to assume that the relevant absorbency was the free liquid absorbency in contrast to other types of absorbency, such as absorbency under load or liquid retention.

Since the claim had to be interpreted so broadly, it lacked novelty over each of D1 to D4.

Because the claim covered unspecified amounts of unspecified material in a layer which could either be the first layer to receive liquid or the second layer to receive liquid, and because there was no evidence of any technical advantage, and because there could be no technical advantage for many of the combinations within the claim, the claimed invention did not solve any technical problem. Accordingly, the provision of multi-layer products having different superabsorbents that complied with the generalised definition of properties referred to in claim 1 lacked an inventive step over each of the citations D2 to D5.

VIII. The arguments of the respondent can be summarized as follows:

The patent specification contained specific examples of

superabsorbents which could be used in the first and in the second layer. Moreover, the patent specification was clear enough to enable a skilled person to decide what materials could be used in these layers.

The definition of claim 1 referred, in a clear manner, to a first layer which was nearest to the wearer's body and included a first superabsorbent which was so highly cross-linked and of such a high gel strength that it was able to swell under normally occurring pressure forces, without changing shape, thereby emptying the fluff of liquid and at the same time loosening the fluff, so that the latter was able to absorb a new high amount of liquid. In that context, no producers of diapers or incontinence guards would have questioned that the normally occurring pressure forces were those created by the weight of the wearer. Further, the statement in claim 1 that the second superabsorbent had a higher liquid absorbency than the first superabsorbent was quite clear for a skilled person.

Novelty and inventive step of the claimed absorbent body had already been acknowledged by the Opposition Division in the appealed decision. With respect to document D1, however, the Division was wrong in assuming that it disclosed a superabsorbent in the lower layer having a higher liquid absorbency than the superabsorbent in the upper layer. D1 disclosed the use, in the lower layer, of a superabsorbent having a higher absorption rate than the superabsorbent in the upper layer. However, superabsorbents with a high absorption rate were inferior in absorbency to superabsorbents with low absorption rate, because gel-blocking occurred relatively quickly. Therefore, it was the superabsorbent in the upper layer that had a higher

liquid absorbency, not the superabsorbent in the lower layer.

Reasons for the Decision

1. The appeal is admissible.

2. *Sufficiency of disclosure*

2.1 According to the established case law, an invention can be held to be sufficiently disclosed if at least one way is clearly indicated enabling the skilled person to carry out the invention (see e.g. T 292/85, OJ 1989, 275). The absorbent body according to the invention as defined in claim 1 must include a first layer of fluff containing a first superabsorbent and a second layer containing a second superabsorbent. Since the skilled person has no difficulties to provide a layer of fluff, and the patent discloses suitable first and second superabsorbents (see column 4, lines 1 to 4), at least one way of carrying out the invention is clearly indicated and the invention is, therefore, sufficiently disclosed.

2.2 The appellant argued that the patent lacked sufficiency of disclosure because there was no teaching in the patent as to how much of any particular superabsorbent should have been used. However, in the Board's opinion, nothing more than simple and straightforward experiments by the person skilled in the art are necessary in order to determine those amounts of superabsorbents, in the different layers of the absorbent article, that provide satisfactory functioning of the absorbent article. Therefore, the

absence of precise indications about the amounts of superabsorbents would not prevent a skilled person from carrying out the invention.

The appellant further argued that there was no teaching as to what effects were intended to be achieved. Also this argument cannot be followed, since the patent clearly states (column 1, lines 40 to 45) what technical problem is to be solved, ie what effects are to be obtained.

3. *State of the art - novelty*

3.1 Document D1, published on 5 December 1990 and claiming a priority date of 31 May 1989, is state of the art according to Article 54(3) EPC. Using the wording of claim 1, this document discloses (see Figure 2) an absorbent body for use in diapers, incontinence guards or like articles, including a first layer of fluff (9), which lies nearest the wearer's body in use, containing a first superabsorbent which is mixed in said first layer; the absorbent body including a second layer (8) containing a second superabsorbent. The first superabsorbent, which is in the layer of fluff, has a high degree of cross-linking and therewith a low rewetting tendency (page 3, lines 37 to 39 and page 5, lines 33 to 41). In accordance with the disclosure in the patent (column 2, line 40 - column 3, line 2), the low rewetting tendency corresponds to the ability to swell without being affected substantially by normally occurring pressure forces, and therefore, the first superabsorbent of D1 also has this ability. Because the superabsorbent swells, it also loosens the fluff. Therefore, noting that claim 1 does not specify whether the superabsorbent must be capable of loosening the

fluff *when pressure forces are applied to it*, it must be concluded that D1 discloses the further feature of claim 1 that the fluff which collapses when absorbing liquid will be loosened and therewith again form an air-containing, voluminous fluff layer.

The appellant submitted that the product of claim 1 had no structural features indicating which layer was to be considered as being nearest to the wearer's body, and that a product which could be either way up was claimed. In that respect the Board notes that, even if the claim may relate to a product either way up, the claim still requires the absorbent body to be such that the first layer may, in use, lie nearest to the wearer's body. The prior art D1 discloses an absorbent article which has one side (corresponding to layer 3) intended to lie nearest to the wearer's body, the opposite side (layer 6) being unsuitable for that purpose because it is impermeable. Therefore, in this prior art, the first layer of fluff which lies nearest the wearer's body is, and can only be, the upper layer 9. Hence, the remaining question to be answered, in order to assess novelty of the subject-matter of claim 1 over D1, is whether D1 discloses that the second superabsorbent in the lower layer (8) has a higher liquid absorbency than the first superabsorbent in the upper layer (9). The whole disclosure of document D1 (see for instance page 2, line 51 to page 3, line 1; table 1 on page 4) is concerned with the absorption rate of the superabsorbents, not with their absorbency. Because the absorption rate gives a measure of the quantity of liquid absorbed in a unit of time, and the absorbency gives a measure of the total quantity of liquid absorbed, independently of time, it is clear that a high absorption rate does not

necessarily correspond to a high absorbency. Indeed, although it quickly absorbs liquid, a superabsorbent with high absorption rate may absorb only during a limited initial time, whilst a superabsorbent with low absorption rate absorbs less quickly but may do it for a longer time, thereby possibly absorbing more liquid, ie providing higher absorbency. Since the indications in D1 relative to the absorption rate are not suitable for obtaining any direct and unambiguous information about the absorbency of the superabsorbents, it must be concluded that document D1 does not disclose the feature of claim 1, that the second layer contains a second superabsorbent having a higher liquid absorbency than the first superabsorbent.

3.2 Document D2 discloses (see Figure 1) an absorbent body including a first layer of fluff (17), which lies nearest the wearer's body in use, containing a first superabsorbent (20) which is mixed in said first layer and which has a high degree of cross-linking and therewith the ability to swell without being affected substantially by normally occurring pressure forces (see column 4, lines 42 to 45), whereby the fluff which collapses when absorbing liquid will be loosened (because the superabsorbent swells, see above point 3.1) and therewith again form an air-containing, voluminous fluff layer; the absorbent body including a second layer (26) containing a second superabsorbent (28). In the absorbent body of D2, the first layer of fluff which lies nearest the wearer's body is, and can only be, the upper layer (17). The lower layer (26) cannot lie nearest the wearer's body, otherwise the absorbent article 10 would fail in providing absorbency, since the lowest layer (30) is liquid impermeable (see column 5, lines 1 to 4). D2

specifically discloses (column 4, lines 59 to 69) to provide a first superabsorbent (20) in the first (upper) layer (30) that gels slower and absorbs more fluid, and thus has a higher liquid absorbency than the second superabsorbent (28). Therefore, also document D2 does not disclose the feature of claim 1, that the second layer contains a second superabsorbent having a higher liquid absorbency than the first superabsorbent.

3.3 Document D3 discloses that blends of more than one superabsorbent can be used (page 5, first paragraph), and generally refers to "layered designs found elsewhere" of superabsorbent diapers, as opposed to "homogeneous SA/pulp blends" (see page 5, 2nd paragraph). However, it cannot be inferred from this disclosure which superabsorbents, and with what properties, are used in said layered designs of diapers.

3.4 D4 discloses (see Figure 7) an absorbent body for use in diapers, incontinence guards or like articles, including a first layer of fluff (674) which lies nearest the wearer's body in use, a first superabsorbent (page 33, lines 9 to 23) which is mixed in said first layer and which has a high degree of cross-linking (page 14, line 29) and therewith the ability to swell without being affected substantially by normally occurring pressure forces, whereby the fluff which collapses when absorbing liquid will be loosened and therewith again form an air-containing, voluminous fluff layer (see page 16, lines 4 to 19; page 17, lines 10 to 23; note that the absorbent member 42 described on page 16 corresponds to the member 642 of Figure 7, see page 32, lines 25 to 28); the absorbent body including a second layer (642)

containing a second superabsorbent (page 33, lines 20 to 23). Also in this piece of prior art (similarly to D1 and D2) the first layer of fluff which lies nearest the wearer's body is, and can only be, the upper layer (layer 674), since its function is that of receiving liquids passing through the topsheet, transporting such liquids to other areas of the core and eventually onto the absorbent member 642 (page 33, lines 4 to 6)

D4 merely states (page 33, lines 20 to 23) that the superabsorbent in the upper layer (647) does not have to be the same as the type employed in the lower layer (642). Therefore, D4 does not disclose the feature of claim 1 that the second superabsorbent has a higher liquid absorbency than the first superabsorbent.

3.5 Document D5 discloses (see Figure 2 and 4) an absorbent body including a layer of fluff (18) containing a superabsorbent (20) which is mixed in said layer and which has such a high degree of cross-linking so that it has the ability to swell without being affected substantially by normally occurring pressure forces, whereby the fluff which collapses when absorbing liquid will be loosened and therewith again form an air-containing, voluminous fluff layer, see page 5, lines 24 to 29 and page 6, lines 13 to 19 and 27 to 33. D5, however, does not disclose that the absorbent body may comprise a second layer containing a second superabsorbent.

3.6 From the above, it follows that the subject-matter of claim 1 is deemed to be novel over the cited prior art.

4. *Inventive step*

4.1 The technical problem underlying the patent in suit is to provide rapid, secondary absorption in a fluff mat which has collapsed at the first absorption (see column 1, lines 40 to 45).

4.2 In the Board's view, document D4 represents the closest prior art because it is the piece of prior art which is the most closely related to the above mentioned technical problem, since it discloses the use of gelling materials that have not only the ability to swell without being affected substantially by normally occurring pressure forces, but also the ability to swell without changing shape, and which are, therefore, capable in use of effectively loosening the fluff (cf. column 3, lines 25 to 29 of the patent). Indeed, D4 discloses that high gel strength absorbent gelling materials will resist deformation upon fluid absorption and will have a reduced tendency to flow into the void spaces between fibers (page 17, lines 10 to 17; see also page 16, lines 12 to 19). This means that the gelling materials of D4 have the ability to swell without changing shape.

The subject-matter of claim 1 is distinguished from the absorbent body of D4 in that the second superabsorbent has a higher liquid absorbency than the first superabsorbent.

4.3 Since the technical problem mentioned in the patent was in relation to a prior art which was less relevant than D4, an inquiry must be made as to which other technical problem objectively existed when starting from D4 as the closest prior art (see e.g. T 246/92 or T 0495/91, not published in the OJ EPO).

The provision, in the second layer, of a second superabsorbent with a higher liquid absorbency than the first superabsorbent, improves the secondary absorption capacity of the absorbent article. Indeed, after a first absorption of liquid by the first superabsorbent which swells and thereby loosens the fluff of the first layer, further liquid can then again be quickly absorbed by the fluff and, thereafter, by the second superabsorbent (see column 3, lines 25 to 53).

The objective problem solved by the patent in suit may therefore be seen in improving the absorption capacity of the known two-layered absorbent article.

4.4 In view of Article 56 EPC, second sentence, document D1, which is state of the art within the meaning of Article 54(3) EPC, cannot be considered in deciding whether there has been an inventive step.

Document D2 teaches to provide a first superabsorbent that gels slower and absorbs more fluid than the second superabsorbent in order to avoid fluid leakage (column 4, lines 59 to 66). Therefore, D2 leads the skilled person towards a solution different to that according to claim 1.

Documents D3 to D5 do not provide any useful suggestion to arrive at the claimed solution, Indeed, D3 and D4 are silent about what superabsorbents should be used in the different layers, and document D5 relates to an absorbent body comprising only one layer with a superabsorbent.

Therefore, the claimed solution to the objective problem was not obvious over the prior art, and the

subject-matter of claim 1, and of dependent claims 2 and 3, involves an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Patin P. Alting van Geusau