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D E C I S I O N
of 7 July 2004

Case Number: T 0091/02 - 3.2.6

Application Number: 95400676.3

Publication Number: 0735175

IPC: D04H 1/44

Language of the proceedings: EN

Title of invention:
Method of producing a sheet of cotton wool and pieces of cotton produced by cutting a sheet obtained using this method

Patentee:
THE PROCTER & GAMBLE COMPANY

Opponent:
Paul Hartmann AG

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0091/02 - 3.2.6

D E C I S I O N
of the Technical Board of Appeal 3.2.6
of 7 July 2004

Appellant: (Proprietor of the patent)	THE PROCTER & GAMBLE COMPANY One Procter & Gamble Plaza Cincinnati, Ohio 45202 (US)
Representative:	Livet, Marie-José Cabinet Pierre Herrburger 115, boulevard Haussmann F-75008 Paris (FR)
Respondent: (Opponent)	Paul Hartmann AG Paul-Hartmann-Strasse 12 D-89522 Heidenheim (DE)
Representative:	Friz, Oliver Patentanwälte Dreiss, Fuhlendorf, Steimle & Becker Postfach 10 37 62 D-70032 Stuttgart (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted 26 November 2001 revoking European patent No. 0735175 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: P. Alting van Geusau
Members: G. Pricolo
R. T. Menapace

Summary of Facts and Submissions

I. The appeal is from the decision of the Opposition Division posted on 26 November 2001 to revoke European patent No. 0 735 175, granted in respect of European patent application No. 95400676.3.

Granted claims 1 and 9 read as follows:

"1. Method for producing a sheet of cotton wool from raw cotton fibres, in which the raw cotton is subjected, successively, to conventional preliminary beating and opening-up operations, in particular on combs, in such a manner as to obtain cotton flock which is opened up and physically cleaned, these fibres are conducted to perforated cylinders or belts on which they are deposited in an approximately uniform manner to form a fluffy sheet having almost no cohesion, each sheet is brought to a wetting liquor containing hot water and a wetting agent in such a manner as to obtain a sheet which is more compact and has a certain strength owing to physical cohesion, and is then removed from the wetting liquor, this sheet is dried between two calender rollers and wound onto a perforated hollow cylinder in such a manner as to obtain a spool, this spool is put into an autoclave, where it is subjected to scalding and bleaching operations by circulating the treatment fluids radially through the coils thereof in such a manner as to increase the cohesion of the sheet which is obtained after unwinding by the effect of the fluid, the spool is then removed from the autoclave and wrung out and dried in a manner known per se, the method being characterised in that there is performed, in the impregnating bath, a sequestration of the

catalytes of the cotton in the acid or neutral phase: agents for hardening the water and the cotton (calcium, magnesium) and metallic ions (iron, copper, manganese) in such a manner as to obtain a preliminary attack of the cotton fibres in order to facilitate the subsequent scalding and bleaching operations, and in that, before the sheet is wound onto a perforated hollow cylinder, it is subjected to a fluid pretreatment in that the entirety of the width thereof is passed at right angles to banks of spraying devices, which banks comprise a series of nozzles or perforations which are very close to one another and are associated with a vacuum source and are able to send a series of jets of a rinsing liquid through the sheet so as to obtain a preliminary bonding thereof by the preliminary action of the fluid."

"9. Piece of cotton of any shape, and in particular round pads, characterised in that it is shaped by cutting a sheet obtained (by) the method according to any one of Claims 1 to 8."

II. In the decision under appeal the Opposition Division considered that the subject-matter of claim 1 lacked an inventive step. Starting from the closest prior art disclosed by document

D1: US-A-4 658 477,

the skilled person, who was aware from documents

D3: Ullmann Lexikon, 1974, page 591;

D4: Extract from the book "Grundlagen der Textilveredelung: Handbuch der Technologie, Verfahren und Maschinen" by M. Peter, Dt. Fachverlag, 1989, pages 464, 466, 467 to 471;

D5: Article "Optimierung der Vorbehandlung von schwer bleichbaren Baumwollqualitäten" in "Textilpraxis International", Nr. 41, 1986, pages 1331 to 1338;

D6: Article "Untersuchung zum Schädigunsmechanismus durch katalyhaltige Verunreinigungen bei der Peroxidbleiche von Baumwolle" in "Melliand Textilberichte" 11/1989, pages 856 to 864;

D7: Article "Qualitative und Ökologische Anforderungen bei der Vorbehandlung von Baumwollartikeln" in "Textilpraxis International", 1990, May, pages 495 to 499;

D8: Article "Der Einsatz von Komplexbildnern in der Vorbehandlung von Zellulosefasern und deren Mischungen mit Synthesefasern" in "Textilveredelung" 17 (1982), Nr. 8, pages 330 to 333;

D9: Article "Sequestering Agents in Bleaching and Scouring" in "Textile Chem. Color" 10 (8), 1978, pages 32/161 to 36/165;

D10: US-A-3 234 124;

that a sequestration of the catalytes of the cotton in the acid or neutral phase would facilitate the subsequent scalding and bleaching operations, would

obviously introduce a sequestration step in the method of D1. He would also recognize that the most suitable location for carrying out the sequestration step was in the impregnating bath. Moreover, it was well known in the art, as documented by

D11: US-A-5 253 392;

D12: DE-A-37 27 843;

D13: US-A-4 647 490;

D14: Extract of the Book "Vliesstoffe" by J. Lünenschloâ et al., Georg Thieme Verlag, 1982, pages 168 to 170;

that a fluid pre-treatment with jets of liquid served to improve the cohesion of the cotton sheet. Considering that a rinsing step was mandatory after the sequestration and that the fluid pre-treatment with jets of liquid necessarily involved a rinsing effect, the skilled person would obviously perform such fluid pre-treatment immediately after the sequestration step.

III. The appellant (patentee) lodged an appeal, received at the EPO on 23 January 2002, against this decision. The payment of the appeal fee was registered on 24 January 2002. The statement setting out the grounds of appeal was received at the EPO on 22 March 2002.

IV. In a communication accompanying the summons for oral proceedings pursuant to Article 11(1) Rules of Procedure of the Boards of Appeal the Board expressed the preliminary opinion that the discussion on

inventive step should focus on whether it was obvious for the skilled person to incorporate in the method of D1 the sequestrating and fluid pre-treatment steps in the specific manner defined in claim 1 of the patent in suit and that, contrary to the statement of the Opposition Division in the decision under appeal, claim 9 was to be regarded as an independent claim.

V. Oral proceedings, at the end of which the decision of the Board was announced, took place on 7 July 2004.

The appellant requested that the decision under appeal be set aside and that the patent be maintained as granted.

As previously announced by letter dated 16 April 2004, the respondent (opponent) did not attend the oral proceedings. The proceedings continued without him (Rule 71(2) EPC). The respondent had requested in writing that the appeal be dismissed.

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

Starting from the closest prior art represented by D1, the problem underlying the patent in suit was to propose a method substantially less polluting and in which the treatment time in the autoclave was substantially reduced whilst avoiding any risk of the coils being torn. This problem was effectively solved by the features of claim 1, because by providing the sequestration in the impregnating bath the time necessary for the treatment in the autoclave and the amount of pollutants resulting from the use of soda and

hydrogen peroxide for the scalding and bleaching operations could be substantially reduced, and by providing a fluid pre-treatment with a series of jets of a rinsing liquid through the sheet the cohesion of the cotton sheet was improved prior to the treatment in the autoclave, so that the risks of tearing at the interior of the autoclave were reduced. In the prior art the step of performing a sequestration of the catalytes of the cotton for facilitating the subsequent bleaching operation and the step of treating cotton fibres by means of a series of liquid jets so as to obtain a preliminary bonding thereof were each, separately, already known. However, the prior art did not suggest, in order to solve the above-mentioned problem, to combine these steps and to perform, in the method of D1, the sequestration step when the cotton sheet was in the impregnating bath. In fact, the prior art taught that for the sequestration to be effective the cotton fibres had to be placed in contact for a period of several minutes with the sequestering agents. The skilled person would discard the option of performing the sequestration step in the impregnating bath because the continuously moving sheet remained in the bath for only about 10 seconds. Therefore, the skilled person would select the option of carrying out the sequestration step in the autoclave, before the scalding and bleaching step. Furthermore, the prior art did not suggest the idea of using jets of liquid for providing, in addition to a preliminary bonding of the fibres, the mandatory rinsing of the sheet after the sequestration step.

VII. In its written submissions the respondent essentially argued as follows:

In accordance with the decision of the Opposition Division, the sequestration step and the fluid pre-treatment step referred to in the characterizing portion of claim 1 were well known in the art. Also well known were the effects of these steps, which were the same of those obtained when performing the method of the patent in suit. Accordingly, it was obvious to provide these steps in the method of D1. The skilled person would obviously provide the sequestration step at a location in the processing line of D1 antecedent to the step of treating the cotton sheet in the autoclave, since by doing so there would be taken advantage of the wet stage already present in the processing line, namely the impregnating bath, and an additional wet stage after the treatment in the autoclave would be avoided. The teaching of D11 or D13 would directly lead the skilled person to provide the fluid pre-treatment step by means of jets of liquid at a location in the processing line immediately prior to the bleaching step. Furthermore, the provision of the above-mentioned steps did not provide any effects going beyond the juxtaposition of the effects obtainable with each step when performed independently from each other.

Reasons for the Decision

1. The appeal is admissible.

2. Novelty not being in dispute, the issue to be decided in this appeal is whether the claimed subject-matter involves an inventive step.

2.1 Starting from the method of document D1, which is the US-patent corresponding to the French application FR-A-2 552 120 cited in paragraph [0010] of the patent in suit and which undisputedly represents the closest prior art in accordance with the preamble of claim 1, the problem underlying the patent in suit, as acknowledged therein (see paragraph [0017]), is to propose a method which is substantially less polluting and in which the treatment time in the autoclave may be substantially reduced whilst avoiding any risk of the coils being torn.

2.2 This problem is effectively solved by means of the features defined in the characterizing portion of claim 1. Indeed, the sequestration of the catalytes of the cotton in the impregnating bath and the subsequent rinsing step result in that the catalytes are removed from the cotton, thereby allowing a substantial reduction of the time necessary for the treatment in the autoclave (paragraphs [0019] to [0021] of the patent in suit) and of the amount of polluting chemical products used in the autoclave for scalding and bleaching (paragraphs [0014] and [0015]) as their action is not affected by the presence of the catalytes. Furthermore, the fluid pre-treatment with jets of rinsing liquids permits an appreciable increase in the cohesion of the sheet, whereby the risks of tearing the sheet at the interior of the autoclave are reduced.

2.3 The treating of cotton fibres with sequestering agents in order to remove the catalytes that negatively affect the bleaching operation is generally known in the art as acknowledged by the appellant.

This is documented in particular by D4, which discloses that cotton fibres should be treated with sequestering agents before the bleaching operation (see page 470, right column, last paragraph). D4 does not disclose how and where the sequestration is carried out.

Similarly, D8 relates to the treatment of cotton fibres with sequestering agents (page 330, point 1), and discloses (page 331, point 3.2) that the removal of catalytes by means of sequestering agents should take place in the boiling bath ("Abkochflotte") preferably before, rather than during, the bleaching operation.

D7 discloses (page 497, first paragraph) the provision of sequestering agents in the alkaline and bleaching stage of the cotton processing line.

D9 (see page 162/33: "Use of sequestrants in scouring and bleaching") discloses the provision of sequestrants in the scouring bath (note that scouring corresponds to scalding since it is carried out using a soda solution at about 100°C=210°F), before subjecting the cotton fibres to the bleaching operation (page 34/163, right column, first paragraph). Scouring with sequestrants is carried out for 1 hour (page 34/163, "Contribution of sequestrants to fabric cleanness").

D10 discloses the use of sequestering agents in the cotton bleaching solution (see claim 1 and table 1 on column 2).

D5 (page 1337, points 1.4.3 and 2.1) generally describes the use of sequestrants for the pre-treatment of cotton. D3 (page 591, right column) and D6 (page 857, left column) generally describe the extraction of catalytes from cotton fibres before the bleaching operation. D3, D5 and D6 do not disclose where the extraction of catalytes should be carried out.

Therefore, the prior art teaches to carry out the sequestration of the catalytes either in the bleaching step or prior to the bleaching step. In the latter case, however, the prior art (D7 to D9) specifically teaches to carry out the sequestration in the boiling, scalding or alkaline bath. Thus, the skilled person would be led by the teachings of the prior art to modify the method of D1 by the provision of sequestering agents in the bath of the autoclave, where the boiling-off (i.e. scalding, in an alkaline bath, see D1, column 10, lines 25 to 30) and bleaching operations are carried out (see D1, column 10, lines 24 to 30). The prior art does not suggest to provide the sequestering agents in the bath of the wetting station (C in Fig. 2 of D1). In fact, the cotton web only remains in contact with the wetting liquor for the short period of time necessary for impregnating it with a wetting agent (see D1, column 2, lines 3 to 7 and column 9, lines 39 to 41) and there is no indication in the prior art that such short time would be sufficient for a sequestration of the catalytes of the cotton to take place. As noted above, according to the disclosure of D9 the cotton web remains in the bath containing the sequestrating agents for 1 hour.

The skilled person is also generally aware that by treating a cotton sheet with a series of jets of liquid the cohesion thereof can be improved, as disclosed for instance by D12 (see column 3, lines 54 to 65) or D14 (page 168, paragraph "Verwirbelungstechniken"). Documents D11 and D13 specifically disclose to treat a cotton web with jets of liquid ("hydroentangling") before delivering it to a bleaching unit (D11: column 4, lines 45 to 50; D13: column 5, lines 29 to 42). However, there is no indication in the prior art suggesting that the liquid jets would also provide an effective rinsing action in respect of a cotton web treated with sequestering agents. Thus, the recognition that a hydroentangling step could be used not only for achieving the known effect of improving the cohesion of the sheet, but additionally to provide the necessary rinsing after the sequestrating step, thereby avoiding the provision of a an additional rinsing step (see D8, page 333, left column, second paragraph) by means of a device specifically dedicated to this purpose, is not one that directly follows from the prior art.

2.4 Therefore, since the combination of features of claim 1 cannot be derived in an obvious manner from the available prior art, the subject-matter of claim 1 is found to involve an inventive step (Article 56 EPC).

3. Dependent claims 2 to 8 define further embodiments of the method of claim 1 and accordingly their subject-matter also involves an inventive step.

4. Claim 9 relates to a piece of cotton shaped by cutting a sheet obtained with the method according to any one of claims 1 to 8 of the patent in suit. As already

pointed out by the Board in the communication accompanying the summons for oral proceedings, claim 9 is an independent claim (contrary to the opinion of the Opposition Division expressed under point 3 of the decision under appeal) because it claims a product and not a method. In fact, it is a "product-by-process" claim, since the features of the product are defined by reference to the method for its manufacture. With respect to the inventive step of the subject-matter of this claim, no arguments have been brought forward by the respondent, not even after having been informed of the Board's opinion set out in the above-mentioned communication. Since the Board sees no reason to doubt that the subject-matter of claim 9 involves an inventive step within the meaning of Article 56 EPC, claim 9 can be maintained as granted.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is maintained as granted.

The Registrar: The Chairman:

G. Nachtigall P. Alting van Geusau