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D E C I S I O N
of 10 March 2005

Case Number: T 0098/03 - 3.3.7

Application Number: 96925882.1

Publication Number: 0842043

IPC: B32B 7/02

Language of the proceedings: EN

Title of invention:
Porous web material

Patentee:
J. R. Crompton Limited

Opponent:
Papierfabrik Schoeller & Hoesch GmbH & Co. KG

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no) - problem and solution"

Decisions cited:
T 0367/96

Catchword:
-



Case Number: T 0098/03 - 3.3.7

D E C I S I O N
of the Technical Board of Appeal 3.3.7
of 10 March 2005

Appellant: Papierfabrik Schoeller & Hoesch GmbH & Co. KG
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
27 November 2002 concerning maintenance of
European patent No. 0842043 in amended form.

Composition of the Board:

Chairman: R. E. Teschemacher
Members: B. J. M. Struif
G. Santavicca

Summary of Facts and Submissions

I. The grant of European patent No. 0 842 043 with respect to European patent application No. 96 925 882.1 originating from international application GB96/01839 (published as WO-A-97/04956) having a filing date of 29 July 1996 was published on 12 April 2000. The granted patent comprised 32 claims. Independent claims 1 and 28 read as follows:

"1. A fibrous porous web material of the non-heat seal type having a basis weight of 9 to 18g m⁻² and comprising a first layer and a second layer juxtaposed thereto wherein the second layer has a smaller pore size than the first layer."

"28. A method of producing a patterned paper of the non-heat seal type comprising wet-laying a first fibrous layer and subsequently a second layer thereon, and forming a pattern in the wet-laid web during the paper forming step whilst the web is on the papermaking fabric or wire by means of fluid jets."

II. On 12 January 2001, a notice of opposition was filed against the granted patent, in which revocation of the patent in its entirety was requested on the grounds of lack of novelty and lack of an inventive step (Article 100(a) EPC) having regard *inter alia* to the following documents:

E1: US-A-2 157 656

E2: EP-A-0 656 224

E3: EP-A-0 380 127

E4: Wochenblatt für Papierfabrikation No. 13/1992,
pages 531 and 532.

During the proceedings before the opposition division,
the opponent alleged a public prior use and submitted
pieces of evidence E5 to E9.

E5: Test production No. 1000, dated 22 October 1985

E6: Test production No. 1246, dated 18 December 1986

E7: Delivery note to Lipton Export Ltd, dated
27 January 1986

E8: Delivery note to Arnim Ott, Kontaktverpackung,
dated 23 January 1986

E9: Eidesstattliche Versicherung of Günter Heinrich,
dated 16 August

III. In an interlocutory decision posted on 27 November 2002,
the opposition division held that the patent as amended
on the basis of a set of granted claims 1 to 27,
submitted at the oral proceedings before the opposition
division as the sole auxiliary request, fulfilled the
requirements of the EPC.

IV. The decision can be summarized as follows:

(a) Since late filed pieces of evidence E5 to E9 found
in the opponent's own archives could have been
introduced at a much earlier stage than 1 month
before the oral proceedings, they were not
admitted into the proceedings under Article 114(2)
EPC. In any case, the evidence was not sufficient
to establish the actual nature of the products
then made, the fact that these products did reach

the addressees and that the addressees were not bound by any obligation of confidentiality.

(b) The subject-matter of claim 1 was considered to be novel over any of E1 to E4. Since the subject-matter of method claim 28 was regarded to be not novel over E4, the main request was not allowable. Since in the auxiliary request granted claims 28 to 32 had been deleted, that objection had been overcome.

(c) Regarding inventive step, E2 and E3, which disclosed a material comprising heat-seal fibres, could not be regarded as the closest state of the art. E4 did not teach the use of a non-heat-seal material. At the filing date of the present invention, tea bags were made of a single-layer paper having suitable porosity and mechanical strength. The opposition division did not see any pointer in the cited prior art how to modify such a single-layer paper to a product as claimed. Therefore, the subject-matter of the auxiliary request involved an inventive step.

V. On 21 January 2003, the opponent (appellant) filed a notice of appeal against the above decision and paid the appeal fee on the same day. In the statement setting out the grounds of appeal, the appellant submitted further pieces of evidence E10 and E11 relating to the alleged public prior use.

E10: Ergänzende Eidesstattliche Versicherung of Günter Heinrich, dated 20 August 2002

- E11: Sample of a tea bag paper from test production
No. 1246, dated 8 January 1986.
- VI. By letter dated 23 October 2003 the proprietor (respondent) filed fifteen sets of amended claims, a witness statement of Mr. Scott, a purchasing agreement between Unilever and JR Crompton Ltd and an International Preliminary Examining Report concerning international patent application GB/01839.
- VII. In a communication dated 18 March 2004, the board addressed the admission of the late filed pieces of evidence E5 to E11 to the proceedings in view of the relevance of the written prior art.
- VIII. By letter dated 17 May 2004 the appellant submitted further prior art documents.
- IX. By letter dated 20 August 2004 the respondent submitted an amended main request and eleven sets of claims as auxiliary requests.
- X. In a communication accompanying the summons to oral proceedings, the board raised further objections to the claims on file and addressed the points to be discussed at the oral proceedings.
- XI. By letter dated 10 February 2005, the respondent submitted an amended set of claims 1 to 27 as new main request and eleven sets of claims identified as auxiliary requests 1 to 11.
- XII. By letter dated 8 March 2005, the respondent submitted an amended set of claims 1 to 27 as main request and

eleven sets of claims identified as auxiliary requests 1 to 11 replacing all previous requests on file.

Claim 1 in the different version reads as follows:

Main request

"A fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 18 g m⁻² and comprising a first wet laid layer and a successively wet laid second layer juxtaposed thereto wherein the second layer has a smaller pore size than the first layer and said first and second layers have been successively wet-laid onto a paper forming fabric or wire."

Auxiliary request No. 1

"A fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 14 g m⁻² and comprising a first wet laid layer and a successively wet laid second layer juxtaposed thereto wherein the second layer has a smaller pore size than the first layer and said first and second layers have been successively wet-laid onto a paper forming fabric or wire."

Auxiliary request No. 2

"A fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 18g m⁻² and comprising a first wet laid layer comprising vegetable fibres and a successively wet laid second layer comprising hardwood fibres juxtaposed thereto wherein the second layer has a smaller pore size than the first layer and said first and second layers have been successively wet-laid onto a paper forming fabric or wire."

Auxiliary request No. 3

"A fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 14 g m⁻² and comprising a first wet laid layer comprising vegetable fibres and a successively wet laid second layer comprising hardwood fibres juxtaposed thereto wherein the second layer has a smaller pore size than the first layer and said first and second layers have been successively wet-laid onto a paper forming fabric or wire."

Auxiliary request No. 4

"A method of producing a fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 18 g m⁻² and comprising successively wet-laying a first layer and a second layer juxtaposed thereto onto a paper forming fabric or wire wherein the second layer has a smaller pore size than the first layer."

Auxiliary request No. 5

"A method of producing a fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 14 g m⁻² and comprising successively wet-laying a first layer and a second layer juxtaposed thereto onto a paper forming fabric or wire wherein the second layer has a smaller pore size than the first layer."

Auxiliary request No. 6

"A method of producing a fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 18 g m⁻² and comprising successively wet laying a first layer comprising vegetable fibres and a second layer comprising hardwood fibres juxtaposed thereto onto a paper forming fabric or wire wherein the second layer has a smaller pore size than the first layer."

Auxiliary request No. 7

"A method of producing a fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 14 g m⁻² and comprising successively wet laying a first layer comprising vegetable fibres and a second layer comprising hardwood fibres juxtaposed thereto onto a paper forming fabric or wire wherein the second layer has a smaller pore size than the first layer."

Auxiliary request No. 8

"A method of producing a fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 18 g m⁻² and comprising successively wet laying a first

layer and a second layer juxtaposed thereto onto a paper forming fabric or wire wherein the second layer has a smaller pore size than the first layer, the method further comprising the step of forming a pattern in one of the layers by means of fluid jets."

Auxiliary request No. 9

"A method of producing a fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 14 g m⁻² and comprising successively wet laying a first layer and a second layer juxtaposed thereto onto a paper forming fabric or wire wherein the second layer has a smaller pore size than the first layer, the method further comprising the step of forming a pattern in one of the layers by means of fluid jets."

Auxiliary request No. 10

"A method of producing a fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 18 g m⁻² and comprising successively wet laying a first layer comprising vegetable fibres and a second layer comprising hardwood fibres juxtaposed thereto onto a paper forming fabric or wire wherein the second layer has a smaller pore size than the first layer, the method further comprising the step of forming a pattern in one of the layers by means of fluid jets."

Auxiliary request No. 11

"A method of producing a fibrous, porous web material of the non-heat seal type having a basis weight of 9 to 14 g m⁻² and comprising successively wet laying a first

layer comprising vegetable fibres and a second layer comprising hardwood fibres juxtaposed thereto onto a paper forming fabric or wire wherein the second layer has a smaller pore size than the first layer, the method further comprising the step of forming a pattern in one of the layers by means of fluid jets."

XIII. Oral proceedings were held on 10 March 2005 in the absence of the respondent, as he had announced in his letter dated 4 March 2005 not to be present, and were continued in accordance with Rule 71(2) EPC.

XIV. The appellant argued substantially as follows:

- (a) No objections under Article 123(2) EPC were raised.
- (b) Amended product claim 1 of the main request and auxiliary requests No. 1 to 3 included a process feature that the layers were "wet laid", which process feature did not clearly define the structure of the web material and was objectionable under Article 84 EPC. Nevertheless, by wet-laying the fibres a non-woven structure was obtained.
- (c) As to novelty, according to E1 the cheese cloth was a woven product and could not be a first wet-laid layer so that the process feature provided a limitation to the product. However, in E4 the function of the machine was described in such a way that the skilled person had no difficulty to produce the claimed web material so that the claimed subject-matter at least of the main request lacked novelty.

- (d) As to inventive step, E1 was considered as the closest prior art document. The patent in suit addressed two different problems, namely to reduce the tendency of fine particles of the tea to pass through the paper and to provide a web material capable of being patterned (perforated). It had not been shown that these problems were effectively solved by the features of claim 1 amended according to the main request and auxiliary request No. 1. In particular, it had not been demonstrated that any web-material in which the fibre material had not been specified would solve the perforation problem. Thus, the problem to be solved by the claimed subject-matter of the main and first auxiliary request was to provide a further web-material, alternative to that of E1. The respondent had not shown that the basis weight not mentioned in D1 contributed to solve the problem posed. Indeed, the basis weight was obvious for all tea bag papers as described in E2 to E4. Furthermore, due to reasons of economy (cheaper starting materials) and of environmental concern (easy degradability of wasted tea bag paper) it was obvious to replace the cheese cloth of E1 by wet-laying a fibrous suspension as known from E4 to provide an alternative product. Hence, the claimed subject-matter of the main request and auxiliary request No. 1 lacked an inventive step.
- (e) As regards auxiliary request No. 2, the restriction to specific fibres rendered the claimed web-material suitable to be patterned. Therefore, the problem solved by the claimed

subject-matter was to provide a web material which had a reduced tendency for fine particles of the tea to pass through the paper and was capable of being patterned (perforated). However, since E4 suggested the preparation of a non-heat-seal type structured (or patterned) tea bag paper having two layers of different fibres, the subject-matter of auxiliary request No. 2 was made obvious from E4. It was common general knowledge in the paper making field, confirmed by E3, that when two different fibres were wet-laid, the wet-laying should start with the longer (vegetable) fibres first and followed by wet-laying the shorter (hardwood) fibres thereon, which were more suitable for perforation. By using such a process sequence, the claimed two layer structure having different porosity was automatically obtained. Thus, claim 1 of the second auxiliary request also lacked an inventive step.

- (f) Alternatively, the assessment of inventive step could start from E4. Since the paper machine of E4 could be used for heat-seal and non-heat-seal type material and since two-layered tea bags could be produced on such a machine, a tea bag paper material with different porosity in the two layers would automatically result, if the machine was used for that purpose. The patent in suit was thus obvious from E4 alone when considering the background knowledge of paper making technology.
- (g) Another suitable starting point was E3, from which the claimed subject-matter differed only in that, instead of synthetic fibres, for one-layer non-

heat-seal type fibres were used. The paper machine shown in Figure 2 had a construction similar to that used in E4 and included two different substance charges in the form of fibre suspensions. The problem posed was to provide an alternative sheet material. Thus, the claimed subject-matter was obvious from a combination of E3 and E4.

- (h) As regards claim 1 of the third auxiliary request, the restriction of the basis weight did not contribute to the solution of the problem and was made obvious by E3 and E4. The reformulation of the product claims into process claims according to auxiliary requests No. 4 to 7 included process features which were already present in the product claims and did not provide any further distinction over the cited prior art. The additional perforation step in auxiliary requests 8 to 11 by means of fluid jets was suggested by using a paper machine according to E4, which included fluid jet means.

- (i) Thus, none of the requests involved an inventive step.

XV. The respondent argued in essence as follows:

- (a) The amended sets of claims overcame the objections raised in the communications of the board and were formally allowable.

- (b) As regards novelty, E1 disclosed a material of two superimposed plies, the first being paper and the second being a coarse cheese cloth. A cheese cloth

was a woven cloth substance, hence no first wet-laid layer within the meaning of the claimed invention. Since the claimed subject-matter comprised a first wet-laid layer and a successively wet-laid second layer juxtaposed to the first layer, the two layers formed a single unit. E1 did not disclose the basis weight of a material comprising paper and cheese cloth. E4 did not disclose a web material having the claimed basis weight, composition and pore size. Thus, the claimed subject-matter was novel.

- (c) As regards inventive step of the main request, the problem to be solved was to provide a fibrous web material which, when used as a tea bag, reduced the tendency of fine particles of tea to pass through the paper to the outside of the bag and which was capable of being patterned without losing porosity. Such problem was not addressed in any of the cited prior art documents. That problem was effectively solved as demonstrated by the example of the patent in suit. In E1, the coffee and tea bag was not made by two wet-laid layers, the second layer having a smaller pore size than the first one. Since in E2 and E3 heat-seal material was used, there was no pointer to the claimed solution of successively wet-laying first and second layers. Thus, the claimed subject-matter was not obvious from a combination of E1 with E2 or E3. Although a machine of E4 could be used to manufacture a product as claimed, there was no incentive in E4 to use the machine in that way. Consequently, the claimed subject-matter was not obvious.

(d) As to the auxiliary requests, the respondent only referred to amendments incorporated into these claims without providing any further arguments, why these amendments compared to the claims of the main request might involve an inventive step.

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

XVII. The respondent requested that the appeal be dismissed and that the patent be maintained on the basis of a set of claims 1 to 27 of the main request, or, alternatively, of one of the eleven auxiliary requests, all filed with letter dated 8 March 2005. Furthermore, he requested that late filed pieces of evidence E5 to E11 not be admitted into the proceedings and that the case be remitted to the first instance if the evidence was admitted.

Reasons for the Decision

1. The appeal is admissible.

Amendments

2. The basis for the amendments in claims 1 of the main request and of the auxiliary requests can be found in the application as filed as follows:

- main request and auxiliary requests No. 1 to 3: "a first wet laid layer and a successively wet laid second layer ... have been successively wet-laid

onto a paper forming fabric or wire" (claims 26 and 28);

- auxiliary requests No. 4 to 11: reformulation of the product claim into a claim relating to "a method of producing a fibrous, porous web material ..."
(claim 26 in connection with claim 1); "successively wet laying a first layer and a second layer ... onto a paper forming fabric or wire" (claims 26 and 28);
- auxiliary request No. 1, 3, 5, 7, 9 and 11: "basis weight of 9 to 14 g m⁻²" (claim 3);
- auxiliary request No. 2, 6, 10: "vegetable fibres" (claim 7), "hardwood fibres" (claim 15);
- auxiliary request No. 8 to 11: "the method further comprising the step of forming a pattern in one of the layers by means of fluid jets" (claim 27).

2.1 These amendments were not objected to by the appellant under Article 123(2) and (3) EPC. The board has no reason to take a different position.

2.2 The appellant argued that amended product claim 1 of the main request and auxiliary requests 1 to 3 included a process feature, i.e. that the layers were "wet-laid", which did not clearly define the structure of the web material.

2.2.1 The wording of the amendments in claim 1 is solely based on the wording of the granted claims. Hence, the objections did not arise out of the amendments made and the amendments can not be objected to under Article 84

EPC, which is not a ground of opposition (Case Law of the Boards of Appeal of the European Patent Office, 4th Edition 2001, VII.C.10.2, in particular T 367/96).

2.2.2 In any case, according to the patent in suit the process step "wet-laying" implies that an aqueous fibre suspension be laid on a continuously moving paper-forming fabric or wire, as illustrated in the drawing and on column 5, lines 25 to 29. Such illustration is in line with the general paper making technique as shown in E3, Figure 2 and page 3, lines 35 to 52. Hence, the wet-laying of fibres can only provide a non-woven structure. Thus, the objected process feature structurally limits the web material in that respect. Consequently, the process feature is not unsuitable to clearly define a structural element of the claimed web-material, i.e. the claims are clear.

2.3 Since according to the appellant the objected process feature provides a limitation to the product of E1, the amended feature may overcome a novelty objection under Article 54 EPC. Consequently, the amendment is occasioned by the grounds of opposition (Rule 57a EPC).

2.4 Therefore, the amendments to the claims are formally allowable.

Novelty

3. The question whether or not the claimed subject-matter is novel over the cited prior art can be left undecided since, in view of the reasons given below, the board has come to the conclusion that the claimed subject-matter does not involve an inventive step.

Inventive step

Closest prior art document

4. The patent in suit concerns porous web material of a non-heat-seal type. Such web materials are known from E1 and E4, which, in addition to E3, were regarded as possible starting points. According to the decision of the opposition division, on which the respondent relied, none of E1, E2 and E4 was a suitable starting point. The opposition division apparently considered tea bags having a single-layer paper as the closest state of the prior art.

4.1 The patent in suit addresses two problems: a first problem to provide a fibrous, porous web material which, when used as tea bag, avoids or mitigates the tendency of fine tea dust (resulting from interaction of tea leaves during processing thereof) or fine particles of tea to pass through the paper to the outside of the tea bag (column 1, lines 28 to 33) and a second problem to provide a fibrous, porous web material which can easily be patterned by fluid jets. When using conventional non-heat-seal paper, the resulting material would be too open, as the jet would strike through a single-layer and would allow the tea leaves to pass through the paper (column 1, line 52 to column 2, line 4; and column 2, lines 24 to 28).

As can be seen from the above, the aspect that fine tea dust or fine particles of tea may pass through the paper to the outside of the tea bag is common to both problems. Hence, the first mentioned problem concerns the main aspect for all claimed web materials.

Furthermore, the additional problem of making the paper

too open only arises if the web material is actually patterned.

- 4.2 E1 discloses a bag containing material for making an individual cup of infusion, said bag being formed from two plies, one of a fabric and the other of a filtering material, said later ply being provided with a vent opening in the upper portion of the bag (claim 1).

The fabric can be a coarse cheese cloth layer and the other layer is a thin paper material which has high porosity but which also has a filtering characteristic, in that it will prevent passage therethrough of tea dust or coffee dust (page 2, left column, line 72 to right column, line 2). The paper can be provided on the inside or on the outside of the bag (page 2, right column, lines 44 to 49) and can be rice paper or paper made from plants or tree of the Musa family (page 2, right column, lines 14 to 16). The two plies or layers of the bag can be made together as a unit. This can be accomplished during the paper making operation by depositing the paper stock directly on the fabric as the paper is made (page 3, right column, lines 16 to 28).

- 4.3 E4 discloses a machine for producing long fibre papers having a basis weight between 9 and 30 g/m² (page 531, left column, fourth full paragraph). As starting materials for those special papers, fibres of eucalyptus, manila and abaca can be used; the two last mentioned fibres are long fibres from banana plants (page 531, left column last paragraph). The paper making machine has a sloping sieve, is supplied with a double substance supply and includes a so called

Perfojet apparatus (page 531, right column, first full paragraph). The machine is suitable to produce structured, heat sealable and non-heat sealable tea bag papers (see 532, left column, second full paragraph). According to the appellant, the term "structured paper" means a paper, which has been patterned by any kind of structure by using the above mentioned Perfojet apparatus. As regards this explanation, which is plausible, the board has no reason to take a different position.

4.4 E3 relates to a tea bag paper consisting of a first phase of natural fibres and a second phase of heat sealable synthetic fibres, wherein the first phase having a weight portion of 60 to 85% is penetrated by the second phase having a weight portion of 15 to 40% in such a way that the natural fibres are surrounded by the melted and resolidified synthetic fibres so that both sides of the paper are heat sealable, and wherein the paper has a basis weight between 10 and 15 g/cm² (claim 1). Hence, E3 aims at a heat-seal tea bag paper having an improved tea diffusion, which can be produced on high speed tea bag production machines (page 2, lines 41 to 47).

4.5 According to established case law of the Boards of Appeal, the closest prior art for the purpose of assessing inventive step is generally that which corresponds to a purpose or technical effect similar to that of the invention and requires the minimum of structural and functional modifications (Case Law, *supra*, I.D.3.1).

Although E3 mentions the problem that tea dust can pass the bag (page 2, lines 32 to 35), the main problem to be solved in E3 relates to the provision of heat sealability to both sides of a tea bag paper, to which the claimed web-material is not directed. Thus, E3 does not relate to the problems mentioned above.

4.6 E1 mentions the problem that the bag should be impervious to the passage therethrough of the dust of tea leaves (page 1, left column, lines 23 and 24) and provides a solution in form of a two-layered structure including a porous paper material which may form, together with a porous cheese cloth, a unitary structure. Due to the different types of layers in E1, a difference in pore size between the two layers will automatically result, with the paper having the smaller pore size. Since the cheese cloth has a woven structure, which provides strength to the bag, E1 does not address the problem of providing a pattern to that tea bag.

4.7 The patent in suit mentions a single-layer paper which is suitable for producing tea bags (column 1, lines 38 to 42). Since the paper in E1 is produced from plants of the Musa family to which also banana fibres such as Manila long fibres belong, it may be assumed that the single-layer paper suitable of producing tea bags should have a porosity similar to the paper used in E1. However, in an unitary structure as mentioned in E1, the additional fabric not only provides strength to the tea bag but will also further reduce the porosity at the points of contact between fibres and the fabric structure. Thus, compared to the single-layer structure the two-layered unitary structure of E1 not only provides different pore structure in the layers but

also a further reduced porosity and is thus closely related to the first problem posed and has more features in common with the claimed structure. Hence, E1 is a more appropriate starting point than the single-layer paper mentioned in the patent in suit, and apparently used by the opposition division in its decision.

4.8 Although E4 mentions a structured tea bag and is thus generally related to the second aspect of the problem, it is mainly concerned with the capability of a paper-making machine to produce tea bags and does not specifically address the first problem, namely to avoid a passage of tea dust through the paper.

4.9 As can be seen from the above, E4 and E1 both relate to tea bag papers and have a similar purpose in line with that of the patent in suit. However, E4 refers more to the ability of a paper making machine to make structured tea bags. On the other hand, E1 mentions the effect of avoiding the passage of tea dust through the paper by using a two-layer structure having a different pore size and is thus closer to the structure as claimed than E4 and more specifically related to the first problem posed, to which the patent in suit seeks to provide a solution.

4.10 Hence, E1 is the most appropriate starting point for assessing inventive step.

Problem and Solution

5. The problem mentioned in the patent in suit is to obviate or mitigate the disadvantages relating to the

passage of fine tea particles through the bag and the patterning of the bag by fluid jets (column 2, lines 29 to 31; compare point 4.1).

5.1 In the example of the patent in suit a bag is prepared by wet-laying a first layer of vegetable fibres combined with softwood and a second (top) layer of hardwood fibres which comprises 25% by weight of the total weight of the material. For testing purposes, sand having a particle size of 106 to 150 μm is used which involves vibrating a horizontally disposed sample of the paper on which the sand is located. As a result of the test, less than 10% of the sand is found to have passed through the papers. This compares to a value of 35 to 50% obtained using a conventional non-heat-seal paper sold in the industry.

5.2 The paper of E1 can be made of fibres from plants and trees of the Musa family which include vegetable fibres such as Manila fibres (also used in the patent in suit, granted claim 11) from which the first paper layer is made, that is suitable to prevent the passage of tea dust. However, no experiments have been provided which show that the claimed structure could provide any improvement over the unitary two-layered structure of E1 in that respect.

5.3 Although the second problem (point 4.1 above) is not addressed in E1 the question arises whether or not that second problem aspect is effectively solved by the claimed subject-matter for all requests.

5.3.1 In the patent in suit no example is directed to that second problem. However, in the general description, a

web-material is described which is formed from one stock comprising vegetable fibres which is wet-laid to form a first layer 1, and the other stock comprising hard wood fibres which is wet-laid to form a second layer 2 (column 5, lines 14 to 29). Such a paper can be perforated by using a liquid jet-pressure of 3 to 4 bar, which causes perforations to be formed in the layer 2. There is no substantial perforation in layer 1 (column 5, lines 37 to 39).

5.3.2 In claim 1 of the main request and of the first auxiliary request, the type of fibre is not specified and may comprise any fibrous material which may be wet-laid to form a fibrous porous web material including non-heat sealable synthetic fibres. Since it has not been shown that any kind of unspecified fibres according to those claims are suitable to solve the patterning problem mentioned above (point 4.1 above), the second problem is not solved within the whole ambit of the claims. Thus, the problem to be solved with respect to the subject-matter underlying the main and the first auxiliary request can only be seen in the provision of a further web material, as an alternative to that of E1, which nevertheless avoids the tendency of tea dust to pass through the web.

5.3.3 According to claim 1 of the second auxiliary request, the fibre materials of the first and second layer are specified as vegetable fibres and hardwood fibres, respectively. However, claim 1 does not specify which layer is patterned. According to claim 20 of auxiliary request No. 2, which deals with the broadest aspect of forming patterns in the web material, the pattern can be formed in any of the layers. Only in claim 21,

dependent on claim 20, the pattern is formed in the layer of the smaller pore size. Since the layer of the smaller pore size is the layer comprising hardwood fibres and since it has been shown that only when patterning this type of layer the low porosity is retained, the second problem has not been solved within the whole ambit of the claims. Thus, the problem to be solved with respect to the second auxiliary request can only be seen in providing a web material which avoids the tendency of tea dust to pass through the web, similar to that of E1, and which additionally is capable of being patterned.

5.3.4 Auxiliary requests 4 to 11 have been reformulated as process claims, in which all the features of claim 1 of the main request including the wet-laying steps are already present. Since in E1 the web-material can be made during the paper making process, wherein a paper stock is deposited on the fabric as the paper is made, the wet-laying step is also part of the known process. Hence, there is no reason to use a starting point other than E1. Thus, the problem to be solved by claim 1 of auxiliary request No. 4 can be formulated in a similar way to that of the main request. Similar considerations apply to auxiliary requests 5 to 7.

5.3.5 Claim 1 of auxiliary requests 8 and 9 additionally comprise the step of forming a pattern in one of the layers by means of fluid jet. By that formulation it is apparent that the web material must not only be capable of being patterned but that such a step is actually carried out. This additional process step however does not solve any additional problem not mentioned above. In particular, no specific effect has been shown which

may result from such a feature, when taking into consideration that the kind of the fibre material is not specified.

5.3.6 In claim 1 of auxiliary requests 10 and 11, in addition to the amendment to claim 1 of auxiliary requests 8 and 9, the materials of the layers are specified as vegetable and hardwood fibres, respectively. However, claim 1 thereof is not restricted by a feature defining in which specific layer of the web the pattern is formed. Since it has not been shown that patterning can be effected in any layer irrespective of its fibre composition without losing the low porosity, the problem is not solved within the whole ambit of claims of those requests (see point 5.3.2 above). Thus, the problem solved by claim 1 according to auxiliary requests 10 and 11 can only be seen in providing a process for the preparation of a web material which avoids the tendency of tea dust to pass through the web and which is also capable of being patterned.

Obviousness

Main request

6. Although E1 does not disclose a basis weight of 9 to 18 g/m², that feature concerns the normal basis weight for tea bag papers. According to E4 the basis weight of papers for tea bags is 9 to 30 g/m², and the exemplified basis weight is 12 g/m² (see page 532, left column, second full paragraph). A further exemplified basis weight for a known non-heat sealable tea bag paper according to E3 is 12.3 g/m² (page 4, table). Thus, those exemplified basis weights for tea bag papers are

within the claimed range so that it is obvious to use papers having such normal basis weights. In addition, the respondent has not shown that the claimed basis weight leads to a technical effect which is related to the problem posed.

- 6.1 In E1, the paper layer is wet-laid when forming a unitary structure with the cheese cloth (page 3, right column, lines 16 to 27). Furthermore, wet-laying is the typical method of preparing papers, in particular tea bag papers in the industry as used in E4.
- 6.2 The paper machine in E4 can be used for the preparation of heat sealable and non-heat sealable papers and is suitable for double stock supply. It is within the common general knowledge in paper making that long fibres need much more water for wet-laying than shorter fibres, so that long fibres will firstly be wet-laid on the sloping sieve of E4 and then on the wet-laid first layer the shorter fibres are applied. When following the usual wet-laying process by using two fibre suspensions, the resulting paper would automatically have the smaller pore size in the second layer produced by shorter fibres, in line with the preferred embodiment described in the patent in suit (column 3, lines 23 to 26). Thus, when starting from E1 with the aim to produce an alternative non-heat sealable, two-layer tea bag paper, it is obvious to replace a cheese cloth fabric by a wet-laid paper layer, as suggested in E4. Hence, the claimed subject-matter of the main request does not involve an inventive step.

Auxiliary request No. 1

7. Claim 1 of auxiliary request No. 1 differs from claim 1 of the main request only in that the basis weight is specified to 9 to 14 g/m². The respondent has not shown that the restricted basis weight would provide any specific technical effect in relation to the problem of avoiding the tendency of tea dust to pass through the paper. Furthermore, the claimed basis weight is known from E3 and E4 (point 6 above). Thus, the same considerations as set out in respect of the main request (points 6.1 and 6.2 above) apply *mutatis mutandis* to claim 1 of auxiliary request 1.

Auxiliary request No. 2

8. Claim 1 of auxiliary request No. 2 differs from claim 1 of the main request in that the first wet-laid layer comprises vegetable fibres and the second layer comprises hardwood fibres. As admitted by the appellant, the specification of the fibre material allows that the web material is capable of being patterned. However, in E4 the non-heat sealable tea bag paper can also be patterned or structured (page 532, left column second paragraph). That patterning can be achieved by a Perfojet apparatus (E4, page 531, right column second paragraph), which is also used in the patent in suit (column 5, lines 12 and 13).
- 8.1 Furthermore, E4 discloses that the paper machine is particularly useful for the preparation of special long fibre papers (page 531, left column, first paragraph), which are based on manila or abaca fibres (page 531, left column, last paragraph and right column, first

full paragraph). Manila fibres are preferred vegetable fibres according to granted claim 11 of the patent in suit. Furthermore, according to E4 wood fibres can be used as one of the fibres charges (page 531, right column, first full paragraph). Specific reference is made to eucalyptus (page 531, left column last paragraph), which according to granted claim 17 of the patent in suit is a hardwood fibre. Hence, E4 mentions the same kind of fibres which are used according the claimed subject-matter.

- 8.2 In view of the problem posed when starting from E1, it is obvious from E4 to produce tea bag paper from two different kinds of fibres including vegetable and hardwood fibres by using the paper machine specifically suitable for that purpose to arrive at the claimed subject-matter. Thus, claim 1 of auxiliary request No. 2 does not involve an inventive step.

Auxiliary request No. 3

9. Claim 1 of auxiliary request No. 3 differs from claim 1 of auxiliary request No. 2 in that the basis weight is specified to be 9 to 14 g/m². As stated under point 6 above the restricted basis weight does not provide any additional effect, which may involve an inventive step. Thus, the same considerations as set out in respect of the main request (points 6, 6.1 and 6.2 above) apply *mutatis mutandis* to claim 1 of auxiliary request No. 3.

Auxiliary request No. 4

10. Claim 1 of auxiliary request No. 4 differs from claim 1 of the main request only in that it is reformulated as

a method of producing a fibrous porous web material. Thus, that claim comprises the same essential features as already present in claim 1 of the main request. In particular, the wet-laying process is the normal procedure to prepare a tea bag paper of heat-seal type or non-heat-seal type (point 6.2 above) so that the reformulation does not add anything to the arguments already considered when assessing inventive step of the main request. Hence for the same considerations as outlined under points 5.1 and 5.2 above for the claimed subject-matter of the main request, claim 1 of auxiliary request No. 4 does not involve an inventive step.

Auxiliary request No. 5

11. Claim 1 of the auxiliary request No. 5 differs from claim 1 of the fourth auxiliary request only in that the basis weight is specified to 9 to 14 g/m². As stated under point 6 above the restricted basis weight does not provide any additional effect, which may involve an inventive step. Thus, the same considerations as set out in respect of the main request (points 6.1 and 6.2 above) and auxiliary request No. 4 (point 10 above) apply *mutatis mutandis* to claim 1 of auxiliary request No. 5.

Auxiliary request 6

12. Claim 1 of auxiliary request No. 6 differs from claim 1 of auxiliary request No. 2 in that the product claim is reformulated as a method of producing a fibrous, porous web material. As stated under point 8 above, the features of the second auxiliary request do not involve

an inventive step. Thus, the same considerations as set out in respect of auxiliary request No. 2 (point 8 above) and auxiliary request No. 4 (point 10 above) apply *mutatis mutandis* to claim 1 of auxiliary request No. 6.

Auxiliary request No. 7

13. Claim 1 of auxiliary request No. 7 differs from claim 1 of auxiliary request No. 6 only in that the basis weight is specified to 9 to 14 g/m². As stated under point 6 the restricted basis weight does not provide any effect, which may involve an inventive step. Thus, the same considerations as set out in respect of the main request (points 5.1 and 5.2 above) and auxiliary request No. 6 (point 12 above) apply *mutatis mutandis* to claim 1 of auxiliary request No. 7.

Auxiliary request No. 8

14. Claim 1 of auxiliary request No. 8 differs from claim 1 of auxiliary request No. 4 in that it additionally includes the feature "the method further comprising the step of forming a pattern in one of the layers by means of fluid jets". E4 discloses a Perfojet apparatus which is used for providing structured papers. Since in the patent in suit also a Perfojet apparatus is used which forms a pattern by means of fluid jets (column 5, lines 3 to 13), the use of that additional feature when preparing structured papers according to E4 is obvious. Furthermore, the same considerations as set out under point 10 above for auxiliary request No. 4 apply *mutatis mutandis* to the subject-matter of the auxiliary

request No. 8. Consequently, that request is not allowable either.

Auxiliary request No. 9

15. Claim 1 of auxiliary request No. 9 differs from claim 1 of auxiliary request No. 8 only in that the basis weight is specified to 9 to 14 g/m². As stated under point 6 above the restricted basis weight does not provide any effect, which may involve an inventive step. Thus, the same considerations as set out in respect of the main request (points 6, 6.1 and 6.2 above), auxiliary request No. 6 (point 12 above) and auxiliary request No. 8 (point 14 above) apply *mutatis mutandis* to claim 1 of auxiliary request No. 7.

Auxiliary request No. 10

16. Claim 1 of auxiliary request No. 10 differs from claim 1 of auxiliary request No. 6 in that it additionally includes the feature "the method further comprising the step of forming a pattern in one of the layers by means of fluid jets". Since that feature is obvious as stated under point 14 above, the same considerations as set out in respect of auxiliary request No. 4 (point 10 above) and auxiliary request No. 6 (point 12 above) apply *mutatis mutandis* to the subject-matter of auxiliary request No. 10. Hence, that request is not allowable either.

Auxiliary request No. 11

17. Claim 1 of auxiliary request No. 11 differs from claim 1 of auxiliary request No. 10 only in that the

basis weight is specified to 9 to 14 g/m². As stated under point 6 above, the restricted basis weight does not provide any additional convincing argument to inventive step. Thus, the same considerations as set out in respect of the main request (points 6, 6.1 and 6.2 above), auxiliary requests No. 4 (point 10 above), No. 6 (point 12 above), No. 8 (point 14 above) and No. 10 (point 16 above) apply *mutatis mutandis* to claim 1 of auxiliary request No. 11.

18. Consequently, the subject-matter underlying each request lacks an inventive step so that no request meets the requirements of the EPC.
19. Since the pieces of evidence E5 to E11 have not become relevant to this decision, it was not necessary to deal with their admission into the proceedings.

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:

C. Eickhoff

R. Teschemacher