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**D E C I S I O N**  
**of 29 July 2005**

**Case Number:** T 0192/03 - 3.3.06

**Application Number:** 94921325.0

**Publication Number:** 708860

**IPC:** D21H 17/07

**Language of the proceedings:** EN

**Title of invention:**

Multi-layered tissue paper web comprising chemical softening composition and binder materials and process for making the same

**Patentee:**

The Procter & Gamble Company

**Opponent:**

SCA Hygiene Products AB

**Headword:**

Multi-layered paper/PROCTER

**Relevant legal provisions:**

EPC Art. 54, 56, 100(b)

**Keyword:**

"Sufficiency of disclosure (yes) - trivial modification of conventional processes"

"Novelty (yes)"

"Inventive step (yes) - cited prior art aims at a different property"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0192/03 - 3.3.06

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.06  
of 29 July 2005

**Appellant:**  
(Opponent)

SCA Hygiene Products AB  
S-405 03 Göteborg (SE)

**Representative:**

Hoffman Eitle,  
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**Respondent:**  
(Proprietor of the patent)

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**Representative:**

Hübner, Gerd  
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**Decision under appeal:**

Decision of the Opposition Division of the  
European Patent Office posted 9 December 2002  
rejecting the opposition filed against European  
patent No. 708860 pursuant to Article 102(2)  
EPC.

**Composition of the Board:**

**Chairman:** L. Li Voti  
**Members:** P. Ammendola  
U. Tronser

## Summary of Facts and Submissions

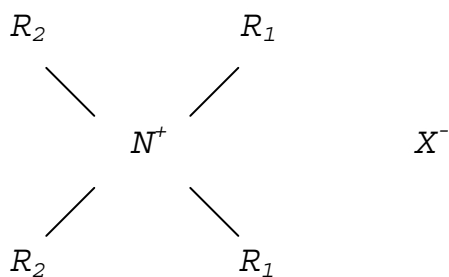
I. This appeal is from the decision of the Opposition Division to reject the opposition against the European patent No. 0 708 860, relating to a multi-layered tissue paper web (hereinafter "MLPW").

II. The granted patent comprised nine claims. Claim 1 read:

"1. A multi-layered tissue paper web comprising at least two superposed layers, a first layer and at least one second layer contiguous said first layer, said multi-layered web comprising:

a) paper making fibers;

b) from 0.01% to 3.0% of a quaternary ammonium compound having the formula



wherein each  $R_2$  substituent is a C1-C6 alkyl or hydroxyalkyl group, or mixture thereof, preferably C1 - C3 alkyl, most preferably, methyl; each  $R_1$  substituent is a C14-C22 hydrocarbyl group, or mixture thereof, preferably C16 - C18 alkyl; and  $X^-$  is a suitable anion, preferably chloride or methyl sulfate;

c) *from 0.1% to 3.0% of a water soluble polyhydroxy compound; wherein said polyhydroxy compound is preferably selected from glycerol, sorbitols, polyglycerols having a weight average molecular weight of from 150 to 800, polyoxyethylene glycols and polyoxypropylene glycols having a weight average molecular weight from 200 to 4000, preferably from 200 to 1000, most preferably from 200 to 600, and mixtures thereof; and*

d) *from 0.01% to 3.0% of a binder material wherein said binder material is preferably selected from permanent wet strength resins, preferably polyamide-epichlorohydrin, or polyacrylamide permanent wet strength resins, and mixtures thereof, temporary wet strength resins, preferably a starch-based temporary wet strength resin, dry strength resins, retention aid resins and mixtures thereof,*

*characterised in that said multi-layered web (10, 20) comprises an inner layer (12, 19) and at least an outer layer (11, 18), said inner layer (12, 19) being located inside said at least one outer layer (11, 18), in case of combining two multilayered webs (15) to a two-ply web (20), and in that the majority of the quaternary ammonium compound and the polyhydroxy compound is contained in said at least one outer layer (11, 18)."*

Claims 2 to 9 of the granted patent defined preferred embodiments of the multi-layered web of claim 1.

III. The Opponent had sought revocation of the patent in suit on the grounds of lack of novelty and of inventive step (Article 100(a) in combination with Articles 52(1), 54 and 56 EPC) and of insufficient disclosure (Article 100(b) EPC). It cited, *inter alia*, the following documents:

D1 = WO 94/10381

D2 = WO 94/29520

D3 = WO 93/09287

D4 = WO 93/09288

D5 = US-A-3 305 392

and

D6 = US-A-4 513 051,

wherein D1 and D2 disclosed prior art relevant only under the provisions of Article 54(3) EPC.

IV. The Opposition Division considered in its decision that the skilled person, who would learn from the patent in suit that the outer layer(s) of the claimed MLPW should contain the majority of the quaternary ammonium salt (b) and of the water soluble polyhydroxy compound (c) (hereinafter these two ingredients are jointly indicated as "softening composition" or "SC"), would be familiar with the conventional processes for producing MLPWs also cited in the patent in suit. Hence, the

skilled person could carry out the invention e.g. by routine adjustment of the composition of the different furnishes to be used in these conventional processes.

The Opposition Division found also that neither D1 nor D2 disclosed a MLPW wherein the SC was mostly present in the outer layer(s), because the different furnishes used in the examples of these citations were blended before being formed into layered webs.

Finally, the Opposition Division concluded that the skilled person, starting from the MLPWs of the prior art disclosed in D3 or in D4 and aiming at an enhanced effectiveness of the softening composition, would have had no reason for locating most of the SC selectively in the outer layers of these webs. He would have rather e.g. increased the overall amount of softening ingredients in all layers or searched for more effective softeners. The teaching in D5 or D6 of the application of coatings made of softening ingredients onto the paper surface would also not render obvious the distribution of the majority of a SC within the outer layers of MLPWs.

- V. The Opponent (hereinafter "Appellant") lodged an appeal against this decision.

Oral proceedings took place before the Board on 29 July 2005 in the presence of all parties.

- VI. The Appellant argued in writing and orally substantially as follows.

The patent in suit failed to disclose the essential process steps necessary for carrying out the invention in so far as it required the SC to be more concentrated in the outer layer(s) of the MLPW. In particular, the patent did not mention the possibility of starting from several distinct furnishes differing in their SC content, but rather disclosed at paragraph 48 the possibility of adding the SC to a (single) furnish that is subsequently formed into the layers of the MLPW. Moreover, the only other method disclosed in the patent in suit for incorporating the SC in the MLPW, i.e. the addition of the SC to an intermediate wet paper web also mentioned in paragraph 48, would be affected by the spontaneous migration of the SC ingredients from one wet layer to the others and, thus, be unsuitable for ensuring the selective addition of the SC in the outer layer(s). The spontaneous migration would render it problematic to carry out the invention even in the hypothesis that the skilled person would arrive (despite the absence of any instruction in the patent in suit) at the idea of preparing several starting furnishes differing in their SC content.

In respect of the novelty of the subject-matter of claim 1 the Appellant considered that, since the claimed MLPW could also be a three-layered web containing the SC homogeneously distributed therein, then the layered web of the prior art disclosed in example 6 of D1 or in example 4 of D2, would anticipate the claimed subject-matter. Moreover, if the spontaneous migration would be negligible as maintained e.g. at page 9 of the letter of 30 October 2003 by the Patent Proprietor (hereinafter "Respondent"), then D1 and D2 would implicitly disclose also MLPWs wherein the

SC was more concentrated in the outer layer(s), since also these citations described - by using substantially the same wording of the patent in suit - the application of a diluted solution of the SC onto the intermediated wet paper web.

Finally, even if the claimed MLPWs would be found novel, they would still not be based on an inventive step. On one side, since the subject-matter of claim 1 could also be a three-layered tissue paper web containing the SC homogeneously distributed therein, this claimed MLPW could only represent an obvious solution to the technical problem of providing a specific embodiment of the MLPW comprising SC and a binder material disclosed in general in D3 and D4. On the other side, the enrichment of the SC in the outer layers of MLPWs was also obvious in the light of the teaching of D5 and/or D6.

VII. The Respondent refuted the Appellant's objections by arguing in writing and orally substantially as follows.

The interpretation of claim 1 of the granted patent should also take into account the whole patent disclosure, from which it would be evident that the claimed MLPW should necessarily display an uneven distribution of the SC among the layers.

The skilled person would find in the patent in suit the instruction to modify the conventional methods for producing MLPWs so as to produce the desired selective addition of the SC in the outer layers. Such modification would be trivial for the skilled person, since it required simply to add all or most of the SC



to the furnish that is subsequently formed into the outer layer(s). Moreover, the migration of the softening composition into the neighbouring layers was only a negligible "dirt" effect. Hence, the disclosure in the patent in suit enabled the skilled person to prepare the claimed MLPW.

The available citations would disclose directly and unambiguously neither the formation of layers from furnishes containing different amounts of SC, nor the selective addition of this latter to the wet layered precursor of the outer layer(s). In particular, even though D1 and D2, similarly to the patent in suit, referred to the conventional methods for forming MLPWs and disclosed the possibility of adding SC either to the starting furnish or after formation of an intermediate wet web, these citations would still not disclose how to make use of these processes in such a way to arrive at the selective addition of all or most of the SC in the outer layers of the MLPW.

Finally, the enhanced effectiveness achieved by selectively adding the majority of the SC in the outer layer(s) was surprising *inter alia* because, as indicated at paragraph 4 of the patent in suit, the aimed softness referred also to the tactile sensation perceived upon crumpling the paper web into the hand, i.e. a property which depended necessarily on several physical properties of the whole MLPW, including the reduction of the dry strength by de-bonding caused by the softening ingredients in the interior of the web. The disclosure in D5 and D6 referred instead only to the superficial soft feeling provided by lubricants or emollient coatings. Moreover, the overall teaching

given in D5 was to avoid de-bonding ingredients to any extent and, therefore, would have lead away from the claimed invention.

VIII. The Appellant has requested that the decision under appeal be set aside and the European patent No. 0 708 960 be revoked.

IX. The Respondent has requested that the appeal be dismissed.

### **Reasons for the Decision**

#### 1. *Interpretation of claim 1 of the patent in suit*

The interpretation of this claim has been repeatedly disputed by the parties in writing and during oral proceedings while arguing on novelty and inventive step. The Board thus considers it appropriate to assess the meaning of the claim before addressing the actual grounds of opposition.

1.1 The Board notes that according to the established jurisprudence of the Boards of Appeal (see "Case Law of the Boards of Appeal of the EPO", 4<sup>th</sup> Edition, 2001, II.B.4.3) the description and drawings should be used to interpret the claims when an objective assessment of the content of a claim has to be made to judge whether its subject-matter is novel and not obvious.

1.2 The MLPW according to claim 1 (see above point II) comprises, in addition to paper fibres and wet strength resin binder, quaternary ammonium salt and water

soluble polyhydroxy compound. These two latter ingredients act as a SC. It is undisputed that this claim encompasses MLPWs wherein the SC content in at least one of the outer layers is superior to that in the inner layer.

1.3 However, the Appellant has observed that the wording of claim 1 requires literally only that the majority of the SC should be "*contained in said at least one outer layer*" of the MLPW. Therefore, the claim definition is also satisfied every time the total amount of SC contained in **both** outer layers is superior to that present in the inner layer, regardless of whether the amount of SC contained in **each** of the two outer layers is superior, equal or even inferior to that present in the inner layer. The Appellant has therefore concluded that the claimed MLPW would also encompass a three-layered web wherein the same amount of SC is present in each layer, because in such MLPW the fraction of SC in the two outer layers adds up to 2/3 of the total and, thus, represents the majority of this ingredient.

1.4 However, the Board notes that, when reading the claim in the context of the description and drawings, the skilled person would be also aware of the technical problem explicitly addressed by the invention as defined at paragraph 16 of the patent in suit. This paragraph starts with the acknowledgement that paper webs comprising a binder and the SC were already known from D3 and D4 and then discloses explicitly that the enhanced effectiveness of the SC in the MLPWs of the invention is produced by the "*selective addition*" of the majority of this composition in the outer layers. The relevance of such selective addition is also

repeated at paragraph 77 of the patent in suit and is consistent with the rest of the patent disclosure. Hence, the patent description implicitly discloses as essential to the desired technical effect the fact that the SC, rather than being homogeneously distributed throughout all the layers of the MLPWs, is instead **selectively** added in larger amounts to the outer layers.

1.5 The Board concludes, therefore, that the skilled person would necessarily construe the subject-matter of claim 1 as not embracing MLPWs containing the SC homogeneously distributed among the different layers.

2. *Sufficiency of disclosure (Article 100(b) EPC)*

2.1 The Board notes that paragraphs 26, 37, 38, 70 and 71 of the patent in suit describe summarily two methods for producing the MLPWs of the claimed invention, both methods being based on the preparation of water-born furnishes (i.e. diluted fibre slurries) which are then formed into wet webs deposited onto one or more foraminous screens and finally dried. In particular, these conventional processes are those used for producing conventional MLPWs stratified in respect of the kind and/or the amount of fibres; in such conventional processes the starting furnishes differ in the kind and/or amount of fibres. This has not been disputed by the Appellant.

2.2 The Board notes additionally that, as already underlined above, the patent in suit also provides the explicit information (see paragraphs 16 and 77) that the enhanced effectiveness of the SC in the claimed MLPWs is obtained by "*selectively adding*" the majority

of the SC to their outer layers. Moreover, the patent in suit instructs the skilled person to add the SC at the wet-end of the paper-making process, preferably already as a component of the starting furnish or (e.g. by spraying) to the intermediate wet web (see paragraph 48 also in combination with paragraph 69).

It is also undisputedly within the common general knowledge of the skilled person, how to use multi-head boxes or how to couch one onto the other separately formed intermediate wet webs.

Thus, the skilled person by simply combining these instructions with this common general knowledge as to the conventional methods for preparing MLPWs would immediately realize in the Board's view how to modify these conventional processes in order to achieve the selective addition of the SC in the outer layers.

2.3 The Appellant has instead maintained that:

- (a) the patent in suit never mentions the preparation of several starting furnishes but only of a single "*furnish*", which is then formed into the layers of the MLPW (see in particular paragraphs 26, 36, 37, 48, 70, 81 and 83),
- (b) even if one would arrive to the idea of using two or more initial furnishes differing in their SC content and would selectively add all or most of this composition in the starting furnish(es) which is(are) to be subsequently formed into the outer layer(s), the patent would still not disclose which measure should be used for avoiding the

spontaneous migration of the SC from one layer to the other during the next wet steps of the paper-making process, and

- (c) this spontaneous migration may be expected to be of particular relevance if the SC is instead applied to a preformed MLPW (while still wet), as also suggested at paragraph 48 of the patent in suit.

The above allegations "(b)" and "(c)" have been contested by the Respondent.

- 2.4 The Board notes that the patent in suit explicitly confirms in paragraphs 37 and 71 that the claimed MLPWs are possibly stratified in respect of the kind and/or the amount of fibers and that the layers are made from "*diluted fibre slurries*". This clearly amounts to the disclosure of distinct starting furnishes differing at least in their fibrous component. Hence, the Appellant's argument "(a)" (see above) is based on an incorrect interpretation of the patent disclosure.

On the other hand, the Appellant's further arguments based on the lack of information in the patent in suit as to how to avoid the spontaneous migration of the SC from one wet layer to the others, have not been supplemented by any supporting evidence rendering credible that the spontaneous migration would override the measures that the skilled person would adopt for obtaining, in the conventional processes for producing MLPWs, the selective addition of the SC in the MLPW outer layers (see above point 2.2). Therefore, the Board concludes that the Appellant's arguments "(b)"

and "(c)" (see above) being unproven allegations which have been contested by the other party, must be disregarded.

2.5 Hence, the Board concludes that the disclosure of patent in suit enables the skilled person to carry out the invention and, therefore, that the ground of opposition under Article 100(b) does not prejudice the maintenance of the patent as granted.

3. *Novelty (Article 100(a) EPC in combination with Articles 52(1) and 54 EPC)*

3.1 Claim 1 of the patent in suit

The Appellant has contested the novelty of the claimed MLPWs vis-à-vis the prior art disclosed in D1 and D2.

3.1.1 The Appellant has initially maintained that example 6 of D1 and example 4 of D2 would be novelty destroying for subject-matter of claim 1. It has considered that the claimed MLPWs could encompass also three-layered webs comprising the SC evenly distributed therein and argued that such structure would also be present in the "layered webs" of these prior art examples.

However, as already discussed above (see point 1.6), the subject-matter of claim 1 of the patent in suit does not encompass MLPWs containing the SC homogeneously distributed among the different layers. Hence, the Board considers this objection irrelevant.

3.1.2 The Appellant has further contested the novelty of the subject-matter of claim 1 on the basis of the generic

disclosure in D1 or D2 as to the possibility of adding the SC to the intermediate wet web in the conventional processes for forming MLPWs maintaining that

- this disclosure is substantially identical to that of the patent in suit (compare in particular paragraphs 48 and 71 of the patent in suit respectively with page 9, lines 11 to 15, and page 13, lines 15 to 23, of D1; or with page 10, lines 1 to 5, and from page 14, line 4 from the bottom, to page 15, line 18, of D2)
- according to the Respondent's own statements in respect of the absence of migration when adding the SC to an intermediate wet web, this addition should necessarily lead to a higher concentration of the SC in the outer layer(s) also in the layered web disclosed in general in D1 or D2.

3.1.3 The Board notes, however, that D1 and D2 do not disclose or require the selective addition of all or most of the SC in the outer layers of the layered webs of this prior art. In the absence of this requirement, the simple disclosure in D1 or D2 of the possibility of adding the SC to a preformed wet web in a conventional MLPW making process does not provide any direct and unambiguous information as to whether the final structure of the layered webs possibly disclosed in these citations is the same of the MLPWs of the patent in suit or another one (e.g. that wherein the SC is homogeneously distributed among all layers or that wherein the majority or all of the SC is in the inner layer).



3.1.4 Therefore, the generic disclosure in D1 and D2 referred to by the Appellant does not amount to the direct and unambiguous disclosure of a process necessarily resulting into the claimed MLPWs. Hence, the Board finds that the subject-matter of claim 1 is novel.

3.2 Claims 2 to 9 of the patent in suit

These claims define preferred embodiments of the MLPW of claim 1. Therefore, also their subject-matter is found to be novel for the same reasons given above for the subject-matter of claim 1.

3.3 Accordingly, the Board concludes that the patent as granted complies with the requirements of Article 54 EPC.

4. *Inventive step (Article 100(a) EPC in combination with Articles 52(1) and 56 EPC)*

4.1 Claim 1 of the opposed patent

4.1.1 As already discussed above (see point 1.4), the technical problem explicitly mentioned in the patent in suit is that of "*improving the effectiveness*" of the softening composition in MLPWs (see paragraphs 16 and 77 of the patent in suit). In the absence of any further description on the nature of such improvement, the Board considers that, as correctly suggested by the Appellant too, such definition can only reasonably indicate the aim of economizing on the SC, i.e. the problem of how to achieve a satisfactory softness in MLPWs with the lesser amount of this ingredient. It is also to be noted that paragraph 4 of the patent in suit

explicitly indicates that the enhanced softness aimed at in the patent in suit resulted from the combination of several physical properties of the whole MLPW construction, including a reduction of the dry strength, i.e. a property enhanced by the de-bonding effect of the softening ingredients. In particular, this paragraph also makes reference to the tactile sensation perceived by the consumer when he/she "*crumples*" the MLPW within his/her hand and associates to this "*softness*" the stiffness of the (whole) MLPW.

- 4.1.2 It is undisputed that the prior art disclosed in D3 and D4, i.e. two citations that are explicitly mentioned as relevant prior art at paragraph 16 of the patent in suit, is also concerned with the problem of achieving a satisfactory softness by using such SC. It is also undisputed that both these citations disclose a "*tissue paper with multilayered construction*" comprising paper fibres, a SC and a binder (see in D3 claim 1, page 3, lines 18 to 21, and page 12, last line to page 13, line 1; and in D4 claim 1, page 3, lines 15 to 20, and page 12, lines 3 to 5 from the bottom).

Hence, the Board concurs with the parties that the prior art disclosed in D3 or D4 (hereinafter jointly indicated as "D3/4") represents an appropriate starting point for the inventive step assessment.

- 4.1.3 The Appellant has not contested that the claimed MLPWs containing more SC in the outer than in the inner layers - i.e. the whole subject-matter of claim 1 as understood by the skilled person (see above items 1.5 and 1.6) - differ from those of prior art disclosed in D3/4 (see above point 4.1.2) for the selective addition

of the SC in the outer layers, i.e. the essential feature to which the patent in suit (see paragraphs 16 and 77) attributes the achievement of the enhanced effectiveness of the SC. The Appellant has also not contested that these MLPWs would have actually solved the technical problem explicitly addressed in the patent in suit (see above point 4.1.1).

In the absence of any reasons for doubting these statements in paragraph 16 and 17 of the patent in suit as to the effect of the selective addition of the SC to the outer layers in the claimed MLPWs, the Board concludes that the subject-matter of claim 1 (when correctly interpreted as discussed at point 1 above) has credibly solved vis-à-vis the prior art disclosed in D3/4 the problem explicitly mentioned in the patent in suit by selectively adding the SC to the outer layers of the MLPWs.

- 4.1.4 The Appellant has argued that this solution to the problem posed would involve no inventive step, because the dependency of the softness of MLPWs mainly on the SC contained in their outer layers, i.e. on the SC contained in the parts of the MLPW exposed to the tactile perception of the consumer, was evident to the skilled person and implicitly confirmed by the disclosure of D5 and D6. As a matter of fact, D5 discloses the softening of a paper web by coating the outermost fibers with a lubricant and teaches that the de-bonding produced by this softening ingredient is instead known to affect the paper properties negatively if added to the interior of the web (see in D5 column 1, lines 32 to 62; the sentence bridging columns 1 and 2; column 2, lines 22 to 26; column 3, lines 14 to 18,;

and column 4, lines 64 to 66). Similarly, also D6 explicitly suggests to the skilled person starting from D3/4 the importance of adding (e.g. by spraying or extrusion) an ingredient producing softness on the outer surface of layered paper webs (see in D6 column 4, lines 27 to 40, column 5, lines 64 to 66 and the examples).

- 4.1.5 The Board notes however that the same definition of "softness" given in paragraph 4 of the patent in suit (see above point 4.1.1) is also to be found at page 1, lines 22 to 29, of D3 and of D4. Therefore, the Board concludes that in the patent in suit, as well as in the starting prior art, the term "softness" clearly indicates a property which is influenced also from the physical properties of the inner layer of the MLPWs. Hence, contrary the Appellant's allegation, it would not be evident to the skilled person that the softness of MLPWs depended more on the amount of SC contained in their outer layers than on that of the SC contained in their inner layer.

On the contrary, the overall disclosure of D5 seems focused only on the surface characteristics of the web (see column 3, lines 14 to 18,; and column 4, lines 64 to 66). Also D6 is focused on providing emollient properties to the paper surface (see from column 5, line 63 to column 6, line 1) and does not mention the consumer's perception upon crumpling the MLPW in the hand.

Hence, the Board finds that the kind of softness in respect to which D5 and D6 provide valuable technical information is substantially different from that

considered in the present case (i.e. the overall softness perception inclusive of that felt by the consumer upon crumpling the tissue paper web). Therefore, already for this reason the teachings in these documents cannot possibly be considered relevant by the skilled person searching for a solution to the technical problem posed.

4.1.6 Moreover, even if one would disregard the different kind of "softness" aimed at in these citations, the Board must concur with the Respondent that the technical teaching provided in particular by D5 would at most suggest to the skilled person to avoid the presence **in** the web of any de-bonding (and, hence, softening) ingredients and to place them preferably **onto** the surface of the web (see in D5 column 1, lines 32 to 62; and the sentence bridging columns 1 and 2), rather than distributing these de-bonding ingredients **within** the outer layers, as required in the patent in suit.

4.1.7 The Board concludes therefore that, contrary to the Appellant's reasoning, the disclosure in D5 or D6 does not render obvious for the skilled reader to enhance the effectiveness of the SC in the MLPWs of the prior art disclosed in D3/4 by selectively adding most of this composition in the outer layers thereof. Hence, the subject-matter of claim 1 is found to be based on an inventive step.

4.2 Claims 2 to 9 of the patent in suit

Since these claims define preferred embodiments of the MLPW of claim 1, their subject-matter is based on an

inventive step for the same reasons given above for claim 1.

4.3 Accordingly, the Board concludes that the patent as granted also complies with the requirements of Article 56 EPC.

## **Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

L. Li Voti