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Datasheet for the decision of 6 September 2007

Case Number: T 0023/05 - 3.2.06

Application Number: 95940188.6

Publication Number: 0792114

IPC: A46D 1/00

Language of the proceedings: EN

Title of invention:
Bristle arrangement for a toothbrush

Patentee:
SMITHKLINE BEECHAM PLC

Opponent:
Colgate-Palmolive Company

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 123(2), 84

Keyword:
"Main request -novelty (no); disclosure in drawings"
"First and second auxiliary requests - Article 123(2) requirements (not met)"
"Auxiliary requests 1a and 2a - clear (no)"
"Third and fourth auxiliary requests - inventive step (no)"

Decisions cited:
T 0204/83, T 0748/91

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0023/05 - 3.2.06

D E C I S I O N
of the Technical Board of Appeal 3.2.06
of 6 September 2007

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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 27 October 2004 concerning maintenance of the European No. 0792114 in amended form.

Composition of the Board:

Chairman: P. Alting Van Geusau
Members: M. Harrison
W. Sekretaruk

Summary of Facts and Submissions

I. The appellant (opponent) filed an appeal against the interlocutory decision of the opposition division, according to which European patent number 0 792 114 as amended was found to meet the requirements of the European Patent Convention.

With its grounds of appeal, the appellant filed

D11a: translation into English of

D11: JP-Y-4833573

II. In its reply filed 15 July 2005, the respondent (proprietor) requested dismissal of the appeal or alternatively maintenance of the patent in an amended form based on first or second auxiliary requests filed with the reply.

III. With its summons to oral proceedings, the Board informed the parties *inter alia* of the perceived relevance of D11 to novelty and inventive step, and made comments concerning the issue of Article 123(2) EPC in relation to the auxiliary requests.

IV. In its letter of 1 August 2007, the respondent filed a third and fourth auxiliary request.

V. During the oral proceedings of 6 September 2007 before the Board, the respondent filed two further auxiliary requests 1a and 2a, and requested that the wording "longer or" be deleted in claim 1 of the third and fourth auxiliary requests as filed.

The appellant's sole request remaining at the end of oral proceedings was that the patent be revoked.

VI. Claim 1 of the main request reads as follows:

"A toothbrush comprising a handle (1) and a head (2) disposed along a longitudinal toothbrush axis A-A, the head (2) having a bristle face (4) from which project bristles which are arranged in tufts containing a plurality of bristles (5, 8, 9, 10) wherein one or more strips (1, 6, 7) of a flexible and resilient material having a width direction, perpendicular to the length direction of the strips, which is greater than the thickness of the strips (1, 6, 7) perpendicular to the width direction of the strips (1, 6, 7) being substantially parallel to the longitudinal axis direction A-A of the head (2), project from the bristle face (4) in a length direction substantially perpendicular to the bristle face (4), the strips being arranged in rows or groups of rows of the said strips (1, 6, 7) longitudinally alternating with rows or groups of rows of the said tufts (5, 8, 9, 10), characterized in that the strips (6, 7) are longer or shorter than the bristles (8, 9, 10), so as to present an undulating profile of longer bristles (8, 9, 10) and shorter strips (6, 7), or vice versa."

VII. In claim 1 of the first auxiliary request the following wording is added after the words "vice versa" in the main request:

"and the strips are made of a softer plastic material than the bristles, or an elastomeric material."

VIII. Claim 1 of auxiliary request 1a contains the same wording as claim 1 of the main request, with the addition of the following after the words "vice versa":

"and the strips are made of a softer plastics material than the material from which conventional bristle filaments are made, or an elastomeric material"

IX. Claim 1 of the second auxiliary request corresponds to claim 1 of the first auxiliary request, with the following added after the last words "…elastomeric material":

", and have a thickness in a direction (t) perpendicular to the width direction (w) of the strips which is 0.2 or less than the width dimension of the strips."

X. In claim 1 of auxiliary request 2a, the following wording is added to claim 1 of the main request, after the words "vice versa":

"and the strips are made of a softer plastics material than the material from which conventional bristle filaments are made, or an elastomeric material, and have a thickness in a direction (t) perpendicular to the width direction (w) of the strips which is 0.2 or less than the width dimension of the strips."

XI. Claim 1 of the third auxiliary request contains the same preamble of claim 1 of the main request, with the following characterizing portion:

"characterized in that the strips (6, 7) are shorter than the bristles (8, 9, 10), so as to present an undulating profile of longer bristles (8, 9, 10) and shorter strips (6, 7), and the strips are made of an elastomeric material."

XII. Claim 1 of the fourth auxiliary request contains the same wording as that of the third auxiliary request, with the following added after the words "elastomeric material":

", and have a thickness in a direction (t) perpendicular to the width direction (w) of the strips which is 0.2 or less than the width dimension of the strips."

XIII. The appellant's arguments, in as far as they relate to the reasons for the decision, can be summarised as follows:

Main request:
The subject matter of claim 1 lacked novelty over D11. Regarding the features of the characterizing portion, Fig. 2 depicted three strips (termed "fins" in D11a), each being some 10% shorter than the bristles. The D11 drawings, even taken alone, provided a disclosure of the disputed features since each of the three fins had the same length and each was drawn shorter than the bristles, thereby presenting an unambiguous teaching. The function of the fins as massaging elements (D11a, page 3, lines 1 to 11) confirmed this size relationship, since the bristles should come into contact with the teeth before the fins. Also, the somewhat triangular shape of the fins meant that their length decreased on

either side of the triangle apex; claim 3 of the patent confirmed that the length could vary across the strip width. Due to the length difference, an undulating profile was present, irrespective of whether the peak of the fins or the sloping sides thereof was used to measure the length; length was itself an imprecise term in view of the possibilities for the strip shape quoted e.g. in paragraph [0007] of the patent.

First auxiliary request:
The added feature contravened Article 123(2) EPC. The disclosure of softer plastic material in the filed application was only used in relation to "conventional" bristles, which were not defined in amended claim 1.

Auxiliary request 1a:
The introduced expression "the material from which conventional bristle filaments are made" was unclear, contrary to Article 84 EPC, as it had no accepted meaning for a skilled person. The BSI standard BSI 5757 supplied by the respondent was only one of many standards; it did not define any material as "conventional"; even nylon was quoted in three different forms, namely 6.6., 6.10, and 6.12. Other materials were conventionally used in toothbrushes. In the description in column [0015], conventional materials could be "for example nylon or other plastics materials" which confirmed that "conventional" had no precise meaning.

Second auxiliary request and auxiliary request 2a:
At least the objections to the previous auxiliary requests applied equally.

Third auxiliary request:
Claim 1 lacked novelty over D11 since the fins of D11 were made of "flexible synthetic resin" which was "elastomeric material". "Elastomeric material" was a broad expression as shown by many references giving various definitions. Even the respondent had defined that "elastomeric" limited the strips only to being rigid enough to stand up yet flexible enough to bend upon application of pressure. The fin material of D11 met that definition.

Claim 1 lacked an inventive step over D11 combined with e.g. the skilled person's general knowledge of elastomeric materials in toothbrushes or with the teaching of

D10: US 1 327 757

D10 disclosed rubber strips used to massage the gums and to clean the teeth. The skilled person wishing to find a suitable flexible material for the strips in D11 to perform the stated purpose, would clearly select an appropriate elastomeric material, e.g. the rubber strip material from D10, without inventive skill.

Fourth auxiliary request:
The objections against claim 1 of the third auxiliary request applied equally. As regards the only added feature, concerning the relative dimensions of the strips, this was disclosed in the drawings of D11, from which it could be deduced when considering the size of a toothbrush head required to fit into a user's mouth and the relative size of the fins. In terms of inventive step, no aim, advantage or effect of using a

thickness of 0.2 or less than the width was given in the patent and no perceivable advantage or different technical effect over the strips in D11 was present.

XIV. In respect of the reasons for the decision, the arguments of the respondent may be summarised as follows:

Main request:
The features of the characterizing portion of claim 1 were not unambiguously disclosed in D11; the drawings were schematic and gave no basis for determining that a difference in length existed and the description gave no indication of a function implying a difference in length. T204/83 supported this view. There was also no "undulating profile" disclosed by the strips and bristles; "undulating" referred to what was present on a macro scale and not a micro scale and was thus something readily noticeable. The "length" of the strips in claim 1 could only be compared to the distance between the head face and the highest point of the fins in D11. Claim 3 of the patent could not be used to interpret claim 1 in the sense that a varying length across the whole width of the fins fulfilled the claim, because "length" required a distinct measuring point and there was no plurality of end surfaces allowing measuring a distinct length.

First auxiliary request:
The feature "softer than the bristles" found its basis in paragraph [0015] of the patent which was identical to the wording in the application as filed. It was implicit that the word "softer" was being used in paragraph [0015] in relation to the bristles of the

head. Any other meaning could only be the result of misconstruing the obviously intended meaning to a skilled person.

Auxiliary request 1a:
The expression "the material from which conventional bristle filaments are made" was introduced to remove any problem under Article 123(2) concerning the way in which the term "softer" was disclosed. The expression was clear (Article 84 EPC) because it was widely known in the art that the conventional material for toothbrushes was nylon. For example, the BSI standard 5757 used nylon as it was known as being conventional material. The different values, e.g. of textural stiffness, for nylon 6.6, 6.10 and 6.12 in this document all gave very similar values to eachother.

Second auxiliary request and auxiliary request 2a:
The same arguments as for the previous requests applied equally regarding Article 123(2) and Article 84 EPC.

Third auxiliary request:
Claim 1 was novel over D11. The term "elastomeric material" implied rubbery characteristics, as was clear from the "wiping" function described in the patent, which provided a "squeegee" effect. The broad terminology "synthetic resin material" in D11 did not anticipate the feature "elastomeric material" in claim 1. The appellant's alleged definition of "elastomeric" was a misunderstanding as it overlooked that the claim defined the material as being elastomeric, not the strip as exhibiting elastomeric properties. The material itself had to exhibit elastomeric properties.

In terms of inventive step, the problem to be solved over D11 was to provide a different cleaning effect, in this case wiping. D11 taught away from elastomeric material fins since the primary function of the fins was to act essentially as toothpicks, for which they had to be relatively stiff. The difference in the shape of the fins in D11 to that in e.g. Fig. 3 of the patent could readily be understood to show that the fins in D11 were not suitable for wiping, whereas those in the patent were. Soft elastomeric material was not suitable for the purpose of the fins in D11 and the massaging function therein was only secondary. The rubber elements for massaging and cleaning in D10 were pyramids/cones in order to achieve the desired stiffness. A skilled person would not use elastomeric materials from D10 in the fins of D11 since this meant replacing the fins by pyramids/cones, which meant that the final product would have no strips at all.

Fourth auxiliary request:
The added feature concerned the aspect ratio of the strips. The Figures in D11 did not disclose this, as dimensions could not be scaled from the drawings, so that claim 1 differed from D11 by all features of the characterizing portion. The use of elastomeric strips of the aspect ratio defined in claim 1 meant that a wiping function was present. The elements in D10 were pyramids/cones which did not have this aspect ratio and did not provide a wiping function; in D11 the triangular pointed fins gave no wiping function. Since no wiping function was provided by the pointed elements of D10, it would not be obvious to replace the fins by such to achieve this improved cleaning effect.

Reasons for the Decision

1. *Main request*

The features of the preamble of claim 1 are disclosed in D11 and this is also not a matter of dispute between the parties. As regards the characterizing portion, the following features of the alternatives therein are relevant:

(a) the strips are shorter than the bristles,

(b) an undulating profile of longer bristles and shorter strips.

In order to determine whether the fins are shorter than the bristles in D11, the term "length" as defined in the preamble of claim 1 has to be given an interpretation, because there is no disclosure in the patent itself which defines the term "length" more precisely. In this regard however it is noted that claim 3 further allows the "length" of the strips to be something which can vary "across their width". Thus, in as far as can be ascertained from the patent, the length of the strips may be measured anywhere across their width in determining whether the condition of "shorter" in feature (a) above is fulfilled. It is also noted that the large range of possibilities of strip shape defined in paragraph [0007] of the patent, according to which the strips "may taper along their length, being either wider or narrower at their end remote from the bristle face than at their base at the bristle face", together with the indication in

paragraph [0015] that the "ends of the strips remote from the bristle face may be rounded, or may terminate in bulbous ends…" supports this conclusion about where length may be measured. In this respect, no support can be found for the respondent's limited interpretation that a "length" requires the presence of specifically identifiable end surfaces at which one or more lengths can be measured, or, in the absence of such surfaces, that only the highest point of the strip element should be used. Indeed, in the only embodiment shown in Figure 3 of the patent, it is observed that one of the end surfaces of the strips has the same length as the bristles adjacent thereto, rather than being "longer or shorter" as claimed.

Taking initially the first, broader interpretation of the term "length", which the Board finds to be within the meaning of claim 1 due not least to the definition of varying length given in claim 3, it is then not sufficient only to consider the absolute highest point of the fins in D11, but instead the length of the fins at locations "across their width". Thus in D11, even if *arguendo* the fins had equal length to the bristles at the fin apex, the length of the fins immediately adjacent the apex would necessarily lie below the bristles. Therefore, in this regard, feature (a) is disclosed in D11.

An undulating profile according to feature (b), taking the broad interpretation of "length", is thus present since the bristle length compared to the fin length measured on either side of the apex, yet still somewhat remote from the bristles, provides such a profile. In regard to the respondent's arguments about feature (b),

it is first noted by the Board that there is no indication in the patent as to the amount of length difference between the strips and bristles which is required to provide an "undulating" profile. The Board therefore finds that it is reasonable to interpret the claim in the sense that any readily perceivable amount would fulfil this definition. The proprietor's argument that the undulating profile should be considered on a macro scale and not a micro scale is however accepted by the Board, but this does not change the fact that a perceivable height difference is disclosed in D11 when considering the broad interpretation of the term "length" and positions on either side of the fin apex which is present also on a macro scale.

Even if a more limited interpretation were to be used for the term "length", whereby the measurement of the fins in D11 is taken from the highest point thereof to the base, Figure 2 depicts the length to be discernibly shorter than the bristles, albeit by a small amount. No explicit written disclosure of the relative lengths of the fins and bristles is however present in D11 and thus the Board considers it suitable to determine whether the information depicted in D11 is an "unambiguous" disclosure of the claimed feature. Such a consideration would also be in line with the findings in T 204/83 (see item 4) as cited by the respondent. In this regard it is first observed that not only one row of fins, but each of the three rows of fins is depicted as being shorter than each of the three rows of adjacent bristles. This is already a strong indication that the size relationship shown is not merely a chance occurrence, but more of a systematic representation of the feature in question, albeit appearing in one

drawing rather than a series of drawings as discussed in T 204/83. However, in the present case, the Board does not need to decide whether Figure 2 by itself is sufficient to provide an unambiguous disclosure of the feature, since the further information contained in D11 regarding the massaging effect of the fins (see D11a, page 3, lines 1 to 11) supports the depicted size difference in a functional manner. Such a consideration is also in line with the findings in decision T 748/91 for example (see item 2.1.1). The function of massaging would require a higher pressure to be put on the brush head to cause a noticeable massaging effect and likewise a brushing effect of the bristles should normally be maintained without undue hindrance from other elements at a lower pressure. This logically means that the fins should be slightly shorter than the bristles in order to achieve both functions in a desired manner. Feature (a) as mentioned above is therefore found to be disclosed in D11 also on a more limited interpretation of the term "length".

In accordance with the considerations made above concerning feature (b), an undulating profile is disclosed in D11 when using the more limited interpretation of the term "length", since the difference in height between the strips and the bristles is not only pictorially represented on a macro scale but also functionally supported in this respect.

Consequently, irrespective of which interpretation of the term "length" is used, the Board finds that D11 discloses all the features of claim 1. The subject matter of claim 1 is therefore not new, contrary to the

requirement of Article 54 EPC. The main request is thus not allowable.

2. *First auxiliary request*

The feature introduced into claim 1 by way of the first auxiliary request contains the terminology "strips are made of softer plastic material than the bristles…". This terminology is not disclosed explicitly in the application as filed, and the presence of an explicit disclosure is not in dispute. The respondent however asserts that it is implicitly understood that the term "softer" is being used in relation to the bristles on the head of the toothbrush of claim 1 and that the description can only reasonably be understood in that manner.

In the paragraph of the description concerned, the following is stated:

"The strips may be made of the materials from which conventional bristle filaments are made, for example nylon or other plastics materials known to those in the art. Alternatively the strips may be made of softer plastics or elastomeric materials, e.g. synthetic rubbers."

The Board finds that the only interpretation possible from this disclosure is that the term "softer" is used in relation to the choice of strip material compared to materials of "conventional" bristle filaments, and not compared to the material of the bristles actually present on the brush head in claim 1. The particular interpretation made of this section by the respondent

thus finds no support. Indeed, the bristles on the brush head defined in claim 1 may be of any material whatsoever, including materials far harder than "conventional" bristle material. Also, nothing in the patent implies unambiguously that "conventional" bristles are the bristles used in the toothbrush head. It is also noted that paragraph [0017] states "The remainder of the toothbrush, and conventional bristles if included…", which confirms that any type of bristle material can be used in the head of claim 1.

As a result of this amendment, the subject matter of the patent extends beyond the content of the filed application, contrary to Article 123(2) EPC and the first auxiliary request is thus not allowable.

3. *Auxiliary request 1a*

The introduced feature includes the terminology "the strips are made of a softer plastics material than the material from which conventional bristle filaments are made…". This defines a relative softness in comparison to "conventional" bristle material. The term "conventional" however has no generally recognised meaning in the art and is entirely vague. This is evident already from the patent itself which in paragraph [0015] states that material of conventional filaments is for example "nylon or other plastics materials known to those in the art", which *de facto* implies a multiplicity of materials. The respondent's argument that BSI Standard 5757 presents nylon 6.6, 6.10 or 6.12 as the conventional bristle material is not convincing, since nowhere does the BSI standard define any of these materials as conventional; it

furthermore mentions natural filaments which are used in toothbrushes. The BSI standard is also not the only standard available. Even if it were accepted that nylon should be regarded as the conventional filament material, which has not been proven by any supportive evidence, it would still be unclear which of the nylon types should be used and how its "softness" would be determined for comparison purposes.

The Board concludes that the subject matter of amended claim 1 is thus not clear, contrary to Article 84 EPC. Auxiliary request 1a is therefore not allowable.

4. *Second auxiliary request and auxiliary request 2a*

These requests contain the same terminology as present in the first auxiliary request and auxiliary request 1a respectively, and thus are also not allowable for the same reasons as apply to those requests.

5. *Third auxiliary request*

5.1 Compared to claim 1 of the main request, claim 1 of this request contains a first limitation that "the strips are made of an elastomeric material". The claim also contains a second limitation that the strips must be "shorter than the bristles, so as to present an undulating profile of longer bristles and shorter strips", this second limitation being as a result of the wording "longer or" and "or vice versa" having been deleted. However, in view of the conclusions reached on novelty in regard to the main request, it has already been decided that the second limitation is disclosed in

D11, such that only the first limitation needs to be considered for assessing novelty over D11.

Albeit that the term "elastomeric material" seems to have no precise definition, the Board finds that a person skilled in the art of toothbrushes would necessarily interpret the term "elastomeric material", as used in the patent, to imply that the material itself, and not merely the element constituted by the material, always has the characteristic of elastic return after deformation. Contrary to the appellant's argument that the respondent had given its own different definition of "elastomeric", the Board however agrees with the respondent that the elastomeric nature of the material itself is at issue, as this is indeed what is defined in claim 1. It is thus irrelevant to consider whether the strips act in an elastomeric manner or whether the strips might exhibit other behavioural characteristics which could be attributable to strips made of elastomeric materials.

The only material disclosed in D11 for the fins is expressed as being a "flexible synthetic resin" (see D11a, page 3, line 27). This expression however includes both elastomeric and non-elastomeric materials and cannot be used to anticipate the more limited expression "elastomeric material" used claim 1, since it is well established jurisprudence of the EPO Boards of Appeal that disclosure of a broad term in the prior art cannot be used to anticipate a more narrowly defined feature of a claim.

The respondent's further submission that a "squeegee" effect must also be provided by such a material is not

considered relevant by the Board, as no such effect is mentioned anywhere in the patent, nor is it evident that such an effect necessarily occurs in all elastomeric material strips which might be covered by claim 1.

The subject matter of claim 1 is thus found to be novel over the disclosure in D11 in view of this single feature.

5.2 The objective technical problem to be solved when starting from D11 in view of the elastomeric material defined in claim 1, according to the respondent, is the provision of a different cleaning effect, namely wiping.

The Board however does not regard this as being an "objective" technical problem starting from D11, since the fins in D11 also perform wiping, even if not explicitly stated. This is because no technical meaning of "wiping" is explained or implicit from the patent which could differentiate it from the action of the fins in D11. In this regard, it is notable that the shape and dimensions of the strips are not even defined in claim 1, so that any alleged differences between the strips shown in the patent drawings and the fins shown in D11 lack relevance to the issue of the objective problem to be solved; the strips of claim 1 could have exactly the same shape and dimensions as the fins in D11.

The Board therefore finds that the objective technical problem starting from D11 is essentially as submitted by the appellant, namely the selection of a suitable material for the fins of D11, allowing them to fulfil

their described function (D11a, page 3, lines 1 to 11) of both massaging the gums and removing foreign matter stuck between the teeth.

The skilled person searching for a suitable material for the fins of D11 is taught by D10 (see e.g. page 1, lines 25 to 40 and page 2, lines 68 to 71) that these two functions are performed by using elastomeric material strips in the form of rubber projecting elements (termed "bristles" in D10) affixed to the toothbrush head. The use of rubber material for the fins of D11 is therefore regarded as obvious in view of the problem to be solved.

Although it was argued by the respondent that a massaging effect was merely secondary in D11 and the hard nature of the fins to act as toothpicks would lead the skilled person away from using elastomeric materials of e.g. D10, the respondent's view is not supported by D11 since page 1 at lines 27 to 33 discloses the removal of foreign matter only as being "in addition" to avoiding injury to gums. More importantly, D10 specifically discloses that its rubber elements are indeed suitable for both the required functions stated in D11.

The respondent's further argument that D10 would teach away from using strips due to the shape of the elastomeric elements in D10 as cones/pyramids is also found to be unconvincing. Firstly, nothing in the claim defines the shape of the strips in a way which excludes strips with larger base dimensions than top end dimensions. Secondly, it is well known to a skilled person that rubber can be obtained in different

hardnesses to perform different purposes, such as where a more stable structure is required with limited dimensions. Thus the selection of the actual type of rubber for the particular circumstances of D11 does not require inventive skill.

The subject matter of claim 1 thus lacks an inventive step contrary to the requirements of Article 56 EPC and the third auxiliary request is consequently not allowable.

6. *Fourth auxiliary request*

6.1 The added feature compared to claim 1 of the third auxiliary request is a range of relative thickness to width values with a maximum at "0.2". Although D11 discloses "thin, flat" fins (see D11a page 3, lines 26 to 28) and the Figures depict an aspect ratio (at least at the base of the fins) which is seemingly in the region of the defined range of "0.2 or less", the Board concludes that no exact dimensions can be scaled from the drawings, such that this feature must be considered novel with respect to D11.

The value "0.2 or less" as claimed is however not disclosed in the patent as having any particular advantage or as solving any particular problem. In fact, the description in paragraph [0007] states that the thickness merely "can be typically 0.2 or less…than the width of the strips". This, combined with the fact that claim 1 does not define any particular shape or minimum height requirements of the strips, does not allow the conclusion to be drawn that the strips as now defined have a wiping effect in some way different to

D11 as a result of this particular aspect ratio. The appellant also did not provide any evidence that the range defined in claim 1 had any particular technical effect in conjunction with other features defined in claim 1 in a way which was not obvious in view of D11.

Thus the Board can only conclude that the selection of the relative thickness to width range of the strips in claim 1 does not distinguish the strips of the patent from the fins of D11 in a way that goes beyond being merely a choice of suitable fin dimension available to a skilled person when considering the requirement that the fins of D11 be thin and flat, in particular having regard to the very thin nature of the fins depicted in the Figures of D11.

The subject matter of claim 1 thus lacks an inventive step, contrary to the requirements of Article 56 EPC. The fourth auxiliary request is consequently not allowable.

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:

N. Maslin P. Alting van Geusau