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**Datasheet for the decision  
of 13 May 2009**

**Case Number:** T 0077/07 - 3.2.06

**Application Number:** 95925631.4

**Publication Number:** 0769920

**IPC:** A46B 7/06

**Language of the proceedings:** EN

**Title of invention:**

Resiliently flexible bristle bearing head toothbrush

**Patentee:**

THE PROCTER & GAMBLE COMPANY

**Opponent:**

Colgate-Palmolive Company

**Headword:**

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**Relevant legal provisions:**

EPC Art. 123(2)

**Relevant legal provisions (EPC 1973):**

EPC Art. 56

**Keyword:**

"Main and first auxiliary requests - lack of inventive step"  
"Second and third auxiliary requests - added subject-matter"

**Decisions cited:**

T 1000/92

**Catchword:**

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Case Number: T 0077/07 - 3.2.06

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.06  
of 13 May 2009

**Appellant:** THE PROCTER & GAMBLE COMPANY  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 13 November 2006  
revoking European patent No. 0769920 pursuant  
to Article 102(1) EPC 1973.

**Composition of the Board:**

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

## Summary of Facts and Submissions

I. This case concerns the appeal by the appellant (proprietor) against the decision of the opposition division posted on 13 November 2006 revoking European patent number 769 920.

The opposition division found *inter alia* that, starting from

D1: US 2 438 268

and combining this with the teaching of

D2: WO 92/17093,

the subject matter of claim 1 as granted lacked an inventive step.

II. With its grounds of appeal, the appellant requested that the decision under appeal be set aside and that, as a main request, the patent be maintained as granted, or alternatively that the patent be maintained in an amended form based on the claims of its first or second auxiliary requests.

III. The respondent (opponent) requested dismissal of the appeal.

IV. In its communication of 6 March 2009 subsequent to summoning the parties to oral proceedings, the Board stated with regard to the main request that it found no reason to differ from the conclusions reached by the opposition division. With regard to the first and

second auxiliary requests, the Board mentioned that with respect to Article 123(2) EPC it needed to be ascertained whether there was an unambiguous disclosure of the combination of claimed features in claim 1 of each request.

- V. With its response dated 23 April 2009, the respondent submitted further objections against the auxiliary requests *inter alia* with regard to Article 123(2) EPC.
- VI. With its response dated 27 April 2009, the appellant filed further arguments in support of its main request, and filed amended claims in the form of first, second and third auxiliary requests on which maintenance of the patent in an amended form was to be based.
- VII. Oral proceedings were held before the Board on 13 May 2009, at which both parties confirmed their respective requests.
- VIII. Claim 1 of the main request (patent as granted) reads as follows:

"A toothbrush, having an elongated handle (2) and a resiliently flexible, plastic, bristle-bearing head (1), the head having a pair of opposing faces with bristles mounted on one of said pair, the same and the opposite face having at least one linear or non-linear transverse groove (4) therein, thereby creating thin hinge(s)(5) which make the head flexible, characterised in that the groove(s) are wholly filled with an elastomeric material (8), such that when the toothbrush is in its normal stress-free configuration, the free ends of bristles lying along a longitudinal axis of the

brush form a concave profile suited to clean the buccal surface (10) of the teeth and whereby the head can bend through into a convex configuration suited to the lingual surface (12) of the teeth."

IX. Claim 1 of the first auxiliary request is the same as claim 1 of the main request with the exception that the wording "each of" is inserted immediately before the wording "the same and the opposite face having at least one linear or non-linear transverse groove (4) therein, ...".

X. Claim 1 of the second auxiliary request is the same as that of the first auxiliary request with the exception that, at the end of the claim, the following wording is added:

"the head further comprising grooves (14) running longitudinally along the head, said longitudinal grooves (14) being filled with elastomer and creating thin hinges making the head flexible to allow outer rows of bristles to flex away from inner ones."

XI. Claim 1 of the third auxiliary request reads as follows "A toothbrush, having an elongated handle (2) and a resiliently flexible, plastic, bristle-bearing head (1), the head having a pair of opposing faces with bristles mounted on one of said pair, the same and the opposite face having a plurality of linear or non-linear transverse grooves (4) therein, thereby creating thin hinges(5) which make the head flexible, characterised in that the grooves are wholly filled with an elastomeric material (8), such that when the toothbrush is in its normal stress-free configuration, the free

ends of bristles lying along a longitudinal axis of the brush form a concave profile suited to clean the buccal surface (10) of the teeth and whereby the head can bend through into a convex configuration suited to the lingual surface (12) of the teeth, and wherein the depth of the grooves increases in the direction towards the handle, making the part of the head closest to the handle (2) more flexible by virtue of having thinner hinges than the part of the head furthest from the handle."

XII. The appellant's submissions may be summarised as follows:

D2, not D1, was the closest prior art, for reasons analogous to those given in T 1000/92, Reasons 4.3. D1 was notably published almost 50 years before the filing date of the patent in suit and trends had moved away from the D1 type of brush. Also, no evidence existed that the D1 brush was commercialised, and the skilled person had no reason to select it as the closest prior art, not least since problems of its manufacture had to be solved first. D1 did not disclose a plastic head as claimed, but a composite head; it had no grooves creating thin hinges, since a groove required a U-shaped cross-section in the material having surrounding sides and a bottom whereas D1 merely had slots between connectors; D1 contained no disclosure of a head able to bend into a convex configuration suited to the lingual surface of the teeth. The problem to be solved, if starting from D1, was to provide a toothbrush head which was easy to manufacture whilst still providing good adjustability and improved resistance to cracking and damage of the hinges. A solution to this could not

be arrived at without hindsight from D1 because the slots were very large so as to allow dirt and particles to pass through the head, which would cause significant deformation of the slots in D1 on bending due to the position of the metal spring which was offset towards one face. D1 even taught against filling the slots since filling would prevent dirt and particles passing through the head, for which purpose the slots in D1 had been designed. Further, filling the slots in D1 would not function, because delamination would occur upon bending and the skilled person would not be motivated to fill the slots because the flexibility of the head was already provided in D1 by using a metal spring. The invention was advantageous since the neutral bending line was moved closer to the hinges by virtue merely of filling the grooves, thereby also solving the problem of increasing strength and durability. D2 would only be consulted in hindsight as its teaching was not in line with D1.

The first auxiliary request merely clarified that at least one groove was formed in each face, which was however already in claim 1 as granted.

The amendments made in the second auxiliary request were fully supported, not by use of exactly the same wording concerning the combination of features, but instead by the possibilities which were disclosed and applied to several variations of the invention. The disclosure on e.g. pages 4, 6, 7 and 8 as well as the claims as filed provided a basis. It was thus not necessary to define that the longitudinal grooves were completely filled for example. No generalisation had

occurred, simply a selection from a very limited number of possible features.

As regards the third auxiliary request, the combination of wholly filled transverse grooves with the other features taken from the description of the Figure 12 embodiment was unambiguously disclosed, because the description of Figure 12 stated that the grooves were filled and not merely some of the grooves; claims 6 and 9 or pages 4 and 5 for example covered wholly filled grooves on both faces. The skilled person would read the description of Figure 12 in the broader context and not as an isolated passage from the rest of the disclosure.

XIII. The respondent's arguments may be summarised as follows:

D1 was the closest prior art. The arguments of the appellant concerning which features of claim 1 were novel over D1 were based on limitations which were not in the claim; the claim did not state that the head was made entirely of plastic, and the term "groove" was very broad since when referring to the description of Figure 11 or to granted claim 4, the term "groove" was stated as extending all the way through the head, whereby no base could be present. The only difference of claim 1 over D1 was that the grooves were wholly filled with elastomeric material. According to paragraph [0022] of the patent, this feature solved the problem of providing variation of the flexibility of the head and avoiding contamination of the grooves with e.g. toothpaste deposits. The same features for solving the same problem were disclosed in D2, notably with identical wording. It was irrelevant that D1 already



disclosed that the transversely extending slots were such as to allow foreign substances to pass through them, since it was evident that if toothpaste deposits entered the slots these would remain to some extent at least on edge portions. The appellant's argument that the use of elastomeric material would not function in D1 was simply erroneous and was anyway unsubstantiated. The appellant's reliance on the problems of avoidance of delamination or cracking was not only unsupported by evidence but was also not disclosed anywhere in the patent.

The features added by way of the first auxiliary request added nothing inventive to claim 1.

As regards the second auxiliary request, the subject matter included a combination of features for which no disclosure existed, contrary to Article 123(2) EPC. For example, in as far as longitudinal grooves were disclosed in combination with transverse grooves at all, this was notably without any indication as to whether grooves were present on both faces or as to whether these were wholly or partly filled. In Figure 6, the longitudinal grooves were also shown as being on the same side of the head as the bristles and notably providing an intersecting relationship with the transverse grooves. Since the claim did not define the location of the longitudinal grooves, the intersecting nature of the grooves, let alone the filling extent of the longitudinal grooves, its subject matter was an unallowable generalisation of what had been disclosed directly and unambiguously.

As regards the third auxiliary request, this again defined a combination of features which was not disclosed in the original application, contrary to Article 123(2) EPC. Figure 12 from which the added features were allegedly taken, disclosed for example filled grooves, albeit not completely filled, on only one face. The claim however required grooves on both faces to be wholly filled. Thus no disclosure was present of the combination of grooves increasing in depth with wholly filled transverse grooves on both faces.

## **Reasons for the Decision**

### 1. *Main request*

1.1 In agreement with the conclusion reached by the opposition division, D1 is found by the Board to be the closest prior art starting point for the consideration of inventive step. D1 discloses all the features of claim 1 with the exception of the transverse grooves being wholly filled with an elastomeric material.

1.2 The appellant however contends that additional features of claim 1 are not known from D1.

As shown below, the Board concludes to the contrary.

1.2.1 In this regard, the appellant argued that D1 does not disclose a toothbrush having a plastic head, since this terminology should be interpreted as meaning a head of purely plastic material and not merely a head including plastic material. In D1, a toothbrush having a head of

both plastic and metal wire forming a spring was disclosed.

The Board however finds this argument unconvincing because claim 1 is not limited by any wording which would imply that the head is made "only" of plastic, nor do any other features of claim 1 imply that the head must be made "only" of plastic. The terminology "having ... a plastic head" does not exclude the presence of further materials in the head.

Turning to D1, the toothbrush thereof has a plastic head (see e.g. column 2, lines 18 to 22 which states that the toothbrush is "preferably (be) made by a moulding operation from plastic material which is somewhat yieldable or flexible."). The fact that a spring-like member made of resilient wire is also moulded into the toothbrush head does not alter this finding.

- 1.2.2 The appellant further argued that D1 does not disclose at least one transverse groove on the same and opposite face of the head. However, the Board finds otherwise. Whilst a groove might often be interpreted to have sides intersecting with a base of some type such as for example a U-shaped groove, the patent itself states in paragraph [0034] that "around the centre axis of the brush BB' the grooves pass right through the brush head (22) leaving a row of hinges (5) on each side of the head...". Also, in granted claim 4 it is stated that "the grooves are the full depth of the head so that two rows of approximately parallel hinges are formed". The term "grooves" in this case cannot therefore be interpreted as meaning anything more limited than a

slot between opposing faces with members forming hinges on either side thereof. Such grooves are present in the head of D1, whereby adjacent plastic sections 6 of the head are joined by moulded plastic connectors 8 forming two rows of hinges on either side of the head, in the same way as described with respect to the embodiment in Figure 11 of the patent.

1.2.3 The appellant argued further that D1 did not disclose a head which was able to bend through into a convex configuration suited to the lingual surface of the teeth. However, since the head in D1 consists of adjacent plastic sections 6 joined by connectors 8 with a wire spring 12 therethrough, the construction is such that the sections 6 can clearly be bent into a convex configuration as well. Additionally, column 2, lines 26 to 30, states that "the connectors 8 perform relative movements of the sections 6 so that in use the sections may conform to the contour of the teeth". This statement, combined with the structural description of the connections between the sections 6 leads the Board to the conclusion that the head necessarily is able to bend through into a convex configuration suited to the lingual surface of the teeth, it being noted that the degree of bending is otherwise undefined in the patent.

1.3 The appellant further disputes that D1 should be regarded as the closest prior art.

1.3.1 D1 is however considered to be the closest prior art document by the Board not only because it discloses all the features of claim 1 apart from wholly filling the transverse grooves with an elastomeric material, but because it also fulfils the underlying requirements of

the brush given in paragraphs [0012] and [0013] of the patent, at least in as far as these requirements are fulfilled by the toothbrush defined in claim 1, as also stated in the Board's communication of 6 March 2009.

D2 is not closer prior art merely because its head is formed entirely of plastic, not least because this characteristic is not a feature of the claim. Also, the head in D2 does not have a concave configuration in its stress-free configuration which is adapted, thereby, to clean the buccal surface.

1.3.2 The appellant argued that the findings made in T 1000/92, Reasons 4.3, were applicable to the present case by analogy, whereby D1 as a very old document could not be considered as the closest prior art. Even applying such criteria to the present case, the Board reaches the conclusion that D1 is indeed the most relevant prior art starting point, already partly because it fulfils the basic requirements of the brush of the patent (see preceding paragraph). The skilled person therefore has a good reason to select D1 as a basis for further development, despite its age, not least because claim 1 defines materials of the toothbrush which do not differ from those disclosed in D1. Merely because techniques for producing sprung plastics may have improved, whereby an additional metal spring is not required is thus not relevant, in particular as claim 1 does not exclude such a metal element being present anyway. Commercialisation, or not, of the toothbrush of D1 is not relevant because many different reasons may exist for non-commercialisation, it being noted that non-commercialisation or specific

reasons therefor had anyway not been proven by the appellant.

The appellant further argued that problems of manufacture of the item in D1 had to be solved first before a head of plastic could be arrived at. However, as explained *supra* the Board does not find a difference to be present between the material, nor has it been shown that moulding requirements of the head in D1 should be different to the head in the patent at least in as far as it has been defined in claim 1, nor does the Board find that any aspects of the manufacture of the article in D1 would prevent it from being further improved.

- 1.4 Starting from D1 as the closest prior art, the objective problem to be solved by the features of the grooves being wholly filled is the same as can be derived from the patent in paragraph [0022], which states:

"In this way too the flexibility and / or resilience of the head may be varied and contamination of the grooves by, for example, toothpaste deposits may be reduced or avoided completely."

In D1, the problem of foreign substances being lodged in the slot is solved by the slots being of considerable area. However, it is evident to a skilled person that slots cannot be made wider without reducing the surface area available for bristles so that widening of the slots is not unlimited. Also, the solution of wide slots in D1 cannot anyway avoid the

problem of toothpaste deposits. Thus merely because D1 provides its own solution to preventing certain foreign objects becoming lodged therein, this in no way prevents the skilled person from seeking further improvement whereby avoidance of the lodging of toothpaste deposits for example can also be improved.

- 1.5 A skilled person searching for a solution to this problem would consult D2 since this document not only concerns a toothbrush which is flexible so as to adapt to the contours of the teeth (see e.g. page 2, second paragraph), but mentions, also in identical wording, the problems which are overcome in paragraph [0022] of the opposed patent.

A skilled person searching for a solution to the problem of varying the flexibility and avoiding contamination would therefore adopt the solution of D2 and entirely fill the transverse grooves as defined in claim 1 without using inventive skill.

The subject matter of claim 1 therefore does not involve an inventive step, contrary to the requirement of Article 56 EPC 1973. The main request is therefore not allowable.

- 1.5.1 The appellant argued that a problem to be solved was to provide a head that was easier to manufacture than that in D1. However, since the head defined in claim 1 defines no structural difference compared to that in D1, apart from a complete filling of the transverse grooves with an elastomeric material, no features resulting in an easier manufacture of the head can be derived. The

problem put forward by the appellant in this regard is thus not objective.

Likewise, claim 1 provides no limits to the shape or depth of the grooves or the materials used. Thus the appellant's arguments concerning possible delamination, cracking or damage effects which might arise when filling the grooves in D1 with elastomer and bending same are found to be irrelevant, since without further limitation of claim 1, precisely the same effects would occur in the head defined therein also. In this regard the appellant argued that because the spring in D1 was offset closer to the non-bristle bearing face, that the grooves on the bristle bearing face would be required to open very wide to cause the flexing defined in claim 1. However, since the depth location of the hinges in claim 1 is left unspecified, these may also be offset to one side of the brush head. In this regard it should also be mentioned that the patent itself contains no such disclosure regarding some particular formation of the grooves, or the filling thereof, whereby these would be advantageous in any respect compared to the grooves in D1. The appellant also supplied no evidence which might support its allegations in this regard.

The appellant further argued that filling the slots in D1 would not function. However the Board is not convinced by this argument, since the claim defines no difference to the slots in D1.

The appellant's additional argument that the slots in D1 should not be filled because the spring in D1 already provided the flexibility adjustment, and



thereby a type of duplication of the function would result, is not found convincing since the hinges in claim 1 provide flexibility in the same way as the hinges formed by the connectors 8 and wire 12 in D1. Any use of an elastomer for varying the flexibility of the head defined in claim 1 of the patent would thus have entirely the same effect as in D1.

In regard to the appellant's further argument that filling of the transverse grooves allowed a neutral line of bending to move closer to the centreline of the brush, the Board can find no basis for this since claim 1 defines nothing about the location, size or shape of the transverse grooves, nor what type of material should be used to fill the grooves. Likewise, the appellant's arguments about strength and durability are equally unsupported by any feature of claim 1 when compared to the disclosure in D1.

Lastly, the appellant's argument that the teaching of D2 was not in line with D1 cannot be followed. D2 not only relates to a flexible headed brush with grooves joined by hinges, but specifically relates to the problem given in the patent which the elastomeric filling of the grooves should solve. Merely because D2 does not use a metallic spring in the head does not dissuade a skilled person from adopting the relevant teaching from D2 concerning the filling of transverse grooves with elastomeric material, since a skilled person is not required to adopt the entire details of a document when combining its teaching in one respect with another disclosure when considering an objective problem.

2. *First auxiliary request*

The amendment made by way of the first auxiliary request was stated by the appellant merely as having the purpose of clarifying that at least one groove is provided in each of the faces of the head. However, the Board has already considered this to be the case when interpreting claim 1. In terms of inventive step considerations therefore, no difference arises in the conclusions reached regarding the main request. D1 notably has grooves formed in each face, in as far as "grooves" have been defined in claim 1.

The subject matter of claim 1 of the first auxiliary request therefore also lacks inventive step contrary to Article 56 EPC 1973, for the same reasons as apply to claim 1 of the main request.

The first auxiliary request is therefore not allowable.

3. *Second auxiliary request*

The features introduced into claim 1 by way of the second auxiliary request result in a combination of features whereby the transverse grooves, which may be linear or non-linear, must also be wholly filled and be provided together with longitudinal grooves which are filled with elastomer.

The application as filed on page 4, last three paragraphs, page 5 first two paragraphs, and in claims 6 to 10 contains individual disclosures of transverse grooves, one or more grooves being wholly or partly filled, all grooves being wholly or partially filled,

linear or non-linear grooves and one or more grooves running longitudinally along the head and being parallel to the axis of the handle. However, this merely provides a very broad disclosure of individual features without disclosing the specific combination of features as now defined in claim 1. Thus, for example, whilst all the grooves may be wholly filled or partially filled, there is no direct and unambiguous disclosure that the transverse grooves may be wholly filled while the longitudinal grooves may be partially filled, which is now covered by claim 1. In as far as longitudinal grooves are disclosed in addition to transverse grooves, the only other disclosure appears to be in Figure 6, where however the longitudinal grooves and the transverse grooves are only shown as being on one side of the head and are anyway disclosed as being in a particular intersecting relationship, none of which is defined in claim 1. Thus, at least in regard to this combination of features within the claim, the Board finds that there is no disclosure of this subject matter within the content of the application as originally filed, contrary to the requirements of Article 123(2) EPC.

The appellant argued that a skilled person would read the various variations and combinations as being specific disclosures within the document, thus also disclosing the combination of features as presently claimed, not least because there were very few combinations disclosed anyway. The Board is however not convinced by this argument since not only is there a very large number of possible combinations of features within the scope of the application from which the skilled person could select, but there is no direct and

unambiguous disclosure of the particular combination of features now within the claim. It is not merely a question of whether a skilled person could have selected the claimed combination from among the possibilities regarding the position of the grooves, and the filling possibilities available, but whether the filed application provides an unambiguous disclosure of this specific combination of features.

The second auxiliary request is therefore not allowable.

4. *Third auxiliary request*

The features introduced by way of the third auxiliary request contain certain features appearing in the descriptive portion of the embodiment of Figure 12, namely that:

"the depth of the grooves increases in the direction towards the handle, making the part of the head closest to the handle (2) more flexible by virtue of having thinner hinges than the part of the head furthest from the handle."

However, whilst these features are indeed used to describe the arrangement in Figure 12, there is no disclosure of such features in combination with, for example, linear or non-linear transverse grooves wholly filled with elastomeric material. Figure 12 shows grooves 4 at least on the bristle bearing face which are filled with elastomeric material, as also confirmed by page 8, last paragraph. However, there is no unambiguous disclosure that grooves which are wholly filled with elastomeric material are also present on

the opposite face of the head. Certainly in the Figure itself, no such filling of grooves on the lower face is shown and whilst the description of Figure 12 states that "the grooves are filled with elastomer", the only grooves which are identified in the Figure, and which have reference numeral 4 as used in the text describing Figure 12, are those on the bristle-bearing face. No direct or unambiguous disclosure of the combination of features can therefore be found in the description of Figure 12. Nor does any other part of the patent disclose such a combination of features.

The appellant argued that the skilled person would however understand the embodiment of Figure 12 as being read in the context of the general description, whereby the features of wholly filling the transverse grooves would be understood to be a disclosure possibility relating also to Figure 12. The Board however is unconvinced by this argument, since Figure 12 shows a specific combination of features whereby it is arguable whether even the grooves 4 are wholly filled or only partially filled and moreover nothing in the general part of the description provides any unambiguous combination between the wholly filling of transverse grooves and the features of increased flexibility due to deeper grooves being located closer to the handle.

Therefore, at least the combination of features introduced into claim 1 together with the features of wholly filled transverse grooves on each side of the head is subject matter which is not disclosed within the content of the application as filed, contrary to the requirements of Article 123(2) EPC.

The third auxiliary request is therefore not allowable.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:

M. Patin

P. Alting van Geusau