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**Datasheet for the decision  
of 28 September 2021**

**Case Number:** T 0528/19 - 3.2.06

**Application Number:** 11005504.3

**Publication Number:** 2543277

**IPC:** A46B9/02, A61C17/22, A61C17/34

**Language of the proceedings:** EN

**Title of invention:**  
Cleaning section for an electric oral hygiene device

**Patent Proprietor:**  
Braun GmbH

**Opponent:**  
Trisa Holding AG

**Headword:**

**Relevant legal provisions:**  
EPC Art. 54, 84, 56, 69  
RPBA 2020 Art. 13, 12(4)

**Keyword:**

Amendment to appeal case - withdrawal of main and several  
auxiliary requests - no amendment of a party's case  
Novelty - main request and auxiliary request 1 (no)  
Inventive step - auxiliary requests 3-6 (no) - bonus effect  
(yes) - effect not made credible within the whole scope of  
claim  
Claims - clarity - auxiliary request 2 (no)

**Decisions cited:**

T 0247/20

**Catchword:**



**Beschwerdekammern**

**Boards of Appeal**

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Case Number: T 0528/19 - 3.2.06

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.06**  
**of 28 September 2021**

**Appellant:** Braun GmbH  
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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
18 December 2018 concerning maintenance of the  
European Patent No. 2543277 in amended form.**

**Composition of the Board:**

**Chairman** M. Harrison  
**Members:** M. Dorfstätter  
E. Kossonakou

## **Summary of Facts and Submissions**

- I. Appeals were filed by the opponent and the patent proprietor against the interlocutory decision of the opposition division in which it found that European patent No. 2 543 277 met the requirements of the EPC. As both parties have appealed, they will be referred to in the following as "opponent" and "proprietor".
- II. The following documents are relevant for the present decision:
- E2 US 8 166 601 B2  
E4 EP 1 339 346 B1  
E11 US 6 308 367 B1
- III. The opponent requested that the decision under appeal be set aside and the patent be revoked.
- IV. The proprietor requested that the decision under appeal be set aside and the patent be maintained on the basis of a main or auxiliary request as filed with its grounds of appeal.
- V. With its reply to the proprietor's grounds of appeal, the opponent further requested to dismiss the proprietor's appeal.
- VI. With its reply to the opponent's grounds of appeal, the proprietor maintained its main and auxiliary request (from then on denoted auxiliary request 1) and further submitted auxiliary requests 2 to 18.

- VII. The Board issued a summons to oral proceedings and a subsequent communication containing its provisional opinion, in which it indicated *inter alia* that the subject-matter of the first alternative of claim 1 of the main request (which was at that time still auxiliary request 1) lacked novelty over several documents including E2. The Board also noted that the proprietor had not dealt with the objections and arguments with respect to auxiliary requests 2 to 18 (as then on file) already presented by the opponent in its grounds of appeal, and that these attacks appeared at least *prima facie* persuasive.
- VIII. With its letter of 10 September 2021, the proprietor withdrew its main request and auxiliary requests 4 to 10 and 14 to 17 and resubmitted the remaining requests in the same order but renumbered as the main request and auxiliary requests 1 to 6.
- IX. With the parties' consent, oral proceedings by videoconference were held before the Board on 28 September 2021, during which the proprietor withdrew its appeal.
- X. The parties' final requests were as follows:
- The opponent requested that the decision under appeal be set aside and the patent be revoked.
- The patent proprietor requested that the opponent's appeal be dismissed (main request, corresponding to auxiliary request 1 as submitted with the statement setting out the grounds of appeal) or, alternatively, that the patent be maintained on the basis of one of auxiliary requests 1 to 6, filed with the letter of 10 September 2021 and corresponding to auxiliary

requests 2, 3, 11 to 13 and 18 filed with the reply to the opponent's grounds of appeal.

XI. Claim 1 of the main request reads as follows (including the feature-by-feature analysis adopted in opposition proceedings and taken over on appeal):

- M1.1 "A cleaning section (20) for an electric oral hygiene device (1), comprising:
- M1.2 at least a first carrier (201; 201C; 201D) mounted for driven rotation or oscillating rotation around a rotation axis (203);
- M1.3 at least a plurality of first cleaning elements (110; 210; 220) mounted on a mounting surface (202) of the first carrier
- M1.4 with their bases (1101) arranged on the vertices of a first star-shaped polygon around the rotation axis,
- M1.5 where the whole interior of the first star-shaped polygon is visible from the point where the rotation axis crosses the mounting surface of the first carrier;
- M1.6 wherein all of the first cleaning elements are circumferentially inclined in the same circumferential direction with respect to the rotation axis
- M1.7 such that the free end (1102) of each of the first cleaning elements is farther away in the circumferential direction than the base of the respective first cleaning element; and

M1.8            wherein at least one cleaning element property selected from the group consisting of:  
length of the cleaning element between base and free end, cross sectional area of the cleaning element, radial inclination angle, and circumferential inclination angle alternates:

[1<sup>st</sup> alternative] between adjacent first cleaning elements such that there is a periodical repetition of the cleaning element property with a period of two cleaning elements; or

[2<sup>nd</sup> alternative] between adjacent clusters of first cleaning elements such that there is a periodical repetition of the cleaning element property with a period of two clusters."

XII.            Claim 1 of auxiliary request 1 corresponds to claim 1 of the main request but with the second alternative deleted.

XIII.           Claim 1 of auxiliary request 2 corresponds to claim 1 of the main request but with the term "adjacent" being substituted by the term "adjoining" in both alternatives.

XIV.            Claim 1 of auxiliary request 3 reads as follows (differences over the main request indicated by the Board, added features being underlined, deletions being struck through):

M1.1            "A cleaning section (20) for an electric oral hygiene device (1), comprising:

- M1.2 at least a first carrier (201; 201C; 201D) mounted for driven rotation or oscillating rotation around a rotation axis (203);
- M1.3 ~~at least~~ a plurality of first cleaning elements (110; 210; 220) mounted on a mounting surface (202) of the first carrier
- M1.4 with their bases (1101) arranged on the vertices of a first star-shaped polygon around the rotation axis,
- M1.5 where the whole interior of the first star-shaped polygon is visible from the point where the rotation axis crosses the mounting surface of the first carrier;
- M1.6 wherein all of the first cleaning elements are circumferentially inclined in the same circumferential direction with respect to the rotation axis
- M1.7 such that the free end (1102) of each of the first cleaning elements is farther away in the circumferential direction than the base of the respective first cleaning element; and
- M1.8 wherein at least one cleaning element property ~~selected from the group consisting of:~~  
~~length of the cleaning element between base and free end, cross sectional area of the cleaning element, radial inclination angle, and circumferential inclination angle~~ including height, as measured between the mounting surface and a free end of the cleaning element in rotation axis direction, alternates:



[1<sup>st</sup> alternative] between adjacent first cleaning elements such that there is a periodical repetition of the cleaning element property with a period of two cleaning elements; or

[2<sup>nd</sup> alternative] between ~~adjacent~~ clusters of first cleaning elements such that there is a periodical repetition of the cleaning element property with a period of two clusters,

M1.9 wherein the cleaning elements have either a first said height (h1) or second said height (h2), wherein the distance between the two height values lies in a range of between about 0.5mm and about 2.0mm,

M1.11 wherein a plurality of second cleaning elements (220; 210) is mounted on the first carrier with their bases arranged on the vertices of a second star-shaped polygon around the rotation axis, where the whole interior of the second star-shaped polygon is visible from the point where the rotation axis crosses the mounting surface of the first carrier, the second star-shaped polygon being disposed inside of the first star-shaped polygon,

M1.12 wherein all of the second cleaning elements are circumferentially inclined in the same circumferential direction with respect to the rotation axis, which circumferential direction is opposed to the circumferential direction in which all the first cleaning elements are inclined."

XV. Claim 1 of auxiliary request 4 corresponds to claim 1 of auxiliary request 3, but with feature M1.8 reading

as follows, and with feature M1.9 substituted by feature M1.10 as follows:

M1.8            "~~wherein at least one cleaning element property selected from the group consisting of:~~  
~~length of the cleaning element between base and free end, cross sectional area of the cleaning element, radial inclination angle, and circumferential inclination angle~~ including cross-sectional shape,  
alternates:

[1<sup>st</sup> alternative] between adjacent first cleaning elements such that there is a periodical repetition of the cleaning element property with a period of two cleaning elements; or

[2<sup>nd</sup> alternative] between ~~adjacent~~ clusters of first cleaning elements such that there is a periodical repetition of the cleaning element property with a period of two clusters,

M1.10            wherein the cross-sectional shape of the first cleaning elements alternate between an elongate shape such as an essentially rectangular shape and a more compact shape such as an essentially square shape or an essentially trapezoidal shape,"

XVI.            Claim 1 of auxiliary request 5 corresponds to claim 1 of auxiliary request 3, but including both features M1.9 (as introduced with auxiliary request 3) and M1.10 (as introduced with auxiliary request 4), and with feature M1.8 reading as follows:

M1.8            "~~wherein at least one cleaning element property selected from the group consisting of:~~  
~~length of the cleaning element between base and free end, cross sectional area of the cleaning element, radial inclination angle, and circumferential inclination angle~~ including cross-sectional shape and height, as measured between the mounting surface and a free end of the cleaning element in rotation axis direction,  
alternates:  
[1<sup>st</sup> alternative] between adjacent first cleaning elements such that there is a periodical repetition of the cleaning element property with a period of two cleaning elements; or  
[2<sup>nd</sup> alternative] between ~~adjacent~~ clusters of first cleaning elements such that there is a periodical repetition of the cleaning element property with a period of two clusters,"

XVII.    Claim 1 of auxiliary request 6 corresponds to claim 1 of auxiliary request 1, but with feature M1.3 reading as follows:

M1.3            "~~at least a plurality of sixteen~~ sixteen first cleaning elements (110; 210; 220) mounted on a mounting surface (202) of the first carrier"

XVIII. The opponent's arguments may be summarised as follows:

Admittance

The requests filed with letter of 10 September 2021 were not convergent and should thus not be admitted into the proceedings.

Main request

The subject-matter of claim 1 lacked novelty vis-à-vis E2. The term "adjacent" referred to the nearest among the group of the previously defined first cleaning elements, but did not exclude the presence of other cleaning elements between two adjacent first cleaning elements. In a given toothbrush-head, not all tufts of bristles needed to be interpreted as "first cleaning elements".

Auxiliary request 1

The subject-matter of claim 1 did not differ from the main request and thus lacked novelty vis-à-vis E2.

Auxiliary request 2

Claim 1 was not clear. It was not clear in what respect the subject-matter was different in comparison to that defined in the main request. The terms 'adjacent' and 'adjoining' were used interchangeably in the description.

Auxiliary requests 3 to 5

The subject-matter of claim 1 did not involve an inventive step. Starting from the embodiment of Figure 15 in E4, the skilled person would apply tufts with alternating heights and/or with a cross-sectional shape that alternated between an elongate and a more compact shape as shown in Figure 15 of E11, in order to improve interproximal cleaning. The difference in length of the

tufts in E11 had the same function as the one defined in claim 1. No special effect was present in the claimed range.

#### Auxiliary request 6

The subject-matter of claim 1 did also not involve an inventive step. The definition that there were sixteen first cleaning elements did not exclude the presence of eighteen, as provided in E4. Furthermore, the difference from eighteen to sixteen had no technical effect.

XIX. The proprietor's arguments may be summarised as follows:

#### Admittance

The requests filed with letter of 10 September 2021 simply removed previous intermediate requests and simplified the case.

#### Main request

The subject matter of claim 1 was novel over E2. The term "adjacent" had to be read in its normal meaning of immediately preceding or following, i.e. without intervening structures. All of the cleaning elements within a ring were to be regarded as first cleaning elements, as this was what was shown in the patent. On a given toothbrush-head, the first cleaning elements could not be arbitrarily selected.

#### Auxiliary request 1

The subject-matter of claim 1 was novel for the same reasons as for the main request.

Auxiliary request 2

Claim 1 was clear. The terms 'adjoining' and 'adjacent' were both used in the patent, as both terms applied for the tufts in the embodiment. 'Adjoining' was more limited than 'adjacent' in that it required that the first cleaning elements were physically next to each other without the interposition of other cleaning elements.

Auxiliary requests 3 to 5

The subject-matter of claim 1 involved an inventive step. The skilled person would not look in the field of manual toothbrushes when trying to improve interproximal cleaning of an electric toothbrush. The linear arrangement of E11 could not easily be transferred to the cleaning elements of E4 which were arranged along the circumference of a rotating or oscillating head. The toothbrush of E11 was intended for an up-and-down movement and was further silent on how the stated effect of improved interproximal cleaning was achieved, such that the skilled person was not prompted to arrange the tufts in an alternating pattern. E11 did not show a height difference lying in the claimed range of 0.5 to 2.0mm. Furthermore, by the alternating arrangement of tilted tufts with different height or shape on a rotating or oscillating toothbrush head, the further effect was achieved that the longer tufts entered the interproximal areas along their vertical direction, thereby further improving the interproximal cleaning.

Auxiliary request 6

The subject-matter of claim 1 involved an inventive step for the same reasons as for the main request.

## **Reasons for the Decision**

### 1. *Admittance*

With letter of 10 September 2021 the proprietor withdrew the main request and auxiliary requests 4 to 10 and 14 to 17 as filed with the reply to the opponent's statement of the grounds of appeal. With the same date the proprietor re-submitted the remaining requests as a new main request and auxiliary requests 1 to 6. The "new" main request and auxiliary requests 1 to 6 are identical to former auxiliary requests 1, 2, 3, 11, 12, 13 and 18. Thus, neither the sequential order nor the content of these particular requests was changed and no other requests were added or substantively altered. Such course of action merely reduces the issues to be discussed and does not constitute an amendment of the proprietor's appeal case; in other words it is merely a limitation thereof. Article 13 RPBA 2020 is entitled "Amendment to a party's appeal case", and in order for the Board to exercise its discretion in the way foreseen in that Article, the Board, as a first step, has to establish whether a change to the party's appeal case has occurred (see e.g. T247/20, Reasons 1.3). As stated above, this is not the case here. The requests were as such already part of the party's appeal case. It follows that Article 13 RPBA 2020 does not apply.

Furthermore, since the requests were resubmitted in the same sequential order, if any lack of convergence exists among them, this is the same as in the requests initially presented. Any lack of convergence is thus of no relevance, as this is a criterion for use when considering procedural economy which falls under

Article 13 RPBA 2020. There is therefore also no cause for the Board to exclude these requests under Article 12(4) RPBA 2017.

2. *Main request - novelty*

The subject-matter of claim 1 lacks novelty vis-à-vis E2 (Article 54 EPC).

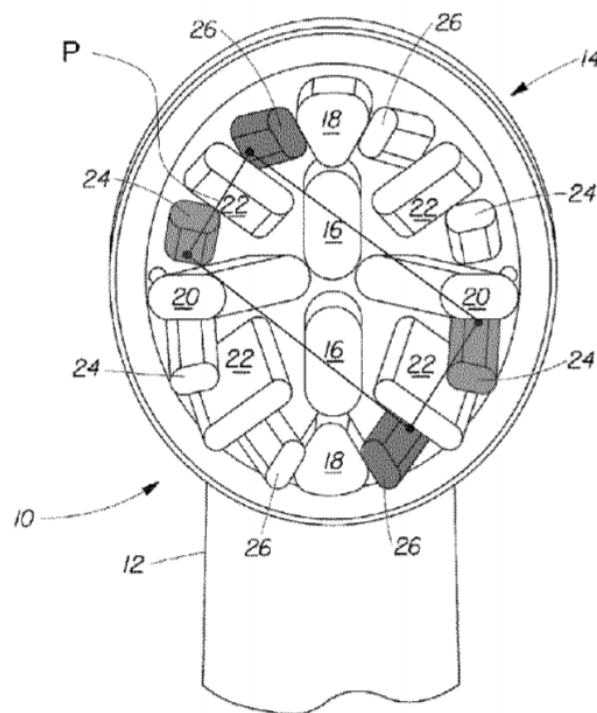


Fig. 3

Figure 3 of E2 (with polygon 'P'  
as added by the opponent)

2.1 E2 discloses all features of claim 1 as follows (see Fig. 3 where the cleaning elements considered as forming 'first cleaning elements' are as indicated by the opponent in its grounds of appeal and reproduced above; see also the explanations in brackets below):



A cleaning section (10) for an electric oral hygiene device (electric toothbrush, column 1, line 15), comprising:

at least a first carrier (head 14) mounted for oscillating rotation around a rotation axis (through the centre of the head 14);

at least a plurality of first cleaning elements (24; 26; as indicated in two different shades of grey in the figure above) mounted on a mounting surface (support member 34) of the first carrier

with their bases arranged on the vertices of a first star-shaped polygon (P in the drawing above) around the rotation axis,

where the whole interior of the first star-shaped polygon (P) is visible from the point where the rotation axis crosses the mounting surface of the first carrier;

wherein all of the first cleaning elements (24; 26) are circumferentially inclined in the same circumferential direction (here: in a clockwise direction when seen from above) with respect to the rotation axis such that the free end of each of the first cleaning elements is farther away in the circumferential direction (here: in a clockwise direction when seen from above) than the base of the respective first cleaning element; and

wherein at least one cleaning element property selected from the group consisting of:

length of the cleaning element between base and free end, cross sectional area of the cleaning element, radial inclination angle, and circumferential inclination angle (here: the length - see also section 2.2 below) alternates:

between adjacent first cleaning elements such that there is a periodical repetition of the cleaning

element property with a period of two cleaning elements (features of the first alternative in M1.8).

2.2 It is noted that E2 (see column 3, line 46 and 54, respectively) defines the height of the tufts 24 to be 7.62mm and the height of the tufts 26 to be 8.4mm, and not their length. However, with both tufts being inclined in the same angle of 12 degrees (see lines 50 and 58, respectively), the length necessarily varies accordingly to their height. This was also not contested.

2.3 In feature M1.3 "at least a plurality of first cleaning elements" is introduced in claim 1. The claim continues with defining several characteristics of these first cleaning elements in features M1.3 to M1.7. The parties disagreed whether the formulation "between adjacent first cleaning elements" in feature M1.8 referred to the first cleaning elements as already defined in features M1.3 to M1.7, or whether it defined further characteristics of first cleaning elements. In other words, it had to be assessed whether feature M1.8 gave a further definition of what constitutes a "first cleaning element" and was thus applicable to all first cleaning elements, or as to whether it referred to only some of the first cleaning elements as a subgroup among the first cleaning elements already previously defined.

The Board concluded that the latter interpretation is to be adopted. Reading it from top to bottom, claim 1 has a certain structure. Each new feature is introduced by a separate statement. Whenever reference is made to a feature introduced in one of the preceding features, the definite article "the" is used:

For the first time, feature M1.3 introduces the plurality of first cleaning elements. Feature M1.4 defines that "their bases", i.e. the bases of the first cleaning elements, are arranged at particular positions and introduces a "first star-shaped polygon". Feature M1.5 defines that "the whole interior of the first star-shaped polygon is visible" from a particular point. Feature M1.6 refers to "all of the first cleaning elements" and defines that they are circumferentially inclined in the same direction. Feature M1.7 refers to "each of the first cleaning elements" and defines that the free end thereof is farther away than the base.

Had this system been applied to feature M1.8 and had the claim had the meaning attributed to it by the proprietor, it could be expected that the adjacency of the first cleaning elements were introduced in a similar manner, e.g. by a definition that "all of the first cleaning elements are adjacent to each other". In its actual formulation however the claim perfectly supports the opponent's understanding that "between adjacent first cleaning elements" does not introduce a further characteristic of the first cleaning elements, but refers to those first cleaning elements that are nearest to each other on the first star-shaped polygon.

2.4 The proprietor's argument that all of the cleaning elements within a ring were to be regarded as constituents of the plurality of first cleaning elements, as this was what was shown in the patent, is not accepted. According to long-standing case law, if a claim is clear or can be interpreted without referring to the description or drawings, then it is not appropriate to refer to Article 69 EPC and to read further restrictions into the claim that are not

explicitly defined therein (see Case Law of the Boards of Appeal, 9th edition 2019, II.A.6.3.4).

2.5 As regards the interpretation of "adjacent", the Board accepts that the term, in its normal meaning (and as argued by the proprietor), is to be understood as "immediately preceding or following". If two cleaning elements are "adjacent", this will also exclude that other cleaning elements are arranged between them. Claim 1 however does not refer to "adjacent cleaning elements" but to "adjacent first cleaning elements" (emphasis by the Board). With the same understanding, this means that no other first cleaning element is arranged between two adjacent first cleaning elements. The arrangement of cleaning elements of another kind (i.e. other than "first") is, however, not excluded by this definition.

2.6 The Board can concur with the proprietor that, in the assessment of novelty vis-à-vis a piece of prior art, the first cleaning elements should not be arbitrarily chosen. However, claim 1 is not limited in a way that all tufts on the circumference of a toothbrush-head form 'first cleaning elements'. It is sufficient if a group of tufts can be determined that establish 'tufts of a kind' (as also referred to in the Board's communication, see item 4.3). It is thus to be assessed which are the necessary characteristics that qualify a cleaning element as a 'first' cleaning element.

The proprietor's argument that the entirety of claim 1 defined which cleaning elements constituted the 'first cleaning elements', is not accepted. As explained above, feature M1.8 does not define a further characteristic of all first cleaning elements. A 'first cleaning element' has thus (at least) those

characteristics as defined in the features preceding feature M1.8.

Any cleaning element fulfilling these features is one 'of this kind' and can thus be considered a 'first cleaning element' in the sense of claim 1. Selecting several cleaning elements having similar characteristics, among which are those defined in features M1.1 to M1.7, is thus not considered arbitrary, but in line with what is defined in claim 1.

Applied to the embodiment shown in Fig. 3 of E2, this means that tufts 24 and 26 form cleaning elements 'of a kind'. They have the same inclination angle, are tilted into the same circumferential direction, and have the same cross-sectional dimensions both in length and width. This 'kind' is also in line with the definitions in features M1.1 to M1.7 of claim 1. Tufts 24 and 26 differ from all remaining tufts on the outer circumference in either their inclination direction or their cross-sectional dimensions, such that considering them as 'first cleaning elements' is not based on an arbitrary selection.

2.7 The Board thus concludes that E2 deprives the subject-matter of claim 1 of novelty in the way as set out above. The main request is thus not allowable.

3. *Auxiliary request 1*

Since the first alternative of feature M1.8 is unamended compared to the main request, the subject-matter of claim 1 of auxiliary request 1 lacks novelty over E2 for the same reasons as for the main request (Article 54 EPC). Auxiliary request 1 is thus also not allowable.

4. *Auxiliary request 2*

Claim 1 is not clear (Article 84 EPC). In particular, it is not clear what the restrictions should be that are introduced by the term 'adjoining' in the context of the first cleaning elements.

4.1 The terms 'adjacent' and 'adjoining' are both used in the description. Whilst paragraph [0013] refers to adjoining first cleaning elements, between which a cleaning element property alternates, the term does not appear in any other part of the patent. Even in the description of the embodiment of Fig. 8, which paragraph [0013] refers to when stating that the concept of adjoining clusters is explained in more detail, the term 'adjacent' is used (see paragraph [0041]).

4.2 The proprietor argued that the terms 'adjoining' and 'adjacent' were both used in the patent, as both terms applied for the tufts in the embodiment of Figure 8. This is however only one possible explanation as to why these terms differ. The Board does not accept that the term 'adjoining' is clearly more limited than 'adjacent'. By using the terms without elaborating on a different meaning, the reader cannot but receive the impression that they are simply used interchangeably.

4.3 But even if it were accepted that the meaning of 'adjoining' was different and also more limited than that of 'adjacent', it would still not be clear in what respect they would differ. In particular, the proprietor's argument that 'adjoining' required the first cleaning elements to be physically next to each other without the interposition of other cleaning

elements, is not accepted. The Board cannot determine a difference over the type of proximity implied by 'adjacent' as formulated in the main request. As is the case there, any such proximity only needs to be present between two first cleaning elements, which does not exclude other elements being arranged between them.

4.4 The proprietor argued that "adjoining" could also be understood in the sense that the material of the carrier base between adjacent first cleaning elements acted to join them together directly without any intervening cleaning elements. However, the Board does not concur with this interpretation because, firstly, the base is continuous and forms a continuous joining material from one first cleaning element to the next even if there are intervening cleaning elements present. Secondly there is no such explanation of the term "adjoining" in this way found in the patent, nor has it been shown that this is the well-established meaning of "adjoining" in this particular technical context. Merely because e.g. Figure 8 of the patent exhibits the relationship in the manner explained by the proprietor, does not make it a definition with a clear meaning in structural terms.

4.5 Therefore, although the Board can accept that the changes made to claim 1 constitute an amendment and indeed an attempt to overcome the issue of lacking novelty, this amendment has not resulted in a clearly perceivable structural relationship of the first cleaning elements to one another, such that the structural implications of the term "adjoining" in the context of claim 1 are not clear, thereby rendering the claim as a whole unclear. Auxiliary request 2 is thus also not allowable.

5. *Auxiliary request 3*

The subject-matter of claim 1 does not involve an inventive step (Article 56 EPC). Starting from the embodiment in Figure 15 of E4, and given the problem to be solved of improving interproximal cleaning, the skilled person would apply the arrangement of tufts of alternating lengths known from the manual toothbrush described in E11, and would thereby arrive at the claimed subject-matter without the need of inventive skill.

5.1 The embodiment depicted in Figure 15 of E4 (of which Fig. 15C is reproduced below for ease of reference) shows a cleaning section for an electric toothbrush comprising an outer polygon formed by eighteen tufts 24 that are inclined in the same circumferential direction and are all adjacent to each other. All of these tufts represent 'first cleaning elements' in the sense of claim 1. It also shows an inner polygon formed by tufts 23 that are inclined with respect to each other in the same direction but in the opposite circumferential direction to those of the outer polygon. Figure 15 of E4 thus shows all features M1.1 to M1.7 and additionally features M1.11 and M1.12. This was not contested by the parties.



Fig.15C.

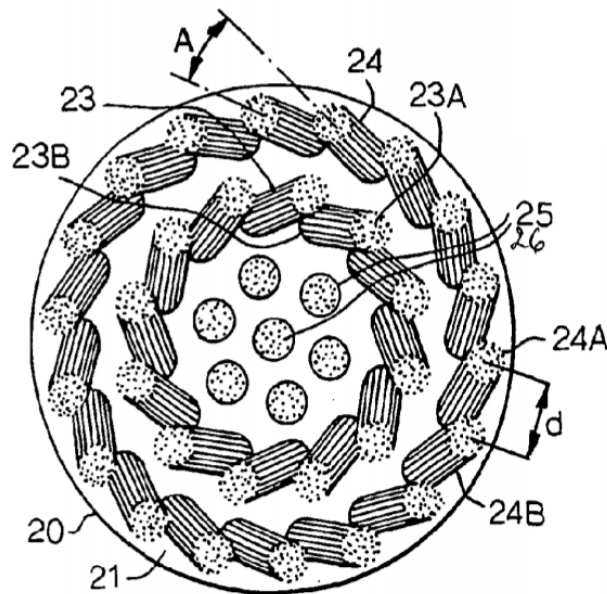


Figure 15C of E4

5.2 The tufts on the outer polygon (with tufts 24) are all of the same length and arranged with the same inclination. The subject-matter of claim 1 of auxiliary request 3 thus differs from the embodiment in Figure 15 of E4

- in that at least one cleaning element property including height, as measured between the mounting surface and a free end of the cleaning element in rotation axis direction, alternates (feature M1.8), and
- in that the cleaning elements have either a first height or a second height, wherein the distance between the two height values lies in a range of between about 0.5mm and about 2.0mm (feature M1.9).

The parties agreed that these differences resulted in an improved cleaning in the gaps between the teeth.

- 5.3 The objective technical problem when starting from E4 is thus to improve the interproximal cleaning.
- 5.4 The proprietor argued that the skilled person, when searching for ways to solve this problem, would not look into the field of manual toothbrushes. It further argued that manual toothbrushes were an older technical field and that the technology of electrical toothbrushes had once emerged therefrom but then developed separately.

The Board, however, finds differently. When further developing the cleaning properties of an electric toothbrush head, the skilled person is evidently aware of the state of the art for manual toothbrushes. Even E4 itself first considers the prior art of bristles in both electrical and manual toothbrushes (see e.g. paragraphs [0004] and [0005]) when looking to solve a problem to interproximal cleaning in an electric toothbrush. The skilled person is also well aware that although cleaning teeth with manual brushes has been known for a long time, development is still ongoing. It is also noted that the filing dates of E4 and E11 are not far apart (only about 2 years), such that it cannot be concluded that one technology had replaced the other. The coexistence of manual and electrical cleaning devices continues to date, as there is still a need for devices that are not dependent on an electrical supply. There is thus good reason that bristle technology for manual cleaning devices contributes in the technological advance in both areas. Having all this in mind, the skilled person is aware that a potential solution to the objective technical problem to improve the interproximal cleaning might be found in this older, but certainly not obsolete, part of the field of technology of toothbrushes. They would

therefore not ignore the prior art in that part of the field, including E11.

5.5 The toothbrush head of the embodiment shown in Figure 7 of E11 (reproduced below) comprises two lateral rows of tufts with alternating height and cross-sectional shape. When the toothbrush is moved in a reciprocating motion and in a direction parallel to the toothbrush handle, the longer tufts will, as they are inclined in a forward direction, raise when the toothbrush is pushed forward. They will thereby enter further into the interproximal areas of the teeth.

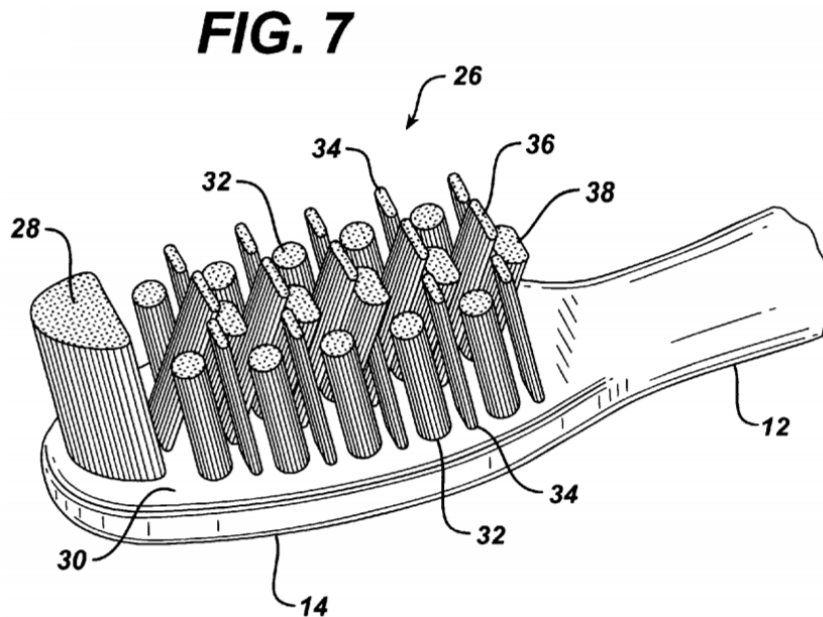


Figure 7 of E11

The proprietor's argument that the toothbrush of E11 was intended to be used with an up-and-down movement is not accepted. The Board is aware that certain dentists recommend using toothbrushes in such a way. This is however far from the only way in which manual toothbrushes are used in practice; it is inconceivable that the toothbrush designer is not also well aware of this. Furthermore, E11 does not suggest in any way such

a use. On the contrary, an up-and-down movement is not borne out by the statement in the description at column 2, lines 12-17, stating that "[p]roviding angled tufts which vary in their length, cross-section, color, materials or combinations thereof, allows such angled tufts to clean more than one part of the teeth. For example, one type of angled tuft will clean the buccal face of teeth while another type of angled tuft will clean the interproximal areas of the teeth." The Board considers it as implicit that the different types of tufts need to be moved over both these types of areas so that this can be accomplished. Moving the toothbrush merely up and down would necessitate that the longer tufts all align with the interproximal areas, something which can hardly be achieved. Also, cleaning the bite surfaces of the teeth is hardly possible with such a motion.

The marginal tufts in E11 are thus considered to be arranged in a way to be moved in a horizontal, reciprocating motion in a direction into which they are inclined. They can hence be regarded as equivalent to the 'first cleaning elements' in the contested patent as well as the tufts on the outer circumferential ring in the Figure 15 embodiment of E4, which are all driven in a rotational or oscillating movement and are inclined in the direction of this movement.

5.6 The proprietor's argument that E11 was silent on how the effect of improved interproximal cleaning was achieved, such that the skilled person was not prompted to arrange the tufts in an alternating pattern, is not persuasive. A skilled reader would understand the passage in column 2 referred to above in a way that there is a link between the particular alternating pattern and shape of the tufts and the improved

cleaning of the interproximal areas of the teeth. Even if there is no explicit explanation as to why this link exists and how it actually works, the mere understanding that the effect is caused by such an arrangement constitutes a hint for the skilled person to apply it in order to solve the problem posed. Furthermore, the Board concludes that a skilled person can deduce from the drawing alone, at least to a certain degree, how the inclined tufts with alternating height and shape will behave in use.

They would also understand that the large tuft 28 at the tip of the toothbrush head can serve no useful purpose in a rotational or oscillating arrangement.

- 5.7 The further argument of the proprietor that the linear arrangement of E11 could not readily be transferred to the cleaning elements of E4 is also not accepted.

As set out above, the skilled person would recognise the working principle of the inclined marginal tufts in E11 from the drawings alone. Once this principle has been understood, there is no technical difficulty to apply the linear arrangement (as it is foreseen for a translational movement) on a toothbrush head for rotational or reciprocating movement. A skilled person would understand that the tufts need to be arranged one after the other and inclined in the direction of movement. This is also what the Figure 15 embodiment in E4 (i.e. the starting point from which the problem to be solved is derived when considering the features of claim 1) already shows and describes (see also paragraph [0077]).

Additionally, the presence of the large tuft 28 at the tip of the toothbrush head in E11 does not impede the

skilled person from making use of their understanding of how the marginal tufts work, since this serves a different and largely independent purpose.

- 5.8 The proprietor's further argument in respect of feature M1.9 that an inventive step was to be acknowledged since E11 did not show a height difference lying in the claimed range of 0.5 to 2.0mm is not persuasive. E11 (see column 3, second and third full paragraph) gives length values for the tufts of 0.350 and 0.440 inches. The difference in length ('distance' in the language of feature M1.9) is thus 0.09 inches, which corresponds to roughly 2.3mm. This was also not contested.

For a distinguishing feature to be considered to contribute to inventive step, it has to be shown that a technical effect can be attributed to the presence of this feature. In the present case it has thus to be ascertained as to whether a height difference lying within the range of 0.5 to 2.0mm achieves a technical effect that would not be achieved with tufts with a length difference of 2.3mm or just less (as used in E11). Such effect must be present over the whole range claimed. No such effect is however stated in the patent and none is apparent to the Board.

On the one hand, the claimed range starts at 0.5mm. As argued by the opponent, this can be regarded to be not much more than the typical length tolerances to be expected for the tufts of a commercially available toothbrush, i.e. one that can be economically produced on a large scale. This was also not contested by the proprietor. On the other hand, the claimed range extends very close to the difference in length value of 2.3mm given in E11.

The proprietor did not submit any arguments as to which effect is achieved by such a length difference of only the usual tolerances. Nor did it present arguments as to what difference it makes that the difference in height is 2.0mm instead of 2.3mm in E11. The Board also cannot see a technical effect of this feature either and thus concludes that the claimed range of length differences does not result in an effect which contributes to an inventive step.

5.9 The proprietor argued that by the alternating arrangement of tilted tufts with different height or shape on a rotating or oscillating toothbrush head, as opposed to a manually moved toothbrush, the further effect was achieved that the longer tufts entered the interproximal areas along their vertical direction, thereby further improving the interproximal cleaning. This is however considered by the Board as a mere bonus effect, which is inevitably achieved once the arrangement of E11 is transferred to a rotating or oscillating electric toothbrush head. No inventive step is involved in achieving the inevitable.

5.10 The Board thus concludes that the skilled person would apply the alternating arrangement and shape of the marginal tufts shown in Figure 7 of E11 to the tufts on the outer circumference in the Figure 15 embodiment of E4, without taking over the large tuft 28 at the tip, and with a length difference of the tufts of about 2.3mm, thereby arriving at a cleaning section for an electric oral hygiene device which differs from the first alternative of claim 1 merely in that the length difference lies about 0.3mm outside the claimed range. As no technical effect is attributable to this remaining difference, the subject-matter of claim 1 does not involve an inventive step (Article 56 EPC).

5.11 Auxiliary request 3 is therefore not allowable.

6. *Auxiliary requests 4 and 5*

By the same combination of the Figure 15 embodiment of E4 with the arrangement and shape of tufts shown in figure 7 of E11, the skilled person would also take over the different cross-sectional shapes of the tufts, alternating between an essentially rectangular shape and a more compact shape, and apply them to the circumferential tufts in the Figure 15 embodiment of E4. Thereby, they would arrive at a cleaning section according to both of auxiliary requests 4 and 5.

The proprietor elected not to submit any further arguments than for auxiliary request 3 in this regard.

The Board thus concludes that the subject-matter of claim 1 of auxiliary requests 4 and 5 does not involve an inventive step (Article 56 EPC). These requests are therefore also not allowable.

7. *Auxiliary request 6*

Claim 1 of auxiliary request 6 defines a number of sixteen first cleaning elements. As also argued by the opponent, the Figure 15 embodiment in E4, with its eighteen tufts along the outer circumference of the toothbrush head, also shows sixteen cleaning elements, as sixteen is comprised in eighteen. The amendment cannot thus lead to a different conclusion in terms of inventive step when starting from E4 than for the other requests.



In its submission dated 10 September 2021 the proprietor referred to its arguments with regard to inventive step in view of auxiliary request 6 to paragraphs 7.12 to 7.18 of its reply to the grounds of appeal of the opponent (see last paragraph of the letter of 10 September 2021). In that section however, no specific arguments in view of the number of cleaning elements are presented. The other arguments have already been dealt with in the discussion of inventive step with regard to auxiliary requests 3 to 5. The reasoning why they are not convincing applies *mutatis mutandis* to auxiliary request 6.

In the oral proceedings the proprietor did not submit any further argument but relied on its written case.

The Board thus concludes that the skilled person would, when applying the teaching of E11 to the Figure 15 embodiment of E4, also contemplate applying a number of sixteen cleaning elements (or more).

The subject matter of claim 1 of auxiliary request 6 therefore does not involve an inventive step (Article 56 EPC), such that auxiliary request 6 is also 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:



D. Grundner

M. Harrison

Decision electronically authenticated