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**Datasheet for the decision
of 11 July 2013**

Case Number: T 0382/11 - 3.2.08

Application Number: 04801524.2

Publication Number: 1696818

IPC: A61C 17/32, H02P 7/00

Language of the proceedings: EN

Title of invention:

Changing amplitude of movement by changing the drive frequency
of a toothbrush brushhead

Patent Proprietor:

Koninklijke Philips Electronics N.V.

Opponent:

Braun GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 56, 100(a)(b)

Keyword:

"Sufficiency of disclosure (yes)"

"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 0382/11 - 3.2.08

D E C I S I O N
of the Technical Board of Appeal 3.2.08
of 11 July 2013

Appellant:
(Opponent)

Braun GmbH
Frankfurter Strasse 145
D-61476 Kronberg (DE)

Respondent:
(Patent Proprietor)

Koninklijke Philips Electronics N.V.
Groenewoudseweg 1
NL-5621 BA Eindhoven (NL)

Representative:

Verweij, Petronella Danielle
Philips Intellectual Property & Standards
P.O. Box 220
NL-5600 AE Eindhoven (NL)

Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted
9 December 2010 concerning maintenance of
European patent No. 1696818 in amended form.**

Composition of the Board:

Chairman: T. Kriner
Members: M. Alvazzi Delfrate
A. Pignatelli

Summary of Facts and Submissions

- I. By decision posted on 9 December 2010 the opposition division decided that European patent No. 1 696 818 in amended form according to auxiliary request 1 then on file and the invention to which it related met the requirements of the EPC.
- II. The appellant (opponent) lodged an appeal against this decision on 9 February 2011, paying the appeal fee on the same day. The statement setting out the grounds of appeal was filed on 8 April 2011.
- III. In a notification dated 20 June 2012 the Board informed the parties that in its provisional opinion the patent as maintained by the opposition division appeared to be sufficiently disclosed and to involve an inventive step.
- IV. With letters dated 17 August 2012 and 14 November 2012 the appellant disagreed with this preliminary opinion and requested oral proceedings.
- V. Oral proceedings were held on 11 July 2013. As announced in their letters dated 11 June 2013 (appellant) and 9 July 2013 (respondent), the parties did not attend them.
- VI. The appellant has requested in the written proceedings that the decision under appeal be set aside and that the patent be revoked.

The respondent (patent proprietor) did not submit any request.

VII. Claim 1 underlying the decision of the opposition division reads as follows:

"A power toothbrush having a resonant frequency and having a system for resonantly driving the power toothbrush, wherein a brushhead portion of the toothbrush moves in operation through a path with an amplitude about a center point, comprising:
a resonant drive system for driving the brushhead at a drive frequency, the drive system including a circuit for periodically changing the drive frequency about a center frequency to produce a periodic change of amplitude of the brushhead portion within the range of 5-30%, providing an improved sensory experience without discomfort to the user."

VIII. The following documents have been cited in the appeal proceedings:

D2: DE -A- 29 40 275;
D6: JP -A- 2003 153741 (and its translation into English D6A);
FB1: O. Föllinger: Regelungstechnik, 5. verbesserte Auflage, pages 28-33;
FB2: H. Unbehauen: Regelungstechnik, 12. Auflage, table 4.3.3 and pages 34-37; and
B1-3:T-BCL Analyse-Bericht, Bericht Nr.: B8-12023, dated 15.02.2008.

IX. The arguments of the appellant can be summarised as follows:

Article 100(b) EPC

An improved sensory experience without discomfort to the user could only be achieved if

1) the energy provided to the system, i.e. the duty factor, was such that at a central driving frequency F_c the maximum tolerable amplitude was achieved, as could be seen from paragraph [0010] of the patent in suit;

2) said central frequency had a distance from the resonance frequency, in accordance with the measurements of B1-3 and as could be realised from paragraph [0017] of the patent in suit; and

3) the periodic change of amplitude was such that the resulting average amplitude was greater than said maximum tolerable amplitude, as could be understood from paragraph [0008] of the patent in suit.

Since claim 1 did not comprise features relating to these conditions the desired object could not be obtained over its whole scope. Hence, the disclosure did not provide a sufficiently clear and complete explanation of how to achieve this object within the full width of claim 1. Accordingly, the requirements enshrined in Article 100(b) EPC were not met.

Inventive step

D6 disclosed a power gum massaging brush which, in view of its construction, could be regarded as a power toothbrush. Said toothbrush had a resonant frequency and a system for resonantly driving it, wherein a

brushhead portion of the toothbrush moved in operation through a path with an amplitude about a centre point. Furthermore, it comprised a resonant drive system for driving the brushhead at a drive frequency.

Moreover, the drive system could produce a periodic change of amplitude of the brushhead portion, as shown in Figures 4(a) to 4(d). Since D6 did not define a lower limit for this change of amplitude, any reasonable value above 0% could be chosen. Furthermore, Figures 4(b) and 4(d) showed a change of amplitude of 100%. Accordingly, the range of 5-30% according to present claim 1 was a selection within the range of 0% to 100% disclosed in D6. The conditions for acknowledging the novelty of this selection were not satisfied. First, the selected range was neither a narrow selection within the range of 0-100% nor far removed from the value of 25% which was exemplified in Figure 4a of D6. Moreover, as already explained, the necessary conditions for achieving an improved sensory experience without discomfort to the user were not comprised in present claim 1. Accordingly, the range of 5-30% was not a purposeful selection. As a consequence, said range was not novel in view of D6.

The provision of an improved sensory experience without discomfort to the user was not novel either. Since the conditions necessary to obtain this result were not defined in present claim 1, said functional feature did not add any restriction in terms of technical features in view of D6.

Therefore, the sole distinguishing feature vis-à-vis D6 was the circuit for periodically changing the drive frequency about a centre frequency.

The object to be achieved by the claimed invention could not be seen in the provision of an improved sensory experience without discomfort, since this result was not obtained by said distinguishing feature. Rather it consisted merely in finding a way of realising the amplitude variation disclosed in D6.

The person skilled in the art was aware that the variation of the frequency of the stimulus in a system with a resonance frequency resulted in a variation of the amplitude, as shown in FB1 and FB2. Accordingly, he knew from his common general knowledge that the amplitude variation could be obtained by varying either the amplitude of the stimulus or its frequency. The choice according to claim 1 of the second of those two equally viable alternatives was an obvious one. Hence, the subject-matter of claim 1 could not involve an inventive step in view of D6 and the common general knowledge of the person skilled in the art.

In the event that the selection of the numerical range 5-30% was seen as novel, an inventive step could not be acknowledged, as said selection did not provide any effect.

Moreover, D2 disclosed in claim 15 that an amplitude variation could be obtained by varying the driving frequency. Hence, the subject-matter of claim 1 did not involve an inventive step in view of the combination of D6 and D2 either.

Reasons for the Decision

1. The appeal is admissible.

2. Article 100(b) EPC

The disclosure to be considered when assessing the requirements of sufficiency is the whole of the patent, not just the claims.

In the present case, according to claim 1 an improved sensory experience without discomfort to the user is provided. Although neither the improvement nor the discomfort is numerically defined, the selection of a change of amplitude in accordance with claim 1 alone may not be enough to achieve this result.

However, the description, in particular paragraphs [0008], [0010] and [0017] to which the appellant itself refers, provides sufficient information as to which parameters are to be considered and how. Hence, the whole of the patent discloses how to provide said improved sensory experience without discomfort. Since only devices which achieve this object fall within the scope of claim 1, the disclosure of the patent provides a sufficiently clear and complete explanation of how to carry out the claimed invention over the whole scope of the claim. Accordingly, the requirements enshrined in Article 100(b) EPC are met.

3. Inventive step

3.1 According to the appellant, D6, which relates to a power brush for massaging the gingivae or gums (see abstract), represents the most relevant prior art for the claimed invention. Although the brush of D6 is to be used for massaging the gums and despite its bristles being formed of a material of low elasticity, some cleaning of the teeth can be obtained by its use. Hence, it is suitable to be used as a power toothbrush.

Moreover, said brush inherently has a resonant frequency. Accordingly, its controlling system is a system for resonantly driving the power toothbrush having a resonant frequency, wherein a brushhead portion of the toothbrush moves in operation through a path with an amplitude about a centre point and which comprises a resonant drive system for driving the brushhead at a drive frequency (see paragraph [0017]).

3.2 It is undisputed that D6 does not disclose the provision of a circuit for periodically changing the drive frequency about a centre frequency.

Hence, although it describes a periodic change of amplitude of the brushhead portion (see paragraph [0020]), this document cannot disclose that said change of amplitude is caused by a change of the drive frequency. As a consequence, D6 does not disclose either that the circuit for periodically changing the drive frequency about a centre frequency produces a periodic change of amplitude of the brushhead portion within the range of 5-30%.

3.3 In power toothbrushes, there is usually a correlation between the amplitude of brushhead movement, during oscillation, and both cleaning effectiveness and sensory experience, wherein greater amplitude provides better cleaning results and an improved experience. However, there is a practical upper limit to the amplitude, above which discomfort to the average user occurs. In the present invention, the amplitude is varied with a periodic change in the range of 5-30%, allowing a user of the toothbrush to tolerate more amplitude, which increases the sensory brushing experience and improves the cleansing effect of the toothbrush as well (see paragraphs [0007] and [0011] of the patent in suit).

3.4 The appellant submitted that this effect could not be acknowledged since a change of amplitude of 5-30% was not novel in view of D6 and, even if it were considered to be novel, its selection had no effect which was not provided over the whole range disclosed in D6. Accordingly, the object to be achieved starting from D6 was merely how to realise the change of amplitude disclosed in this document. However, this argument is not convincing.

It is true that D6 discloses a periodic change of amplitude of the brushhead portion and that Figure 4(b) shows a change wherein the amplitude is reduced to zero (see also paragraph [0020]), i.e. the change of amplitude is 100%. However, D6 does not disclose the lower limit of the change of amplitude, but merely states that this change is aimed at preventing the user from growing familiar with the stimulus to the gum (see paragraph [0020]), without disclosing the amount of

stimulus necessary for this purpose. Contrary to the appellant's view, this lack of disclosure does not amount to disclosing a lower limit of 0%. Hence, D6 does not disclose a range of 0-100% for the change of amplitude. Therefore, the range 5-30% is not a selection within a range known from D6.

As to Figure 4(a), neither the starting point nor the scale of the abscissae is indicated on it. Hence, it does not disclose a value of about 25% for the change of amplitude, as submitted by the appellant. Accordingly, the range 5-30% for the change of amplitude is not known from D6.

Turning to the effect of this range, it may well be that a particular choice of some parameters results in no improved sensory experience or in discomfort for the user despite the choice of a change of amplitude in said range. However, it has not been disputed that, by an appropriate choice of said parameters, said change of amplitude indeed results in an improved sensory experience without discomfort for the user. Nor has it been shown that the same result can be obtained in the whole scope of the possible change of amplitudes disclosed in D6. As a matter of fact, D6 not only does not disclose how this change of amplitude is to be chosen, but it also states that it is aimed at a completely different object, namely preventing a user from becoming accustomed to a massaging stimulus of the gingivae. Hence, there is no reason to assume that it can provide an improved sensory experience and tooth cleaning effect without discomfort during tooth brushing.

3.5 Accordingly, an effect of the range 5-30% for the change of amplitude is acknowledged and the object to be achieved by virtue of the distinguishing features is to render possible an improved sensory experience and tooth cleansing effect without discomfort for the user (see paragraph [0002]).

3.6 Starting from D6, which relates to a power brush for massaging the gingivae or gums, it was not obvious to consider this object in the first place.

Moreover, even if it were to be considered, no hint can be found in the prior art that it could be achieved in accordance with claim 1. It is true that it was known that changes of amplitude can be achieved by changing the drive frequency when resonantly driving a system. However, neither D6 itself, nor the common general knowledge of the person skilled in the art nor D2 hinted at the possibility of achieving the above object by a change of amplitude in the range 5-30%.

Accordingly, the subject-matter of claim 1 involves an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

V. Commare

T. Kriner