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**Datasheet for the decision
of 10 June 2024**

Case Number: T 0161/22 - 3.5.02

Application Number: 15169330.6

Publication Number: 2961059

IPC: H02P7/00, A61C17/34, H02P25/02,
H02P31/00

Language of the proceedings: EN

Title of invention:
Personal hygiene device with resonant motor

Patent Proprietor:
Braun GmbH

Opponent:
Trisa Holding AG

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - main request (yes)



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Case Number: T 0161/22 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 10 June 2024

Appellant: Braun GmbH
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
23 December 2021 concerning maintenance of the
European Patent No. 2961059 in amended form.**

Composition of the Board:

Chairman G. Flyng
Members: C.D. Vassoille
G. Decker

Summary of Facts and Submissions

- I. The patent proprietor filed an appeal against the interlocutory decision of the opposition division concerning European patent no. 2 961 059.
- II. The following documents are referred to in the present decision:
- D4: WO 2004/034561 A1
D8: US 7,307,397 B2
D19: DE 10242094 A1
D20: US 2006/0175909 A1
D21: WO 2004/020161 A1
D22: JP S54133267 A
- III. In the decision under appeal, the opposition division *inter alia* concluded that the subject-matter of claim 1 of the main request (patent in amended form) was obvious in view of a combination of document D4 with document D8. The patent in the form of the then auxiliary request 15 was considered to meet the requirements of the Convention.
- IV. The parties were summoned to oral proceedings. In a communication under Article 15(1) RPBA annexed to the summons, the board set out their preliminary observations on the appeal, concluding *inter alia* that the subject-matter of claim 1 of the main request involved an inventive step over a combination of documents D4 and D8. The same applied to the respondent's alternative line of attack, based on document D8 as the closest prior art.

- V. With a letter of 31 May 2024, the respondent withdrew all requests made in the course of the appeal proceedings, in particular the request for the appeal to be dismissed and the request that the patent be revoked in its entirety as well as the request for oral proceedings. The respondent further noted that they would not take part in the oral proceedings.
- VI. Following the respondent's letter, the oral proceedings scheduled for 26 November 2024 were cancelled.
- VII. The appellant (patent proprietor) requested in writing that the decision under appeal be set aside and the patent be maintained in amended form according to the main request or one of auxiliary requests 1 to 10, all filed with the statement of grounds of appeal. They requested oral proceedings only if the board was unable to allow the main request on the basis of the written submissions of the parties.
- VIII. Claim 1 of the appellant's main request (patent in amended form) reads as follows (feature numbering added in square brackets):

"**[A]** A personal hygiene device, said personal hygiene device being an electric toothbrush, the personal hygiene device comprising

[B] a resonant motor comprising a motor coil and at least one movable motor armature carrying at least one permanent magnet assembly having at least one permanent magnet fixedly connected with the motor armature,

[C] which motor armature is held in a rest position by at least one spring element;

[D] a motor control unit for applying a periodic voltage signal with a driving frequency at the motor coil of the resonant motor

[E] for driving the motor armature of the resonant motor into an oscillating motion with an oscillating frequency equal to the driving frequency,

[F] where the periodic voltage signal has a period that is divided into two equally long half cycles;

[G] wherein the motor control unit comprises a synthesizer circuit for digitally synthesizing the periodic voltage signal

[H] from voltage pulses of variable length provided with a pulse frequency higher than the driving frequency

[I] such that at least two voltage pulses are applied in at least one of the two half cycles of each period of the periodic voltage signal,

[J] wherein the pulse frequency of the synthesizer circuit is at least 6 times as high as the driving frequency."

Claims 2 to 14 are dependent on claim 1.

- IX. In view of the board's decision on the main request, it was not necessary to reproduce the wording of the auxiliary requests here.
- X. The relevant arguments of the parties will be referred to in the reasons for the decision below.

Reasons for the Decision

1. *Right to be heard (Article 113(1) EPC) and decision in written proceedings*

The respondent withdrew their request for oral proceedings, see point V above. The appellant did not request oral proceedings if the board acceded to the main request, see point VII. above.

The present decision is based on grounds and evidence on which the respondent had the opportunity to present their comments. The respondent's arguments on the merits of the case were duly taken into account by the board both in the communication under Article 15(1) RPBA and in the present decision. Thus, the principle of the right to be heard under Article 113(1) EPC is fully respected.

Therefore and in view of the (final) requests of the parties, the present decision is issued in writing without holding oral proceedings.

2. *Main request - Inventive step in view of document D4 (Article 56 EPC)*

Distinguishing features

- 2.1 In the contested decision, the opposition division concluded that features G, H, I and J of claim 1 constituted the distinguishing features with respect to document D4. This finding was not disputed by the appellant. A first line of attack of the respondent is based on these distinguishing features.

2.2 On pages 4 to 6 of the reply to the appeal, the respondent provided a further attack against claim 1 of the main request which is based on the assertion that document D4 also disclosed features G, H and I of claim 1 and that the only distinguishing feature was therefore feature J of claim 1.

2.3 Notwithstanding the board's impression that feature J is in fact not the only distinguishing feature, the board in any case agrees with the appellant that this submission constitutes a new line of attack raised for the first time in the appeal proceedings. The new submissions based on the asserted fact that feature J is the only distinguishing feature are therefore subject to the admissibility requirements of Article 12(4) and (6) RPBA.

The board exercised its discretion under Article 12(6) RPBA by not admitting the new submissions concerning the distinguishing features over document D4 into the appeal proceedings, because they could and should have been submitted already during the proceedings before the opposition division.

2.4 In the light of the foregoing, the present decision bases its assessment of inventive step on the assumption that document D4 does not disclose features G, H, I and J of claim 1 of the main request.

Objective technical problem

2.5 The contested decision as well as the written submissions of both parties in the appeal proceedings give rise to different views as to the objective technical problem to be considered in view of document

D4 as the closest prior art and the distinguishing features G, H, I and J.

In particular, in the contested decision, the opposition division considered the reduction of harmonics in the motion of the motor to be the appropriate objective technical problem when starting from D4 and in view of the distinguishing features.

The appellant, on the other hand, considered the objective technical problem to be that of providing means for adjusting or adapting the noise behaviour of the toothbrush to a user's needs. They argued that the opposition division had misinterpreted this objective technical problem as implying that a user can actively adjust the noise level, which was however not necessarily the case.

Furthermore, the respondent argued in the reply to the appeal that the objective technical problem was that of how to allow for a larger variability in the periodic voltage signal applied to the motor.

2.6 The board is of the opinion that in the present case there is more than one objective technical problem which the skilled person could solve on the basis of document D4.

However, as can be seen from the following reasons, the subject-matter of claim 1 of the main request involves an inventive step, irrespective of the question of which objective technical problem is to be considered on the basis of the distinguishing features, starting from document D4 as the closest prior art document. An in-depth discussion on the question of which objective

technical problem or problems should be considered was therefore not necessary at this point.

Non-obviousness of the solution

- 2.7 It is undisputed that document D8 discloses the distinguishing features G, H, I and J. In the contested decision, the opposition division concluded that the subject-matter of claim 1 of the main request was obvious when starting from D4 in view of the teaching of document D8. The board does not share this view.
- 2.8 Document D4 concerns a very specific circuit arrangement for controlling an oscillating electric motor, *inter alia*, in an electric toothbrush. A specific switching sequence of the H-bridge switching elements serves to increase the efficiency so that a longer battery charge life is achieved. The specific sequence of switching states in document D4 comprises four successive phases in a half period, namely a load phase A ("Lastphase"), in which the battery is switched on, a commutation phase B ("Kommutierungsphase"), in which the battery is decoupled from the electric motor, a first extinction phase C ("Löschphase"), in which energy is recuperated into the battery and a subsequent fast extinction phase, in which all switching elements are open (see in particular the paragraph spanning pages 7 and 8 of D4 in connection with figure 7).
- 2.9 Document D8, on the other hand, exclusively deals with increasing the energy efficiency of an electric shaver. In particular, in document D8 it is explained that many current waveforms can be formed as a result of intermittently applying a driving voltage, corresponding to the application of voltage pulses according to the distinguishing features. This can

reduce energy loss through unnecessary current and increase energy efficiency (see e.g. D8 in col. 2, ln. 22 to 31).

- 2.10 The board came to the conclusion that, irrespective of the underlying objective technical problem, the skilled person in any event would not have integrated the distinguishing features G, H, I and J as disclosed in D8 into the control structure of the electric toothbrush according to document D4.

Document D4 teaches, as explained above, a specific control sequence comprising only a single voltage pulse. Indeed, it is not apparent how the skilled person would have applied in the electric toothbrush of D4 the principle disclosed in D8 of generating a desired current waveform by providing multiple voltage pulses in the sense of features G, H, I and J. As the appellant has argued, the teachings disclosed in the two documents D4 and D8 refer to different approaches to increase energy efficiency and thus are even incompatible.

- 2.11 The board is also not convinced by the respondent's argument that the starting point of the invention of document D8 is based on a single pulse control scheme corresponding to the teaching of document D4. The motor control scheme shown in figure 24, which illustrates the prior art on which the invention of document D8 is based, is considerably different from the control scheme comprising the four distinct control phases described in document D4. In particular, in the process described in figure 24 of D8, the conventional driving unit controls the moving unit by varying the (rectangular) voltage application period and the phase of the voltage in order to make the moving element

perform an intended motion. It is further described in D8 that this conventional approach does not take into consideration an influence of a waveform of the current flowing through the coil on energy efficiency (see col. 1, ln. 30 to 67).

2.12 In the light of the above considerations, the board concluded that the subject-matter of claim 1 of the main request was not rendered obvious to a person skilled in the art by the combination of document D4 with the further document D8 and therefore involves an inventive step under Article 56 EPC in view of this combination of documents.

3. *Main request - Inventive step in view of document D8 (Article 56 EPC)*

3.1 Document D8 does not constitute an appropriate starting point in the assessment of inventive step. The subject-matter of claim 1 of the main request concerns an electric toothbrush and not an electric shaver, as disclosed in document D8. Even if the skilled person for electric shavers and for electric toothbrushes were to be identical or at least were to have similar skills, the board considers the argument that the skilled person designing an electric toothbrush would start from an electric shaver to be rather artificial.

3.2 For this reason alone, the board concluded that the subject-matter of claim 1 of the main request is not rendered obvious to the person skilled in the art by document D8 and therefore involves an inventive step under Article 56 EPC in view of this document. It is therefore not necessary to discuss the other documents D19 to D22 cited by the respondent in this context.

3.3 In the light of the above considerations, the question of whether the objection based on document D8 as a starting point for the assessment of inventive step had to be admitted into the appeal proceedings could be left unanswered.

4. Result

Since the main request involves an inventive step under Article 56 EPC and the respondent did not raise any further objections to this request, the board had to accede to the appellant's main request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent with the following claims and a description to be adapted thereto:
 - Claims 1 to 14 of the main request filed with the statement of grounds of appeal.

The Registrar:

The Chairman:



U. Bultmann

G. Flyng

Decision electronically authenticated