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**Datasheet for the decision
of 27 November 2008**

Case Number: T 0660/07 - 3.2.02

Application Number: 02708093.6

Publication Number: 1379163

IPC: A61B 5/00

Language of the proceedings: EN

Title of invention:

System and method for detection and removal of dental tartar

Applicant:

DENTSPLY CANADA LTD

Opponent:

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Headword:

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Relevant legal provisions:

-

Relevant legal provisions (EPC 1973):

EPC Art. 52(1), 56

Keyword:

"Inventive step (main request and first auxiliary request,
no)"

"Remittal to first instance (second auxiliary request)"

Decisions cited:

-

Catchword:

-



Case Number: T 0660/07 - 3.2.02

D E C I S I O N
of the Technical Board of Appeal 3.2.02
of 27 November 2008

Appellant: DENTSPLY CANADA LTD
161 Vinyl Court
Woodbridge ON L4L 4A3 (CA)

Representative: Ahner, Francis
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 8 November 2006
refusing European application No. 02708093.6
pursuant to Article 97(1) EPC 1973.

Composition of the Board:

Chairman: T. Kriner
Members: S. Chowdhury
A. Pignatelli

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division dated 8 November 2006 to refuse European patent application No. 02 708 093.6.

The grounds of refusal were that the claims were objectionable under Article 123(2) EPC 1973 and Article 52(1) EPC 1973, having regard to the following documents:

D1: DE-A-4 015 066 and

D2: DE-U-29 705 934.

Also of interest in the appeal procedure is the following document cited by the appellant:

D3: US-A-5 382 163.

- II. On 9 January 2007 the appellant lodged an appeal against the decision and paid the prescribed fee on the same day. On 19 March 2007 a statement of grounds of appeal was filed.
- III. Oral proceedings before the Board were held on 27 November 2008.

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the set of claims according to the main request or alternatively according to the first to third auxiliary requests all filed during the oral proceedings.

IV. Independent claim 1 of the main request reads as follows:

"A dental tartar detection and removal device, comprising a tartar removal instrument (12) adapted to be displaced along a tooth, illumination means (14) for illuminating with an incident light of one or more predetermined ranges of wavelengths a region to be examined on, or adjacent to, the tooth, detection means (16) for collecting the light reflected thereat, and an analysing system for providing a signal to an operator of said tartar removal instrument or to said tartar removal instrument when measurements of the amount of the light reflected in the same one or more predetermined ranges of wavelengths fall within any first predetermined range of values that are characteristic of tartar, or when said measurements do not fall within any second predetermined range of values that are characteristic of artefacts other than tartar, such that in response to said signal said tartar removal instrument can be operated for removing tartar at said region, or adjacent thereto, wherein the tartar removal instrument is a powered tartar removal instrument."

Claim 1 of the first auxiliary request additionally specifies that the tartar removal instrument is a powered tartar removal instrument comprised in a group consisting of sonic scaler, ultrasonic scaler, rotary scaler, piezo electronic scaler, hand-powered instruments.

Claim 1 of the second auxiliary request reads as follows:

"A dental tartar detection and removal device, comprising a tartar removal instrument (12) adapted to be displaced along a tooth, illumination means (14) for illuminating with an incident light of two predetermined ranges of wavelengths a region to be examined on, or adjacent to, the tooth, detection means (16) for collecting the light reflected thereat, and an analysing system for providing a signal to an operator of said tartar removal instrument or to said tartar removal instrument when combined measurements of the amount of the light reflected in the same two predetermined ranges of wavelengths fall within any first predetermined range of values that are characteristic of tartar, or when said combined measurements do not fall within any second predetermined range of values that are characteristic of artefacts other than tartar, such that in response to said signal said tartar removal instrument can be operated for removing tartar at said region, or adjacent thereto, wherein the tartar removal instrument is a powered tartar removal instrument comprised in a group consisting of sonic scaler, ultrasonic scaler, rotary scaler, piezo electronic scaler, hand-powered instruments."

Claim 1 of the third auxiliary request has the same wording as claim 1 of the second auxiliary request, and additionally specifies that one of the wavelength ranges is infrared.

V. The appellant argued as follows:

The invention related to the detection and removal of subgingival tartar in a very small pocket, and there was no indication in the prior art that this could be performed by a laser since this would also destroy adjacent tissue. Tartar could only be effectively removed by mechanical means.

The dental practitioner must easily and quickly know whether or not any tartar remained in a tight space, and the present invention was dedicated to detecting tartar by reflection spectrometry in a given wavelength range, which could effectively detect when tartar was removed.

D2 stated that there were problems with the use of reflection spectrometry in a periodontal cavity where a variety of substances having colour differences of the same magnitude may be present, so the chances of reflection spectrometry working were small. The present application, nevertheless provided a simple solution while working quickly and avoiding complex and lengthy calculations.

The person skilled in the art would not consider document D1 because this did not relate to the removal of tartar by mechanical means, it disclosed the use of a laser for removing tartar, which was not effective. Moreover, D1 disclosed a complicated system which did not easily indicate whether or not tartar was effectively removed.

Reasons for the Decision

1. The appeal is admissible.
2. Amendments

Claim 1 of each of the main and auxiliary requests is based on claim 1 as originally filed, and amplified to specify that one or more predetermined ranges of wavelengths are incident on a tooth for the detection of tartar by reflection spectroscopy, and that the tartar removal instrument is a powered tartar removal instrument, in particular comprised in a group consisting of sonic scaler, ultrasonic scaler, rotary scaler, piezo electronic scaler, hand-powered instruments. These features are adequately supported by the application as originally filed. The claims have also been clarified in that they specify that it is the amount of light that is measured.

All the amendments are allowable, accordingly.

3. *Novelty - main request*
 - 3.1 Document D3 discloses a tartar detection and removal device, comprising a tartar removal instrument (30, 32) adapted to be displaced along a tooth, illumination means (12, 18) for illuminating with an incident light of one or more predetermined ranges of wavelengths (see column 5, lines 35 to 39) a region to be examined on, or adjacent to, the tooth, detection means (14) for collecting the returning light (luminescence), and an analysing system (42, column 5, lines 1 to 5) for providing a signal to an operator of said tartar

removal instrument (see column 6, lines 30 to 32) when measurements on the returning light in one or more predetermined ranges of wavelengths (see column 5, lines 54 to 58) fall within a first predetermined range of values that are characteristic of tartar, such that in response to said signal said tartar removal instrument can be operated for removing said tartar at said region, wherein the tartar removal instrument is a powered dental tartar instrument (see column 4, lines 38 to 40).

3.2 The device of claim 1 is novel over the D3 device by virtue of the fact that the D3 device examines returning luminescence light from the tooth whereas the claimed device examines reflected light from the tooth.

3.3 The appellant's representative agreed with the above analysis at the oral proceedings.

4. *Inventive step - main request*

4.1 It is well known to the person skilled in the art of spectroscopic analysis of substances that each substance has its own characteristic spectrum, regardless of whether the spectrum is the reflection spectrum, the absorption spectrum, the transmission spectrum, or the fluorescence spectrum, all these spectra equally represent the substance. Which one of these spectra is selected for study is a matter of convenience in a given circumstance, and is not an inventive selection.

In any case, that it was known to study the reflectance spectrum in order to examine for the presence of tartar is exemplified by document D1, which discloses the measurement of the reflection spectrum from tartar in order to determine the presence of same (see D1: the abstract and Figures 1 and 2).

- 4.2 The appellant argued that D2 taught a technical prejudice against the use of spectroscopic reflection measurements in the art, so that its use in the present case was inventive. This argument is not persuasive because a solitary document is not sufficient for establishing the fact of a technical prejudice, this must be proven as being generally accepted in the art.

Moreover, D2 does not state that the use of reflection spectrometry would not work. It states, instead, that this is costly and complicated, it can be influenced by ambient light, that different substances often have colour differences of the same magnitude, and that much time is required to evaluate the reflection spectrum (D2, page 3, second paragraph). This does not amount to a technical prejudice, it merely states that some difficulties must be overcome when using reflection spectrometry.

Furthermore, the present application uses reflection spectrometry without indicating how these difficulties are overcome, and claim 1 defines no feature which concerns any of the difficulties concerning reflection spectrometry recited in D2.

The appellant also argued that the person skilled in the art would not consult D1 because this document did not teach the removal of tartar by mechanical means, and lasers are not effective for removing tartar. These arguments are not relevant for the following reasons:

The detection of tartar and the removal thereof are two quite separate technical problems, there is no technical relationship between them. D1 is invoked only in order to exemplify that reflection spectrometry for the detection of tartar was known.

- 4.3 Therefore, the above difference (point 3.2) is not considered to involve an inventive step, so that claim 1 of the main request does not meet the inventive step requirement of Article 52(1) EPC 1973.

5. Claim 1 of the first auxiliary request merely elaborates that the powered dental tartar instrument may be a sonic scaler, ultrasonic scaler, rotary scaler, piezo-electronic scaler, or a hand-powered instrument (e.g. a curette, page 4, last line). These are well known in the art and the patentee's representative himself acknowledged at the oral proceedings that they cannot be considered inventive in the context.

6. Claim 1 of the second auxiliary request includes the additional features that two wavelength ranges are used to illuminate a tooth and the combined measurements of the light reflected at the two wavelength ranges are employed to detect the presence of tartar.

These features have been imported from the description and not from the original claims and it is assumed that they have not been searched. Consequently the Board is not in a position to examine this claim under Article 52(1) EPC 1973. Therefore, the Board considers it appropriate to remit the case to the department of the first instance for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of the first instance for further prosecution on the basis of the claims of the second auxiliary request filed during the oral proceedings.

The Registrar

The Chairman

V. Commare

T. Kriner