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**Datasheet for the decision
of 2 September 2011**

Case Number: T 0429/09 - 3.2.02

Application Number: 00955865.1

Publication Number: 1210022

IPC: A61B 18/14

Language of the proceedings: EN

Title of invention:

Non-stick electrosurgical forceps

Patentee:

Stryker Sales Corporation

Opponent:

KLS Martin GmbH + Co. KG

Headword:

-

Relevant legal provisions:

EPC Art. 56

Relevant legal provisions (EPC 1973):

-

Keyword:

"Inventive step (main request: no, auxiliary request: yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 0429/09 - 3.2.02

D E C I S I O N
of the Technical Board of Appeal 3.2.02
of 2 September 2011

Appellant:
(Opponent)

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Patent- und Rechtsanwaltssozietät
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Respondent:
(Patent Proprietor)

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Representative:

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Decision under appeal:

Interlocutory decision of the Opposition
Division of the European Patent Office posted
18 December 2008 concerning maintenance of
European patent No. 1210022 in amended form.

Composition of the Board:

Chairman: M. Noël
Members: M. Stern
J. Geschwind

Summary of Facts and Submissions

I. The opponent lodged an appeal against the interlocutory decision of the Opposition Division dispatched on 18 December 2008 to maintain the European patent No. 1 210 022 in amended form. The Opposition Division held that the grounds for opposition mentioned in Article 100(a) and (c) EPC (notably Articles 54, 56 and 123(2) EPC) did not prejudice the maintenance of the patent as amended.

II. A notice of appeal was filed by the appellant (opponent) on 17 February 2009 together with a statement setting out the grounds of appeal. The fee for appeal was paid on the same day.

III. The respondent (patent proprietor) replied by letter dated 21 August 2009 including amended sets of claims relating to first to seventh auxiliary requests.

IV. Oral proceedings took place on 2 September 2011.

The appellant requested that the decision under appeal be set aside and that the European patent be revoked.

At the oral proceedings, the respondent filed a new auxiliary request comprising claims 1 to 3, in replacement of the previous first to seventh auxiliary requests filed with letter dated 21 August 2009.

The respondent requested that the appeal be dismissed or that the patent be maintained in amended form on the basis of claims 1 to 3 submitted at the oral proceedings.

V. The following documents are of importance for the present decision:

D1b: DE-2 006 126 ("Patentschrift")

D2: WO-A-98/53 750.

VI. Claim 1 of the main request reads as follows:

"Electrosurgical forceps (110), comprising:

first and second elongated and spaced-apart electrode arms adapted for conducting electrosurgical current there between during use in an electrosurgery procedure;

said first elongated electrode arm having a tip portion that is spaced apart from a tip portion of said second elongated electrode arm; each electrode arm having a cross-sectional area that increases away from a distal end of its tip portion;

said first electrode arm having a first metal core (115, 123) with said tip portion thereof having a layer of silver or a biocompatible alloy of silver with a thermal diffusivity equal to, or greater than, about $3.0 \times 10^{-5} \text{ m}^2/\text{s}$; and

said second electrode arm having a second metal core (115, 123) with said tip portion thereof having a layer of silver or a biocompatible alloy of silver with a thermal diffusivity equal to, or greater than, about $3.0 \times 10^{-5} \text{ m}^2/\text{s}$;

characterized in that:

the layers of silver or a biocompatible alloy of silver have a layer-thickness of at least about 0.25mm (0.01 inches) to allow heat generated during an electrosurgical procedure to be quickly dissipated

throughout said layer-thickness, the layers extend proximally away from the distal ends of the tip portions; and wherein the cross-sectional area of the layers increases away from the distal end of the tip portion to form a three-dimensional thermal reservoir (117, 125) on each arm, spaced apart from the distal end of the tip portion, to enhance heat flow from the distal ends of the electrode arms into the thermal reservoir (117, 125) to reduce the temperature of the electrode tips during electrosurgery."

VII. Claim 1 of the auxiliary request reads as follows:

"Electrosurgical forceps (110), comprising:

first and second elongated and spaced-apart electrode arms adapted for conducting electrosurgical current there between during use in an electrosurgery procedure;

said first elongated electrode arm having a tip portion that is spaced apart from a tip portion of said second elongated electrode arm; each electrode arm having a cross-sectional area that increases away from a distal end of its tip portion;

said first electrode arm having a first metal core (115, 123) with said tip portion thereof having a layer of silver with a thermal diffusivity equal to, or greater than, about $3.0 \times 10^{-5} \text{ m}^2/\text{s}$; and

said second electrode arm having a second metal core (115, 123) with said tip portion thereof having a layer of silver with a thermal diffusivity equal to, or greater than, about $3.0 \times 10^{-5} \text{ m}^2/\text{s}$;

characterized in that:

each of said first and second metal cores (115, 123) are stainless steel;

each metal core comprises a gold strike layer onto which the layer of silver is coated;

the layers of silver have a layer-thickness of at least about 0.25mm (0.01 inches) to allow heat generated during an electrosurgical procedure to be quickly dissipated throughout said layer-thickness, the layers extend proximally away from the distal ends of the tip portions; and wherein the cross-sectional area of the layers increases away from the distal end of the tip portion to form a three-dimensional thermal reservoir (117, 125) on each arm, spaced apart from the distal end of the tip portion, to enhance heat flow from the distal ends of the electrode arms into the thermal reservoir (117, 125) to reduce the temperature of the electrode tips during electrosurgery."

Claims 2 and 3 are dependent claims.

VIII. The arguments of the appellant are summarised as follows:

The appellant contested the inventive step of the subject-matter of claim 1 of the main request departing from document D1b as the closest prior art. It was submitted that a silver layer coating on the metal arms of an electrosurgical forceps with a thickness of at least 0.25 mm was obvious in view of D1b in combination with the disclosure in document D2 of thick silver layers applied to an electrosurgical device.

Concerning the claims filed as an auxiliary request by the proprietor during the oral proceedings, the appellant declared that it had no objections against

the maintenance of the patent on the basis of this request.

IX. The arguments of the respondent are summarised as follows:

Concerning claim 1 of the main request it was argued that nowhere in D1b was there any indication of the importance of the thickness of the coating material in relation to heat dissipation. Hence, the search for an appropriate thickness was part of the solution, and should therefore not be formulated as part of the objective problem. The affidavits provided by the inventor J. Thorne and by his subcontractor G. Baun testified to the unusually large thickness of the silver coating layer used in the present invention. D2 was directed to a monopolar electrode construction which could not be used in the bipolar forceps structure disclosed in D1b. Moreover, in Figure 10 of D2, heat was dissipated mainly through a conductive metallic core, rather than through the silver coating layer.

Claim 1 of the auxiliary request was explained to incorporate further technical features from dependent claims 5 and 6 of the main request, thereby defining a feature combination which was not disclosed in or suggested by the prior-art documents.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request*
 - 2.1 In view of the fact that the subject-matter of claim 1 of the main request is found to lack an inventive step for the reasons given hereinafter, the Board sees no need to discuss the objections under Article 123(2) EPC raised by the appellant (see also second paragraph of point 3 below).

 - 2.2 Document D1b is undisputedly the closest prior art. It discloses electrosurgical forceps comprising two spaced-apart electrode arms for conducting electrosurgical current between them (cf column 3, lines 3 to 7). In one of the embodiments, which is described on column 4, lines 22 to 42, but not directly depicted in the figures, each of the electrode arms has a metal core (e.g. steel) which is coated with a thermally highly conductive material, such as silver or a (biocompatible) alloy of silver and gold (cf column 4, lines 30 to 40).

Document D1b is concerned with the primary problem of preventing overheating of the electrode tips so as to avoid sticking of the jaws of the instrument to the coagulated tissue (see in D1b, column 1, lines 60 to 66). This is the same general problem as that addressed by the patent in suit (cf paragraph [0019]). One of the two measures envisaged in D1b to solve this problem is to effectively dissipate the heat away from the points of contact of the jaws with the tissue by applying a

thermally highly conductive coating upon the outer surface of the core which is made of a material of a lower thermal conductivity (see in D1b, column 2, lines 18 to 27; column 4, lines 22 to 30). The patent in suit also provides this measure (cf the last sentence in each of paragraphs [0030] and [0033]).

Since the cross-sectional area of the arms 4 and 5 in D1b increases in proximal direction (see Figure 2), even with a constant thickness of the silver layer, "the cross-sectional area of the layers increases away from the distal end of the tip portion to form a three-dimensional thermal reservoir on each arm, spaced apart from the distal end of the tip portion", as defined in claim 1 in suit.

2.3 Document D1b is silent as to the thickness of the silver layer. Hence, the device of claim 1 differs from D1b in that the thickness of the layer is at least 0.25 mm. The claimed device is thus new over D1b.

2.4 The skilled person starting from the closest prior art D1b is thus confronted with the objective problem of finding an appropriate silver layer thickness which achieves an effective heat dissipation. As explained under point 2.2 above, effective heat transfer away from the tip of the electrodes reduces sticking of the electrode tips to the tissue (see also paragraphs [0033] and [0037] of the patent in suit).

2.5 Firstly, when seeking good thermal conductivity through a layer, mere common general knowledge would prompt the skilled person to provide the layer as thick as possible. The patent in suit itself does not attribute

to the claimed thickness range any particular effect going beyond the effect which the skilled person would reasonably expect on the basis of his common general knowledge, namely, an effective heat transfer away from the electrode tip (cf paragraph [0033] of the patent in suit).

Secondly, D1b explicitly discloses that the silver coating is to be *plated* onto the metal core (cf the term "plattiert" in D1b, column 4, lines 35 to 40). As convincingly pointed out by the appellant with reference to the definition given in the Brockhaus encyclopaedia, plating of a metal layer relates to the coating of a relatively thick metal layer onto another base metal.

Finally, the skilled person would also search in the state of the art for any solution to the objective problem and thus consider D2, an earlier application filed by the proprietor, which deals with the same problem of effectively dissipating heat away from the tip of an electrosurgical electrode to prevent tissue from sticking to the electrode tip (see abstract of D2; page 5, lines 24 to 30). In one of the alternatives, D2 proposes on page 12, line 29 to page 13, line 7 to coat a metal core with a "relatively thick" silver coating, having typically a thickness of at least about 0.5 mm (cf D2, page 13, lines 3 to 5).

As a consequence, considering that D1b prompts the skilled person to utilise relatively thick silver layers and that in D2 such silver layers are proposed with a thickness of more than 0.5 mm, the skilled person would readily apply this teaching also to the

forceps disclosed in D1b. These known layer thickness values fall within the claimed thickness range of at least 0.25 mm.

2.6 The arguments advanced by the respondent (see point IX above) failed to convince the Board. Even if D1b does not disclose any specific layer thickness, the skilled person knows that a suitable layer thickness will have to be provided in order to solve the problem posed in D1b of achieving an effective heat dissipation away from the tips of the electrodes. The declarations of the inventor J. Thorne and of his subcontractor G. Baun testifying to what was to be understood as being an unusually large layer thickness of silver are clearly refuted by D2 disclosing the coating of thick silver layers of more than 0.5 mm onto a metal electrode core. The Board is also unable to follow the respondent's allegation that thick silver coatings on a less conducting metallic core such as in the embodiment according to Figure 10 of D2 do not substantially contribute to the dissipation of heat. Also the fact that D2 relates to a monopolar electrode while D1b relates to a bipolar forceps structure is found to be of no relevance when solving the problem of heat dissipation away from an electrode tip, as this problem is common to both types of electrosurgical electrodes.

2.7 Hence, the subject-matter of claim 1 of the main request does not involve an inventive step in the sense of Article 56 EPC.

3. *Auxiliary request*

During the oral proceedings, the opponent declared that he had no objections against the maintenance of the patent on the basis of claims 1 to 3 filed at the oral proceedings as an auxiliary request, in replacement of all the previous auxiliary requests.

Claim 1 of the auxiliary request fulfils the requirement of Article 123(2) EPC. Those features of claim 1 of the auxiliary request which are common with claim 1 of the main request are directly and unambiguously derivable from originally filed claims 1, 2 to 4, 7 and 9, the paragraph bridging pages 13 and 14, and page 12, lines 7 to 14 of the original application. The additional features concerning the provision of the silver coating layer onto a stainless steel electrode core previously coated with a strike layer of gold are disclosed on page 14, lines 15-19 of the original application.

Claims 2 and 3 are supported by original claim 3 and the passage on page 11, lines 20-21 of the application as filed, respectively.

The Board sees no reason to object to the inventiveness of the claimed subject-matter since none of the documents on file discloses or suggests applying a silver coating layer onto a stainless steel electrode core previously coated with a strike layer of gold. As explained in paragraph [0035] of the patent specification in suit, the coating of a stainless steel electrode core with a thicker silver layer is much easier when a strike layer of gold is first used.

Consequently, the Board decided to admit the auxiliary request into the proceedings and considered that the claimed subject-matter involves an inventive step within the meaning of Article 56 EPC.

4. However, the description still needs to be adapted to the claims of the auxiliary request, in particular having regard to the fact that the description contains examples which should be deleted since they involve materials (such as biocompatible alloys of silver) or combinations of materials other than the currently claimed combination of a silver layer on a stainless steel core previously coated with a strike layer of gold. For this reason, the case is remitted to the Opposition Division pursuant to Article 111(1) EPC.

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 first instance with the order to maintain the patent in amended form on the basis of claims 1 to 3 submitted during the oral proceedings, a description to be adapted thereto, and the figures 1 to 7 as published.

The Registrar:

The Chairman:

D. Sauter

M. Noël