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**Datasheet for the decision  
of 10 May 2011**

**Case Number:** T 1754/07 - 3.2.02

**Application Number:** 02080011.6

**Publication Number:** 1316298

**IPC:** A61F 9/01

**Language of the proceedings:** EN

**Title of invention:**

An apparatus for creating a corneal flap

**Applicant:**

Technolas Perfect Vision GmbH

**Headword:**

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**Relevant legal provisions:**

EPC Art. 56, 123(2)

**Relevant legal provisions (EPC 1973):**

EPC Art. 54(3)

**Keyword:**

"Extended subject-matter (no, after amendments)"  
"Novelty (yes, after amendments)"

**Decisions cited:**

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**Catchword:**

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Case Number: T 1754/07 - 3.2.02

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.02  
of 10 May 2011

**Appellant:** Technolas Perfect Vision GmbH  
Messerschmittstrasse 1+3  
D-80992 München (DE)

**Representative:** Maisch, Thomas  
Ullrich & Naumann  
Patent- und Rechtsanwälte  
Schneidmühlstrasse 21  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 1 June 2007  
refusing European patent application  
No. 02080011.6 pursuant to Article 97(1) EPC  
1973.

**Composition of the Board:**

**Chairman:** P. L. P. Weber  
**Members:** C. Körber  
A. Pignatelli

## Summary of Facts and Submissions

- I. On 1 June 2007 the Examining Division posted its decision to refuse European patent application No. 02080011.6 for unallowable added subject-matter under Article 123(2) EPC and lack of novelty under Article 54(3) EPC 1973.
- II. An appeal was lodged against this decision by the applicant by notice received on 25 July 2007, with the appeal fee being paid on the same day. The statement setting out the grounds of appeal was received on 4 October 2007.
- III. The final requests of the appellant (applicant) were as follows:
1. to set aside the impugned decision;
  2. to grant a patent on the basis of the following documents:  
  
claims 1 to 12 as filed with telefax letter of 23 March 2011;  
  
description pages 2, 3, 5, and 9 as filed with telefax letter of 23 March 2011 and pages 1, 4, 6 to 8 and 10 to 15 as originally filed;  
  
drawings: sheets 1/3 to 3/3 as originally filed.  
  
Oral proceedings were requested on an auxiliary basis.

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

D1: US-A-5 993 438

D2: US-A-5 984 916

D3: EP-A-1 232 743.

V. Claim 1 of the main request reads:

"1. An apparatus (10) adapted to establish a periphery (32) for subsequent creation of a corneal flap (30) for an ophthalmic procedure, said apparatus comprising: a laser source (12) adapted to create a laser beam (22); a means (18) adapted to direct said laser beam (22) to a focal point at a location on an interface (50) between layers of stromal lamellae (42) to photoablate stromal tissue (38) at said focal point with a photoablation response in the form of a gas bubble, said gas bubble having a diameter; a means for measuring said diameter of said gas bubble; a means (14, 16) adapted to sequentially move said focal point along a predetermined path to other said focal points within the stroma (40) to photoablate stromal tissue (38) with the photoablation response to create solely said periphery (32) for said flap (30); a means (16) adapted to compare said diameter of said gas bubble to a reference value to determine whether said bubble is on an interface between layers of stromal lamellae (42); and a means (18) adapted to reposition said laser beam to focus the rays of said laser beam at another point when said comparing means (16) indicates that said bubble is

not on an interface (50) between layers of stromal lamellae (42), wherein said means for directing and said means for moving said laser beam comprise: means (18) for focusing the rays of a laser beam (22) to a start point in the stroma (40) to photoablate stromal tissue (38) at said start point so as to create a gas bubble in response thereto, the apparatus adapted to repeat said comparing and repositioning steps until a bubble results that is on an interface (50) between layers of stromal lamellae (42)."

Claims 2 to 12 are dependent claims.

VI. The appellant's arguments are summarised as follows:

Claim 1 was based on original claims 1 and 2 and the requirements of Article 123(2) EPC were thus met.

Document D3 only disclosed means for photoablating an area within the stromal tissue, this area constituting the entire inner surface of the corneal flap to be created. In contrast, claim 1 comprised means for photoablating solely the periphery of the envisaged flap and was thereby distinguished over the teaching of D3.

Neither D1 nor D2 gave a hint towards controlling focal depth adjustment to the interface between stromal lamellae based on the comparison of the "photoablation response" with a reference value, thereby simplifying the creation of a corneal flap. Accordingly, the

subject-matter of claim 1 was based on an inventive step.

## Reasons for the Decision

1. The appeal is admissible.
2. Amendments

Claim 1 is based on claims 1 and 2 as originally filed in combination with page 3, line 32 (see also page 12, lines 24 to 26) and page 5, lines 16 to 18 of the description as originally filed. The amendments made to the description are aimed at adapting it to the amended claims and acknowledging the relevant prior art documents. Therefore, the requirements of Article 123(2) EPC are met.

3. Novelty

Document D3 is state of the art under Article 54(3) EPC 1973. As shown in Figures 3 and 5 and described in paragraph [0026], the focal point is moved such that a photoablation response is created on the entire bottom surface of the envisaged flap, i.e. the area 58 bounded by lines 82 and 76. As acknowledged in the description of the present application (see paragraph bridging pages 3 and 4), the subject-matter of claim 1 is distinguished over D3 by the means adapted to sequentially move said focal point along a predetermined path to other said focal points within the stroma to photoablate stromal tissue with the photoablation response to create **solely** said periphery

for said flap. This functional feature of the claimed apparatus defines the movement of the focal point along a photoablation path in the form of a peripheral line, which is a clear distinction over the apparatus of D3, where the apparatus is designed to subject the whole interface area 58 to photodisruption, in contrast to what is stated in the impugned decision (see page 2 of the communication dated 18 July 2005).

Consequently, the subject-matter of claim 1 is new vis-à-vis D3 (Article 54 (1) and (3) EPC 1973).

Document D1 discloses an apparatus for performing intrastromal photorefractive keratectomy using a pulsed laser beam focused in a patterned sequence to focal spots in the stroma which are photodisrupted, resulting in a photoablation response in the form of a cavitation gas bubble. Document D2 also discloses an apparatus for laser-based corneal and intraocular surgery. The apparatus can be used to photoablate regions of various geometries within the cornea, inter alia to perform circumcisions in any predetermined shape. However, both documents fail to disclose means for measuring the diameter of a gas bubble and controlling the position of the laser beam based on this measurement as defined in claim 1.

None of the other cited documents discloses in combination all the features of claim 1.

Consequently, the subject-matter of claim 1 is new (Article 54 (1) and (2) EPC).

4. Inventive step

Neither D1 or D2 nor any other of the prior art documents cited in the search report gives a hint towards an apparatus with bubble-diameter controlled focal depth adjustment to the interface between stromal lamellae for creating solely a periphery of a corneal flap as defined in the last four paragraphs of claim 1. It is thereby possible to create a corneal flap with a minimum amount of tissue that must be cut, by separating adjacent layers of lamellae from each other along the interface between these layers (cf. page 5, line 17 to page 6, line 6 of the description).

Accordingly, the subject-matter of claim 1 is based on an inventive step within the meaning of Article 56 EPC.

5. Since the current set of application documents meets the requirements of the EPC, there is no need to hold oral proceedings.



## 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 with the order to grant a patent on the basis of the following documents:

Claims:

1 to 12 as filed with telefax letter of 23 March 2011;

Description:

pages 2, 3, 5, and 9 as filed with telefax letter of 23 March 2011;

pages 1, 4, 6 to 8 and 10 to 15 as originally filed;

Drawings:

sheets 1/3 to 3/3 as originally filed.

The Registrar:

The Chairman:

D. Sauter

P. L. P. Weber