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Datasheet for the decision of 28 September 2022

Case Number: T 0913/19 - 3.2.08

Application Number: 08846795.6

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Title of invention:
SYSTEM AND METHOD FOR SCANNING A PULSED LASER BEAM

Applicant:
Johnson & Johnson Surgical Vision, Inc.

Relevant legal provisions:
EPC Art. 54(2)

Keyword:
Novelty - (no)

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Case Number: T 0913/19 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 28 September 2022

Appellant: (Applicant)	Johnson & Johnson Surgical Vision, Inc. 31 Technology Drive, Suite 200 Irvine, CA 92618 (US)
Representative:	Carpmaels & Ransford LLP One Southampton Row London WC1B 5HA (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 8 October 2018 refusing European patent application No. 08846795.6 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairwoman	P. Acton
Members:	G. Buchmann
	Y. Podbielski

Summary of Facts and Submissions

I. The examining division had decided to refuse European patent application No. 08846795.6, due to lack of clarity (Article 84 EPC) and lack of novelty (Article 54(2) EPC).

II. The applicant filed an appeal against that decision.

III. Oral proceedings took place before the Board on 28 September 2022.

IV. The appellant (applicant) requested that the decision under appeal be set aside and a patent be granted on the basis of the main request or the auxiliary request, both filed with the grounds of appeal on 15 February 2019.

V. In the present decision, reference is made to the following document:

D12: WO 99/34742 A1

VI. **Claim 1 of the <u>main request</u>** reads:

"A system (10) for photoaltering a region of a material, the system comprising:
a laser (14) configured to produce a pulsed laser beam;
a controller (22) configured to transmit a signal; and
a scanner (20) coupled to the controller,

characterized in that

the scanner is operable and controlled to randomly scan the pulsed laser beam in the region in response to the signal to produce an undirected scan spot placement resulting in a scan spot pattern in the region having a scan spot density effective to photoalter the region of material and a locally randomized scan spot distribution."

Claim 1 of the auxiliary request reads (added features underlined):

"A system (10) for photoaltering a sub-surface region of a material, the system comprising:
a laser (14) configured to produce a pulsed laser beam;
a controller (22) configured to transmit a signal; and
a scanner (20) coupled to the controller and operable to direct the pulsed laser beam to a focal plane, wherein the subsurface region of the material lies within the focal plane,

characterized in that

the scanner is further operable and controlled to randomly scan the pulsed laser beam in the sub-surface region within the focal plane in response to the signal to produce an undirected scan spot placement resulting in a scan spot pattern in the sub-surface region having a scan spot density effective to photoalter the sub-surface region of material and a locally randomized scan spot distribution."

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

Main request - novelty

The methods described in D12 scanned the laser "in a predetermined scan pattern" which was different from the locally randomized scan spot distribution required by the claim. In D12 only the timely order of the application of the laser spots was random, not their local distribution as in claim 1.

The wording of claim 1 meant that the scanner was controlled by the controller for aiming the laser beam to an intended location. The location was, however, not exact but there was an additional random deviation from the selected location (the "bull's eye"). "Randomly" in the sense of claim 1 meant that the spot location was not determined in advance and then mechanistically followed. In contrast, the spot placement was "substantially undirected" which meant that it was not planned as in D12.

Therefore, the subject-matter of claim 1 of the main request was novel over D12.

Auxiliary request - novelty

Claim 1 was restricted to a system for photoaltering a sub-surface region of a material. For such a system, a laser having particular parameters was needed, which was not disclosed in D12.

Therefore, the subject-matter of claim 1 of the auxiliary request was novel over D12.

Reasons for the Decision

1. **Main request - Novelty - Article 54(2) EPC**

1.1 Document D12 discloses an apparatus for performing laser ablation to reshape human corneal tissue (page 3, lines 28-30). This is, in the words of claim 1, a system for photoaltering a region of a material.

It is undisputed that D12 discloses a system including all features according to the preamble of claim 1.

1.2 D12 describes four different scanning methods for the ablating laser beam. The passage on page 8, line 17 to page 9, line 6 describes a "proportionally randomized scan" (embodiment (3)). In this method, the "ablation points are disbursed [sic] about the ablation zone in a randomized manner" (page 8, lines 22-24). The ablation points "are not aligned in a regular array as in the circular or elliptical technique, or as in the linear scan technique, but instead are distributed in a randomized manner" (page 8, line 27 - page 9, line 1). This represents a locally randomized scan spot distribution according to claim 1.

1.3 The appellant argued that according to the general description of D12, on page 5, lines 10-22 the methods according to the invention of D12 scanned the laser "in a predetermined scan pattern" (lines 13-14). Only the timely order of the laser ablation points was random, not their local distribution.

However, as set out above, the embodiment (3) using the randomized scan is explicitly set in contrast to the

other embodiments of D12 with respect to the scanning pattern (page 8, line 27 - page 9, line 1). Therefore, the embodiment (3) does not include the predetermined scan pattern described on page 5. Moreover, lines 1 and 2 of page 9 describe that the "Proportional Randomized Scan" of the third embodiment results in an ablation sequence of ablation points which is "naturally randomized".

Finally, the disclosure of claim 28 (which depends on claim 24) of D12 also refers to a "predetermined line scan pattern", combined with a "generally randomized pattern within a predetermined annular ablation zone". According to the appellant, this supports the argument that in D12 the scan pattern is predetermined and not random. However, the words "randomized pattern within a predetermined annular ablation zone" includes a locally randomized distribution of the laser spots.

1.4 Furthermore, according to the appellant, claim 1 of the main request had to be interpreted as follows:

The scanner was controlled by the controller for aiming the laser beam to an intended location (the "bull's eye"). The location where the laser beams impacted was, however, not exact but there was an additional random deviation from the selected location. "Randomly" in the sense of claim 1 meant that the spot location was not determined in advance and then mechanistically followed. In contrast, the spot placement was "substantially undirected" which meant that it was not planned. The placement of the spots was comparable with a "spray".

This random placement was not generated by the controller but by some other entity which may produce a

calculated quasi-random or a true stochastic random distribution.

However, neither the claim nor the description provide any indication that the randomized scan spot distribution would be generated by any other device than the controller. The complete application is silent about such an uncontrolled random process, let alone the question how such a random "spray" could be achieved with a laser beam.

On the contrary, from the claim wording, according to which "the scanner is ... controlled to randomly scan the pulsed laser beam ... in response to the signal [of the controller]", it must be concluded that the controller provides a signal representing the random function and the scanner is directed accordingly. This interpretation is supported by paragraph [0010] of the description which mentions that the control is used to command the actions of the scanner wherein these actions could be a random scan providing an undirected scan spot placement.

Therefore, claim 1 includes a system in which the random location of the spots is predetermined by the controller and then provided to the scanner. This corresponds to the disclosure of D12.

1.5 Consequently, the subject-matter of claim 1 of the main request lacks novelty with respect to D12.

2. **Auxiliary request - Novelty - Article 54(2) EPC**

2.1 In claim 1 of the auxiliary request, it was added that the system is suitable to treat a sub-surface region wherein the focal plane of the laser beam is located in

the sub-surface region. This corresponds to the use of the system for forming a corneal flap e.g. in preparation of LASIK operations, or any other operation where sub-surface cuts are performed.

2.2 Document D12 is directed to particular methods of controlling the scanner to direct a laser beam to an eye. They are described in the context of tissue ablation, i.e. the treatment of a tissue surface. The passage on page 3, line 30 - page 4, line 8 confirms that the method of D12 is described with reference to the removal of corneal tissue.

However, said passage further mentions that the invention also relates to the use in other operations, including intrastromal photodisruption or laser lamellar dissection. These operations represent methods of cutting a sub-surface region of the cornea.

Therefore, the disclosure of D12 also includes a system which is suitable for photoaltering a sub-surface region of a material wherein the sub-surface region of the material lies within the focal plane, according to claim 1 of the auxiliary request.

2.3 The appellant argued that the surface ablation system described in D12 needed a laser having particular parameters, e.g. a wavelength of less than 400 nm, relatively large spot size and typical pulse widths of 10-20 ns. These parameters were typically achieved by an excimer laser.

In contrast, for a sub-surface application as claimed, a different laser had to be used. For photoaltering a sub-surface region, highly focused lasers producing femto-second pulses and having a wavelength of more

than 400 nm, were needed. Therefore, even if D12 mentioned the intrastromal photodisruption, no system was disclosed by D12 which was suitable to perform such an operation.

However, D12 concentrates particularly on the control of the scanner, and does not explicitly describe the laser parameters used in the system. The laser parameters needed for the described particular application result implicitly for the skilled person reading the document.

In the same way, when reading the information that the apparatus of D12 is also used for intrastromal photodisruption, the skilled person concludes that a suitable laser has to be included in that system.

Therefore, the femto-second laser suitable for a system for photoaltering a sub-surface region is implicitly present in D12 in the same way as the laser used for the described surface ablation.

2.4 Therefore, the subject-matter of claim 1 of the auxiliary request lacks novelty with respect to document D12.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairwoman:

C. Moser P. Acton

Decision electronically authenticated