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Datasheet for the decision of 9 July 2019

Case Number: T 0768/15 - 3.4.02

Application Number: 12155423.2

Publication Number: 2481346

IPC: A61B3/12

Language of the proceedings: EN

Title of invention:
Adaptive optics for compensating for optical aberrations in an imaging process

Applicant:
Heidelberg Engineering GmbH

Headword:

Relevant legal provisions:
EPC 1973 Art. 84
RPBA Art. 13(1)

Keyword:
Claims - clarity - main request (no)
Late-filed auxiliary requests - request clearly allowable (no) - admitted (no)

Decisions cited:
T 1634/09

Catchword:

Europäisches Patentamt
European Patent Office
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Beschwerdekammern

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Chambres de recours

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Case Number: T 0768/15 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 9 July 2019

Appellant: (Applicant)	Heidelberg Engineering GmbH Tiergartenstraße 15 69121 Heidelberg (DE)
Representative:	Tomkins & Co 5 Dartmouth Road Dublin 6 (IE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 3 December 2014 refusing European patent application No. 12155423.2 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	R. Bekkering
Members:	A. Hornung
	B. Müller

Summary of Facts and Submissions

I. The applicant lodged an appeal against the decision of the examining division refusing European patent application No. 12155423.2 because the requirements of Article 123(2) EPC (main request and first to fourth auxiliary requests then on file), Article 84 EPC (main request and first to sixth auxiliary requests then on file) and Article 56 EPC (main request and first to sixth auxiliary requests then on file) were not fulfilled.

II. The applicant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request filed with the statement setting out the grounds of appeal dated 31 March 2015 or of the first or second auxiliary requests filed with the letter dated 6 June 2019.

III. The board was informed by a letter dated 5 July 2019 that neither the applicant nor its representative would attend the oral proceedings scheduled for 9 July 2019.

IV. Oral proceedings before the board were held on 9 July 2019 in the absence of the duly summoned appellant.

V. Claims of the requests

Main request

Claim 1 according to the main request reads as follows:

"A device for use in an optical system to compensate for aberrations in a beam of light caused by an eye of a patient, wherein the light beam is directed along a beam path, with the beam path defining an axis and said system characterised by:

a Hartmann Shack type sensor (16) for monitoring the light beam;

at least one dual compensator (34) positioned on the beam path and substantially centered thereon wherein said dual compensator comprises a first plate (36) having a substantially flat surface with an aberration specific pattern presented thereon, wherein the pattern has a central point and defines a pattern axis in the surface of said plate; and a second plate (38) having a substantially flat surface with a same aberration specific pattern presented thereon, wherein the central point of said first plate and the central point of said second plate are positioned on the beam path axis with the respective pattern axes substantially perpendicular to the beam path axis, and such that when the dual compensator is assembled, the pattern axis of said first plate is established at an angle α relative to the pattern axis of said second plate;

a means configured to rotate said assembled dual compensator about the axis of the beam path through an angle β measured from a base line perpendicular to the beam axis to compensate for asymmetrical aberrations in the light beam, such that the angle α between the two plates is maintained during the rotation; and

a MEMS mirror (18) for concerted use with the dual compensator to compensate for higher order aberrations and symmetrical aberrations in the light beam."

First auxiliary request

Claim 1 according to the first auxiliary request reads as follows:

"An optical system configured to compensate for aberrations in a beam of light caused by an eye of a patient, wherein the light beam is directed along a beam path, with the beam path defining an axis and said system characterised by:

a Hartmann Shack type sensor (16) for monitoring uncompensated aberrations caused by the eye of the patient in a wavefront of the light beam;

at least one dual compensator (34) positioned on the beam path and substantially centered thereon wherein said dual compensator comprises a first plate (36) having a substantially flat surface with an aberration specific pattern presented thereon, wherein the pattern has a central point and defines a pattern axis in the surface of said plate; and a second plate (38) having a substantially flat surface with a same aberration specific pattern presented thereon, wherein the central point of said first plate and the central point of said second plate are positioned on the beam path axis with the respective pattern axes substantially perpendicular to the beam path axis, and with the pattern axis of said first plate established at an angle α relative to the pattern axis of said second plate, and wherein the or each dual compensator is rotated about the axis of the beam path through a patient-specific angle β measured from a base line perpendicular to the beam axis to compensate for an asymmetrical aberration introduced by the eye of the patient into the light beam, such that the angle α between the two plates is maintained during the rotation; and

a MEMS mirror (18) for use in combination with the dual compensator to compensate for aberrations monitored by the Hartmann Shack sensor, wherein the MEMS mirror compensates for higher order aberrations and symmetrical aberrations associated with myopia, hyperopia and spherical aberration

in the light beam, while an asymmetrical aberration in the light beam is compensated by the dual compensator."

Second auxiliary request

Independent claim 1 of the second auxiliary request differs from claim 1 of the first auxiliary request in that the feature of claim 1 of the first auxiliary request "such that the angle α between the two plates is maintained during the rotation" is deleted.

Reasons for the Decision

1. Main request

Claim 1 lacks clarity (Article 84 EPC 1973) for the following reason alone:

Claim 1 is directed to a device. It attempts to define the technical features of the claimed device by referring to its use "in an optical system to compensate for aberrations in a beam of light caused by an eye of a patient". All features of claim 1 relate to a light beam not belonging to the claimed device and to the optical system in which the claimed device is to be used. However, such a referral to the use of a device does not allow to clearly define the technical features of the device itself. The applicant did not present any argument in favour of clarity of this kind of definition of the claimed device even though the board had raised this objection in the communication annexed to the summons to oral proceedings (in point 6.1.1, first paragraph).

2. First auxiliary request

The board decides not to admit the first auxiliary request into the proceedings under Article 13(1) RPBA.

2.1 The first auxiliary request has been filed in response to the communication annexed to the summons to oral proceedings.

2.2 According to the applicant's letter, page 2, first paragraph of the chapter entitled "Clarity", "the amendments to the claims set out above address the clarity issues raised in the communication appended to the summons". No other argument was provided by the applicant in favour of the admission of the first auxiliary request into the proceedings.

One of the criteria for admitting new requests into the proceedings is indeed that sound reasons, for instance, new developments occurring during the proceedings, exist therefor. New objections raised by the board may represent such new developments. It remains true, however, that a new auxiliary request filed in response to a summons to oral proceedings represents an amendment of the party's case in the sense of Article 13(1). Such an amendment of the party's case may be admitted only at the board's discretion. See e.g. decision of the board of appeal in case T 1634/09, point 3 of the reasons.

2.3 According to established jurisprudence of the boards of appeal (see Case Law of Boards of Appeal, 8th edition 2016, sections IV.E.4.4.1 and IV.E.4.4.2a), new auxiliary requests containing amended claims may be admitted into the proceedings under Article 13(1) RPBA *inter alia* if the claims are prima facie clearly allowable, wherein "[c]laims are clearly allowable if the board can quickly ascertain

that they do not give rise to new objections and overcome all outstanding objections".

2.4 In the present case, this condition is not fulfilled since amended claim 1 contains subject-matter which extends beyond the content of the application as filed, contrary to the requirement of Article 123(2) EPC.

2.4.1 The amendment concerns the expression "uncompensated aberrations caused by the eye of the patient in a wavefront of" in the feature of claim 1 "a Hartmann Shack type sensor (16) for monitoring uncompensated aberrations caused by the eye of the patient in a wavefront of the light beam".

2.4.2 The applicant submitted merely "that this is implicitly disclosed in the application as filed" (see the applicant's letter of 6 June 2019, page 2, first paragraph), without referring to specific passages of the application as filed and/or submitting additional arguments explaining why the amendment was implicitly disclosed in the application as filed.

2.4.3 It is to be noted that the applicant did not attend the oral proceedings during which it could have provided further arguments as to the basis of the amended feature in the application as originally filed.

2.4.4 The board also is unable to identify a basis for the amended feature in the application as filed.

According to figure 1, the Hartmann Shack sensor (16) receives laser light either directly from the laser source (12) after having been transmitted through the beamsplitter or after having been reflected by the beamsplitter, reflected by the MEMS mirror (18), passed through the low order aberration compensation device (30), reflected by the

eye (22) of the patient and passed a second time through the compensator device (30) and reflected by the beamsplitter. In the first case, the Hartmann Shack sensor (16) monitors laser light which does not comprise any aberrations caused by the eye (22) of a patient. In the second case, the Hartmann Shack sensor (16) monitors laser light which has been compensated by the MEMS mirror (18) and the low order aberration compensation device (30). In other words, in none of these two cases is the Hartmann Shack sensor arranged for monitoring "uncompensated aberrations caused by the eye of the patient". Thus, figure 1 does not represent a basis for the amended feature of claim 1.

This conclusion is confirmed by the description of figure 1, stating that "the system 10 includes a laser source 12 for generating a laser beam 14. Through electronic connections, not shown in Fig. 1, this laser beam 14 is then monitored by a sensor 16 (preferably a Hartmann Shack type sensor), it is also refined by a MEMS mirror 18 that removes certain aberrations from the laser beam 14, and it is controlled by a scanner 20" (page 6, lines 17 to 22). This passage discloses in general terms that the Hartmann Shack sensor (16) monitors a laser beam but remains silent about which kind of laser beam is monitored. The skilled person would deduce from this passage that the Hartmann Shack sensor (16) monitors the laser beam generated by the laser source before it encounters any of the MEMS mirror, the compensation device or the eye of the patient, i.e. the Hartmann Shack sensor is not arranged for monitoring "uncompensated aberrations caused by the eye of the patient".

2.5 A condition for admitting new auxiliary requests under Article 13(1), namely that the claims be prima facie clearly allowable, is also not fulfilled in view of the clarity objections raised in points 6.1.4 and 6.1.5 of the

communication annexed to the summons to oral proceedings, which clearly remain valid. These clarity objections read:

"6.1.4 Claim 1 defines means which are configured to rotate the dual compensator to compensate for asymmetrical aberrations. However, it appears to be unclear how this compensation of asymmetrical aberrations is effectively obtained. Claim 1 neither defines a specific type of rotation nor specific aberration patterns which imply that asymmetrical aberrations are effectively compensated in the light beam. It would appear, therefore, that claim 1 attempts to define the claimed subject-matter in terms of the result to be achieved, i.e. "compensation of asymmetrical aberrations", instead of defining it in terms of structural features responsible for achieving the claimed result."

"6.1.5 There appears to be no limiting effect of the scope of claim 1 related to the rotation angle β because the angle β is measured from an arbitrary base line.

Claim 1 defines two plates which are in an angular position such that their respective pattern axes are rotated relative to each other by a certain final angle α. This feature of claim 1 is independent of whether the final angle α was obtained by rotating the plates by an angle α followed by an angle β (as defined in claim 1) or by any other combination of angles, as long as means exist allowing the assembled plates to be rotated together."

Against this backdrop the board makes the following findings:

Firstly, amended claim 1 does still not comprise clear technical features which enable asymmetrical aberrations to be compensated. In particular, it is obscure which concrete

pattern is designated in claim 1 by the expression "aberration specific pattern". Secondly, referral to an undefined base line and to an undefined patient-specific angle β does not make it possible to define concrete technical features of the dual compensator of claim 1.

2.6 In conclusion, since claim 1 of the first auxiliary request is prima facie not clearly allowable, the board exercises its discretion under Article 13(1) RPBA in not admitting the first auxiliary request into the proceedings.

3. Second auxiliary request

The second auxiliary request has been filed in response to the communication annexed to the summons to oral proceedings.

Since claim 1 of the second auxiliary request comprises the same amended feature as claim 1 of the first auxiliary request, i.e. "a Hartmann Shack type sensor (16) for monitoring uncompensated aberrations caused by the eye of the patient in a wavefront of the light beam", the board decides not to admit the second auxiliary request into the proceedings under Article 13(1) RPBA for the same reasons as those given in point 2. above.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Kiehl R. Bekkering

Decision electronically authenticated