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**Datasheet for the decision
of 28 April 2022**

Case Number: T 1694/19 - 3.4.02

Application Number: 06730883.3

Publication Number: 1865306

IPC: G01N21/64, G02B21/00

Language of the proceedings: EN

Title of invention:
LIGHT MEASURING APPARATUS

Patent Proprietor:
Olympus Corporation

Opponent:
Carl Zeiss Microscopy GmbH

Headword:

Relevant legal provisions:
EPC 1973 Art. 56, 100(a), 100(b), 111(1), 114(1)
RPBA 2020 Art. 11

Keyword:
Inventive step - main request (no)
Remittal - (yes)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 1694/19 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 28 April 2022

Appellant: Carl Zeiss Microscopy GmbH
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 11 March 2019
rejecting the opposition filed against European
patent No. 1865306 pursuant to Article 101(2)
EPC.**

Composition of the Board:

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

Summary of Facts and Submissions

- I. The opponent appealed against the decision of the opposition division rejecting the opposition against European patent No. 1 865 306.

Opposition had been filed against the patent as a whole and based on the grounds for opposition under Article 100(a) EPC 1973, together with Article 56 EPC 1973, and under Article 100(b) EPC 1973.

The opposition division had found that the grounds for opposition set out in Articles 100(a) and 100(b) EPC 1973 did not prejudice the maintenance of the patent as granted.

- II. Oral proceedings before the board were held on 28 April 2022.
- III. The opponent (appellant) requested that the decision under appeal be set aside and that the patent be revoked.
- IV. The patentee (respondent) requested that the appeal be dismissed or, in the alternative, that the decision under appeal be set aside and the case be remitted to the department of first instance for further prosecution, or, as a further alternative, that the patent be maintained in amended form on the basis of the claims of auxiliary requests 1 to 7, all filed with a letter dated 25 March 2022, and that documents D11 to D14 filed by the patentee with the statement of grounds of appeal not be admitted to the proceedings.

V. The following documents will be referred to in the present decision:

D1: DE 197 02 753 A1

D5: DE 103 23 921 A1.

VI. Independent claim 1 according to the main request reads as follows (the features of claim 1 are preceded by the numbering **1A** to **1H** as used in the appealed decision, point 10.1, and in the parties' submissions):

1A: "A confocal fluorescence microscope which has a light source (1, 2) for emitting light to a sample, and

1B: a light guide optics system for guiding light generated as a result of applying the emitted light to the sample, to a photodetector (26),

1C: wherein the light guide optics system is arranged in a lightproof unit (20) which interrupts disturbance light, and

1D: includes optical elements (21, 24, 25, 26, 34) for guiding the generated light to the photodetector (26);

1E: a positioning section (23, 27, 29, 33) configured to adjust a position of at least one of the optical elements (21, 26, 34); and

1F: a position detecting section (31) configured to detect a position of at least one of the optical elements (34) by an optical method, and

1G: the confocal fluorescence microscope comprises a position adjusting section (41) configured to adjust positions of the optical elements (21, 26, 34) by

controlling the positioning section (23, 27, 29, 33) and the position detecting section (31), and

1H: a light emission control section (41) configured to control operations of starting light emission of the position detecting section (31) when adjusting a position of at least one of the optical elements (34), and stopping light emission of the position detecting section (31) when measuring the sample".

VII. Claim 1 of the first auxiliary request differs from claim 1 of the main request in that the following feature has been added at the end of feature **1D**:

"wherein the optical elements (21, 24, 25, 26, 34) include at least a pinhole (21) and a filter (34) having a function of selectively transmitting or reflecting a wavelength of an incident light",

and that the wording "at least one of" has been deleted from feature **1F**.

Reasons for the Decision

1. Main request - sufficiency of disclosure

According to the appealed decision, point 11, "the opposition based on Article 100(b) EPC does not prejudice the maintenance of the patent as granted". The opponent did not present any counter-argument in its statement of grounds of appeal. The board does not see any reason either why the patent should be revoked for not disclosing the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

2. Main request - inventive step

The subject-matter of claim 1 does not involve an inventive step in view of document D1 in combination with document D5 and common general knowledge (Article 56 EPC 1973).

2.1 Distinguishing features with respect to the closest prior art

It is undisputed between the parties that D1 represents the closest prior art and that the subject-matter of claim 1 differs from the microscope of D1 in that it comprises features **1C** and **1F** to **1H**.

2.2 Objective technical problem

As submitted by the patentee in its letter dated 25 March 2022, pages 3 to 6, the objective technical problem solved by the distinguishing features **1C** and **1F** to **1H** in combination is "how to provide a confocal fluorescence microscope allowing for efficiently achieving a high fluorescence signal-to-noise ratio". The board concurs with the patentee's view.

2.3 Solution of the objective technical problem

In order to solve the objective technical problem of achieving a high fluorescence signal-to-noise ratio, the skilled person has to increase the signal of the fluorescent light arriving from the sample at the photodetector placed behind the pinhole and reduce noise, i.e. parasitic light, arriving at the photodetector.

2.3.1 Starting from D1, the skilled person is taught that the position of the confocal pinhole of the microscope is

adjustable along the optical axis as well as perpendicular thereto (D1, column 3, line 33 to column 4, line 35; figures 4 and 5). This positional adjustment of the pinhole compensates for axial chromatic aberrations of various optical elements (column 3, lines 47 to 53) and/or for angular errors of the beamsplitters or of their mounting onto the beamsplitter wheel leading to transverse errors in the pinhole plane (column 4, lines 15 to 21). D1 further discloses a control unit (34) for precisely controlling these adjustments of the pinhole (see e.g. column 3, lines 57 to 63; column 4, lines 4, 31 and 34). A precise adjustment of the position of the pinhole with respect to the image of the sample point increases the amount of fluorescent light collected by the photodetector placed behind the pinhole. Indeed, if the pinhole is axially not positioned precisely in the image plane of the sample point or if the pinhole is transversely decentered with respect to the image of the sample point, the amount of fluorescent light collected by the photodetector is reduced. However, D1 is silent about concrete technical means for implementing these adjustments of the pinhole. Therefore, the skilled person has to determine concrete means for adjusting the pinhole so as to solve the objective technical problem, i.e. to achieve a high signal-to-noise ratio.

2.3.2 Increasing the signal

Looking for concrete means of how to adjust the position of the pinhole and taking into account both the explicit teaching in D1 (see e.g. D1, column 3, line 62: "a precise setting"; column 4, line 4: "a precise adjustment") and the implicit general requirement in a confocal microscope to adjust the pinhole with high precision, the skilled person would obviously consult D5. Indeed, the title of D5, "adjustable pinhole (...)", already announces the

sought-for solution. When consulting D5, the skilled person is taught how to adjust the position of a pinhole with high precision. In particular, D5, [0016], discloses an optical encoder comprising a light emitter and a photodetector for adjusting the position of the pinhole with high precision, namely a reproducible setting of the pinhole within 0.3 microns (D5, [0002]). By applying the teaching of D5 to the microscope of D1, the pinhole in the microscope of D1 will be positioned with high precision, thereby solving the objective technical problem of achieving a high signal-to-noise ratio. In other words, by implementing the optical method of D5 using an optical encoder in the microscope of D1, the skilled person arrives directly at features **1F** and **1G** of claim 1.

2.3.3 Reducing noise

Noise is generated at the photodetector by any light not generated by the sample. Ambient light and light emitted by the optical encoder represent such parasitic or disturbance light.

- (a) Since D1 does not explicitly disclose a lightproof unit surrounding the light guide optics system of the confocal microscope, ambient light could, in principle, fall onto the photodetector. However, as submitted by the opponent, ambient light falling onto the photodetector would render very difficult, if not impossible, the detection of the comparably very weak signal generated by the sample. Therefore, it would be obvious to the skilled person to arrange a lightproof unit around the light guide optics system to avoid ambient light generating noise at the photodetector.

Accordingly, feature **1C** does not contribute to inventive step.

(b) Moreover, while putting the teaching of D5 into practice, the skilled person would realise that the optical encoder, located close to the pinhole and, hence, to the highly photosensitive confocal PMT detector of D1, emits light which potentially disturbs the measurement of the sample. Certainly, this occurs only when the optical encoder is switched on and emits light for detecting the position of the pinhole. In order to eliminate the noise generated by the optical encoder, it would be obvious to a person skilled in the art to simply switch off the optical encoder. Switching off the optical encoder is not detrimental to the correct functioning of the confocal microscope of D1. Indeed, the position of the pinhole is to be detected only when necessary, e.g. after an optical element of the light guide optics system is exchanged, moved or switched, thereby displacing the optimal position of the pinhole. Once the pinhole is positioned at the optimal position and the measurement of the light emitted by the sample takes place, the position of the pinhole does not need to be measured by the optical encoder anymore. Therefore, the skilled person, based on its own cognitive abilities and common general knowledge, would arrange the control unit (34) of D1 so as to start light emission of the optical encoder when needed, i.e. when adjusting the pinhole position, and to stop light emission of the optical encoder when not needed, i.e. measuring the sample.

This course of action of the skilled person leads to a microscope including feature **1H** of claim 1 in an obvious manner.

2.4 In conclusion, the skilled person, starting from D1 and trying to solve the objective technical problem, would modify the microscope of D1 so as to comprise features **1C** and **1F** to **1H** and arrive at the subject-matter of claim 1 in an obvious manner. The subject-matter of claim 1 does, therefore, not involve an inventive step over D1, in combination with D5 and common general knowledge.

2.5 Counter-arguments of the patentee

2.5.1 The patentee disagreed that D1 was silent about concrete means for implementing the adjustments of the pinhole in D1. According to the patentee, "the control unit 34, the actuating means/unit 38 and the data lines connecting the control unit and the actuating means/unit 38 are the concrete means in question" (patentee's letter dated 25 March 2022, page 7, last paragraph). Therefore, in the patentee's view, "the skilled person would not even have to look for means for how to adjust the position of the pinhole" (patentee's letter dated 25 March 2022, page 8, second paragraph).

The board does not find the patentee's arguments convincing. The expressions "control unit" and "actuating means/unit" are too vague for the skilled person to deduce which devices are actually referred to in D1. The concrete technical features of the "control unit" and the "actuating means/unit" are left undefined in D1. Therefore, when implementing the invention of D1, the skilled person would have to look for concrete actuating means and control means which allow for adjusting the position of the pinhole with high precision.

2.5.2 The patentee furthermore argued that "the skilled person would not even consider placing any light emitter within a lightproof unit, because this would dilute the advantage

achieved by the lightproof unit, namely, reducing stray light inside the lightproof unit" (patentee's letter dated 25 March 2022, page 8, third paragraph). Rather, the skilled person would implement one of the well-known "'dark' techniques for position detection" which "do not produce stray light inside the lightproof unit".

The board is not convinced by this argument. While it is true that the skilled person would not consider using a light source within the lightproof unit during the measurement of the weak signal generated by the fluorescent sample, using an optical encoder with a light source for positioning the pinhole with high precision **outside** the phase of measuring the signal from the sample does not generate any parasitic or disturbance light diluting the advantage achieved by the lightproof unit. As explained in point 2.3.3 (b), switching off the optical encoder during the measurement of the fluorescent signal would be obvious.

2.5.3 The patentee submitted that neither D1 nor D5 taught a light emission control section as defined in feature **1H** of claim 1. In particular, "there is not even the slightest prompting in any of documents D1 and D5 for providing a light emission control section configured to control operations of starting light emission of the position detecting section when adjusting a position of at least one of the optical elements, and stopping light emission of the position detecting section when measuring the sample" (patentee's letter dated 25 March 2022, page 8, fourth paragraph to page 9, first paragraph).

The applicant's argument is not found persuasive by the board because, due to the skilled person's own cognitive abilities and common general knowledge, there is no need for any prompting in the prior art documents to switch on

the optical encoder when a position of the pinhole has to be measured by the optical encoder and to switch it off when no position of the pinhole has to be measured.

- 2.5.4 The applicant submits that it "would evidently be much too complicated" to combine the pinhole device of D5 into the microscope of D1 (patentee's letter dated 25 March 2022, page 9, third paragraph and paragraph bridging pages 9 and 10).

The board cannot follow the patentee's argumentation. It is not disputed by the patentee that optical encoders and their control means are well-known in the art. First of all, as explained in point 2.3.1 above, D1 is silent about any concrete means for adjusting the pinhole position. Therefore, the skilled person would in any case have to adapt the microscope of D1 and render more concrete the general and theoretical disclosure of the microscope of D1. Secondly, since an optical encoder and the means for switching it on and off depending on whether it is used or not are as such well-known in the art, the board is convinced that the skilled person would have no difficulties implementing feature **1H** into the microscope of D1.

3. Remittal of the case

- 3.1 Given that the decision under appeal cannot be upheld, the appeal is allowable within the meaning of Article 111(1), first sentence, EPC 1973. According to the second sentence of that provision, in deciding on the appeal the board "may either exercise any power within the competence of the department which was responsible for the decision appealed or remit the case to that department for further prosecution".

3.2 The board notes that the patentee had in total filed seven auxiliary requests 1 to 7 during the first- and second-instance opposition proceedings and that it maintained all these requests. None of these auxiliary requests had been decided upon or at least preliminarily assessed by the opposition division. In view of the fact that the auxiliary requests 1 to 7 define subject-matter along diverging directions, it is to be noted that the board has not taken any decision on the admittance of the auxiliary requests 1 to 7 into the proceedings. If the board were to admit one or several auxiliary requests to the proceedings, the board would have to assess the patentability of the subject-matter of any of these auxiliary requests in view of the available prior art. This assessment of patentability might amount to a fresh case.

In view of the primary object of the appeal proceedings to review the decision under appeal in a judicial manner (Article 12(2) RPBA 2020), the necessity of an assessment that might amount to a fresh case constitutes special reasons within the meaning of Article 11 RPBA 2020 for remitting the case to opposition division for further prosecution.

3.3 The patentee requested that the case be remitted to the opposition division for further prosecution.

3.4 During the oral proceedings before the board, the opponent stated for the first time in the appeal proceedings that it had no objections against claim 1 of the first auxiliary request. The board, however, was prima facie not in a position to find that the patent could be maintained on the basis of claim 1 of the first auxiliary request. The board rather considered that the opposition division

should examine the facts of its own motion (Article 114(1) EPC 1973).

3.5 Therefore, the board exercises its discretion under Article 111(1) EPC 1973 and Article 11 RPBA 2020, in remitting the case to the opposition division 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 first instance for further prosecution.

The Registrar:

The Chairman:



H. Jenney

R. Bekkering

Decision electronically authenticated