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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BERNARDUS HENDRIKUS WILHELMUS HENRDIKS,
GERHARDUS WILHELMUS LUCASSEN, RAMI NACHABE, NENAD
MIHAJLOVIC, ADRIEN EMMANUEL DESJARDINS, JEROEN JAN
LAMBERTUS HORIKX, and MARJOLEIN VAN DER VOORT

Appeal 2015-005816
Application 13/641,894
Technology Center 2800

Before BRADELY R. GARRIS, LINDA M. GAUDETTE, and
DEBRA L. DENNETT, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants¹ appeal under 35 U.S.C. § 134(a) from the Examiner's decision² finally rejecting claims 1, 2, and 4–14. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

Of the appealed claims, claims 1, 13, and 14 are independent. For reference, claims 1 and 14 are reproduced below (App. Br., Claims App'x):

1. A system for obtaining extended microscopy information, comprising
 - a first light source (544) for imaging,
 - a spectrometer (550) comprising a second light source (546) and an optical detector (548), and
 - an interventional device (542), where the interventional device (542) has
 - imaging optics capable of guiding light from the first light source (544) so as to perform imaging of a first region (118) of an associated sample (552),
 - an imaging system capable of and arranged for imaging the first region (118) of the associated sample (552),
 - a first guide (108) for guiding photons from the second light source (546) to an exit position (128) on a distal end of the interventional device, the photons being emittable from the exit position (128), and
 - a second guide (112) for guiding photons from an entry position (130) on the distal end of the interventional device and to the optical detector (548),wherein the exit position (128) and the entry position (130) are spatially separated and spatially oriented so that, upon positioning the distal end of the interventional device adjacent to the associated sample, an average spectral information is obtainable from photons collectable at the entry position, the

¹ Appellants identify the real party in interest as Koninklijke Philips NV of Eindhoven, Netherlands. Appeal Brief filed Dec. 19, 2014 (“App. Br.”), 2.

² Final Office Action mailed June 4, 2014 (“Final Act.”).

average spectral information comprises information about a second region (116) of the associated sample, and
wherein the exit position and the entry position are arranged so that the second region (116) is larger than the first region (118), and
wherein the exit position and the entry position are arranged so that the photons emittable at the exit position and subsequently collectable at the entry position are diffusive photons which experience multiple scattering events.

14. A method for extending microscopy information, the method comprising the steps of,
imaging (S1) a first region of an associated sample,
performing (S2) a spectroscopic analysis of a second region of the associated sample, the spectroscopic analysis comprising the steps of
guiding (S3) photons from a light source to an exit position, and
guiding (S4) photons from an entry position and into an optical detector,
wherein the exit position and the entry position are spatially separated and spatially oriented so that an average spectral information of photons emitted from the exit position and collected at the entry position, is dependent on a second region of the associated sample, when the distal end of the interventional device is placed adjacent to the associated sample, the second region being larger than the first region, and
wherein the exit position and the entry position are spatially separated and spatially oriented so that the photons emittable at the exit position and subsequently collectable at the entry position are diffusive photons which experience multiple scattering events.

The Examiner maintains the following grounds of rejection on appeal (Examiner's Answer mailed Mar. 19, 2015 ("Ans."), 2):

1. claims 13 and 14 are rejected under pre-AIA 35 U.S.C. § 102(b) as anticipated by Xie (US 2008/0294002 A1, pub. Nov. 27, 2008); and

2. claims 1, 2, and 4–12 are rejected under pre-AIA 35 U.S.C. § 103(a) as follows:

a. claims 1, 2, 4, and 7–9 over Xie and Fulghum et al. (US 2010/0069720 A1, pub. Mar. 18, 2010 (“Fulghum”));

b. claim 5 over Xie, Fulghum and Seibel et al. (US 2008/0249369 A1, pub. Oct. 9, 2008);

c. claim 6 over Xie, Fulghum and Allen et al. (US 2008/0004495 A1, pub. Jan. 3, 2008);

d. claim 10 over Xie, Fulghum and Papaioannou et al. (US 2009/0203991 A1, pub. Aug. 13, 2009);

e. claim 11 over Xie, Fulghum and Boutillette et al. (US 2006/0030753 A1, pub. Feb. 9, 2006); and

f. claim 12 over Xie, Fulghum and Boutillette et al., further in view of Feld et al. (US 2002/0156380 A1, pub. Oct. 24, 2002).

We turn first to independent claim 1 (“A system for obtaining extended microscopy information, comprising . . . an interventional device”) and independent claim 13 (“An interventional device”). The respective positions of the Examiner and Appellants raise the following issue on appeal: Did the Examiner reversibly err in finding Xie discloses or suggests an “interventional device” wherein “the exit position [for photons from the device into a sample] and the entry position [for photons from the sample into the device] are arranged” (claim 1), or “spatially separated and spatially oriented” (claim 13), “so that the photons emittable at the exit position and

subsequently collectable at the entry position are diffusive photons which experience multiple scattering events” (claims 1 and 13)? We answer this question in the affirmative for the reasons discussed below.

As an initial matter, we note the respective positions of the Examiner and Appellants are based on an underlying disagreement over the scope and meaning of the above-quoted claim language, which appears in the final wherein clauses of claims 1 and 13. Appellants argue the broadest reasonable interpretation of this language requires an arrangement of entry and exit positions for photons at the distal end of an interventional device that enables collection of, at the entry position of the device, the *same* photons emitted at the exit position of the device. *See* App. Br. 9. The Examiner contends the argued claim language merely requires that “the entry position is spaced such that it is capable of receiving diffusive photons which experience multiple scattering events.” Ans. 3. The Examiner maintains claims 1 and 13 do not require that the photons emitted at the exit position and the photons collected at the entry position are one and the same. *See id.* Appellants argue the plain meaning of the claim language supports an interpretation of the claims as limited to a single group of photons, noting that “the two adjective phrases ‘*emittable at the exit position*’ and ‘*subsequently collectable at the entry position*’ both have the same subject ‘*photons*’ and are connected by the conjun[ct]ion ‘*and*.’” Reply Brief filed May 18, 2015 (“Reply Br.”), 4.

We agree with Appellants, and find their interpretation of the argued claim language is consistent with the description on Specification page 4, lines 24–30. Accordingly, we interpret claims 1 and 13 as requiring an interventional device having a distal end comprising an exit position and an

entry position arranged (or oriented) with respect to each other such that, when the distal end is placed adjacent a sample and diffusive photons are emitted from the exit position into the sample, the entry position into the device from the sample is capable of collecting the same diffusive photons emitted from the exit position.

Having construed the argued claim language, we turn to the merits of the rejections of claims 1 and 13.

The Examiner finds Xie Figure 13 describes an interventional device having a distal end “wherein the exit position and the entry position are arranged” (claim 1), or “spatially separated and spatially oriented” (claim 13), “so that photons emittable at the exit position and subsequently collectable at the entry position are diffusive photons which experience multiple scattering events” (claims 1 and 13). *See* Final Act. 4, 7. The Examiner finds, more specifically, that the entry and exit positions illustrated in Figure 13 are “diametrically directed away from each other preclud[ing] any photon emitted at the exit position [from entering the entry position] after only one reflection.” *Id.*

Appellants argue the facts and reasons relied on by the Examiner are insufficient to support a finding that the entry and exit positions of Xie’s device are arranged in a manner whereby the entry position is capable of collecting the same diffusive photons emitted from the exit position. *See, e.g.,* App. Br. 10. Appellants explain that in Xie’s device, a light guide 17 emits excitation light that irradiates living tissue through a prism 42e. *See id.* at 9. According to Appellants, living tissue having fluorescence material included therein, when irradiated, generates fluorescent photons because of its excited state. *See id.* at 9–10. Appellants contend these fluorescent

photons, collected by fluorescence image guide 20, are not the same photons emitted by light guide 17. *See id.* Appellants reference Xie, paragraph 63, in support of their argument that fluorescence is caused by absorption of photons, not diffusion, and, therefore, the photons collected at the entry position (end of guide 20) are not diffusive photons, and not the same photons emitted at the exit position (end of guide 17). *See id.*

The Examiner, in response, finds “less than 100% of light emitted by Xie will actually cause fluorescence. The remaining output light will experience other types of scattering, e.g. Rayleigh and Raman, which would also be collected by the probe of Xie.” Ans. 5. The Examiner further finds:

When photons undergo multiple scattering events, they do not all undergo the exact same scattering events, and therefore, will not exit the sample in the same spot or even same orientation; rather, they will randomly scatter from point to point until they leave the sample in the last direction of scatter. . . . Therefore, the entry position can be spaced any distance from the exit position and still be capable of receiving photons which have undergone multiple scattering events.

Id. at 4–5. The Examiner’s finding that Xie’s device would emit not only photons that are absorbed by the sample, but also some percentage that are diffusively scattered, is supported by the article³ cited by Appellants in the Evidence Appendix to the Appeal Brief (App. Br. 21). Moreover, the facts and reasons relied on by the Examiner in the Final Office Action and Answer support the Examiner’s finding that the entry position (end of guide 20) in Xie’s device would be capable of collecting the same diffusive photons emitted from the exit position (the end of guide 17).

³ Department of Earth and Planetary Sciences, “in situ Planetary Raman Spectroscopy”, Washington University in St. Louis, <http://epsc.wustl.edu/haskingroup/Raman/fags.htm> (printed 9/10/2014).

“[W]hen the prior art evidence reasonably allows the PTO to conclude that a claimed feature is present in the prior art, the evidence ‘compels such a conclusion if the applicant produces no evidence or argument to rebut it.’” *In re Crish*, 393 F.3d 1253, 1259 (Fed. Cir. 2004) (quoting *In re Spada*, 911 F.2d 705, 708 n.3 (Fed. Cir. 1990)).

Appellants, in their Reply Brief, continue to assert that the configuration of Xie’s device is such that the entry position would not be capable of collecting the same diffusive photons emitted from the exit position. *See* Reply Br. 6–10. Appellants’ argument is not supported by persuasive evidence and, therefore, fails to convince us of error in the Examiner’s findings with respect to the capabilities of Xie’s device. *See In re Geisler*, 116 F.3d 1465, 1471 (Fed. Cir. 1997) (argument by counsel cannot take the place of evidence).

Accordingly, we sustain the Examiner’s rejections of claims 1, 2, and 4–13. *See* App. Br. 14 (“Claims 2 and 4-12 depend from claim 1 and are allowable for the reasons that claim 1 is allowable.”).

We turn next to method claim 14. Appellants’ arguments in support of patentability of claim 14 are based on the same recitation argued in support of patentability of claims 1 and 13 (*see* Claim 14 (final wherein clause)). *See* App. Br. 8. The argued limitation is a structural limitation. A structural limitation does not necessarily limit the scope of a method claim. *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 1271 (Fed. Cir. 1986) abrogated on other grounds by *Egyptian Goddess, Inc. v. Swisa, Inc.*, 543 F.3d 665 (Fed. Cir. 2008) (en banc). In the present appeal, however, we find a determination of whether the argued claim language limits the scope of claim 14 is unnecessary because, for the reasons discussed above, a

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preponderance of the evidence supports the Examiner's finding that Xie describes a device having a structure that is capable of emitting diffusive photons at an exit position and collecting the same diffusive photons at an entry position. Accordingly, we likewise sustain the Examiner's rejection of claim 14.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. §1.136(a)(1)(iv).

AFFIRMED