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PATTERSON THUENTE PEDERSEN, P.A. 80 SOUTH 8TH STREET 4800 IDS CENTER MINNEAPOLIS, MN 55402-2100			KOHARSKI, CHRISTOPHER	
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johnson@ptslaw.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MARK BISCHOFF, DIRK MUEHLHOFF, and
GREGOR STOBRAWA

Appeal 2018-008234
Application 13/715,670
Technology Center 3700

Before EDWARD A. BROWN, ANNETTE R. REIMERS, and
SEAN P. O’HANLON, *Administrative Patent Judges*.

REIMERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner’s decision to reject claims 1–26. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM IN PART.

¹ We use the term “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Carl Zeiss Meditec AG. Appeal Brief (“Appeal Br.”) 2, filed Feb. 22, 2018.

CLAIMED SUBJECT MATTER

The claims are directed to a device and method for material processing by means of laser radiation. Claims 1 and 8 are independent. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A device for material processing by laser radiation, said device comprising:

a source of laser radiation emitting pulsed laser radiation for interaction with the material;

optics focusing the pulsed laser radiation to a center of interaction in the material;

a scanning unit shifting positions of the center of interaction within the material, wherein each laser pulse interacts with the material in a zone surrounding the center of interaction assigned to said laser pulse so that material is separated in the zones of interaction; and

a control unit which controls the scanning unit and the source of laser radiation such that a cut surface is produced in the material by sequential arrangement of zones of interaction, wherein the spatial distance a of the centers of interaction of two subsequent laser pulses is smaller than a size d of the focus so that sequentially produced zones of interaction overlap in the material and the fluence F of each laser pulse is below a threshold value M , above which an optical breakthrough forms in the material.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Bille	US 4,988,348	Jan. 29, 1991
Lai	US 5,984,916	Nov. 16, 1999
Hohla	US 6,090,100	July 18, 2000

REJECTIONS^{2,3}

Claims 2–6, 9–13, and 16–18⁴ are rejected under 35 U.S.C. § 112, second paragraph, as indefinite.

Claims 1–26 are rejected under 35 U.S.C. § 103(a) as unpatentable over Lai, Bille, and Hohla.

Claims 1–26 are rejected on the ground of nonstatutory double patenting as unpatentable over claims 1–15 of U.S. Patent No. 8,092,446.⁵

Claims 1–26 are rejected on the ground of nonstatutory double patenting as unpatentable over claims 1–39 of U.S. Patent No. 8,553,735.⁶

² The Examiner has withdrawn the rejection of claims 2 and 9 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Examiner’s Answer (“Ans.”) 3, dated June 13, 2018; *see also* Reply Brief (“Reply Br.”) 4 (“The Examiner is believed to have withdrawn the earlier rejection[] on the basis of lack of enablement.”), filed Aug. 9, 2018.

³ In the Reply Brief, Appellant contends that the Examiner has not considered the Information Disclosure Statement (“IDS”) filed October 19, 2017 and “requests that the Board reverse the Examiner and require that the IDS be considered.” Reply Br. 4–5. However, the Examiner’s consideration or lack of consideration of a filed IDS is not within the jurisdiction of the Board. *See* 37 C.F.R. § 1.181.

⁴ Claims 2, 16, and 18 are missing from the heading of the rejection under § 112, second paragraph, but are rejected in the body of the Final Office Action and the Examiner’s Answer. Final Office Action (“Final Act.”) 6–7, dated Aug. 22, 2017; Ans. 4. We consider the Examiner’s omission of claims 2, 16, and 18 in the heading of the rejection to be an inadvertent typographical error. Additionally, the Examiner’s discussion of claims 2, 16, and 18 in the body of the rejection provides notice to Appellant as to the rejection of claims 2, 16, and 18 under § 112, second paragraph. *See* Final Act. 7; Ans. 4; Reply Br. 4, 7. We note that claim 6 depends from claim 5, claim 13 depends from claim 11, and claim 17 depends from claim 16. Appeal Br. 40–42 (Claims App.).

⁵ Bischoff (US 8,092,446 B2; issued Jan. 10, 2012).

⁶ Bischoff (US 8,553,735 B2; issued Oct. 8, 2013).

ANALYSIS

Indefiniteness

The word “about,” as recited in the limitations at issue in claims 2–5, 9–12, 16, and 18 is a term of degree. *See, e.g., Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014) (identifying “unobtrusive manner” as a term of degree); *Star Scientific, Inc. v. R. J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1372 (Fed. Cir. 2008) (“Here, the term ‘anaerobic condition’ is in effect a term of degree because its bounds depend on the degree of oxygen deficiency.”). Our reviewing court has recently reaffirmed that terms of degree are not “inherently indefinite.” *Interval Licensing*, 766 F.3d at 1370. “Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention.” *Id.* (citations omitted). To satisfy the statute, however, “[t]he claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art.” *Id.* at 1371 (citing *Nautilus, Inc. v. Biosig Instrs., Inc.*, 572 U.S. 898, 911 & n.8 (2014) (additional citation omitted)).

The Examiner determines that “about 10 μm ” (claims 2 and 9), “about 5 [J]/ cm^2 ” (claims 3, 5, 10, 12), “about 3 [J]/ cm^2 ” (Claims 4 and 11), and “about 5 seconds” (claims 16 and 18) are “relative term[s], which render[] the claim[s] indefinite,” and, which “[are] not defined by the claim[s].” Final Act. 6–7; *see also* Ans. 4. The Examiner further determines that Appellant’s Specification “does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.” Final Act. 6–7; *see also* Ans. 4. Additionally, in the Answer, the Examiner provides analysis as to why the

term “about” could be construed to include numerous interpretations of different degrees based on Appellant’s Specification. Ans. 9–10.

Appellant contends that “the Examiner has not established a *prima facie* case of indefiniteness,” because the Examiner’s determinations are conclusory and that “[t]his conclusion is made without any presentation of any analysis as to whether one of ordinary skill in the art, in view of the prior art and the status of the art, would be nevertheless reasonably apprised of the scope of the invention.” Appeal Br. 26–27; *see also* Reply Br. 5–7.

The Examiner has the better position here. In the Appeal Brief, Appellant acknowledges the Examiner’s determination that Appellant’s Specification “does not provide some standard for measuring the term of degree ‘about.’” Appeal Br. 26. In addition, Appellant does not provide any evidence that the meaning of the term “about” could be ascertained by one of ordinary skill in the art when reading Appellant’s disclosure. *See* Appeal Br. 26–27; *see also* Reply Br. 5–7; Ans. 11; Manual of Patent Examining Procedure (“MPEP”) § 2173.05(b)(I) (9th Ed. Rev. 08.2017 (Jan. 2018)).

For these reasons, we sustain the Examiner’s rejection of claims 2–6, 9–13, and 16–18 as indefinite.

Obviousness over Lai, Bille, and Hohla

Claims 1 and 8 require, among other things, “wherein the spatial distance a , of the centers of interaction of two subsequent laser pulses is smaller than a size d of the focus so that sequentially produced zones of interaction overlap in the material.” Appeal Br. 39, 40–41 (Claims App.). The Examiner relies on Lai for this limitation. Final Act. 8; *see also* Ans. 11–13. In particular, the Examiner finds that Lai discloses that control unit 114 controls the source of laser radiation 100 and scanning unit 104, and that

the interaction point diameter (focus of the laser beam) is in the range of 1 pm to about 30 pm and is produced from sequential laser pulses. Final Act. 8 (citing Lai 8:22–31, 44–45, 65–66). The Examiner reasons that since the spatial distance of the centers of interaction is the distance between centers of the diameters of the interaction point and laser unit 100 of Lai can output a beam to any location in an area defined by orthogonal X and Y axes, “the device of Lai is capable of having a spatial distance which is smaller than the diameter of the interaction point, and therefore would inherently form zones of interaction that overlap in the material.” *Id.* (citing Lai 8:56–59).⁷

Additionally, in reference to claim 24 of Lai, the Examiner states that (1) as is well-known to one having ordinary skill in the art (who is at least an ophthalmic surgeon, very familiar with laser surgery of the eye), “radial keratotomy involves producing a cut in the form of continuous radial lines that extend from near the center of the cornea to near the edge thereof,” and (2) “as one having ordinary skill in the art would be well aware, the laser pulses applied to produce this cut must touch, that is to say, overlap at least slightly, in order to produce a continuous line.” Ans. 12; *see also* Lai 18:17–51 (Claim 24).

Although we acknowledge that claim 24 of Lai recites performing an ophthalmic surgical procedure using generated laser pulses, wherein the ophthalmic surgical procedure includes “radial keratotomy” and “creating straight line excisions in the cornea,” claim 24 also recites the ophthalmic surgical procedure includes “creating curved-line excisions in the cornea.” *See* Lai 18:17–23 (Claim 24). As claim 24 of Lai recites that the ophthalmic

⁷ The Examiner relies on the teachings of Bille and Hohla for limitations other than those discussed above. *See* Final Act. 7–9.

Appeal 2018-008234
Application 13/715,670

surgical procedure includes “creating *curved-line* excisions in the cornea,” the Examiner’s findings are speculative. *See* Ans. 12; *see also* Lai 18:17–23 (Claim 24) (emphasis added). In particular, the Examiner does not provide sufficient evidence or technical reasoning to support findings that “radial keratotomy involves producing a cut *in the form of continuous radial lines* that extend from near the center of the cornea to near the edge thereof” and that “the laser pulses applied to produce this cut *must touch*, that is to say, *overlap* at least slightly, in order to produce a *continuous line*.” Ans. 12 (emphases added); *see also* Lai 18:17–23 (Claim 24).

Further, even assuming for the sake of argument that the device of Lai is capable of having a spatial distance that is smaller than the diameter of the interaction point, as the Examiner suggests, the Examiner does not direct us to any discussion in Lai of “overlap,” let alone, “sequentially produced zones of interaction overlap in the material” as required by claim 1 of the subject application. *See* Final Act. 8; *see also* Ans. 12. As pointed out by Appellant, “the Examiner only argues that the device disclosed by Lai would be capable of such a thing. At best, the device of Lai might or might not be able to perform in such a fashion. Accordingly, the missing descriptive matter is not *necessarily present* in . . . Lai.” Appeal Br. 29. “Inherency. . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Cont’l Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991). Rejections based on 35 U.S.C. § 103 must rest on a factual basis. In making such a rejection, the Examiner has the initial duty of supplying the requisite factual basis and may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions, or hindsight

Appeal 2018-008234
Application 13/715,670

reconstruction to supply deficiencies in the factual basis. *In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967).

For these reasons, we do not sustain the Examiner’s rejection of claims 1–26 as unpatentable over Lai, Bille, and Hohla.

Nonstatutory Double Patenting

Appellant contends that “[c]laims 1-15 of U. S. Patent 8,092,446 and claims 1-39 of U.S. Patent 8,553,735 do not include any limitations suggesting that sequentially produced zones of interaction overlap in the treated material and that the zones of interaction are generated by the application of laser pulses at a fluence that is below the threshold at which optical breakthroughs occur.” Appeal Br. 36.

In this case, the Examiner does not apprise us how claim 1 of U.S. Patent No. 8,553,735 teaches “the zones of interaction are generated by the application of laser pulses at a fluence that is below the threshold at which optical breakthroughs occur,” or how claim(s) 1 and/or 2 of U.S. Patent No. 8,092,446 teach(es) “sequentially produced zones of interaction overlap in the treated material.” *See* Final Act. 10; *see also* Ans. 15–17; Appeal Br. 36.

For these reasons, we do not sustain (1) the Examiner’s nonstatutory double patenting rejection of claims 1–26 over claims 1–15 of U.S. Patent No. 8,092,446 or (2) the Examiner’s nonstatutory double patenting rejection of claims 1–26 over claims 1–39 of U.S. Patent No. 8,553,735.⁸

⁸ Should there be further prosecution of the instant application, the Examiner may want to evaluate other claims of US Patent No. 8,092,446 and US Patent No. 8,553,735 as potentially reading on claim 1 of the instant application.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
2-6, 9-13, 16-18	112, second paragraph	Indefiniteness	2-6, 9-13, 16-18	
1-26	103(a)	Lai, Bille, Hohla		1-26
1-26		Nonstatutory Double Patenting		1-26
1-26		Nonstatutory Double Patenting		1-26
Overall Outcome			2-6, 9-13, 16-18	1, 7, 8, 14, 15, 19-26

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

AFFIRMED IN PART