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katelyn.mulroy@philips.com
marianne.fox@philips.com
patti.demichele@Philips.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BABU VARGHESE,
MARTIN JURNA, JONATHAN ALAMBRA PALERO,
MARGARET RUTH HORTON,
MOUNIR ZEITOUNY, and RIEKO VERHAGEN

Appeal 2019-004977
Application 15/112,447
Technology Center 3700

Before CHARLES N. GREENHUT, MICHAEL L. HOELTER, and
ANNETTE R. REIMERS, *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 1–15, which constitute all the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Koninklijke Philips, N.V. Appeal Brief (“Appeal Br.”) 3, filed Dec. 28, 2018.

CLAIMED SUBJECT MATTER

The claimed subject matter “relates generally to the treatment of skin using laser light, and more particularly to a non-invasive device and method for performing said treatment.” Spec. 1:2–3. Claims 1 and 8 are independent.

Claim 1 is illustrative of the claimed subject matter and recites:

1. A non-invasive device for treatment of an inner skin layer using laser light, the device comprising:

a light source and an associated optical system for generating pulses of a laser treatment beam along a treatment optical axis of the device, the light source and the optical system being configured and arranged to provide, within a transverse cross-section of the laser treatment beam perpendicular to the treatment optical axis:

a first and a second beam region of non-zero light intensity disposed at a periphery of the transverse cross-section, and

a third beam region, arranged between the first and the second beam region, of lower light intensity than the non-zero light intensity;

the optical system being further configured and arranged:

to focus, in use, the treatment laser beam to a focal spot in the inner skin layer disposed on the treatment optical axis;

to guide, in use, the laser treatment beam such that the laser treatment beam with the first and the second beam region passes along the treatment optical axis through an outer skin layer to the focal spot, whereby the first and the second beam region pass through, respectively, a first and a second skin region in the outer skin layer;

wherein: an extent of the third beam region is predetermined and/or controlled to provide a corresponding third skin region in the outer skin layer, arranged between the first and the second skin region; the lower light intensity of the third beam

region is predetermined and/or controlled to provide a maximum temperature during a pulse of the laser treatment beam within the third skin region, the maximum temperature during the pulse of the laser treatment within the third skin region being lower than maximum temperatures during the pulse of the laser treatment beam within the first and the second skin regions; and the light source is configured and arranged to provide, in use, a pulse duration of the pulse of the laser treatment beam that is longer than a thermal relaxation time of the first and the second skin region.

THE REFERENCES AND REJECTIONS ON APPEAL

- I. Claims 1–13 and 15 stand rejected under 35 U.S.C. § 102(a)(1) as anticipated by Altshuler (US 2006/0020309 A1, published Jan. 26, 2006).
- II. Claim 14 stands rejected under 35 U.S.C. § 103 as unpatentable over Altshuler.

ANALYSIS

Rejection I – Anticipation by Altshuler

Appellant does not offer arguments in favor of independent claim 8 or dependent claims 2–7, 9–13, and 15 separate from those presented for independent claim 1. Appeal Br. 6–10. We select claim 1 as the representative claim, and claims 2–13 and 15 stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner finds that Altshuler discloses the non-invasive device of claim 1 including a light source and an optical system configured and arranged to provide a transverse cross-section of a laser treatment beam perpendicular to a treatment optical axis, a first and a second beam region of non-zero light intensity disposed at a periphery of the transverse cross-

section, and a third beam region, arranged between the first and the second beam region, of lower light intensity than the non-zero light intensity Final Act. 4–5² (citing Altshuler ¶¶ 24, 112, 150–153).

Appellant contends that “there is no disclosure or discussion of first, second and third beam regions as claimed, and especially no disclosure of the first and second beams’ being at a **periphery of a transverse cross-section of the laser treatment beam perpendicular** to the treatment optical axis.” Appeal Br. 9.

The Examiner provides an annotated Figure 3B of Altshuler, reproduced below:

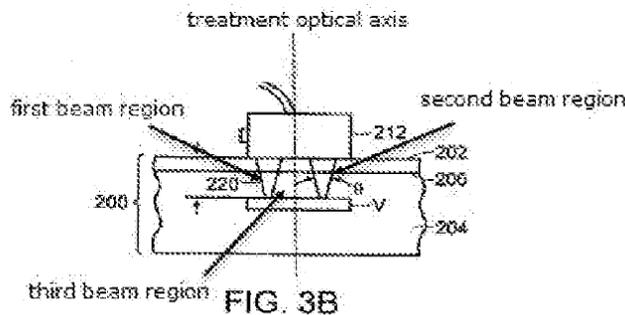


Figure 3B depicts a “semi-schematic perspective and side view[] . . . of a section of a patient’s skin and of equipment positioned thereon” in which the Examiner annotates a “first beam region,” a “second beam region,” a “third beam region” and a “treatment optical axis.” Ans. 5³; Altshuler ¶ 53. A transverse cross-section of Figure 3B that is perpendicular to the treatment optical axis encompassing the three beam regions illustrated above is comparable to the transverse cross-section depicted in Appellant’s Figure 4, in which the first and second beam regions are located at a periphery and the

² Final Office Action (“Final Act.”), dated July 31, 2018.

³ Examiner’s Answer (“Ans.”), dated Apr. 17, 2019.

third beam region is located between the first and second beam regions. *See* Altshuler Fig. 3B; Spec. Fig. 4. Thus, Appellant does not apprise us of Examiner error regarding Altshuler’s failure to disclose the recited beam locations.

Appellant further contends that in Altshuler, “there is no disclosure of first and second beams, which have a non-zero intensity that is **greater** than the lower light intensity of the third beam,” consistent with claim 1. Appeal Br. 10; *see also* Reply Br. 3–4⁴ (arguing that “the Examiner is pointing to . . . an **optically unlit volume** between the multiple beamlets 464 of *Altshuler* as the ‘laser treatment beam.’”).

As an initial matter, claim 1 recites “a third beam region, arranged between the first and the second beam region, of *lower* light intensity than the non-zero light intensity.” Appeal Br. 13 (Claims App.) (emphasis added). Claim 1 does *not* preclude the third beam region having zero light intensity. Stated differently, claim 1 does *not* preclude the third beam region from being an optically *unlit* beam region.⁵ *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (“[A]ppellant’s arguments fail from the outset because . . . they are not based on limitations appearing in the claims.”).

Further, the Examiner’s finding that Altshuler’s optically unlit volume between multiple beamlets corresponds to the claimed “third beam region” having “lower light intensity than the non-zero light intensity” is *consistent*

⁴ Reply Brief (“Reply Br.”), filed June 12, 2019.

⁵ Notably, in describing the “lower light intensity” of the third beam region 22c, the Specification states that “[t]his lower light intensity is substantially lower than the non-zero intensity.” *See* Spec. 10:31–33. In other words, the Specification does not define “lower light intensity” to preclude zero light intensity.

with Appellant’s disclosure. In describing a laser intensity profile in Figure 6a, the Specification discloses that “the intensity at the centre of the beam cross-section is *reduced to zero*.” See Spec. 13:1–8 (emphasis added). In describing Figure 3, the Specification discloses that “[t]his ‘doughnut’ cross-section may be provided by the light source 20 or optical system 12 comprising at least one optical element which reduces, *or even blocks, the light intensity* at the inner disc-shaped beam region 22c of the treatment beam 22.” See *id.* at 9:23–33 (emphasis added).^{6,7} Thus, Appellant’s contention is inapposite in view of the Specification.

In the Reply Brief, Appellant attempts to differentiate Altshuler’s optically unlit volume from the claimed “third beam region” by emphasizing that claim 1 recites a “third **beam** region.” Reply Br. 4. It appears Appellant is arguing that the region the Examiner identifies in Altshuler’s Figure 3B cannot correspond to the claimed “third beam region” because it is not part of a “beam.”

This argument is also unpersuasive. Appellant’s written description does not appear to define the boundaries of a beam. See Spec., *passim*. We note, however, that the figures appear to delineate the boundary of a beam region to encompass an unlit region away from a non-zero intensity region,

⁶ Notably, the Specification discloses that the third beam region can be produced using a “central mask” or a “ring aperture.” Spec. 9:33–10:1. We note that Altshuler also discloses using a “mask” or a “light duct” as a light directing element. Altshuler ¶ 49.

⁷ The Examiner also points out that, like Appellant, Altshuler’s “untreated region,” which corresponds to the claimed “third beam region,” serves as a “thermal energy sink.” Ans. 6 (citing Spec. 8, 13 describing “heat sink[s]” and Altshuler ¶ 113 disclosing “thermal energy sinks”).

i.e., a region that is outside the beam. For example, Appellant's Figures 3 and 4 show a dashed circle representing a treatment beam 22 or a transverse cross-section 122 encompassing regions (white area away from dark area) that are *not* part of first and beam regions 22a and 22b or first and second non-continuous regions of non-zero intensity 122a and 122b.

Also in the Reply Brief, Appellant argues that Altshuler "does not provide for . . . any focal spot on the treatment optical axis as in claim 1." Reply Br. 4.

We note that this argument was not raised in the Appeal Brief, and does not appear to be responsive to any argument raised in the Examiner's Answer. As stated in 37 C.F.R. § 41.41(b)(2):

Any argument raised in the reply brief which was not raised in the appeal brief, or is not responsive to an argument raised in the examiner's answer, including any designated new ground of rejection, *will not be considered by the Board for purposes of the present appeal, unless good cause is shown.*

(Emphasis added). Accordingly, we need not consider this untimely argument in the present appeal. Nonetheless, we do not find this argument persuasive for the reasons discussed below.

Claim 1 recites that the optical system is configured and arranged "to guide, in use, the laser treatment beam such that the laser treatment beam with the first and the second beam region passes *along* the treatment optical axis through an outer skin layer to the focal spot." Appeal Br. 13 (Claims App.) (emphasis added). Altshuler discloses that "the beams can be *convergent*, defining volumes of decreasing cross-sectional area in the plane orthogonal to the central axis of the beams (e.g., *cones*, *pyramids*)." Altshuler ¶ 150 (emphasis added). Thus, the regions identified by the Examiner as "first beam region" and "second beam region" can be said to

pass along the treatment optical axis as annotated in Figure 3B, to a focal spot, as described in Altshuler's paragraph 150, because they can be convergent having volumes in the shape of cones or pyramids. Further, Appellant's Figure 2 shows a third beam region 22c along a treatment optical axis 13, and as discussed above, the third beam region 22c can have zero light intensity. Thus, focal spot 25 depicted in Appellant's Figure 2 would have zero light intensity. Altshuler's "optically unlit volume" as referred to by Appellant as the "third beam region" or as annotated by the Examiner in Altshuler's Figure 3B, can also be said to have a focal point having zero light intensity in the same manner as depicted in Appellant's Figure 2 or as described in the Specification.⁸ As such, Appellant does not apprise us of Examiner error.

In summary, and based on the record presented, we are not persuaded the Examiner erred in rejecting independent claim 1 as anticipated by Altshuler. Accordingly, we sustain the Examiner's rejection of claim 1. We further sustain the rejection of claims 2–13 and 15, which fall with claim 1.

Rejection II – Obviousness over Altshuler

Claim 14 depends from claim 8. Appeal Br. 17 (Claims App.). Appellant relies on the same arguments discussed above for claims 1 and 8. *Id.* at 10. As we find no deficiencies in the Examiner's rejection of independent claim 8 as anticipated by Altshuler for the reasons discussed above, we likewise sustain the Examiner's rejection of claim 14 as unpatentable over Altshuler.

⁸ We further note that claim 1 does not preclude each beam region from having its own treatment optical axis nor does claim 1 require that all beam regions share the same treatment optical axis. Appeal Br. 13 (Claims App.).

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1-13, 15	102(a)(1)	Altshuler	1-13, 15	
14	103	Altshuler	14	
Overall Outcome			1-15	

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