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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte VIJAYEN S. VEERASAMY

Appeal 2019-006866
Application 13/835,278
Technology Center 1700

Before MICHAEL P. COLAIANNI, JEFFREY B. ROBERTSON, and
MONTÉ T. SQUIRE, *Administrative Patent Judges*.

SQUIRE, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner’s decision to finally reject claims 1–11, 13–20, 28, and 31–37, which are all of the claims pending in this application.³ We have jurisdiction under 35 U.S.C. § 6(b).

¹ This Decision refers to the Specification filed Mar. 15, 2018 (“Spec.”); Final Office Action dated Sept. 4, 2018 (“Final Act.”); Advisory Action dated Jan. 15, 2019 (“Advisory Act.”); Appeal Brief filed Apr. 4, 2019 (“Appeal Br.”); Examiner’s Answer dated July 23, 2019 (“Ans.”); and Reply Brief filed Sept. 23, 2019 (“Reply Br. “).

² We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies Guardian Glass, LLC as the real party in interest. Appeal Br. 3.

³ Claims 12, 21–27, 29, 30, and 38 are cancelled. *See* Claims Listing filed Jan. 4, 2019; Appeal Br. 9.

We AFFIRM.

CLAIMED SUBJECT MATTER

The invention relates to anti-reflective (AR) coatings and methods of making the same and, more particularly, to coated articles, including broadband and omnidirectional AR transparent coatings and methods of making the same. Spec. ¶¶ 1, 7; Abstract. Claim 1 illustrates the subject matter on appeal and is reproduced below from the Claims Appendix to the Appeal Brief:

1. A method of making a coated article comprising an antireflective (AR) coating supported by a glass substrate, the method comprising:

dispensing a solution onto at least one major surface of the glass substrate;

drying the solution at a first temperature;

forming Benard cells and/or allowing Benard cells to form during the dispensing and/or drying, the Benard cells causing nanostructures to self-assemble on the at least one major surface of the glass substrate in accordance with a desired template, ***the desired template exhibiting waveguide modes that approximate:***

(a) a transverse magnetic (TMz) mode in which

$$\varepsilon_{\text{eff}} = \varepsilon_0 + \frac{\pi^2}{3} [f(1-f)(\varepsilon_2 - \varepsilon_1)]^2 \alpha^2 + O(\alpha^4)$$

, and/or

(b) a transverse electric (TEz) mode in which

$$\varepsilon_{\text{eff}} = \frac{1}{a_0} + \frac{\pi^2}{3} \left[f(1-f) \frac{(\varepsilon_2 - \varepsilon_1)}{\varepsilon_2 \varepsilon_1} \right]^2 \frac{\varepsilon_0}{a_0^3} \alpha^2 + O(\alpha^4)$$

,

where $\alpha_0 = \frac{f}{\varepsilon_2} - \frac{(1-f)}{\varepsilon_1}$, $\varepsilon_0 = \varepsilon_2 f - \varepsilon_1(1-f)$, and $\alpha = \frac{2R}{\lambda_0}$; and

curing at least a part of the solution at a second temperature that is higher than the first temperature in forming the AR coating.

Appeal Br. 23 (key disputed claim language italicized and bolded).

REJECTIONS

On appeal, the Examiner maintains (Ans. 3) the following rejections:⁴

1. Claims 1–11, 13–20, 28, and 31–37 are rejected under 35 U.S.C. § 112(b) or 35 U.S.C. § 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or for pre-AIA, the applicant regards as the invention. (“Rejection 1”). Final Act. 4.
2. Claims 1–11, 13–20, 28, and 31–37 are rejected under 35 U.S.C. § 112(a) or 35 U.S.C. § 112 (pre-AIA), first paragraph, as failing to comply with the enablement requirement (“Rejection 2”). Final Act. 3.

OPINION

Rejection 1

The Examiner rejects claims 1–11, 13–20, 28, and 31–37 under 35 U.S.C. § 112 for indefiniteness. Ans. 3–5; Final Act. 4. Appellant presents argument for the patentability of claims 1–11, 13–20, 28, and 31–37 as a

⁴ The Examiner’s rejections of claims 1–11, 13–20, 28, and 31–37 under pre-AIA 35 U.S.C. § 103(a) (Final Act. 5–10) are withdrawn at page 3 of the Answer.

group. Appeal Br. 15. We select claim 1 as representative and claims 2–11, 13–20, 28, and 31–37 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner determines that the “desired template exhibiting waveguide modes that approximate” recitation of claim 1 is indefinite because it is unclear what the phrase means when read in light of Appellant’s Specification and whether one of ordinary skill in the art would understand what is being claimed. Ans. 4 (determining “the criteria and determination of approximate equations is unclear”), 5 (explaining “one of ordinary skill would not have known how to determine if the equations are approximated or not”); Final Act. 4 (determining “claim 1 merely requires the template exhibit waveguide modes that approximate the claimed equations”).

The test for definiteness under 35 U.S.C. § 112 is whether “those skilled in the art would understand what is claimed when the claim is read in light of the specification.” *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986) (citations omitted).

Appellant argues the Examiner rejection of claim 1 should be reversed because one of ordinary skill in the art at the time of the invention would have recognized and understood the meaning of that claim language. Appeal Br. 15–16; Reply Br. 1–5. In particular, Appellant contends that, when read in light of the Specification, “those skilled in the art would have no difficulty determining whether a real-life structure approximates [the claimed] template.” Appeal Br. 16 (citing Spec. ¶ 73); *see also* Reply Br. 5 (arguing those skilled in the art “would understand that the structures formed approximate the mathematical equations when the guidance of paragraph 73 [of the Specification] . . . is taken into account”). Appellant further contends

that paragraph 44 and Figure 4 “provide a standard for measuring the meaning of the term” and “an objective example of how this language could be met.” Appeal Br. 16. Appellant also contends the Examiner’s rejection relates to the breadth of the claims and not to indefiniteness. *Id.*

We do not find Appellant’s arguments persuasive of reversible error in the Examiner’s rejection. Rather, on this appeal record and based on the fact-finding and reasons the Examiner provides at pages 3–5 of the Answer and page 4 of the Final Office Action, which a preponderance of the evidence supports, we agree with the Examiner that claim 1 is indefinite. In particular, on this appeal record, we determine the meaning of the “desired template exhibiting waveguide modes that approximate” recitation of the claim is indefinite because it is subject to multiple plausible interpretations and unclear what is actually claimed when read in light of Appellant’s Specification. *See Ex Parte Miyazaki*, 89 USPQ2d 1207, 1211 (BPAI 2008) (precedential) (“[I]f a claim is amenable to two or more plausible claim constructions, the USPTO is justified in requiring the applicant to more precisely define the metes and bounds of the claimed invention by holding the claim unpatentable under 35 U.S.C. § 112 2nd paragraph, as indefinite.”).

Although the portions of the Specification Appellant identifies and principally relies on to show that the claim language is not indefinite describe certain embodiments where some nanostructures may meet the claimed criteria (*see* Spec. ¶¶ 44, 73, Fig. 4), they do not sufficiently specify or make clear what exactly the phrase “desired template exhibiting waveguide modes that approximate” means or what one of ordinary skill in the art would understand it to mean.

Paragraph 73 of the Specification, for example, states:

It is noted that certain example embodiments may not achieve the exact structure indicated by these equations. Thus, although certain example embodiments are described as providing nanostructures that meet these criteria, approximate these equations, and/or are formed “in accordance” with the equations, it will be appreciated that an exact match is not required. Instead, there may be some tolerance for at least manufacturing variations, incidental or deviations, etc. In some situations, nanostructures may meet these criteria, approximate these equations, and/or be formed “in accordance” with the equations, provided that they serve the same or similar functions / provide a performance boost (e.g., in terms of visible transmission gain and/or reflection reduction) as set forth herein.

Spec. 20.

Absent more, we are not persuaded this description sheds any light or provides any meaningful clarification as to the meaning of the phrase “desired template exhibiting waveguide modes that approximate” sufficient for one of ordinary skill in the art to understand what is actually being claimed. The other portions of the Specification Appellant identifies and relies on in response to the Examiner’s rejection in this regard (*see* Spec. ¶ 44, Fig. 4) are equally unpersuasive because they, too, merely describe specific embodiments, and we decline to read the limitations of specific embodiments from the Specification into the claims because the claim language is broader than the embodiments.

Accordingly, we affirm the Examiner’s rejection of claims 1–11, 13–20, 28, and 31–37 under 35 U.S.C. § 112(b) or 35 U.S.C. § 112 (pre-AIA), second paragraph, for indefiniteness.

Rejection 2

Having considered the respective positions the Examiner and Appellant advance in light of this appeal record, we reverse the Examiner's rejection of claims 1–11, 13–20, 28, and 31–37 under 35 U.S.C. § 112 for non-enablement for essentially the reasons Appellant provides at pages 9–14 of the Appeal Brief and 6–7 of the Reply Brief, and set forth below.

The Examiner rejects claims 1–11, 13–20, 28, and 31–37 under 35 U.S.C. § 112 for non-enablement. Final Act. 3–4. The Examiner contends Appellant's Specification does not teach "how to produce a template exhibiting the claimed transverse magnetic and electric mode equations" in such a way to enable one of ordinary skill in the art to make and use the claimed invention and that undue experimentation would be required. *Id.* at 3.

For an enablement rejection, the PTO must "set[] forth a reasonable explanation as to why it believes that the scope of protection provided by that claim is not adequately enabled by the description of the invention." *In re Wright*, 999 F.2d 1557, 1561–62 (Fed. Cir. 1993). "[T]o be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *Id.* at 1561. Some experimentation, however, even a considerable amount, is not "undue" if it is merely routine, or if the specification provides a reasonable amount of guidance as to the direction in which the experimentation should proceed. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

Appellant argues the Examiner's rejection should be reversed because the Examiner has not adequately explained or identified evidence sufficient

to support a determination of non-enablement. Appeal Br. 9–14; Reply Br. 6–7. Appellant maintains that, in contrast to the Examiner’s rejection, the Specification, read as a whole, does provide sufficient guidance and description such that those skilled in the art would be able to make and use the claimed invention and would be able to do so without undue experimentation. Appel Br. 14; Reply Br. 7.

The weight of the evidence supports Appellant’s argument. On this appeal record, we are not persuaded the Examiner adequately explains or direct us to evidence in the record sufficient to establish that the claims are not enabled. The Examiner’s statements at pages 3–4 of the Final Action are conclusory and, without more, are insufficient to support the Examiner’s rejection. The Examiner’s assertions that there are no working examples (Final Act. 4; Ans. 6) are not persuasive because the fact that the Specification may not provide working examples, without more, does not establish or necessarily mean that the Specification would not have enabled a person skilled in the art to practice the invention commensurate in scope with the claims.

We are also not persuaded the Examiner provides sufficient analysis of the factors in *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988) to show that undue experimentation would have been required to make or use the claimed invention. *See* Final Act. 3–4; Ans. 6–7. For example, although the Examiner asserts that the quantity of experimentation needed to make or use Appellant’s claimed invention is “unduly large” (Final Act. 4; Ans. 6), the Examiner does not provide any meaningful analysis or identify persuasive evidence in the record to adequately support that assertion.

In contrast, at pages 9–14 of the Appeal Brief and pages 6–7 of the Reply Brief, Appellant provides a fairly detailed analysis and identifies evidence, including specific citations to disclosures in the Specification to show that, based on those disclosures, the Specification provides guidance and direction sufficient for one ordinary skill in the art to make and use the claimed invention and that undue experimentation would not be required (analyzing the *Wands* factors and citing Spec. ¶¶ 33, 38, 39, 40–45, 49, 50, 53, 54, 55–60, 61–66, Figs. 3a, 3b, 4). We find a preponderance of the evidence supports Appellant’s contentions in this regard.

Accordingly, we reverse the Examiner’s rejection of claims 1–11, 13–20, 28, and 31–37 under 35 U.S.C. § 112(a) or 35 U.S.C. § 112 (pre-AIA), first paragraph, for failing to comply with the enablement requirement.

DECISION SUMMARY

In summary:

| Claim(s) Rejected | 35 U.S.C. § | Reference(s)/Basis | Affirmed | Reversed |
|------------------------------|--------------------|---------------------------|------------------------------|------------------------------|
| 1-11, 13-20, 28, 31-37 | 112 | indefiniteness | 1-11, 13-20, 28, 31-37 | |
| 1-11, 13-20, 28, 31-37 | 112 | enablement | | 1-11, 13-20, 28, 31-37 |
| Overall Outcome | | | 1-11, 13-20, 28, 31-37 | |

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