

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SEOUL SEMICONDUCTOR CO., LTD., and
SEOUL SEMICONDUCTOR, INC.,
Petitioner,

v.

DOCUMENT SECURITY SYSTEMS, INC.,
Patent Owner.

Case IPR2018-00522
Patent 7,524,087 B1

Before SALLY C. MEDLEY, SCOTT C. MOORE, and
BRENT M. DOUGAL, *Administrative Patent Judges*.

DOUGAL, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. Background

Seoul Semiconductor Co., Ltd. and Seoul Semiconductor, Inc. (“Petitioner”)¹ filed a Petition (Paper 2, “Pet.”) to institute an *inter partes* review of claims 1, 6–8, 15, and 17 (the “challenged claims”) of U.S. Patent 7,524,087 B1 (Ex. 1001, the “’087 patent”). Document Security Systems, Inc. (“Patent Owner”) timely filed a Preliminary Response (Paper 6, “Prelim. Resp.”). Applying the standard set forth in 35 U.S.C. § 314(a), we instituted an *inter partes* review of all challenged claims. Paper 10 (“Dec.”).

Patent Owner filed a Patent Owner’s Response (Paper 20, “PO Resp.”), Petitioner filed a Reply (Paper 21, “Reply”), and Patent Owner filed a Patent Owner’s Sur-Reply (Paper 24, “Sur-Reply”). An oral hearing was held on April 4, 2019, and a copy of the transcript was entered into the record. Paper 32 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of the claims on which we instituted trial. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). Having reviewed the arguments of the parties and the supporting evidence, we determine that Petitioner has shown, by a preponderance of the evidence, that the challenged claims of the ’087 patent are unpatentable.

¹ Everlight Electronics Co., Ltd., which had previously been joined as a petitioner (IPR2018-01226, Paper 15), has been terminated as a party. Paper 33.

B. Related Proceedings

The parties indicate that the '087 patent is involved in the following: *Document Security Systems, Inc. v. Seoul Semiconductor Co.*, No. 8:17-cv-00981 (C.D. Cal.); *Document Security Systems, Inc. v. Cree, Inc.*, No. 2:17-cv-04263 (C.D. Cal.); *Document Security Systems, Inc. v. Everlight Electronics Co.*, No. 2:17-cv-04273 (C.D. Cal.); *Document Security Systems, Inc. v. OSRAM GmbH*, No. 2:17-cv-05184 (C.D. Cal.); *Document Security Systems, Inc. v. Lite-On, Inc.*, No. 2:17-cv-06050 (C.D. Cal.); and *Document Security Systems, Inc. v. Nichia Corp.*, No. 2:17-cv-08849 (C.D. Cal.). Pet. 5; Paper 5, 2.

Patent Owner informs us that IPR2018-01165 (instituted December 11, 2018) and IPR2018-01221 (institution denied November 13, 2018) challenge(d) the '087 patent. Paper 9, 2–3. Patent Owner indicates that the following additional pending *inter partes* reviews are related to the present *inter partes* review: IPR2018-00965, IPR2018-00966, and IPR2018-01166. *Id.*

C. The '087 Patent

The '087 patent generally relates to an optical device with a light emitting diode (LED) die, such as for use in a large display panel. Ex. 1001, Abstract, 1:5–8, 59–61. Top and bottom perspective views of an optical device are illustrated in Figures 1 and 2, reproduced below. *Id.* at 1:25–28.

positioned at a lead receiving compartment 52 in the housing 20. *Id.* at 2:38–39, 64–67.

Of the challenged claims, claims 1 and 15 are independent, claims 6–8 depend from claim 1, and claim 17 depends from claim 15. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. An optical device comprising:
 - a lead frame with a plurality of leads;
 - a reflector housing formed around the lead frame, the reflector housing having a first end face and a second end face and a peripheral sidewall extending between the first end face and the second end face, the reflector housing having a first pocket with a pocket opening in the first end face and a second pocket with a pocket opening in the second end face;
 - at least one LED die mounted in the first pocket of the reflector housing;
 - a light transmitting encapsulate disposed in the first pocket and encapsulating the at least one LED die;
 - and
 - wherein a plurality of lead receiving compartments are formed in the peripheral sidewall of the reflector housing.

D. Instituted Grounds

Petitioner contends that the challenged claims are unpatentable under 35 U.S.C. § 103 based on the following grounds (Pet. 5–6, 30–67):

Reference[s]²	Claims challenged
Kyowa	1, 6–8, 15, and 17
Kyowa and Okazaki	1, 6–8, 15, and 17
Matsumura	1, 6–8, 15, and 17
Matsumura and Suehiro	1, 6–8, 15, and 17
Matsumura and Oshio	1, 6–8, 15, and 17

As further support, Petitioner offers the Declaration of Michael Pecht, Ph.D. Ex. 1003.

II. ANALYSIS

A. Obviousness under 35 U.S.C. § 103

The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of

² Japanese Pat. Pub. JP2001-118868, Apr. 27, 2001 (Ex. 1009) (“Kyowa”); U.S. Patent 6,653,661 B2, Nov. 25, 2003 (Ex. 1012) (“Okazaki”); U.S. Pat. Pub. 2004/0206964 A1, Oct. 21, 2004 (Ex. 1010) (“Matsumura”); U.S. Patent 6,834,977 B2, Dec. 28, 2004 (Ex. 1011) (“Suehiro”); U.S. Pat. Pub. 2008/0054287 A1, Mar. 6, 2008 (Ex. 1014) (“Oshio”).

nonobviousness.³ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). A patent can be obvious in light of a single prior art reference if it would have been obvious to modify that reference to arrive at the patented invention. *See, e.g., Takeda Chem. Indus., Ltd. v. Alphapharm Pty, Ltd.*, 492 F.3d 1350, 1357 (Fed. Cir. 2007); *SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp.*, 225 F.3d 1349, 1356 (Fed. Cir. 2000).

B. Level of Ordinary Skill

Petitioner states that a person of ordinary skill “at the time of the [] invention would have had at least a B.S. in mechanical or electrical engineering or a related field, and two years’ experience designing LED packages.” Pet. 19 (citing Ex. 1003, Declaration of Petitioner’s proffered expert, Dr. Michael Pecht (“Pecht Decl.”) ¶¶ 29–31). Petitioner contends that “a higher level of education or skill might make up for less experience, and vice-versa.” *Id.*

Patent Owner does not contest or otherwise address Petitioner’s proposed level of ordinary skill. *See generally*, PO Resp. We are persuaded, on the present record, that Petitioner’s proposal is consistent with the problems and solutions in the ’087 patent and prior art of record. *See, e.g., In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (“In determining this skill level, the court may consider various factors including type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology;

³The parties do not direct us to any objective evidence of nonobviousness.

and educational level of active workers in the field.” (citations and internal quotations omitted)).

C. Claim Construction

In an *inter partes* review filed before November 13, 2018, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent. *See* 37 C.F.R. § 42.100(b) (2017); *see also* *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016) (affirming that USPTO has statutory authority to construe claims according to 37 C.F.R. § 42.100(b)).⁴ Claim terms are given their ordinary and customary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. “Pocket” and “Cavity”

Petitioner submits a proposed construction for the terms “pocket” and “cavity” in claims 1 and 15. Pet. 11–14. First, Petitioner states that the Specification of the ’087 patent uses these terms interchangeably, with “no

⁴ The Office recently changed the claim construction standard used in *inter partes* review proceedings. 37 C.F.R. § 42.100(b) (2019). As stated in the Federal Register notice, however, the new rule applies only to petitions filed on or after November 13, 2018, and, therefore, does not impact this matter. *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,340 (Oct. 11, 2018) (stating “[t]his rule is effective on November 13, 2018 and applies to all IPR, PGR and CBM petitions filed on or after the effective date”).

substantive difference between” them. *Id.* at 12 (citing Ex. 1001, 2:17–19). Then, Petitioner argues that these terms should be construed to mean “a partially enclosed space.” *Id.* at 13 (emphasis omitted). In support of its construction, Petitioner discusses the use of these terms in the Specification (*id.* at 12–13), a number of dictionary definitions (*id.* at 13), and Patent Owner’s positions taken in litigation (*id.* at 13–14).

Patent Owner appears to agree that the terms “pocket” and “cavity” are interchangeable as they use the term “pocket/cavity” to describe the cavities 30, 34 in the housing. PO Resp. 2–3. Although Patent Owner contests Petitioner’s claim constructions generally, rather than address them directly, Patent Owner’s argument focuses on whether an artifact from the injection molding process can be considered a “pocket/cavity,” that is, what Petitioner categorizes as Patent Owner’s positions taken in litigation. *Id.* at 14–18. In particular, Patent Owner argues that a protrusion is not a cavity or pocket. *Id.* at 17. However, this position does not appear to run counter to the claim construction proposed by Petitioner. A protrusion is not a partially enclosed space. Patent Owner further acknowledges that Petitioner’s cited evidence of Patent Owner’s positions taken in litigation shows the protrusion within a “larger pocket/cavity,” which also does not counter Petitioner’s claim construction. *Id.* at 16.

In view of the above, we agree that the terms “pocket” and “cavity” are interchangeable and therefore have the same meaning. We further construe “pocket” and “cavity” to mean a partially enclosed space as

Petitioner's proposal is consistent with the portions of the Specification that relate to these claim limitations. *See e.g.*, Ex. 1001, 2:17–22, 64–67.

2. “*Lead receiving compartments . . . in the peripheral sidewall . . .*”

Petitioner submits a proposed construction for the phrase “lead receiving compartments are formed in the peripheral sidewall of the reflector housing,” as recited in claim 1, and “said reflector housing further having . . . a peripheral sidewall . . . , said peripheral sidewall having a plurality of lead receiving compartments formed therein,” as similarly recited in claim 15. Pet. 14–18. Petitioner argues that these phrases should be construed to mean “partially enclosed spaces adjacent to a side surface that can receive a lead.” *Id.* at 18 (emphasis omitted).

In support of its argument, Petitioner points to the fact that the '087 patent Specification in one embodiment equates a “lead receiving compartment” and a “cavity.” *Id.* at 15 (citing Ex. 1001, 2:64–66, Fig. 2). Petitioner also argues that the Specification shows that the leads are not necessarily within their respective compartments, and that a compartment needs only to “be capable of receiving that lead.” *Id.* Thus, Petitioner takes the position that a “lead receiving compartment” is “a partially enclosed space that can receive a lead.” *Id.* (emphasis omitted). Petitioner also points to dictionary definitions of “compartment” and “receive” in support of this position. *Id.* at 15–16.

With respect to the “location” of the “lead receiving compartment,” Petitioner argues that “[t]he specification uses the terms sidewall and

peripheral wall interchangeably” and that these terms both “indicate a location *adjacent to a side surface.*” *Id.* at 16.

However, Petitioner does not cite any use of the term “peripheral sidewall” in the Specification or address whether this term differs from merely a “sidewall” or a “peripheral wall.” Further, Petitioner’s evidence does not support Petitioner’s construction for the “location” of the “lead receiving compartment.” For example, Petitioner’s definitions of “sidewall” all refer to a “wall,” however, there is no mention of a “wall” in Petitioner’s claim construction. *See* Pet. 17. The Petition provides no explanation why the claimed “sidewall” is reduced to a “side surface” or how the term “peripheral” modifies the “sidewall.”⁵ *See generally id.* at 14–18.

Among other aspects of the claimed phrase, the Petition also does not address the “formed in” or “formed therein” aspects of the phrase in the proposed construction. Rather, Petitioner’s construction inappropriately reads this limitation out of the claims.

Thus, we do not accept Petitioner’s proposed claim construction for the phrase “lead receiving compartments are formed in the peripheral sidewall of the reflector housing,” as recited in claim 1, and “said reflector housing further having . . . a peripheral sidewall . . . , said peripheral sidewall having a plurality of lead receiving compartments formed therein,”

⁵ We note that the Petition does not rely on or cite to the Declaration of Michael Pecht (Ex. 1003) in support of any of the claim construction positions. *See generally* Pet. 10–18.

as similarly recited in claim 15, to mean “partially enclosed spaces adjacent to a side surface that can receive a lead.” *Id.* at 14, 18 (emphasis omitted).

Patent Owner argues that Petitioner also erred in its construction of “peripheral sidewall.” PO Resp. 18–21. Patent Owner provides a marked-up view of Figure 4 of the ’087 patent, reproduced below, to show “[a]n exemplary peripheral sidewall.” *Id.* at 19–20.

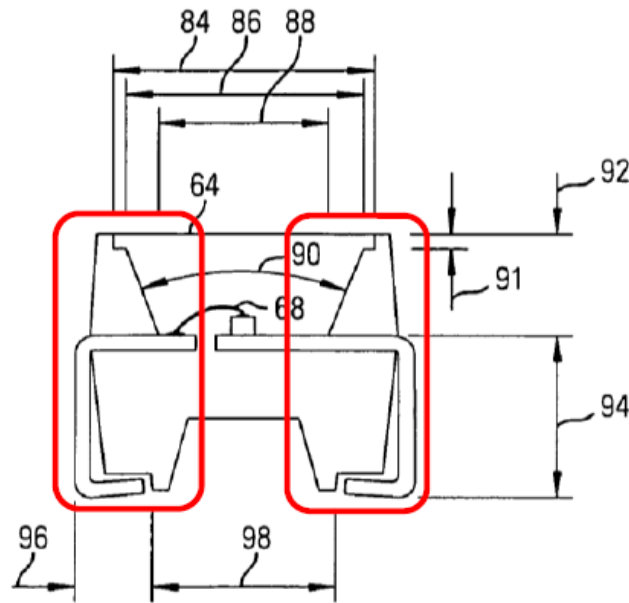


FIG. 4

Figure 4 of the ’087 patent is a cross-sectional view of an optical device (Ex. 1001, 1:30–31), with red rectangles added by Patent Owner to emphasize the peripheral sidewall (PO Resp. 20).

In our institution decision, we generally agreed with Patent Owner’s arguments concerning the construction of “peripheral sidewall” (*see* Prelim. Resp. 13–15) and construed “peripheral sidewall” as “a feature having a wall-like appearance arranged at the periphery of the reflector housing”

(Dec. 9). Patent Owner and Petitioner now both agree that this is the correct construction of the term “peripheral sidewall.” *See* PO Resp. 19, Tr. 5 (Petitioner’s counsel: “The Board said and the parties have now agreed that a peripheral sidewall is a feature having a wall-like appearance arranged at the periphery of the reflector housing.”); *id.* at 18 (Patent Owner’s counsel: “[W]e fully endorse the claim construction [of peripheral sidewall].”). Thus, based on the parties’ agreement and for the reasons given in our institution decision, we construe “peripheral sidewall” as a feature having a wall-like appearance arranged at the periphery of the reflector housing.

Patent Owner also argues that implicit in the claims is that “the inner portions of the peripheral sidewall 26 of the reflector housing provide ‘pockets’ or ‘cavities.’” PO Resp. 19 (citing Ex. 1001, 2:24–26 (“The second cavity 34 is surrounded on four sides by the peripheral wall 26, providing rigidity and preventing cracks due to flexing.”), 3:17–25). Patent Owner does not identify the alleged language in the claims that gives this implication, and we find none. Rather, Patent Owner’s argument only cites to the discussion of an embodiment in the Specification. Though the Specification informs the inquiry into the meaning of the terms in the claims, we resist Patent Owner’s suggestion to read features of the Specification into the claims. Thus, we do not agree with Patent Owner that the “peripheral sidewall” in the claims is required to form the walls of the first or second cavities.

Patent Owner argues that if we reject Petitioner’s claim construction here, “the Petition’s defect on this term conclusively confirms that Petitioner[] failed in this proceeding.” Sur-Reply 5. This is because the Supreme Court has instructed, with regard to *inter partes* reviews, that “[i]n all these ways, the statute tells us that the petitioner’s contentions, not the Director’s discretion, define the scope of the litigation all the way from institution through conclusion.” *SAS Institute, Inc.*, 138 S. Ct. at 1357. Further, Petitioner[] must include, in the Petition, “how the challenged claim is to be construed” and “how the construed claim is unpatentable” under the challenged grounds. 37 C.F.R. § 42.104(b)(3)-(4).

Id. at 4–5.

We do not agree with Patent Owner that because of *SAS*, a petition’s incorrect claim construction “conclusively” or necessarily determines that a petition fails. *Id.* at 5. Though an incorrect claim construction in a petition can result in the Board finding that the petition has not shown the claims to be unpatentable, that is not necessarily the case. Rather, we analyze Petitioner’s positions in view of our claim construction, and in view of both parties’ additional arguments below. *See e.g., Ericsson Inc. v. Intellectual Ventures I LLC*, 901 F.3d 1374, 1380 (Fed. Cir. 2018) (remanding to the Board to analyze Petitioner’s new position in the Reply on how the art taught the claim term based on the Board’s claim construction).

In summary, and as discussed above, we construe “peripheral sidewall” as a feature having a wall-like appearance arranged at the periphery of the reflector housing. Further, we reject Petitioner’s construction of the broader phrases and Patent Owner’s further requirement

that specific structures define the “peripheral sidewall.” We further reject Patent Owner’s reading of *SAS*, which would require us to dismiss the Petition based on our rejection of certain of the Petitioner’s claim constructions.

3. *Other Terms*

We decline to provide an express construction for any other terms in the ’087 patent because we determine that no such construction is required for purposes of this Decision. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that “only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

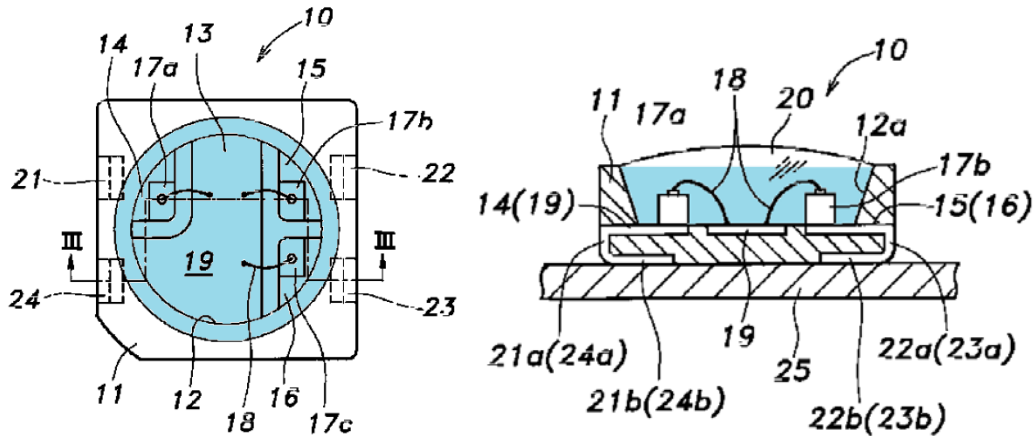
D. Obviousness over Kyowa

Petitioner asserts that claims 1, 6–8, 15, and 17 would have been obvious over *Kyowa*, citing record evidence. Pet. 30–44. Petitioner asserts that *Kyowa* teaches an optical device with an LED similar to the claimed optical device. *Id.* at 30–31 (citing *e.g.*, Ex. 1009 ¶ 1).⁶ Petitioner notes that *Kyowa* teaches “an electronic component chip [17a, b] . . . mounted to a lead frame [13] and sealed in a resin package [11],” and that the lead frame has a plurality of leads [21–24]. *Id.* at 31 (quoting Ex. 1009 ¶ 1); *see also id.* at

⁶ We note that Petitioner’s analysis of *Kyowa*’s teachings with respect to claim 15 and its dependent claim 17 largely mirrors Petitioner’s analysis of claim 1. *Compare* Pet. 30–39, *with id.* at 40–44.

20. Petitioner cites Figures 5(a)–(c) as showing the formation of a housing (resin package 11) over the lead frame. *Id.* at 31.

Petitioner provides marked-up versions of Kyowa Figures 2 and 3, reproduced below (*id.* at 32) with blue highlighting added by Petitioner to show the first cavity in the housing (*id.* at 33).



“Figure 2 (left) is a plan view showing the light emitting side of the device.” *Id.* at 32. “Figure 3 (right) is a cross sectional view[] taken along line III-III of figure 2.” *Id.* Figure 3 further shows the optical device attached to a printed circuit board 25. Ex. 1009 ¶ 15.

We agree with and adopt Petitioner’s contentions regarding the undisputed limitations of claims 1, 6–8, 15, and 17. Pet. 30–44; Ex. 1003 ¶¶ 44–67; Ex. 1019 ¶¶ 3–8. Petitioner’s reliance on further aspects of Kyowa are discussed below in reference to the disputed limitations.

1. Peripheral Sidewall

Patent Owner argues that “Petitioner[] fail[s] to demonstrate that Kyowa includes . . . a peripheral sidewall” as required by independent claims 1 and 15. PO Resp. 22. Patent Owner first argues that the Petition

fails to “identify a structure in Kyowa corresponding to the claimed peripheral sidewall,” and that the statements concerning the peripheral sidewall are conclusory. *Id.* at 23.

In the Petition, Petitioner states that “a first end face is shown as the plan and top surfaces of the housing [11] in figures 2 and 3 respectively [of Kyowa],” and that “a second end face is shown as the bottom surface of the housing [11] in figure 3.” Pet. 32–33. Petitioner asserts that Kyowa’s “peripheral sidewall extend[s] between the first and second surfaces [i.e., end faces] . . . shown in the cross-sectional view” of Figure 3. *Id.* at 33. As support for this position, Petitioner cites to the Pecht Declaration (*id.*), which states: “The area between the edge of the pocket/cavity and the outer edge of [Kyowa’s] device comprises a peripheral sidewall” (Ex. 1003 ¶ 49).

From the above, we do not agree with Patent Owner’s assertion that Petitioner fails to “identify a structure in Kyowa corresponding to the claimed peripheral sidewall,” or that Petitioner’s position is merely conclusory, as asserted by Patent Owner. *See* PO Resp. 23. Rather, as identified by Petitioner, Kyowa teaches a peripheral sidewall under the construction agreed to by both parties, namely “a feature having a wall-like appearance arranged at the periphery of the reflector housing.” The main cavity in Kyowa that houses the LED (i.e., the first pocket or cavity) defines a wall at the periphery of the housing, which gives the outer periphery a “wall-like” appearance. *See* Ex. 1003 ¶ 49 (Pecht Decl.); *see also* Ex. 1019 ¶ 4 (Second Pecht Decl.) (“Kyowa and Matsumura references both depict features that have a wall-like appearance arranged at the periphery of a

reflector housing. Those features are solid structures that extend from the top to the bottom around the outside of the reflector housing, precisely as depicted in the '486 patent.”). As required by the claims, this “peripheral sidewall” also extends between the first and second end faces, as shown in the cross-sectional view of Kyowa Figure 3.

Patent Owner attempts to discredit the testimony of Dr. Pecht, arguing that he “confirmed repeatedly [in his deposition] that he treated the claimed ‘sidewall’ as synonymous with a *surface* of the references’ housings.” PO Resp. 24 (emphasis added). Patent Owner continues: “[B]y ignoring the interior shape of the package features, and focusing solely on the outer surface, Dr. Pecht failed to provide any credible opinion on whether the asserted references disclose a ‘peripheral sidewall,’ or a ‘feature having a wall-like appearance.’” *Id.* at 26. Patent Owner further states that Dr. Pecht’s analysis “renders a wall indistinguishable from a solid cube” (Sur-Reply 2); however, Patent Owner’s statement ignores the presence of the first cavity in Kyowa.

Notably, Patent Owner omits any discussion of where Dr. Pecht noted the features in Kyowa that teach a side wall that, together with other features on the outer periphery, form a “wall-like” feature or a “peripheral sidewall” as claimed. *See e.g.*, Ex. 2006, 59:18–61:11, 62:4–63:8. Dr. Pecht’s testimony considers the various features as a whole that make up the peripheral sidewall (*id.*), while Patent Owner relies on Dr. Pecht’s discussion of individual parts or aspects of the “peripheral sidewall,” and highlights

only parts of his testimony, to make it appear that Dr. Pecht's testimony is more limited than it is. PO Resp. 24–27; Sur-Reply 2–3.

Patent Owner also argues that Kyowa does not teach a “peripheral sidewall” because of shortcomings in Petitioner's position concerning the second pocket/cavity. PO Resp. 27. Patent Owner further argues that as per the “construction of ‘peripheral sidewall,’” “[a] wall-like appearance requires certain proportions to be meaningful; otherwise ‘wall-like’ is rendered meaningless.” *Id.* at 28.

However, Patent Owner's argument is based on a portion of its claim construction position, rejected above, that requires the peripheral sidewall to define the second pocket. *See e.g., id.* at 19 (asserting that the claims implicitly require that “the inner portions of the peripheral sidewall 26 of the reflector housing provide ‘pockets’ or ‘cavities’”). Though the peripheral sidewall must be “wall-like,” there is no requirement in the claims that either of the first or second cavity defines some portion of the peripheral sidewall. The claims do not require that the second cavity be large enough to define a wall that would be considered part of the peripheral sidewall, as asserted by Patent Owner. *Id.* at 27–28.

At the same time, as discussed above, we note that at a minimum, the main cavity in Kyowa that houses the LED (i.e., the first pocket or cavity) defines a wall at the periphery of the housing, which gives the outer periphery a “wall-like” appearance. *See* Ex. 1003 ¶ 49; Ex. 1019 ¶ 4. Thus, though the claims do not require that the peripheral sidewall be defined by either the first or the second cavity, they also do not prevent it.

In addition to Petitioner’s position concerning Kyowa teaching a peripheral sidewall, Petitioner also comes to the same result by analyzing Kyowa under the method Patent Owner used to identify the peripheral sidewall of the ’087 patent (*see* PO Resp. 19–20). *See* Reply 17–18; Ex. 1019 ¶¶ 6–8. We do not review this analysis, as Dr. Pecht states that this is “not an exercise that a person having ordinary skill in the art would undertake to determine the existence or absence of a wall-like feature” (Ex. 1019 ¶ 6), which Patent Owner does not contest (*see* Sur-Reply 5–6). Patent Owner overly generalizes Dr. Pecht’s statement by asserting that “Dr. Pecht disparages any evaluation of the asserted references that actually examines them for a wall-like structure” and thus the Board has, in essence, no way of determining what is a peripheral sidewall. *Id.* at 5. We do not agree with Patent Owner’s understanding of Dr. Pecht’s statement. Further, we do not agree that this statement impacts Petitioner’s positions on Kyowa outside of applying Patent Owner’s style of analyses.

In the Patent Owner Response, Patent Owner identified the peripheral sidewall by placing red boxes around portions of Figure 4 of the ’087 patent (reproduced below). PO Resp. 20. We note that Patent Owner does not provide testimony concerning the creation of this modified figure.

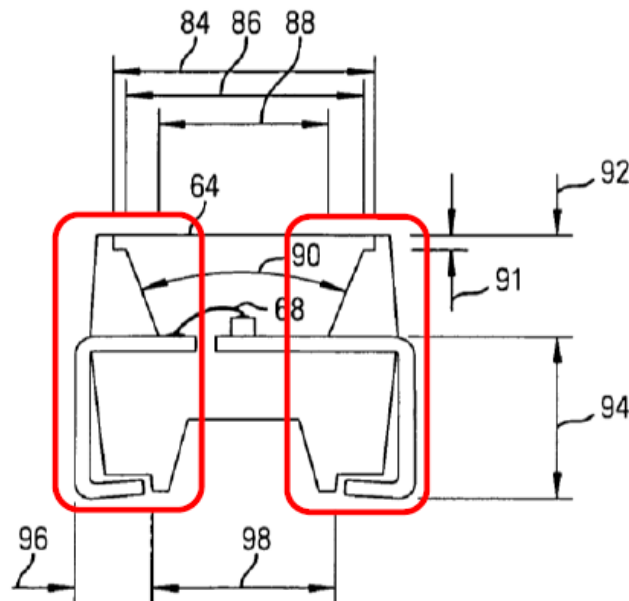


FIG. 4

Figure 4 of the '087 patent is a cross-sectional view of an optical device (Ex. 1001, 1:30–31), with red rectangles added by Patent Owner to emphasize the peripheral sidewall (PO Resp. 20).

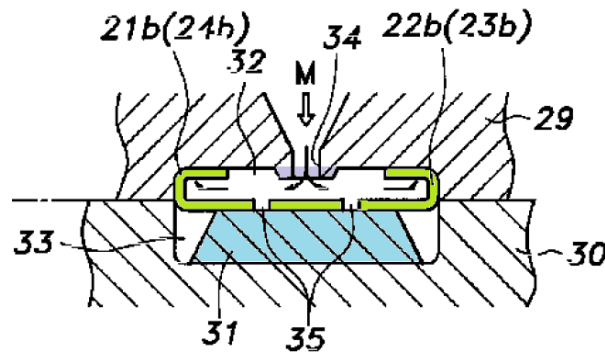
Dr. Pecht criticizes this method as being vague and arbitrary with respect to the thickness of the walls in particular. Ex. 1019 ¶ 6. We agree with Dr. Pecht that the specific location of the boxes appears to be imprecise. For example, it is not clear why the boxes are not positioned in identical locations on either side of the optical device, though they are close. However, this also speaks to the level of precision that Patent Owner believes is necessary to determine what a peripheral sidewall is.

In view of the foregoing, we find Petitioner has made a persuasive showing that Kyowa teaches or suggests a peripheral sidewall as required by independent claims 1 and 15.

2. Second Cavity

Patent Owner argues that the Petition fails to show that Kyowa teaches or suggests a second pocket or cavity. PO Resp. 27–31.

Petitioner admits that Kyowa Figure 3 does not show a second pocket opening in the second end face (*id.* at 34–35), based on the irregular cut of that cross-section;⁷ however, Petitioner argues that a pocket is formed during the injection molding process. Pet. 33–35 (citing *e.g.*, Ex. 1009 Figs. 5(b)–(c)). In particular, Petitioner asserts that the resin injection hole 34 “extends into the cavity 32,” so that after resin injection “a circular artifact will provide a second pocket/cavity in the bottom of the housing.” *Id.* at 34. Petitioner cites Figure 5(b), reproduced below as marked-up by Petitioner, as showing the resin injection hole 34 (highlighted in purple). *Id.* at 33–34.



Marked-up Kyowa Figure 5(b) shows a section view of part of a resin molding process with the “mold in a clamped state.” Ex. 1009 ¶ 13.

⁷ Line III-III of Figure 2. Pet. 35; *see also* Ex. 1009 ¶ 13 (“FIG. 3 shows a cross sectional view across line III-III of FIG. 2.”).

Petitioner further argues that “[t]o the extent that it is argued that the second pocket/cavity somehow disappears after the injection molding process, . . . it would have been obvious based on *Kyowa* and the background knowledge of a person having ordinary skill.” Pet. 35–36. Petitioner asserts that “[a] person having ordinary skill in the art would have understood that the indicated configuration of the resin injection hole would result in an indentation into the back surface of the resulting housing.” *Id.* at 36 (citing Ex. 1014; Ex. 1015; Ex. 1003 ¶ 52).

Patent Owner argues that “Petitioner[] rel[ies] on the mold shown in Fig. 5(b) and 5(c), but there is no evidence establishing the type or size of indentation that would result in *Kyowa*’s device from the disclosed mold” and that “the dimensions of any indentation that might result on the back surface of *Kyowa*’s housing cannot be inferred from *Kyowa*’s Figure 5(b) showing a clamped mold.” PO Resp. 27, 28.

We first note that the challenged claims in the present proceeding do not require particular dimensions or proportions for the second cavity. Secondly, though Patent Owner implies that an indentation may not result in *Kyowa*, they provide no evidence why the resin would not conform to the shape of the mold. Further, Patent Owner does not contest the testimony of Dr. Pecht that “*Kyowa* directly and unambiguously discloses a second pocket/cavity” (Ex. 1003 ¶ 52) or that:

The standard technique as shown in *Kyowa* is to force the resin through a narrow aperture/hole. In most designs, the narrow aperture sticks out into the mold to allow any resin remaining in the hole to be broken off from the molded part. It is this projection of the “resin injection hole 34” down into the cavity

that results in a second pocket/cavity in Kyowa as shown in figure 5(b) and (c).

Id. ¶ 50. Thus, independent of the dimensions, we have no reason to question the formation of a cavity in Kyowa.

Additionally, Petitioner provides persuasive evidence that a person of ordinary skill in the art would have understood the resin injection hole in Kyowa to result in a cavity in the housing. Pet. 36 (citing Exs. 1014, 1015, 1003 ¶ 52); *see also* Ex. 1003 ¶¶ 50–52. Petitioner also cites additional background evidence to support this assertion. *See id.* (citing Exs. 1014 ¶ 20, 1003 ¶ 52, 1015, 29).

Patent Owner questions this evidence, stating that “Kyowa’s mold shown in Fig. 5(b) and 5(c) includes no disclosed size, scale, or proportions, and there is simply no evidence to conclude that Kyowa’s molding process would yield a housing shaped like Oshio’s [Ex. 1014] packaging member.” PO Resp. 29. However, this unsupported attorney argument is not explained or expanded upon. Further, Patent Owner does not address why the testimony of Dr. Pecht concerning Oshio (Ex. 1003 ¶ 52) is not sufficient evidence. Patent Owner’s argument is therefore unpersuasive.

Patent Owner also questions Petitioner’s use of the Plastic Injection Molding reference (Ex. 1015). PO Resp. 29–31. Patent Owner argues that “the *Plastic Injection Molding* reference conditions the type of vestige’s surface irregularity based on the ‘type of gate used,’ (Ex. 1015, 29) but such gate types, or the resulting ‘vestiges’ per gate type, are never identified by Petitioner[.]” *Id.* at 29.

This argument fails because Patent Owner addresses the Plastic Injection Molding reference alone, without consideration or discussion of what one of skill in the art would have understood related to the formation of a cavity in Kyowa as evidenced by the teachings in Plastic Injection Molding. Kyowa discloses the shape of the nozzle 34 (i.e. gate) that both projects into and forms part of the mold. *See e.g.*, Ex. 1009, Figs. 5a–c.

Patent Owner also argues that “Petitioner[] ha[s] not established that a [person of ordinary skill in the art] having the skill identified by Dr. Pecht would have been able to access the *Plastic Injection Molding* reference.” PO Resp. 29. Patent Owner appears to be attempting to establish that Plastic Injection Molding is not prior art. However, Petitioner is not using Plastic Injection Molding as a prior art reference. Rather, Dr. Pecht is offering Plastic Injection Molding as evidence to corroborate his testimony concerning the knowledge of one of skill in the art. Ex. 1003, ¶ 52; Reply 20. Thus, to rely on this evidence in support of Dr. Pecht’s testimony regarding the knowledge of the ordinarily skilled artisan, Petitioner need not show that one skilled in the art could have accessed this particular reference.

In view of the foregoing, we find Petitioner has made a persuasive showing that Kyowa teaches or suggests a second cavity, as required by independent claims 1 and 15.

3. *Lead Receiving Compartments*

Patent Owner argues that Kyowa does not teach or suggest lead receiving compartments. PO Resp. 32–33.

Petitioner asserts that “*Kyowa* discloses a plurality of lead receiving compartments formed in the peripheral sidewall of the reflector housing (11),” as “the leads (green) form their own compartments within the housing during the injection molding process.” Pet. 38 (citing Ex. 1009 ¶ 22; Ex. 1003 ¶ 55). Petitioner points to Figures 3 and 5(c), reproduced below, as showing the lead receiving compartments (outlined by Petitioner in orange) formed by the leads (highlighted by Petitioner in green). *Id.*

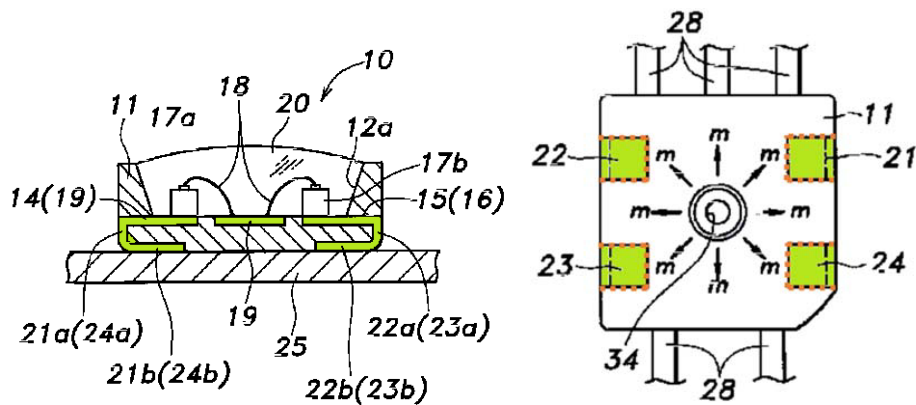


Figure 3, above left, shows a cross-sectional view of the optical device. Ex. 1009 ¶ 13. Figure 5(c), above right, illustrates resin (m) being injected into a mold. *Id.*

Patent Owner states that Petitioner construes “lead receiving compartments” to mean “a partially enclosed space that can receive a lead.” PO Resp. 32 (citing Pet. 15–18). Patent Owner argues that “[t]o the extent [*Kyowa*’s] injection molding process results in a housing forming around the leads, Petitioner[] fail[s] to explain why the resulting structure constitutes a ‘partially enclosed space,’ according to their proposed construction, when that space is wholly defined by the lead occupying the space.” *Id.* As noted above, we do not adopt Petitioner’s claim construction concerning the “lead

receiving compartments.” As Patent Owner’s argument is based entirely on a rejected claim construction, rather than the language of the claims, it is not persuasive.

We determine that Petitioner persuasively argues that in Kyowa “the leads . . . form their own compartments within the housing during the injection molding process,” and “[t]hat the resulting leads are recessed into spaces within the housing.” Pet. 38 (citing Ex. 1009 ¶ 22; Ex. 1003 ¶ 55). Thus, we determine that Petitioner has made a persuasive showing that Kyowa teaches “lead receiving compartments.”

4. Conclusion

In view of the foregoing, we find Petitioner has made a persuasive showing that Kyowa teaches or suggests all of the limitations of claims 1, 6–8, 15, and 17. Pet. 30–44; Ex. 1003 ¶¶ 44–67; Ex. 1019 ¶¶ 3–8. On this record, and having considered all arguments raised by both parties, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 6–8, 15, and 17 are unpatentable as obvious over Kyowa.

E. Obviousness over Kyowa and Okazaki

Petitioner asserts that claims 1, 6–8, 15, and 17 would have been obvious over Kyowa and Okazaki, citing record evidence. Pet. 63–67. Petitioner relies on the teachings of Kyowa as discussed above, but further provides “an alternative claim interpretation requiring a relatively large second pocket/cavity.” *Id.* at 63. Petitioner relies on the teachings of Okazaki for disclosing this feature. *Id.* Petitioner argues that

implementation of a relatively large second pocket/cavity as taught by Okazaki was within the skill of one of skill in the art. *Id.* at 64.

We determine herein that Petitioner has shown by a preponderance of the evidence that claims 1, 6–8, 15, and 17 are unpatentable as obvious over Kyowa. In addressing these grounds, we have addressed all challenged claims. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding that a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *see also* 35 U.S.C. § 318(a). It is unnecessary for us to decide whether Petitioner has shown by a preponderance of the evidence that claims 1, 6–8, 15, and 17 would have been obvious based on Kyowa and Okazaki. *Cf. In re Gleave*, 560 F.3d 1331, 1338 (Fed. Cir. 2009) (not reaching other grounds of unpatentability after affirming the anticipation ground); *see also Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (once a dispositive issue is decided, there is no need to decide other issues).

F. Obviousness over Matsumura; Matsumura and Suehiro; and Matsumura and Oshio

Petitioner asserts that claims 1, 6–8, 15, and 17 would have been obvious over Matsumura, citing record evidence. Pet. 44–54. Petitioner also asserts that claims 1, 6–8, 15, and 17 would have been obvious over Matsumura and Suehiro, citing record evidence. *Id.* at 54–60. Petitioner also asserts that claims 1, 6–8, 15, and 17 would have been obvious over Matsumura and Oshio, citing record evidence. *Id.* at 60–63.

We determine herein that Petitioner has shown by a preponderance of the evidence that claims 1, 6–8, 15, and 17 are unpatentable as obvious over Kyowa. In addressing these grounds, we have addressed all challenged claims. *See SAS Inst.*, 138 S. Ct. at 1359; *see also* 35 U.S.C. § 318(a). It is unnecessary for us to decide whether Petitioner has shown by a preponderance of the evidence that claims 1, 6–8, 15, and 17 would have been obvious based on Matsumura; Matsumura and Suehiro; or Matsumura and Oshio. *Cf. In re Gleave*, 560 F.3d at 1338; *see also Beloit Corp.*, 742 F.2d at 1423.

G. The Institution Decision

Patent Owner asserts that the Institution Decision does not conform to the agency rules and is therefore improper. PO Resp. 8–12. Patent Owner previously advanced this argument in its Request for Panel Rehearing (Paper 12”) of our Decision instituting *inter partes* review in the present case. Patent Owner also addresses our Decision (Paper 18) on Patent Owner’s Request for Panel Rehearing. Thus, Patent Owner’s argument is a second request for rehearing of the institution Decision.

Our rules make clear that “[a] party dissatisfied with a decision may file a *single* request for rehearing without prior authorization of the Board.” 37 C.F.R. § 42.71(d) (emphasis added). Patent Owner has not requested authorization for this second request for rehearing. Thus, we dismiss Patent Owner’s request as improper.

In any event, Patent Owner has failed to demonstrate persuasively that our reading of 35 U.S.C. § 314(a) and 42.108(c) in instituting the proceeding

is erroneous, and we reject Patent Owner’s argument for the same reasons set forth in our Decision on Patent Owner’s Request for Panel Rehearing.⁸ Paper 18, 2–4.

H. Constitutionality of Inter Partes Review

Patent Owner states that “[a]t the time Patent Owner’s patent issued, the express provisions of the Patent Act did not make patents revocable through *inter partes* review.” PO Resp. 49. Thus, Patent Owner argues that “[r]etroactively subjecting Patent Owner’s vested patent rights to new qualifications . . . presents a constitutional concern sufficient to preclude invalidation of the claims.” *Id.* at 49–50.

The Board previously has declined to consider constitutional challenges because “generally, ‘administrative agencies do not have jurisdiction to decide the constitutionality of congressional enactments.’” *Square Inc. v. Unwired Planet LLC*, Case IPR2014-01165, slip op. at 25 (PTAB Oct. 30, 2015) (Paper 32) (quoting *Riggin v. Office of Senate Fair Emp’t Practices*, 61 F.3d 1563, 1569 (Fed. Cir. 1995)). We likewise decline to consider the merits of Patent Owner’s constitutional challenge.

⁸ We further direct Patent Owner to the guidance on the impact of SAS on AIA trial proceedings issued by the Patent Office on April 26, 2018 (available at <https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/trials/guidance-impact-sas-aia-trial>).

III. CONCLUSION

Based on the information presented, we conclude that Petitioner has shown by a preponderance of the evidence that claims 1, 6–8, 15, and 17 of the '087 patent are unpatentable under 35 U.S.C. § 103.

IV. ORDER

For the reasons given, it is

ORDERED that claims 1, 6–8, 15, and 17 of U.S. Patent 7,524,087 B1 are unpatentable under 35 U.S.C. § 103; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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