

NOTE: This disposition is nonprecedential.

**United States Court of Appeals  
for the Federal Circuit**

---

**NICHIA CORPORATION,**  
*Appellant*

v.

**DOCUMENT SECURITY SYSTEMS, INC.,**  
*Cross-Appellant*

---

2020-2261, 2020-2287

---

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2018-01165.

---

Decided: April 26, 2022

---

THOMAS R. MAKIN, Shearman & Sterling LLP, New York, NY, argued for appellant. Also represented by DAVID JEFFREY COOPERBERG, ERIC SEBASTIAN LUCAS; MATT BERKOWITZ, PATRICK ROBERT COLSHER, Menlo Park, CA.

PAUL ANTHONY KROEGER, Russ August & Kabat, Los Angeles, CA, argued for cross-appellant. Also represented by BRIAN DAVID LEDAHL, SHANI M. WILLIAMS.

---

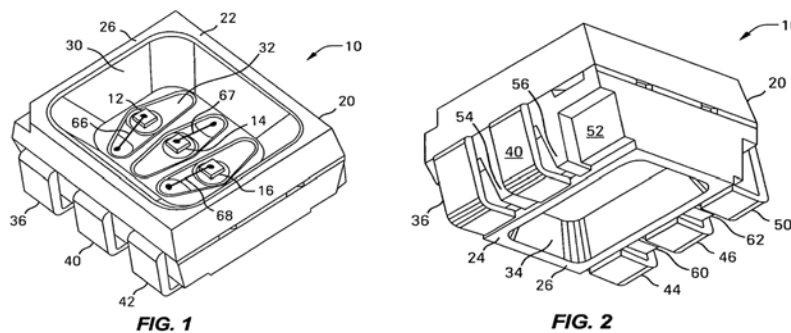
Before DYK, REYNA, and STOLL, *Circuit Judges*.

REYNA, *Circuit Judge*.

Document Security Systems owns U.S. Patent No. 7,524,087, directed to light emitting diode display panels. Nichia Corporation petitioned for inter partes review of claims 1–19. The Patent Trial and Appeal Board determined Nichia proved claims 1 and 6–8 unpatentable but did not prove claims 2–5 and 9–19 unpatentable. Both parties appeal. We affirm the Board’s findings as to all claims except claims 15–19. We reverse on claim 15 and remand for further proceedings regarding dependent claims 16–19.

#### BACKGROUND

U.S. Patent No. 7,524,087 (“the ’087 patent”) is owned by Document Security Systems, Inc. (“Document Security”) and describes an optical device with a light emitting diode (“LED”) die. ’087 patent, abstract. The device can be used in a display panel as one of numerous LEDs and consists of an LED die mounted to a plastic housing. In one embodiment, LEDs are mounted in a housing and encapsulated for protection from the environment. ’087 patent, 1:50–52. Figure 1 below shows the top perspective and figure 2 shows the bottom perspective of an exemplary optical device.



'087 patent, figs. 1 & 2.

In relation to figures 1 and 2, the device contains reflector housing 20 with a sidewall 26 extending between a top 22 and bottom 24. '087 patent at 2:12–17. A first pocket, or cavity, 30 is formed on the top of the housing 22 and a second pocket 34 is formed on the bottom 24. *Id.* The first pocket 30 contains light sources 12, 14, and 16 mounted on an electronically conductive lead frame 32. '087 patent at 2:17–21. Each lead 36, 40, 42, 44, 46, and 50 is positioned at a lead receiving compartment (e.g., 52) formed in the exterior sidewall 26 of the reflector housing 20. '087 patent at 2:64–67. The first pocket 30 may be filled with encapsulant to cover and protect the LED dies, which may be a substantially transparent silicone material. '087 patent at 3:26–30. Independent claim 1 is representative.

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 encapsulant 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.

'087 patent at 6:23–37.

Nichia Corporation (“Nichia”) petitioned for inter partes review of all 19 claims of the ’087 patent, and the Patent Trial and Appeal Board (“Board”) instituted review. *Nichia Corp. v. Document Security Systems, Inc.*, IPR2018-01165, 2019 WL 6719173 at \*1 (P.T.A.B. Dec. 10, 2019) (“Decision”). Three prior art references from Nichia’s petition are relevant to this appeal.

The first prior art reference is U.S. Patent Application Publication No. US 2004/0135156 A1 (“Takenaka”), which is titled “Semiconductor Light Emitting Device and Fabrication Method Thereof.” Takenaka illustrates a semiconductor LED including an LED chip, a frame upon which the chip is mounted, a second electronically connected lead frame, and a resin portion surrounding the chip and securing the lead frame. Decision at \*3, \*6–7. A metal body sits between the lead frames secured by a resin portion. *Id.*

Second, Japanese Patent Application Publication A No. 2001 118868 (“Kyowa”) is titled “Surface mounted parts and their manufacturing method” and illustrates a surface-mounting device that stores light-emitting parts such as light-emitting chips that are mounted to portions of the device by die bonding. Decision at \*3, \*7. The chips are connected to a common area, the outer lead frame has outer leads continuing to the common area, and the device is enclosed in a resin package. *Id.*

And third, U.S. Patent No. 6,653,661 B2 (“Okazaki”) describes “a chip-type LED utilized as a light source for various display panels or a backlight source for liquid crystal display devices.” Decision at \*3, \*31. The device includes a tubular vessel with an upper and lower opening with an LED positioned between the openings. *Id.*

The Board found Nichia demonstrated by a preponderance of the evidence that claims 1 and 6–8 are unpatentable as obvious over Takenaka in combination with Kyowa. Decision at \*15, \*20–21. The Board found a motivation to combine Takenaka and Kyowa. According to the Board, a

person of ordinary skill in the art would have been motivated to combine the lead receiving compartments of Kyowa with the sidewall of Takenaka's LED housing to protect the leads from external forces. *Id.* at \*13–14. The Board found Takenaka teaches most of claim 1 and Kyowa teaches the remaining limitation requiring multiple lead-receiving compartments in the reflector housing sidewall, thus rendering claim 1 and dependent claims 6–8 unpatentable as obvious. *Id.* at \*13–15.

The Board further determined Nichia did not demonstrate that claims 2–5 and 9–19 are unpatentable based on any asserted grounds. Decision at \*20, \*22–23, \*30, \*37. The Board determined claims 1 and 6–14 are not unpatentable in view of Okazaki and Kyowa because Okazaki discloses a tubular vessel rather than the claimed two pockets. *Id.* at \*33–36. The Board's findings were based on its determination that Document Security's relevant testimony was more credible than Nichia's. *Id.* at \*34. The Board determined the relevant art is LED displays and that Mr. Credelle, Document Security's expert, is qualified in this field because he has an M.S. degree in Electrical Engineering, more than 40 years of experience, and received recognition in the field. *Id.* at \*32–33. The Board relied on Mr. Credelle's testimony that a person of ordinary skill would understand Okazaki to describe a tubular vessel rather than two pockets. *Id.* at \*33–36. The Board explained Okazaki does not refer to the interior of the tubular vessel as having separate spaces, and the pinching in of the tubular vessel serves purposes requiring a through-hole rather than pockets. *Id.*

Additionally, the Board determined Nichia did not demonstrate claims 9–19 are unpatentable over Takenaka in view of Kyowa. Decision at \*21–23. The Board found that Nichia did not identify any disclosure in Takenaka regarding the “plastic phrase” in claim 9. *Id.* Claim 9 begins: “A display comprising a plurality of plastic leaded chip carrier LEDs, the plastic leaded chip carrier LEDs each

comprising . . . ’087 patent at 6:55–57 (emphasis added). The underlined portion above is referred to as the “plastic phrase.” The Board determined that the preamble for claim 9 is “[a] display comprising” and accordingly, that the plastic phrase is limiting. Decision at \*21–22. The Board found Nichia did not meet its burden on claim 9 and dependent claims 10–14 because it failed to point to any disclosure regarding plastic in Takenaka. *Id.*

In the Final Written Decision, the Board found that Nichia also did not identify any disclosure in Takenaka that teaches or suggests the “electrical connection limitation” in independent claim 15. Decision at \*22–23. Claim 15 is essentially the same as claim 1 with the additional limitation that “at least one LED die” is “electronically connected to said plurality of electrically conductive leads.” ’087 patent at 7:20–22. The Board found Nichia did not identify any disclosure in Takenaka for this limitation and thus did not meet its burden for claim 15 and dependent claims 16–19. Decision at \*22–23.

Nichia appeals the Board’s determination that it had not proven claims 1 and 6–14 unpatentable based on Okazaki in view of Kyowa or proven claims 9–19 unpatentable based on Takenaka in view of Kyowa. Appellant’s Br. 22. Document Security cross-appeals the Board’s finding that claims 1 and 6–8 are obvious. Appellee’s Br. 24. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

#### STANDARD OF REVIEW

We review decisions by the Board in accordance with the Administrative Procedure Act, 5 U.S.C. § 706. *See Dickinson v. Zurko*, 527 U.S. 150 (1999). We review the Board’s legal conclusions de novo and its factual findings for substantial evidence. *See ACCO Brands Corp. v. Fellowes, Inc.*, 813 F.3d 1361, 1365 (Fed. Cir. 2016). Substantial evidence is “such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” *In*

*re Gartside*, 203 F.3d 1305, 1312 (Fed. Cir. 2000) (citations omitted).

The Board's ultimate obviousness determination is a legal conclusion reviewed de novo. See *In re Cuzzo Speed Techs., LLC*, 793 F.3d 1268, 1280 (Fed. Cir. 2015). The Board's factual findings underlying its obviousness determination are reviewed for substantial evidence. *Id.* (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)). “The scope and content of the prior art, as well as whether the prior art teaches away from the claimed invention, are determinations of fact.” *In re Mouttet*, 686 F.3d 1322, 1330 (Fed. Cir. 2012).

## DISCUSSION

### I. Nichia's Appeal

Nichia appeals two issues. First, that the Board erred in its finding that Nichia failed to show that claims 1 and 6–14 of the '087 patent were unpatentable over Okazaki in view of Kyowa. Second, that the Board erred in its finding that Nichia did not prove that claims 9–19 of the '087 patent were unpatentable as obvious over Takenaka in view of Kyowa. Appellant's Br. 24–26, 48–49.

#### A

Nichia's argument regarding claims 1 and 6–14 is directed to the Board's finding that Okazaki does not disclose a device with two pockets. Appellant's Br. 27–48. The claims require a reflector housing having two pockets. Decision at \*33–34. The parties disagreed whether the tubular vessel bisected by lead frames described in Okazaki taught or suggested the required two pockets. *Id.*

Document Security's expert, Mr. Credelle, explained that a person of ordinary skill in the art would understand the tubular vessel as a “through-hole” or tube, rather than two pockets. *Id.* Nichia's expert, Dr. Shealy, testified that a person of ordinary skill would have understood the lead

frames to bisect the tubular vessel into separate spaces, i.e., pockets. *Id.* The Board weighed the expert testimonies and found Mr. Credelle's testimony more credible.

The Board explained that Mr. Credelle's testimony "more closely reflect[ed] Okazaki's disclosure." Decision at \*33. Mr. Credelle's testimony aligns with Okazaki's descriptions of the tubular vessel as being a single space. *Id.* at \*33–35. Additionally, the Board credited Mr. Credelle's testimony that the pinching in of the tubular vessel is for the purpose of reflecting light upwards rather than creating two pockets. *Id.* at \*35. Based on Mr. Credelle's testimony, the Board determined that a person of ordinary skill in the art would not understand Okazaki to teach or suggest a reflector housing having two pockets. *Id.* at \*36.

The Board's determination is a question of fact that we review for substantial evidence. *See Cuozzo*, 793 F.3d at 1280. In its Final Written Decision, the Board pointed to Mr. Credelle's testimony that Okazaki describes the tubular vessel as a single space. The Board cited to the descriptions and figures from Okazaki that support Mr. Credelle's testimony and the Board's determination. In particular, the Board explained that figures 3 and 4 do not describe two separate spaces as Nichia contended, but rather described the tubular vessel as a singular tube. Decision at \*33–36. We conclude that the expert testimony and disclosures from Okazaki provide substantial evidence supporting the Board's decision. We also reject Nichia's alternative request to find that Okazaki's single, tubular vessel satisfies claim 9's single cavity limitation. The Board correctly determined that Nichia never proposed that Okazaki disclosed anything other than two pockets or cavities.

Thus, we affirm the Board's finding that Okazaki does not teach the required two pockets and that claims 1 and 6–14 of the '087 patent were not shown to be unpatentable.



## B

Nichia argues that the Board erred in finding that Nichia failed to show that claims 9–19 are unpatentable over Takenaka in view of Kyowa. Appellant’s Br. 49–65. Nichia makes three arguments.

First, Nichia argues that the Board erred in its construction of claim 9. Appellant’s Br. 49–52. The Board determined that the preamble for claim 9 is “[a] display comprising” and accordingly, that the plastic phrase—“a plurality of plastic leaded chip carrier LEDs, the plastic leaded chip carrier LEDs each comprising”—is limiting. Decision at \*21–22. According to Nichia, the plastic phrase should be construed as a preamble, not a limitation. Appellant’s Br. 49–52.

Claim construction is an issue of law that we review de novo. *See Cuozzo*, 793 F.3d at 1280. A preamble is “a general description of all the elements or steps of the claimed combination . . .” 37 C.F.R. § 1.75(e)(1). “Claims are usually structured with a preamble, a ‘transition phrase,’ and the elements or steps that are necessary to the right to exclude.” *CIAS, Inc. v. Alliance Gaming Corp.*, 504 F.3d 1356, 1360 (Fed. Cir. 2007) (citation omitted). The phrase “[a] display comprising” is a general description followed by the transition word “comprising” and then the required elements. Accordingly, we affirm the Board’s determination that “[a] display comprising” is the preamble to claim 9 and that “a plurality of plastic leaded chip carrier LEDs, the plastic leaded chip carrier LEDs each comprising” is a limitation.

Second, Nichia argues that statements from Takenaka addressing plastic were included in its claim charts for claim 1, and the Board abused its discretion by not applying this information to claim 9. Appellant’s Br. 52–65.

In inter partes review proceedings, the patent challenger bears the burden and must “show with particularity

why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). The patent challenger must provide an understandable explanation of the element-by-element specifics of its unpatentability contentions, identifying supporting disclosures from the asserted prior art. *See* 35 U.S.C. § 312(a)(3). This burden combined with the structure of Board proceedings means “in some cases, a challenge can fail even if different evidence and arguments might have led to success.” *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1367 (Fed. Cir. 2015). “[A]buse of discretion is found if the decision: (1) is clearly unreasonable, arbitrary, or fanciful; (2) is based on an erroneous conclusion of law; (3) rests on clearly erroneous fact finding; or (4) involves a record that contains no evidence on which the Board could rationally base its decision.” *Bilstad v. Wakalopoulos*, 386 F.3d 1116, 1121 (Fed. Cir. 2004) (citations omitted).

Nichia failed to establish anywhere in its petition or expert declaration that Takenaka disclosed “plastic.” Decision at \*21–22; J.A. 173. Nichia’s claim charts disclose solely the use of resin, and Nichia makes no argument comparing resin and plastic. J.A. 160–61; 173. Nichia failed to demonstrate with particularity that Takenaka discloses “plastic leaded chip carrier LEDs.” We therefore affirm the Board’s conclusion that Nichia did not meet its burden on claim 9 and dependent claims 10–14.

Third, Nichia argues that the Board abused its discretion in finding that Nichia did not prove claim 15 unpatentable based on Takenaka in view of Kyowa. Appellant’s Br. 60–65. Claim 15 is essentially the same as claim 1 with an additional limitation—“at least one LED die . . . electronically connected to said plurality of electrically conductive leads.” *Compare* ’087 patent at 6:23–38, *with id.* at 7:15–8:7. The Board found Takenaka and Kyowa render claim 1 obvious. Decision at \*12. Further, the Board found that Nichia did not identify where Takenaka teaches an electrical connection as required by claim 15 and thus, did

not prove claim 15 unpatentable based on Takenaka in view of Kyowa. *Id.* at \*22–23.

Nichia argues that the Board abused its discretion by ignoring Nichia’s reference to its claim chart for claim 1 and finding that Nichia did not prove claim 15 unpatentable as obvious due to the combination of Takenaka and Kyowa. Appellant’s Br. 60–65. Nichia contends its discussion of claim 15 references the discussion of claim 1, which addresses the electrical connection. *Id.*

Here, it was Nichia’s burden to demonstrate Takenaka disclosed the required electrical connection. *See, e.g., Harmonic*, 815 F.3d at 1363; *Ariosa Diagnostics*, 805 F.3d at 1367. Unlike with the plastic phrase, Nichia’s petition specifically stated that Takenaka disclosed an electrical connection. In discussing claim 15, the petition cites to Section VI.D.1., which discusses grounds for unpatentability of claim 1 based on Takenaka. J.A. 177–79. The petition quotes Takenaka’s description of how the leads are connected. “LED chip 4 is mounted on first lead frame 1 with Ag paste 7 therebetween. Bonding wire 5 is attached to second lead frame 2. Accordingly, second lead frame 2 is mechanically and *electrically connected* to LED chip 4.” J.A. 163–64 (emphasis added). This shows Takenaka discloses an LED die electrically connected to a conductive lead. Thus, Nichia demonstrated with particularity that this claim limitation is disclosed in the prior art. The Board’s conclusion to the contrary demonstrates a clearly erroneous fact finding qualifying as an abuse of discretion.

Because we find that Nichia proved the electrical limitation is disclosed in Takenaka, we reverse the Board’s decision regarding claim 15 and remand to the Board to address dependent claims 16–19.

## II. Document Security’s Cross-Appeal

On cross-appeal, Document Security challenges the Board’s finding that claims 1 and 6–8 of the ’087 patent are

obvious over Takenaka in view of Kyowa. Appellee's Br. 57. Document Security presents two issues for appeal. First, Document Security argues that Takenaka meets all the limitations of the asserted patent's disclosed method to protect the leads from external forces. And as a result, there was no need to combine Takenaka with Kyowa. Appellee's Br. 61–66.

The Board determined that a person of ordinary skill would have been motivated to combine Takenaka with Kyowa with a reasonable expectation of success. Decision at \*13–15. Motivation to combine is a finding of fact. *See Mouttet*, 686 F.3d at 1330. We review the Board's factual findings for substantial evidence. *See ACCO Brands*, 813 F.3d at 1365.

In its Final Written Decision, the Board relied on the testimony of Dr. Shealy, Nichia's expert. Decision at \*13–14. Dr. Shealy opined that a person of ordinary skill in the art would have been motivated to add the compartments described in Kyowa to the LED housing sidewall of Takenaka to protect the leads from external forces. *Id.* In his testimony, Dr. Shealy pointed to Kyowa's discussion that sidewall compartments protect the leads from external forces. *Id.* The Board thus found that Kyowa teaches or suggests improving the LED assembly of Takenaka by protecting the leads from external forces. *Id.* at \*15. Dr. Shealy's expert testimony and Kyowa's disclosure provide "relevant evidence as a reasonable mind" would find supports the Board's conclusion. *Gartside*, 203 F.3d at 1312. Thus, we conclude that the Board's finding that a person of ordinary skill in the art would be motivated to combine Takenaka and Kyowa is supported by substantial evidence.

Second, Document Security argues that even if a person of ordinary skill in the art were motivated to combine Kyowa and Takenaka, the Board erred because Kyowa does not teach a required element of the claims at issue.

The Board found claim 1 unpatentable as obvious because Takenaka teaches most of claim 1, including the reflector housing, and Kyowa teaches the remaining limitation requiring multiple lead-receiving compartments in a sidewall. Decision at \*13–15. According to Document Security, Kyowa does not disclose or suggest reflector housing and therefore cannot teach the lead-receiving compartments limitation. Appellee’s Br. 58–61.

What the prior art teaches is a finding of fact we review for substantial evidence. *ACCO Brands*, 813 F.3d at 1365. The Board explained that Kyowa teaches the device is enclosed in a resin package, which is an LED housing, and the sidewall contains multiple compartments in the housing. Decision at \*11–12. Further, the Board reasoned that Takenaka teaches a housing formed of “white resin having high reflectance,” which corresponds to the required reflector housing. *Id.* at \*8. The Board pointed to the disclosures in Takenaka that teach the reflector housing and the disclosures in Kyowa that teach the multiple compartments within the housing. *Id.* at \*7–15. We conclude that the Board’s finding that Takenaka and Kyowa teach all the limitations of claim 1 is supported by substantial evidence. Accordingly, we affirm.

#### CONCLUSION

We affirm the Board’s decision with respect to all claims except claims 15–19. We reverse with respect to claim 15 and remand for findings on dependent claims 16–19. We have considered both parties’ remaining arguments and find them unpersuasive.

#### **AFFIRMED-IN-PART, REVERSED-IN-PART AND REMANDED**

#### COSTS

No Costs.