

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LG DISPLAY CO., LTD.,
Petitioner,

v.

DELAWARE DISPLAY GROUP LLC,
Patent Owner.

Case IPR2015-00506
Patent 7,434,973 B2

Before THOMAS L. GIANNETTI, BEVERLY M. BUNTING, and
MICHELLE N. WORMMEESTER, *Administrative Patent Judges*.

WORMMEESTER, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

A. Background

LG Display Co., Ltd. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–5 of U.S. Patent No. 7,434,973 B2 (Ex. 1001, “the ’973 patent”). Paper 1 (“Pet.”). Delaware Display Group LLC (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

Upon consideration of the Petition, and for the reasons explained below, we determine that Petitioner has shown that there is a reasonable likelihood that it would prevail with respect to the challenged claims 1–5. We institute an *inter partes* review of claims 1–5 of the ’973 patent.

B. Related Proceedings

The parties identify the following case involving the ’973 patent: *Delaware Display Group LLC v. Lenovo Group Ltd.*, Case No. 1:13-cv-02108 (D. Del., filed Dec. 31, 2013). Pet. 1; Paper 4, 2.

The parties also identify twenty-two pending requests for *inter partes* review involving patents related to the ’973 patent. Pet. 1–2; Paper 4, 2–3.

C. The '973 Patent

The '973 patent is titled "Light Emitting Panel Assemblies." The Abstract describes the subject matter as follows:

Light emitting panel assemblies include a light emitting panel member having at least one light source optically coupled to a portion of an input edge of the panel member. A plurality of individual light extracting deformities on or in at least one panel surface of the panel member are of well defined shape and have a length and width substantially smaller than the length and width of the panel surface. At least some of the deformities have at least one surface that is angled at different orientations relative to the input edge depending on the location of the deformities on the panel surface to face a portion of the input edge to which a light source is optically coupled.

Ex. 1001, Abstract.

D. The Challenged Claims

Petitioner challenges claims 1–5 of the '973 patent. Independent claim 1 is illustrative of the claimed subject matter and is reproduced below:

1. A light emitting panel assembly comprising
a light emitting panel member having at least one input edge,
a plurality of light sources optically coupled to different portions of the width of the input edge, and
a pattern of individual light extracting deformities associated with respective light sources,
wherein the deformities are projections or depressions on or in at least one surface of the panel member for producing a desired light output from the panel member,
wherein each of the deformities has a length and width substantially smaller than the length and width of the panel surface,
wherein the deformities that are in close proximity to the input edge increase in density, size, depth and/or height as the

distance of the deformities from the respective light sources increases across the width of the panel member, and wherein the density, size, depth and/or height of the deformities in close proximity to the input edge is greatest at approximate midpoints between adjacent pairs of the light sources.

Ex. 1001, 14:64–15:13.

E. Claim Construction

The Board interprets claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see In re Cuozzo Speed Techs., LLC*, 778 F.3d 1271, 1278–81 (Fed. Cir. 2015).

The only claim term for which Petitioner proposes a construction is the term “deformities,” appearing in all challenged claims of the ’973 patent. Pet. 6. Petitioner asserts that the ’973 patent “expressly defines” the term to mean “any change in the shape or geometry of a surface and/or coating or surface treatment that causes a portion of the light to be emitted.” *Id.* (citing Ex. 1001, 6:6–10). Patent Owner appears to take no position on claim construction at this stage of the proceeding. Prelim. Resp. 2–3. Patent Owner points out, however, that the construction of “deformities” proffered by Petitioner was agreed to and adopted by the district court. *Id.*

Having considered Petitioner’s construction of “deformities,” i.e., “any change in the shape or geometry of a surface and/or coating or surface treatment that causes a portion of the light to be emitted,” (Pet. 6), we determine that, at this stage, it should be adopted here.

F. Asserted Grounds of Unpatentability

Petitioner contends that the challenged claims are unpatentable under 35 U.S.C § 102 or § 103 based on the following grounds. Pet. 17–59.

Reference(s)	Basis	Claims Challenged
The '389 patent ¹ and Pelka ²	§ 103	1–5
Shinohara ³	§ 102	1–5
Shinohara and Yoshikawa ⁴	§ 103	1–5
Pelka and Funamoto ⁵	§ 103	1–5
Hooker ⁶ and Mizobe ⁷	§ 103	1, 2

II. ANALYSIS

A. Real Party-in-Interest

We first address Patent Owner’s contention that the Petition should be denied because Petitioner has failed to name two real parties-in-interest. Prelim. Resp. 17. They are allegedly LG Electronics Inc. and LG Electronics U.S.A., Inc. *Id.*

Patent Owner’s Preliminary Response fails to provide convincing evidence that LG Electronics Inc. is a real party-in-interest. According to Patent Owner, “LG Electronics Inc. is a real party-in-interest because it owns 37.9% of Petitioner and because it has admitted to being a related party to Petitioner.” *Id.* (citing Ex. 2003). We are not persuaded by this argument. As the Office Trial Practice Guide, 77 Fed. Reg. 48,756, 48,759

¹ Parker, US 7,195,389 B2, issued Mar. 27, 2007 (Ex. 1007).

² Pelka, US 6,473,554 B1, issued Oct. 29, 2002 (Ex. 1009).

³ Shinohara, US 6,167,182, issued Dec. 26, 2000 (Ex. 1010).

⁴ Yoshikawa, US 5,775,791, issued July 7, 1998 (Ex. 1011).

⁵ Funamoto, EP 0 878 720 A1, published Nov. 18, 1998 (Ex. 1012).

⁶ Hooker, US 5,477,422, issued Dec. 19, 1995 (Ex. 1013).

⁷ Mizobe, US 5,057,974, issued Oct. 15, 1991 (Ex. 1014).

(Aug. 14, 2014), makes clear, and as Patent Owner acknowledges (Prelim. Resp. 18), an important factor in determining real party-in-interest is control or the ability to control the proceeding. *See Zoll Lifecor Corp. v. Philips Elecs. N. Am. Corp.*, Case IPR2013-00609, slip op. at 10 (PTAB Mar. 20, 2014) (Paper 15). In *Zoll*, the Board relied on the fact that the party determined to be a real party-in-interest (Zoll Medical) controlled 100 % of the petitioner (Zoll Lifecor). Here, LG Electronics Inc. is not even a majority owner of Petitioner. Moreover, the fact that the attorneys representing Petitioner here also represent LG Electronics Inc. in a district court lawsuit involving the '973 patent (Prelim. Resp. 18), without more, is insufficient evidence to demonstrate control of this proceeding by LG Electronics.

Patent Owner also fails to provide convincing evidence that LG Electronics U.S.A. Inc. is a real party-in-interest. Patent Owner's sole argument states "LG Electronics U.S.A., Inc. is a real party-in-interest because it is 100 % owned by LG Electronics, Inc." *Id.* Again, Patent Owner has not provided sufficient proof that LG Electronics Inc. is a real party-in-interest. Therefore, based on the evidence of record, Patent Owner's contention that LG Electronics U.S.A. Inc. also is a real party-in-interest simply because it is "100% owned by LG Electronics, Inc." is not persuasive.

We therefore determine that, on this record, the Petition should not be denied on this basis.

B. Effective Filing Date for Claims 1–5

The '973 patent issued from U.S. Patent Application No. 11/673,302, which has a filing date of February 9, 2007. Ex. 1001, at [10], [21], [22]. Through a chain of continuing applications, the application for the '973 patent claims the benefit under 35 U.S.C. § 120 of U.S. Patent Application No. 08/495,176 (“the '176 grandparent application”), which has a filing date of June 27, 1995. *Id.* at [60]; Ex. 1002, 89.

Petitioner argues that the effective filing date for claims 1–5 of the '973 patent is not the filing date of the '176 grandparent application. Pet. 7. Instead, Petitioner asserts that the claims are entitled to a “priority date” no earlier than November 28, 2007. *Id.* According to Petitioner, certain limitations in the issued claims of the '973 patent were not “sufficiently described” in the application as originally filed. *Id.* Petitioner contends that the application for the '973 patent was amended on November 28, 2007, to cancel the original claims and to add new Figures 39A–B and related subject matter to the specification. *Id.* at 8. This amendment also added new claims 30 and 31, among others. *Id.* Those claims were later combined in a subsequent amendment and became claim 1 of the issued '973 patent. *Id.*

The amended claims included the limitation “wherein the density, size, depth and/or height of the deformities in close proximity to the input edge is greatest at approximate midpoints between adjacent pairs of the light sources.” *Id.* Petitioner provides a chart illustrating the passages from the originally-filed Specification relied upon by Patent Owner to support the amendment, and asserts that the originally-filed disclosure for the '973 patent does not provide written description support for this limitation, which was “new matter” added by the amendment. *Id.* at 8–12.

Patent Owner responds by pointing to the following disclosure in the '176 grandparent application:

By varying the density, opaqueness or translucence, shape, depth, color, area, index of refraction, or type of deformities or disruptions may be used to control the percent of light emitted from any area of the panels. For example, less and/or smaller size deformities 21 may be placed on panel areas where less light output is wanted. Conversely, a greater percentage of and/or larger deformities may be placed on areas of the panels where greater light output is desired.

Varying the percentages and/or size of deformities in different areas of the panel is necessary in order to provide a uniform light output distribution. For example, the amount of light traveling through the panels will ordinarily be greater in areas closer to the light source than in other areas further removed from the light source. A pattern of light extracting deformities 21 may be used to adjust for the light variances within the panel members, for example, by providing a denser concentration of light extracting deformities with increased distance from the light source 3 thereby resulting in more uniform light output distribution from the light emitting panels.

Prelim. Resp. 5–6 (citing Ex. 2002, 8:20–9:7). Patent Owner contends that this disclosure provides written description support for the issued claims of the '973 patent. *Id.* at 6–7. We are not persuaded by this argument.

The cited disclosure in the '176 grandparent application discusses varying the density, size, and depth of the deformities in different areas of the panel. Ex. 2002, 8:20–33. For example, the density of deformities may be increased as their distance from a light source increases. *Id.* at 9:3–5. This disclosure does not describe, however, the density, size, depth, or height of the deformities at approximate midpoints between adjacent pairs of light sources. Accordingly, on this record, we determine that the '176

grandparent application, as originally filed, does not provide written description support for this limitation. Therefore, claims 1– 5 are not entitled to the benefit of the filing date of the '176 grandparent application.

At the same time, we also are not persuaded by Petitioner's argument that the introduction of "new matter" into the application for the '973 patent through the November 28, 2007, amendment means necessarily that the '973 patent claims only are entitled to a November 28, 2007, filing date.

Pet. 7. Although the MPEP is not binding authority, we note that the MPEP states, "[i]f the originally filed disclosure does not provide support for each claim limitation, or if an element which applicant describes as essential or critical is not claimed, a new or amended claim *must be rejected* under . . . 35 U.S.C. 112, para. 1, as lacking adequate written description, or in the case of a claim for priority under 35 U.S.C. 119, 120, or 365(c), the claim for priority must be denied." MPEP § 2163(II)(A)(3)(b) (emphasis added).

Having considered Petitioner's "new matter" argument, we determine that the issue it raises is not a filing date issue, but instead the question of whether the originally-filed disclosure for the '973 patent supports the amended claims filed on November 28, 2007. *See R.R. Dynamics, Inc. v. A. Stucki Co.*, 727 F.2d 1506, 1517 (Fed. Cir. 1984) ("Stucki had amended its claims in the course of prosecuting its application [T]he sole question raised . . . is whether the claims entered by amendment were supported by the disclosure in Stucki's original application."); *Westphal v. Fawzi*, 666 F.2d 575, 577 (C.C.P.A. 1981). That question is ultimately a written description issue under 35 U.S.C. § 112, which we do not address in an *inter partes* review. *See* 35 U.S.C. § 311(b) ("petitioner in an *inter partes* review

may request to cancel as unpatentable 1 or more claims of a patent only on a ground that could be raised under section 102 or 103”).

Alternatively, Petitioner argues that the earliest priority date to which the ’973 patent is entitled is February 23, 1999, the filing date of a parent application that issued as U.S. Patent No. 6,712,481 (“the ’481 patent”). *See* Pet. 12. For the claims of the ’973 patent to be entitled to the February 23, 1999, priority date, however, the application for the ’481 patent must describe all the limitations of the claims. *See Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997). Petitioner’s arguments in this regard, however, do not persuade us that the challenged claims are entitled to the February 23, 1999, priority date of the application for the ’481 patent.

For the reasons set forth above, we determine that, on the record before us, the claims are not entitled to the benefit of the June 27, 1995 filing date of the ’176 grandparent application. At the same time, we are not persuaded by Petitioner’s argument that the challenged claims are limited to a date no earlier than November 28, 2007. Accordingly, in light of the record before us, we determine for purposes of this proceeding only, that Patent Owner is entitled to the effective filing date of the application for the ’973 patent, February 9, 2007.

C. Obviousness over the ’389 Patent and Pelka

Petitioner argues that claims 1–5 of the ’973 patent would have been obvious over the ’389 patent and Pelka. *See* Pet. 18–29. According to Petitioner, “[t]he ’389 Patent qualifies as prior art under 35 U.S.C. § 102(b) because the application leading to the ’389 Patent was published on January

22, 2004, over a year before the November 28, 2007 priority date to which the claims of the '973 Patent may be entitled.” Pet. 15.

We note that the Petitioner has not submitted a copy of the published application to which Petitioner refers. Our rules require that the petition include the following: “The exhibit number of the supporting evidence relied upon to support the challenge and the relevance of the evidence to the challenge raised, including identifying specific portions of the evidence that support the challenge.” 37 C.F.R. § 104(b)(5). Furthermore, the rules provide: “The Board may exclude or give no weight to the evidence where a party has failed to state its relevance or to identify specific portions of the evidence that support the challenge.” *Id.* Because Petitioner has not provided this information, we do not consider the published application as prior art in this proceeding. Petitioner has, however, submitted the '389 patent as Exhibit 1007 and refers to that patent in the Petition. Accordingly, we consider the '389 patent itself, and not the published application, in evaluating Petitioner's argument.

We conclude that the '389 patent does not qualify as prior art. The '389 patent has an issue date of March 27, 2007 (Ex. 1007, at [45]). As discussed above, we determine the effective filing date of the challenged claims is February 9, 2007. Therefore, the '389 patent does not qualify as prior art under 35 U.S.C. § 102(b). The '389 patent has a filing date of July 15, 2003, (*id.* at [22]), earlier than the filing date of the '973 patent. However, the inventive entities of the '973 patent and the '389 patent are the same. Accordingly, the '389 patent does not qualify as prior art against the '973 patent under 35 U.S.C. § 102(e). We, therefore, determine, on this record, that the '389 patent is not prior art to the '973 patent and Petitioner

has not met its burden of establishing a reasonable likelihood that it would prevail in showing the unpatentability of claims 1–5 based on the '389 patent and Pelka.

D. Anticipation by Shinohara

Petitioner argues that Shinohara anticipates claims 1–5 of the '973 patent. *See* Pet. 29–38. Petitioner relies on a Declaration by Dr. Michael J. Escuti (Ex. 1004). *See id.* We are persuaded that Petitioner's analysis and supporting evidence have established a reasonable likelihood of Petitioner prevailing in showing the unpatentability of claims 1–5.

1. Shinohara

Shinohara describes a surface light source device with a plurality of point light sources 30 spaced apart along an optical guide plate 22. Ex. 1010, Fig. 27. The optical guide plate 22 is divided into areas corresponding to the point light sources 30. *Id.* Each area includes a diffuse pattern 24. *Id.* at 20:1–5. Each diffuse pattern 24 includes diffuse pattern elements 24a that are arranged concentrically around the point light source 30. *Id.* at 13:41–43. A diffuse pattern element 24a may be a recess formed on the lower surface of the optical guide plate 22. *See id.*, Fig. 10. The density of the diffuse pattern elements 24a increases as the distance from the point light source 30 increases. *Id.* at 13:47–49, 20:9–11. Thus, “the luminance distribution is uniform with respect to the corresponding point light source 30, and the luminance of the surface light source device is increased.” *Id.* at 20:6–8.

2. *Claims 1–5*

Petitioner contends that Shinohara discloses each and every element of claim 1. *See* Pet. 29–38. For example, Petitioner points to disclosures in Shinohara as corresponding to certain elements in this claim:

Element in Claim 1	Disclosure in Shinohara
“light emitting panel member”	optical guide plate 22
“input edge”	light incidence surface 26
“plurality of light sources”	point light sources 30
“pattern of individual light extracting deformities”	diffuse pattern 24
“deformities”	diffuse pattern elements 24a

See Pet. 29–38. Based on the cited portions of Shinohara, we are persuaded by Petitioner’s contentions in this regard. *See, e.g.*, Ex. 1010, Figs. 9–10, 27.

Patent Owner does not dispute that Shinohara describes the elements recited in claim 1. Patent Owner contends, however, that “Petitioner’s contentions that Shinohara anticipates Claims 1–5 of the ’973 Patent under 35 U.S.C. § 102(e) depend on picking, choosing, and combining various embodiments within Shinohara’s disclosure.” Prelim. Resp. 9. In particular, Patent Owner points out that Petitioner relies on Figure 9 of Shinohara for disclosing that each of the recited deformities has a length and width substantially smaller than the length and width of the panel surface, while relying at the same time on Figure 27 of Shinohara for disclosing that the density of the recited deformities is greatest at approximate midpoints between adjacent pairs of the light sources. *See id.* We are not persuaded by Patent Owner’s contention.

Although Figures 9 and 27 of Shinohara describe different embodiments as a whole, Petitioner relies on Figure 9 for illustrating a

particular aspect of the diffuse pattern elements 24a, which is present in both embodiments. *See* Pet. 34 (discussing Ex. 1010, Fig. 9); Ex. 1010, Figs. 9, 27. Accordingly, we are persuaded that Shinohara discloses the recited elements “arranged or combined in the same way as in the claim.” *See Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1370 (Fed. Cir. 2008). This is, therefore, not a situation like that presented in *Net MoneyIN*, where the same features were not present in both embodiments.

Based on the record before us, we conclude that Petitioner has made a sufficient showing that Shinohara discloses the recited limitations arranged as in claim 1. Having reviewed Petitioner’s arguments and claim charts (*see* Pet. 36–38) contending that dependent claims 2–5 are anticipated by Shinohara, we also conclude that Petitioner has made a sufficient showing that Shinohara discloses the limitations recited in these claims. Accordingly, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing claims 1–5 are anticipated by Shinohara.

E. Obviousness over Shinohara and Yoshikawa

Petitioner argues that claims 1–5 of the ’973 patent would have been obvious over Shinohara and Yoshikawa. *See* Pet. 38–40. We discussed Shinohara above.

1. Yoshikawa

Yoshikawa describes a surface emission apparatus comprising a rectangular light-guide plate 1, light sources 4, and projecting portions 31. *See* Ex. 1011, 3:23–30, Fig. 2. The light sources 4 are located in a plane along a shorter side of the light-guide plate 1 (*see id.*, Fig. 2), and their light is incident on the light-guide plate 1 through an end face 1f (*see id.* at 3:32–

34, Fig. 2). The projections 31 are formed on the light-guide plate 1, and their density gradually increases as their distance from the light sources 4 increases. *See id.* at 3:28–31, Fig. 2. With this arrangement, “uniform light emission can be obtained throughout the light-emitting surface.” *Id.* at 2:24–25.

2. Claims 1–5

Petitioner argues that Shinohara teaches all the limitations recited in claim 1. *See Pet.* 39. For example, Petitioner contends that Shinohara teaches the recited width of the input edge (*see Pet.* 38), which appears to run along a longer side of the optical light guide plate 22 (*see Ex.* 1010, Fig. 27). As discussed above, we are persuaded that Shinohara teaches all the recited limitations of claim 1.

Alternatively, Petitioner contends:

To the extent that the width of the light guide is interpreted as the short side of the light guide, one of ordinary skill in the art at the time of the alleged invention would understand that placing light sources along the shorter edge of a light guide was well within the skill of a person of ordinary skill in the art as exemplified, for example, in U.S. Patent No. 5,775,791 to Yoshikawa.

Pet. 38 (citing *Ex.* 1011, Fig. 2). Based on the cited portions of Yoshikawa, Petitioner argues persuasively that Yoshikawa alternatively teaches the recited width of the input edge. *See id.*

Nonetheless, it is not sufficient for Petitioner to demonstrate that each of the components is known. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Petitioner must also provide “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). In that

regard, Petitioner contends that one of ordinary skill in the art would have found it obvious to combine Shinohara and Yoshikawa “[b]ecause the references are in the same field, address the same technology, and are intended to solve the same general problem.” Pet. 39. Petitioner supports this contention with testimony of Dr. Escuti. *See id.* (citing Ex. 1004, ¶ 157).

Petitioner does not explain sufficiently why one of ordinary skill in the art would combine elements of Shinohara with elements of Yoshikawa, or why one of ordinary skill in the art would modify the teachings of Shinohara in view of the teachings of Yoshikawa to arrive at the claimed invention. For example, as discussed above, Shinohara already teaches a panel input edge along which multiple light sources are located. *See* Pet. 32. Neither Petitioner nor Dr. Escuti explains why a person of ordinary skill in the art would have replaced Shinohara’s panel input edge with Yoshikawa’s panel input edge to provide an edge along which multiple light sources are located, when Shinohara’s panel input edge already has multiple light sources located along it. On this record, we are not persuaded that Petitioner has provided adequately articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *See Kahn*, 441 F.3d at 988.

In view of the foregoing, we determine that Petitioner has not established a reasonable likelihood of prevailing in showing that claim 1 would have been obvious based on the combination of Shinohara and Yoshikawa. Claims 2–5 depend from claim 1. Accordingly, we also determine that Petitioner has not established a reasonable likelihood of

prevailing in showing that claims 2–5 would have been obvious based on the combination of Shinohara and Yoshikawa.

F. Obviousness over Pelka and Funamoto

Petitioner argues that claims 1–5 of the '973 patent would have been obvious over Pelka and Funamoto. *See* Pet. 40–49.

1. Pelka

Pelka describes a rectangular-shaped waveguide 42. *See* Ex. 1009, 8:65, Fig. 7. Light sources 44 are located along an edge 5 of the waveguide 42. *See id.* at 9:4–6, Fig. 7. The light sources 44 may comprise light emitting diodes. *See id.* at 6:10–12. Elongate structures 54 are arranged in concentric arcs around each of the light sources 44. *See id.* at 9:8–10, Fig. 7. The elongate structures 54 may comprise grooves with a triangular or v-shaped cross-section. *See id.* at 7:52–54, Fig. 4A. The density of the elongate structures 54 increases as their distance from the light sources 44 increases. *See id.* at 8:54–55. This arrangement helps achieve uniform illumination profiles across the illumination output region of the waveguide. *See id.* at 8:6–8.

2. Funamoto

Funamoto describes a surface illuminating device with a rectangular light guide plate 11, optical extraction structures located on the surface of the light guide plate 11, and point light sources 2 located in a plane along a shorter side of the light guide plate 11. *See* Ex. 1012, at [57], 10:36–42, Fig. 18. The optical extraction structures may comprise convex shapes 11A. *See id.* at 10:36–39. The density of the convex shapes 11A increases as their

distance from the point light sources 2 increases. *See id.* This arrangement helps achieve uniform illumination. *See id.* at 10:41–42.

3. *Claims 1–5*

Petitioner contends that Pelka teaches most of the limitations recited in claim 1. *See* Pet. 40–49. For example, claim 1 recites deformities in close proximity to an input edge with a density that is greatest at approximate midpoints between adjacent pairs of light sources. *See* Ex. 1001, 15:11–13.

For this limitation, Petitioner directs us to where Pelka discloses mounting multiple light sources 44 along an edge of a waveguide 42 to input light proximate to a periphery of the waveguide. *See* Pet. 44 (citing Ex. 1009, 1:57–60, 9:3–6, Fig. 7). Elongate structures 54 are arranged in concentric arcs around each of the light sources 44, as shown in Fig. 7, which is reproduced below. *See id.* at 45 (citing Ex. 1009, 9:8–12, Fig. 7).

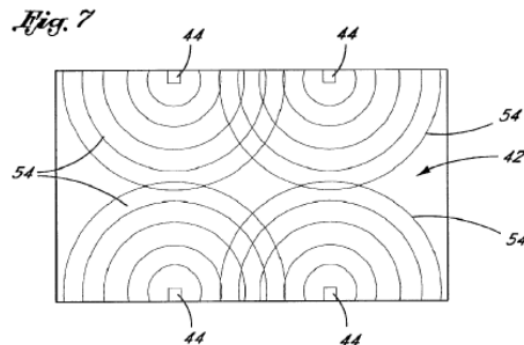


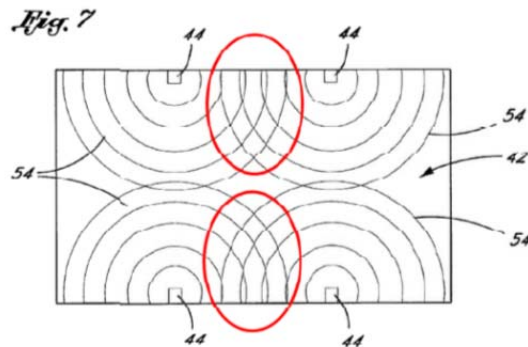
Figure 7 is a top plan view of a waveguide for use in a lighting apparatus. Ex. 1009, 4:40–41.

According to Petitioner, “[t]he embodiment in Fig. 7 shows the density of the elongate structures 54 being at a maximum at the approximate midpoint between the light sources 44.” Pet. 19.

In response, Patent Owner contends that Petitioner’s assertion “is merely conclusory.” Prelim. Resp. 8. Patent Owner also contends that

“Petitioner does not show or explain how the most dense structures are the ones ‘in close proximity to the input edge.’” *Id.* As an initial matter, we note that claim 1 does not require the densest structures to be in close proximity to the input edge. Claim 1 instead requires that the structures in close proximity to the input edge are densest at approximate midpoints between adjacent pairs of light sources.

To support its position, Petitioner directs us to its annotated version of Figure 7:



Pet. 20. According to Petitioner, the red circles highlight where the density of the elongate structures is at a maximum. *Id.* at 19–20. We note that, on this record, the density of the structures 54 closest to the edge along which the light sources 44 are mounted is greatest toward the midpoint between the light sources 44. Based on Petitioner’s arguments and the cited disclosures in Pelka, we are persuaded that the elongate structures 54 of Pelka teach the recited deformities.

Claim 1 also recites that the light sources are coupled to different portions of the *width* of the input edge of the panel member. *See* Ex. 1001, 14:65–67). For this limitation, Petitioner relies on Funamoto. *See* Pet. 45 (citing Ex. 1012, Fig. 18); Ex. 1004 ¶ 167. Based on the cited portions of Funamoto, we are persuaded that Funamoto teaches the limitation.

As noted above, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”

Kahn, 441 F.3d at 988. Petitioner contends that one of ordinary skill in the art would have found it obvious to combine Pelka and Funamoto “[b]ecause the references are in the same field, address the same technology, and are intended to solve the same general problem.” Pet. 43. This is not sufficient for explaining why one of ordinary skill in the art would combine elements of Pelka with elements of Funamoto, or why one of ordinary skill in the art would modify the teachings of Pelka in view of the teachings of Funamoto to arrive at the claimed invention.

For example, as Petitioner points out, Pelka already teaches a panel input edge along which multiple light sources are located. *See* Pet. 44. Petitioner does not explain why a person of ordinary skill in the art would have replaced Pelka’s panel input edge with Funamoto’s panel input edge along which multiple lights sources are located, when Pelka’s panel input edge already has multiple light sources located along it. On this record, we are not persuaded that Petitioner has provided adequately articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *See Kahn*, 441 F.3d at 988.

In view of the foregoing, we conclude that Petitioner has not established a reasonable likelihood of prevailing in showing that claim 1 would have been obvious based on Pelka and Funamoto. Claims 2–5 depend from claim 1. Accordingly, we also determine that Petitioner has not established a reasonable likelihood of prevailing in showing that claims 2–5 would have been obvious over the combination of Pelka and Funamoto.

G. Obviousness over Hooker and Mizobe

Petitioner argues that claims 1 and 2 of the '973 patent would have been obvious over Hooker and Mizobe. *See* Pet. 49–59.

1. Hooker

Hooker describes a liquid crystal display apparatus comprising a rectangular light guide, light emitting diodes (LEDs) 30 located along a pair of opposite sides of the light guide 2, and a light attenuating member 50 with a pattern 60 of dots located adjacent to the light guide 2. *See* Ex. 1013, 1:51–58, Fig. 6. The dots reduce the intensity of light reaching portions of the liquid crystal display closest to the LEDs 30. *See id.* at 1:58–61. The size or the frequency of the dots decreases as their distance from the LEDs 30 increases. *See id.* at 4:12–16. This arrangement helps provide uniform illumination over the entire LCD area. *See id.* at 4:24–27 (“again to provide less attenuation as the distance from the LED 130 increases, and so provide uniform illumination over the whole LCD area”).

2. Mizobe

Mizobe describes a system for uniformly illuminating a rectangular liquid crystal display board. Ex. 1014, 3:65–66. The system includes a main body A and two lamps 6 located in the interior of the main body A. *Id.* at 4:3–6, Fig. 2. The main body A includes a rugged layer 4 with a light reflecting means 5 comprising a large number of concavities and convexities. *Id.* at 4:12–13, Fig. 2. The concavities and convexities are dimensioned such that a user viewing the liquid crystal display board cannot see them. *Id.* at 4:16–20. The density of the light reflecting means 5 increases as its distance from the lamps 6 increases. *Id.* at 4:50–56.

3. Claims 1 and 2

Claim 1 recites “wherein the density, size, depth and/or height of the deformities in close proximity to the input edge is greatest at approximate midpoints between adjacent pairs of the light sources.” Ex. 1001, 15:11–13. Petitioner relies on Mizobe for this limitation. See Pet. 59. In particular, Petitioner directs us to where Mizobe describes a main body with two light sources 6 and a light reflecting means 5 comprising concavities and convexities. See Pet. 56 (citing Ex. 1014, 4:23–30). Mizobe teaches that “a density of distribution of the light reflecting means 5 per unit area is practically determined to increase in inverse proportion to a square of the distance as measured from each light source 6.” See *id.* at 59 (citing Ex. 1014, 4:50–56, Fig. 2). According to Petitioner, this disclosure in Mizobe teaches the recited limitation. See Pet. 59.

Although Figure 2 of Mizobe, reproduced below, shows that the density of certain light reflecting means 5 is greatest at approximate midpoints between the light sources 6, we are not persuaded that Mizobe teaches those certain light reflecting means 5 to be *in close proximity to an input edge*, as required by claim 1.

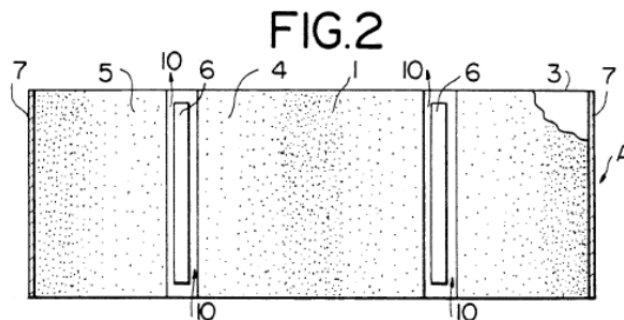


Figure 2 illustrates a number of light reflecting means arranged in a dot-shaped pattern. Ex. 1014, 3:37–40.

Nor are we persuaded by Petitioner's alternative theory that Hooker teaches this feature. *See* Pet. 59. Petitioner directs us to disclosure in Hooker that describes reducing the size or frequency of dots as their distance from a light source 30 increases. *See id.* (citing Ex. 1013, 4:12–16, Fig. 6). Figure 6 of Hooker is reproduced below. Based on the cited portions of Hooker, we are not persuaded that Hooker teaches that the size or frequency of the dots in close proximity to an input edge is greatest at approximate midpoints between adjacent pairs of the light sources 30. In fact, Figure 6 shows that the density of the dots in close proximity to the input edge is zero at approximate midpoints between the light sources 30.

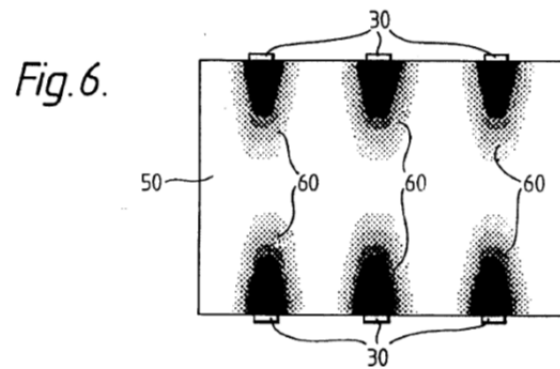


Figure 6 is a plan view of an attenuating member. Ex. 1013, 2:49.

In view of the foregoing, we determine that Petitioner has not established a reasonable likelihood of prevailing in showing claim 1 would have been obvious based on the combination Hooker and Mizobe. Claim 2 depends from claim 1. Accordingly, we also determine that Petitioner has not established a reasonable likelihood of prevailing in showing claim 2 would have been obvious based on the combination of Hooker and Mizobe.

III. CONCLUSION

For the foregoing reasons, we are persuaded that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that claims 1–5 of the '973 patent are unpatentable. The Board, however, has not made a final determination with respect to the patentability of the challenged claims.

IV. ORDER

For the reasons given, it is

ORDERED that *inter partes* review is instituted as to claims 1–5 of the '973 patent based on the following alleged ground of unpatentability: anticipation of claims 1–5 by Shinohara;

FURTHER ORDERED that no other grounds of unpatentability are authorized for an *inter partes* review as to any claim of the '973 patent; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this decision.

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