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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DYNAMIC DRINKWARE, LLC
Petitioner,

v.

NATIONAL GRAPHICS, INC.
Patent Owner.

Case IPR2014-01162
Patent 6,424,467 B1

Before MICHAEL P. TIERNEY, JUSTIN BUSCH, and BARBARA A. PARVIS, *Administrative Patent Judges*.

TIERNEY, *Administrative Patent Judge*.

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

I. INTRODUCTION

Dynamic Drinkware LLC (“Petitioner”), filed a Petition requesting an *inter partes* review of claims 1–46 of U.S. Patent 6,424,467 B1 (Ex. 1001, “the ’467 patent”). Paper 1 (“Pet.”). Patent Owner, National Graphics Inc. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). We determined that there was a reasonable likelihood that Petitioner would prevail in challenging those claims as unpatentable. Pursuant to 35 U.S.C. § 314, therefore, we authorized an inter partes review to be instituted, on January 29, 2015. Paper 7 (“Dec. on Inst.”).

After institution, Patent Owner filed a Patent Owner Response (Paper 12, “PO Resp.”), and Petitioner filed a Reply (Paper 19, “Reply”). Additionally, Patent Owner filed a Motion re Real Party in Interest (Paper 16, “Mot.”), and Petitioner filed a response to the motion (Paper 17, “Opp.”). An oral hearing was held on November 5, 2015. A transcript of the hearing has been entered into the record of the proceeding as Paper 23 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–46 are unpatentable.

A. Related Proceedings

The ’467 patent is not the subject of any currently-pending judicial matters. Pet. 3.

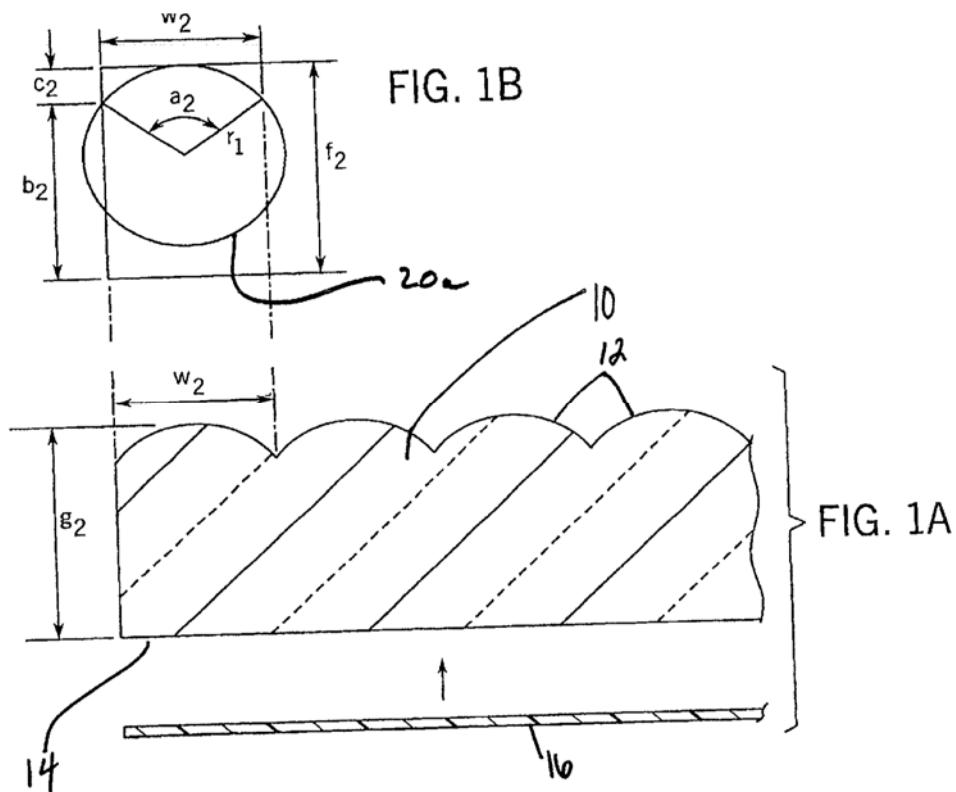
B. The '467 Patent

The '467 patent is directed to high definition lenticular lenses.

Ex. 1001, 1:11–13. A lenticular lens can be used to produce the illusion of three dimensionality in a visually perceptible image. Ex. 1002, Abstract.

Lenticular images have been used on a variety of items, including postcards, business cards, and labeling applications. Ex. 1001, 1:63–67.

Lenticular lenses take the form of a transparent plastic sheet or web having an array of identical curved or ribbed surfaces that are formed on the front surface of the plastic sheet. *Id.* at 1:15–19. The back surface of the lens is typically flat. *Id.* at 1:19–20. An interlaced image is then positioned on the backside of the lens. Figures 1A and 1B of the '467 patent, depicted below, provide an example of a lenticular lens and its dimensions.



In Figure 1A above, 10 is a lenticular lens, the lens having one ribbed side of lenticules 12, and substantially flat back 14. *Id.* at 7:7–11. Lens 10 has image 16 joined to the back side of the lens. *Id.* at 7:12–15. An adhesive, not shown, may be used to join lens 10 to image 16. *Id.* at 7:16–20. As depicted in Figure 1A, w_2 is the width of the lenticule, and g_2 is the gauge thickness. *Id.* at 7:52–67. In Figure 1B, a_2 is the arc angle, b_2 is the base thickness, c_2 is the crescent depth, f_2 is the focal length, r_1 is the lenticule radius, and w_2 is the width of the lenticule. *Id.*

The '467 patent states that the relationships between certain dimensions can be calculated and provides several formulas to determine the various parameters. *Id.* at 8:55–64. For example, the '467 patent states that lenticule width is a function of both the arc angle and radius of the lenticule. *Id.* at 8:65–66.

C. Illustrative Claims

The '467 patent contains eleven independent claims, each of which is challenged by Petitioner. Each of the independent claims is directed to a lenticular lens and requires a specified arc angle, lenticular width, and gauge thickness. Independent claim 1, and dependent claim 2, are illustrative of the challenged claims, and are recited below:

1. A high definition lenticular lens comprising:

a front surface comprising a plurality of lenticules, each of the lenticules having characteristic parameters that comprise a focal length, an arc angle that is greater than about 90 degrees, and a width that is less than about 0.006667 inches; and
style="padding-left: 80px;">a substantially flat back surface opposite the front surface;

wherein the lens has a gauge thickness that is substantially equal to the focal length.

2. The high definition lenticular lens of claim 1 wherein the lens gauge thickness is less than about 10 mils.

D. Prior Art Relied Upon

Petitioner relies upon the following prior art:

U.S. 5,266,995 Quadracci	Nov. 30, 1993	(Ex. 1002)
U.S. 5,364,274 Sekiguchi	Nov. 15, 1994	(Ex. 1005)
U.S. 5,457,515 Quadracci	Oct. 10, 1995	(Ex. 1010)
U.S. 4,414,316 Conley	Nov. 8, 1983	(Ex. 1011)
U.S. 4,420,502 Conley	Dec. 13, 1983	(Ex. 1012)

E. Instituted Grounds of Unpatentability

We instituted the instant trial based on the following grounds of unpatentability (Dec. 3–4, 20):

Reference(s)	Basis	Claims challenged
Quadracci '995	§ 102	1, 2, 23, 24, and 27–29
Quadracci '995 in view of Sekiguchi and Quadracci '515	§ 103	30–31, 34–35, 38–39, 42–43, and 46
Quadracci '995 in view of Quadracci '515, Conley '316, or Conley '502	§ 103	3–22, 25–26, 32–33, 36–37, 40–41, and 44–45

F. Level of Ordinary Skill in the Art

Petitioner's declarant, Mr. Mark Raymond, testifies that, based on his experience in the lenticular industry, a person of ordinary skill

in the lenticular art “is one who has several years of work experience in the lenticular industry.” Ex. 1013 ¶ 11. Patent Owner’s declarant, Dr. Garcia, testifies that a person of ordinary skill in the art would have five or more years of experience in the lenticular lens industry or have an understanding of optical engineering including first and higher order geometric and physical optics principles. Ex. 2001 ¶ 13.

The parties’ definitions of one of ordinary skill in the art are substantially the same and neither party states how any difference in the parties’ articulated levels of skill impacts the proceeding. For purpose of this decision, we hold that the level of ordinary skill in the art is reflected by the prior art of record, such that one of skill in the art would have had years of experience in the lenticular lens industry or had an understanding of optical engineering, including higher order geometric and physical optics principles. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art itself can reflect the appropriate level of ordinary skill in the art).

II. ANALYSIS

A. Claim Interpretation

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable interpretation in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012); *see In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1276–80 (Fed. Cir. 2015). Claim terms are given their ordinary and customary meaning, as understood

by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Petitioner identifies the following five claim terms for construction.

Proposed Construction of Claim Terms in the '467 Patent	
Claim Term	Proposed Construction
lenticule	“an individual lens formed on the front surface of a plastic sheet that focuses on, and extends over, substantially the full length of an underlying image.” Pet. 12.
focal length	“the distance from a focal point of a lens or mirror to the corresponding principal plane.” Pet. 12.
arc angle	“the angle drawn from the center point of a radius (r_1) for a particular lenticule and extends from the first point of intersection with a first lenticule disposed to one side of the particular lenticule and to the second point of intersection with a second lenticule disposed to the opposite side of the particular lenticule.” Pet. 12–13; <i>see also</i> Ex. 1001, Fig. 1B.
Width	w_1 as shown in Patent Owner figures. Pet. 13; <i>see also</i> Fig. 1A and 1B depicted above.
gauge thickness	“measured from the outermost edge of the curved surface of the lens to the flat back surface of the lens.” Pet. 13.

Patent Owner does not dispute the proposed constructions, except to state that, consistent with Petitioner’s definition of focal length, one of ordinary skill in the art would have understood that focal length in the '467 refers to the “effective focal length” of the lens. PO Resp. 3–4.

We adopt Petitioner’s proposed claim constructions as they are consistent with the Patent Owner’s use of the terms in the '467 patent Specification. For example, the term gauge thickness is defined in the '467 patent with reference to g_2 of Fig. 1A and states that the thickness is

measured from the outermost edge of the curved surface of the lens to the flat back surface of the lens. Ex. 1001, 2:27–33.

B. Claims 1, 2, 23, 24, and 27–29 Anticipation by Quadracci '995

To anticipate a patent claim under 35 U.S.C. § 102, “a reference must describe . . . each and every claim limitation and enable one of skill in the art to practice an embodiment of the claimed invention without undue experimentation.” *Am. Calcar, Inc. v. Am. Honda Motor Corp.*, 651 F.3d 1318, 1341 (Fed. Cir. 2011) (citing *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009)).

1. Quadracci '995 (Ex. 1002)

Quadracci '995 teaches a lenticular lens web that is said to produce the illusion of three dimensionality in a visually perceptible image. Ex. 1002, 1:5–12. According to Quadracci '995, its invention provides photographically acceptable quality graphic images. *Id.* at 1:6–12, 4:37–41.

Quadracci '995's lenticular lens images are characterized by their ability to achieve a finished graphic image having photographically acceptable quality. *Id.* at 5:25–32. Quadracci '995 states the preferred lenticule shape is that of a half cylinder split longitudinally, which provides an arc angle of 180 degrees. *Id.* at 10:49–50 and Fig. 1. Quadracci '995 further states that its most preferred embodiment has at least 300 lenticules per inch, thus, the width of each lenticule is 0.003333 inches or less. *Id.* at 8:51–52, 10:42–48. Quadracci '995 also teaches that it is desirable that each lenticule has a focal length that coincides with its distance from the image, which is printed on the back of the lenticule. *Id.* at 11:39–62. Specifically,

Quadracci '995 states explicitly that it is desirable that each lenticule have a focal length that coincides with its distance from the printing layer. *Id.* at 11:60–62. The back side of the lenticules is flat. *Id.* at Figs. 1, 7.

2. Discussion

Petitioner contends that claims 1, 2, 23, 24, and 27–29 are anticipated under 35 U.S.C. §102(b) by Quadracci '995. Pet. 14–21. Generally, Petitioner contends that Quadracci '995 describes a lenticular lens having over 300 half cylinder lenticules per inch with a half cylinder shape, giving the lenticules an arc angle of greater than 90 degrees and a width of less than .00333 inches. Pet. 15. Petitioner further contends that, using well-known formulas, one of ordinary skill in the art would have understood the focal length of Quadracci '995's preferred lens to be 0.003411 inches, or 3.4 mils. *Id.* (citing Ex. 1013 ¶ 27). According to Petitioner, Quadracci '995 teaches lenticules having a focal length that coincides with their distance from a printing layer. *Id.* at 15–21. Petitioner states that the lenticular screen of Quadracci '995 has a flat rear surface with an image joined to that surface. *Id.* at 18 citing Ex. 1002, 7:49–56.

Patent Owner disagrees with Petitioner's analysis of Quadracci '995's teachings. According to Patent Owner, Quadracci '995 does not disclose a lens having a gauge thickness that is substantially equal to the focal length. PO Resp. 5–12. Patent Owner states that while Quadracci '995 mentions the desirability of a focal length coinciding with the printing layer, Quadracci '995 does not enable a person of ordinary skill in the art to practice such an embodiment. *Id.* at 12–14. Further, Patent Owner states that the contrary testimony of Petitioner's declarant, Mr. Raymond, is not credible as Mr.

Raymond failed to account for an adhesive layer and relies upon an unacceptable index of refraction. *Id.* at 14–18.

a. Quadracci '995 Simulations

Patent Owner's declarant, Dr. Garcia, testifies that he conducted several simulations of the lenticular lenses described in the challenged Goggins '467 patent and Quadracci '995 and determined that the focal point of Quadracci '995 does not lie at the back of the lens, resulting in an image that is out of focus as compared to that of Goggins. *Id.* at 5, Ex. 2001 ¶¶ 21–51. According to Patent Owner, Dr. Garcia's testimony demonstrates that Quadracci '995's focal length is not substantially equal to the gauge thickness as required by all of the challenged claims. PO Resp. 12.

Dr. Garcia's simulations attempt to use equations recited in the '467 patent to calculate the gauge thickness of a lens according to Quadracci '995. Ex. 2001 ¶ 30–31. Dr. Garcia testified that by his calculations, the '467 patent examples he simulated led to an effective focal length that was closer to the gauge thickness than the examples he simulated from the Quadracci '995 patent. Ex. 1017, 35–36. Based on his calculated focal length, Dr. Garcia concludes that the lenticular images of Quadracci '995 must be placed closer to the focal point and would require a location far away from the printing layer at the back of the lenticular lens. Ex. 2001 ¶ 50. From this, Dr. Garcia opines that the Quadracci '995 patent fails to teach or disclose a lenticular lens having a focal length substantially equal to the gauge thickness as required by the challenged claims. *Id.* at ¶ 51. Dr. Garcia, on cross-examination, stated that one could not design a lens using a 180 degree aperture having a gauge length substantially the same as the

focal length using the formulas identified in the '467 patent. Dr. Garcia, on cross-examination, acknowledged that the '467 patent claims are not limited to the specific focal length formulas recited in the patent and agreed that there “are more calculations or more formulas” for determining focal length than those listed in the patent. Ex. 1017, 26–27. Dr. Garcia also testified on cross-examination that using “the Gaussian formula” one could reduce the thickness of the lens to try to push the focal point closer to the lens but the resulting lens would have more of a departure from ideal behavior than that of the challenged claims. Ex. 1017, 45–46. Specifically, the resulting lens would not look like a sharp, crisp image. *Id.* at 46.

Quadracci '995 states that its lenticular lenses produce photographically acceptable quality graphic images. Ex. 1002, 1:6–12, 4:37–41. Quadracci '995 further states that it is desirable that each lenticule have a focal length that coincides with its distance from the printing layer. *Id.* at 11:60–62. One skilled in the art would have understood that lenticular imaging requires that the lenticular lens focus on the image at the back of the lenticular lens. Ex. 2001 ¶ 67 and Second Declaration of Mr. Raymond, Ex. 1016 ¶ 4.

Mr. Raymond testifies that he performed a ray tracing analysis on each sample lens from Dr. Garcia's Declaration and identified the location along the ray tracing where the spot size created by the rays is minimized using root mean square analysis. Ex. 1016 ¶ 5. Mr. Raymond testifies that the simulated 150 lenticule per inch (LPI), 200 LPI and 250 LPI samples had gauge lengths substantially equal to the focal length. *Id.* at 6–8.

We find that Quadracci '995 taught one skilled in the art to make lenticular lenses having a gauge thickness that is substantially equal to the

focal length to produce photographically acceptable quality graphic images. Quadracci '995's teachings are confirmed by Mr. Raymond's second declaration testifying that one skilled in the art following Quadracci '995's teachings would create lenses having gauge lengths substantially equal to the focal length. We have considered Dr. Garcia's simulations to the contrary but note that Dr. Garcia acknowledged on cross-examination that one could produce an image with Quadracci '995 lenses with a focal point closer to the end of the lens using the Gaussian formula, albeit without looking as crisp and sharp.

b. Quadracci '995 is Enabling

Patent Owner contends that Quadracci '995 is not enabling as "any lenticular lens that is designed using this disclosure will have a focal length that lies well within the lens." PO Resp. 13. According to Patent Owner, Quadracci '995 is directed to a method for joining an image web to a lenticular lens and its detailed disclosure focuses on the machinery used to implement this process. *Id.* at 12–13. Patent Owner states that Quadracci '995 is not directed to lenticular lens design and its discussion of lens geometry does not enable a person of ordinary skill in the art to practice the challenged claims, which require a lens having a gauge thickness that is substantially equal to the focal length. *Id.* at 13.

The description of an anticipating reference must be such that a person of ordinary skill in the field of the invention can practice the subject matter based on the reference, without undue experimentation. *See Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 457 F.3d 1293, 1306–07 (Fed. Cir. 2006). Prior art patents, however, are presumed to be enabled. *In re Antor Media Corp.*, 689 F.3d 1282, 1287 (Fed. Cir. 2012) ("[B]oth claimed and

unclaimed materials disclosed in a patent are presumptively enabling . . .”). The burden is on the party challenging the enablement of the prior art patent to show that the patent is not enabled. *Id.* at 1288.

Challenged claim 1 requires a lenticular lens having lenticules with an arc angle greater than 90 degrees and a width of less than about 0.006667 inches where the lens has a gauge thickness that is substantially equal to the focal length. Quadracci '995 describes a preferred lenticule shape having a half cylinder split longitudinally, which provides an arc angle of 180 degrees. Quadracci '995 further describes that a preferred embodiment having at least 300 lenticules per inch, i.e., the width of each lenticule is 0.003333 inches or less.

Dr. Garcia created lens simulations based on Quadracci '995's teachings using an arc angle of 180 degrees and 150 LPI, 200 LPI and 300 LPI. Ex. 2001 ¶¶ 40–49. Using the formulas described in the '467 patent, Dr. Garcia calculated the focal lengths based on the lenticular width and arc angle of Quadracci '995 and concluded that Quadracci '995 does not disclose a focal length that is substantially equal to the gauge length. *Id.* at ¶¶ 40–41 and 51. Specifically, Dr. Garcia stated that it was not physically possible using the four formulas described in the '467 patent to have the focal length substantially equal to the gauge thickness. *Id.* at 50–51. Dr. Garcia did not testify, however, that one skilled in the art using known focal length formulas other than those recited in the '467 patent, would arrive at the same conclusion.

Mr. Raymond testifies that a ray tracing analysis with a spot size created by the rays minimized by root mean square analysis demonstrates that an arc angle of 180 degrees and a 150 LPI, 200 LPI and 300 LPI lens

results in gauge lengths substantially equal to the focal length. Ex. 1016 ¶¶ 5–10. Mr. Raymond testifies explicitly that the information available in Quadracci '995 was sufficient to allow one of ordinary skill in the art to make a lens having an arc angle greater than 90 degrees, wherein the width of the lenticules is less than about 0.00667 inches and the lens has a gauge thickness that is substantially equal to the focal length. *Id.* at 10.

Based on the evidence of record, we credit the ray tracing testimony of Mr. Raymond and are persuaded that the lenticular lens disclosure of Quadracci '995 is enabling. Specifically, Dr. Garcia acknowledges that focal length formulas other than those recited in the '467 patent were known in the art and Mr. Raymond demonstrates that, consistent with the teachings of Quadracci '995, one of ordinary skill in the art could make the described lenses.

c. Mr. Raymond's Gauge Thickness and Focal Length Calculations

Patent Owner states that Mr. Raymond's thickness calculation in his first declaration is either wrong, or it uses an unacceptable index of refraction. Mr. Raymond, in his first declaration, testifies that using the general lens formulas described in the '467 patent, he arrived at a gauge thickness of 3.4 mils. Ex. 1013 ¶¶ 26–28. Mr. Raymond, however, does not disclose the index of refraction that he used to determine the gauge thickness. Expert testimony that does not disclose the underlying data on which the opinion is based is entitled to little or no weight. 37 C.F.R. 42.65(a). As Mr. Raymond failed to disclose the index of refraction used in his calculations and provide support for his selected refraction index, we do not credit Mr. Raymond's gauge thickness calculation in his first declaration with respect to Quadracci '995. As discussed below, however, Mr.

Raymond's second declaration identifies the specific index of refraction used to calculate the gauge thickness.

Patent Owner also contends that Mr. Raymond's analysis presented in his first declaration testimony is fatally flawed for failing to take into account the thickness of Quadracci '995's adhesive layer. PO Resp. 14. During cross-examination, Mr. Raymond acknowledged that Quadracci '995 does not disclose explicitly the thickness of the adhesive layer. Ex. 2002, 31:1–16. On re-direct examination, Mr. Raymond stated that he thought the adhesive layer would be very small, something like 5 percent with a maximum of about 25 microns or 1 mil. *Id.* at 35:2–25. Patent Owner states that Mr. Raymond did not account for this extra distance when opining that the gauge thickness and focal length are substantially equal. PO Resp. 16–17.

Mr. Raymond's second declaration states that his prior estimation of the thickness of the adhesive layer during his deposition was incorrect. Ex. 1016 ¶ 12. According to Mr. Raymond, one of ordinary skill in the art would have understood that the adhesive layer used in lenticular printing is so small that it is included within the gauge thickness of the lens and will be accounted for when designing a lens. *Id.* Mr. Raymond's ray tracing examples in his second declaration used a 0.0787 mil adhesive layer with a 5.69 mil lens, such that the adhesive layer of the lens was just 1.4% of the total gauge thickness of the lens. *Id.* Additionally, Mr. Raymond's ray tracing employed an index of refraction of 1.56, which is the same index of refraction used in Dr. Garcia's simulations. *Id.* at ¶¶ 6–8.

We agree with Patent Owner that Mr. Raymond's first declaration did not specifically take the thickness of the adhesive layer into account. We

credit, however, Mr. Raymond’s cross-examination testimony that the adhesive layer is “very small” as this is consistent with Quadracci ’995’s desire to employ a relatively transparent adhesive layer. Ex. 1002, 11:47–50. Similarly, we credit Mr. Raymond’s second declaration testimony that one skilled in the art would have understood that the adhesive layer used in lenticular printing is so small that it will be just over 1% of the total thickness.

d. Petitioner’s Objections to Alleged New Patent Owner Arguments at Oral Hearing

Petitioner objected to alleged new Patent Owner arguments at oral hearing. For the first time at oral hearing, counsel for Patent Owner argued that printing an image directly to the flat back surface of the lens as required by challenged claims 28 and 29 is not in Quadracci ’995. Paper 23, 44:9–13. Petitioner objected to Patent Owner’s counsel’s new argument, contending that Petitioner did not have an opportunity to respond as Patent Owner did not brief this contention. Paper 23, 65:20–25. When Patent Owner’s counsel was asked if they had previously raised this argument in their Patent Owner Response, counsel for Patent Owner stated “[y]ou know, we did not raise that.” *Id.* at 44:18–20.

Parties are not permitted to raise new arguments or evidence at oral hearing. *Office Patent Trial Practice Guide*, 77 Fed. Reg. 48,756, 48,768 (Aug. 14, 2012). Petitioner’s objection to Patent Owner’s new argument relating to printing an image directly to the flat back surface of the lens is sustained.

e. Quadracci '995 Anticipates Claims 1, 2, 23, 24, and 27–29

Having reviewed the evidence of record, we find that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, 23, 24, and 27–29 are unpatentable as anticipated by Quadracci '995. Specifically, Quadracci '995 teaches a photographically acceptable quality lenticular lens having an arc angle of 180 degrees and at least 300 lenticules per inch and each lenticule has a focal length that coincides with its distance from the image. While Dr. Garcia presents several simulations based on general lens formulas to demonstrate that the focal length of Quadracci '995 is too short, Mr. Raymond's second declaration provides credible and sufficient testimony to demonstrate that, consistent with the teachings of Quadracci '995, the gauge thickness of Quadracci '995's lenses are substantially equal to their focal length.

C. Claims 30–31, 34–35, 38–39, 42–43, and 46 Obviousness over Quadracci '995 in view of Sekiguchi or Quadracci '515

Claims 30, 34, 38, 42, and 46 are independent claims, and like independent claim 1, are directed to a lenticular lens having an arc angle of greater than 90 degrees, and a width of less than about 0.006667 inches. Claim 30, however, requires that the lens be part of a package, claim 34 requires the lens be in combination with a container, claim 38 requires the lens to be with a cup substrate, claim 42 requires a label substrate and claim 46 requires that the image for the lens be at least one of a photographic image, a bar code image, and a text image. Ex. 1001, 15:61–18:11. Dependent claims 31, 35, 39, and 43 require that the image be joined at the base of the lens. *Id.* at 16:8–17:2.

1. Sekiguchi (Ex. 1005) and Quadracci '515 (Ex. 1010)

Sekiguchi describes using lenticular lenses on items, ranging from packages, cups, and magazines, to product marketing and advertising displays. Ex. 1005, Abstract, 3:22–62, 6:8–11, 6:43–49, Figures 45 and 53. Quadracci '515 teaches that lenticular lenses can be used in a “wide variety of products,” such as textbooks, automobiles, packaging materials, and magazine covers. Ex. 1010, 12:55–67.

2. Discussion

Petitioner contends that claims 30, 34, 38, and 42 merely incorporate the limitations of claim 1 into a package, cup, and label, respectively. Pet. 39. Petitioner states that the use of lenticular lenses for packages, cups, and labels was known in the art, for example, Sekiguchi and Quadracci '515. *Id.* at 39–40. According to Petitioner, it would have been obvious to one of ordinary skill in the art to incorporate the high definition lenticular lenses of Quadracci '995 into packages, containers, cups, and labels as Sekiguchi and Quadracci '515 teach that it was known in the art to combine lenticular lenses with such objects. Pet. 39–40. Petitioner further contends that, as shown by Quadracci '515's teaching that one can print an image to the lens, it was known in the art to join an image to the base of a lenticular lens as required by dependent claims 31, 35, 39, and 43. Pet. 41–42. Additionally, as to claim 46, Petitioner states that it was known in the art that text images with small fonts, photographic images, and bar codes were used in the packaging, publishing, and labelling industry, and that it would have been obvious to use lenticular lenses with such text, photographic images, and bar codes. *Id.* at 39–40, 47; Ex. 1001, 1:63–2:8.

Patent Owner states that Quadracci '995 fails to disclose a lens having a thickness that is substantially equal to the focal length, and therefore this ground must be denied for the same reasons that the anticipation ground over Quadracci '995 must be denied. PO Resp. 19.

For the reasons discussed above, we find that Petitioner has demonstrated that Quadracci '995 teaches a preferred lenticular lens embodiment falling within the scope of the claimed subject matter. Petitioner has provided sufficient evidence (Sekiguchi and Quadracci '515) to demonstrate that it was known in the art to use lenticules with images on packages, cups, labels, and magazine covers. Petitioner relies upon Mr. Raymond's testimony to demonstrate that it would have been obvious to use or join the lenticular lenses of Quadracci '995 with packages, cups, labels, and magazine covers to create attractive displays. Ex. 1013 ¶ 46.

The Supreme Court has held that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int'l v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). We conclude that Petitioner has established a sufficient reason to combine the references in the asserted manner. Specifically, Petitioner has established that it would have been obvious to join Quadracci '995's lenticular lenses with packages, cups, and magazines, as this represents combining known elements for their known purpose to achieve a predictable result, a lenticular package, cup, or magazine having an attractive display.

We hold that Petitioner has demonstrated by a preponderance of the evidence that claims 30–31, 34–35, 38–39, 42–43, and 46 are unpatentable

as obvious over the combined teachings of Quadracci '995, Sekiguchi, and Quadracci '515.

D. Claims 3–22, 25–26, 32–33, 36–37, 40–41, and 44–45 Obvious over Quadracci '995 in view of Quadracci '515, Conley '316, or Conley '502

Claims 3–22, 25–26, 32–33, 36–37, 40–41, and 44–45 are dependent claims that generally recite additional conventional limitations. For example, the dependent claims further limit the independent claims to joining the image to the flat back surface of the lens (claim 3), printing the image onto the back of the lens (claim 4), using web-offset printing (claim 5), using laser printing (claim 6), including an aqueous white flood coating over the image (claims 7–9), manufacturing the lens using polyester or PVC (claim 10), using bar code images (claims 11, 26, 33, 37, 41, and 45), and images with text having specified font sizes (claims 12, 25, 32, 36, 40, and 44). Ex. 1001, 13:65–17:7.

Petitioner cites Quadracci '995 for its teachings of lenticular lenses, and Quadracci '515, Conley '316, and Conley '502 for their descriptions of how the limitations recited in the dependent claims were well-known in the lenticular arts for use with lenticular lenses and their manufacture. Pet. 47–59. Petitioner provides detailed claim charts and the testimony of Mr. Raymond to set forth how the dependent claim limitations were well known in the art (Quadracci '515, Conley '316, or Conley '502). *Id.*; Ex. 1013 ¶¶ 47–63. For example, Quadracci '515 is cited for its description of printing on lenticular lenses using web offset, ink jet, and laser printing methods. Ex. 1013 ¶¶ 50–51.

Patent Owner states that Quadracci '995 fails to disclose a lens having a thickness that is substantially equal to the focal length and therefore this ground must be denied for the same reasons that the anticipation ground over Quadracci '995 must be denied. PO Resp. 19–20.

For the reasons discussed above, we find that Petitioner has demonstrated that Quadracci '995 teaches a preferred lenticular lens embodiment falling within the scope of the claimed subject matter. Petitioner has presented sufficient evidence to demonstrate that one of ordinary skill in the art had reason to combine the references in the suggested manner to arrive at the claimed subject matter. Quadracci '995 teaches the use of high-definition lenticular lenses for photographically acceptable image quality and Quadracci '515, Conley '316, and Conley '502 demonstrate that the additional subject matter recited in the challenged dependent claims was known to one of ordinary skill in the lenticular art for use in the manufacture of lenticular lenses. Petitioner has presented sufficient evidence, on this record, that the claimed subject matter represents a combination of known elements for their known purpose to achieve a predictable result, lenticular lenses that provide high quality images.

We hold that Petitioner has demonstrated by a preponderance of the evidence that claims 3–22, 25–26, 32–33, 36–37, 40–41, and 44–45 are unpatentable as obvious over the combined teachings of Quadracci '995, Quadracci '515, Conley '316, and Conley '502.

E. Patent Owner Motion For Determination Regarding Real Party-in-Interest (“RPI”)

Patent Owner filed a motion requesting that Pacur, LLC be determined to be a real party-in-interest in this proceeding. Paper 16. Petitioner opposes Patent Owner’s request. Paper 17 (Pet. Opp.)

Whether a party who is not named as a participant in a given proceeding constitutes an RPI is a highly fact dependent question that takes into account how courts generally have used the terms to “describe relationships and considerations sufficient to justify applying conventional principles of estoppel and preclusion.” Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,759 (Aug. 14, 2012). Although “rarely will one fact, standing alone, be determinative of the inquiry” (*id.* at 48,760), “[a] common consideration is whether the non-party exercised or could have exercised control over a party’s participation in a proceeding.” *Id.* at 48,759.

Patent Owner states that Pacur, LLC (“Pacur”), is a plastic extruder that makes lenticular lens sheets, among other products. Paper 16, 1. According to Patent Owner, Pacur is currently selling a product that potentially infringes the challenged claims. *Id.* Patent Owner also contends, although Dynamic Drinkware and Pacur are separate legal entities, Dynamic Drinkware was formed by Pacur after Pacur purchased the assets of a third-party. *Id.* at 2–3, 7. Patent Owner provides an overview of the litigation history between Pacur and Patent Owner and how Pacur is related to Petitioner, including sharing common management. *Id.* at 1–8. Patent Owner also states that Pacur and Petitioner are (or at least have been) represented by the same counsel. *Id.* at 8.

Patent Owner infers that Pacur desires review of the ‘467 patent based on the history between Patent Owner and Pacur and the allegedly infringing Pacur product. *Id.* at 10–11. Patent Owner contends that a reasonable

inference can be made, given the common management between Pacur and Petitioner, that Pacur *could* exercise control over this proceeding, if Pacur is not actually controlling it. *Id.* at 11–14. Patent Owner also identifies certain legal relationships between Pacur and Petitioner and the common alignment of interests as further evidence that Pacur could control the proceeding. *Id.* at 14–15.

Petitioner states that Petitioner Dynamic Drinkware and Pacur are distinct entities and that Pacur has not been involved in any way in this proceeding. Pet. Opp. 5–12. As support for its position, Petitioner submits the declarations of Mr. Johnson, president of both Petitioner Dynamic Drinkware (Ex. 1014) and Pacur (Ex. 1015). *Id.* at 8–9. Mr. Johnson testifies that Petitioner has its own employees and sales staff, website, email addresses, computer systems and products. Ex. 1014 ¶ 2. Further, Petitioner maintains its own financial records and Mr. Johnson uses an email address and contact information specific to Petitioner when conducting business on behalf of Petitioner. *Id.* at ¶¶ 4–5. Mr. Johnson further testifies that Pacur did not direct Petitioner’s filing of the petition and that Pacur did not exercise control over Petitioner’s involvement in the proceeding or provide any funding. Ex. 1015 ¶ 5.

A patent owner challenging a petitioner’s RPI disclosure must produce sufficient evidence to bring a petitioner’s identification of the RPIs into question. To that end, the evidentiary record before us presents little information as to how Pacur controlled the proceeding, paid expenses or participated in the proceeding such that conventional principles of estoppel and preclusion would apply. The fact that Pacur and Petitioner share common management and have a pre-existing legal relationship does not

demonstrate sufficiently that Pacur exercised or could have exercised control over Petitioner's filing of the petition. As noted by Petitioner, Petitioner and Pacur are not in a parent-subsidiary relationship and Patent Owner's inferences do not rise to the level of evidence demonstrating that Pacur has played any role in this particular proceeding or has any opportunity to exercise control over this proceeding. Pet. Opp. 6–7.

Based upon the evidence presented, we hold that Patent Owner has failed to establish that Pacur is a real party-in-interest in this proceeding.

III. CONCLUSION

Petitioner has demonstrated by a preponderance of the evidence that: claims 1, 2, 23, 24, and 27–29 of the '467 patent are unpatentable as anticipated under 35 U.S.C. § 102(b) by Quadracci '995; claims 30–31, 34–35, 38–39, 42–43, and 46 of the '467 patent are unpatentable under 35 U.S.C. § 103(a), as obvious over Quadracci '995 in view of Sekiguchi and Quadracci '515; and, claims 3–22, 25–26, 32–33, 36–37, 40–41, and 44–45 of the '467 patent are unpatentable under 35 U.S.C. § 103(a), as obvious over Quadracci '995 in view of Quadracci '515, Conley '316, and Conley '502.

IV. ORDER

In consideration of the foregoing, it is:
ORDERED that claims 1–46 of the '467 patent are held unpatentable; 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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