

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHENZHEN LIOWN ELECTRONICS CO., LTD.,
Petitioner,

v.

DISNEY ENTERPRISES, INC.,
Patent Owner.

Case IPR2015-01656
Patent 8,070,319 B2

Before TRENTON A. WARD, J. JOHN LEE, and WILLIAM M. FINK,
Administrative Patent Judges.

FINK, *Administrative Patent Judge.*

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

I. INTRODUCTION

On July 31, 2015 Shenzhen Liown Electronics Co., Ltd. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–5, 17, and 18 of U.S. Patent No. 8,070,319 B2 (Ex. 1001, “the ’319 patent”). Paper 2 (“Pet.”). On November 10, 2015, exclusive licensee and real party-in-interest, Luminara Worldwide, LLC, acting under authority of Disney Enterprises, Inc. (collectively, “Patent Owner”), filed a Preliminary Response. Paper 6 (“Prelim. Resp.”); Paper 5, App’x 1 (agreement). On February 8, 2016, we instituted trial as to claims 1–5 of the ’319 patent on the grounds of unpatentability, under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a), that were alleged in the Petition. Paper 7 (“Inst. Dec.”).

After institution, Patent Owner filed a Patent Owner Response (“PO Resp.”). Paper 21. Petitioner filed a Reply to the Patent Owner Response. Paper 30 (“Pet. Reply”). A consolidated oral hearing for IPR2015-01656, IPR2015-01657, and IPR2015-01658 was held on October 18, 2016. A transcript of the hearing has been entered into the record. Paper 48 (“Tr.”).

This Final Written Decision (“Decision”) is issued pursuant to 35 U.S.C. § 318(a). For the reasons explained below, we conclude Petitioner has demonstrated, by a preponderance of the evidence, that claims 1–5 of the ’319 patent are unpatentable.

A. Related Matters

Petitioner and Patent Owner identify the following pending judicial matters as relating to the ’319 patent: *Luminara Worldwide, LLC v. Liown Electronics Co., Ltd.*, Case No. 14-cv-03103 (D. Minn.), filed August 5, 2014; *Luminara Worldwide, LLC v. Liown Electronics Co., Ltd.*, Case No. 15-1671 (Fed. Cir.), filed May 21, 2015; *RAZ Imports, Inc. v. Luminara*

Worldwide, LLC, Case No. 3-15-cv-02223 (N.D. Tex.), filed July 3, 2015; and *Luminara Worldwide, LLC v. RAZ Imports, Inc.*, Case No. 15-cv-03028 (D. Minn.), filed July 10, 2015. Pet. 1–2; Paper 5, 1–2.

In addition to this proceeding, the following *inter partes* reviews are pending in which related patents are challenged:

IPR	Patent	Stage
2015-01657	U.S. Patent No. 8,534,869	Trial
2015-01658	U.S. Patent No. 8,696,166	Trial
2016-01785	U.S. Patent No. 8,721,118	Pre-Institution
2016-01834 2016-01835	U.S. Patent No. 8,727,569	Pre-Institution

B. The '319 Patent

The '319 patent relates to “simulating a flickering flame providing kinetic light movement,” such as the simulation of a single candle flame. Ex. 1001, 1:16–18. Figure 1 of the '319 patent is reproduced below:

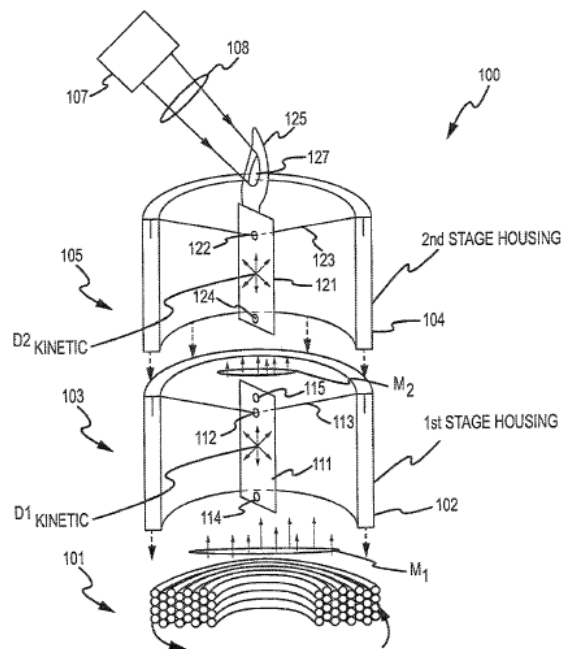


FIG. 1

Figure 1 illustrates an embodiment of the kinetic flame device, in accordance with the claimed invention, resembling a conventional wax candle. Ex. 1001, 3:57–59, 5:6–9. As shown in Figure 1, single coil 101 may be distributed about the central axis of the device to act upon upper and lower pendulum members 111 and 121. *Id.* at 5:19–22, 5:42–49. Specifically, energized coil 101 produces a time-varying magnetic field, which acts upon magnet 114 on lower or first-stage pendulum 111 to produce kinetic motion $D1_{\text{Kinetic}}$. *Id.* at 5:54–56, 5:66–6:8. First-stage pendulum 111 is “pivotally supported” by support 113, which may be a rod, axle, wire, or the like, and which passes through hole 112 to allow the kinetic motion about the pivot point. *Id.* at 7:1–9. The second stage 105 is similar in construction and operation to the first stage, with second-stage pendulum 121 pivotally mounted on support element 123. *Id.* at 8:61–67. Flame silhouette 125 extends from the top of second-stage pendulum 121 and is formed into a flame-shaped outline. *Id.* at 9:21–28. Flame silhouette 125 moves with kinetic movement $D2_{\text{Kinetic}}$ of second-stage pendulum 121 and is illuminated by spotlight 107. *Id.* at 10:25–34. Although Figure 1 represents a two-stage embodiment, single-stage only embodiments are also described, such as depicted in Figure 7. *Id.* at 15:12–21, Fig. 7.

C. Illustrative Claim

Claim 1 is an independent claim. Claims 2–5 directly depend from claim 1. Claim 1 is reproduced below.

1. An apparatus for simulating a flame, comprising:
 - a housing including an interior space;
 - a drive mechanism generating a time varying electromagnetic field that extends into the interior space;

a pendulum member pivotally mounted within the interior space of the housing, the pendulum member including a magnet or ferrous tag on a first end positioned proximate to the drive mechanism, whereby the magnet or ferrous tag interacts with the time varying electromagnetic field, wherein the pendulum member further includes a flame silhouette element extending from a second end of the pendulum member; and

a light source adapted to selectively transmit light onto the flame silhouette element.

Ex. 1001, 21:27–40.

D. Pending Grounds of Unpatentability

The first pending ground of unpatentability challenges independent claim 1 and dependent claim 5 as anticipated by Schnuckle '455.¹ The second pending ground of unpatentability challenges claims 1–5 as being directed to obvious subject matter, under 35 U.S.C. § 103(a), over the teachings of Schnuckle '455.

II. DISCUSSION

A. Alleged Statutory Bar

Patent Owner alleges Petitioner was served with a complaint alleging infringement of the '319 patent on December 3, 2012, more than one year prior to the filing of the Petition. Prelim. Resp. 55; PO Resp. 29–30. As such, Patent Owner contends the instant Petition is time-barred by 35 U.S.C. § 315(b), which states “an inter partes review may not be instituted if the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner . . . is served with a complaint.”

¹ U.S. Patent No. 7,261,455 B2, issued Aug. 28, 2007 (Ex. 1003) (“Schnuckle '455”).

Although conceding the parties agreed to dismiss the 2012 civil action without prejudice, Patent Owner argues the statute makes no exception for “such an event.” Prelim. Resp. 55. Patent Owner notes that in some contexts dismissal without prejudice “‘renders the proceedings a nullity’ and ‘leaves the parties as though the action had never been brought.’” *Id.* at 56 (citing *Graves v. Principi*, 294 F.3d 1350, 1356 (Fed. Cir. 2002); *Bonneville Assocs. Ltd. P’ship v. Barram*, 165 F.3d 1360, 1364 (Fed. Cir. 1999)). However, Patent Owner argues, this general rule has exceptions, such as the “two dismissal rule” or the fact that a court may impose sanctions for a case even though voluntarily dismissed without prejudice. *Id.* (citation omitted).

Patent Owner also analogizes the voluntary dismissal here with the facts of *Flowers v. Secretary of Department of Health & Human Services*, 49 F.3d 1558 (Fed. Cir. 1995). Prelim. Resp. 57; PO Resp. 29–30 (“Luminara maintains its position on this issue.”). In *Flowers*, according to Patent Owner, the plaintiff filed her Court of Federal Claims (“CFC”) action, during her co-pending state court action, but, after learning that the Vaccine Act prohibited parallel proceedings in state court and the CFC, voluntarily dismissed her state court action. *Id.* (citing *Flowers*, 49 F.3d at 1559, 1562). Despite this, according to Patent Owner, the Federal Circuit held the CFC was required by the statute to dismiss for lack of jurisdiction. *Id.* As with the Vaccine Act’s statutory bar, Patent Owner argues, the fact of the voluntary dismissal without prejudice of the 2012 infringement suit at issue here does not affect the application of the § 315(b) bar. *Id.*

The Board’s opinions in *LG Electronics, Inc. v. Mondis Technology Ltd.*, Case IPR2015-00937 (PTAB Sept. 17, 2015) (Paper 8) (precedential) and *Oracle Corp. v. Click-to-Call Techs. LP*, IPR2013-00312 (PTAB Oct.

30, 2013) (Paper 26) (precedential as to Section III.A) squarely address Patent Owner's argument. In *LG*, the Board determined that a proceeding was time-barred even though the prior case (in which a complaint was served more than one year prior to the Petition) was dismissed *with prejudice in part* and without prejudice in part. *Id.* at 6. Because even a partial dismissal with prejudice did not leave the parties in the position that they would have been in had the prior complaint never been brought, the Board found the exception to § 315(b) for prior complaints dismissed without prejudice did not apply. *Id.*

In *Oracle*, by contrast, the facts are similar to those alleged here. Specifically, a petitioner was served with a complaint alleging infringement of the challenged patent more than one year before the petition the proceeding was filed. *Id.* at 15. That suit was dismissed without prejudice. *Id.* at 16–17. Applying the Federal Circuit decisions in *Graves* and *Bonneville*, the Board determined that “the dismissal of the infringement suit . . . nullifies the effect of the service of the complaint and, as a consequence, does not bar [Petitioner] or any of the other Petitioners from pursuing an *inter partes* review.” *Id.* at 17. As with *Oracle*, Patent Owner here concedes the 2012 case was dismissed without prejudice and does not allege any circumstances that would tend to show the parties are not in the position they were in had the complaint never been served. Accordingly, we find *Oracle* is controlling under the circumstances alleged in this proceeding.

We have considered Patent Owner's reliance on the Federal Circuit's decision in *Flowers* and have determined that it does not compel a different result. Patent Owner summarizes some of the relevant facts of that case, but

does not address one important difference. As explained in *Flowers*, the Vaccine Act's bar, as originally enacted, specifically permitted voluntary withdrawal of a parallel state court proceeding at any time before judgment to avoid the effect of a bar on filing a CFC petition:

(B) If a plaintiff who on the effective date of this subtitle had pending a civil action for damages for a vaccine-related injury or death does not withdraw the action under subparagraph (A), such person may not file a petition under subsection (b) of this section for such injury or death.

49 F.3d at 1560 (quoting 42 U.S.C. §§ 300aa–11(a)(5)(B) (1988)). The Federal Circuit noted, however, that Congress revised the statute in 1989 and deleted the exception (underlined above) permitting withdrawal of the parallel proceeding. *Id.* at 1560–61 (citing 42 U.S.C. §§ 300aa–11(a)(5) (Supp. V. 1989)). The Federal Circuit reasoned that, because the 1989 amendment expanded the exclusionary scope of paragraph (B) to encompass *all* cases involving a co-pending civil action, “one could reasonably conclude that Congress ultimately thought it necessary to address co-pendency concerns beyond the single class of pre-enactment cases.” *Id.* at 1561.

By contrast, Patent Owner does not direct us to any such language in 35 U.S.C. § 315(b) or any such indication of legislative intent that the § 315(b) bar was designed to apply to circumstances in which prior complaints were voluntarily dismissed without prejudice, as it apparently was here. In the absence of such legislative intent, we are not persuaded that the result in *Flowers* should be applied to § 315(b) in contravention to the Board's precedential decision in *Oracle*. We, therefore, decline to apply the

statutory bar based on the 2012 complaint served on Petitioner and later dismissed without prejudice.

B. Level of Ordinary Skill in the Art

Petitioner's declarant, Dr. Delson, testifies:

a person of ordinary skill in the art at the time of the alleged invention would have had a Bachelor's degree in mechanical engineering and one to three years of mechanical design experience. This description is approximate and additional educational experience in mechanical engineering could make up for less work experience and vice versa.

Ex. 1002 ¶ 41. Patent Owner's declarant, Dr. Brown, testifies that "a person [of ordinary skill in the art] typically would have a mechanical engineering degree (either a bachelor's degree or associate's degree), and would have some familiarity, training, or experience with electric lighting devices."

Ex. 2010 § 14.

We find these "definitions" to be substantially similar. For example, both require at least a mechanical engineering degree and experience varying between "some," in Dr. Brown's opinion, and "one to three years," in Dr. Delson's opinion. Given this apparent lack of disagreement, we adopt Dr. Delson's statement of the level of ordinary skill for purposes of this Decision, but we note that our analysis would be the same under either formulation.

C. Claim Interpretation

In an *inter partes* review, claim terms in an unexpired patent are given their "broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142–46 (2016). Under the broadest reasonable construction standard, claim terms are generally given their

ordinary and customary meaning, as would be 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).

1. “flame silhouette element” and “selectively transmit light”

In the Decision to Institute, we construed the term “flame silhouette element” recited in at least independent claim 1, as “a body of material having a shape that is suitable to generate a flame flickering effect.” Inst. Dec. 10. We construed the term “selectively transmit light onto the flame element,” also recited in at least claim 1, as “controlling the direction of light towards the flame silhouette.” *Id.* at 16–17. In their respective Response and Reply, neither party disputes the preliminary construction of these terms. Accordingly, we see no reason to change our construction, which we based on the broadest reasonable interpretation, consistent with the Specification.

2. “kinetic motion”

In its Preliminary Response, Patent Owner proposed the term “kinetic motion,” recited in at least claim 3, be construed to “require unconstrained and unpredictable motion of the pendulum member in multiple axes.” Prelim. Resp. 14–21. In the Decision to Institute, we rejected this construction, but, in considering the Specification, we determined that the term “kinetic motion” should not include “fully periodic or predictable motion.” Inst. Dec. at 15 (citing Ex. 1001, 4:42–43 (“Prior devices that attempt to simulate flickering flames [that] generally *used modulated or controlled motion* to mimic a flame.”); 4:53, 10:62–63). The parties do not raise claim construction or patentability arguments related to this term. *See*,

e.g., PO Resp. 10–13, 17–23. Accordingly, we see no reason to depart from the preliminary construction in this Decision.

3. “pivotally mounted”

a. Federal Circuit’s Construction of “pivot”

After the Decision to Institute, the Federal Circuit reviewed the related ’166 patent² to determine whether, in a related district court action, Luminara (i.e., Petitioner) had raised a substantial question of validity sufficient to avoid a preliminary injunction. *See Luminara Worldwide, LLC v. Liown Elecs. Co.*, 814 F.3d 1343 (Fed. Cir. 2016); *see also* PO Resp. 10–13 (discussing the Federal Circuit’s *Luminara* decision); Pet. Reply. 3–4 (same). Significantly, the Federal Circuit held that the ’166 patent’s specification (which is substantially the same as the specification of the ’319 patent at issue here) “disclaims non-chaotic pivoting” and “devices driven by rhythmic or metronomic patterns,” with “no further requirements on movement.” *Luminara*, 814 F.3d at 1353–54 (internal quotations omitted). The Federal Circuit further held that Schnuckle ’455 indisputably teaches pivoting in two axes and “seems” to disclose chaotic movement. *Id.* at 1354. As a result, the Federal Circuit determined that Petitioner’s anticipation argument based on Schnuckle ’455 raised a substantial question of validity and reversed the district court’s grant of a preliminary injunction against Petitioner. *Id.*

The Federal Circuit applied this disclaimer to the “pivot” term in claim 1 of the ’166 patent. *Id.* at 1354 (“Thus, we preliminarily construe claim 1 of the ’166 patent to require chaotic pivoting, with no further

² U.S. Patent No. 8,696,166 (“the ’166 patent”) is at issue in IPR2015-01658.

requirements on movement.”). As discussed in more detail below, the parties agree that the disclaimer applies equally to the instituted claims here, because, similar to the “pivot” term in the ’166 patent, the ’319 patent recites a “pivotally mounted” flame silhouette element in claim 1. PO Resp. 10–11 (citing, e.g., *NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282, 1293 (Fed. Cir. 2005)); *see also* Pet. Reply 3 (“[T]he Federal Circuit’s analysis of the intrinsic evidence is equally applicable to the ’319 patent.”). Given the substantially similar specification of the ’166 patent, which issued from a continuation-in-part of the application for the ’319 patent, we agree with the parties that the same disclaimer applies here. For example, the ’319 patent contains the same statements regarding the present invention’s “real but chaotic physical movements,” addressing the deficiency of the prior art, as relied upon by the Federal Circuit in finding a disclaimer of non-chaotic movement. *Compare Luminara*, 814 F.3d at 1353 (quoting ’166 patent, 2:13–16, 2:23–25) *with* Ex. 1001, 2:5–7, 2:14–16.

Although the Federal Circuit’s opinion appears to fully address the scope of the disclaimer sufficiently enough for the Federal Circuit to preliminarily determine that Schnuckle ’455 discloses the disputed pivotally mounted limitation, Patent Owner raises additional arguments here concerning what the Federal Circuit meant with its “chaotic pivoting” requirement.

b. Patent Owner’s Position

Relying on various extrinsic evidence, Patent Owner contends “chaotic” means aperiodic, unpredictable behavior arising in a system extremely sensitive to initial conditions. PO Resp. 12 (citing Ex. 3001, 234;

Ex. 2014, 0009; Ex. 2010 ¶ 16); Tr. 51:17–22. Based on this meaning of chaotic, Patent Owner further contends:

Importantly, the flame element moves chaotically *not* because of the nature of driving force that initially perturbs the pendulum. Indeed, all the driving force has to do is “kick” the pendulum into motion. Rather, it is *the claimed pivotal mounting* for the pendulum member, not the kick, that ensures that the motion of the flame element is chaotic. The [Federal Circuit] did not consider this point when it concluded that a substantial question of validity existed with respect to Schnuckle [’455].

PO Resp. 13 (internal citations omitted). In other words, according to Patent Owner, it is the pivotal mounting structure, not the driving force, that makes the pivoting *chaotic* within the meaning of that term. *Id.*

Thus, Patent Owner essentially views *Luminara* as requiring two disclaimers of different scope, one of devices driven by rhythmic or metronomic patterns, and one of non-chaotic pivoting devices. Tr. 54:5–13. The latter imposes additional constraints on the pivotal mounting structure, including extreme sensitivity to initial conditions. Tr. 50:1–6. Relying on Dr. Brown’s testimony, Patent Owner contends this definition of chaotic pivoting requires three, independent, non-linear types of motions that must not be controlled or modulated. PO Resp. 12–13 (citing Ex. 2010 ¶¶ 17–21).

Patent Owner also argues that the claims are entitled to an interpretation that preserves their validity over Schnuckle ’455. PO Resp. 14. Specifically, Patent Owner contends that because Schnuckle ’455 was before the Examiner during prosecution of the ’319 patent (*id.* (citing Ex. 1001 at [56])), it is reasonable to infer that the Examiner considered Schnuckle ’455 and “appreciated the differences” (*id.* at 14) between it and the challenged claims. According to Patent Owner, any ambiguity (i.e.

whether Schnuckle '455's two-axis mounting structures should read on the claimed pivotal mounting structure) should be resolved with an eye towards preserving the validity of the claims over the prior art of record and exclude Schnuckle '455's two-axis mounting. *Id.* at 15 (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1327 (Fed. Cir. 2005) (en banc)).

c. Analysis

As noted above, based on a mathematical definition of *chaotic*, Patent Owner views *Luminara* as requiring two disclaimers of different scope, one of the driving mechanism (i.e., excluding rhythmic or metronomic) and one of the pivotal mounting (i.e., excluding non-chaotic). We have reviewed the evidence, and we conclude that neither the Federal Circuit's *Luminara* opinion nor the nearly identical specifications of the '319 patent and the '166 patent support this position.

We start with the relevant portion of the Federal Circuit's opinion, which also reproduces relevant portions of the specification of the '166 patent:

By contrast, the specification disclaims non-chaotic pivoting. It explains that solitary flames are “complex kinetic interactions” that “produce a continuously and randomly moving light.” '166 patent, col. 1 ll. 39–41. It teaches that flame displays in the prior art “are relatively poor imitations of a real flame and have not been widely adopted by the commercial or retail markets.” *Id.* at col. 2 ll. 13–16. The specification further explains that “[t]he present description addresses the above and other problems by providing kinetic flame devices that create lighting effects driven by *real but chaotic physical movements.*” *Id.* at col. 2 ll. 23–25 (emphasis added); *see also id.* at col. 4 ll. 52–58 (“The present description involves devices that create lighting effects driven by real, chaotic, and physical movements.”), col. 4 l. 62–col. 5 l. 2 (“[T]he present invention stimulates and/or perturbs a complex interaction between

gravity, mass, electromagnetic field strength, magnetic fields, air resistance, and light, but the complex interaction is not directly modulated or controlled.”). . . .

Luminara, 814 F.3d at 1353–54. As the above excerpt indicates, the Federal Circuit bases the disclaimer of “non-chaotic pivoting” on the ’166 patent specification’s description of the nature of solitary flames (i.e., “continuously and randomly moving”), the deficiencies of the prior art (i.e., “poor imitations”), and the present invention’s requirement for “lighting effects driven by *real but chaotic physical*” movements.

In other words, the Federal Circuit viewed the specification’s description of the driving forces (i.e., “real but chaotic” and “not directly modulated or controlled”) as significant in finding the disclaimer of non-chaotic pivoting, as summarized in the concluding sentence of the above paragraph:

By teaching that the “present description” solves the problems associated with the prior art candle devices because it is driven by “real but chaotic movements,” the patentee disclaims devices driven by rhythmic or metronomic patterns.

Id. at 1354. Thus, the Federal Circuit started the paragraph by stating that the specification disclaimed non-chaotic pivoting, and then, after reviewing the ’166 patent specification evidence, concluded that this meant the patentee disclaims devices driven by rhythmic or metronomic patterns. We discern no suggestion by the Federal Circuit that it believed the disclaimer of chaotic pivoting to require more than not being driven by rhythmic or metronomic patterns such that Patent Owner’s mathematical definition of chaos is required.

Although we disagree with Patent Owner’s reading of the Federal Circuit’s opinion, we have also considered its mathematical definition of chaotic, i.e., requiring sensitivity to initial conditions, in light of the ’319 patent specification.³ As an initial matter, the ’319 patent specification does not support or suggest a sensitivity to initial conditions. Tr. 61:11–12 (Patent Owner: “The Petitioner is right, the specification doesn’t talk about that.”).

Moreover, as Petitioner points out, the specification uses “chaotic” nearly “interchangeably with both ‘unpredictable’ and ‘random.’” Pet. Reply 10 (citing, e.g., Ex. 1001, 18:67–19:5 (explaining that magnets may modify the kinetic movement or “its chaotic nature (e.g., make the movement, $D2_{Kinetic}$, more unpredictable.)”)); *see* Ex. 1001, 3:11–16, 6:12–14, 6:56–61, 8:36–39, 9:38–40. Patent Owner’s declarant apparently agrees that “random” is not chaotic in the mathematical sense. *See* Ex. 1024, 96:13–22 (“random is not chaotic and chaotic is not random”). These frequent references to “chaos” or “chaotic” used synonymously with terms that do not require chaos in the mathematical sense in the ’319 patent specification suggest that a looser, colloquial meaning for “chaos” or “chaotic” was adopted by applicant.

³ We note that Patent Owner’s construction of “chaos” is based on a dictionary definition we cited in our Decision to Institute. PO Resp. 12; Inst. Dec. 14 n.12 (citing Ex. 3001, 234). However, we cited this definition as evidence that “kinetic motion” and “chaotic motion” generally do not mean the same thing in response to Patent Owner’s preliminary joint proposed construction of both terms. *Id.* at 14. It bears emphasis that we rejected an interpretation of “kinetic motion” in claim 3 and “chaotic motion” in claim 17 as requiring movement in three orthogonal axes, as we similarly reject that requirement for the “pivotally mounted” term here. *Id.* at 12–13.

Furthermore, as Petitioner points out (Pet. Reply 7), Patent Owner’s declarant stated that a system is either chaotic in the mathematical sense or it is not. Ex. 1024, 31:20–23 (“Chaos is an existence or nonexistence phenomenon, and there are different types of chaotic motion, but I’m not aware of any sliding scale which measures the amount of chaos”). The specification, however, uses the term chaos in conjunction with relative terms such as “more” (Ex. 1001, 3:32–37, 7:9–14), “increasingly” (*id.* at 7:29–32), or “enhance” (*id.* at 11:49–53). When combined with the way the specification interchangeably uses chaotic, unpredictable, and random, these terms of degree further suggest that a person of ordinary skill in the art would have understood the specification to use the term chaos in a colloquial sense to indicate the extent to which the flame element moves naturally or realistically. Indeed, Petitioner provides evidence that a person of ordinary skill in the art, as defined by Patent Owner (i.e., having a bachelor’s or associate’s degree), would not have been educated on mathematical chaos theory. Pet. Reply 11–12 (citing Ex. 1024, 37:2–17). This view is consistent with the patent’s stated objective, i.e., “provid[ing] a convincing simulation that appears real or natural to a viewer.” Ex. 1001, 1:35–39.

Notwithstanding our disagreement with Patent Owner’s mathematics-based interpretation of the disclaimer addressed by the Federal Circuit, we also consider whether Patent Owner’s construction of “pivotally mounted” (i.e., requiring three, independent, non-linear types of motions that must not be controlled or modulated) is appropriate. *See* PO Resp. 12–13. We conclude it is not. Though preliminary, the Federal Circuit specifically rejected this reading both before and after determining that non-chaotic pivoting is disclaimed. *Luminara*, 814 F.3d at 1352–53 (rejecting the

district court’s construction that “free to pivot” requires “movement that is more than rotation around two axes”; “Pivoting includes rotation around a single axis.”), 1354 (finding that “[t]he [Schnuckle] ’455 patent undisputedly teaches pivoting in two axes” and the “final limitation in claim 1 of the ’166 patent—chaotic movement—seems to be met . . . in the prior art [Schnuckle] ’455 patent.”).

We agree with the Federal Circuit’s analysis, because it is consistent with the intrinsic evidence. Conversely, Patent Owner’s proposed construction contradicts the intrinsic evidence in other respects. For example, claim 17 has a limitation directed to both pivoting (i.e. “allowing the pendulum to pivot about the hole on the support wire”) and “chaotic motion at the coupling member *in at least two dimensions.*” Ex. 1001, 23:28–30 (emphasis added). By requiring chaotic motion in at least two dimensions (as on a single-axis), the claims suggest chaotic motion nominally includes motion in even one dimension, as in up or down or side to side. On the other hand, interpreting the specification disclaimer of “chaotic pivoting” for purposes of claim 1 to require three, independent non-linear types of motion, as Patent Owner argues, would lead to the incompatible result that claim 17, which requires movement in only two dimensions, would cover devices that are disclaimed by the specification.

Finally, we have also considered Patent Owner’s argument that any ambiguity in the claim language should be resolved in a manner that would preserve the patent’s validity, especially where, as here, the prior art was expressly considered during examination. PO Resp. 14–15. We find this argument unavailing as well. First, Patent Owner relies on *Phillips* for this proposition. *Id.* (citing 415 F.3d at 1327). However, as Patent Owner

acknowledges (PO Resp. 11), we apply the broadest reasonable interpretation consistent with the specification, not the *Phillips* standard. *See Cuozzo*, 136 S. Ct. at 2134, 2144–46. Patent Owner has not directed us to any case in which a claim term’s *broadest reasonable interpretation* turned on preserving its validity. Regardless, even under *Phillips*, this canon of construction only applies in situations where the proposed claim interpretation is “practicable” and “based on sound claim construction principles,” even where the prior art at issue is part of the prosecution history. *Generation II Orthotics, Inc. v. Medical Techs., Inc.*, 263 F.3d 1356, 1365 (Fed. Cir. 2001). As we determined above, Patent Owner’s proposed construction of the disclaimer is unsupported by, and even contrary to, the specification of the ’319 patent.

We determine that the Federal Circuit’s statement of the disclaimer of “non-chaotic pivoting” and devices “driven by rhythmic and metronomic patterns,” *Luminara*, 814 F.3d at 1353–54, is sufficiently specific to determine the scope of the term “pivotally mounted” in claim 1.⁴ Accordingly, we apply the Federal Circuit’s construction that the plain and ordinary meaning of “pivotally mounted” applies, except that non-chaotic pivoting and devices driven by rhythmic and metronomic patterns are disclaimed.

⁴ We have also considered Patent Owner’s Motion for Observations (Paper 38), which are substantially directed at obtaining admissions from Petitioner’s declarant in support of its proposed construction of chaotic pivoting (or that Schnuckle ’455 does not disclose chaotic pivoting based on this construction). *See id.* at 6–13. Although we have considered Patent Owner’s observations, we do not find them persuasive for the reasons explained herein.

D. Anticipation of Claims 1 and 5 by Schnuckle '455

Petitioner argues that claims 1 and 5 of the '319 patent are unpatentable, under 35 U.S.C. § 102(b), as anticipated by Schnuckle '455. *See* Pet. 15–19. We have reviewed the Petition, Patent Owner's Response, Petitioner's Reply, as well as the relevant evidence discussed in those papers and other record papers. As described in further detail below, we determine that the record supports Petitioner's contentions for claims 1 and 5, challenged as anticipated by Schnuckle '455, and we adopt Petitioner's analysis discussed below as our own. For reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1 and 5 of the '319 patent are anticipated Schnuckle '455.

1. Schnuckle '455 (Ex. 1003)

Schnuckle '455, which shares a common inventor with the '319 patent (Prelim. Resp. 1), describes an imitation candle comprising a simulated candle housing and a simulated flame mounted on a pendulum within the housing. Ex. 1003, Abstract, Figs. 2, 7, 12.

Figures 7 and 12 of Schnuckle '455 are reproduced below:

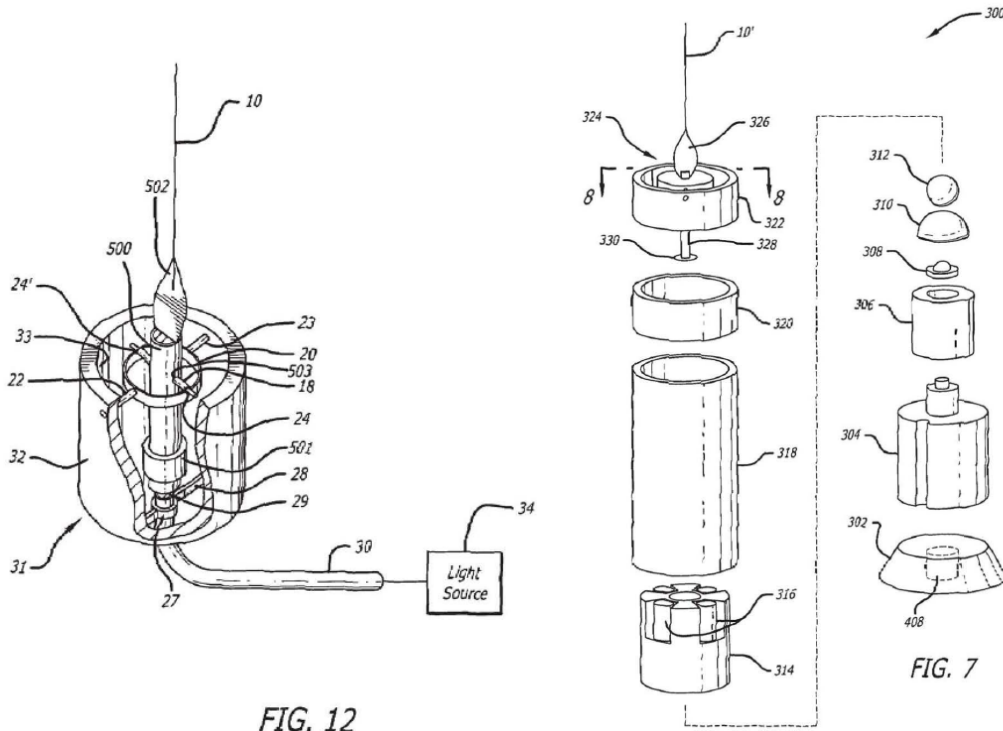


FIG. 12

FIG. 7

Figures 7 and 12 above illustrate an artificial candle in accordance with the invention of Schnuckle '455. Ex. 1003, 2:49–50, 2:56–57. As shown in Figure 12, teardrop shaped element 502 resembling a flame is secured to the upper end of channel 500. *Id.* at 6:47–49. Rod 18 passes through hole 503 in channel 500. *Id.* at 6:49–50. Rod 18 is disposed in grooves 24 and 24' of ring shaped member 20 of the gimbal mechanism. *Id.* at 3:55–65, 6:49–52, Figs. 2, 12. Ring shaped member 20 is connected to housing 32 by a pair of pins, 22 and 23, “each pin 22, 23 being fixedly secured to the outer periphery of member 20 and rotatably secured to the inner wall of housing 32.” *Id.* at 3:56–60. “The pins 22 and 23 thus permit the member 20 of the gimbal mechanism to rotate about the longitudinal axes of pins 22 and 23.” *Id.* at 3:60–62.

Air from a fan is blown or injected against the components from the bottom of the candle housing to cause the components to move on the

gimbal mechanism. *Id.* at 3:41–45. The Figure 7 embodiment is similar but for the use of electromagnets 316 instead of air to drive the lower end of the pendulum to simulate the movement of the flame blowing in the wind. *Id.* at 5:13–32, 6:53–62.

2. Claim 1

Claim 1 recites an apparatus for simulating a flame. Ex. 1001, 21:27. Petitioner contends Schnuckle '455's apparatus for generating a flickering flame effect discloses the preamble of claim 1. Pet. 15–16 (citing, e.g., Ex. 1003, Abstract, 4:41–52); *see also* Ex. 1001, Fig. 12 (reproduced above). Petitioner relies on cylindrical housing 322 of Figure 7 as disclosing the recited “housing including an interior space” of claim 1. Pet. 16 (citing, e.g., Ex. 1003, 5:13–38). Claim 1 also recites “a drive mechanism generating a time varying electromagnetic field that extends into the interior space.” In the Figure 7 embodiment, Schnuckle '455 discloses electromagnets 316 positioned on base 314 “for generating an electromagnetic field.” Ex. 1003, 5:23–25. Petitioner also relies on Figure 11 (Pet. 17), which explicitly incorporates like-numbered components from both Figures 2 and 7 into one embodiment, including electromagnets 316 for generating an electromagnetic field. *Id.* at 6:27–41; Fig. 11. Electromagnets 316 are driven by a control board including memory, pulsing circuits and a power source. *Id.* at 5:13–31, 5:52–67. Petitioner contends these descriptions in Schnuckle '455 disclose the required drive mechanism generating a time varying electromagnetic field. Pet. 16–17; *see* Ex. 1003, Fig. 11, 6:27–41.

Before turning to the disputed limitation of claim 1, we address the final limitation, which recites, “a light source adapted to selectively transmit light onto the flame silhouette element.” Ex. 1001, 21:39–40. Petitioner

contends that this limitation is disclosed in Figure 7 by LED 308 for selectively transmitting light to the flame silhouette element 326. Pet. 18 (citing, e.g., Ex. 1003, 5:13–32, 6:1–11); *see* Ex. 1003, 6:27–33; Ex. 1002 ¶ 78. Petitioner also cites the description of the same LED apparatus in Figure 11. Pet. 18 (citing Ex. 1003, 6:12–41). As noted above, we construe “selectively transmitting light” as “controlling the direction of light towards the flame silhouette.” We determine that Schnuckle ’455 discloses selectively transmitting light thus construed because LED 308, along with condenser lens 310 and ball lens 312 positioned on mount 306, “allow[s] optimal *focusing* of the LED light output” (Ex. 1003, 5:17–23 (emphasis added)). In its Response, Patent Owner does not address this limitation or any of the foregoing contentions. We determine the record supports Petitioner’s contentions with respect to these undisputed limitations and, therefore, adopt them as our own.

Claim 1 also recites, “a pendulum member pivotally mounted within the interior space of the housing” and “including a magnetic or ferrous tag on a first end positioned proximate to the drive mechanism . . . [and] flame silhouette element extending from a second end of the pendulum member.” Petitioner contends this that limitation is disclosed by Figure 7 and associated description of pendulum member, including rod 328 with magnetic base 330 attached to the lower end and flame silhouette 326 at the upper end. Pet. 17 (citing Ex. 1003, 5:13–47, Fig. 7). Petitioner also relies on Figure 11 (*id.*), which incorporates the same numbered gimbal structures as depicted in the two-axis Figure 2 gimbal. *See* Ex. 1003, 6:12–41, Fig. 11. Petitioner contends magnetic base 330 interacts with the time varying field of electromagnets 316, which discloses the recited “pendulum member . . .

whereby the magnet or ferrous tag interacts with the time varying electromagnetic field.” Pet. 17 (citing Ex. 1003, 5:52–6:11, 6:24–41, Fig. 11).

In its Response, Patent Owner disputes these contentions as to the “pivotally mounting” term, arguing that Schnuckle ’455 does not pivot chaotically as required by the Federal Circuit’s claim construction. PO Resp. 18–22 (citing Ex. 2010 ¶ 141). Because Patent Owner’s arguments depend on Patent Owner’s interpretation of “chaotic pivoting,” which we do not adopt, we are not persuaded.

Although we disagree with Patent Owner’s arguments, we nonetheless consider whether Schnuckle ’455 sufficiently discloses the pivotally mounted limitation given the disclaimer of non-chaotic pivoting and devices driven by rhythmic and metronomic patterns. As noted above, the Federal Circuit specifically determined, at least as a preliminary matter, that Schnuckle ’455 seemed to meet this claim requirement with its discussion of a two-axis gimbal articulated by “chaotic forces” that can articulate the flame element to “randomly simulat[e] blowing in the wind. ’455 patent, col. 6, ll. 53–62.” *Luminara*, 814 F.3d at 1354.

We agree with the Federal Circuit’s preliminary determination. Petitioner, relying on Dr. Delson’s testimony, also states the disclosure of driving with “natural and chaotic forces” “simulating blowing in the wind” is not a “rhythmic or metronomic” driving force in accordance with the disclaimer. Pet. Reply 20 (citing Ex. 1019 ¶¶ 19–27). Petitioner cites the discussion of “programmable movement patterns” as additional evidence of this fact. *Id.* (citing Ex. 1003, 5:52–67 (“The desired movement pattern of the flame shaped surface 326 may be encoded and stored in the memory

module 408 of the control board 302 in the form of digital data or control signals.”); Ex. 1019 ¶¶ 25–26 (explaining that exciting electromagnets according to digital data can produce chaotic motion)). Patent Owner interprets this excerpt differently, arguing that because “the movement pattern of the flame shaped surface 326 may be encoded and stored in the memory module 408 of the control board 302 in the form of digital data or control signals,” Schnuckle ’455 admits the gimbal of Figure 7 *does not move naturally*. PO Resp. 21 (quoting Ex. 1003, 5:53–56; Ex. 2010 ¶ 141). We disagree.

Nothing in the column 5 excerpt of Schnuckle ’455 suggests memory is programmed with rhythmic or metronomic patterns. Rather, column 5 explains how the electromagnets 316 are excited according to the data programmed into the memory module. *See* Ex. 1003, 5:54–63. This column 5 description is informed by column 6’s explanation that magnetism articulates the light pipe (i.e., pendulum) with a “natural and chaotic external . . . force (such as . . . magnetism)” resulting in “simulating blowing in the wind.” *See id.* at 6:56–63. From these descriptions, the programmed pattern is not rhythmic or metronomic, but is natural and chaotic. We, therefore, find the column 5 description consistent with the column 6 description relied upon by the Federal Circuit (Ex. 1003, 6:53–62).⁵ This is consistent with Dr. Delson’s testimony (Ex. 1002 ¶¶ 57–58; Ex. 1019 ¶ 26), which we credit. Accordingly, we find Schnuckle ’455 discloses chaotic pivoting.

⁵ As set forth above, the Figure 11 two-axis gimbal embodiment explicitly combines the two-axis gimbal embodiment of Figure 2, with LED illumination 308, control board 302, and electromagnetic drive arrangement 316 of Figure 7. *See* Ex. 1003, 6:27–32, Fig. 11 (using the same part numbering).

3. *Claim 5*

Claim 5 requires the light source of claim 1, “wherein the light source is positioned within the interior space of the housing more proximate to the drive mechanism than the second end of the pendulum member, whereby the flame silhouette element is illuminated by the light transmitted from within the housing.” Ex. 1001, 21:59–63. Petitioner contends this limitation is disclosed by Figures 7 and 11 and associated description of LED 308 located proximate to (and underneath) the electromagnetic drive mechanism that transmits light upward from within the housing towards flame element 326. Pet. 18–19 (citing, Ex. 1003, 5:13–32, 6:1–11, 6:27–33). Patent Owner does not present a specific argument in response to Petitioner’s contention that claim 5 is anticipated. We agree with Petitioner’s analysis and adopt it as our own. It is clear from Schnuckle ’455’s disclosures that LED 308 is either underneath or within electromagnetic drive 316, and is, therefore, more proximate to it than it is to the second end of the pendulum above the gimbal (and adjacent the flame element).

Accordingly, for the foregoing reasons, we determine Petitioner has satisfied its burden of proving anticipation against claims 1 and 5 by a preponderance of the evidence.

*E. Alleged Obviousness of Claims 1–5
over Schnuckle ’455*

Petitioner argues that claims 1–5 of the ’319 patent are unpatentable, under 35 U.S.C. § 103(a), as directed to obvious subject matter over Schnuckle ’455. *See* Pet. 19–23. We have reviewed the Petition, Patent Owner’s Response, Petitioner’s Reply, as well as the relevant evidence discussed in those papers and other record papers. As described in further

detail below, we determine that the record supports Petitioner’s contentions for claims 1–5, challenged as obvious over Schnuckle ’455, and we adopt Petitioner’s contentions discussed below as our own. In view of our determination above that every limitation of claims 1 and 5 is explicitly disclosed, we also find the same disclosures teach each limitation of claims 1 and 5 for purposes of obviousness. We address claims 2–4 below.

1. Claims 2 and 3

Claim 2 requires “the drive mechanism comprises a coil of wire and a signal generator providing time-varying current to the coil to create the time-varying magnetic field.” Ex. 1001, 21:41–44. Petitioner contends this limitation is taught by Schnuckle ’455’s control board 302 with pulsing circuits, memory 408, and electromagnets 316. Pet. 20. Petitioner and Dr. Delson contend a person of ordinary skill in the art would recognize these components as including “a coil of wire that receives such a current to create a time-varying magnetic field.” Pet. 20–21; Ex. 1002 ¶¶ 74–76.

Claim 3 requires that the “flame silhouette element is displaced in a random pattern over time, whereby the flame silhouette element has kinetic motion.” As discussed above, we determine the broadest reasonable interpretation of kinetic motion, consistent with the Specification, to be aperiodic or irregular. We note that claim 3’s additional requirement that the flame silhouette element be “displaced in a *random* pattern over time,” also encompasses motion is aperiodic or irregular, as random motion is not periodic. Petitioner contends Schnuckle ’455’s magnetically driven flame element, which “moves ‘randomly simulating blowing in the wind’ due to the magnetic field” generated according to the data pattern teaches claim 3. Pet. 21 (quoting Ex. 1003, 6:46–62); Ex. 1002 ¶¶ 77–78.

In its Response, although Patent Owner challenges the legal conclusion of obviousness based on objective indicia of non-obvious, which we address below, it does not dispute Petitioner's contentions concerning whether Schnuckle '455 teaches the elements of these claims. We determine the record supports Petitioner's analysis and, therefore, adopt it as our own.

2. Claim 4

Claim 4 requires "the pendulum member comprises an elongated body with an hour glass shape including a lower, wider portion, a narrower, middle portion, and an upper, wider portion including the flame silhouette element." Claim 4 also requires that the "first support element extending across at least a portion of the housing and through a hole in the body of the pendulum member." For this latter requirement, which Patent Owner does not dispute, Petitioner points to the pivotal mounting in the housing by the gimbal structure shown in Figures 2, 11, and 12 of Schnuckle '455, including rod 18, which passes through hole 503 in the pendulum (channel 500). *See* Pet. 22–23 (citing Ex. 1003, 6:49–52). We agree with this analysis and adopt it as our own.

The dispute concerns the requirement that the pendulum member comprises an elongated body with an hourglass⁶ shape whose lower, middle, and upper portions are wide, narrow, and wide respectively. For this requirement, Petitioner points to the shapes of the pendulums of Figures 7 and 12 of Schnuckle '455. *See id.* Relying on Dr. Delson, Petitioner argues that the outline of, for example, Figure 7 resembles an hourglass, and that it would have been obvious to select such desired widths for aesthetics or cost

⁶ Unless quoting the term "hour glass" directly from the '319 patent, we refer to it as hourglass.

considerations. *Id.* (citing Ex. 1002 ¶¶ 80–84). Dr. Delson further testifies that there is nothing non-obvious about the choice of pendulum shape, and that such an hourglass shape selection would have been a routine design choice for a person of ordinary skill in the art. *See* Ex. 1002 ¶ 83.

Patent Owner argues, relying on Dr. Brown’s testimony, that a person of ordinary skill in the art would not have considered the pendulum of Figure 7 to be an hourglass shape due to the right angles between base 330, cylindrical rod 328, and top portion 326. PO Resp. 23 (citing Ex. 2010 ¶¶ 142–143). Dr. Brown further testifies that there are functional reasons why an hourglass shape is advantageous that are not satisfied by Figure 7 of Schnuckle ’455. Ex. 2010 ¶ 143. Specifically, Dr. Brown cites the description that “air resistance is controlled by using a more irregular shape such as an hour glass shaped member 111,” and the depiction of member 1121 in Figure 11, as representative of how a person of ordinary skill in the art would have understood the hourglass shape requirement. *Id.* (citing Ex. 1001, 8:44–48).

We agree with Petitioner. As an initial matter, neither party proposes an explicit construction of the term “hour glass shape,” nor is a definition provided by the ’319 patent. However, the ’319 patent does provide one specific example of an hourglass shape. Figure 11 is reproduced below:

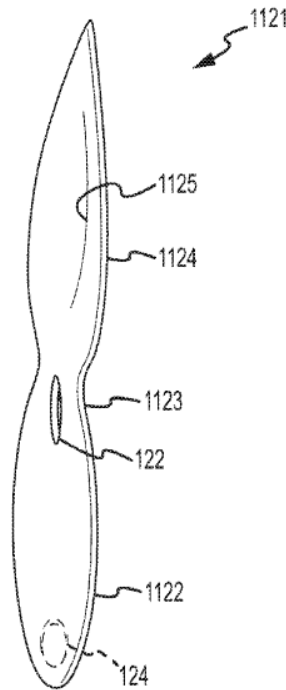


Figure 11 depicts hourglass shaped member 1121

As Petitioner points out, member 1121 is not shaped like an actual hourglass because it is pointed (in a flame shape) on the upper half and rounded on the lower half. *See* Pet. Reply 19. We agree that an actual hourglass would generally have a flatter top and bottom and sides that were more uniformly parallel than what is shown in Figure 11. *Id.* Similar to claim 4 itself, the only other direction provided by the specification is that an hourglass shape include a narrower middle portion and wider upper and lower portions.

Ex. 1001, 20:61–21:1.

Thus, Figure 11 of the '319 patent suggests that the broadest reasonable interpretation of the term hourglass requires something that is relatively narrower in the middle than on the ends and perhaps tapered. We agree with Patent Owner that the pendulum members identified in Figures 7 and 12 of Schnuckle '455 are not hourglass shaped, but only in the sense that

they are not tapered (i.e., having right angled transitions from narrower to wider portions) (*see* PO Resp. 23; Ex. 1010 ¶¶ 142–143). However, the question is whether the difference between what is claimed and what is disclosed would have been obvious to a person of ordinary skill in the art.

“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.” *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 421 (2007). Here, as noted above, Petitioner has provided evidence through its declarant that a person of ordinary skill in the art would have varied the design of the pendulum members in Schnuckle ’455 for either aesthetic or cost reasons. *See* Ex. 1002 ¶¶ 80–84. Patent Owner does not provide rebuttal evidence disputing either the aesthetic or the cost rationale of Petitioner’s declarant. From an aesthetic point of view, we agree that some portion of the pendulum in Schnuckle ’455 would be visible from the top of the candle housing (*see* Ex. 1001, Fig. 11) and that tapered edges would look less mechanical and more closely mimic the natural appearance of a wax candle. Thus, we determine that Petitioner’s un rebutted testimony supporting a rationale based on aesthetics is entitled to weight.

We have considered Patent Owner’s argument that according to the specification of the ’319 patent, the hourglass shape in the ’319 patent has a functional purpose—controlling air resistance. This argument is not persuasive because we do not “look only to the problem the patentee was trying to solve. . . . Under the correct analysis, any need or problem known

in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *KSR*, 550 U.S. at 420. Where, as here, the claim does not link the functional purpose to the hourglass shape requirement, “any need or problem,” including aesthetics, can provide a reason for modifying the shape. Petitioner has articulated and provided evidence in support of such a reason. Accordingly, we adopt Petitioner’s rationale and motivation in support of its argument for obviousness.

Before reaching our legal conclusion as to whether claims 1–5 are unpatentable as obvious, we turn to Patent Owner’s arguments based on objective indicia of non-obviousness.

3. Objective Indicia of Non-Obviousness

Factual inquiries for an obviousness determination include secondary considerations based on evaluation and crediting of objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). The totality of the evidence submitted, including objective evidence of nonobviousness, may lead to a conclusion that the challenged claims would not have been obvious to one of ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984).

Secondary considerations may include any of the following: long-felt but unsolved needs, failure of others, unexpected results, commercial success, copying, licensing, and praise. *See Graham*, 383 U.S. at 17; *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007). However, to be given substantial weight, there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995).

“Nexus” is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988).

In its Response, Patent Owner presents evidence and arguments as to long-felt need, commercial success, industry praise, licensing, and copying. PO Resp. 24–29.

a. Long-Felt Need

Patent Owner contends “[t]he public has long sought artificial candles that can simulate a natural flickering flame.” PO Resp. 25. As an example, Patent Owner cites Wiklund (Ex. 2013), which, according to the related ’166 patent (Ex. 2005, 1:66–2:19) could not convincingly reproduce a real or natural flame. *Id.* The ’319 patent addressed this need by providing devices that realistically reproduced the chaotic movement of natural flame. PO Resp. 25 (citing Ex. 2010 ¶¶ 144–145). Patent Owner contends this need has nexus to the innovative aspects of the challenged claims, i.e. “the improved ‘pleasing and realistic simulation of solitary flames’ achieved by the pivotal mounting structures and the corresponding chaotic movement they produce.” *Id.* (citing Ex. 2005, 1:63–64).

To be relevant, the proffered evidence must show a long-felt need *recognized by those of ordinary skill in the art.* *In re Gershon*, 372 F.2d 535, 538 (CCPA 1967). Reliance solely on the specification of the challenged patent is only probative of the inventors’ recognition of a problem and, if anything, demonstrates that the problem is not a serious one. *Id.* In this case, because the only proffered evidence of the alleged long-felt

need are the inventors' statements in the '166 patent, the evidence of long-felt need is weak at best.

We also consider Patent Owner's contention that a nexus exists between the claimed invention and the alleged long-felt need. PO Resp. 24–25. According to Petitioner, Patent Owner only argues a nexus to realistic flame effect, which was known the in the prior art before the '319 patent. Pet. Reply 21–22.

“A nexus may not exist where, for example, the merits of the claimed invention were ‘readily available in the prior art.’” *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1220 (Fed. Cir. 2016) (quoting *Richdel Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1580 (Fed. Cir. 1983)) (holding that the Board properly gave no weight to evidence relating to features disclosed in the proposed combination). However, while a nexus may be lacking if it “exclusively relates to a feature that was ‘known in the prior art,’ the obviousness inquiry centers on whether ‘the claimed invention as a whole’ would have been obvious.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1329–32 (Fed. Cir. 2016) (quoting *Rambus, Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013)).

In *WBIP*—an appeal from a denial of JMOL of obviousness—the Federal Circuit found that the patentee was entitled to a presumption of nexus based on its showing that its products were embodiments of the claimed invention. *Id.* at 1330–31. The challenger argued that a nexus did not exist because objective indicia evidence (i.e., reducing carbon monoxide emissions) was “not tied to the elements in the claims that were missing from [the prior art,] Phipps,” namely a catalyst. *Id.* The court disagreed. Noting that there was testimony that Phipps alone could not “reduce carbon

monoxide emissions *without the addition of a catalyst*,” it stated that the inquiry must focus on the invention as a whole. *Id.* at 1331–32. Because the invention as a whole was sufficiently linked to the *combination* of known elements with the allegedly new element (i.e., the catalyst), the court concluded the jury’s presumed factual findings relating to nexus were supported by substantial evidence. *Id.* at 1332.

Here, according to Patent Owner, the alleged long-felt need is addressed by chaotic pivoting of the flame element to “reproduce a real or natural flame.” PO Resp. 24–25. According to Patent Owner, this “evidence of long-felt need has nexus to the innovative aspects of the challenged claims—namely the improved ‘pleasing and realistic simulation of solitary flames.’” *Id.* at 25. However, as discussed above, Schnuckle ’455 discloses that the “natural and chaotic” forces cause the flame element to move “randomly simulating blowing in the wind.” Ex. 1003, 6:53–62. Schnuckle ’455 also states that the system “includes an apparatus and a method for synthesizing an artificial flame that provides a *realistic flickering flame effect* that is safe and easy to manufacture.” *Id.* at 1:55–58 (emphasis added).

Consequently, in contrast to *WBIP*, we determine that the record supports the conclusion that the allegedly inventive features relied upon by Patent Owner of the claimed invention as a whole are disclosed *as a whole* by Schnuckle ’455. Patent Owner makes no effort, for example, to differentiate between the realistic flame effect of the current invention and identical disclosures in Schnuckle ’455. Accordingly, we find that insufficient nexus has been established between the alleged long-felt need

and the claimed invention. For this additional reason, we give little weight to Patent Owner's long-felt need argument.

b. Commercial Success

Patent Owner contends it has enjoyed significant commercial success, directly attributable to its "flameless candles that are covered by the challenged independent claims of each of the '166, '319, and '869 patents." PO Resp. 25–26. Patent Owner relies on Dr. Brown (Ex. 2010 ¶¶ 144–145) and a claim chart he provided (Ex. 2017) to demonstrate that the independent claims read on the commercial embodiment. *Id.* at 26. Patent Owner relies on Dr. Gorowsky (Ex. 2036 ¶¶ 3–6) for evidence that the product sales figures are attributable to the commercial embodiment. *Id.*

We have reviewed this evidence and testimony, and we find it does not demonstrate commercial success. At the outset, a necessary component of the commercial success inquiry is determining market share associated with the alleged product, relative to competing products. *In re Applied Materials, Inc.*, 692 F.3d 1289, 1300 (Fed. Cir. 2012). In this case, Patent Owner provides only raw sales (*see* Ex. 2020) of products allegedly embodying the independent claims as evidence of commercial success. *See* Ex. 2036 ¶¶ 3–6. Without market share, or a sense of the total market, we have no point of reference with which to evaluate the significance of the proffered sales amounts. *Applied Materials*, 692 F.3d at 1300 ("[T]he number of units sold without evidence of the market share is only weak evidence of commercial success.").

Moreover, similar to the deficiency identified above, Patent Owner again relies on features found in the prior art to demonstrate nexus to commercial success. Specifically, Patent Owner's evidence establishes, at

most, that its commercial embodiments cover the required chaotic pivoting and realistic flame effect, which we determined to be disclosed by Schnuckle '455. *See* Ex. 2017; Ex. 2010 ¶¶ 144–145 (“As shown in Exhibit 2017, I have mapped out how each feature of each *independent* claim corresponds to an aspect of the commercial embodiment.” (emphasis added)). As with long-felt need, Patent Owner fails to differentiate between the realistic flame effect of the current invention and comparable disclosures in Schnuckle '455. As such, this evidence can only establish success based on “features that were [available] in the prior art.” *ClassCo*, 838 F.3d at 1220; *see also Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1312 (Fed. Cir. 2006) (holding that evidence that commercial success was due to unclaimed or non-novel features of a device “clearly rebuts the presumption that [the product’s] success was due to the claimed and novel features”).

We have also considered Patent Owner’s argument that customers favor and perhaps pay as much as twice the price of conventional “*flash-bulb*” flameless candles (*see* PO Resp. 26–27), but we do not find it persuasive because it, too, is linked either to the “realistic flame effect” or the chaotic pivoting disclosed in the prior art. Accordingly, for these additional reasons, we give little weight to Patent Owner’s commercial success argument.

c. Praise

We have reviewed Patent Owner’s arguments regarding industry praise and, for reasons similar to those discussed above, determine that these, too, are entitled little weight. Patent Owner relies on a video praising Patent Owner’s product at the “Consumer Electronics Show in January

2010” (Ex. 2024⁷) and an article praising the products allegedly copying the patented technology (Ex. 2025). PO Resp. 27. Regardless, the evidence allegedly relates to “superior realistic flickering flame effect enabled by simulating chaotic motion.” *Id.*; *see also* Ex. 2025 (“The wick actually moves, not just the light flickering. That[’s] what gives it a real look, authenticity.”). In other words, similar to the deficiencies identified above with respect to long-felt need, the evidence at most provides a nexus only to the prior art chaotic pivoting disclosed in Schnuckle ’455, and insufficient nexus to the claimed invention.

d. Licensing

Patent Owner contends it has successfully licensed the ’319 patent to Candella and its successor, Luminara. PO Resp. 27 (citing Ex. 2026). According to Patent Owner, Luminara’s moving flame flameless candles embodying innovative aspects of the claimed technology have been sold through distributors and nationally-recognized retailers. *Id.* at 27–28 (citing Ex. 2028). Patent Owner also contends Petitioner agreed to pay Candella an 18% royalty under an agreement for use of the patented technology and thereafter, in 2012, sought a license directly from Disney. *Id.* at 28 (citing Ex. 2027; Ex. 2029).

⁷ Patent Owner also cites Ex. 2018, which is its own contention interrogatory responses from related litigation. *See* PO Resp. 25 (identifying Ex. 2018 as “*arguments* in the parallel district court proceeding” (emphasis added)). Patent Owner’s own arguments are not evidence; citing to them as such is an improper attempt to incorporate additional briefing by reference. *See* 37 C.F.R. § 42.6(a)(3). To the extent evidence is cited in Ex. 2018, but not filed and cited in the papers of these proceedings, it has not been considered.

We have reviewed this evidence and testimony, and we find it provides little relevant evidence of non-obviousness. At the outset, we discount Luminara's distribution agreements (Ex. 2028) evidence, because these do not purport to be "[l]icenses taken under the patent in suit," and, therefore, do not demonstrate a nexus to the claimed invention. *See GPAC*, 57 F.3d at 1580. We also give little weight to the unsuccessful attempt by Petitioner to obtain a license from Patent Owner during litigation. *See Ex. 2029*. Licenses intended to resolve litigation disputes are not strong evidence of non-obviousness because "it is often cheaper to take licenses than to defend infringement suits." *In re Cree, Inc.*, 818 F.3d 694, 703 (Fed. Cir. 2016) (internal quotes omitted). Here, in addition to not identifying the specific patent at issue or its applications, the unexecuted license between the parties purports to "resolve [the parties'] disputes." *See Ex. 2029*, 26. As such, we give it little weight.

Of greater relevance, Patent Owner has presented what appears to be a series of executed license agreements between Luminara and Disney dating back to May 1, 2008 (Ex. 2026), of which the October 31, 2012 amendment purports to relate to the '319 patent at issue. *See id.* at 19, 26 (listing the '319 patent). Patent Owner does not direct us to how this agreement relates specifically to the challenged claims here, as opposed to other patents identified in the agreements or the prior art chaotic pivoting and realistic flame effect. Indeed, we observe that the earliest version of the license has an effective date of May 1, 2008, which is prior to the earliest priority date of the '319 patent. *See id.* at 1. This earlier agreement lists only the prior art Schnuckle '455 patent under "Licensed Patents." *See id.* at 2. Taken as a whole, therefore, this license is more broadly indicative of Luminara's desire

to obtain Disney’s “Artificial Flame Technology” (*id.* at 1) going back to Schnuckle ’455,⁸ than any inventive features of the challenged claims here. As such, there is insufficient nexus to the claims at issue here for this evidence to be given more than little weight. *See Cree*, 818 F.3d at 694 (finding broad licenses covering multiple patents as not having sufficient nexus).

e. Copying

With regard to copying, Patent Owner’s contentions in full are as follows:

[Petitioner] Liown made specific efforts to reverse-engineer and replicate [Patent Owner] Luminara’s products, specifically the innovative feature of chaotic pivoting at the location of the flame element. (Ex. 2030; Ex. 2029.) Liown did so after a failed attempt to access the technology through a manufacturing agreement with Luminara’s predecessor, Candella. (Ex. 2029.) Copies of Luminara’s patented flameless candles include the innovative features that enable chaotic pivoting of the flame element. (*See, e.g.*, Ex. 2030 at 5–9; Ex. 2029 at 4, 24–25, 32–40, 49–51.) The companies that copied Luminara’s patented flameless candles did so with exactitude, with an apparent intent to copy and coopt the consumer demand associated with Luminara’s products based on the ability to provide a more realistic flickering flame effect. (*Id.*)

PO Resp. 28–29 (citations to Ex. 2018 omitted).⁹

In considering these contentions, we make several observations. First, the cited pages 5–9 of Exhibit 2030 appear to be part of a declaration

⁸ The fact that the license initially covered Schnuckle ’455 also demonstrates Patent Owner’s misplaced reliance above on realistic flame effect to establish nexus with the challenged claims here.

⁹ As noted above, the arguments in Patent Owner’s Interrogatory Responses are not considered. *See* 37 C.F.R. § 42.6(a)(3).

submitted by Patent Owner in a district court infringement suit contending that “Liown’s flameless candle” practices claim 1 of the ’166 patent. *See id.* Petitioner does not address this Exhibit or deny that the cited portions depict its product. *See* Pet. Reply 30. Second, Petitioner also does not deny Patent Owner’s contention that Exhibit 2029 includes an attempted manufacturing agreement between Candella (i.e. Patent Owner’s predecessor) and Petitioner. *See id.*

Third, we observe that Exhibit 2029 it is a 51-page compilation of draft agreements, emails, CAD drawings, foreign and U.S. patents, a letter, product photographs, and an advertisement. Of this compilation, Patent Owner directs us to pages 4, 24–25, 32–40, and 49–51. These cites include CAD drawings, two untranslated pages of a Chinese patent, a U.S. patent, and the photographs of finished products. Other than the contentions reproduced above, Patent Owner provides no further explanation as to how these disparate documents are connected with each other, much less interpreted as evidence of copying. Accordingly, other than the CAD drawings, which Petitioner specifically addresses in its Reply, and the attempted agreement, Patent Owner has failed to demonstrate sufficiently that the other documents in the Exhibit 2029 compilation are evidence of copying.

Based on these observations, we assume *arguendo* that the depicted single-pendulum product in Exhibit 2030’s claim chart is Petitioner’s product.¹⁰ As an initial matter, Petitioner does not deny that it had access to

¹⁰ We do not consider the mapping of Petitioner’s product to claim 1 of the related ’166 patent as evidence of copying. *See Iron Grip Barbell Co., Inc.*

Patent Owner's CAD drawings during the relevant time frame. *See Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010) (noting that copying requires access and substantial similarity to the patented product). Although not pointed out to us by Patent Owner, we do note that there are similarities between the unannotated drawings and Petitioner's product, including similar angled lighting components and a wire-based pivotal mounting. *Compare Ex. 2029, 4 with Ex. 2030, 3.* On the other hand, we cannot clearly discern from the photographs whether Petitioner's pendulum is closely similar to Patent Owner's drawing or whether Patent Owner is using a two-stage pendulum with two wire supports as opposed to Petitioner's single-stage pendulum. *Compare Ex. 2029, 4–5 with Ex. 2030, 3.*

Based on the foregoing, we determine the evidence supports some degree of copying. However, without further analysis by Patent Owner and the uncertainties identified above, we do not find the evidence to be particularly substantial.

4. Legal Conclusion

We have considered Patent Owner's evidence of non-obviousness against Petitioner's showing above that the subject matter of claims 1–5 are obvious in view of Schnuckle '455. We found the evidence supports giving the proposed objective indicia of non-obviousness little weight overall. Although the copying evidence is somewhat stronger, we note “that a showing of copying is only equivocal evidence of non-obviousness in the absence of more compelling objective indicia of other secondary considerations,” *Ecolchem, Inc. v. Southern California Edison Co.*, 227

v. USA Sports, Inc., 392 F.3d 1317, 1325 (Fed. Cir. 2004) (holding that alleged infringement is not evidence of copying).

F.3d 1361, 1380 (Fed. Cir. 2000), which we did not find here. Considering the evidence as a whole, including Petitioner’s rationale for modifying Schnuckle ’455 to obtain the limitations of claims 2–4, either because the modification is suggested by Schnuckle ’455 (claims 2–3) or because the modification would have been obvious to a person of ordinary skill in the art (claim 4), based on a predictable use of prior art elements according to their established functions, we are persuaded that Petitioner has established by a preponderance of the evidence that claims 2–4, as well as claims 1 and 5, are unpatentable as obvious over Schnuckle ’455.

F. Patent Owner’s Motion to Exclude

Patent Owner “moves to exclude Exhibits 1019, 1025–1047, 1050, and 1051 submitted with Petitioner’s Reply.” Paper 39, 2. Patent Owner also states that:

It is not enough for the Board to find that this motion is moot if the Board does not rely on the inadmissible items of evidence in reaching its Final Written Decision. If the items of evidence are allowed to remain in the record, Liown could continue to rely on them on appeal to the Federal Circuit, where Luminara could unfairly be forced to face them again.

Id. at 3.

We have *not* relied on Exhibits 1025–1047, 1050, or 1051 in this Decision. We also have not relied on paragraph 48 of Exhibit 1019—the only paragraph of that exhibit Patent Owner contends should be excluded. We have considered Patent Owner’s suggestion that we rule on its objections regardless of that fact.

For exhibits not relied on, the Board’s well-established practice is to dismiss motions to exclude such evidence as moot. *See, e.g., Apple, Inc. v.*

VirnetX, Inc., Case IPR2015-00812, slip op. at 40–41 (PTAB Aug. 30, 2016) (Paper 43); *Array BioPharma, Inc. v. Takeda Pharm. Co. Ltd.*, Case IPR2015-00754, slip op. at 36, 46 (PTAB Aug. 12, 2016) (Paper 61); *Daicel Corp. v. Celanese Int’l Corp.*, Case IPR2015-00171, slip op. at 62 (PTAB June 23, 2016) (Paper 86); *Bank of Am., N.A., v. Intellectual Ventures I, LLC*, Case CBM2014-00029, slip op. at 30 (PTAB May 19, 2015) (Paper 38); *Yamaha Corp. of Am. v. Black Hills Media, LLC*, Case IPR2013-00597, slip op. at 29–30 (PTAB Mar. 18, 2015) (Paper 46); *Nichia Corp. v. Emcore Corp.*, Case IPR2012-00005, slip op. at 57–58 (PTAB Feb. 11, 2014) (Paper 68).

In this case, Patent Owner has moved to exclude nearly 30 exhibits on numerous grounds. An advisory opinion on their admissibility when we have not considered them would be improper. Moreover, Patent Owner has not cited any authority for its suggestion that it is “not enough” for the Board to act in accordance with its established procedure. Accordingly, we decline Patent Owner’s suggestion, and *dismiss* its motion to exclude as *moot*.

III. CONCLUSION

For the foregoing reasons, Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 5 of the ’319 patent are anticipated by Schnuckle ’455 and that claims 1–5 are unpatentable as directed to obvious subject matter over Schnuckle ’455.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–5 of the ’319 patent have been shown to be unpatentable;

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FURTHER ORDERED that Patent Owner's Motion to Exclude is dismissed as moot; 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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