

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UV ENGINEERING SOLUTIONS LLC,
Petitioner,

v.

TROJAN TECHNOLOGIES GROUP ULC,
Patent Owner.

IPR2023-01015
Patent 8,167,654 B2

Before THOMAS L. GIANNETTI, DAVID C. McKONE, and
SCOTT B. HOWARD, *Administrative Patent Judges*.

HOWARD, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. *Background and Summary*

UV Engineering Solutions LLC (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–5 and 8–24 of United States Patent No. 8,167,654 B2 (Ex. 1001, “the ’654 patent”). Paper 1 (“Pet.”). Trojan Technologies Group ULC (“Patent Owner”) filed a Preliminary Response. Paper 10 (“Prelim. Resp.”).

We have authority, acting on the designation of the Director, to determine whether to institute an *inter partes* review under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a). *Inter partes* review may not be instituted unless “the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). “When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.108(a) (2022).

Upon consideration of the contentions and the evidence of record, we conclude that Petitioner has not established a reasonable likelihood that it will prevail in proving the unpatentability of at least one challenged claim of the ’654 patent. Accordingly, we deny Petitioner’s request and do not institute an *inter partes* review.

B. *Real Parties in Interest*

Petitioner states that UV Engineering Solutions LLC is the real party in interest. Pet. 47.

Patent Owner states that Trojan Technologies Group ULC is the real party in interest. Paper 5, 1 (Mandatory Notices).

C. Related Matters

The parties do not identify any pending “judicial or administrative matter[s] that would affect, or be affected by, a decision in this proceeding.” Pet. 48; Paper 5, 1.¹

D. The ’654 Patent

The ’654 patent is titled “Radiation Lamp and Radiation Source Module Incorporating Same.” Ex. 1001, code (54). The invention relates to a “radiation lamp” for “water disinfection.” *Id.* at 1:19–27. “Generally, . . . fluid treatment systems . . . employ ultraviolet (UV) radiation to kill, sterilize and/or prevent replication of microorganisms.” *Id.* at 1:48–52.

According to the ’654 patent, conventional “ultraviolet lamps [are] configured to have all of the electrical connections disposed at one end of the lamp.” Ex. 1001, 1:62–64. As an example of this conventional design, the ’654 specifically identifies figures 2–8 of United States Patent No. 4,700,101 to Ellner, discussed in more detail in Section II.D.1, *infra*.

The ’654 patent describes an issue with conventional lamp connector designs. According to the ’654 patent, “the electrical connection pins . . . are parallel with the longitudinal ax[i]s of [a] radiation lamp[,] . . . the electrical connection is made by pushing . . . [a] connection base on to the

¹ Petitioner states “[t]he only petition previously filed regarding the ’654 Patent[,] IPR2022-00506[] filed by First Light Technologies, Inc. (‘FLT’),” and the corresponding “earlier patent infringement lawsuit between FLT and Patent Owner” (Pet. 43–44) were both terminated per a settlement reached between Patent Owner and FLT before the filing of a Preliminary Response (Pet. 43, 47).

pins in a direction parallel to the longitudinal axis of the radiation lamp.”

Ex. 1001, 2:1–7. As a result, “turbulence created within [a] water treatment system invariably imparts a vibratory motion to the lamps[,] which frequently results in lamps being vibrated or shaken loose of [their] electrical connection base or socket [and] thereby [renders] the lamps . . . inoperative.”

Id. at 2:8–14. As a result, “the water being treated may not be fully disinfected.” *Id.* at 2:14–16.

One “attempt[] to address this problem . . . used a relatively complicated . . . ‘push-and-twist’ connection[] to secure the lamp to the connection base.” Ex. 1001, 2:18–21. “The problem with these approaches is the . . . pushing and twisting gives rise to a higher incidents of lamp breakage . . . by field personal.” *Id.* at 2:23–29.

The ’654 patent proposes several solutions to this problem. Ex. 1001, 2:38–3:2. Relevant to the challenged claims of the ’654 patent is the third embodiment which, “provides a lamp device comprising a longitudinal axis, a first elongate electrical connector and a second elongate electrical connector[;] each of the first elongate electrical connector and the second elongate connector being non-parallel with respect to the longitudinal axis.” *Id.* at 2:42–47; *see also id.* at 4:42–45. Figures 10 and 12–14, reproduced below, illustrate that solution. *Id.* at 3:13–14; 4:42–45.

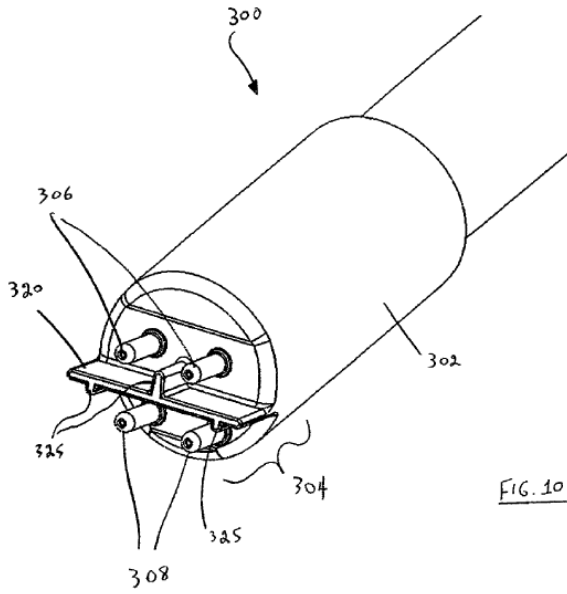


FIG. 10

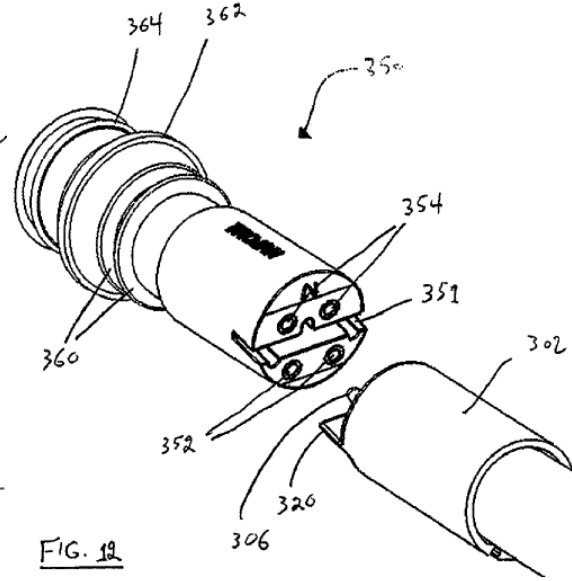


FIG. 11

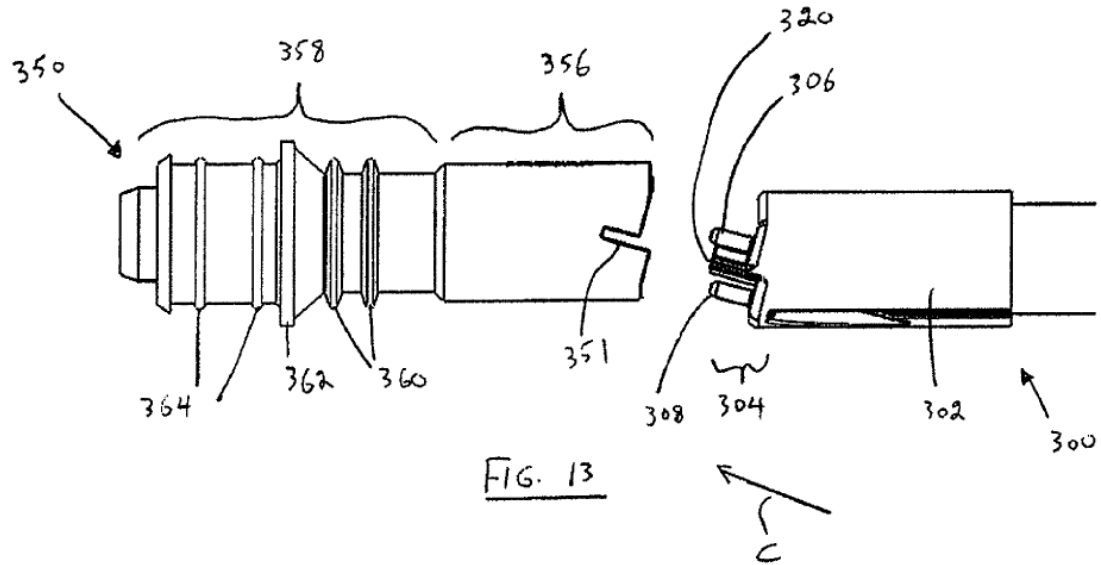


FIG. 13

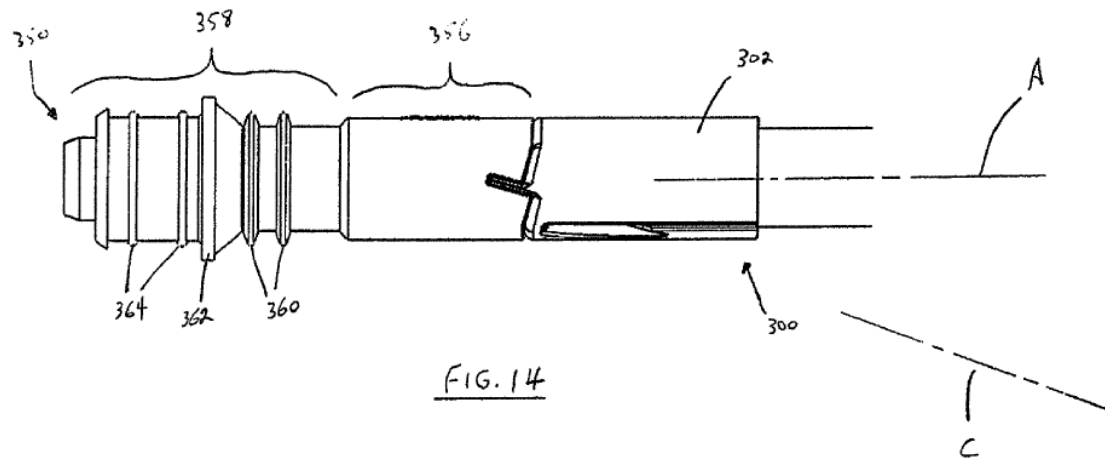


FIG. 14

The figures above “illustrate portions of . . . [an] embodiment of the present lamp device.” Ex. 1001, 3:13–14. Specifically, “there is illustrated a first electrical base unit 300 and a second electrical base unit 350.” *Id.* at 4:42–45. “First electrical base unit 300 comprises a housing 302. An end portion 304 of first electrical base unit 300 comprises a first pair of electrical connectors 306 and a second pair of electrical connectors 308.” *Id.* at 4:46–49.

Figure 11, reproduced below, depicts an additional feature of this embodiment.

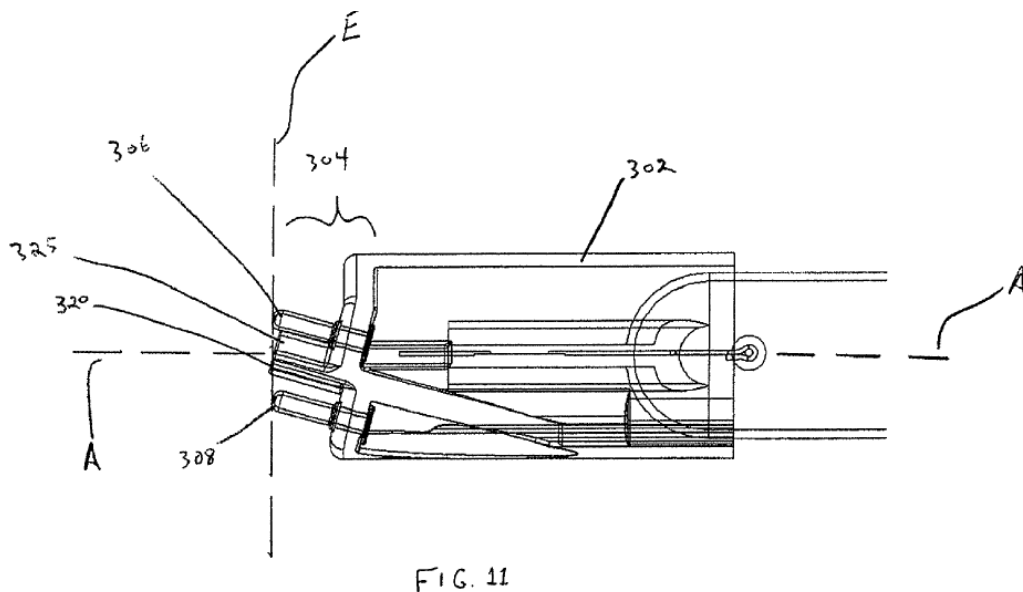


Figure 11 depicts housing 302 and the relative orientation of the electrical connectors. “Specifically, . . . electrical connectors 106 and 108 are disposed in an offset manner with respect to line A,” “the longitudinal axis.” Ex. 1001, 5:14–17. Additionally, “the distal ends of electrical connectors 306 and electrical connectors 308 are in substantial alignment along line E,” which is orthogonal to the longitudinal axis represented by line A. *Id.* at 5:24–26, Fig. 11. The ’654 patent describes how this alignment results in an improved connection:

[I]t can be seen that first electrical base unit 300 cannot be disengaged from second electrical base unit 350 along line A. Thus, when lamp device incorporating first electrical base unit 300 and second electrical base unit 350 is disposed in a protective (e.g., quartz) sleeve having a diameter very similar to that of stop portion 362, first electrical base unit 300 can[]not be disengaged from second electrical base unit 350 in a direction along line A. Rather, the two base units may be disengaged by relative movement thereof in the direction of line C (i.e., after removal of the protective sleeve).

Id. at 5:27–37.

E. Illustrative Claim

Claims 1, 23, and 24 are independent. Claim 1, which is illustrative of the claimed invention, is reproduced below with annotations (brackets) inserting Petitioner’s identifiers of claim limitations and the dispositive claim limitations emphasized.

1. [1.P] A lamp device having a longitudinal axis, and comprising:

[1.1] a first elongate electrical connector and a second elongate electrical connector, [1.2] the first elongate electrical connector and the second elongate electrical connector being aligned in a spaced relationship with respect to a line orthogonal to the longitudinal axis, [1.3] *each of the first elongate electrical connector and the second elongate connector configured to form an oblique angle with respect to the longitudinal axis*, [1.4] *ends of all of the electrical connectors of the lamp device being in substantial alignment along a plane orthogonal to the longitudinal axis*.

Ex. 1001, 6:2–14 (emphasis added).

F. Asserted Grounds and Testimony

Petitioner asserts that claims 1–5 and 8–24 would have been unpatentable on the following grounds.

Claim(s) Challenged	35 U.S.C. § ²	Reference/Basis
1–5, 8–19, 23, 24	103(a)	Ellner, ³ Titchener ⁴
20–22	103(a)	Ellner, Titchener, Solymar ⁵

Petitioner and Patent Owner have not submitted any testimonial evidence.

II. ANALYSIS

A. Legal Standard

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under 35 U.S.C. § 103(a) that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) if in evidence, “secondary considerations” of non-obviousness such as “commercial success, long felt but unsolved needs, failure of others, etc.” *Id.* at 17–18. “While the sequence of these questions might be reordered in any particular case,” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407

² The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. §§ 102, 103 that became effective on March 16, 2013. Because the ’654 patent issued from an application filed before March 16, 2013, we apply the pre-AIA versions of the statutory bases for unpatentability. *See* Ex. 1001, code (22) (application filed April 4, 2008).

³ U.S. Patent No. 4,700,101, issued October 13, 1987 (Ex. 1006).

⁴ U.S. Patent No. 7,033,203 B2, issued April 25, 2006 (Ex. 1007).

⁵ U.S. Patent No. 5,166,527, issued November 24, 1992 (Ex. 1008).

(2007), the U.S. Court of Appeals for the Federal Circuit has repeatedly emphasized that “it is error to reach a conclusion of obviousness until all those factors are considered,” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016).⁶

B. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). The “person having ordinary skill in the art” is a hypothetical construct, from whose vantage point obviousness is assessed. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

Factors pertinent to a determination of the level of ordinary skill in the art include “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Envtl. Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). “Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case.” *Id.*

⁶ Because neither party addresses objective indicia of non-obviousness, we focus solely on the first three *Graham* factors.

Petitioner contends a person having ordinary skill in the art “would have a degree in mechanical engineering, or an equivalent field, and/or a minimum of one to two years of practical experience in design, development, or manufacture of mechanical devices, including, for example, lamp devices, or equivalent experience, education or both.” Pet. 6.

Patent Owner contends a person having ordinary skill in the art “would have had a bachelor’s degree in electrical engineering, mechanical engineering, or of a similar field, and at least four to six years of professional experience, or its equivalent, in the manufacture of ultraviolet radiation lamps for fluid treatment systems or similar devices.”

Prelim. Resp. 6. Though proposing greater and more particular experience (than proposed by Petitioner), Patent Owner states the further experience is not requisite to their arguments because, “even applying a lesser skill level as proposed by Petitioner, the inventions of the ’654 Patent would not have been obvious.” Prelim. Resp. 7

The primary dispute between the parties is whether the person having ordinary skill in the art works with lamps generally (Petitioner) or works with ultraviolet lamps for fluid treatment systems (Patent Owner). Although the specification of the ’654 patent focuses on ultraviolet lamps for fluid treatment systems (*see* Ex. 1001, 1:24–2:29), the claims of the patent are not so limited. Rather, the claims broadly claim “lamps” without reciting any field of use. *See id.* at 6:2–8:24. Because the claims are not limited to ultraviolet lamps or fluid treatment centers, Petitioner’s formulation of the level of skill is more consistent with the claims. Accordingly, we adopt Petitioner’s proposed description of the person having ordinary skill in the art.

C. Claim Construction

We apply the same claim construction standard used in federal courts, in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). See 37 C.F.R. § 42.100(b). Under the *Phillips* standard, the “words of a claim ‘are generally given their ordinary and customary meaning,’” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1312–13.

Petitioner states, without providing any reasoning, that the term “aligned in a spaced relationship with respect to a line orthogonal to the longitudinal axis” means that “the connectors are spaced in a direction orthogonal to the longitudinal axis.” Pet. 7. Petitioner further states that the remaining terms should be given their plain and ordinary meaning. *Id.*

Patent Owner proposes, “for all claim terms, . . . that the Board adopt the ordinary and customary meaning of the claim terms as understood by one of ordinary skill in the art.” Prelim. Resp. 7.

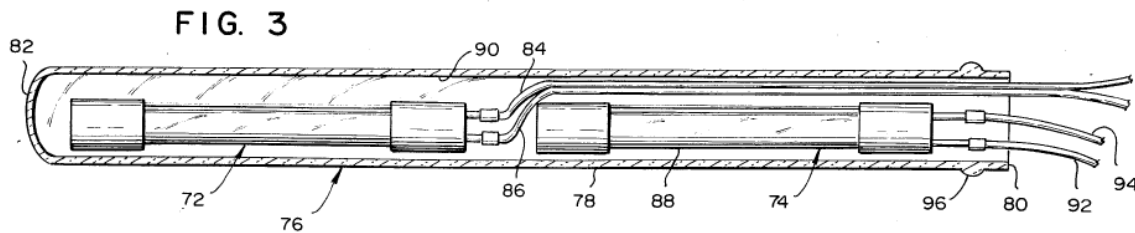
Because construction of the disputed claim limitation is not necessary to resolve the controversy, we need not expressly construe any claim terms. See *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Overview of the Asserted References

1. Overview of Ellner

Ellner is a United States patent titled “Elongated Tubular Lamp Construction.” Ex. 1006, code (54). Ellner describes a “tubular gaseous discharge lamp[,] such as an ultraviolet or fluorescent lamp[,] . . . includ[ing] a hollow cylinder . . . connected to a pair of end caps on each of which there is mounted an electrode.” *Id.* at code (57). “[To] facilitate connection of the ultraviolet lamp to a source of electrical power which is located at one end of the lamp,” each electrode is connected to a respective insulated wire that extends from the lamp’s end cap co-located with the power source. *Id.*

Ellner Figure 3 is reproduced below.



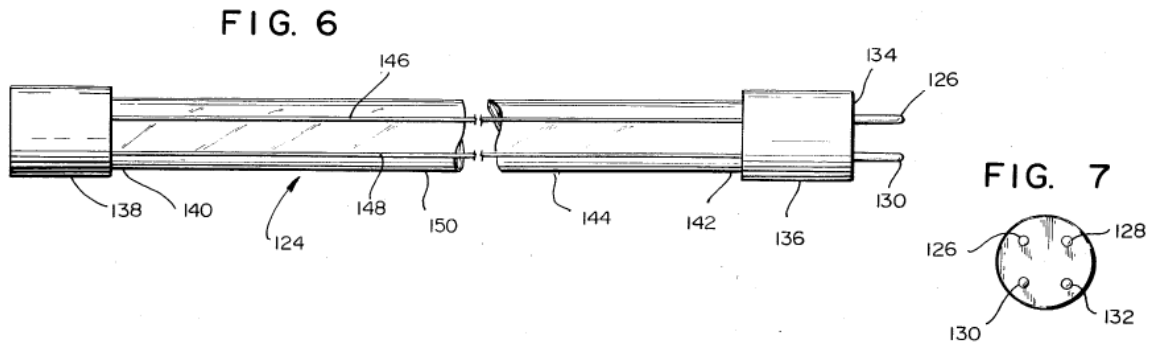
Ellner Figure 3 “shows . . . a pair of ultraviolet lamps . . . installed in a single jacket.” Ex, 1006, 2:62–64. The lamp system is described as follows:

[A] pair of ultraviolet lamps 72, 74 . . . are installed in a quartz jacket 76 . . . [that] comprises a hollow cylinder 78 having an open end 80 and a sealed end 82. The overall length of the jacket 76 is slightly longer than the combined length of the two ultraviolet lamps 72, 74. The two wires 84, 86 . . . project from the first ultraviolet lamp 72[,] are disposed between the cylinder 88 of the second ultraviolet lamp 74 and the inside surface 90 of the quartz jacket 76[,] and leave the quartz jacket 76 via the open end 80. Similarly, the two wires 92, 94 from the second ultraviolet lamp 74 leave the quartz jacket via the open end 80. The wires 84, 86, 92, 94 may be connected to a source of electrical power, thereby energizing the ultraviolet lamps 72, 74 and providing a source of ultraviolet energy having extended length. The quartz jacket 76 includes a circumferential retaining

collar 96 . . . proximate to the open end 80 . . . [and] mounting the quartz jacket 76 in a structure[, e.g., in] a tank for . . . exposing wastewater . . . to ultraviolet energy for purposes of disinfection and purification.

Id. at 3:38–61.

Ellner Figures 6 and 7 are reproduced below.



Ellner Figures 6 and 7 show a lamp that may be placed within jacket 76.

Ex. 1006, 3:38–41, 4:20–25, 4:33–39. “[T]he ultraviolet lamp 124 is connected to a source of electrical power by means of four terminal pins 126, 128, 130, 132 which project from the surface 134 of the end cap 136.”

Id. at 4:33–39.

2. Overview of Titchener

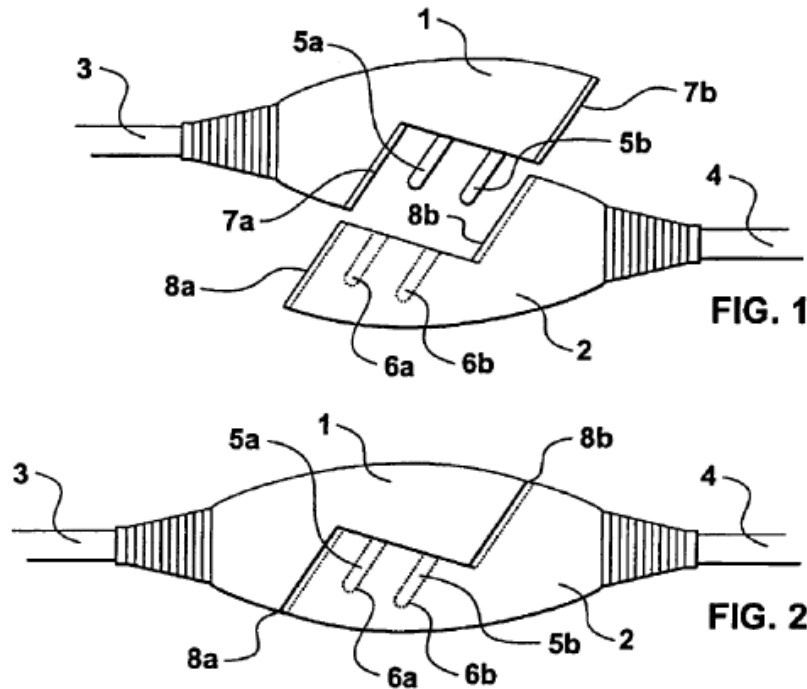
Titchener is a United States patent titled “Connector and Components Therefor.” Ex. 1007, code (54). Titchener describes a “connector pair[] for detachably connecting two ends of cables . . . [with] a first connector [having] at least one male coupling part and a second connector [having] at least one female coupling part.” *Id.* at 1:9–13.

Titchener describes a “problem [of typical] connector pairs . . . easily unplug[ging] when a pulling force is exerted to the two cable ends.”

Ex. 1007, 1:21–23. To address the problem, Titchener’s “coupling part[s] are positioned[,] in relation to the two ends[, such that the] pulling force . . . will change a partial coupling between the first connector and the second

connector into a complete coupling[;] . . . [the] coupled connector pair can never become uncoupled by exerting a pulling force to the attached cable.” *Id.* at 1:39–47.

Titchener Figures 1 and 2 are reproduced below.



Titchener Figures 1 and 2 show, respectively, a “side view . . . embodiment of a first and a second connector for connecting two cables” not connected and the two cables connected to each other. Ex. 1007, 2:65–3:2, Figs. 1, 2.

The connector pair 1, 2 are described as follows:

[A] first connector 1 and a second connector 2 . . . connect[] two cables 3, 4. First connector 1 is provided with male coupling parts 5a, 5b and second connector 2 is provided with female coupling parts 6a, 6b, a type well known in the art. Both connectors can be coupled easily, by sliding the male coupling part into the corresponding female coupling part. Because of the particular position of the coupling parts with respect to the cables 3, 4, it is evident that when one exerts a pulling force on a cable will be resolved in a force perpendicular to the coupling parts and

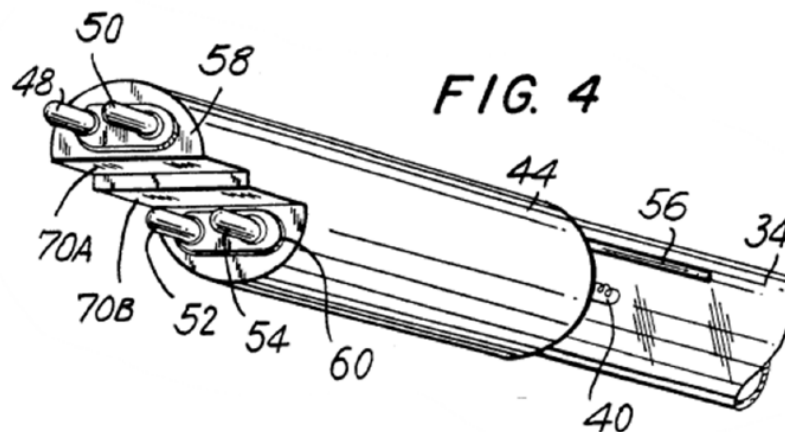
a force parallel to the coupling parts and this latter force pulls both connectors together.

Id. at 3:36–50.

3. Overview of Solymar

Solymar is a United States patent titled “Ultraviolet Lamp for Use in Water Purifiers.” Ex. 1008, code (54). Solymar is directed to “improvements in lamps, especially ultraviolet lamps used in water purifiers.” *Id.* at 1:7–9.

Solymar Figure 4 is reproduced below.



Solymar Figure 4 is a broken-away, perspective view of one end of a lamp. Ex. 1008, 2:52–57. As shown in Figure 4 above, “exterior wall 70 itself may be stepped . . . to show multiple sections 70A, 70B. Any number of pins and any number of exterior wall sections are comprehended in this invention.” *Id.* at 4:39–42.

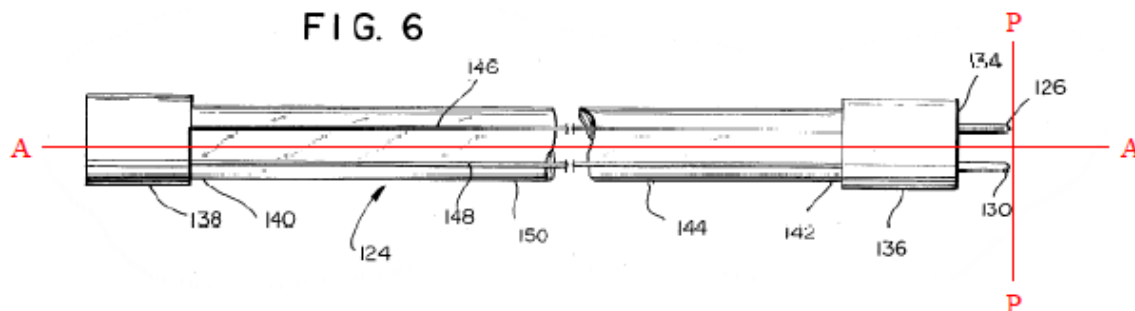
E. Reasonable Likelihood Analysis

1. *Claims 1 and 24*

Claim 1 recites “[a] lamp device having a longitudinal axis” with a first and second elongate connector in which “[1.3] each of the first elongate

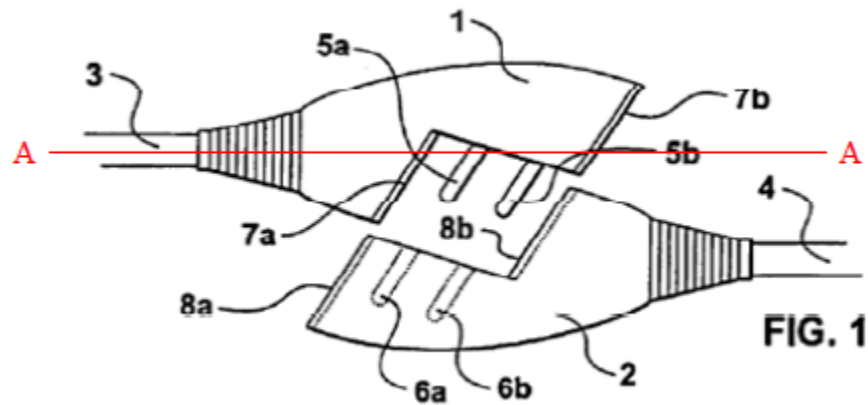
electrical connector and the second elongate connector configured to form an oblique angle with respect to the longitudinal axis,” and the “[1.4] ends of all of the electrical connectors of the lamp device being in substantial alignment along a plane orthogonal to the longitudinal axis.” Ex. 1001, 6:2–14. Independent claim 24 recites similar features. *See id.* at 8:13–24 (“each of the elongate electrical connectors configured to form an oblique angle with respect to the longitudinal axis, ends of all of the electrical connectors being in substantial alignment along a plane orthogonal to the longitudinal axis.”).

With regard to the lamp having a longitudinal axis, Petitioner relies on Ellner and argues, using the annotated illustration of Figure 6 reproduced below, that lamp 124 includes a “longitudinal axis” shown as line A–A.



Pet. 11. Ellner Figure 6 has been annotated by Petitioner to include a line A–A running in the direction of the longitudinal axis and with a line P–P, which is orthogonal to the longitudinal axis and aligned with the edge of the terminal pins. *Id.* at 10–11.

With regard to limitation 1.3, Petitioner relies on Titchener’s connector and argues that, as shown in Titchener Figure 1 and reproduced below, first connector 1 includes a “longitudinal axis” shown as the annotated line A–A.



Pet. 12. In the figure reproduced above, Petitioner has added a line A–A which is parallel to the longitudinal axis of cable 3. *Id.*

Petitioner argues that a person having ordinary skill in the art would have “modif[ied] the terminal pins 126, 128, 130, and 132 of Ellner to be angled relative to the longitudinal axis as shown in Titchener so as to create a reliable connection between cables as disclosed in Titchener.” Pet. 12. Petitioner further argues that “[s]uch a modification would be a simple substitution of one known element (i.e., angled connectors 5a and 5b of Titchener) for another (i.e., non-angled terminal pins 126, 128, 130, and 132 of Ellner) to obtain predictable results.” *Id.* at 12–13. According to Petitioner, the combination of the teachings of Ellner and Titchener result in a lamp in which “each of the first elongate electrical connector (i.e., terminal pin 126, 128 modified to be angled as shown in Titchener) and the second elongate connector (i.e., terminal pin 130, 132 modified to be angled as shown in Titchener) configured to form an oblique angle with respect to the longitudinal axis.” *Id.* at 13.

With regard to limitation 1.4, Petitioner argues that Ellner teaches that limitation. Pet. 13–14. Specifically, Petitioner argues that, as illustrated in Ellner Figure 6, reproduced above, the ends of terminal pins 126–132 are

aligned with a “plane orthogonal” to the longitudinal axis, shown as annotated line P–P. *Id.* .⁷

We are not persuaded by Petitioner’s arguments. Petitioner’s arguments are deficient in that Petitioner ignores that in its proposed modification, the person having ordinary skill would have replaced Ellner’s connectors with Titchener’s connectors. That is, for limitation 1.3, Petitioner argues that a person having ordinary skill in the art would have substituted Ellner’s terminal pins 126, 128, 130, and 132 with Titchener’s angled connectors 5a and 5b. Pet. 12–13. However, for limitation 1.4, Petitioner ignores that modification and, instead, focuses on Ellner’s unmodified terminal pins 126, 128, 130, and 132. *See id.* at 13 (“Ellner discloses that the ends of all of the terminal pins 126, 128, 130, and 132 of the UV Lamp 124 are substantially equal in length and thus in substantial alignment along a plane P-P orthogonal to the longitudinal axis A-A as shown in annotated Fig. 6 below.”). Having replaced Ellner’s terminal pins with Titchener’s angled connectors in its analysis, Petitioner’s argument that Ellner teaches that the “ends of all of the electrical connectors of the lamp device being in substantial alignment along a plane orthogonal to the longitudinal axis,” as recited in limitation 1.4, is contradictory and not persuasive. On this record, Petitioner’s assertion, unsupported by expert testimony, that a person having ordinary skill in the art would have first replaced the terminal pins in Ellner, and then relied on those same replaced terminal pins to meet a different limitation, is unavailing.

⁷ Petitioner relies on substantially the same arguments for the corresponding limitations in claim 24. *See* Pet. 36–39.

Petitioner does not argue that Titchener's connectors meet limitation 1.4. *See* Pet. 13–14 (relying solely on Ellner for limitation 1.4). Nor does Petitioner offer any expert testimony supporting why a person having ordinary skill in the art would have modified Titchener's connectors (as opposed to Ellner's) resulting in the “ends of all of the electrical connectors of the lamp device being in substantial alignment along a plane orthogonal to the longitudinal axis,” as recited in limitation 1.4. *See id.*

Accordingly, Petitioner has not shown a reasonable likelihood of prevailing on the challenges to independent claims 1 and 24.

2. *Claims 2–5, 8–22*

Additionally, because claims 2–5 and 8–22 depend from claim 1, Petitioner has also failed to demonstrate a reasonable likelihood of prevailing on its assertion that those claims would have been unpatentable as obvious over Ellner and Titchener (claims 2–5 and 8–20) or over Ellner, Titchener, and Solymar⁸ (claims 21 and 22). *See In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.”).

3. *Claim 23*

Like independent claims 1 and 24, independent claim 23 recites “[23.3] each of the first elongate electrical connector and the second elongate connector configured to form an oblique angle with respect to the longitudinal axis.” Ex. 1001, 8:7–10. As with claims 1 and 24, Petitioner argues that a person having ordinary skill in the art would have “modif[ied] the terminal pins 126, 128, 130, and 132 of Ellner to be angled relative to the

⁸ Petitioner does not argue that Solymar addresses the deficiency noted above. *See* Pet. 39–42.

longitudinal axis as shown in Titchener so as to create a reliable connection between cables as disclosed in Titchener.” Pet. 31.

Unlike independent claims 1 and 24, independent claim 23 does not recite that the “ends of all of the electrical connectors being in substantial alignment along a plane orthogonal to the longitudinal axis.” *See* Ex. 1001, 8:1–12. However, claim 23 recites that “[23.4] none of the elongate electrical connectors of the lamp device being staggered with respect to the longitudinal axis.” *Id.* at 8:10–12. And like limitation 1.4 discussed above, for limitation 23.4, Petitioner argues that Ellner teaches that limitation. Pet. 32–33. Specifically, Petitioner argues that, as illustrated in Ellner Figure 6, reproduced above, “the ends of all of the terminal pins 126, 128, 130, and 132 of the UV Lamp 124 are substantially equal in length and thus are not staggered with respect to the longitudinal axis A-A as shown in annotated Fig. 6.” *Id.* at 32.⁹

Although the limitations recited in claim 23 vary from those recited in claims 1 and 24, Petitioner’s argument regarding claim 23 suffers from the same defect discussed for those claims. That is, for limitation 23.3, Petitioner argues that a person having ordinary skill in the art would have modified Ellner’s terminal pins 126, 128, 130, and 132 in light of Titchener’s angled connectors 5a and 5b. Pet. 30–32. However, for limitation 24.4, Petitioner ignores that modification and, instead, focuses on Ellner’s unmodified terminal pins 126, 128, 130, and 132. *See id.* at 32–33 (“Ellner discloses that the ends of all of the terminal pins 126, 128, 130, and 132 of the UV Lamp 124 are substantially equal in length and thus are not staggered with respect to the longitudinal axis A-A as shown in annotated

⁹ Annotated Figure 6 is reproduced on page 16.

Fig. 6 below.”). Having replaced Ellner’s terminal pins with Titchener’s angled connectors in its analysis, Petitioner’s argument that Ellner teaches that the “none of the elongate electrical connectors of the lamp device being staggered with respect to the longitudinal axis,” as recited in limitation 23.4, is contradictory and not persuasive. On this record, Petitioner’s assertion, unsupported by expert testimony, that a person having ordinary skill in the art would have first replaced the terminal pins in Ellner, and then relied on those same replaced terminal pins to meet a different limitation, is unavailing.

Petitioner does not argue that Titchener’s connectors meet limitation 23.4. *See* Pet. 32–33 (relying solely on Ellner for limitation 23.4). Nor does Petitioner offer any expert testimony supporting why a person having ordinary skill in the art would have modified Titchener’s connectors (as opposed to Ellner’s) resulting in “none of the elongate electrical connectors of the lamp device being staggered with respect to the longitudinal axis,” as recited in limitation 23.4. *See id.*

Accordingly, Petitioner has not shown a reasonable likelihood of prevailing on the challenges to independent claim 23.

III. CONCLUSION

For the foregoing reasons and on the present record, we determine that the information presented in the Petition does not demonstrate a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of any of the challenged claims of the ’654 patent.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is *denied*.

IPR2023-01015
Patent 8,167,654 B2

For PETITIONER:

J. Derek Mason
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