UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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UV ENGINEERING SOLUTIONS LLC
Petitioner,

v.

TROJAN TECHNOLOGIES GROUP, ULC
Patent Owner.

_____

Case IPR2023-01015
U.S. Patent No. 8,167,654

PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 8,167,654

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Exhibit List

Exhibit No.	Description
1001	U.S. Patent No. 8,167,654 to Elku et al. (‘654 Patent)
1002	File History of U.S. Patent No. 8,167,654 to Elku et al. (‘654 Patent File History)
1003	U.S. Provisional Application No. 60/693,502 to Elku et al. (‘502 Provisional)
1004	International Application No. PCT/CA2006/001040 to Elku et al. (‘040 PCT Application)
1005	U.S. Patent No. 7,390,225 to Elku et al. (the ’225 Patent)
1006	U.S. Patent No. 4,700,101 to Ellner et al. (Ellner)
1007	U.S. Patent No. 7,033,203 to Titchener (Titchener)
1008	U.S. Patent No. 5,166,527 to Solymar (Solymar)
1009	U.S. Patent No. 5,753,996 to Csoknyai (Csoknyai)
1010	U.S. Patent No. 6,838,057 to Russell et al. (Russell)
1011	U.S. Patent No. 7,390,222 to Ciancanelli et al. (Ciancanelli)
1012	U.S. Patent No. 3,551,879 to Waller (Waller)
1013	U.S. Patent No. 5,586,898 to Anderson et al. (Anderson)
1014	U.S. Patent No. 1,967,021 to Gary (Gary)

Pursuant to 35 U.S.C. §§ 311 *et seq.*, Petitioner UV Engineering Solutions LLC petitions for inter partes review ("IPR") of Claims 1-5 and 8-24 of U.S. Patent No. 8,167,654 (the "'654 Patent"). As demonstrated below, Petitioner has a reasonable likelihood of prevailing on its challenge that at least one claim in the '654 Patent is unpatentable over the prior art. *See* 35 U.S.C. § 324(a).

I. INTRODUCTION

Although the title of the '654 Patent is "Radiation Lamp and Radiation Source Module Incorporating Same," the actual alleged invention is a configuration of electrical connectors for use in UV lighting used in water disinfection systems. The claimed invention is far from novel, and each claim discussed below is invalid as obvious in view of the relevant prior art. The Board should institute inter partes review of those invalid claims and cancel each of them.

II. THE '654 PATENT DISCLOSES COMMON FEATURES OF A LIGHTING DEVICE

Electrical connectors for connecting cable ends, cords, etc. to provide a reliable connection are well known in the art. For example, a patent from 1968 titled "Nonloosening Electrical Connector" discloses mating connectors 11 and 12 including contacts 52, 54, and 56 that are inclined to mate with corresponding receptacles 72, 74, and 76. *See* U.S. Patent No. 3,551,879 at 3:3-23 (filed Dec. 20, 1968) ("Waller") (EX1012). Waller discloses that the included connectors

are all aligned along the same line. *See* Waller (EX1012), Fig. 2. Similarly, a patent from 1996 titled "Self Locking Male and Female Connectors for Electrical Cords" discloses a male connector 12 with a plurality of connector prongs 19 inclined to mate with corresponding receptors 28. *See* U.S. Patent No. 5,586,898 at 2:35-62 and Fig. 1 (filed Nov. 25, 1994) ("Anderson") (EX1013).

Another example of an electrical connector for connecting cables is a patent from 1931 titled "Safety Electrical Connector," which discloses mating connectors 10 and 11 where parallel prong contacts 19 are aligned with respect to a line orthogonal to a longitudinal axis and are in substantial alignment along the line. *See* U.S. Patent No. 1,967,021 at 2:32-38 and Fig. 2 (filed July 7, 1931) ("Gary") (EX1014). There are countless other relevant patents in this space. For example, a patent from 1998 titled "Gas Discharge Lamp with Handle Construction" discloses a UV lamp with a plurality of end contacts 14, 15, 17A, and 18A that extend from an end of the lamp to be aligned with respect to a line orthogonal to a longitudinal axis and are in substantial alignment along the line. *See* U.S. Patent No. 5,753,996 at 2:7-23 and Fig. 1 (filed Sept. 19, 1996) ("Csoknyai") (EX1009). Similarly, a patent from 2005 titled "Power Disruption Apparatus for a Radiation Lamp" discloses a radiation module having terminal pins 17 and 17a. *See* U.S. Patent No. 6,838,057 at 6:16-47 and Fig. 6 (filed Oct. 31, 2003) ("Russell") (EX1010).

A known problem in the field was accidental disconnection of connectors. Gary, for example, identified this problem in the 1930s, noting that "[t]his invention relates to electrical connectors and has particular reference to separable connectors which may be locked together against accidental disconnection and can only be disconnected intentionally." *See* Gary (EX1013), 1:1-5.

III. THE '654 PATENT CLAIMS FEATURES THAT EXIST IN PRIOR ART NOT BEFORE THE EXAMINER

A. Overview of the '654 Patent

The '654 Patent discloses a lamp device for providing an electrical connection in a fluid treatment system.

Claim 1 recites a lamp device having a longitudinal axis with first and second elongate electrical connectors being aligned in a spaced relationship with respect to a line orthogonal to the longitudinal axis. Each of the first and second elongate electrical connectors is configured to form an oblique angle with respect to the longitudinal axis, and ends of all of the electrical connectors of the lamp device being in substantial alignment along a plane orthogonal to the longitudinal axis. Claims 23 and 24 similarly claim the lamp device.

B. Summary of the Prosecution History of the '654 Patent

The application that resulted in the '654 patent was filed on April 4, 2008. *See* '654 Patent (EX1001). The earliest patent application to which the '654 Patent claims priority is U.S. Provisional Application No. 60/693,502 (the "'502

Provisional") filed on June 24, 2005. *See* '654 Patent (EX1001), 1:7-14. International Application No. PCT/CA2006/001040 (the "'040 PCT Application") was then filed June 27, 2006 claiming priority to the '502 Provisional, and U.S. Patent Application No. 11/626,756, which issued as U.S. Patent No. 7,390,225 (the "'225 Patent") was filed January 24, 2007 as a continuation-in-part application of the '040 PCT Application. *Id.*, 1:7-14.

The '654 Patent was originally filed with one claim, and after receiving a double patenting rejection, the original claim was canceled and new claims 2-23 were added. *See* '654 Patent File History (EX1002), pages 244-252, 281-284, and 308.

The new claim 2 was directed to a lamp device including a first elongate electrical connector and a second elongate electrical connector, the first elongate electrical connector and the second elongate electrical connector being aligned in a spaced relationship along the longitudinal axis, each of the first and second elongate electrical connectors configured to form an oblique angle with respect to the longitudinal axis. *See* '654 Patent File History (EX1002), page 245. This claim focused on the embodiments shown in Figs. 1-8 of the application, which subject matter was disclosed in the '502 Provisional. *See* '502 Provisional (EX1003).

The Examiner rejected the claim based in part on U.S. Patent No. 7,390,222, which has an effective filing date of February 27, 2006. *See* U.S. Patent No.

7,390,222 (filed Feb. 27, 2006) ("Ciancanelli") (EX1011). There was a significant dispute between the attorney of record and the Examiner as to whether Ciancanelli qualified as prior art. The dispute arose from the fact that the '040 PCT Application was filed more than a year after the '502 Provisional. *See* '654 Patent File History (EX1002), pages 154-216. The one-year priority deadline for the '502 Provisional was June 24, 2006, which was St. John the Baptist Day in Canada, a public holiday in Quebec. *Id.*, pages 193 and 194. The holiday was observed on Monday June 26, 2006, and the Canadian Intellectual Property Office was closed. *Id.* The '040 PCT Application was thus filed Tuesday June 27, 2006, and the Applicant pointed to Rule PCT 80.5 to show that the application was timely filed. *Id.*, pages 163 and 164.

This issue was not resolved during prosecution because shortly after filing an Appeal Brief, the Applicant filed an amendment to amend the claims to focus on the embodiment shown in Figs. 9-14 that was added in the '225 patent as new matter not supported by the original filing. *Id.*, pages 139-146.

As amended, claim 2 focused on the ends of the first and second elongate electrical connectors being in substantial alignment along a line orthogonal to the longitudinal axis, which Applicant argued is shown in Fig. 11. *Id*. The dependent claims were unchanged and as a result many do not align well with the embodiment shown in Fig. 11. The new claims were rejected based on Ciancanelli in view of U.S. Patent No. 7,033,203 to Titchener ("Titchener"). *Id.*, pages 129-136.

In view of this rejection, claim 2 was further amended to recite that all of the electrical connectors of the lamp device were in substantial alignment along the line orthogonal to the longitudinal axis. *Id.*, pages 110-121. New independent claims 24 and 25 were added that were similar to claim 2, except that they recited that none of the elongate electrical connectors is staggered and that ends of all of the pairs of electrical connectors are in substantial alignment. *Id.* The Applicant never addressed Titchener. Instead, the Applicant's arguments related to Ciancanelli. The Applicant argued that even though claim 2 only recites a first and a second electrical connector, the term "all" should be given its plain meaning that the limitation would apply to more than two electrical connectors as well. *Id.*, pages 119 and 120. The Applicant thereby argued that Ciancanelli could not invalidate claim 2 because the ends of all its electrical connectors are not aligned along one line. *Id.*

C. Level of Ordinary Skill in the Art

A person having ordinary skill in the art for the '654 Patent, at the time of the earliest alleged priority date of June 24, 2005, 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.

IV. CLAIM CONSTRUCTION (37 C.F.R. § 42.104(b)(3))

To Petitioner's knowledge, neither the Board nor any court has construed any claim term of the '654 Patent. No claim of the '654 Patent includes a "means plus

function" limitation. Accordingly, no claim term needs to be construed under 35 U.S.C. § 112(f). For purposes of this Petition, the following construction for the term "aligned in a spaced relationship with respect to a line orthogonal to the longitudinal axis" will be applied: the connectors are spaced in a direction orthogonal to the longitudinal axis.

The remaining terms should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art in view of the '654 prosecution history. 37 C.F.R. § 42.100(b).

V. GROUNDS FOR UNPATENTABILITY AND RELIEF REQUESTED (37 C.F.R. § 42.104(b))

Petitioner requests institution of inter partes review and cancellation of Claims 1 through 24 of the '654 Patent on the following grounds:

Ground	Prior Art	Basis	Claims Challenged
1	*Ellner* in view of *Titchener*	§ 103 (obviousness)	1-5, 8-19, 23, and 24
2	*Ellner* in view of *Titchener* and *Solymar*	§ 103 (obviousness)	20-22

VI. THE CHALLENGED CLAIMS OF THE '654 PATENT ARE UNPATENTABLE (37 C.F.R. § 42.104(b)(4),(5))

A. Ground 1: *Ellner* in view of *Titchener* renders claims *1-5, 8-19, 23, and 24* obvious

U.S. Patent No. 4,700,101 to Ellner et al. ("Ellner") was filed February 7, 1985 and is prior art to the '654 Patent under 35 U.S.C. § 102(b) (pre-AIA). Ellner

(EX1006). Ellner was not cited during prosecution of the '654 Patent. *See* '654 Patent (EX1001).

Ellner is in the same field of endeavor as, and is pertinent to, the '654 Patent. The '654 Patent relates to a fluid treatment system that employs ultraviolet (UV) radiation to kill microorganisms that may be present in fluid. *See* '654 Patent (EX1001), 1:48-52. The '654 Patent purports to solve problems related to motion vibrating or shaking loose electrical connections. *See* '654 Patent (EX1001), 2:8-15 and 31-35. Like the '654 Patent, Ellner is directed to providing an ultraviolet light source that is rugged and reliable, for example for use in high wastewater flow rates. *See* Ellner (EX1006), 1:50-53. The Applicant admitted that Ellner is relevant prior art by referencing Ellner in the background of the application for the '654 Patent. But the Applicant failed to cite Ellner (and many other patents from the background) in an Information Disclosure Statement. Because the Examiner likewise did not cite Ellner in a PTO-892 form, it was not considered.

U.S. Patent No. 7,033,203 to Titchener ("Titchener") was filed November 3, 2004 and is prior art to the '654 Patent under 35 U.S.C. § 102(b) (pre-AIA). Titchener (EX1007). Titchener was cited during prosecution of the '654 Patent. *See* '654 Patent (EX1001).

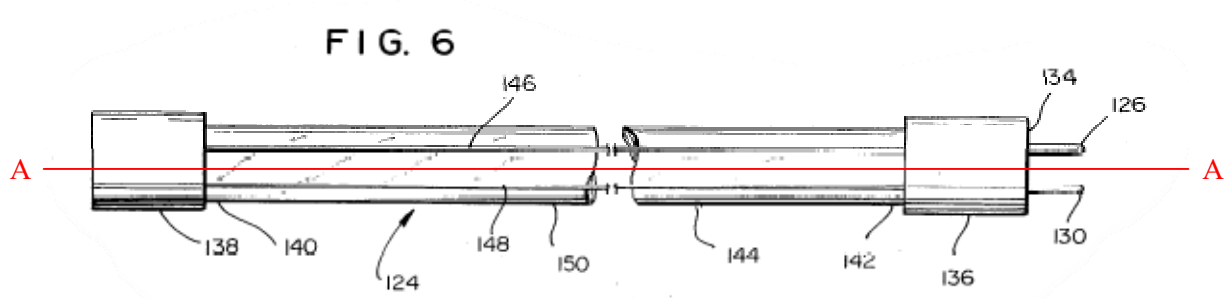
Titchener is in a similar filed of endeavor as, and is pertinent to, the '654 Patent. Titchener is directed to connection pairs for detachably connecting cable

ends, cords, optical fibers, or hoses, which will create a reliable connection. *See* Titchener (EX1007), Abstract. Like the '654 Patent, Titchener prevents loosening of electrical connections, for example when a force is exerted on ends of the cord. *See* Titchener (EX1007), 1:9-35.

1. Claim 1

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

Ellner discloses a UV Lamp 124 used in water purification applications having a longitudinal axis represented as A-A in annotated Fig. 6 below.



See Ellner (EX1006), Fig. 6 annotated.

b. *[1.1]* a first elongate electrical connector and a second elongate electrical connector,

The '654 Patent correlates a first and second elongate electrical connector with reference numerals 306 and 308. *See* '654 Patent (EX1001), 5:21-23; '654 Patent File History (EX1002), pages 118 and 119.

Ellner discloses that the UV Lamp 124 has an end cap 136 with terminal pins 126, 128, 130, and 132 projecting from a surface 134 of the end cap 136 to connect

the UV Lamp 124 to a source of electrical power. *See* Ellner (EX1006), 4:33-39 and Fig. 8. Thus, Ellner discloses a first elongate electrical connector (i.e., terminal pins 126 and 128) and a second elongate electrical connector (i.e., terminal pins 130 and 132). Therefore, the combination of Ellner and Titchener teaches limitation [1.1].

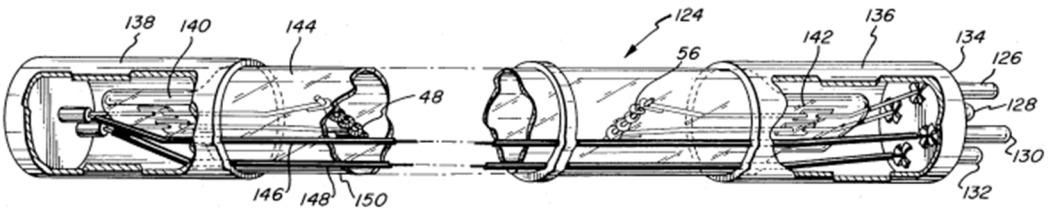
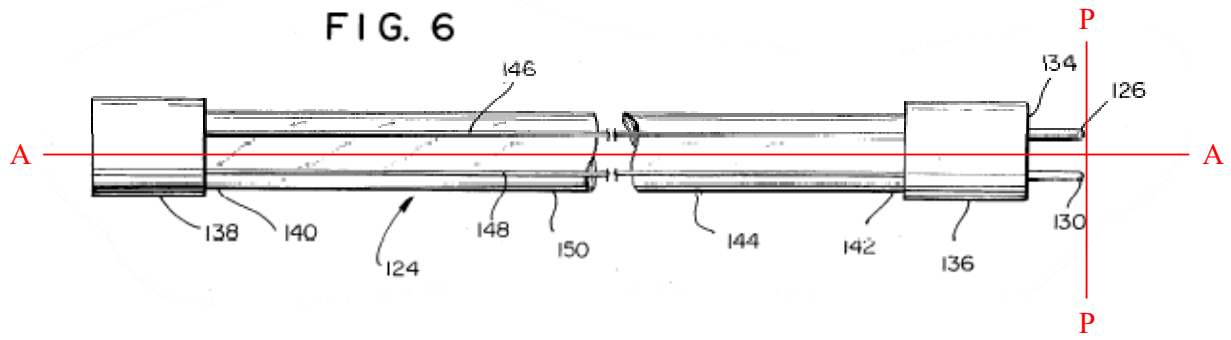


FIG. 8

c. *[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,

The '654 Patent illustrates the electrical connectors 306 and 308 being spaced from one another along the line E orthogonal to the line A. *See* '654 Patent (EX1001), 5:21-26 and Fig. 11.

Ellner likewise discloses that the terminal pins 126 and 128 and the terminal pins 130 and 132 are aligned in a spaced relationship with respect to a line represented by line P-P orthogonal to the longitudinal axis A-A as shown in annotated Fig. 6 below.



See Ellner (EX1006), Fig. 6 annotated.

Thus, Ellner discloses the first elongate electrical connector (i.e., terminal pin 126, 128) and the second elongate electrical connector (i.e., terminal pin 130, 132) being aligned in a spaced relationship with respect to a line (i.e., line P-P in annotated Fig. 6) orthogonal to the longitudinal axis (i.e., line A-A in annotated Fig. 6). Therefore, the combination of Ellner and Titchener teaches limitation [1.2].

d. *[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,

Ellner does not expressly disclose that the terminal pins form an oblique angle with respect to the longitudinal axis. But in the same field of endeavor, Titchener does expressly teach electrical connectors that form an oblique angle with respect to the longitudinal axis.

In particular, Titchener discloses that a connector 1 includes male coupling parts 5a and 5b that are formed at an oblique angle with respect to a longitudinal

axis, represented by line A-A in annotated Fig. 1 below, for connecting cables 3 and 4 to each other. *See* Titchener (EX1007), 3:36-50 and Fig. 1. The connectors 5a and 5b are also disposed at an angle from the surface they emanate from and substantially parallel to each other similar to Fig. 11 of the '654 Patent.

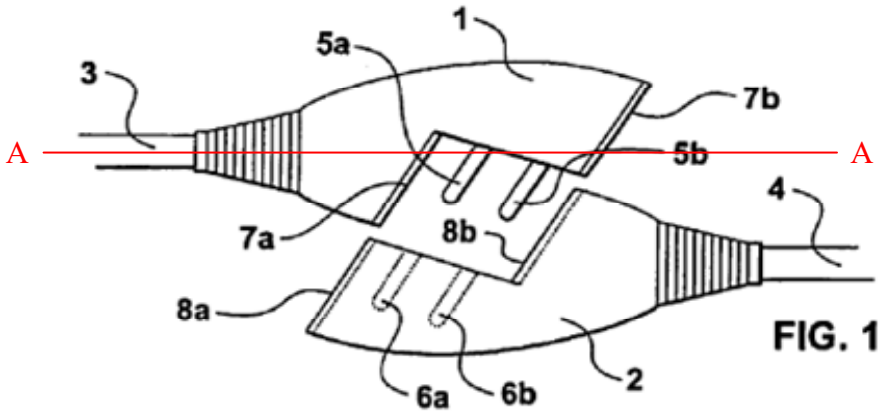


FIG. 1

See Titchener (EX1007), Fig. 1 annotated.

Thus, based on the disclosure of Titchener, it was known in the art of electrical connectors that connector pins can be configured to form an angle relative to the longitudinal axis of the device to prevent the connectors from being easily unplugged. *See* Titchener (EX1007), 1:19-27.

It would have been obvious to one of ordinary skill in the art to modify 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. Such a modification would be a simple substitution of one known element (i.e., angled connectors 5a and 5b of Titchener) for another

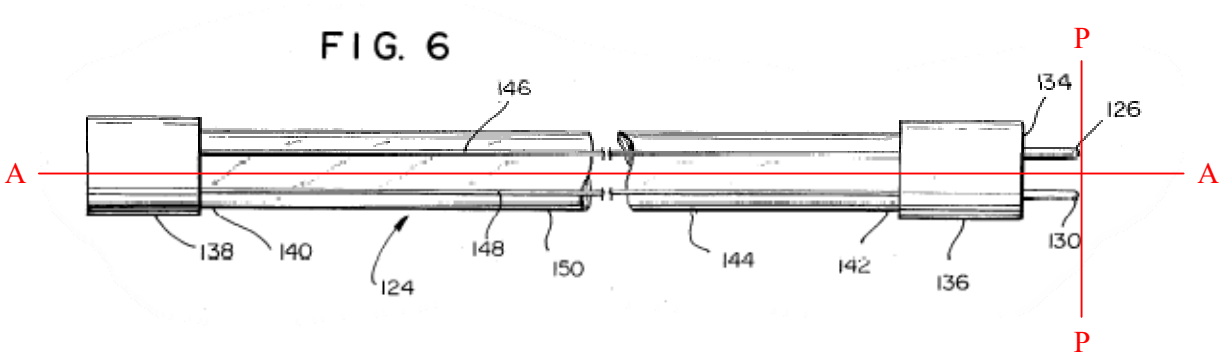
(i.e., non-angled terminal pins 126, 128, 130, and 132 of Ellner) to obtain predictable results.

Such a modification would also be applying a known technique (i.e., use of angled connectors) to a known device ready for improvement (any embodiment of Ellner) to yield predictable results.

Thus, Ellner in view of Titchener teaches 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. Therefore, the combination of Ellner and Titchener teaches limitation [1.3].

e. *[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.

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.



See Ellner (EX1006), Fig. 6 annotated.

This is a common arrangement for end caps containing electrical terminal pins in fluorescent and UV lamps. *See also* Csoknyai (EX1009), Fig. 2; Russell (EX1010), Fig. 7.

Thus, Ellner discloses ends of all of the electrical connectors (i.e., terminal pins 126, 128, 130, and 132) of the lamp device being in substantial alignment along a plane orthogonal to the longitudinal axis. Therefore, the combination of Ellner and Titchener teaches limitation [1.4].

Accordingly, the combination of Ellner and Titchener discloses all of the limitations of claim 1.

2. Claim 2

Claim 2 recites: "The lamp device defined in claim 1, wherein the first elongate electrical connector and the second elongate electrical connector are substantially parallel with respect to one another." *See* '654 Patent (EX1001), 6:15-18.

Ellner discloses that the terminal pins 126, 128, 130, and 132 are substantially parallel with respect to one another. *See* Ellner (EX1006), Fig. 6. Likewise, Titchener discloses that the male coupling parts 5a and 5b are substantially parallel to one another. *See* Titchener (EX1007), Fig. 1. Accordingly, modifying the terminal pins of Ellner to be angled like the male coupling parts of Titchener will maintain the substantially parallel arrangement of Ellner.

Thus, Ellner in view of Titchener teaches the lamp device as defined in claim 1, wherein the first elongate electrical connector (i.e., terminal pin 126, 128) and the second elongate electrical connector (i.e., terminal pin 130, 132) are substantially parallel with respect to one another. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 2.

3. Claim 3

Claim 3 recites: "The lamp device defined in claim 1, further comprising an elongate radiation emitting cavity comprising the longitudinal axis." *See* '654 Patent (EX1001), 6:19-21.

Ellner discloses that the end cap 136 has a cavity that includes the longitudinal axis, as shown below:

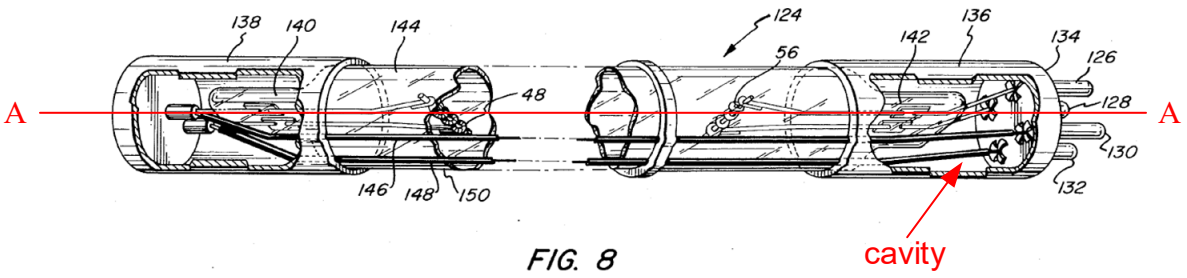


FIG. 8

See Ellner (EX1006), annotated Fig. 8.

Thus, Ellner in view of Titchener teaches a lamp device as defined in claim 1, further comprising an elongate radiation emitting cavity (i.e., the cavity in annotated Fig. 8) comprising the longitudinal axis (i.e., axis A-A in annotated Fig. 8). Therefore, the combination of Ellner and Titchener teaches the limitations of claim 3.

4. Claim 4

Claim 4 recites: "The lamp device defined in claim 1, wherein at least one of the first elongate electrical connector and the second elongate electrical connector comprises a male portion of a male-female connection system." *See* '654 Patent (EX1001), 6:22-25.

Ellner discloses that the terminal pins 126, 128, 130, and 132 are a male portion of a male-female connection. In particular, Ellner discloses that the terminal pins 126, 128, 130, and 132 project from the surface 108 of the end cap 110. *See* Ellner (EX1006), 4:33-39 and Fig. 6. Likewise, Titchener discloses that the electrical

connectors are male coupling parts 5a and 5b for engaging female coupling parts 6a and 6b. *See* Titchener (EX1007), 3:38-41 and Fig. 1.

Thus, Ellner in view of Titchener teaches a lamp device defined in claim 1, wherein at least one of the first elongate electrical connector (i.e., terminal pin 126, 128) and the second elongate electrical connector (i.e., terminal pin 130, 132) comprises a male portion (i.e., terminal pin 126, 128, 130, 132) of a male-female connection system. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 4.

5. Claim 5

Claim 5 recites: "The lamp device defined in claim 1, wherein each of the first elongate electrical connector and the second elongate electrical connector comprises a male portion of a male-female connection system." *See* '654 Patent (EX1001), 6:26-29.

Ellner discloses that the terminal pins 126, 128, 130, and 132 are a male portion of a male-female connection. In particular, Ellner discloses that the terminal pins 126, 128, 130, and 132 project from the surface 108 of the end cap 110. *See* Ellner (EX1006), 4:33-39 and Fig. 6. Likewise, Titchener discloses that the electrical connectors are male coupling parts 5a and 5b for engaging female coupling parts 6a and 6b. *See* Titchener (EX1007), 3:38-41 and Fig. 1.

Thus, Ellner in view of Titchener teaches a lamp device defined in claim 1, wherein each of the first elongate electrical connector (i.e., terminal pin 126, 128) and the second elongate electrical connector (i.e., terminal pin 130, 132) comprises a male portion (i.e., terminal pin 126, 128, 130, 132) of a male-female connection system. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 5.

6. Claim 8

Claim 8 recites: "The lamp device defined in claim 1, comprising a pair of first elongate electrical connectors and a pair of second elongate electrical connectors." *See* '654 Patent (EX1001), 6:41-43.

Ellner discloses a pair of first terminal pins 126 and 128 and a pair of second terminal pins 130 and 132. *See* Ellner (EX1006), 4:33-39 and Fig. 8.

Thus, Ellner in view of Titchener teaches a lamp device defined in claim 1, comprising a pair of first elongate electrical connectors (i.e., terminal pins 126 and 128) and a pair of second elongate electrical connectors (i.e., terminal pins 130 and 132). Therefore, the combination of Ellner and Titchener teaches the limitations of claim 8.

7. Claim 9

Claim 9 recites: "The lamp device defined in claim 8, wherein the pair of first elongate electrical connectors are in substantial alignment along a line orthogonal to the longitudinal axis." *See* '654 Patent (EX1001), 6:44-46.

Ellner discloses a pair of first terminal pins 126 and 128 in alignment along the line orthogonal to the longitudinal axis. *See* Ellner (EX1006), Fig. 6 and Fig. 8.

Thus, Ellner in view of Titchener teaches a lamp device defined in claim 8, wherein the pair of first elongate electrical connectors (i.e., terminal pins 126 and 128) are in substantial alignment along a line orthogonal to the longitudinal axis. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 9.

8. Claim 10

Claim 10 recites: "The lamp device defined in claim 8, wherein the pair of second elongate electrical connectors are in substantial alignment along a line orthogonal to the longitudinal axis." *See* '654 Patent (EX1001), 6:47-49.

Ellner discloses a pair of second terminal pins 130 and 132 in alignment along the line orthogonal to the longitudinal axis. *See* Ellner (EX1006), Fig. 6 and Fig. 8.

Thus, Ellner in view of Titchener teaches a lamp device defined in claim 8, wherein the pair of second elongate electrical connectors (i.e., terminal pins 130 and 132) are in substantial alignment along a line orthogonal to the longitudinal axis.

Therefore, the combination of Ellner and Titchener teaches the limitations of claim 10.

9. Claim 11

Claim 11 recites: "The lamp device defined in claim 8, wherein the pair of first elongate electrical connectors and the pair of second elongate electrical connectors are in substantial alignment along a line orthogonal to the longitudinal axis." *See* '654 Patent (EX1001), 6:50-53.

Ellner discloses a pair of first terminal pins 126 and 128 and a pair of second terminal pins 130 and 132 in alignment along the line orthogonal to the longitudinal axis. *See* Ellner (EX1006), Fig. 6 and Fig. 8.

Thus, Ellner in view of Titchener teaches a lamp device defined in claim 8, wherein the pair of first elongate electrical connectors (i.e., terminal pins 126 and 128) and the pair of second elongate electrical connectors (i.e., terminal pins 130 and 132) are in substantial alignment along a line orthogonal to the longitudinal axis. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 11.

10. Claim 12

Claim 12 recites: "The lamp device defined in claim 1, wherein the first elongate electrical connector and the second elongate connector are disposed in a base portion at one end of the lamp device." *See* '654 Patent (EX1001), 6:54-57.

Ellner discloses that the terminal pins 126, 128, 130, and 132 project from the surface 134 of the end cap 136 at one end of the device. *See* Ellner (EX1006), 4:33-39 and Fig. 8.

The '654 Patent recites that "For example, it is possible to reverse the arrangement of electrical connectors and electrical receptacles in the illustrated embodiments--i.e., the **electrical connectors would be disposed in electrical connection base unit 150,250,350** and the electrical receptacles would be disposed in electrical connection base unit 100,200,300." *See* '654 Patent (EX1001), 5:43-49 (emphasis added). Thus, the '654 Patent uses the term "disposed in" to mean that the electrical connectors are provided in the base portion or base unit 350.

Ellner in view of Titchener teaches a lamp device defined in claim 1, wherein the first elongate electrical connector (i.e., terminal pin 126, 128) and the second elongate connector (i.e., terminal pin 130, 132) are disposed in a base portion (i.e., end cap 136) at one end of the lamp device. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 12.

11. Claim 13

Claim 13 recites: The lamp device defined in claim 12, wherein a cross-section of the base portion containing the longitudinal axis comprises an undulating shape. *See* '654 Patent (EX1001), 6:58-60.

Ellner does not expressly disclose that a cross-section of the base portion containing the longitudinal axis comprises an undulating shape, but Titchener discloses this feature. In particular, Titchener discloses that a connector 1 includes an undulating shape in the cross-section containing its longitudinal axis. The undulating shape allows for more contact areas between the connector 1 and the connector 2. Such a modification would be a simple substitution of one known element (i.e., connectors with undulating shape of Titchener) for another (i.e., non-undulating shape of Ellner) to obtain predictable results.

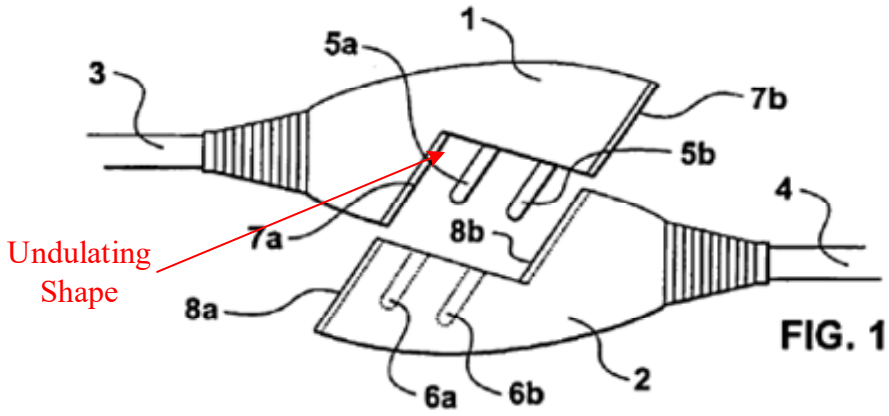


FIG. 1

See Titchener (EX1007), Fig. 1 annotated.

Thus, Ellner in view of Titchener teaches a cross-section of the base portion containing the longitudinal axis comprises an undulating shape. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 13.

12. Claim 14

Claim 14 recites: The lamp device defined in claim 12, wherein a cross-section of the base portion containing the longitudinal axis comprises at least one peak and at least one valley. *See* '654 Patent (EX1001), 6:61-63.

Ellner does not expressly disclose that a cross-section of the base portion containing the axis comprises a peak and a valley, but Titchener does disclose this feature. In particular, Titchener discloses that a connector 1 includes a peak and a valley, and the connector 2 has a corresponding shape. The shape allows for more contact areas between the connector 1 and the connector 2. Such a modification would be a simple substitution of one known element (i.e., connectors with peaks and valleys of Titchener) for another (i.e., no peaks and valleys of Ellner) to obtain predictable results.

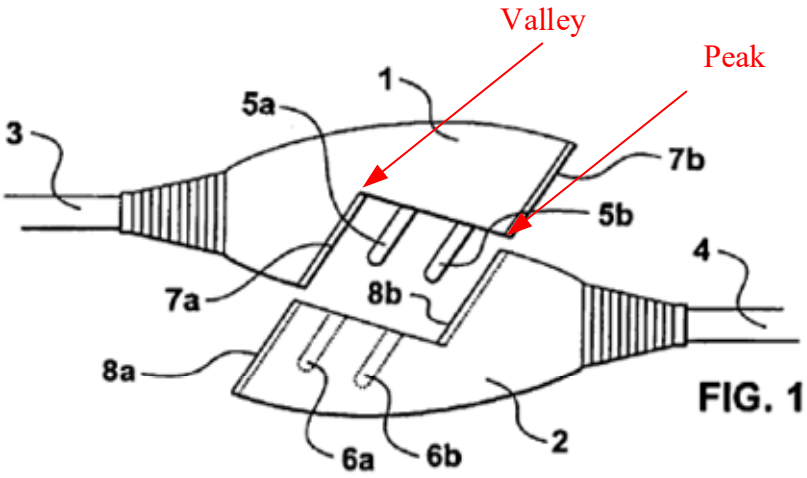


FIG. 1

See Titchener (EX1007), Fig. 1 annotated.

Thus, Ellner in view of Titchener teaches a cross-section of the base portion containing the longitudinal axis comprises at least one peak and at least one valley. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 14.

13. Claim 15

Claim 15 recites: The lamp device defined in claim 14, wherein the first elongate electrical connector and the second elongate electrical connector are offset with regard to the at least one peak or the at least one valley. *See* '654 Patent (EX1001), 6:64-67.

Titchener discloses that a connector 1 includes a peak and a valley, and that the male coupling parts 5a and 5b are offset from the peak and valley. Such a modification would be a simple substitution of one known element (i.e., connectors with peaks and valleys of Titchener) for another (i.e., no peaks and valleys of Ellner) to obtain predictable results.

Thus, Ellner in view of Titchener teaches the first elongate electrical connector and the second elongate electrical connector are offset with regard to the at least one peak or the at least one valley. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 15.

14. Claim 16

Claim 16 recites: The lamp device defined in claim 14, wherein the first elongate electrical connector and the second elongate electrical connector are offset with regard to both of the at least one peak and the at least one valley. *See* '654 Patent (EX1001), 7:1-4.

Titchener discloses that a connector 1 includes a peak and a valley, and that the male coupling parts 5a and 5b are offset from both the peak and valley. Such a modification would be a simple substitution of one known element (i.e., connectors with peaks and valleys of Titchener) for another (i.e., no peaks and valleys of Ellner) to obtain predictable results.

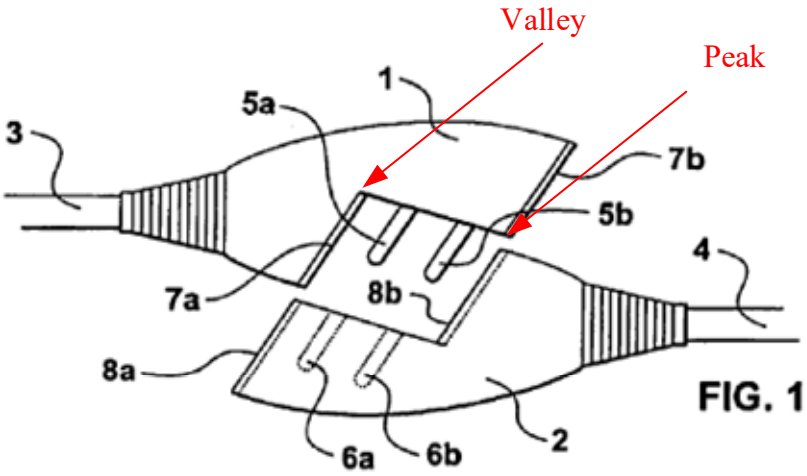
Thus, Ellner in view of Titchener teaches the first elongate electrical connector and the second elongate electrical connector are offset with regard to both of the at least one peak or the at least one valley. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 16.

15. Claim 17

Claim 17 recites: The lamp device defined in claim 12, wherein a cross-section of the base portion containing the longitudinal axis comprises a single peak and a single valley. *See* '654 Patent (EX1001), 7:5-7.

Titchener discloses that a connector 1 includes a single peak and a single valley, and the connector 2 has a corresponding shape. The shape allows for more

contact areas between the connector 1 and the connector 2. Such a modification would be a simple substitution of one known element (i.e., connectors with peaks and valleys of Titchener) for another (i.e., no peaks and valleys of Ellner) to obtain predictable results.



See Titchener (EX1007), Fig. 1 annotated.

Thus, Ellner in view of Titchener teaches a cross-section of the base portion containing the longitudinal axis comprises a single peak and a single valley. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 17.

16. Claim 18

Claim 18 recites: The lamp device defined in claim 17, wherein the first elongate electrical connector and the second elongate electrical connector are offset with regard to the single peak or the single valley. *See* '654 Patent (EX1001), 7:8-11.

Titchener discloses that a connector 1 includes a single peak and a single valley, and that the male coupling parts 5a and 5b are offset from the peak and valley. Such a modification would be a simple substitution of one known element (i.e., connectors with peaks and valleys of Titchener) for another (i.e., no peaks and valleys of Ellner) to obtain predictable results.

Thus, Ellner in view of Titchener teaches the first elongate electrical connector and the second elongate electrical connector are offset with regard to the single peak or the single valley. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 18.

17.Claim 19

Claim 19 recites: The lamp device defined in claim 17, wherein the first elongate electrical connector and the second elongate electrical connector are offset with regard to both of the single peak and the single valley. *See* '654 Patent (EX1001), 7:12-15.

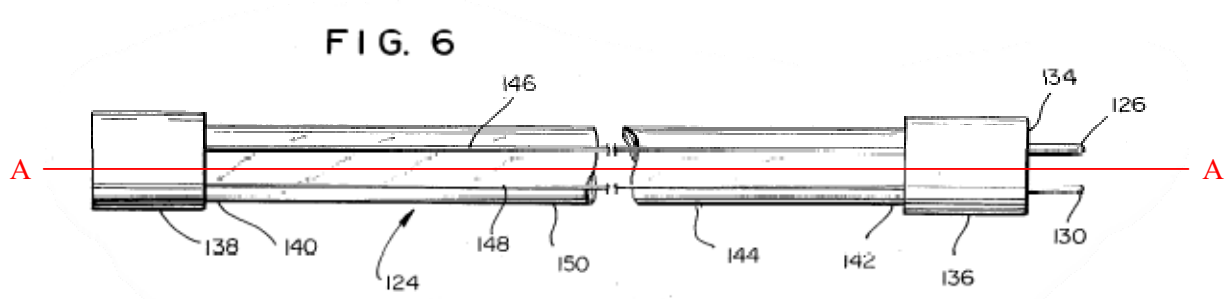
Titchener discloses that a connector 1 includes a single peak and a single valley, and that the male coupling parts 5a and 5b are offset from both the peak and valley. Such a modification would be a simple substitution of one known element (i.e., connectors with peaks and valleys of Titchener) for another (i.e., no peaks and valleys of Ellner) to obtain predictable results.

Thus, Ellner in view of Titchener teaches the first elongate electrical connector and the second elongate electrical connector are offset with regard to both of the single peak and the single valley. Therefore, the combination of Ellner and Titchener teaches the limitations of claim 19.

18. Claim 23

a. *[23.P]* A lamp device having a longitudinal axis, and comprising:

Ellner discloses a UV Lamp 124 used in water purification applications having a longitudinal axis represented as A-A in annotated Fig. 6 below.



See Ellner (EX1006), Fig. 6 annotated

b. *[23.1]* a first elongate electrical connector and a second elongate electrical connector,

The '654 Patent correlates a first and second elongate electrical connector with reference numerals 306 and 308. *See* '654 Patent (EX1001), 5:21-23; '654 Patent File History (EX1002), pages 118 and 119.

Ellner discloses that the UV Lamp 124 has an end cap 136 with terminal pins 126, 128, 130, and 132 projecting from a surface 134 of the end cap 136 to connect

the UV Lamp 124 to a source of electrical power. *See* Ellner (EX1006), 4:33-39 and Fig. 8. Thus, Ellner discloses a first elongate electrical connector (i.e., terminal pins 126 and 128) and a second elongate electrical connector (i.e., terminal pins 130 and 132). Therefore, the combination of Ellner and Titchener teaches limitation [23.1].

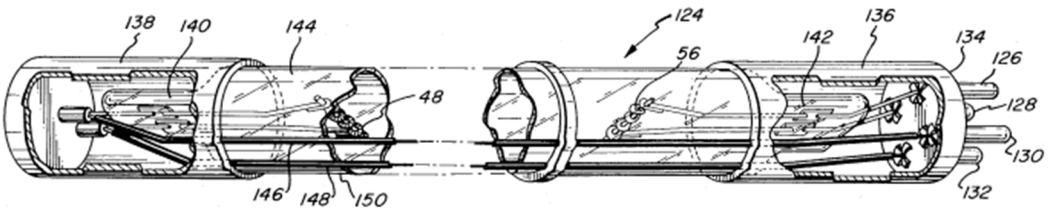
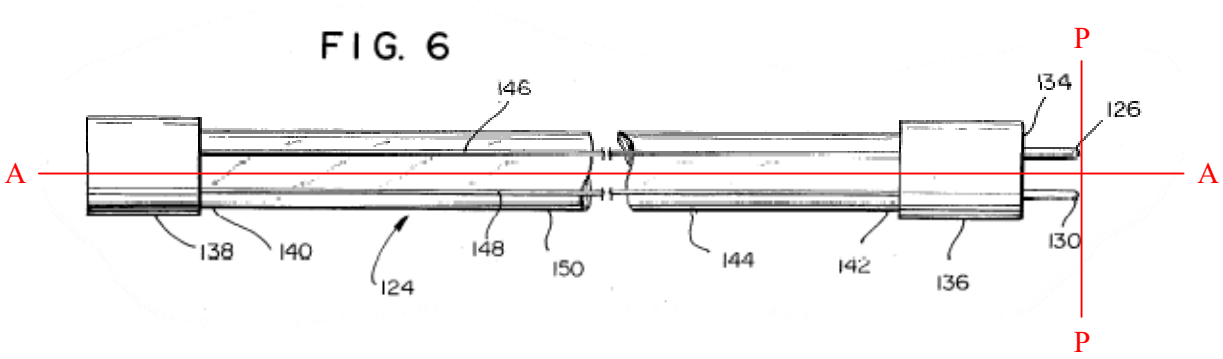


FIG. 8

c. *[23.2]* 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,

The '654 Patent illustrates the electrical connectors 306 and 308 being spaced from one another along the line E orthogonal to the line A. *See* '654 Patent (EX1001), 5:21-26 and Fig. 11.

Ellner likewise discloses that the terminal pins 126 and 128 and the terminal pins 130 and 132 are aligned in a spaced relationship with respect to a line represented by line P-P orthogonal to the longitudinal axis A-A as shown in annotated Fig. 6 below.



See Ellner (EX1006), Fig. 6 annotated.

Thus, Ellner discloses the first elongate electrical connector (i.e., terminal pin 126, 128) and the second elongate electrical connector (i.e., terminal pin 130, 132) being aligned in a spaced relationship with respect to a line (i.e., line P-P in annotated Fig. 6) orthogonal to the longitudinal axis (i.e., line A-A in annotated Fig. 6). Therefore, the combination of Ellner and Titchener teaches limitation [23.2].

d. *[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,

Ellner does not expressly disclose that the terminal pins form an oblique angle with respect to the longitudinal axis. But in the same field of endeavor, Titchener does expressly teach electrical connectors that form an oblique angle with respect to the longitudinal axis.

In particular, Titchener discloses that a connector 1 includes male coupling parts 5a and 5b that are formed at an oblique angle with respect to a longitudinal

axis represented by line A-A in annotated Fig. 1 below for connecting cables 3 and 4 to each other. *See* Titchener (EX1007), 3:36-50 and Fig. 1). The connectors 5a and 5b are also disposed at an angle from the surface they emanate from and substantially parallel to each other similar to Fig. 11 of the '654 Patent.

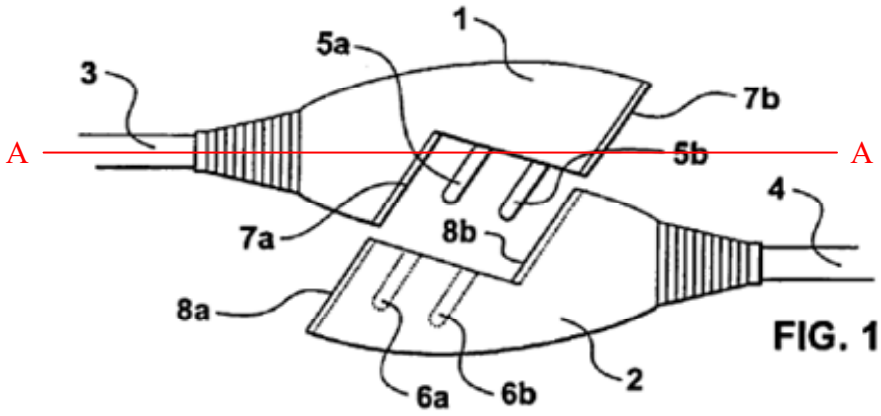


FIG. 1

See Titchener (EX1007), Fig. 1 annotated.

Thus, based on the disclosure of Titchener, it was known in the art of electrical connectors that connector pins can be configured to form an angle relative to the longitudinal axis of the device to prevent the connectors from being easily unplugged. *See* Titchener (EX1007), 1:19-27).

It would have been obvious to one of ordinary skill in the art to modify the terminal pins 126, 128, 130, and 132 of Ellner to be angled relative to the longitudinal axis as shown in Titchener to create a reliable connection between cables as disclosed in Titchener. Such a modification would be a simple substitution of one known element (i.e., angled connectors 5a and 5b of Titchener) for another

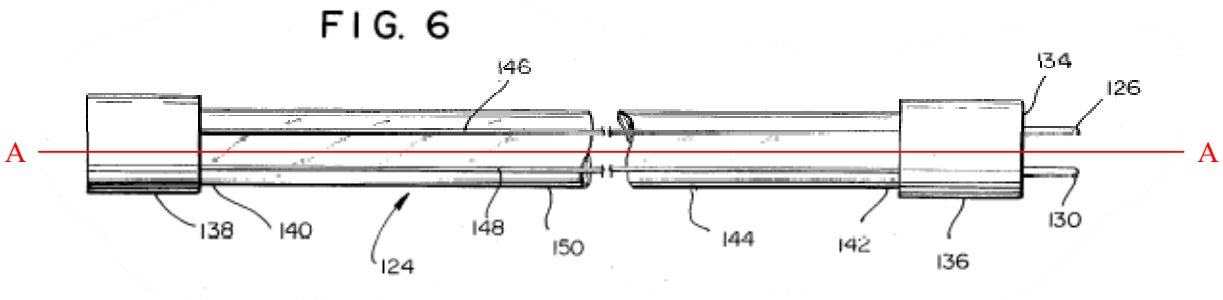
(i.e., non-angled terminal pins 126, 128, 130, and 132 of Ellner) to obtain predictable results.

Such a modification would also be applying a known technique (i.e., use of angled connectors) to a known device ready for improvement (any embodiment of Ellner) to yield predictable results.

Thus, Ellner in view of Titchener teaches 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. Therefore, the combination of Ellner and Titchener teaches limitation [23.3].

e. *[23.4]* none of the elongate electrical connectors of the lamp device being staggered with respect to the longitudinal axis.

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 Fig. 6 below.



See Ellner (EX1006), Fig. 6 annotated.

This is a common arrangement for end caps containing electrical terminal pins in fluorescent and UV lamps. *See also* Csoknyai (EX1009), Fig. 2; Russell (EX1010), Fig. 7.

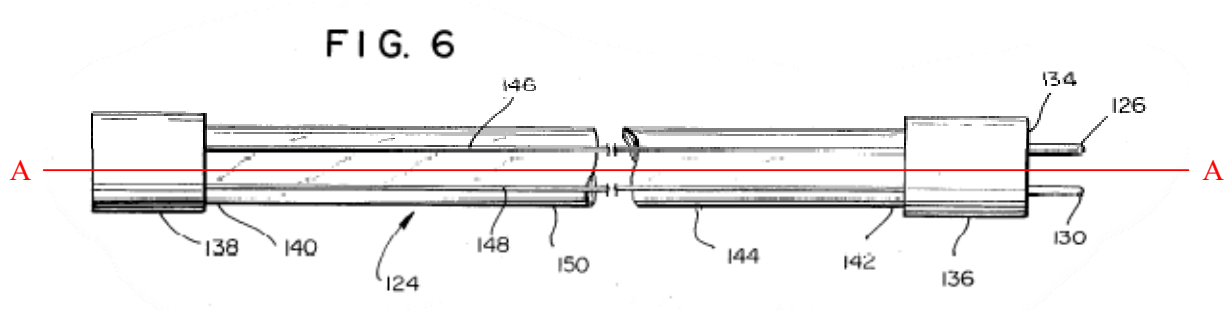
Thus, Ellner discloses that none of the electrical connectors (i.e., terminal pins 126, 128, 130, and 132) of the lamp device is staggered with respect to the longitudinal axis. Therefore, the combination of Ellner and Titchener teaches limitation [23.4].

Accordingly, the combination of Ellner and Titchener discloses all of the limitations of claim 23.

19. Claim 24

a. *[24.P]* A lamp device having a longitudinal axis, and comprising:

Ellner discloses a UV Lamp 124 used in water purification applications having a longitudinal axis represented as A-A in annotated Fig. 6 below.



See Ellner (EX1006), Fig. 6 annotated.

b. *[24.1]* a first pair of elongate electrical connectors and a second pair of elongate electrical connectors,

The '654 Patent correlates a first pair of elongate electrical connectors and a second pair of elongate electrical connectors with reference numerals 306 and 308. *See* '654 Patent (EX1001), 5:21-23; '654 Patent File History (EX1002), pages 118 and 119.

Ellner discloses that the UV Lamp 124 has an end cap 136 with terminal pins 126, 128, 130, and 132 projecting from a surface 134 of the end cap 136 to connect the UV Lamp 124 to a source of electrical power. *See* Ellner (EX1006), 4:33-39 and Fig. 8. Thus, Ellner discloses a first pair of elongate electrical connectors (i.e., terminal pins 126 and 128) and a second pair of elongate electrical connectors (i.e., terminal pins 130 and 132). Therefore, the combination of Ellner and Titchener teaches limitation [24.1].

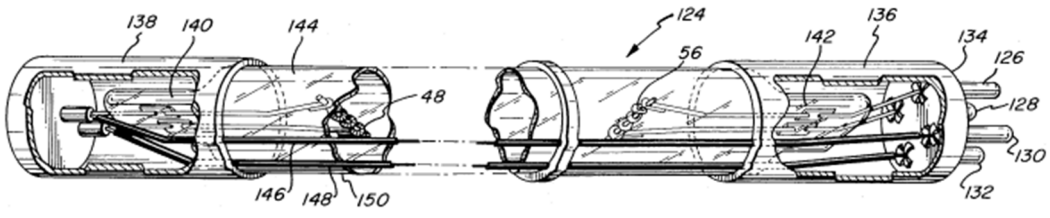
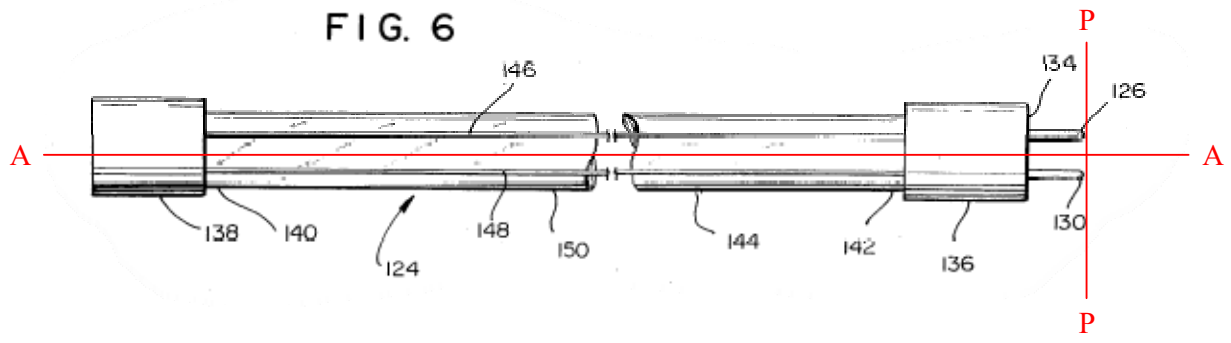


FIG. 8

c. *[24.2]* the first pair of elongate electrical connectors and the second pair of elongate electrical connectors being aligned in a spaced relationship with respect to a line orthogonal to the longitudinal axis,

The '654 Patent illustrates the electrical connectors 306 and 308 being spaced from one another along the line E orthogonal to the line A. *See* '654 Patent (EX1001), 5:21-26 and Fig. 11.

Ellner likewise discloses that the terminal pins 126 and 128 and the terminal pins 130 and 132 are aligned in a spaced relationship with respect to a line represented by line P-P orthogonal to the longitudinal axis A-A as shown in annotated Fig. 6 below.



See Ellner (EX1006), Fig. 6 annotated.

Thus, Ellner discloses the first pair of elongate electrical connectors (i.e., terminal pins 126 and 128) and the second pair of elongate electrical connectors (i.e., terminal pins 130 and 132) being aligned in a spaced relationship with respect to a

line (i.e., line P-P in annotated Fig. 6) orthogonal to the longitudinal axis (i.e., line A-A in annotated Fig. 6). Therefore, the combination of Ellner and Titchener teaches limitation [24.2].

d. *[24.3]* each of the elongate electrical connectors configured to form an oblique angle with respect to the longitudinal axis,

Ellner does not expressly disclose that the terminal pins form an oblique angle with respect to the longitudinal axis. But in the same field of endeavor, Titchener expressly teaches electrical connectors that form an oblique angle with respect to the longitudinal axis.

In particular, Titchener discloses that a connector 1 includes male coupling parts 5a and 5b that are formed at an oblique angle with respect to a longitudinal axis represented by line A-A in annotated Fig. 1 below for connecting cables 3 and 4 to each other. *See* Titchener (EX1007), 3:36-50 and Fig. 1. The connectors 5a and 5b are also disposed at an angle from the surface they emanate from and substantially parallel to each other similar to Fig. 11 of the ‘654 Patent.

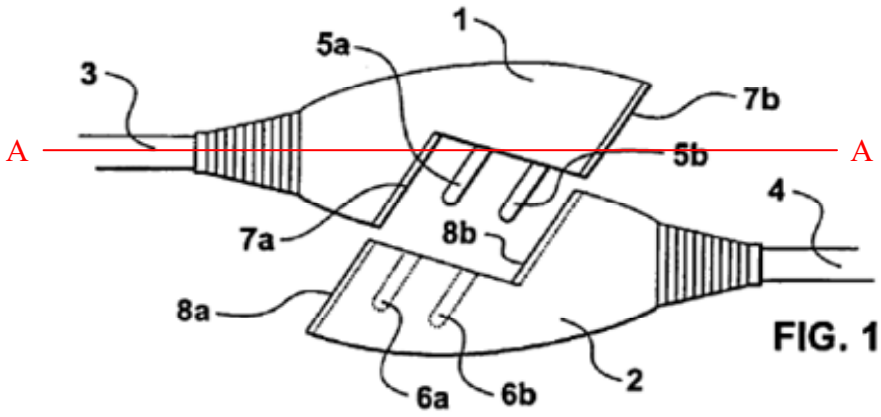


FIG. 1

See Titchener (EX1007), Fig. 1 annotated.

Thus, based on the disclosure of Titchener, it was known in the art of electrical connectors that connector pins can be configured to form an angle relative to the longitudinal axis of the device to prevent the connectors from being easily unplugged. *See* Titchener (EX1007), 1:19-27.

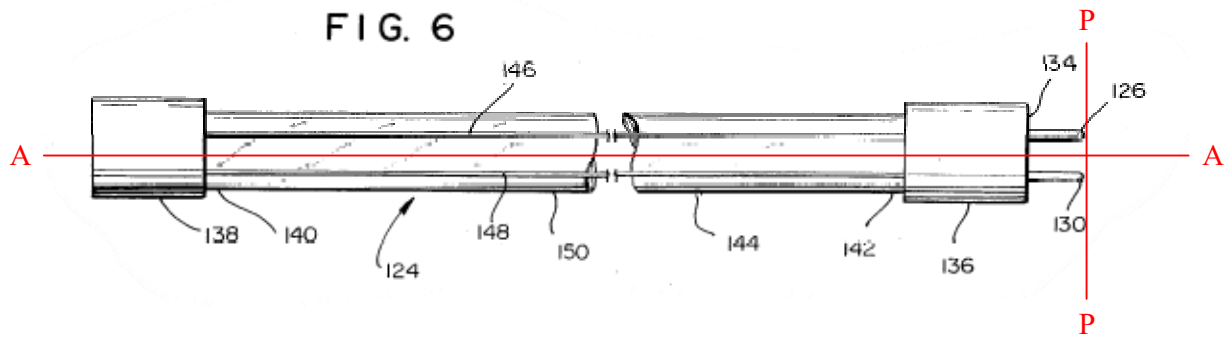
It would have been obvious to one of ordinary skill in the art to modify the terminal pins 126, 128, 130, and 132 of Ellner to be angled relative to the longitudinal axis as shown in Titchener to create a reliable connection between cables as disclosed in Titchener. Such a modification would be a simple 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.

Such a modification would also be applying a known technique (i.e., use of angled connectors) to a known device ready for improvement (any embodiment of Ellner) to yield predictable results.

Thus, Ellner in view of Titchener teaches each of the elongate electrical connectors (i.e., terminal pins 126, 128, 130, and 132 modified to be angled as shown in Titchener) configured to form an oblique angle with respect to the longitudinal axis. Therefore, the combination of Ellner and Titchener teaches limitation [24.3].

e. *[24.4]* ends of all of the electrical connectors being in substantial alignment along a plane orthogonal to the longitudinal axis.

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.



See Ellner (EX1006), Fig. 6 annotated.

This is a common arrangement for end caps containing electrical terminal pins in fluorescent and UV lamps. *See also* Csoknyai (EX1009), Fig. 2; Russell (EX1010), Fig. 7.

Thus, Ellner discloses ends of all of the electrical connectors (i.e., terminal pins 126, 128, 130, and 132) being in substantial alignment along a plane orthogonal to the longitudinal. Therefore, the combination of Ellner and Titchener teaches limitation [24.4].

Accordingly, the combination of Ellner and Titchener discloses all of the limitations of claim 24.

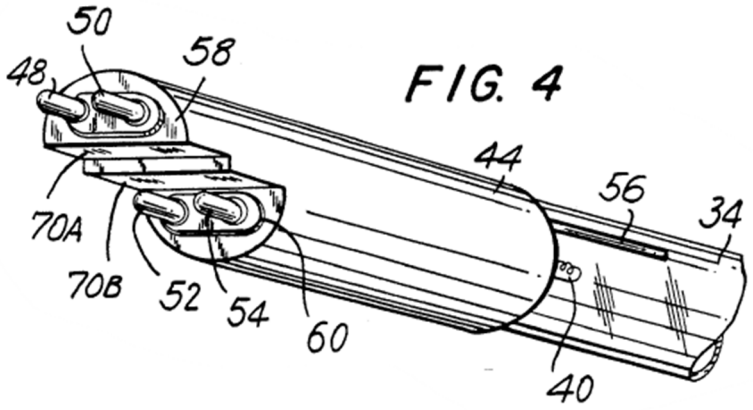
B. *Ellner* in view of *Titchener* and *Solymar* renders claims *20-22* obvious

U.S. Patent No. 5,166,527 to Solymar ("Solymar") was filed December 9, 1991 and is prior art to the '654 Patent under 35 U.S.C. § 102(b) (pre-AIA). Solymar (EX1008). Solymar was cited during prosecution of the '654 Patent. *See* '654 Patent (EX1001). Solymar is in a similar filed of endeavor as, and is pertinent to, the '654 Patent. Solymar is related to ultraviolet lamps used in water purifiers. *See* Solymar (EX1008), 1:8-10.

1. Claim 20

Claim 20 recites: The lamp device defined in claim 12, wherein a cross-section of the base portion containing the longitudinal axis comprises at a plurality of peaks and a plurality of valleys. *See* '654 Patent (EX1001), 7:16-18.

Neither Ellner nor Titchener discloses a plurality of peaks and a plurality of valleys, but in the same field of endeavor, Solymar discloses a connector having a plurality of peaks and valleys. Solymar discloses that the wall 70 may be stepped and include any number of exterior wall sections. *See* Solymar (EX1008), 4:39-42.



See Solymar (EX1008), Fig. 4.

It would be obvious to one of ordinary skill in the art to modify the combination of Ellner and Titchener with Solymar to include additional peaks and valleys to apply an additional physical obstruction to arcing. *See* Solymar (EX1008), 4:36-38. Such a modification would be a simple substitution of one known element (i.e., a peak and valley of Titchener) for another (i.e., multiple peaks and valleys of Solymar) to obtain predictable results.

Thus, Ellner in view of Titchener and Solymar teaches a cross-section of the base portion containing the longitudinal axis comprises at a plurality of peaks and a

plurality of valleys. Therefore, the combination of Ellner, Titchener and Solymar teaches the limitations of claim 20.

2. Claim 21

Claim 21 recites: The lamp device defined in claim 20, wherein the first elongate electrical connector and the second elongate electrical connector are offset with regard to the plurality of peaks or the plurality of valleys. *See* '654 Patent (EX1001), 7:18-21.

Titchener discloses that a connector 1 includes a peak and a valley, and that the male coupling parts 5a and 5b are offset from the peak and valley. Such a modification would be a simple substitution of one known element (i.e., connectors with peaks and valleys of Titchener and Solymar) for another (i.e., no peaks and valleys of Ellner) to obtain predictable results.

Thus, Ellner in view of Titchener and Solymar teaches the first elongate electrical connector and the second elongate electrical connector are offset with regard to the plurality of peaks or the plurality of valleys. Therefore, the combination of Ellner, Titchener and Solymar teaches the limitations of claim 21.

3. Claim 22

Claim 22 recites: The lamp device defined in claim 20, wherein the first elongate electrical connector and the second elongate electrical connector are offset

with regard to both of the plurality of peaks and the plurality of valleys. *See* '654 Patent (EX1001), 7:22-25.

Titchener discloses that a connector 1 includes a peak and a valley, and that the male coupling parts 5a and 5b are offset from both the peak and valley. Such a modification would be a simple substitution of one known element (i.e., connectors with peaks and valleys of Titchener and Solymar) for another (i.e., no peaks and valleys of Ellner) to obtain predictable results.

Thus, Ellner in view of Titchener and Solymar teaches the first elongate electrical connector and the second elongate electrical connector are offset with regard to the plurality of peaks or the plurality of valleys. Therefore, the combination of Ellner, Titchener and Solymar teaches the limitations of claim 22.

C. Secondary Considerations of Nonobviousness

Patent Owner has not identified any alleged secondary considerations of nonobviousness, and Petitioner is not aware of any.

VII. THE BOARD SHOULD NOT EXERCISE ITS DISCRETION TO DENY UNDER 35 U.S.C. §§ 314(a) OR § 325(d)

35 U.S.C. § 314(a) grants the Board discretion to grant or deny a petition for inter partes review. The factors the Board typically considers in making this determination are set forth in *General Plastic Industrial Co. v. Canon Kaubushiki Kaisha,* IPR 2016-01357, Paper 19 (P.T.A.B. Sept. 6, 2017) (precedential). Additionally, the Board may exercise its discretion where there is parallel litigation

between the Petition and Patent Owner is pending in a district court. *See Apple Inc. v. Fintiv Inc*., IPR2020-00019, Paper 11 at 5 (P.T.A.B. March 20, 2020) (precedential). 35 U.S.C. §§ 325(d) similarly permits denial during pendency of any post-grant review. The Board should not exercise its discretion to deny institution under either of these standards.

A. The Board Should Not Exercise its Discretion to Deny Under § 314(a)

This is Petitioner's first Petition seeking review of the '654 Patent. The only petition previously filed regarding the '654 Patent is IPR2022-00506, filed by First Light Technologies, Inc. ("FLT"). That matter was terminated following a settlement before a preliminary response was filed, much less any decision made as to institution. Petitioner here has no business relationship with FLT.

Petitioner was generally aware of an earlier patent infringement lawsuit between FLT and Patent Owner (discussed further below), but first learned of the asserted prior art when it obtained in May 2023 a copy of the FLT petition in the previous, never-instituted, IPR proceeding. Petitioner had no reason to participate in that earlier proceeding because the '654 Patent had not been asserted against it. Petitioner was first accused of infringement on May 2, 2023, and is filing this Petition just one month after that accusation. Thus, there is no *General Plastic* "follow-on petition" concern or any other reason under Section 314(a) to deny this Petition.

There also is no *Fintiv* ground for denying this Petition. There has never been any district court litigation between Petitioner and Patent Owner, relating to the '654 Patent or anything else. In fact, the only district court litigation involving allegations that the '654 Patent was infringed of which Petitioner is aware was one filed against FLT in the United States District Court for the District of Vermont, titled *Trojan Technologies Group, ULC v. First Light Technologies, Inc.*, Case No. 21-cv-214 CR (D. Vt.). That case was dismissed in conjunction with the IPR termination. No claim construction or any other substantive matters were decided during the short life of that litigation. In the absence of any litigation between Petitioner and Patent Owner, *Fintiv* is wholly inapposite.

For all of the above reasons, instituting review based on this Petition would be an efficient use of Board resources and would not raise concerns about duplication of effort between the Board and any district court. Discretionary denial under § 314(a) is unwarranted.

B. The Board Should Not Exercise Its Discretion Under § 325(d)

35 U.S.C. § 325(d) grants the Board discretion to deny institution based on earlier Patent Office proceedings, particularly where they raise "the same or substantially the same prior art or arguments previously were presented to the Office." 35 U.S.C. § 325(d). Under *Advanced Bionics*, this Board applies a two-part test in applying its discretion under § 325(d): "(1) whether the same or substantially

the same art previously was presented to the Office"; and if so "(2) … whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims." *Advanced Bionics, LLC v. Med-El Elektr. Gerate GmbH*, IPR2019-01469, Paper 6 at 8 (P.T.A.B. Feb. 13, 2020) (precedential); *see also* Paper 7 at 2-3. The "*Becton, Dickinson* factors provide useful insight into how to apply the framework under 35 U.S.C. § 325(d)." *Advanced Bionics, LLC*, IPR2019-01469, Paper 6 at 9-11 (citing *Becton, Dickinson, and Co. v. B. Braun Melsungen AG*, IPR2017-01785, Paper 8 (P.T.A.B. Dec. 15, 2017) (precedential)). Here, as discussed below, the Titchener reference was "presented to the Office" during prosecution, but the Office did not consider the primary reference applied herein. It would be inappropriate to exercise discretion to deny institution under the second step of *Advanced Bionics* and under the *Becton, Dickinson* factors.

The only prior art references applied during prosecution of the '654 Patent were Titchener, Ciancanelli, and Sabo. Applicant argued during prosecution that it was entitled to claim priority to the date the '502 Provisional application was filed, which would mean that Ciancanelli was not prior art at all. After amending the claims to claim only the embodiment shown in Figs. 9-14, which was not disclosed in the '502 Provisional, the Applicant argued that Ciancanelli, Titchener, and Sabo together did not render any claim obvious. In particular, the Applicant argued that none of Ciancanelli, Titchener, and Sabo discloses all of the electrical connectors of

the lamp being in substantial alignment along the line orthogonal to the longitudinal axis. *See* '654 File History (EX1002), page 119. The Applicant never disputed that Titchener discloses connectors configured to form an oblique angle with respect to the longitudinal axis as asserted by the Examiner. Because the Examiner agreed that Ciancanelli did not disclose ends of all the connectors being in alignment along a plane orthogonal to the longitudinal axis, the Examiner never considered Titchener independent of Ciancanelli—which she ultimately agreed was prior art—and the claims were allowed without further consideration.

The Office erred in relying on Ciancanelli, when a number of more relevant references such as Ellner, Csoknyai, Russel, and Boehme were readily available to use as primary references. Because Titchener was not considered by the Office with these highly relevant references, the Office erred in a manner material to the patentability of the challenged claims.

Thus, Petitioner has satisfied the requirement under the second step of *Advanced Bionics* and factor (e) of *Becton, Dickinson* by "demonstrate[ing] that the Office erred in a manner material to the patentability of challenged claims." *Advanced Bionic*, IPR2019-01469, Paper 6 at 8-9, 9 n.10. Moreover, at least *Becton Dickinson* factors (c) ("the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection"), (d) ("the extent of the overlap between the arguments made during examination and the

manner in which petitioner relies on the prior art"), and (f) ("the extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments") also favor institution.

VIII. CONCLUSION

For the above reasons, Petitioner requests inter partes review of Claims 1-5 and 8-24 of the '654 Patent, and that the Board ultimately determine that those claims are unpatentable based on the grounds set forth above.

IX. GROUNDS FOR STANDING UNDER 37 C.F.R. § 42.104(a)

Petitioner certifies that the '654 Patent is available for IPR. Petitioner further certifies that it is not barred or estopped from requesting an IPR challenging the '654 Patent's claims on the grounds identified above. Petitioner further certifies that the prohibitions of 35 U.S.C. §§ 315 (a)-(b) are inapplicable.

X. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

A. Real Parties In Interest — 37 C.F.R. § 42.8(b)(1)

Petitioner certifies that the real party in interest is UV Engineering Solutions LLC.

B. Related Matters — 37 C.F.R. § 42.8(b)(2)

As noted above, Patent Owner filed a lawsuit in the United States District Court for the District of Vermont, alleging that FLT infringed the '654 Patent: *Trojan Technologies Group, ULC v. First Light Technologies, Inc.*, Case No. 21-cv-214 CR (D. Vt.). That case was dismissed following a settlement between the parties.

FLT also filed a petition requesting inter partes review of the '654 Patent: IPR2022-00506. That proceeding also was terminated, pre-institution, following the settlement between the parties.

Petitioner is not aware of any ongoing judicial or administrative matter that would affect, or be affected by, a decision in this proceeding.

C. Lead and Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel. Pursuant to 37 C.F.R. § 42.10(b), a Power of Attorney is being submitted with this Petition.

LEAD COUNSEL	BACKUP COUNSEL
Patrick F. Clunk, Reg. No. 59482 TUCKER ELLIS LLP 950 Main Street, Suite 1100 Cleveland, OH 44113 Telephone: 216.592.5000 Facsimile: 216.592.5009 patrick.clunk@tuckerellis.com	Brian K. Brookey, *pro hac vice anticipated* TUCKER ELLIS LLP 1399 New York Ave. NW Suite 350 Washington, DC 20005 Telephone: 202.505.6493 Facsimile: 202.505.6410 brian.brookey@tuckerellis.com Carter Ostrowski, Reg. No. 80090 TUCKER ELLIS LLP 950 Main Street, Suite 1100 Cleveland, OH 44113 Telephone: 216.696.3792 Facsimile: 216.592.5009 carter.ostrowski@tuckerellis.com

D. Service Information Under 37 C.F.R. § 42.8(b)(4)

Service of any documents to lead and back-up counsel can be made via hand-delivery to Tucker Ellis LLP, 950 Main Street Suite 1100, Cleveland, OH 44113. Petitioner consents to electronic service directed to patrick.clunk@tuckerellis.com, brian.brookey@tuckerellis.com, and carter.ostrowski@tuckerellis.com.

XI. FEE STATEMENT –– 37 C.F.R. § 42.103

Petitioner submits concurrently with filing this Petition the fees set forth in 37 C.F.R. § 42.15(a) for this Petition for IPR. Undersigned counsel authorizes Deposit Account No. 50-0902 to be charged for the payment of any additional fees.

Dated: June 5, 2023

Respectfully submitted,

/Patrick F. Clunk/

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Backup Counsel

Certificate of Service 37 C.F.R. §§ 42.6(e) and 42.105(b)

The undersigned certifies that on June 4, 2023, I will cause true and correct copies of the foregoing PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 8,167,654, Petitioner's Power of Attorney, and all associated exhibits or appendices referred to therein, to be served via Federal Express delivery upon the attorney of record for U.S. Patent No. 8,167,654 at the following address:

KATTEN MUCHIN ROSENMAN LLP
(C/O Patent Administrator)
1919 Pennsylvania Avenue NW, Suite 800
Washington, DC 20006-3401

Respectfully submitted,

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Certificate of Compliance Pursuant to 37 C.F.R. § 42.24

This paper complies with the type-volume limitation of 37 C.F.R. § 42.24. This paper contains 8,933 words, excluding the parts of the paper exempted by 37 C.F.R. § 42.24(a).

This paper also complies with the typeface requirements of 37 C.F.R. § 42.6(a)(ii) and the type style requirements of 37 C.F.R. § 42.6(a)(iii)&(iv).

Dated: June 5, 2023

Respectfully submitted,

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