

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EVERSTAR MERCHANDISE CO. LTD.,
Petitioner,

v.

WILLIS ELECTRIC CO. LTD.,
Patent Owner.

Case PGR2019-00055
Patent 10,119,664 B2

Before DEBRA K. STEPHENS, STACEY G. WHITE, and
JEFFREY W. ABRAHAM, *Administrative Patent Judges*.

WHITE, *Administrative Patent Judge*.

DECISION
Denying Post-Grant Review
35 U.S.C. § 324

I. INTRODUCTION

A. Overview

Everstar Merchandise Co. Ltd. (“Petitioner”) filed a Petition requesting post-grant review of claims 1–10 (the “challenged claims”) of U.S. Patent No. 10,119,664 B2 (Ex. 1101, “the ’664 patent”). Paper 1 (“Pet.”). Willis Electric Co. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

We have authority to determine whether to institute a post-grant review under 35 U.S.C. § 324 and 37 C.F.R. § 42.4(a). We may not institute a post-grant review unless “the information presented in the petition . . . , if such information is not rebutted, would demonstrate that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable.” 35 U.S.C. § 324(a).

Petitioner, supported by the declaration of Stephen D. Fantone, Ph.D., (Ex. 1009), contends that claims 1–10 of the ’664 patent are unpatentable on the following grounds. Pet. 6.

Reference(s)/Basis	35 U.S.C. §	Claims Challenged
Sylvania, ¹ Gao, ² optionally UL 2002 Standards ³	103(a)	1, 2, 5–10

¹ Commercial sale of Sylvania Net Light Set (Ex. 1007, “Sylvania”), purchased on September 9, 2008.

² CN 203910314 (Ex. 1003, “Gao”). The exhibit includes both the Chinese patent and certified translation. Unless otherwise indicated all references to Gao will be to the certified translation.

³ Underwriters Laboratories Standard for Safety for Seasonal and Holiday Decorative Products, UL 588, 18th Ed., Feb. 15, 2002 (Ex. 1008, “UL 2002 Standards”).

Reference(s)/Basis	35 U.S.C. §	Claims Challenged
Kumada ⁴ , Gao, Lin, ⁵ optionally UL 2002 Standards	103(a)	1–10
Won ⁶ , Gao, Kumada, optionally UL 2002 Standards	103(a)	1–10

Upon considering the evidence and arguments presented, we determine, as discussed below, that Petitioner has not demonstrated that it is more likely than not that at least one of the claims challenged in the Petition is unpatentable. Therefore, we deny Petitioner’s request to institute post-grant review of claims 1–10.

B. Related Proceedings

Patent Owner advises us that Petitioner has filed a PGR petition (PGR 2019-00056) against U.S. Patent No. 10,222,037, an IPR petition (IPR2019-01484) against U.S. Patent No. 9,671,097, and an IPR petition (IPR2019-01485) against U.S. Patent No. 9,157,588, all of which are owned by Patent Owner. Paper 4, 2.

C. The ’664 Patent

The ’664 Patent, titled “Tangle-Resistant Decorative Lighting Assembly,” issued November 6, 2018. Ex. 1001, codes (45), (54). The ’664 Patent describes “decorative lighting assemblies, including net lights and icicle lights[] that are less prone to tangling than traditional decorative lighting assemblies.” *Id.* at 1:44–47. Figure 4 of the ’664 patent is reproduced below.

⁴ U.S. Pat. No. 6,367,951 (Ex. 1006, “Kumada”).

⁵ Canadian Pat. App. Pub. No. CA2238113 (Ex. 1004, “Lin”).

⁶ U.S. Pat. No. 6,217,193 (Ex. 1005, “Won”).

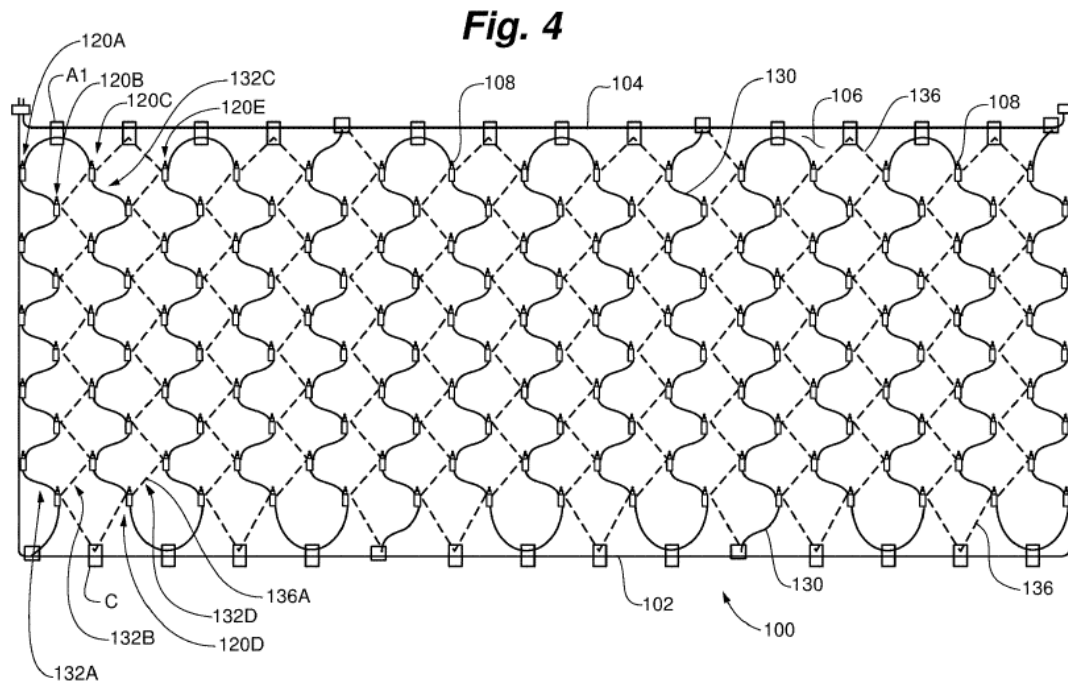


Figure 4 depicts an embodiment of the '664 patent's decorative lighting assembly. *Id.* at 2:53–55. Lighting assembly 100 has power wires 104 and 102 and a plurality of lamp assemblies 108 distributed across display area 106. *Id.* at 7:28–35. The plurality of lamp assemblies are interconnected by intermediate wires 130 to form electrical circuits. *Id.* at 7:41–43. In addition, the lamp assemblies are mechanically coupled by cords 136, which provide mechanical support for the assembly. *Id.* at 7:43–45. “[T]he wires and the cords cooperate to form a net-like structure.” *Id.* at 7:47–48. In some embodiments, “the intermediate wires comprise 22 AWG reinforced wire.” *Id.* at 8:45–46. Further, “intermediate wires 130, first power wire 102 and second power wire 104 may comprise a reinforced wire such as the reinforced wire described in published U.S. Patent Application US20150167944.” *Id.* at 6:16–20.

D. Challenged Claims

Petitioner challenges independent claim 1 and dependent claims 2–10, which depend directly or indirectly from independent claim 1. Claim 1, reproduced below, is illustrative of the subject matter of the challenged claims of the '664 patent.

1. A tangle-resistant decorative lighting assembly having first, second, third and fourth sides that define a rectangular display area, the lighting assembly comprising:

a power plug adjacent a first corner formed at the first and fourth sides of the rectangular display area;

a power receptacle adjacent a second corner formed at the first and second sides of the rectangular display area;

a first power wire in electrical connection with the power plug and the power receptacle, and defining the first side of the rectangular display area of the lighting assembly;

a plurality of lamp assemblies distributed within the rectangular display area;

a plurality of 22AWG reinforced intermediate wires electrically connecting the plurality of lamp assemblies, each of the plurality of 22AWG reinforced intermediate wires electrically connecting a pair of the plurality of lamp assemblies and extending in a direction from the first side of the rectangular display area to the third side of the rectangular display area, the plurality of 22AWG reinforced intermediate wires connected to the plurality of lamp assemblies forming a plurality of rows of the plurality of 22AWG reinforced intermediate wires connected to the plurality of lamp assemblies, each row of the plurality of 22AWG reinforced intermediate wires extending from the first side of the rectangular display area to the third side of the rectangular display area and

connecting a group of the plurality of lamp assemblies in each of the rows of the plurality of 22AWG reinforced intermediate wires, each of the plurality of 22AWG reinforced intermediate wires including an internal reinforcing strand, none of the plurality of 22AWG reinforced intermediate wires having an external reinforcing strand or other reinforcing structure;

a plurality of mechanical-connection cords, each of the plurality of mechanical-connection cords extending from the first side of the rectangular display area to the third side of the rectangular display area and connecting the group of lamp assemblies of the plurality of lamp assemblies to form a plurality of rows of the plurality of mechanical-connection cords, none of the plurality of mechanical-connection cords including wire conductors, and each of the rows of the plurality of mechanical-connection cords directly mechanically connected to less than all of the plurality of lamp assemblies of the group of the plurality of lamp assemblies of each row of the plurality of 22AWG reinforced intermediate wires connected to the plurality of lamp assemblies, and each row of the plurality of mechanical-connection cords is adjacent to a row of the plurality of 22AWG reinforced intermediate wires connected to the plurality of lamp assemblies, thereby forming the rectangular display area with alternating rows of the plurality of mechanical-connection cords and the plurality of 22AWG reinforced intermediate wires connected to the plurality of lamp assemblies.

Ex. 1001, 23:29–24:22.

II. DISCUSSION

A. *Eligibility for Post Grant Review*

As a threshold matter, we must determine whether the '664 patent is eligible for post-grant review. Post-grant review is available for patents “described in section 3(n)(1)” of the Leahy-Smith America Invents Act

(“AIA”), Pub L. No. 112-29, 125 Stat. 284 (2011). AIA § 6(f)(2)(A). The post-grant review provisions set forth in § 6(d) of the AIA only apply to patents subject to the first-inventor-to-file provisions of the AIA. *See* AIA § 6(f)(2)(A). Patents subject to the first-inventor-to-file provisions are those that issue from applications “that contain[] or contained at any time . . . a claim to a claimed invention that has an effective filing date as defined in section 100(i) of title 35, United States Code, that is on or after” March 16, 2013. AIA § 3(n)(1). The “effective filing date” for a claim is either the application’s actual filing date or the filing date of the earliest application that supports the claim. 35 U.S.C. § 100(i).

Petitioner has the burden of demonstrating eligibility for post-grant review. *See Mylan Pharms. Inc. v. Yeda Res. & Dev. Co.*, PGR2016-00010, Paper 9 at 10 (PTAB Aug. 15, 2016). Petitioner states that, “[t]he ’664 patent was issued on November 6, 2018 from U.S. Patent Application 15/813,011, which was filed on November 14, 2017.” Pet. 3. Patent Owner does not appear to dispute post-grant review eligibility and its discussion of the prosecution history of the ’664 patent comports with Petitioner’s discussion as to the relevant filing dates. *See* Prelim. Resp. 8.

In addition, “[a] petition for a post-grant review may only be filed not later than the date that is 9 months after the date of the grant of the patent or of the issuance of a reissue patent (as the case may be).” 35 U.S.C. § 321(c). Here, the ’664 patent issued November 8, 2019 (Ex. 1001, code (45)) and this Petition was filed August 5, 2019. Thus, on this record, we determine that the ’664 patent is eligible for post-grant review.

B. Level of Ordinary Skill

As part of our determination as to whether an invention would have been obvious, 35 U.S.C. § 103 requires us to ascertain the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere*, 383 U.S. 1, 17 (1966). The resolution of this question is important because it allows us to “maintain[] objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995).

Factors to consider in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* In addition, the level of ordinary skill in the art is reflected by the prior art of record. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Generally, it is easier to establish obviousness under a higher level of ordinary skill in the art. *Innovention Toys, LLC v. MGA Entm’t, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”).

Petitioner asserts that a person of ordinary skill in the art at the time of the invention “would have had at least a Bachelor of Science degree (or equivalent) in Electrical Engineering, or a comparable field, and at least five years of experience in the fields of design of electrical wiring and/or decorative lighting.” Pet. 9 (citing Ex. 1009 ¶ 21). Patent Owner argues that Petitioner’s proposed definition recites an unnecessarily high level of skill.

Prelim. Resp. 21. Patent Owner contends that the appropriate level of ordinary skill “would have been (1) a technician with at least two years of experience in the design of electrical wiring and/or decorative lighting, or (2) a person with at least a bachelor’s degree in mechanical engineering, electrical engineering, or an equivalent field, and a basic familiarity with circuits used in decorative lighting.” *Id.* (citing Ex. 2001 ¶¶ 14–15).

At this stage in the proceeding, we determine that the current record supports Patent Owner’s description of an ordinarily skilled artisan. For purposes of this Decision, therefore, we adopt Patent Owner’s description of an ordinarily skilled artisan.⁷ We also note that the applied prior art reflects the appropriate level of skill at the time of the claimed invention. *See Okajima*, 261 F.3d at 1355.

C. Claim Construction

In an AIA proceeding filed on or after November 13, 2018, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), including construing claims in accordance with the ordinary and customary meaning of such claims, as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2018); 83 Fed. Reg. 51340 (Oct. 11, 2018). In applying such standard, claim terms generally are given their plain and ordinary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention and in the context of the entire patent

⁷ At this time, the parties have not argued and based on the current record, we are not persuaded that the differences between the parties’ proposed levels of ordinary skill would have made a difference as to the outcome of this institution decision.

disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

Neither party offers any proposed constructions for any claim terms. Pet. 8–9; Prelim. Resp. 20. Specifically, Petitioner indicates, “no terms require a specific construction, as they would be readily understandable to a [person of ordinary skill in the art].” Pet. 9 (citing Ex 1009 ¶ 22). Patent Owner also indicates, for purpose of its Preliminary Response, that no claim construction is necessary at this stage, but reserves the right to propose constructions should trial be instituted. Prelim. Resp. 20.

On this record and for purposes of this decision, we determine that no claim term requires express construction. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

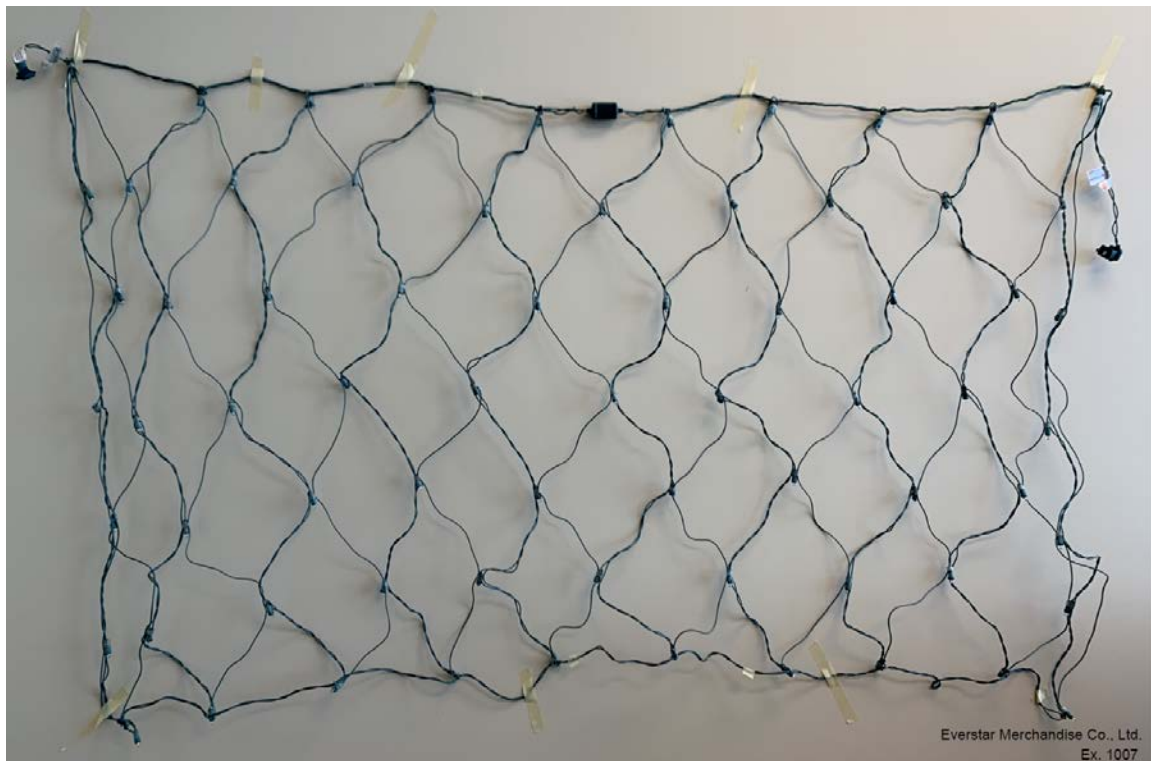
D. Asserted Obviousness over Sylvania, Gao, and Optionally UL 2002 Standards

Petitioner asserts that claims 1, 2, and 5–10 would have been obvious over Sylvania, Gao, and optionally UL 2002 Standards. Pet. 18–61. Petitioner explains how Sylvania, Gao, and optionally UL 2002 Standards allegedly teach the claimed subject matter and relies upon the testimony of Dr. Fantone to support its positions. *Id.*; Ex. 1009. We have reviewed Petitioner’s assertions and supporting evidence and Patent Owner’s Preliminary Response and associated evidence and on this record, we find Petitioner has not made a sufficient showing as to the unpatentability of claims 1, 2, and 5–10 based on Sylvania, Gao, and UL 2002 Standards.

1. Sylvania (Ex. 1007)

Petitioner's declarant, William E. Shelleman, contends that he purchased a Sylvania net light set from BJ's Wholesale Club on September 10, 2008. Ex. 1010 ¶ 4. In support of his testimony, he provides a copy of a receipt that purportedly shows the purchase of this product. Ex. 1010, App. A. At this time, Patent Owner does not challenge the prior art status of Sylvania. *See generally* Prelim. Resp.

As described on the box, the product at issue purports to be "Sylvania LED Series LED Micro Net-Style Lights." Ex. 1007, 1. Each net light set includes 70 lights that use 9.6 watts of energy. *Id.* Page 2 of Exhibit 1007 is reproduced below.



Page 2 of Exhibit 1007 purports to be a photograph of the net light set. Ex. 1007, 2. There appear to be electrical plugs/receptacles on the left and right

corners of the net light set. *Id.* at 2–3. In addition, lights appear to be disposed throughout the net light set. *Id.* at 2, 7–8.

2. *Gao (Ex. 1003)*

Gao, a Chinese patent titled “Novel Wire.” Ex. 1003, code (54). Gao describes “a novel wire which comprises a wire body including an insulating surface layer and a conductive wire in the insulating surface layer.” *Id.* at code (57). Figure 1 of Gao is reproduced below.

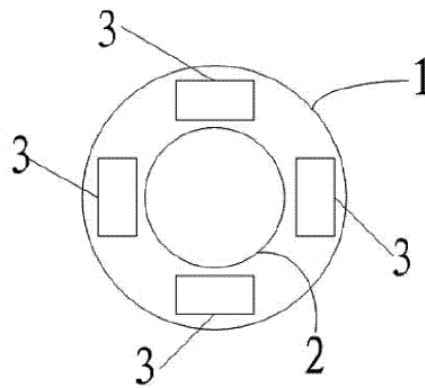


Figure 1

Figure 1 of Gao is a cross-sectional view of Gao’s wire. *Id.* ¶ 11. Gao’s wire comprises a wire body, which includes insulating surface layer 1 and conductive wire 2 in insulating surface layer 1. *Id.* ¶ 13. The wire includes reinforcing members 3, which are disposed between an outer surface of the conductive wire 2 and an inner surface of the insulating surface layer 1. *Id.* “The reinforcing member 3 comprises a monofilament or fiber of plastic such as PE, PET, PA, and the like, thereby increasing the tensile strength of the wire.” *Id.* ¶ 16.

3. *UL 2002 Standards (Ex. 1008)*

UL 2002 Standards is a publication from Underwriters Laboratory titled “UL Standard for Safety for Seasonal and Holiday Decorative

Products, UL 588.” Ex. 1008, tr1⁸. These standards “cover temporary-use, seasonal decorative-lighting products and accessories.” *Id.* at 13.

As described in UL 2002 Standards, “[t]he wire employed in a series-connected seasonal product shall be a minimum No. 22 AWG⁹ (0.32 mm²) Type CXTW twisted conductor.” *Id.* at 40. There are several exceptions to this general rule. *Id.* In particular, Exception No. 2 notes “[w]hen a net lighting string employs single conductor Type CXTW flexible cord, it shall be a minimum No. 18 AWG.” *Id.* In addition, Exception No. 4 notes “[s]ingle conductor CXTW wire may be employed if the wire is twisted with a non-current carrying polymeric supporting rope.” *Id.*

4. Claim 1

Petitioner identifies where in the prior art references it asserts each recitation of claim 1 is disclosed, taught, or suggested, and articulates a rationale to combine Sylvania, Gao, and optionally UL 2002 Standards. Pet. 19–51. Petitioner relies on Sylvania to teach most aspects of claim 1. *See id.* Petitioner relies on Gao to teach the use of reinforced wires. *Id.* at 31–33. Petitioner further relies on UL 2002 Standards to teach the use of 22 AWG wires and as additional evidence that one of ordinary skill in the art would have used reinforced wires. *Id.* at 30, 31, 33.

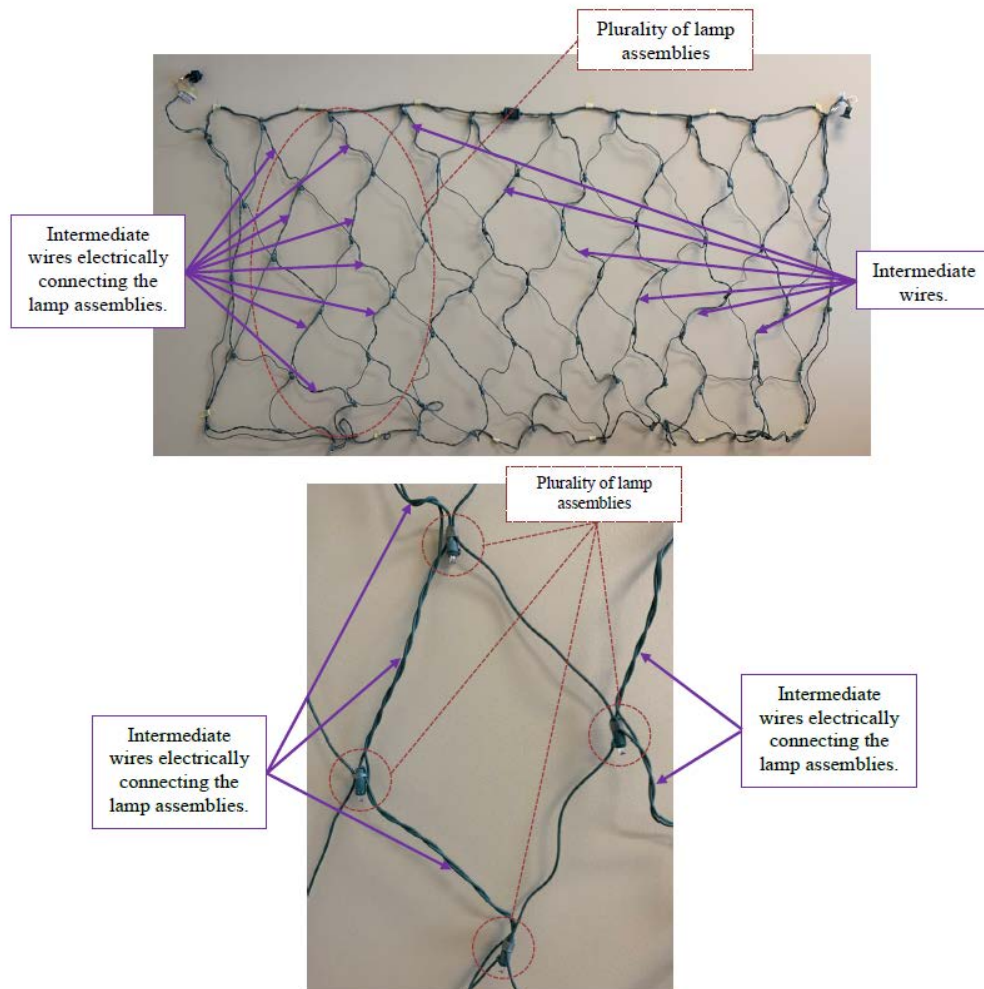
Patent Owner asserts that Petitioner failed to make the requisite showing because it fails to demonstrate that the asserted art teaches “22 AWG reinforced intermediate wires” that include “an internal reinforcing strand, none of the plurality of 22 AWG reinforced intermediate wires

⁸ We use the page numbering from the original document.

⁹ We note that the larger the AWG numbers indicate smaller wires. For example, 18 AGW is 0.82 mm² and 22 AGW is 0.32 mm². Ex. 1008, 39.

having an external reinforcing strand or other reinforcing structure” as recited in claim 1. Prelim. Resp. 23–39. In other words, Patent Owner with the support of its declarant Dr. Stuart B. Brown, urges us to find that Sylvania, Gao, and UL 2002 Standards fail to teach or suggest 22 AWG reinforced intermediate wires that have an internal reinforcing strand and that may not have external reinforcing strands or structures. *Id.*

As to these limitations, Petitioner asserts “Sylvania’s net light includes a plurality of intermediate wires that electrically connect the plurality of lamp assemblies.” Pet. 28. Photographs annotated by Petitioner, from page 9 of the Petition are reproduced below.



Petitioner annotates a picture of Sylvania to indicate which portions of Sylvania include the recited intermediate wires. *Id.* at 29. As can be seen above, twisted pairs of wires connect the lamp assemblies throughout the body of Sylvania's net lights. *Id.* at 28. Petitioner points out that Sylvania's net lights include a tag that indicates the lights were manufactured in accordance with Underwriters Laboratory's standards for decorative string lights. *Id.* at 30. Petitioner directs us to UL 2002 Standards which state that "wire employed in a series connected seasonal product shall be a minimum No. 22 AWG (0.32 mm²) Type CXTW twisted conductor." *Id.* (quoting Ex. 1008, 40 §13.2.4). Thus, Petitioner contends that Sylvania's intermediate wires would have been 22 AWG. *Id.* (citing Ex. 1009 ¶ 50). Further, Petitioner argues that "[t]o the extent Sylvania's intermediate wires are not reinforced, reinforced wires having the structure called for by the claimed invention have been known in the art for many years and well-before the time of the alleged invention, as indicated by Gao." *Id.* at 31 (citing Ex. 1009 ¶ 52, Appx. B.). In addition, Petitioner asserts that "the UL standards governing decorative lighting products as far back as 2001 have contemplated the use of reinforced wiring in decorative lighting products." *Id.* (citing Ex. 1008, 40 §13.2.4 (Exception 4)). Petitioner's declarant Dr. Fantone opined, "internally reinforced wires with the structure required by the claimed invention, e.g., with polymer reinforcing strands, have been known in the art for many years and well-before the time of the alleged invention, as indicated by Gao, Debladis,¹⁰ Fujii, and Huang." Ex. 1009 ¶

¹⁰ We note that Petitioner and its declarant repeatedly refer to Debladis, Fujii, and Huang. *See e.g.*, Pet. 31, 32, 40. The Petition does not include any cites to or specific argument referring to these references. Thus, we do

52. Petitioner argues that one of ordinary skill in the art would have used Gao's wire in Sylvania's net light in order "to achieve more durable intermediate wires for the net light." Pet. 33.

Patent Owner points out that Petitioner lacks evidence as to the wire gauge of Sylvania's net lights. Prelim. Resp. 24. Petitioner provides Exhibit 1007, which is a series of photographs of the Sylvania net lights, its packaging, and its inserts from the box. *See* Ex. 1007; *see also* Ex. 1010 ¶ 7 (describing Ex. 1007 as "a collection of photographs"). Petitioner also submitted Exhibit 1010, which is a declaration from William Shelleman describing the purchase of Sylvania. *See* Ex. 1010. Finally, Dr. Fantone's declaration includes a description of Sylvania. Ex. 1009 ¶ 28. We have reviewed Petitioner's evidence and we agree with Patent Owner that Petitioner has not established the wire gauge of Sylvania's net lights because none of these documents purport to indicate the gauge of the wires in Sylvania. Thus, the question is whether the recited wire gauge teaches the asserted combination.

Patent Owner correctly points out that Gao does not address wire gauge and as such, Petitioner's allegations must rely on UL 2002 Standards despite the Petitioner's description of that reference as optional. Prelim. Resp. 25. UL 2002 Standards describe the use of 22 AWG twisted conductors (also known as a twisted pair). *See* Ex. 1008, 40. The document, however, also states that if a single wire is used it should be a larger 18 AWG wire. *Id.* Petitioner does not explain why one of ordinary skill in the art would use a 22 AWG wire for a single wire. In light of Patent Owner's

not consider the disclosures of Debladis, Fujii, and Huang as part of our analysis of Petitioner's asserted grounds.

arguments and the disclosures of UL 2002 Standards, we are persuaded that the UL 2002 Standards teach the use of 22 AWG in twisted pairs and 18 AWG for single wires. As such, if Petitioner is relying on Gao's wire to be a single wire¹¹ replacement for Sylvania's intermediate wires (which are a twisted pair), then the teachings would indicate that the single wire is 18 AWG, and we are persuaded that this would not meet the limitations of claim 1.

Thus, we are left with the question as to whether the limitations of claim 1 would have been met if Gao's wires were used in a twisted pair. Patent Owner argues that Petitioner does not provide evidence as to whether Sylvania's twisted pair of wires is a pair of conductive wires as opposed to a conductive wire and a non-conductive cord. Prelim. Resp. 27–28.

According to Patent Owner, a non-conductive cord would constitute an external reinforcing structure and thus, would not meet the limitations of claim 1. *Id.* This argument seems to comport with Petitioner's view of the evidence. Petitioner relies on UL 2002 Standards to support its argument that one of ordinary skill in the art would have reinforced Sylvania's wires. Pet. 31 (citing Ex. 1008, 40 §13.2.4 (Exception 4)); *id.* at 33. Exception 4 of the UL 2002 Standards specifies that a “[s]ingle conductor CXTW wire may be employed if the wire is twisted with a non-current carrying polymeric supporting rope.” Ex. 1008, 40. Thus, it appears that Petitioner is relying

¹¹ We note that Petitioner's allegations are not clear as to whether Gao is to be used as part of a twisted pair or if it is to be used as a single wire. This lack of clarity as to the proposed grounds is troubling, but we find that Petitioner's allegations are insufficient under either interpretation and as such we do not need to determine which argument Petitioner intended to advance.

upon the description of a wire twisted with a non-conductive wire as an example of reinforcement. *See* Ex. 1009 ¶ 53 (“[A]t the time of the invention, one skilled in the art would have known to reinforce current carrying wires with polymeric supporting rope per the UL Standards and as disclosed by Gao.”). Petitioner, however, does not argue that reinforcing non-conductive cord is not an external reinforcing structure. We credit Dr. Brown’s testimony that such a reinforcing non-conductive cord would be an external strengthening element and thus, would not meet the limitations of claim 1 that exclude external reinforcing strands or structures. *See* Ex. 2001 ¶ 30. Therefore, we agree with Patent Owner that if the pair of wires includes a non-conductive cord, that cord would be an additional external reinforcement and as such, the claim limitation would not be met if the pair included such a support cord. *See* Prelim. Resp. at 28.

If, however, we were to assume that both wires in the pair were conductive then we would need to examine whether a pair of conductive wires would meet claim 1. Patent Owner argues that even if the second wire is conductive the claim is not met. *Id.* at 29. Dr. Brown testified on behalf of Patent Owner that “[a] POSITA would appreciate that a second wire twisted with a first wire is a form of external reinforcement of the first wire.” Ex. 2001 ¶ 65. Patent Owner asserts “[t]his is demonstrated by the UL 2002 Standards’ specification of 18 AWG (e.g., a **thicker wire**) for single conductor (Exception No. 2) as compared to the 22AWG minimum gauge wire which is specified for two wires twisted together (Section 13.2.4) and wires twisted with the proper non-current carrying rope (Exception No. 4).” Prelim. Resp. 30 (citing Ex. 1008, 54; Ex. 2001 ¶ 65). As such, Patent Owner asserts that twisting the wires together causes the wires to have an

external reinforcement that is expressly disallowed by the claim language, which excludes “wires having an external reinforcing strand or other reinforcing structure.” *Id.* at 32–33.

Petitioner describes Sylvania’s wires as a twisted pair, but does not address whether the twisting of the wires would have been an external reinforcing strand or other reinforcing structure. *See id.* at 28, 40. Gao focuses on increasing the tensile strength and durability of its wire, but is silent as to whether its wire is to be used in twisted pairs. *See* Ex. 1003, code (57). UL 2002 Standards require a thicker wire if the wire is used without a non-conductive cord or without being part of a twisted pair. Ex. 1008, 40. Petitioner does not address the differing wire gauges used for single versus paired wires. Petitioner also does not explain why a pair of wires would not constitute external reinforcement. We are persuaded that 2002 UL Standard’s disclosure of using a thinner wire in a twisted pair supports Patent Owner’s argument that the twisting of the wires provides an external reinforcement. This is because we are persuaded that the reinforcement from the second wire provides additional strength such that a thinner wire could be used and still provide the requisite strength and durability provided by a single thicker wire. Thus, Petitioner has not met its burden to establish that these references would teach “22 AWG reinforced intermediate wires” that include “an internal reinforcing strand, none of the plurality of 22 AWG reinforced intermediate wires having an external reinforcing strand or other reinforcing structure” as recited in claim 1.

For the foregoing reasons, based on the current record, we determine Petitioner has not made a sufficient showing as to claim 1.

5. Claims 2, and 5–10

Claims 2 and 5–10 depend from claim 1. As such, they also include the above-discussed limitations. Petitioner’s arguments as to claims 2 and 5–10 do not alter the analysis presented above as to claim 1. Thus, for the same reasons discussed above as to claim 1, we find that Petitioner has not made a sufficient showing as to the unpatentability of claims 2 and 5–10.

E. Asserted Obviousness Over Kumada, Gao, Lin, and Optionally UL 2002 Standards

Petitioner contends that claims 1–10 of the ’664 patent would have been obvious over Kumada, Gao, Lin, and optionally UL 2002 Standards. Pet. 61–93. We have considered the record before us and are persuaded that Petitioner has not shown sufficiently that claims 1–10 would have been obvious over Kumada, Gao, Lin, and UL 2002 Standards.

1. Kumada (Ex. 1006)

Kumada discloses “[a]n economical method of making a net or mesh light,” wherein the net light includes a plurality of series-connected light strings, each light string including a plurality of lamp sockets and a plurality of intermediate lengths of wire connecting the lamp sockets, and at least one non-electrical rope physically fastened to the lamp sockets, thereby forming a net or mesh. Ex. 1003, code (57). Kumada notes that “[i]n the United States, the UL (“Underwriters Laboratory”) approves of a net light only where the active and return wires A, R are twisted together on each light string (the only permissible alternative being the use of a very thick wire, which would render the product economically unfeasible).” *Id.* at 2:52–56. One embodiment of Kumada’s net light is depicted in Figure 6B, reproduced below.

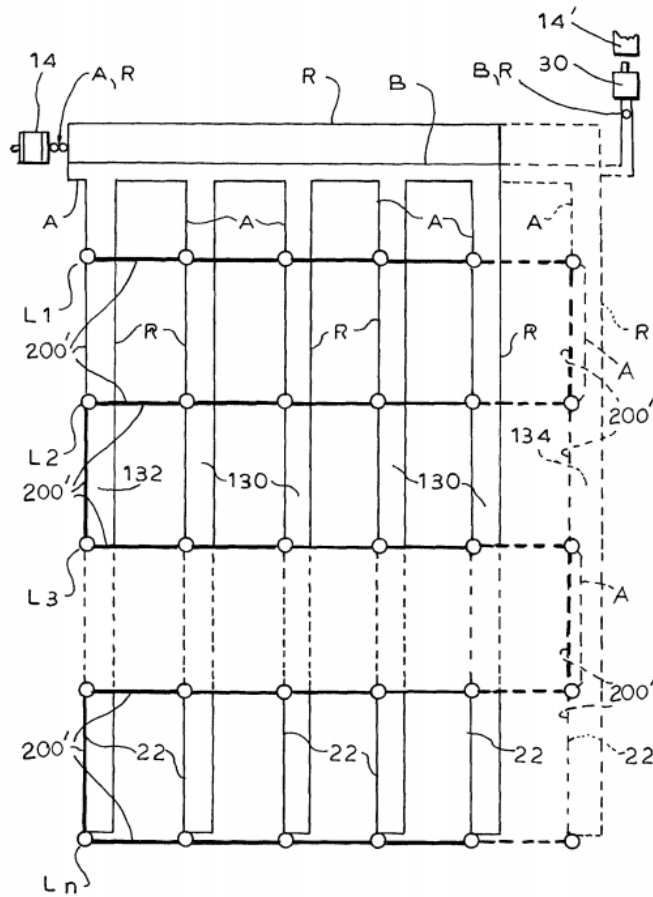


Figure 6B is a circuit diagram and physical layout of a net light having light strings 130, wires 22 connecting the individual lamps sockets (L1, L2, L3, ...Ln) in the light strings, and rope 200' which joins all of the lamp sockets of all light strings 130. *Id.* at 10:22–44, 11:7–12.

2. *Lin (Ex. 1004)*

Lin discloses a “lamp netting assembly” that seeks to improve upon conventional lamp netting assemblies by including a string or strings connected to the light sockets to replace a portion of wire and to support stably a large number of decoration lamps. Ex. 1004, 2:19–24. Figure 10 is one embodiment of Lin’s lamp netting assembly, and is reproduced below.

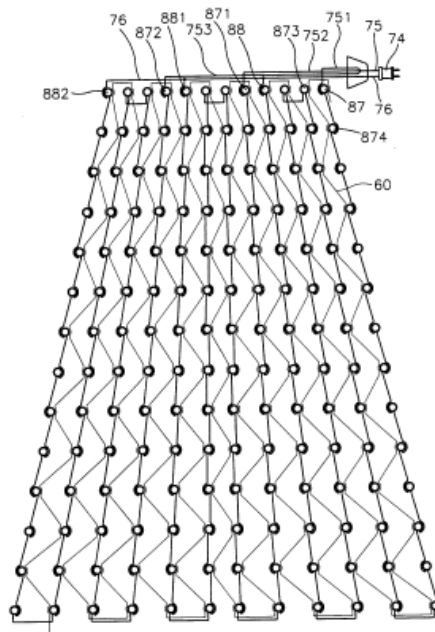


FIG. 10

Figure 10 shows a schematic view of a lamp netting assembly with main wire 75 and secondary wire 76 connected to plug 74, three branch wires 751, 752, and 753 connected to first main wire 75 and light sockets 87, 871, and 872, respectively, and string 60 connecting various light sockets. Ex. 1004, 5:25–6:12.

3. Claim 1

Petitioner identifies where in the prior art references it asserts each recitation of claim 1 is disclosed, taught, or suggested, and articulates a rationale to combine Kumada, Gao, Lin, and optionally UL 2002 Standards. Pet. 61–93. Petitioner relies on Kumada to teach most aspects of claim 1. *See id.* Petitioner relies on Gao to teach the use of reinforced wires. *Id.* at 68–70. Petitioner relies on Lin to teach the mechanical-connection cords. *Id.* at 75–77. Petitioner further relies on UL 2002 Standards to teach the use of 22 AWG wires and as additional evidence that one of ordinary skill in the art would have used reinforced wires. *Id.* at 68–70.

Patent Owner asserts that “the Petition references twisted wire pairs of Kumada, which are subject to the same defects of Sylvania’s twisted pairs of wires.” Prelim. Resp. 39. Patent Owner contends that “Kumada makes it clear that [its active and return wires] are twisted wires and that a single wire would be economically unfeasible.” *Id.* at 40. Kumada states that “UL (‘Underwriters Laboratory’) approves of a net light only where the active and return wires A, R are twisted together on each light string (the only permissible alternative being the use of a very thick wire, which would render the product economically unfeasible).” *Id.* (quoting Ex. 1006, 2:52–56) (emphasis omitted). Petitioner relies upon substantially the same arguments and substantially the same portions of Gao and UL 2002 Standards discussed above in relation to Sylvania to support its argument that one of ordinary skill in the art would have used 22 AGW reinforced wires in Kumada’s net lights. Thus, we agree that Petitioner’s arguments here are insufficient for substantially the same reasons discussed above as to the Sylvania ground.

Specifically, Petitioner made similar arguments here as it made for the previous ground. Petitioner points to Kumada’s reference to UL standards and asserts that Kumada’s intermediate wires would have been 22 AWG as specified by UL 2002 Standards. Pet. 68. Petitioner also relies on Gao’s wire in the same way as it did for the previous ground. *See e.g., id.* at 68–70. Here again, Petitioner’s argument lacks an explanation as to why the twisted pair would not impermissibly add an external reinforcement. Thus, we are similarly persuaded here that Petitioner has not shown sufficiently that claim 1 would have been obvious over Kumada, Gao, Lin, and UL 2002 Standards.

4. Claims 2–10

Claims 2–10 depend from claim 1. As such, they also include the above-discussed limitations. Petitioner’s arguments as to claims 2–10 do not alter the analysis presented above as to claim 1. Thus, for the same reasons discussed above as to claim 1, we find that Petitioner has not made a sufficient showing as to the unpatentability of claims 2–10.

F. Asserted Obviousness Over Won, Gao, Kumada, and Optionally UL 2002 Standards

Petitioner contends that claims 1–10 of the ’664 patent would have been obvious over Won, Gao, Kumada, and optionally UL 2002 Standards. Pet. 93–115. We have considered the record before us and are persuaded that Petitioner has not met its burden to demonstrate that claims 1–10 would have been obvious over Won, Gao, Kumada, and UL 2002 Standards.

1. Won (Ex. 1005)

Won is a U.S. Patent titled “Ornamental Lamp Strings in Network Structure.” Ex. 1005, code (54). Won is directed “to a Christmas ornamental lamp, and particularly to a network knitted with a plurality of lamp strings. *Id.* at 1:6–8. Figure 1 of Won is reproduced below.

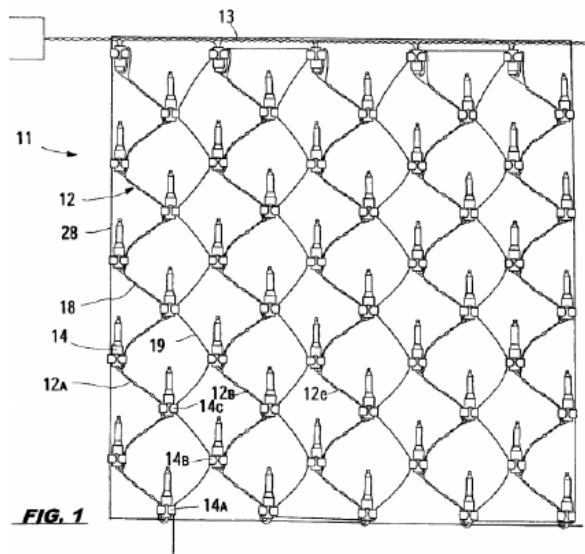


Figure 1 of Won depicts ornamental lamp strings in a network structure 11. *Id.* at 2:40–41. Won’s network structure 11 of ornamental lamp strings includes a main power-supply cable 13 and a plurality of lamp strings 12. Ex. 1005, 2:41–43. Lamp strings 12 are knitted together by knitting cords 19. *Id.* at 2:43–44. Every two adjacent lamp strings 12 are connected together with a knitting cord 19. *Id.* at 2:48–49. As described in Won, “every lamp string is twisted with two power-supply wires.” *Id.* at 1:67–2:1.

2. Claim 1

Petitioner identifies where in the prior art references it asserts each recitation of claim 1 is disclosed, taught, or suggested, and articulates a rationale to combine Won, Gao, Kumada, and optionally UL 2002 Standards. Pet. 93–108. Petitioner relies on Won to teach most aspects of claim 1. *See id.* Petitioner relies on Gao to teach the use of reinforced wires. *Id.* at 99–100, 102–103. Petitioner relies on Kumada to teach the recited power receptacles. *Id.* at 95–96. Petitioner further relies on UL 2002 Standards to teach the use of 22 AWG wires and as additional evidence that one of ordinary skill in the art would have used reinforced wires. *Id.* at 99–100.

Patent Owner asserts that Petitioner relies on the same portions of Gao and UL 2002 Standards as those discussed above with respect to the other grounds. Prelim. Resp. 47. Patent Owner contends that Petitioner makes the identical argument as to the Won and Kumada-based grounds despite the fact that Won does not explicitly reference any UL standards. *Id.* at 48. Based upon our review of the Petition, we agree that Petitioner relies upon substantially the same arguments and substantially the same portions of Gao and UL 2002 Standards discussed above in relation to Sylvania and Kumada

to support its argument that one of ordinary skill in the art would have used 22 AWG reinforced wires in Won's net lights. Thus, we agree that Petitioner's arguments here are insufficient for substantially the same reasons discussed above.

Specifically, Petitioner made similar arguments here as it made for the previous ground. Petitioner asserts that "[w]hile Won does not explicitly teach that the intermediate wires are 22AWG reinforced wires, the power-supply wires 18 would at a minimum be 22AWG wires, as required by UL standards for the same reasons as discussed above." Pet. 99. Petitioner also relies on Gao's wire in the same way as it did for the previous ground. See *e.g., id.* at 99–100. Here again Petitioner's argument lacks an explanation as to why the twisted pair would not impermissibly add an external reinforcement. Thus, we similarly are persuaded here that Petitioner has not shown sufficiently that claim 1 would have been obvious over Won, Kumada, Gao, and UL 2002 Standards.

3. *Claims 2–10*

Claims 2–10 depend from claim 1. As such, they also include the above-discussed limitations. Petitioner's arguments as to claims 2–10 do not alter the analysis presented above as to claim 1. Thus, for the same reasons discussed above as to claim 1, we find that Petitioner has not made a sufficient showing as to the unpatentability of claims 2–10.

III. CONCLUSION

For the foregoing reasons, we determine Petitioner fails to demonstrate it is more likely than not that any of claims 1–10 of the '664 patent are unpatentable on the grounds asserted in the Petition.

IV. ORDER

Accordingly, it is

ORDERED that the Petition is denied, and no post-grant review is instituted.

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