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Paper 118
Entered: February 26, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

POLYGROUP LIMITED,
Petitioner,

v.

WILLIS ELECTRIC CO., LTD.,
Patent Owner.

Case IPR2016-01613
Patent 9,044,056 B2[1]

Before WILLIAM V. SAINDON, JEREMY M. PLENZLER, and BARBARA A. PARVIS, *Administrative Patent Judges*.

SAINDON, *Administrative Patent Judge*, for the Board,
PLENZLER, *Administrative Patent Judge*, dissenting.

FINAL WRITTEN DECISION
Finding No Claims Unpatentable
Granting Motion to Amend In Part, Dismissing as Moot In Part
Denying Patent Owner's Motion to Exclude

[1] The grounds raised in IPR2016-00803 are consolidated with IPR2016-01613.

SAINDON, *Administrative Patent Judge*, for the Board:

I. INTRODUCTION

We have jurisdiction under 35 U.S.C. § 6. The evidentiary standard is a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

As was explained in further detail in Paper 13, this proceeding is a consolidation of Petitioner's challenges in two petitions of claims 1, 2, 4, 5, 11, 13, and 16–19 of U.S. Patent No. 9,011,056 B2 (Ex. 1001, "the '056 patent").[2] We instituted an *inter partes* review on all challenged claims on all challenged grounds (Paper 33, "Dec. on Inst."). During trial, Patent Owner filed a Response (Paper 52, "PO Resp.") and Petitioner filed a Reply (Paper 70, "Pet. Reply"). An oral hearing was held (Paper 113, "Tr.").

Patent Owner canceled claim 1 by non-conditionally moving to amend that claim with proposed substitute claim 21. Paper 117; Paper 88 (Patent Owner's Motion to Amend, "Mot."). Reviewing the arguments and evidence before us, we determine that Petitioner has not established by a preponderance of the evidence that claims 2, 4, 5, 11, 13, and 16–19 of the '056 patent are unpatentable. We grant Patent Owner's Motion to Amend, with proposed substitute claim 21 being entered in favor of original claim 1. The remainder of Patent Owner's motion to amend, which is contingent, is dismissed as moot.

[2] As used herein, "Petition I" or "Pet. I" refers to the petition originally filed in IPR2016-00802, now Paper 25. "Petition II" or "Pet. II" refers to the petition originally filed in IPR2016-01613, Paper 2.

A. Related Matters

Both parties have asserted patents and have filed petitions against the other party. The '056 patent has been asserted against Petitioner in *Willis Elec. Co. v. Polygroup Ltd*., No. 0:15-cv-03443-WMW-KMM (D. Minn., filed Aug. 28, 2015). Paper 2, 71; Paper 4. Petitioner previously filed a petition (Pet. II) challenging certain independent claims of the '056 patent in IPR2016-00802 (Pet. II 71–72), which was granted (Pet. II 71–72; Paper 4); the challenges raised in that proceeding are a part of this proceeding, per agreement of the parties. *See* Paper 12 (requesting merger of challenges to '056 patent); Paper 13 (granting request).

Petitioner has filed other petitions challenging Patent Owner's patents containing similar subject matter and which were also asserted against Petitioner. U.S. Patent No. 8,454,186 ("the '186 patent") is challenged in IPR2016-00800, IPR2016-01609, and IPR2016-01610. Paper 4. U.S. Patent No. 8,454,187 is challenged in IPR2016-00801, IPR2016-01611, and IPR2016-01612. *Id.* U.S. Patent No. 8,936,379 is challenged in IPR2016-01615, IPR2016-01616, and IPR2016-01617. *Id.* U.S. Patent No. 9,066,617 is challenged in IPR2016-01783. *Id.* U.S. Patent No. 8,974,072 is challenged in IPR2016-01781 and IPR2016-01782. *Id.*

Petitioner has asserted patents against Patent Owner in *Polygroup Macau Ltd (BVI) v. Willis Electric Co., Ltd.*, No. 3:15-cv-00552 (W.D.N.C.). *Id.*

Patent Owner has filed petitions challenging U.S. Patent Nos. 8,863,416, 6,794,825, 9,119,495, and 8,959,810, owned by Petitioner, in IPR2017-00309, IPR2017-00330, IPR2017-00331, IPR2017-00334, and IPR2017-00335.

B. The ’056 Patent

The ’056 patent is directed to a modular artificial tree (e.g., a Christmas tree) with electrical connectors. Ex. 1001, (54). An electrical connection runs up the trunk of the tree to provide a source of electricity for light strings draped over the branches. *See id.* at Figs. 2, 3. Physically connecting the trunk sections during assembly of the tree also electrically connects the trunk sections. *Id.* at (57), Fig. 3.

C. Challenged Claims

Petitioner challenges claims 1, 2, 4, 5, 11, 13, and 16–19 of the ’056 patent. Claim 1 is reproduced below.

> A lighted artificial tree, comprising:
>
> a first tree portion aligned along a central vertical axis, the first tree portion including:
>
> a first trunk body having a first end, a second end,
>
> a first electrical connector positioned in the second end of the first trunk body and including a first electrical terminal positioned in line with the central vertical axis, and a second electrical terminal; and
>
> a second tree portion aligned with the central vertical axis, the second tree portion including;
>
> a second trunk body including a first end and a second end, the first end configured to couple with the second end of the first trunk body of the first tree portion;
>
> a second electrical connector positioned in the first end of the second trunk body and including a first electrical terminal and a second electrical terminal, the second electrical terminal defining a ring shape that encircles the first electrical

> terminal, the second electrical connector configured to couple with the first electrical connector of the first trunk body;
>
> a light string electrically connected to the first and the second electrical terminals of the second electrical connector,
>
> wherein upon the first tree portion being coupled to the second tree portion along the central vertical axis, the first electrical connector is coupled to the second electrical connector, such that the first electrical terminal of the first electrical connector is electrically connected to the first electrical terminal of the second electrical connector, and the second electrical terminal of the first electrical connector is electrically connected to the second electrical terminal of the second electrical connector.

D. Prior Art and Asserted Grounds

Petitioner asserts that claims 1, 2, 4, 5, 11, 13, and 16–19 of the '056 patent are unpatentable under 35 U.S.C. § 103 on the following grounds:

References	**Claim(s) Challenged**	**Petition[3]**
Miller,[4] Otto,[5] and Jumo[6]	1	I
Hicks,[7] Otto, and McLeish[8]	1 and 5	I

[3] *See supra* n.2 for cross references to petition number and paper number.

[4] U.S. Patent No. 4,020,201, issued Apr. 26, 1977 (Ex. 1006).

[5] German Utility Model Patent G 84 36 328.2, published Apr. 4, 1985 (translated copy) (Ex. 1008).

[6] French Patent No. 1,215,214, issued Nov. 16, 1959 (translated copy) (Ex. 1009). The inventor is not listed on the face of the patent and instead lists Société Nouvelle des Établissements Jumo.

[7] U.S. Pat. App. Pub. No. US 2007/0230174 A1, published Oct. 4, 2007, (Ex. 1007).

[8] U.S. Patent No. 7,066,739 B2, issued June 27, 2006 (Ex. 1010).

References	Claim(s) Challenged	Petition[3]
Miller and Seghers[9]	11	I
Miller, Otto, and Jumo	2 and 4	II
Miller and Seghers	13, 16, and 17	II
Miller and Loomis[10]	18 and 19	II

Petitioner also relies on the declaration of Mike Wood (Ex. 1005), who testifies he is an expert in electrical engineering as it relates to lighting manufacturing and design (*id.* ¶ 12). *See also* Ex. 1049 (Wood declaration in Petition I).

II. PENDING INTERLOCUTORY MOTIONS

A. Patent Owner's Motion to Exclude

Patent Owner moves to exclude Exhibits 1100 (Declaration of Wood), 1101,[11] 1212 (Declaration of Chen), and portions of 1106 (Deposition of Chen). We have reviewed Patent Owner's motion (Paper 80), Petitioner's opposition (Paper 82), and Patent Owner's reply (Paper 85). As to the testimony of Petitioner's expert, Mr. Wood, we decline to exclude that evidence and instead give the evidence more or less persuasive value depending on the context of the testimony, the degree to which the testimony is supported by reasoning, fact, and the declarant's expertise. As to the testimony of the inventor, Mr. Chen, we likewise afford the evidence the weight it is due given the context of its use. We acknowledge Patent Owner's point about Mr. Chen not being a patent expert or a native English

[9] U.S. Patent No. 1,974,472, issued Sept. 25, 1934 (Ex. 1011).

[10] U.S. Patent No. 8,053,042 B1, issued Nov. 8, 2011 (Ex. 1027).

[11] This document was expunged per request of the parties. *See* Paper 91 (joint motion to expunge certain papers), Paper 95 (granting the motion).

speaker. Paper 80, 8. We may account for this by giving appropriate weight to the evidence. There is no jury, and we see little reason to exclude evidence on the basis of potential prejudice. In sum, Patent Owner's motion to exclude is denied.

B. Motion for Observation

Patent Owner submitted a Motion for Observations on Cross-Examination of Petitioner's Reply Declarants. Paper 78. Petitioner offers its response. Paper 83. We have reviewed these papers.

III. PATENTABILITY ANALYSIS

A. Claim Construction

We interpret the claims of an unexpired patent using the broadest reasonable interpretation in light of the specification of the patent. 37 C.F.R. § 42.100(b). Under that standard, a claim term generally is given its ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Although our claim interpretation cannot be divorced from the specification, *see Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (quoting *In re NTP, Inc.*, 654 F.3d 1279, 1288 (Fed. Cir. 2011)), we must be careful not to import limitations from the specification that are not part of the claim language, *see SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

1. *"Tree Portion"*
(Independent Claims 1, 5, 11, 18)

Patent Owner raised the issue of the construction of "tree portion" in its Response. PO Resp. 29–31. Patent Owner proposes a "tree portion" means "a mechanically and electrically connectable modular and unitary portion of an artificial tree." *Id.* at 29–30 (citing Ex. 2048 ¶¶ 13–15, 21–26; Ex. 2049 ¶¶ 62–66) (emphasis removed). Petitioner replies that it should mean "a part of a tree." Pet. Reply 19–20 (citing Ex. 1100 ¶ 30; Ex. 1137, 3). We have considered these positions and the evidence cited in support of them.

Claims 1, 5, 11, and 18 are directed to a "lighted artificial tree" having one or more tree portions. Each claim includes a tree portion that is recited as having a trunk, electrical connector, and light string. Patent Owner's claim construction would cause "tree portion" to serve as defining a structural relationship between those things described in the claim as constituting the tree portion; effectively that the subcomponents must be structurally located and connected in a way so as to make the "tree portion," i.e., their sum, an identifiable assembly that functions as a module, or unitary portion, of the tree. Petitioner's construction would give no patentable weight to the term, other than perhaps its use as a label to refer to the subcomponents as a group. Our position and reasoning for supporting Patent Owner's proposed construction of "tree portion" is set forth in greater detail in our Final Written Decision in IPR2016-01610 addressing the '186 patent, which involves effectively the same specification and evidence, and which we incorporate herein. *See also Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1334 (Fed. Cir. 2003) ("[W]e presume, unless otherwise

compelled, that the same claim term in the same patent or related patents carries the same construed meaning."). There is a slight difference in the claims in this proceeding, however, that requires additional discussion but otherwise does not change the net result.

The distinction between the claims in this proceeding and those in IPR2016-01610 is that the claims in IPR2016-01610 explicitly require the tree portion to include a trunk, lights, and *branches*. Of those structures, the claims in this proceeding omit an explicit recitation of branches (choosing instead to focus on the electrical connections inside the trunk). We review the specification of the '056 patent to determine how a person of ordinary skill in the art would construe "tree portion" in these claims.

The '056 patent makes clear that it is directed to a modular tree having tree portions. Ex. 1001, (54), 1:13–15. Those tree portions are modules that each comprise a trunk, multiple branches, and one or more light strings. *Id.* at 5:40–42; 6:39–42.[12] Similarly, the '056 patent defines the tree portion module in terms of a set of trunk, branches, and lights that are connected to one or more sets of trunk, branches, and lights. *Id.* at 8:22–28; 12:48–51, 15:4–7; 16:61–64. Although the claims omit an explicit recitation of the branches, ultimately a tree portion having lights must have branches for those lights to reside. We find no disclosure in the specification where lights are not on branches in a tree portion of a lighted

[12] The specification provides an alternative embodiment for unlit trees, where no lights are provided in the modules. Ex. 1001, 5:17–20. However, the claims in the '056 patent are all directed to "lighted" trees, and claim lights, excluding that alternative embodiment. *Id.* at 19:2, 19:49, 20:41, 21:26.

tree, nor does it make sense to have a *lighted* artificial tree without branches. Thus, we determine that a person of ordinary skill in the art would consider "tree portion" in this proceeding to mean "a mechanically and electrically connectable modular and unitary portion of an artificial tree" and to require that tree portion to include a trunk, lights, *and branches*. Ex. 2049 ¶ 65.

2. *Other Claim Terms*

No remaining terms require construction for purposes of this decision. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (only those terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy).

B. Person of ordinary skill in the art

Petitioner proposes that a person of ordinary skill in the art had:

> (1) a degree in electrical engineering or an equivalent degree; (2) a minimum of one or two years of experience in electrical engineering or electronics, specifically lighting manufacturing and/or design; and (3) general knowledge of engineering that would include understanding of lighting design, construction, functions, attributes and processes used to implement such products.

Pet. II 14–15 (citing Ex. 1005 ¶¶ 15–20) *accord* Pet. I 12 (citing Ex. 1049 ¶¶ 15–20). Patent Owner offers the following description:

> A person having ordinary skill in the art during the relevant time period would have been either (1) a person with at least a bachelor's degree in mechanical engineering or electrical engineering and at least one to two years of experience in the development of mechanical and electrical products, or (2) a person with at least one to two years of experience in product development, design, or manufacturing of lighted artificial trees.

PO Resp. 25 (citing Ex. 2048 ¶ 7; Ex. 2049 ¶ 14).

We also consider the level of skill implied by the disclosures of the prior art references. *Okajima v. Bourdeau*, 261 F.3d. 1350, 1355 (Fed. Cir. 2001) (the prior art itself can reflect the appropriate level of skill in the art).

After reviewing the parties' proposed definitions, we find Petitioner's to be the more appropriate, with one caveat discussed later. Petitioner's proposed level of skill would allow that person to understand the prior art in this proceeding and make and/or use it. On the other hand, Patent Owner's proposed level of skill is too low, and includes persons not involved in the design or creation of the product, such as a person tangentially involved with the product in the manufacturing phase—people who would not know how to make and/or use the relevant art. We agree with Petitioner, arguing in its Reply, that a person of ordinary skill in the art requires the technical skills and knowledge to be able to understand, e.g., the electrical connections involved in the artificial trees. Pet. Reply 4–8. As to Patent Owner's argument that Petitioner's person of ordinary skill has an engineering degree and two year's practical experience is unduly high (PO Resp. 26–27), we note that the person of ordinary skill is a hypothetical person, and that less education can be offset by more experience—in other words, we do not interpret Petitioner's list as having a strict requirement for an engineering degree, but rather set forth the idea that a person of ordinary skill in the art is typified by someone with the knowledge relevant to this field had by a person with an engineering degree.

We do not outright adopt Petitioner's proposed definition, however, because it is broadly directed to "lighting design." Although we are persuaded that a person of ordinary skill in the art would have broader knowledge outside of lighted artificial trees, we are not persuaded that a

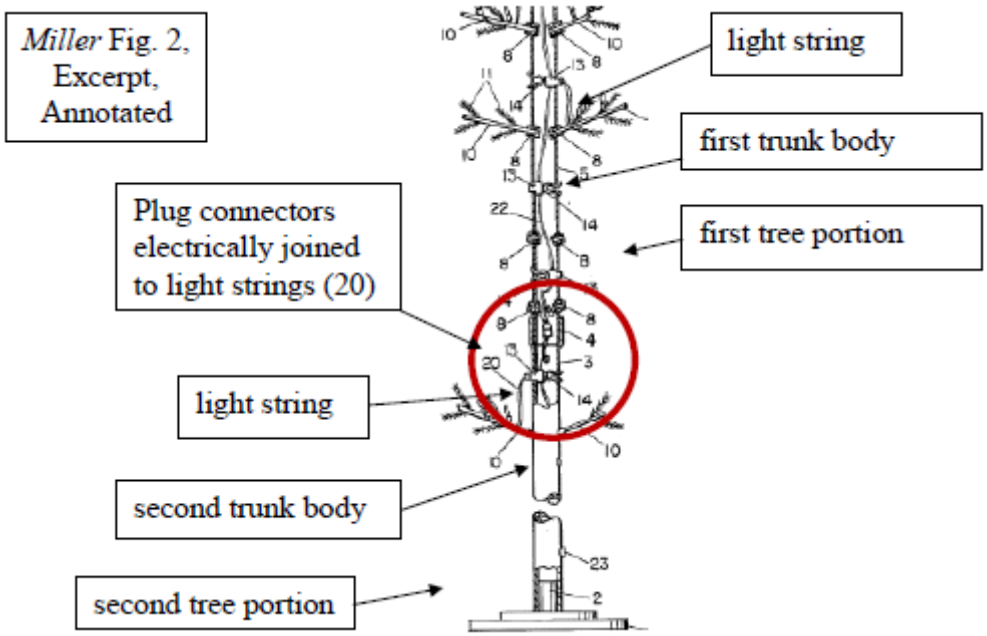
person who spends her time on any given form of "lighting design," e.g. stadium lighting, has ordinary skill in the claimed subject matter dealing with artificial trees. Granted, with her knowledge and skills, she would likely readily become such a person with exposure, but she would need some time to become familiar with the particularities of the design of lighted artificial trees. *See, e.g.*, Pet. Reply 4–5 (highlighting a need for consideration of safety standards for consumer products); Ex. 1100 ¶ 9 (same). Accordingly, we adopt Petitioner's level of skill with the modification that the person of ordinary skill in the art have: "(2) a minimum of one or two years of experience in electrical engineering or electronics, specifically ~~lighting~~ lighted artificial tree manufacturing and/or design." This reflects the reality that a person of ordinary skill in the art would at least have exposure to working with lighted artificial trees at a technical level.

C. Miller, Otto, and Jumo Ground (Claims 2 and 4)

1. *Petitioner's Ground*

This ground is similar to the ground we discussed in the related proceeding decided concurrently herewith, IPR2016-01610. Claim 1, from which claims 2 and 4 depend, requires the traditional components of an artificial tree (trunk sections, branches) with an electrical power source running inside the trunk of the tree and with the connections of the trunk sections providing both a mechanical and an electrical connection. Petitioner asserts that the subject matter of claim 1 would have been obvious to a person of ordinary skill in the art. Pet. I 17–31. At a high level, Petitioner asserts that Miller describes most of the elements of claim 1 with

the exception of the recited mechanical/electrical connection between the tree trunk elements required by the claim. *See*, *e.g.*, *id.* at 18. Petitioner provides the following annotated version of Figure 2 of Miller showing each claim element it asserts is described in Miller:



Petitioner's annotated version of Miller's Figure 2 depicts an artificial tree with first and second light strings, trunk bodies, and tree portions. The electrical connector between tree portions is a loose, plug-and-socket connection housed within the hollow trunk bodies. *See* Ex. 1006, 2:19–68 (describing a "main double conductor wire 22 extending lengthwise of trunk").

Petitioner asserts that Otto, also describing an artificial tree, explains the benefit of having trunk sections connect both electrically and mechanically at the same time (rather than in sequence as apparently would

be done in Miller). Pet. I 22 (citing Ex. 1008, 18:6–29[13], Ex. 1005 ¶¶ 119–123, 141–42). Otto's Figure 2 is reproduced below:

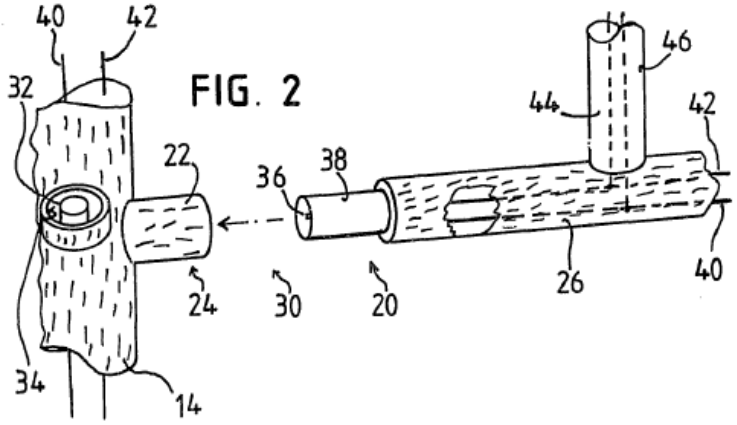


Figure 2 of Otto is a perspective view of a branch having a plug being connected into a socket on a trunk portion. Otto describes how trunk and branch components electrically and mechanically connect using coaxial connections, which makes it "easy to put the connecting areas together, and the branches and trunk elements may be rotated relative to one another even in the assembled state, so that any desired configuration of the Christmas tree is achieved." Ex. 1008, 18:23–27.

Petitioner also asserts that a person of ordinary skill in the art would have been aware of a connector as shown in Jumo, which is directed to configurable coaxial power connections between tube-like arm segments, e.g., as in a desk lamp. *See* Pet. I 20–21; Ex. 1009, Fig. 4.

[13] Petitioner's citations to Otto are to the page numbers stamped on the Exhibit and to the line numbers shown thereon. We follow this convention. We note that the line numbers do not line up very well and that our citations are to the approximately closest line number drawn on the left and not based on counting actual line numbers.

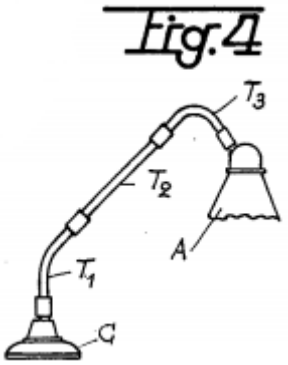


Figure 4 of Jumo depicts an example use of the connectors in a desk lamp.

An excerpt of Figure 1 of Jumo is reproduced below, showing additional details of the connectors inside the tubes:

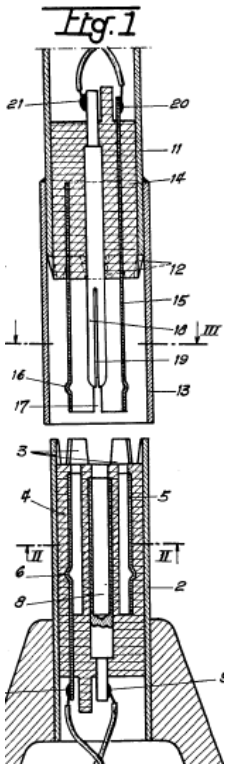


Figure 1 of Jumo depicts a cross section view of a coaxial tube connector.

Jumo explains that connections made between flexible or metal wiring components in jointed support arms can become strain-hardened or damaged, and proposes a particular set of tubes with coaxial power connections that also have slots to fix rotational movement between the connected portions. Ex. 1009, 4:18–25. Jumo discloses that these tubes can be straight or curved, "and [are connected] up to a user device that can be of absolutely any type whatsoever." *Id.* at 5:20.

Petitioner asserts that it would have been obvious to a person of ordinary skill in the art to replace the conventional plug-and-socket electrical connectors with the coaxial connectors of Jumo, for the reasons suggested in Otto and Jumo. Pet. I 22–23. According to Petitioner, Otto describes why it would have been obvious to have an electrical/mechanical connection in artificial Christmas trees, to allow multiple rotational connections and for the ease of making the electrical/mechanical connection at the same time. *Id.* (citing Ex. 1008, 18:6–29; Ex. 1005 ¶¶ 119–123, 141–142). Petitioner also asserts that Jumo describes why a person of ordinary skill in the art would choose the particular coaxial power connections in Jumo, to avoid the drawbacks of flexible wiring and rubbing contacts. *Id.* at 22–23 (citing Ex. 1009 4:8–9; Ex. 1005 ¶¶ 124–127). Petitioner characterizes the combination as "a substitution of one known element for another to obtain predictable results and a combination of elements according to known methods to yield predictable results." *Id.* at 23 (citing *KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 415–416, 421 (2007); Ex. 1005, ¶¶ 137–180).

2. *Patent Owner's Arguments*

As to the Miller-Otto-Jumo ground, Patent Owner states the following:

> PO disagrees with the stated Grounds with respect to Claim 1 and dependents, which also fail to meet Petitioner's burden. However, PO makes no argument with respect to Claim 1 and dependents and refers the Panel and Petitioner to its Motion to Amend that claim.

PO Resp. 2, n.1.

Patent Owner has requested we cancel claim 1 and consider its motion to amend that claim non-contingent. Paper 117. Accordingly, that leaves claims 2 and 4. Despite Patent Owner's silence on these claims, absent a request for adverse judgment, Petitioner bears the burden of establishing by a preponderance of the evidence its ground of unpatentability. 35 U.S.C. §§ 318(a), 316(e).

3. *Analysis of the Miller-Otto-Jumo Ground*

a. Tree Portion

Although canceled, we focus our attention on independent claim 1, from which remaining claims 2 and 4 depend. Petitioner relies on Miller to teach the claimed tree portions. Pet. I 32, 35. We do not find Miller to describe a tree portion as claimed. Our analysis here is similar to that of claim 1 of the '186 patent, addressed in IPR2016-01610.

In particular, Petitioner has not provided sufficient evidence that the proposed combination of Miller, Otto, and Jumo satisfy this claim limitation, because Petitioner has not addressed how the trunk and branches have a modular or unitary relationship within a given purported tree section. Instead, we credit the testimony of Patent Owner's expert, Dr. Brown, that

the branches in Miller are separate from the trunk and not a part of a module or unit consisting of trunk, branches, and lights are required by these claims. Ex. 1006, Fig. 2 (noting the branches fit in the apertures 7), 2:3–8; Ex. 2049 ¶¶ 85–86. The claims require the "standard pattern," or module, is the trunk-branch-light unit, whereas in Miller, the branches are not part of the same "standard pattern" with the trunk but rather independent. Ex. 1006, Fig. 2; Ex. 1134, 3. The same goes for the lights, which we find likewise are not as a unit with the trunk, because they hang on branches that are separately assembled and, thus, they are independent of the trunk sections of Miller-Otto-Jumo. Ex. 1007, Fig. 2; Ex. 2049 ¶¶ 91–92. Because claim 1, requires the level of modularity to be the combination of trunk (with electrical connectors), branches, *and* lights, the Miller-Otto-Jumo combination does not recite a "tree portion" as claimed.

Petitioner does not point to a teaching in another reference to cure this deficiency. Accordingly, we find that Petitioner has not established, by a preponderance of the evidence that claims 2 and 4 are unpatentable over the proposed combination of Miller, Otto, and Jumo.

b. Rationale

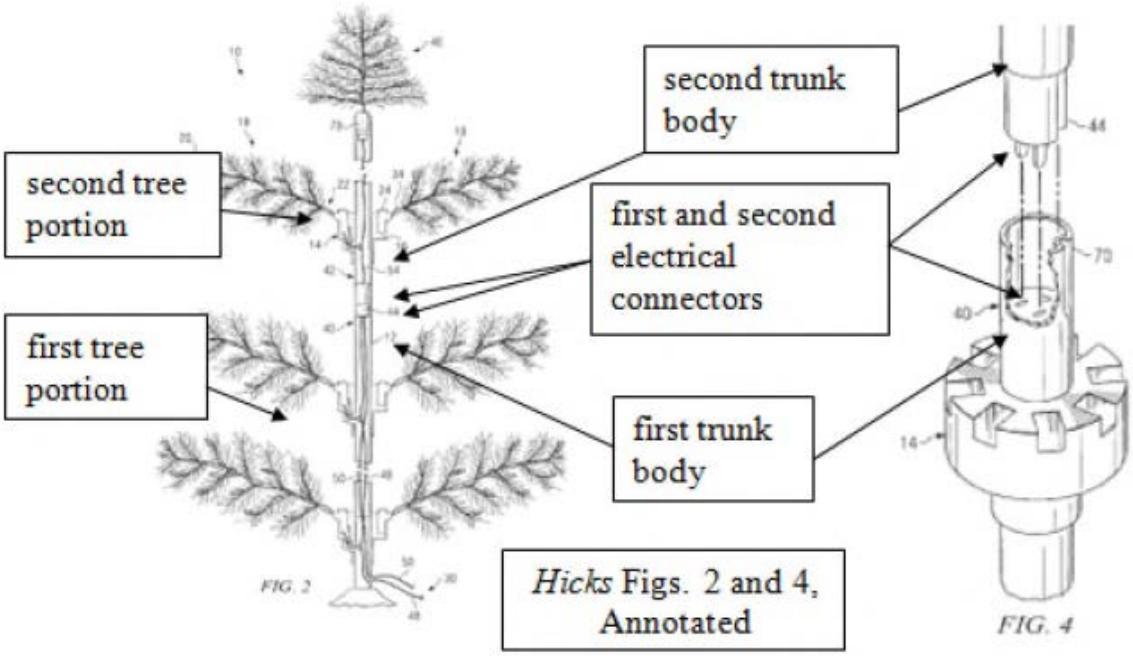
The rationale and evidence here are similar to that in Petitioner's ground addressing claim 1 of the '186 patent in IPR2016-01610 as unpatentable over Miller, Otto, and Jumo. We incorporate our analysis in that Final Written Decision here as our explanation of why Petitioner has not shown, by a preponderance of the evidence, that the subject matter of claims 2 and 4 are unpatentable. Namely, Petitioner has not provided sufficient evidence or explanation in support of its positions that Jumo is analogous art

or that there would have been a reason with rational underpinning to modify Miller's electrical connectors with Jumo's.

D. Hicks, Otto, and McLeish Ground (Claim 5)

1. *Petitioner's Ground*

Petitioner asserts that the subject matter of claim 5 would have been obvious to a person of ordinary skill in the art. Pet. I 31–48. As with Miller in the Miller-Otto-Jumo ground, Petitioner asserts that Hicks describes each element of the claim except for the details of the electrical connector between trunk sections. *Id.* at 31–32. Unlike Miller, however, Hicks shows that the trunk connections are both mechanical and electrical, as Petitioner indicates in the annotated figures below:

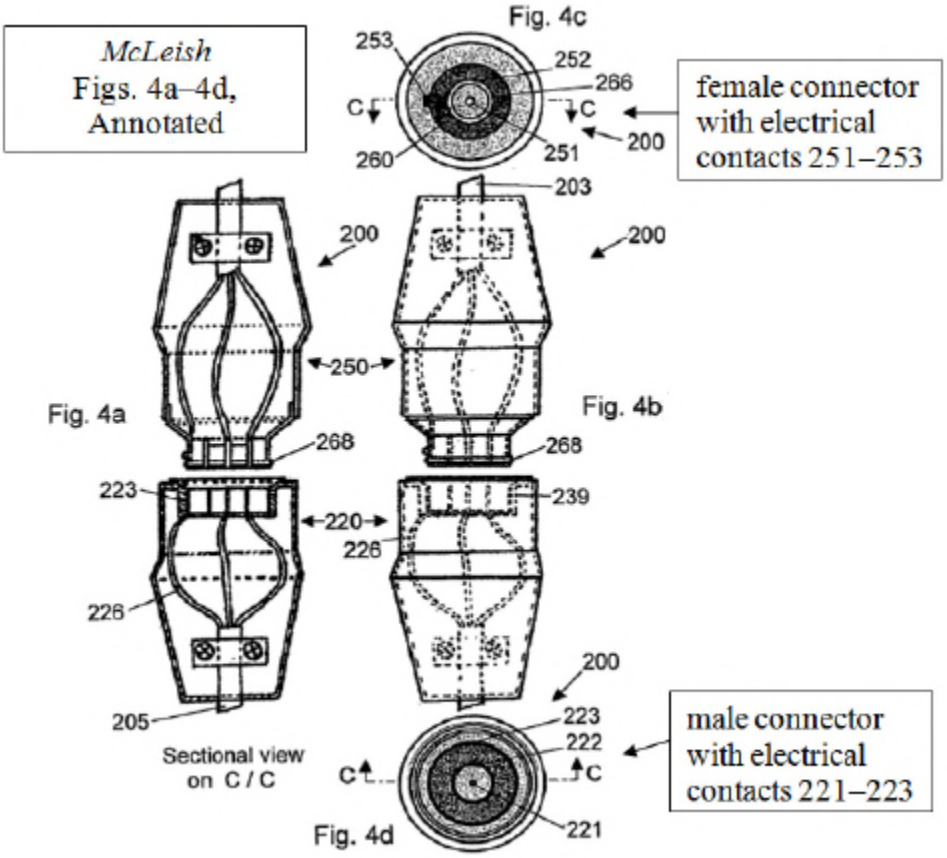


Hicks Figs. 2 and 4, Annotated

Petitioner's annotated Figures 2 and 4 of Hicks identify where the first and second tree portions and trunk bodies can be found on Hicks's artificial

tree. Pet. I 32. Notably, and as shown in greater detail in Figure 4, the trunk connectors include an electrical connector that is of a typical 3-prong type.

Petitioner asserts that Otto describes an electrical/mechanical trunk connection using a coaxial plug-and-ring arrangement. *See id.* at 35–36. Similar to Jumo, Petitioner asserts that McLeish describes in detail an electrical connector that allows for connections with arbitrary rotational alignment. *See id.* at 36. McLeish is an electrical connector "particularly suited for use in out of reach locations, for example to easily and safely replace light bulbs into sockets suspended from a ceiling." Ex. 1010, Abstract; *see also id.* Fig. 8. Petitioner's annotated version of Figures 4a–4d of McLeish is reproduced below:



Figures 4a–4d of McLeish depict multiple views of the McLeish coaxial connector, including views of the male and female connector ends, a cross section view, and a perspective view with the internal electrical components depicted in ghost form. Petitioner characterizes the combination as "combining prior art elements with each performing the same function it had been known to perform to yield what one would expect from such an arrangement." Pet. I 37.

2. *Patent Owner's Arguments*

Patent Owner argues, *inter alia*, that Hicks does not disclose a tree portion (PO Resp. 41–43), and that Petitioner has not provided sufficient rationale to combine (*id.* at 36–41).

3. *Analysis of the Hicks-Otto-McLeish Ground*

a. Tree Portion

Petitioner relies on Hicks (Ex. 1007) to teach the claimed second tree portion (Pet. I 40 (citing Ex. 1007, Fig. 2, item 40)), but we do not find Hicks to disclose the claimed second tree portion. In Hicks, the branches and lights are one module, whereas the trunk sections are another module. Ex. 1007 ¶¶ 21 ("string of lights 34 about each branch 18 is therefore independent of other branches 18 and lights on the tree 10"), 22 ("The center pole 12 may comprise one continuous section or multiple sections in the construction thereof"). The branch/light module in Hicks is not a sub-module of the trunk module but rather wholly independent from the trunk module, as demonstrated by the fact that a user interfaces with the trunks and branches separately. *Compare id.*, Fig. 1 (prior art light string attachment) *with* Fig. 3 (Hicks's light string attachment when attaching a branch). Indeed, the fact that the branch/light module is independent from the trunk, and not part of a tree section comprising a trunk, branches, and lights, is *the* touted benefit of the Hicks invention. Ex. 1007 ¶¶ 11 ("The string of lights on each branch is independent from any string of lights on other branches; therefore, a failure of one string of lights on one branch does not affect any other string of lights on the tree."), 20 ("The difficulties encountered in the prior art include isolating branches, individually wrapping isolated branches with strings of electrical lights, isolating a string of electrical lights that has failed once failure becomes apparent, and the effect of failed strings of lights on other strings."). Accordingly, Hicks does not disclose a second tree portion as claimed, which requires the module to be a trunk/branch/light module, because Hicks specifically discloses that

independent branch/light modules function as a unit separately from the trunks.

Accordingly, we do not find Petitioner to have established, by a preponderance of the evidence, that the subject matter of claim 5 is obvious in view of Hicks, Otto, and McLeish.

b. Rationale

As an additional and alternative basis, we find that Petitioner has not articulated a sufficient rationale for combining the references. Petitioner cites to the teachings of Otto and McLeish for their electrical connectors. Pet. I, 33 ("Petitioner supplies Otto and McLeish as secondary references to teach the claimed electrical connectors and terminals of Claim 1"). Petitioner alleges that Otto discloses "electrical trunk connections having a central plug and a surrounding sleeve-shaped plug and a corresponding socket with a central bushing and ring-shaped coaxial bushing," but to the extent that this is not express, cites to McLeish, which discloses coaxial electrical contacts. *Id.* Petitioner notes that McLeish characterizes itself as "for use with any type of electrical appliance." *Id.* (citing Ex. 1010, 10:18–21). Petitioner also relies on McLeish and Otto "to supply the claimed connector 'positioned in' the end of a trunk section." *Id.* at 34. Accordingly, we understand Petitioner to be modifying the electrical connector of Hicks to include the coaxial-type connector of McLeish as explained in Otto and to locate it in the end of a trunk section as suggested by those same two references.

Petitioner then states that a person of ordinary skill in the art "would have [been] motivated . . . to modify the electrical connections in *Hicks'* trunks (40, 42) so that the trunk members would electrically connect like

McLeish's male/female assemblies." Pet. I 35. Petitioner states that Otto suggests an electrical connector for multiple rotational alignments, and that McLeish teaches an electrical connector providing multiple rotational alignments. *Id.* at 35–37. Accordingly, we understand Petitioner to be asserting that Otto motivates a coaxial-type connector, and McLeish is a coaxial-type connector.[14]

The deficiency in this argument is that Petitioner does not give sufficient technical reasoning or evidence that a person of ordinary skill in the art would consider modifying Hicks's connector *with McLeish's*. Petitioner arguably gives a reason to modify Hicks's connector to be coaxial, as taught in Otto and for the reasons therein. But we see no explanation why it would have been obvious to take the extra step of going to McLeish (aside from the fact that it conveniently describes certain claimed features). We do not take Otto's discussion of the benefits of a coaxial connector to mean that a person of ordinary skill in the art now has *carte blache* to combine any coaxial electrical connector. *In re Kubin*, 561 F.3d 1351, 1359 (Fed. Cir. 2009) ("where a defendant merely throws metaphorical darts at a board filled with combinatorial prior art possibilities, courts should not succumb to hindsight claims of obviousness"). There still must be a reason to reach out to McLeish. Further, while familiar items may have obvious applicability, we have insufficient evidence or technical explanation that McLeish is somehow representative of a class of well-known coaxial connectors having general applicability. *Cf. KSR*, 550 US at 420 ("[c]ommon sense teaches,

[14] In our view, Petitioner here clearly relies on McLeish and not Otto for the second electrical connector. Pet. I 41–44.

however, that familiar items may have obvious uses beyond their primary purposes").

Petitioner's assertions that the proposed combination is a substitution of "one known element for another" or "combin[es] prior art elements with each performing the same function" belies the great differences between Miller-Otto and McLeish. Pet. I 36–38. There is no evidence suggesting that McLeish is a known or substitutable element for use in artificial trees. Further, aside from the notion that McLeish's connectors would be used for an electrical connection, McLeish's connectors would not be performing the same function in Miller-Otto. McLeish functions to connect loose, movable structures, or structures that are otherwise out of reach and hard to quickly disconnect or connect, both situations explaining why it has magnets. *See, e.g.*, Ex. 1010, 3:22–29 (magnets strong enough to attract each other up to 15 cm); 13:32–49 (used for hard to reach electrical cables); 13:41–48 (used for out of reach electrical connections that need to be quickly connected or disconnected). Connecting tree portion segments in Miller-Otto does not involve hard to reach cables nor loose cables. Accordingly, these rationales are unpersuasive.

Given no particular explanation for how McLeish would be considered by a person of ordinary skill in the art, Petitioner's conclusion that the combination is "swap[ping] out known components" (Pet. I 37) is unsupported—there is no evidence that a person of ordinary skill in the art would have known about McLeish or known it to be a swappable component. At best, Petitioner's conclusion here is that there would be no technical difficulty in doing so, but establishing technical feasibility does not establish a rationale sufficient to support an obviousness determination.

Belden Inc. v. Berk-Tek LLC, 805 F. 3d 1064, 1073 (Fed. Cir. 2015) ("obviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention"); *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 1092 n.16 (Fed. Cir. 1985) ("The question, however, is never whether an invention could be made, but whether there is anything in the prior art as a whole that would have rendered its making obvious to one skilled in the art when the invention was made"); *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1575 (Fed. Cir. 1986) ("the district court's analysis employed an inappropriate 'would have been able to produce' test. The statute, § 103, requires much more, i.e., that it would have been obvious to produce the claimed invention at the time it was made without the benefit of hindsight").

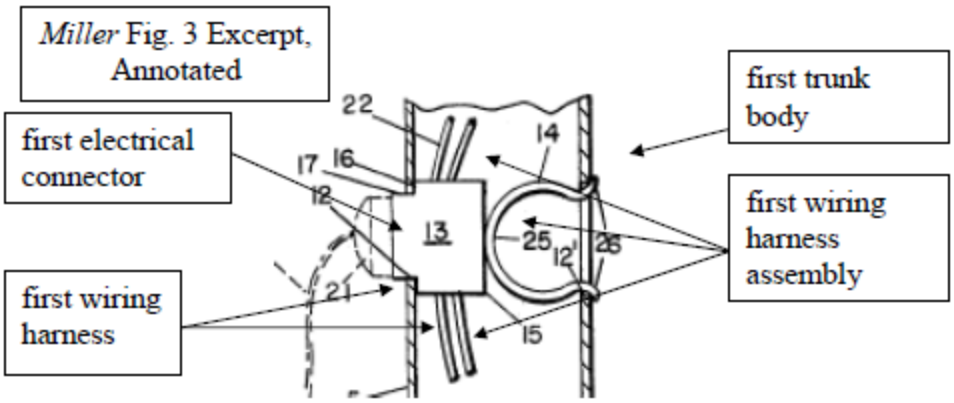
Because the ground is supported by insufficient rationale for the proposed combination, we determine that Petitioner has not established by a preponderance of the evidence that the subject matter of claim 5 would have been unpatentable in view of Hicks, Otto, and McLeish.

E. Miller and Seghers Ground (Claims 11, 13, 16, and 17)

1. *Petitioner's Ground*

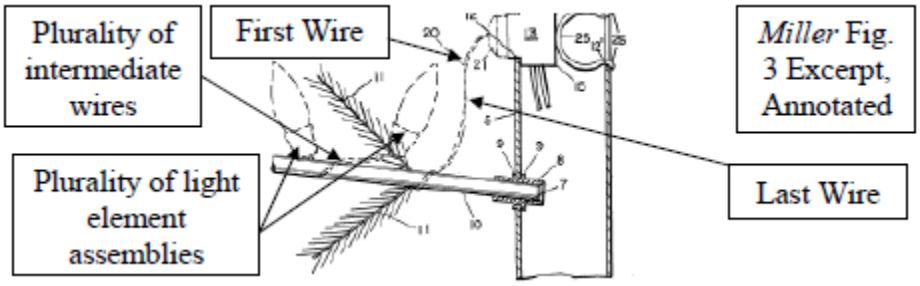
Claim 11 is generally similar to claim 5 but (1) does not discuss the inter-trunk connections at issue in claims 1 and 5, and (2) sets forth in more detail the wiring connections. Petitioner asserts that Miller and Seghers render this claim obvious. Pet. I 48–56. In general, Petitioner asserts that Miller describes each element of claim 11 "with the possible exception of the explicit details of the light string element," which Petitioner asserts is

described in Seghers. *Id.* at 48. Petitioner provides an annotated, excerpted version of Figure 3 of Miller, reproduced below, addressing the limitations regarding the trunk body and wiring harness:



Petitioner's annotated, excerpted Figure 3 of Miller depicts a cross-sectional view of an artificial tree, showing the trunk and details of a wiring harness. Pet. I 49.

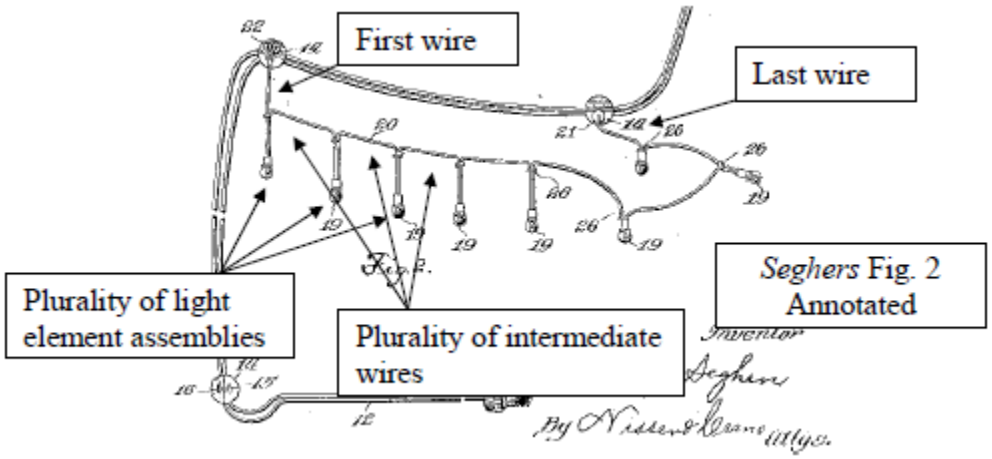
The limitations directed to the light string include a first wire, a plurality of intermediate wires, a plurality of light element assemblies, and a last wire. The two ends are both connected to a first wiring harness. Miller only depicts two lighting elements and, as a consequence, might depict only one intermediate wire. Petitioner's annotated, excerpted version of Figure 3 of Miller, reproduced below, depicts this:



Petitioner's annotated, excerpted Figure 3 of Miller depicts a cross-sectional view of an artificial tree with a branch extending therefrom,

showing in dashed lines two lighting elements connected to a wiring harness on the trunk. Pet. I 54.

Petitioner points out that Miller describes the lights as a "conventional double string of miniature lights 20." Ex. 1006, 2:31–32. Although Miller only shows the two lights, it is readily understood that light strings (regardless of wiring configuration) generally include more than this number. *See, e.g.*, Ex. 1007, Fig. 2; Ex. 1008, Fig. 1; Ex. 1010, Figs. 1, 2. Petitioner asserts that Seghers explicitly describes the claimed light string configuration, and provides annotated Figure 2 of Seghers, reproduced below, to illustrate:



Petitioner's annotated Figure 2 of Seghers depicts a light string wired in series. Pet. I 54.

Petitioner asserts that a person of ordinary skill in the art "would have looked to other known art for clarity [as to what Miller discloses regarding light string wiring]." Pet. I 51. Petitioner asserts that Seghers would "fill in any gaps in *Miller's* disclosure." *Id.* Petitioner also asserts that using series-type wiring has the added benefit of allowing smaller voltage lights, representing a cost savings. *Id.* at 50–51.

2. *Patent Owner's Argument*

Patent Owner argues, *inter alia*, that Petitioner's ground does not address the "tree portion" as claimed. PO Resp. 47–49.

3. *Analysis of the Miller-Seghers Ground*

In accordance with our analysis of "tree portion" in the Miller-Otto-Jumo ground touching independent claim 1, we find that Miller does not teach the "tree portion" of independent claim 11. Petitioner does not allege Seghers teaches this limitation. The ground as to dependent claims 13, 16, and 17 does not cure this deficiency. Accordingly, we determine that Petitioner has not established, by a preponderance of the evidence, that the subject matter of claims 11, 13, 16, and 17 would have been unpatentable in view of Miller and Seghers.

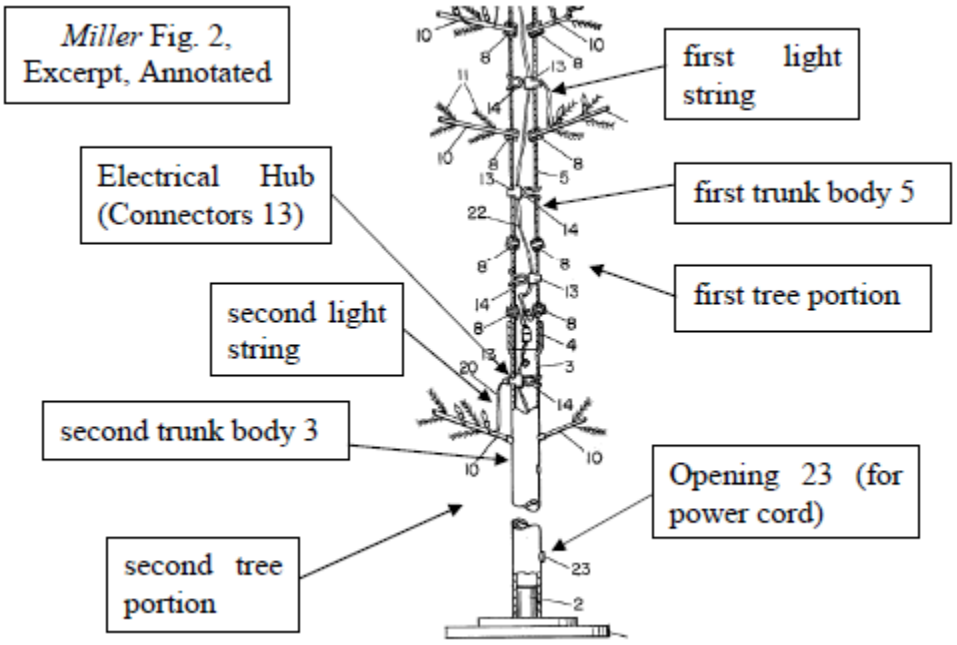
F. Miller and Loomis Ground (Claims 18 and 19)

1. *Petitioner's Ground*

Claim 18 is independent and is directed to an artificial tree with two tree portions. Each tree portion includes a trunk body and an electrical connector. The first trunk portion includes a power cord, and the second trunk portion includes an electrical hub connected to two light strings. Claim 19 depends from claim 18 and specifies that the hub is a terminal block.

For claims 18 and 19, Petitioner identifies where each element is found in the prior art (Pet. II 61–79) and sets forth its obviousness rationale (*id.* at 55–61). Petitioner provides an annotated version of Miller's Figure 2

(*id.* at 56), which illustrates how Petitioner reads the claims on the Miller tree:



Petitioner's annotated version of Miller's Figure 2 identifies various claim features.

Petitioner asserts that Miller does not describe explicitly the features of the claimed electrical connectors, but that Loomis "describes electrical connectors, which provide an electrical-mechanical connection with the ease of assembly of a simple two-bladed plug." *Id.* at 59.

2. *Patent Owner's Argument*

Patent Owner argues, *inter alia*, that Miller does not disclose a tree portion. PO Resp. 56.

3. *Analysis of the Miller-Loomis Ground*

Petitioner makes clear that it is relying on Miller for teaching tree portions. Pet. II 61, 63 (citing to *id.*, 32, 35). In accordance with our

analysis of "tree portion" in the Miller-Otto-Jumo ground touching independent claim 1, we find that Miller also does not teach the "tree portion" of independent claim 18. The ground as to dependent claim 19 does not cure this deficiency. Accordingly, we determine that Petitioner has not established, by a preponderance of the evidence, that the subject matter of claims 18 and 19 would have been unpatentable in view of Miller and Seghers.

IV. MOTION TO AMEND

A. Background

Patent Owner filed a Motion to Amend. Due to the later issuance of the Federal Circuit's *Aqua Products* decision,[15] we permitted, at their joint request, the parties to re-do the Motion to Amend and associated briefing in light of that guidance. Papers 84, 87, 95. Patent Owner then filed a Motion to Amend (Paper 88, "Mot."), to which Petitioner filed an opposition (Paper 93, "Opp."), Patent Owner filed a reply (Paper 101, "Reply"), and Petitioner filed a sur-reply (Paper 104, "Sur-Reply").

B. Proposed Substitute Claim 21

Patent Owner non-contingently proposes to substitute claim 21 for claim 1. Proposed substitute claim 21 is reproduced below.

> [21.P] A lighted artificial tree, comprising:
> [21.1] a first tree portion aligned along a central vertical axis,
> [21.2] the first tree portion including: a first trunk body having a first end, a second end,
> [21.3] a first electrical connector positioned in the second end of the first trunk body

[15] *Aqua Products Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017).

[21.4] and including an electrical terminal set, the electrical terminal set including a first electrical terminal positioned in line with the central vertical axis, [[and]] a second electrical terminal, and a third electrical terminal; and

[21.5] a second tree portion aligned with the central vertical axis,

[21.6] the second tree portion including: a second trunk body including a first end and a second end, the first end configured to couple with the second end of the first trunk body of the first tree portion;

[21.7] a second electrical connector positioned in the first end of the second trunk body

[21.8] and including a first electrical terminal, and a second electrical terminal, and a third electrical terminal, the second electrical terminal defining a ring shape that encircles the first electrical terminal,

[21.9] the second electrical connector configured to couple with the first electrical connector of the first trunk body;

[21.10] a first light string electrically connected to the first and the second electrical terminals of the second electrical connector,

[21.13] wherein upon the first tree portion being coupled to the second tree portion along the central vertical axis, the first electrical connector is coupled to the second electrical connector,

[21.14] such that the first electrical terminal of the first electrical connector is electrically connected to the first electrical terminal of the second electrical connector, and the second electrical terminal of the first electrical connector is electrically connected to the second electrical terminal of the second electrical connector, and the third electrical terminal of the first electrical connector is electrically connected to the third electrical terminal of the second electrical connector, wherein the first, second and third electrical terminals are configured to provide power to the first light string separate from power provided to a second light string.

Mot. 16–17 (element labels and formatting as per original).

C. Non-Broadening Amendment / Responsive to a Ground

In an *inter partes* review motion to amend, a patent owner must not seek to broaden a claim by amendment. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii). Proposed substitute claim 21 further limits claim 1 by adding a third electrical terminal, and specifying that the second and third terminals are configured to provide power to the first light string separate from a second light string. No limitations have been removed.

Patent Owner must amend with subject matter that is responsive to a ground of unpatentability. 37 C.F.R. § 42.121(a)(2)(i). Patent Owner asserts that proposed substitute claim 21 adds limitations to distinguish over the electrical connections provided in Jumo and McLeish. Mot. 5–6.

Petitioner does not raise any deficiencies with respect to the scope and responsiveness of proposed claim 21, nor do we find any.

D. Written Description

Under 35 U.S.C. § 316(d)(3), an amendment in an *inter partes* review cannot introduce new matter. New matter is defined as an addition to the disclosure without support in the original disclosure. Normally, a claim element without support in the original disclosure (i.e., the application as originally filed) merits a rejection under 35 U.S.C. § 112 for lack of written description support. *See, e.g.*, *In re Rasmussen*, 650 F. 2d 1212, 1214 (CCPA 1981) ("The proper basis for rejection of a claim amended to recite elements thought to be without support in the original disclosure, therefore, is § 112, first paragraph . . . ."). Patent Owner provides its explanation for how the proposed amendments have written description support in the specification as originally filed (Ex. 2053) and the provisional patent

application (Ex. 2054). Mot. 7–10. Petitioner does not point to any alleged deficiencies in Patent Owner's showing, nor do we find any.

E. Definiteness

Petitioner first argues that the limitation of proposed substitute claim 21 is indefinite on the basis that the scope of the terms "first, second and third electrical terminals" fails to inform a person of ordinary skill in the art with which electrical connector they are associated. Opp. 2–3. Patent Owner replies that the claim is referring to the connection of the terminals. Reply 12–13. Petitioner replies that, if Patent Owner were correct, the claim would recite "the electrically connected" terminals or otherwise make the position clear. Sur-Reply 5–6.

The standard for indefiniteness requires claims to be set forth with a *reasonable* degree of precision and particularity. *In re Moore*, 439 F.2d 1232, 1235 (CCPA 1971). Reviewing the claims, we do not find the claim to lack such precision when it states the "first, second and third electrical terminals are configured to provide power." As Petitioner's argument realizes, the claim is stating that each set of terminals is connected to each other. The claim states that the electrical connectors, where these terminals are found, are electrically connected when they are physically connected. Mot. 16 (noting element [21.13]). Thus, it is clear that the terminals are mated, which is further made clear when the claim describes the terminals "provide power to the first light string separate from power provided to a second light string," indicating that power flows through the electrical connectors. Thus, we do not find any ambiguity here.

Petitioner next argues that the terminals "provide" power is subject to two interpretations—the terminals providing power collectively or

individually. Opp. 3–4. Petitioner explains that the claim leaves open whether there are two or three "hot" connectors.[16] *Id.* at 3. Patent Owner responds that both options fall under the breadth of the claim. Reply 13. Petitioner argues that such options are inappropriate under *Ex parte Miyazaki*.[17] Sur-Reply 7–8.

There is a distinction between two or more options caused by the breadth of claims and impermissible "two plausible definitions" indicated as improper in *Miyazaki*. Claim breadth allows for multiple ways a claim could be satisfied in practice, but each of the narrower embodiments in practice are all fairly described by the same understanding of the broader claim language. A *Miyazaki* claim is one where the narrower embodiments are not all fairly described by the same understanding of the broader claim language, because the broader claim language has conflicting interpretations. The panel found that *Miyazaki's* sheet feeding area was subject to two plausible definitions because the sheet feeding *area* could be one of two *distinct locations*. *Id.* at 17–18. Thus, the issue was not one of breadth but rather one of mutually exclusive locations of the "sheet feeding area."

In this case, proposed substitute claim 21, and the variations identified by Petitioner (e.g., two or three hot wires), is merely a matter of scope. There are three terminals, and thus two or three may be "hot" in order to

[16] As we understand Petitioner, a "hot" wire is a wire that provides the current source. The neutral, or common, wire provides the return path. The hot wire provides electric potential (Volts) relative to the neutral wire. For example, with a 120 Volt current source, each "hot" wire provides 120 Volts, such that each "hot" wire could be thought of providing its own independent circuit.

[17] *Ex parte Miyazaki*, Appeal 2007-3300, 19-21 (BPAI 2008) (precedential)

provide the separate power for the first and second light strings. The claim is open ended, permitting more than three terminals, such that they could all be "hot" with unclaimed terminals being "neutral" or possibly "ground." It is true that a real-world embodiment could not have only two and only three "hot" terminals at the same time, and that those embodiments would be mutually exclusive. However, *Miyazaki* is not concerned with mutually exclusive real-world embodiments, but rather mutually exclusive readings of the claim. Accordingly, we do not find proposed substitute claim 21 ambiguous.

F. Prior Art

We review the unpatentability of claims in *inter partes* review under the preponderance of the evidence standard. 35 U.S.C. § 316(e). Petitioner opposes Patent Owner's motion on the grounds that proposed substitute claim 21 would have been obvious in view of Hicks, Otto, and Falossi. As part of our review of the evidence of record, we first review the merits of this ground offered by Petitioner, as detailed below.[18]

Petitioner asserts that proposed substitute claim 21 is unpatentable in view of Hicks, Otto, and Falossi. Opp. 8–25. This ground is very similar to the Hicks, Otto, McLeish ground, with McLeish's more typical three

[18] *See* "Guidance on Motions to Amend in view of *Aqua Products*" (Nov. 21, 2017) (https://www.uspto.gov/sites/default/files/documents/guidance_on_motions_to_amend_11_2017.pdf) ("if a patent owner files a motion to amend . . . the Board will proceed to determine whether the substitute claims are unpatentable by a preponderance of the evidence based on the entirety of the record, *including any opposition made by the petitioner*.") (emphasis added).

electrical connections (e.g., hot, neutral, ground) replaced with Falossi's four (e.g., hot1, hot2, neutral, ground).

We are not persuaded by Petitioner's rationale for combining the references. Petitioner asserts that "*Otto's* known advantages would have motivated a POSA to modify the electrical connections in *Hicks'* trunk sections (40, 42) so that the trunk sections would electrically connect like *Falossi's* male/female connectors." Opp. 13–14. Petitioner notes that Falossi describes an electrical connector for use in "various applications such as a power tool, appliances, computers, extension cords, etc." Ex. 1035, 1:37-2:24. Petitioner also asserts that Hicks discloses a tree that may have additional trunk sections and that:

> To provide a cord that separately powers the third trunk section of *Hicks* and avoid overloading each power cord, which could cause damage and safety hazards, a POSA would have found it obvious to turn to a known four . . . terminal electrical connector (taught by *Falossi*) for the lowermost connector (between the bottom and middle tree sections) to separately provide power to lights strings on the second and third trunk sections in addition to the neutral and ground terminals shown in FIG. 4 of *Hicks*.

Opp. 15; *see also id.* at 11.

Petitioner offers insufficient reason or explanation why a person of ordinary skill in the art would turn to Falossi. Falossi is a generic cable or cord connector. Ex. 1035, Abstract. The modification proposed by Petitioner is more than just a change in the connector, it is a change in the connector and a change in wiring that results in a substantial change in function. Petitioner's assertion that Falossi provides for the ability to separately power the trunk sections presumes that a person of ordinary skill in the art had a reason to separately power the trunk sections, but Petitioner

does not explain why a person of ordinary skill would change from a simple electrical connection of Hicks, Otto, or McLeish, where all connectors are present and utilized, to a configuration wherein additional terminals provide separate power channels to different light strings.

All of the power terminals in Hicks, Otto, and McLeish are on the same connection,[19] whereas the modification proposed by Petitioner (to meet the claims) is to include another terminal so that not all power terminals are on the same connection.[20] This is a difference in structure that comes in as a result of the combination, but Petitioner does not address sufficiently why a person of ordinary skill in the art would have considered it obvious to make such a leap or that the prior art teaches such an arrangement.

Petitioner's naked assertion that a person of ordinary skill in the art would do so to avoid overloading the cord (Opp. 15) is unsupported by evidence or technical reasoning explaining that a person of ordinary skill in the art would have recognized the problem of overloading a cord or the proposed solution. *See also* Ex. 1500 ¶ 154 (Petitioner's expert repeating Petitioner's naked assertions of unpatentability). Petitioner's expert states that Hicks "separately provides power to each trunk section," but we do not find this to be the same type of separate power connection required by the claims. *Id.* ¶ 144. Specifically, Hicks's connections go through standard three prong adapters. Ex. 1007, Fig. 4, Fig. 7. Although these may be separate cords (i.e., one in each section), the power connection is the same because the power flows through those same three prongs—all light strings

[19] To put it another way, they all share the same voltage drop.

[20] That is, each power terminal provides a parallel voltage drop.

in Hicks would reside on the same power connection. *See id.* Hicks does not disclose the same as what is claimed, which requires separate power provided to the first and second light strings. Thus, Hicks does not provide a solution of, or recognize the problems solved by, the claimed separate power connections required by the claim. Accordingly, we find that Petitioner has not provided a reason with rational underpinning that supports their assertion that proposed substitute claim 21 would have been obvious in view of Hicks, Otto, and Falossi.

Petitioner has not persuaded us that the subject matter of proposed substitute claim 21 is unpatentable. Reviewing the record as a whole, we do not find a preponderance of the evidence in support of unpatentability. *See Aqua Products*, 872 F.3d at 1296 ("Finally, we believe that the Board must consider the entirety of the record before it when assessing the patentability of amended claims under § 318(a) and must justify any conclusions of unpatentability with respect to amended claims based on that record."). For example, regardless of which tree one of ordinary skill in the art starts with, Miller, Hicks, Loomis, etc., we do not find sufficient evidence that a person of ordinary skill in the art would have provided separate power to the first and second light strings in the manner required by proposed substitute claim 21. Falossi teaches connectors possibly capable of facilitating such a connection, but ultimately the claim requires more than a connection but rather a particular way that the power is distributed in the tree, i.e., a modification of the tree's internal power distribution wiring. In sum, reviewing the record before us, the preponderance of the evidence does not establish that proposed substitute claim 21 is unpatentable under 35 U.S.C. §§ 102 & 103.

V. ORDER

In view of the foregoing, it is hereby:

ORDERED that Patent Owner's motion to cancel claim 1 and to treat the Motion to Amend (Paper 88) claim 1 with proposed substitute claim 21 non-contingent is granted;

FURTHER ORDERED that claims 2, 4, 5, 11, 13, and 16–19 of U.S. Patent 9,044,056 have not been determined to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Amend is granted as to proposed substitute claim 21, and dismissed as moot as to all other proposed substitute claims;

FURTHER ORDERED that Patent Owner's Motion to Exclude (Paper 80) is denied;

FURTHER ORDERED that this is a Final Written Decision, and any party to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

VI.

PLENZLER, *Administrative Patent Judge*, dissenting-in-part:

I disagree with the majority's claim construction and treatment of Petitioner's challenges, and, therefore, also the ultimate determination that all challenged claims are non-obvious. I join the majority in the motions addressed, including the motion to amend claim 1. I do not join the majority decision with respect to unpatentability of the challenged claims and, therefore, respectfully *dissent-in-part*. Accordingly, I would reach the additional issues in this case, including the other claims addressed in Patent Owner's motion to amend, which the majority does not reach.

I disagree with the majority's construction of "tree portion," as well as its determinations with respect to the challenges based on Miller, for reasons similar to those set forth in the final decision for IPR2016-01610 and - 01612. Accordingly, in this decision, I address specifically on the challenge based on Hicks.

My disagreement with the majority with respect to whether Hicks teaches a "tree portion" is also based in our disagreement as to the appropriate construction for that term, which, as noted above, is discussed more fully in IPR2016-01610 and -01612.

The majority additionally faults Petitioner for failing to provide sufficient rationale for combining the teachings of Otto and McLeish with those of Hicks with respect to claim 5. Maj. Op. 21–24. The Petition, however, explicitly states that "*Hicks* . . . teaches every element of Claim 5" and cites Otto and McLeish as evidence of connectors "positioned in" the end of a trunk portion to the extent there is any dispute as to whether Hicks

teaches that feature. Pet. I 34. There is no dispute as to whether Hicks teaches that limitation, and based on the record before us, I would determine that Hicks teaches, or at least suggests, a connector being at least partially within the end of its trunk portion. Moreover, to the extent it is unclear as to whether the connector of Hicks is at least partially within its trunk portion, I am persuaded that such an arrangement would have been obvious. *See id.* at 31–38, 42–45.

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