

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

Willis Electric Co., Ltd.,

Case No. 15-cv-3443 (WMW/KMM)

Plaintiff,

CLAIM CONSTRUCTION ORDER

v.

Polygroup Macau Limited (BVI), Polytree
(H.K) Co. Ltd., and Polygroup Trading
Limited,

Defendants.

In this patent-infringement action, Plaintiff alleges that certain products sold by Defendants infringe multiple claims in five United States patents owned by Plaintiff. This matter is now before the Court to construe ten disputed claim terms in Plaintiff's asserted patents. (Dkt. 594.) For the reasons addressed below, the Court resolves the claim-construction disputes as described herein.

BACKGROUND

Plaintiff Willis Electric Co., Ltd. (Willis Electric) and Defendants Polygroup Macau Limited (BVI), Polytree (H.K) Co. Ltd., and Polygroup Trading Limited (collectively, Polygroup) are competitors in the field of artificial holiday trees. Manufacturers in this field compete based on price, product quality, and product innovation. Willis Electric began manufacturing holiday lights in 1993 and expanded its business to include pre-lit artificial holiday trees in 2008. Until 2010, Willis Electric's pre-lit holiday trees were "typical of the industry," as they were "big, bulky, complex,

and difficult to assemble.” But in 2010, Willis Electric began selling a “One Plug Tree.” Willis Electric filed patent applications pertaining to the One Plug Tree and other related pre-lit artificial holiday tree designs. Subsequently, Polygroup began selling an alleged “knockoff design” and applied for its own patents.

Willis Electric commenced this patent-infringement lawsuit against Polygroup in August 2015. After the conclusion of *inter partes* review (IPR) proceedings before the Patent Trial and Appeal Board (PTAB), Willis Electric filed the now-operative second amended complaint in May 2019. The second amended complaint alleges that Polygroup has infringed and continues to infringe five of Willis Electric’s United States patents pertaining to pre-lit artificial holiday trees.¹ Four of the asserted patents pertain to Willis Electric’s One Plug Tree design: United States Patent No. 8,454,186 (the ’186 Patent); United States Patent No. 8,454,187 (the ’187 Patent); United States Patent No. 8,936,379 (the ’379 Patent); and United States Patent No. 8,974,072 (the ’072 Patent) (collectively, the One Plug Tree Patents). A fifth asserted patent, United States Patent No. 9,066,617 (the ’617 Patent), pertains to Willis Electric’s multi-positional locking artificial tree trunk design. Willis Electric has narrowed the asserted claims in this case to: claims 7, 10, 11, 15–22, 25 and 28 of the ’186 Patent; claims 1–15 of the ’187 Patent; claims 12 and 15 of the ’379 Patent; claim 5 of the ’072 Patent; and claims 4 and 11 of the ’617 Patent. The parties dispute ten claim terms in the asserted patent claims: five claim terms that appear in the One Tree Plug Patents and five claim terms that appear in the ’617 Patent.

¹ The second amended complaint also alleges infringement of a sixth patent, United States Patent No. 9,044,056, which Willis Electric no longer asserts in this lawsuit.

ANALYSIS

I. Legal Standards

Whoever “without authority makes, uses, offers to sell, or sells any patented invention, within the United States . . . during the term of the patent,” infringes that patent. 35 U.S.C. § 271(a). A district court employs a two-step analysis when making a patent-infringement determination. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995). First, the district court construes the asserted claims of the patent to ascertain their meaning and scope. *Id.* Second, the fact finder compares the construed claims to the accused product. *Id.* Only claim construction, the first step of this analysis, currently is at issue.

At the claim-construction stage, it is the district court’s duty to resolve any dispute about the scope of the patent claims raised by the parties. *Eon Corp. IP Holdings LLC v. Silver Spring Networks, Inc.*, 815 F.3d 1314, 1319 (Fed. Cir. 2016). This duty resides with the district court because “the ultimate question of construction [is] a legal question.” *Id.* at 1318 (quoting *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 333 (2015)). A district court construes the disputed claims “independent of the accused product, in light of the specification, the prosecution history, and the prior art.” *Embrex, Inc. v. Serv. Eng’g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000) (internal quotation marks omitted). Although a district court may consider the accused device when determining *which* aspects of the patent claim should be construed, the claim “is construed in . . . light of the claim language . . . *not* in light of the accused device.” *Exigent Tech., Inc. v.*

Atrana Sols., Inc., 442 F.3d 1301, 1309 n.10 (Fed. Cir. 2006) (internal quotation marks omitted). Claim construction merely elaborates the typically terse claim language “to understand and explain, but not to change, the scope of the claims.” *Embrex*, 216 F.3d at 1347 (internal quotation marks omitted).

To ascertain the meaning of disputed patent claim terms, a district court begins its analysis by focusing on the words of the claims. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005). “It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Id.* (internal quotation marks omitted). Courts generally give words in a patent claim their ordinary and customary meaning. *Id.* The ordinary and customary meaning of a claim term is the meaning that would be understood by a person of ordinary skill in the field of technology in question at the time of the invention:

Such person is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning and usage in the field. The inventor’s words that are used to describe the invention—the inventor’s lexicography—must be understood and interpreted by the court as they would be understood and interpreted by a person in that field of technology.

Id. at 1313 (quoting *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998)).

The ordinary meaning of claim language, at times, “may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Id.*

at 1314. For this reason, a district court need not construe terms that have ordinary meanings, “lest trial courts be inundated with requests to parse the meaning of every word in the asserted claims.” *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008). Also, to be legally sound, a “claim construction need not . . . purge every shred of ambiguity.” *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 806 (Fed. Cir. 2007). “The resolution of some line-drawing problems—especially easy ones” is a determination that “is properly left to the trier of fact.” *Id.*

A district court begins the process of claim construction by reviewing the patent specification and the prosecution history. *Phillips*, 415 F.3d at 1313. The specification, which includes the written description of the invention, “is the single best guide to the meaning of a disputed term.” *Id.* at 1315 (internal quotation marks omitted). When the specification includes “a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess,” the lexicography of the inventor governs. *Id.* at 1316. But a district court may not import limitations from the written description into the claims. *Laitram Corp. v. NEC Corp.*, 163 F.3d 1342, 1347 (Fed. Cir. 1998). The disclosure of a particular embodiment of the claimed invention in the specification does not narrow the patent claims. *Id.* at 1347–49. Moreover, “[a] claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.” *MBO Labs., Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007) (internal quotation marks omitted). Although the patent’s prosecution history may be used to understand the claim terms, it cannot enlarge, diminish, or vary

the claim limitations. *Markman*, 52 F.3d at 980. Similarly, extrinsic evidence may be consulted when it is useful in determining the true meaning of disputed claim language, but it is less significant than the intrinsic record. *Phillips*, 415 F.3d at 1317; *Markman*, 52 F.3d at 980–81. It is an error to use extrinsic evidence to vary or contradict the terms of the claims. *Markman*, 52 F.3d at 981.

II. Disputed Claim Terms in the One Tree Plug Patents

The parties disagree as to the proper construction of five claim terms that appear throughout the One Tree Plug Patents. Although these disputed terms appear in multiple claims throughout the One Tree Plug Patents, the parties agree that the '186 Patent is representative. The Court addresses each dispute in turn.

A. “coupling,” “coupled” and “configured to couple”

Willis Electric’s Construction	Polygroup’s Construction
Plain and ordinary meaning or, in the alternative, “joined, linked, or connected”	<p><u>coupling</u>: “the act of securely fitting together two trunk portions/bodies”</p> <p><u>coupled</u>: “two trunk portions/bodies securely fit together”</p> <p><u>configured to couple</u>: “two trunk portions/bodies are designed to securely fit together”</p>

The parties dispute the meaning of the terms “coupling,” “coupled,” and “configured to couple” (collectively, the coupling terms), which appear in the '186 Patent (asserted claims 7, 10, 16, 20 and 28) and the '187 Patent (asserted claims 1–5, 7–10 and 14).

To ascertain the meaning of disputed patent claim terms, a district court begins its analysis by focusing on the words of the claims. *Phillips*, 415 F.3d at 1312. The '186 Patent includes the following representative examples of the disputed coupling terms:

[Claim 1]

. . . wherein an end of the second trunk portion is **configured to couple** with an end of the first trunk portion

[Claim 10]

. . . wherein the second tree portion is mechanically and electrically connectable to the first tree portion by **coupling** a lower end of the second trunk body to an upper end of the first trunk body along a common vertical axis

[Claim 16]

. . . the first plug surface being adjacent to and in contact with the second plug surface when the first tree body is **coupled** to the second tree body.

(Emphasis added.)

Courts generally give words in a patent claim their ordinary and customary meaning. *Phillips*, 415 F.3d at 1312. Some claim terms are simple enough that a lay person can understand their meaning. *Id.* at 1314. As such, a district court need not construe terms that have ordinary meanings. *O2 Micro*, 521 F.3d at 1360. It is true that a court's "determination that a claim term 'needs no construction' or has the 'plain and ordinary meaning' may be inadequate when a term has more than one 'ordinary' meaning or when reliance on the term's 'ordinary' meaning does not resolve the parties' dispute." *Id.* at 1361. But "claim construction need not always purge every shred of ambiguity," and "resolution of some line-drawing problems . . . is properly left to the trier of fact." *Acumed LLC*, 483 F.3d at 806.

When the patent’s specification includes “a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess,” the lexicography of the inventor governs. *Phillips*, 415 F.3d at 1316. Here, nothing in the claim language or specifications of the One Tree Plug Patents reflects that the disputed coupling terms have a specialized or technical meaning in the relevant art that deviates from the commonly understood meaning of these terms. To the contrary, the One Tree Plug Patents provide sufficient context from which the coupling terms can be understood by a lay juror.

Polygroup’s proposed constructions involve two primary components, neither of which warrants deviating from the plain and ordinary meaning of the disputed coupling terms.

First, Polygroup seeks to define the disputed coupling terms to include reference to the objects that are being coupled—namely, “two trunk portions/bodies.” But adding a reference to two trunk portions or bodies is superfluous because the claims, as written, clearly use the coupling terms in reference to two trunk portions or bodies. As such, Polygroup’s inclusion of “two trunk portions/bodies” in its proposed constructions is redundant and would not assist a lay juror to understand and apply the claim terms. Moreover, to the extent that any minimal ambiguity exists as to what objects are being coupled, Polygroup has not demonstrated that a jury would be incapable of resolving that ambiguity by considering the coupling terms in context. *See Acumed LLC*, 483 F.3d at 806. In short, this aspect of Polygroup’s proposed constructions is simply unnecessary.

Second, Polygroup seeks to define the disputed coupling terms to mean that the trunk portions or bodies must “securely fit together.” Significantly, however, the patent claims contain no references that require trunk portions or bodies to “securely fit together.” Instead, Polygroup relies on references to a secure fit that appear in the patent specifications. But a district court may not import limitations from the written description into the claims, and the disclosure of a particular embodiment of the claimed invention in the specification does not narrow the patent claims. *Laitram Corp.*, 163 F.3d at 1347.

Moreover, Polygroup’s proposal to use “securely fit together” to define the coupling terms could introduce, rather than resolve, ambiguity in the claims. Indeed, Polygroup does not identify an objective baseline to define the requisite secure fit that Polygroup’s construction would impose. *Cf. Sonix Tech. Co. v. Publ’ns Int’l, Ltd.*, 844 F.3d 1370, 1378 (Fed. Cir. 2017) (recognizing that terms of degree in a patent claim are “purely subjective,” such that they could be invalid as indefinite, if there is not “an objective baseline through which to interpret the claims”). And courts generally avoid a claim construction that might render a claim invalid. *See Whittaker Corp. v. UNR Indus., Inc.*, 911 F.2d 709, 712 (Fed. Cir. 1990) (recognizing that “claims are generally construed so as to sustain their validity, if possible”). For these reasons, Polygroup has not demonstrated that the disputed coupling terms should be construed to mean that the trunk portions or bodies must “securely fit together.”

Accordingly, the Court concludes that the disputed coupling terms—“coupling,” “coupled,” and “configured to couple”—have their plain and ordinary meaning and require no construction.

B. “the electrical connection being made independent of the rotational orientation/alignment of the first tree/trunk portion relative to the second tree/trunk portion”

Willis Electric’s Construction	Polygroup’s Construction
“an electrical connection that can be made at any available arrangement of the first tree/trunk portion relative to the second tree/trunk portion about a common vertical axis between the tree-trunk portions”	“the electrical connection made when the trunk portions/bodies are coupled at a rotational orientation/alignment is a rotationally independent electrical connection and not interrupted when the trunk portions/bodies are moved to any rotational orientation”

The parties dispute the meaning of the phrase “the electrical connection being made independent of the rotational orientation/alignment of the first tree/trunk portion relative to the second tree/trunk portion.” Variations of this disputed phrase appear in the ’186 Patent (asserted claims 7, 10, 20 and 28) and the ’187 Patent (asserted claims 1 and 7).

When resolving a disputed claim construction, the “construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Phillips*, 415 F.3d at 1316 (internal quotation marks omitted). Claim 10 of the ’186 Patent includes the following representative example of this disputed phrase:

wherein the second tree portion is mechanically and electrically connectable to the first tree portion by coupling a lower end of the second trunk body to an upper end of the first trunk body along a common vertical axis at a rotational orientation of the first trunk portion relative the second trunk portion about the common vertical axis, thereby causing the trunk connector of the first trunk portion to make an electrical connection with the trunk connector of the second trunk portion within an interior of the lighted artificial tree, **the electrical connection being made independent of the rotational orientation of the first trunk portion relative the second trunk portion** about the common vertical axis.

(Emphasis added.) The parties' disagreement as to this disputed phrase pertains to what it means for an electrical connection to be "made independent of" the rotational orientation or alignment of tree trunk portions. Willis Electric contends that an electrical connection is "independent of" the rotational orientation or alignment if making an electrical connection does not depend on which of the multiple available alignments is used when mechanically connecting the tree trunk portions. Polygroup contends that an electrical connection can be "independent of" the rotational orientation or alignment *only* if the tree trunk portions can be rotated (while mechanically connected) without interrupting the electrical connection.

It is undisputed that none of the claims expressly addresses whether tree trunk portions may or must be capable of being rotated after an electrical connection has been made. Nor do the claims expressly or implicitly require an electrical connection to remain uninterrupted if any such rotation occurs. Indeed, the claims say nothing about *maintaining* the electrical connection or preventing interruptions in the electrical

connection if rotation occurs.² Instead, the relevant claim language pertains to the *making of* the electrical connection: “the electrical connection *being made* independent of the rotational orientation.” This is consistent with Willis Electric’s construction, under which multiple possible rotational orientations are available, but an electrical connection can be *made* no matter which of the available rotational orientations is chosen. In contrast, the plain language of the claims does not support Polygroup’s construction.

Polygroup instead relies on the *structure* of the claims, which, according to Polygroup, implicitly supports Polygroup’s proposed construction. When a claim term is first introduced with the article “a,” antecedent basis principles suggest that any later reference to the same claim term using the article “the” is presumptively a reference to the same thing. *See Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1356–57 (Fed. Cir. 1999). Polygroup correctly observes that the claim language first requires the tree trunk portions to be coupled “at a rotational orientation” and to “make **an** electrical connection,” and the claim language later references “**the** electrical connection being made independent of **the** rotational orientation.” Polygroup contends that the antecedent basis reflected by this phrasing means that the electrical connection in the later portion of the claim *depends on* the rotational orientation used in the earlier portion of the claim, notwithstanding the claim language requiring the electrical connection be

² Polygroup cites a passage from the specification, which provides that “in one embodiment, . . . [I]f some rotation occurs inadvertently, the coupling and connection still occurs, regardless of the rotation.” But the disclosure of a particular embodiment of the claimed invention in the specification does not narrow the patent claims. *Laitram Corp.*, 163 F.3d at 1347–48.

independent of the rotational orientation. According to Polygroup, the only logical way to resolve this inconsistency is “for the electrical connection to *not be interrupted* when the trunks are moved,” in which case the electrical connection does not depend on the initial rotational orientation.

Polygroup’s strained construction imposes an unwarranted limitation on the claims, however. As addressed above, the disputed claim language addresses the *making* of an electrical connection, not the *maintaining* of such a connection. And an electrical connection can be made “independent of” the rotational orientation of the trunk portions if, regardless of which of multiple rotational orientations is used to mechanically connect the tree trunk portions, an electrical connection is made. This plausible and logical construction of the claim language does not require rewriting the claims to add implicit limitations pertaining to whether an electrical connection is “interrupted” if rotation occurs. *See Phillips*, 415 F.3d at 1316 (observing that the “construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction” (internal quotation marks omitted)). Willis Electric’s proposed construction most naturally aligns with the claim language and specification.

Polygroup contends that PTAB construed this disputed claim language during the IPR proceedings and that Polygroup’s construction is consistent with PTAB’s construction. But PTAB’s final written decisions reflect that PTAB did *not* construe this claim language. Although PTAB assessed whether the prior art disclosed this limitation,

and in doing so characterized the functionality of the prior art, PTAB did not expressly construe the now-disputed phrase in the One Tree Plug Patents: an “electrical connection being made independent of the rotational orientation” of the tree trunk portions. PTAB’s characterization of prior art has no bearing on the scope of the claims in the One Tree Plug Patents.

Polygroup nonetheless contends that PTAB’s final written decisions are necessarily inconsistent with Willis Electric’s proposed construction, which provides that an electrical connection can be made at “any available arrangement” of the tree trunk portions. By limiting the claim language to require an electrical connection only at the *available* rotational orientations of the tree trunk portions, Polygroup argues, Willis Electric’s construction necessarily implies that some rotational orientations are *unavailable*. According to Polygroup, the claims require *all* rotational orientations to be available. But the claim language belies Polygroup’s argument. The language in some of the disputed claims reflects that, in certain embodiments of the invention, some rotational orientations might not be available. For instance, claim 1 of the ’186 Patent and claim 1 of the ’187 Patent refer to trunk portions that are configured to couple “in at least four different rotational” alignments or orientations, implying that some embodiments of the invention might permit a limited number of rotational alignments or orientations. PTAB recognized that prior art that broadly permits “any number” of rotational orientations includes “at least four different” rotational orientations. But this recognition is consistent with a construction of the ’186 Patent and the ’187 Patent in which an embodiment of the

invention might include *less* than every conceivable rotational orientation.³ Thus, some rotational orientations might be *unavailable* in a particular embodiment of the '186 Patent or the '187 Patent, which is consistent with the reference to “any available arrangement” of the tree trunk portions that appears in Willis Electric’s proposed construction.

For all of these reasons, the Court rejects Polygroup’s proposed construction of this phrase and adopts Willis Electric’s proposed construction of this phrase—namely, “an electrical connection that can be made at any available arrangement of the first tree/trunk portion relative to the second tree/trunk portion about a common vertical axis between the tree-trunk portions.”

C. “coaxial trunk connectors” and “coaxial electrical contact set”

Willis Electric’s Construction	Polygroup’s Construction
<u>coaxial trunk connectors</u> : “connectors capable of making an electrical connection between trunk sections and that include a set of electrical contacts that permit the electrical connection to be made about a common vertical axis of the trunk sections”	<u>coaxial trunk connectors</u> : “trunk connectors capable of making an electrical connection between trunk portions at any rotational orientation of the trunk portions about a common vertical axis”
<u>coaxial electrical contact set</u> : “a set of electrical contacts that permit the electrical connection to be made about a common vertical axis of the trunk sections”	<u>coaxial electrical contact set</u> : “a set of electrical contacts that share a common vertical axis”

³ PTAB disagreed with Willis Electric’s contention that claim 1 of the '186 Patent requires a “fixed number” of rotational orientations, observing that the claim “allow[s] any rotational orientation.” But there is a difference between a claim that *allows* up to an infinite number of rotational orientations, as PTAB concluded, and a claim that *requires* an infinite number of rotational orientations, as Polygroup advocates. The “any available” rotational orientation language in Willis Electric’s proposed construction is consistent with the availability of an infinite number of rotational orientations.

The parties dispute the meaning of the terms “coaxial trunk connectors” and “coaxial electrical contact set” (collectively, the “coaxial terms”), which appear in the ’186 Patent (asserted claim 15) and the ’187 Patent (asserted claims 4, 10 and 13).

1. “coaxial trunk connectors”

The dispute as to the term “coaxial trunk connectors” pertains to whether the trunk connectors must be capable of making an electrical connection at “any rotational orientation,” as Polygroup contends, or whether the trunk connectors merely need to be “about a common vertical axis,” as Willis Electric contends. Claim 15 of the ’186 Patent provides the following representative example of the disputed term in context:

The lighted artificial tree of claim **10**, wherein the trunk connectors of the first and second tree portions form **coaxial trunk connectors**.

(Emphasis added.) Claim 10, from which claim 15 depends, describes the first and second tree portions as being coupled “along a common vertical axis,” which is consistent with both parties’ proposed constructions. The material difference between the parties’ proposed constructions is Polygroup’s addition of the requirement that an electrical connection can be made at “any rotational orientation,” which is language that undisputedly does *not* appear in the claim language.

In support of its proposed construction, Polygroup relies in part on the specification, which describes “one embodiment” in which “the coaxial nature of connectors . . . permit the electrical connection of the connectors at any rotational orientation about a vertical axis.” But, as addressed above, it is improper to import

limitations from the written description into the claims, and the disclosure of one particular embodiment of the claimed invention in the specification does not narrow the patent claims. *Laitram Corp.*, 163 F.3d at 1347–48. Absent any support in the claim language for Polygroup’s proposed “any rotational orientation” limitation, Polygroup’s reliance on the specification is unavailing.

Moreover, the record reflects that Polygroup’s construction is inconsistent with the position Polygroup took during the IPR proceedings before PTAB. Indeed, Polygroup’s expert opined to PTAB that “another example of a conventional coaxial electrical connector” includes a mechanical block fitted during assembly to “ensur[e] that the final connection is made in a discrete position,” as opposed to any rotational orientation. As such, Polygroup’s proposed construction of “coaxial trunk connectors” lacks adequate support.

2. “coaxial contact sets”

The dispute as to the term “coaxial contact sets” pertains to whether the claimed set of electrical contacts must “share a common vertical axis,” as Polygroup contends, or whether the claimed set of electrical contacts merely “permit the electrical connection to be made about a common vertical axis,” as Willis Electric contends. Claim 4 of the ’187 Patent provides the following representative example of the disputed term in context:

The lighted artificial tree of claim 1, wherein the first trunk electrical connector of the first portion includes a **first coaxial electrical contact set** and the trunk connector of the second trunk portion includes a **second coaxial electrical contact set** such that the electrical connection between the first wiring assembly and the second wiring assembly

comprises an electrical connection between the **first coaxial electrical contact set** and the **second coaxial electrical contact set**.

(Emphasis added.)

Courts generally give words in a patent claim their ordinary and customary meaning. *Phillips*, 415 F.3d at 1312. When the patent’s specification includes “a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess,” the lexicography of the inventor governs. *Id.* at 1316. But here, nothing in the claim language or specifications of the One Tree Plug Patents reflects that “coaxial” has a specialized or technical meaning in the relevant art that deviates from its commonly understood meaning, which is—quite literally—sharing a common axis. *See* Merriam-Webster’s Collegiate Dictionary 237 (11th ed. 2014) (defining “coaxial” as “having coincident axes”). As such, the ordinary and customary meaning of “coaxial” supports Polygroup’s proposed construction.

Although Willis Electric concedes that “the electrical connection formed by the coaxial electrical connector must be made about a common vertical axis,” Willis Electric contends that the electrical contacts “need not physically share a common vertical axis.” But Willis Electric fails to plausibly explain how an electrical connection can be made “about a common vertical axis” *without* the electrical contacts physically sharing that vertical axis. Nor does Willis Electric plausibly explain how an electrical contact set can even be “coaxial” if it does not, as the term “coaxial” plainly suggests, share an axis. Indeed, the specification describes and depicts electrical contacts that share a common

axis, which is consistent with the plain and ordinary meaning of “coaxial.” As such, Polygroup’s proposed construction of “coaxial contact sets” is consistent with the ordinary and customary meaning of the claim language, whereas Willis Electric’s proposed construction of this term is not.

For these reasons, the Court adopts Willis Electric’s proposed construction of “coaxial trunk connectors”—namely, “connectors capable of making an electrical connection between trunk sections and that include a set of electrical contacts that permit the electrical connection to be made about a common vertical axis of the trunk sections.” And the Court adopts Polygroup’s proposed construction of “coaxial contact sets”—namely, “a set of electrical contacts that share a common vertical axis.”

D. “trunk electrical connector/trunk connector” and “trunk connector assembly”

Willis Electric’s Construction	Polygroup’s Construction
“an assembly positioned in part or whole in the trunk body that is capable of making an electrical connection between trunk/tree portions”	<p><u>trunk electrical connector/trunk connector</u>: “a non-conductive body enclosing a pair of electrical contacts configured to make an electrical connection with another trunk connector”</p> <p><u>trunk connector assembly</u>: “a trunk electrical connector/trunk connector coupled to an electrical connector via wiring”</p>

The parties next dispute the meaning of the terms “trunk electrical connector/trunk connector” and “trunk connector assembly” (collectively, the connector terms), which appear in the ’186 Patent (asserted claim 7, 10, 11, 15, 16, 20, 22 and 28), the ’187 Patent

(asserted claims 1–11, 13 and 14), the '072 Patent (asserted claim 5), and the '379 Patent (asserted claims 12 and 15).

A threshold aspect of the parties' dispute as to the connector terms is whether "trunk connector assembly" should be construed to have a different meaning than "trunk electrical connector" and "trunk connector."⁴ Willis Electric contends that these phrases are used interchangeably in the One Plug Tree Patents, whereas Polygroup contends that "trunk connector assembly" is distinct. Independent claim 7 of the '187 Patent is the only asserted claim that uses the "trunk connector assembly" phrase:

a first tree portion including a first trunk portion, a first plurality of branches joined to the first trunk portion, and a first light string affixed to a portion of the first plurality of branches, the first trunk portion having a first trunk body and a **trunk connector assembly**, at least a portion of the **trunk connector assembly** housed within the first trunk body and electrically connected to the first light string

(Emphasis added.) Later in that same claim, the phrase "trunk connector" also is used:

wherein the second tree portion is mechanically and electrically connectable to the first tree portion by coupling a lower end of the second trunk body to an upper end of the first trunk body along a common vertical axis at a rotational orientation of the first trunk portion relative the second trunk portion about the common vertical axis, thereby causing the **trunk connector** of the first trunk portion to make an electrical connection with the **trunk connector** of the second trunk portion within a trunk interior

(Emphasis added.) All of the other asserted claims that use the connector terms use either "trunk electrical connector" or "trunk connector."

⁴ The parties agree that "trunk electrical connector" and "trunk connector" should share the same meaning.

The doctrine of claim differentiation creates a presumption that the use of different terms in different patent claims indicates that those claims should be ascribed different scope or meaning. *See Chi. Bd. Options Exch., Inc. v. Int'l Sec. Exch., LLC*, 677 F.3d 1361, 1369 (Fed. Cir. 2012); *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1369 (Fed. Cir. 2007). This presumption has less force, however, when there are other differences between the claims. *See, e.g., SRAM Corp. v. AD-II Eng'g, Inc.*, 465 F.3d 1351, 1358 (Fed. Cir. 2006). And when two independent claims are at issue, the doctrine of claim differentiation generally is *not* applicable because patentees are free to use linguistic variations in multiple independent claims. *See, e.g., Andersen Corp.*, 474 F.3d at 1370 (declining to apply doctrine of claim differentiation to separate independent claim terms “pellets,” “linear extrudates,” and “composite compositions” when there were other differences between the claims); *Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 438 F.3d 1374, 1380–81 (Fed. Cir. 2006) (recognizing that “[c]laim drafters can also use different terms to define the exact same subject matter”); *Hormone Research Found. v. Genentech, Inc.*, 904 F.2d 1558, 1567 n.15 (Fed. Cir. 1990) (“It is not unusual that separate claims may define the invention using different terminology, especially where (as here) independent claims are involved.”). Moreover, evidence from the specification may “overcome any presumption arising from the doctrine of claim differentiation.” *Andersen Corp.*, 474 F.3d at 1370 (internal quotation marks omitted).

Here, claim 7 of the '187 Patent is an independent claim, as are several of the other asserted claims that use one or more of the disputed connector terms. The scope of

the claims also differs in other respects unrelated to the connectors. As such, the doctrine of claim differentiation is entitled to significantly less weight here. Moreover, claim 7 of the '187 Patent uses the terms “trunk connector assembly” and “trunk connector” interchangeably within the same claim. And the specification similarly uses these terms interchangeably. For example, the specification describes a “trunk connector assembly” as “a female trunk connector configured to receive a male counterpart.” For these reasons, the doctrine of claim differentiation is not applicable here and the three disputed connector terms are construed to share the same meaning.

The substance of the parties’ proposed constructions for the connector terms involves two primary material differences.

First, Willis Electric’s proposed construction defines the trunk connectors as being “positioned in part or whole in the trunk body.” But several of the asserted claims already expressly require the trunk connector to be “located within” or “housed within” the trunk body. Thus, Willis Electric’s proposed construction is needlessly redundant as to these asserted claims. In addition, some of the asserted claims do *not* expressly require the trunk connector to be located or housed within the trunk body. Thus, Willis Electric’s proposed construction would improperly add a limitation as to these asserted claims, and Willis Electric provides no basis for doing so. For these reasons, the Court rejects this aspect of Willis Electric’s proposed construction.

Second, Polygroup’s proposed construction defines the physical structure of trunk connectors as “a non-conductive body enclosing a pair of electrical contacts,” whereas

Willis Electric's proposed construction refers to the physical structure of the trunk connectors simply as "an assembly." According to Willis Electric, Polygroup's proposed construction is "nonsensical" because to "make an electrical connection . . . a connector must include some conductive material." But Polygroup's proposed construction is not devoid of conductive material. Rather, under Polygroup's proposed construction, the conductive material (namely, "a pair of electrical contacts") is merely enclosed by "a non-conductive body." Polygroup's proposed construction, therefore, is not "nonsensical."

Polygroup's proposed construction is not consistent with the claim language, however. Nothing in the asserted claims requires a trunk connector to have "a non-conductive body" enclosing a pair of electrical contacts. Polygroup relies on the specification, which describes the use of "plastic or similar non-conducting material." But, as addressed above, it is improper to import limitations from the written description into the claims, and the disclosure of a particular embodiment of the claimed invention in the specification does not narrow the patent claims. *Laitram Corp.*, 163 F.3d at 1347. Moreover, Polygroup cites the specification out of context. In full, this aspect of the specification provides: "Although *not intending to be limiting*, insert . . . *may comprise* a plastic or similar non-conducting material." (Emphasis added.) Polygroup provides no other support for this aspect of its proposed construction, which is inconsistent with the claim language. The Court, therefore, rejects this aspect of Polygroup's proposed construction.

For these reasons, the Court rejects Polygroup’s proposed construction of the connector terms and adopts, as modified, Willis Electric’s proposed construction of these terms. Accordingly, the Court construes the terms “trunk electrical connector,” “trunk connector,” and “trunk connector assembly” to mean “an assembly that is capable of making an electrical connection between trunk/tree portions.”

E. “plug” and “plug insertable into the trunk body”

Willis Electric’s Construction	Polygroup’s Construction
“a non-conductive mechanical structure fixedly positioning an electrical contact set within a trunk body”	“a non-conductive mechanical structure configured to form a compression or interference fit with the inner wall of the trunk body”

The parties next dispute the meaning of the terms “plug” and “plug insertable into the trunk body” (collectively, the plug terms), which appear in the ’186 Patent (asserted claims 16 and 17) and the ’187 Patent (asserted claim 14). The parties agree that a plug must be a non-conductive mechanical structure. The parties’ dispute pertains to whether a plug must be “configured to form a compression or interference fit with the inner wall of the trunk body,” as Polygroup proposes, or whether a plug need only “fixedly position[] an electrical contact set within a trunk body,” as Willis Electric proposes.

Claims 16 and 17 of the ’186 Patent provide representative examples of this disputed claim language in context:

16. The lighted artificial tree of claim **10**, wherein the trunk connector of the first trunk portion includes a first **plug insertable into the** upper end of the first **trunk body** and having a first plug surface, the trunk connector of the second trunk portion includes a second **plug insertable into the**

lower end of the second **trunk body** and having a second plug surface, the first plug surface being adjacent to and in contact with the second plug surface when the first tree body is coupled to the second tree body.

17. The lighted artificial tree of claim **16**, wherein the first **plug** includes flexible portions that deform when inserted into the trunk body, thereby forming an interference fit between the first **plug** and the first trunk body.

(Emphasis added.) Claim 14 of the '187 Patent is nearly identical to claim 16 of the '186 Patent. And it is undisputed that the terms “plug” and “plug insertable into the . . . trunk body” have the same meaning.

Notably, although claim 17 of the '186 Patent references “an interference fit” as to the *first* of two plugs, claim 17 does not impose this requirement on the *second* plug. And the other two relevant claims do not reference “an interference fit” at all. Instead, claim 16 of the '186 Patent (and claim 14 of the '187 Patent) describe two plugs that are “adjacent to and in contact with” each other without describing any type of “fit.” By incorporating the “interference fit” limitation into its definition of the plug terms, Polygroup’s construction improperly imposes a limitation onto all plugs referenced in all three relevant claims even though the limitation appears in only one relevant claim and applies only to one of the two plugs referenced in that claim. Moreover, *none* of the relevant claims references a “compression” fit.

Polygroup contends that, because the relevant claims describe *inserting* the plug as well as physical contact with the plug, the claim language necessary describes a

compression or interference fit.⁵ But this inference does not explain why the “interference fit” limitation is expressly referenced in one claim but omitted from the other two relevant claims. Indeed, because claim 17 of the ’186 Patent depends from claim 16 of the ’186 Patent, and claim 17 uses a phrase that claim 16 does not, the doctrine of claim differentiation creates a presumption that the difference in phrasing is meaningful. *See, e.g., Andersen Corp.*, 474 F.3d at 1369. Significantly, the reference to an interference fit appears to be the primary difference between claim 16 and claim 17, which strengthens this presumption. *Acumed*, 483 F.3d at 806 (observing that the “presumption is especially strong when the limitation in dispute is the only meaningful difference between an independent and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim” (internal quotation marks omitted)). Polygroup’s arguments are insufficient to overcome the presumption that the “interference fit” limitation in claim 17 should not be imposed on claim 16. As such, the Court rejects Polygroup’s proposed construction of the plug terms.

Polygroup argues that the phrase “fixedly positioning” in Willis Electric’s proposed construction is vague and unsupported by the claims or specification. Indeed, Willis Electric does not explain what “fixedly positioning” means, and this phrase does not appear in the claims or specifications of the One Plug Tree Patents. Instead, the

⁵ Polygroup also relies on references to interference and compression fits that appear in the specification. But the specification cannot limit the claims in a manner that is inconsistent with the claim language. *See Laitram Corp.*, 163 F.3d at 1347.

specification provides that a plug is “for *securely positioning* [a] contact set . . . within its respective trunk or base portion.” (Emphasis added.) As such, the Court modifies Willis Electric’s proposed construction to better align with the invention as described in the One Tree Plug Patents. *See Phillips*, 415 F.3d at 1316 (observing that a correct claim construction “stays true to the claim language and most naturally aligns with the patent’s description of the invention” (internal quotation marks omitted)).

For these reasons, the Court rejects Polygroup’s proposed construction of the plug terms and adopts, as modified, Willis Electric’s proposed construction of these terms. Accordingly, the Court construes the terms “plug” and “plug insertable into the trunk body” to mean “a non-conductive mechanical structure securely positioning an electrical contact set within a trunk body.”

III. Disputed Claim Terms in the ’617 Patent

The parties also disagree as to the proper construction of five claim terms that appear in the ’617 Patent, which pertains to Willis Electric’s multi-positional locking artificial tree trunk design. The Court addresses each dispute in turn.

A. “multi-positional interlocking artificial tree assembly”

Willis Electric’s Construction	Polygroup’s Construction
“an artificial tree having two or more trunk portions configured to mechanically couple together in multiple orientations around a common axis, and the multiple trunk portions have limited rotational movement about the common axis when coupled in any of the multiple orientations”	“an artificial tree having two trunk portions coupled together in one of multiple orientations around a common vertical axis using a coupling mechanism to prevent rotation of the coupled trunk portions”

The parties dispute the meaning of the preamble to claim 1 of the '617 Patent, from which asserted claims 4 and 11 depend. Specifically, the parties disagree about whether this preamble is limiting and, if it is limiting, the parties dispute the scope and proper construction of the preamble.

1. Whether the Preamble is Limiting

As a threshold issue, the parties disagree as to whether the preamble to claim 1 of the '617 Patent is limiting. Polygroup argues that it is limiting, whereas Willis Electric argues that it is not limiting.

“[U]se descriptions” in the preamble of a patent claim are “rarely treated as claim limitations.” *Marrin v. Griffin*, 599 F.3d 1290, 1294 (Fed. Cir. 2010) (explaining that “[p]reamble language that merely states the purpose or intended use of an invention is generally not treated as limiting the scope of the claim” (internal quotation marks omitted)). For apparatus claims, such as those at issue here, “patentability depends on the claimed structure, not on the use or purpose of that structure.” *Id.* (quoting *Catalina Mktg. Int’l v. Coolsavings.com, Inc.*, 289 F.3d 801, 809 (Fed. Cir. 2002)).

There is no “litmus test” for a court to determine whether a preamble limits the scope of patent claims. *Catalina Mktg.*, 289 F.3d at 808. The Federal Circuit has articulated several factors or “guideposts” that a court may consider. *Id.* For example, a preamble may be limiting if (1) “dependence on a particular disputed preamble phrase for antecedent basis . . . indicates a reliance on both the preamble and claim body to define the claimed invention,” (2) “the preamble is essential to understand limitations or terms

in the claim body,” (3) the preamble recites “additional structure or steps underscored as important by the specification,” or (4) the patentee demonstrated “clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art.” *Id.* Here, the parties fail to address most of these factors in their briefing.

The record reflects that several of the *Catalina Marketing* factors are present. First, the bodies of the asserted claims depend on the preamble for an antecedent basis and to understand the terms in the claim body. For example, the bodies of the asserted claims do not reference a tree, artificial or otherwise. Without the preamble’s reference to an “artificial tree,” it would not necessarily be clear that the claimed apparatus is an artificial tree. Moreover, the preamble provides context for understanding certain otherwise ambiguous claim terms, such as “trunk,” which can have multiple meanings. Second, the preamble defines the *structure* of the invention—a “multi-positional interlocking artificial tree assembly”—as opposed to merely stating its purpose or intended use. *See, e.g., Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997); *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989). Third, the record from the IPR proceedings supports the conclusion that the preamble to claim 1 of the ’617 Patent is limiting. Not only did Willis Electric extensively argue that the preamble is limiting during IPR proceedings (contrary to the arguments Willis Electric makes now to this Court), PTAB also *agreed* that the preamble is limiting.⁶ Although

⁶ Willis Electric misleadingly fails to acknowledge in its briefing to this Court that the position Willis Electric took in the IPR proceedings *and* the conclusion reached by PTAB both are contrary to the position Willis Electric takes in this case.

PTAB's final written decisions are not binding on this Court, *see Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2146 (2016), it is notable and relevant that Willis Electric demonstrated clear reliance on the preamble to distinguish the claimed invention from the prior art, *see Catalina Mktg.*, 289 F.3d at 808.

For these reasons, the preamble to claim 1 of the '617 Patent is limiting.

2. Scope of the Preamble

The parties also dispute the scope and proper construction of the preamble. The disputed preamble provides: "A multi-positional interlocking artificial tree assembly, comprising . . . ," followed by a series of claim limitations.

The parties first dispute whether the preamble should be construed to require "two or more trunk portions," as Willis Electric contends, or to require "two trunk portions," as Polygroup contends. As Willis Electric correctly argues, nothing in the claim language or specification of the '617 Patent limits the patented artificial tree to having only two trunk portions. To the contrary, the specification provides that a user may "optionally" include a third trunk portion or "more than three trunk portions." For this reason, the Court rejects this aspect of Polygroup's proposed construction, and instead adopts Willis Electric's proposed "two or more trunk portions" construction.

The parties next dispute whether the preamble requires an *already-assembled* artificial tree, or merely one that is capable of being assembled. Under Willis Electric's proposed construction, the trunk portions are "configured to mechanically couple together in multiple orientations," whereas under Polygroup's proposed construction, the

trunk portions have already been “coupled together in one of multiple orientations.” According to Polygroup, the preamble’s use of the word “assembly” refers to an assembled tree. But as Willis Electric correctly observes, the patent claims use active verbs to describe the assembly process—for example, “the male body portion *inserts* into the trunk cavity.” (Emphasis added.) As Willis Electric persuasively argues, it would be illogical for the preamble to require an already-assembled artificial tree when the limitations that follow the preamble describe the assembly process. Accordingly, the Court rejects this aspect of Polygroup’s proposed construction, and instead adopts Willis Electric’s proposed “configured to mechanically couple together” construction.

The parties also dispute whether the preamble’s reference to an “interlocking” assembly means that the invention allows “limited rotational movement,” as Willis Electric contends, or “prevent[s] rotation of the coupled trunk portions,” as Polygroup contends. Significantly, nothing in the claim language addresses rotation, let alone requires the trunk portions to be strictly *prevented* from rotating. Nor does the ordinary and customary meaning of “interlocking” compel such a construction.⁷ Polygroup relies solely on references in the specification that describe trunk portions that cannot rotate. But, as addressed above, the specification cannot limit the claims in a manner that is not reflected in the claim language. *See Laitram Corp.*, 163 F.3d at 1347–48. Thus, the

⁷ *See* Merriam-Webster’s Collegiate Dictionary 653 (11th ed. 2014) (defining “interlock” as “to lock together” or “to connect so that the motion or operation of any part is constrained by another”).

Court rejects this aspect of Polygroup’s proposed construction, and instead adopts Willis Electric’s proposed construction.

For these reasons, the Court rejects Polygroup’s proposed construction of the preamble to claim 1 of the ’617 Patent and adopts Willis Electric’s proposed construction of the preamble. Accordingly, the Court construes the preamble to mean “an artificial tree having two or more trunk portions configured to mechanically couple together in multiple orientations around a common axis, and the multiple trunk portions have limited rotational movement about the common axis when coupled in any of the multiple orientations.”

B. “coupling mechanism”

Willis Electric’s Construction	Polygroup’s Construction
“a sleeve or plug for mechanically aligning two trunk portions such that the trunk portions have limited rotational movement relative to one another about a common axis”	“a substantially sleeve-shaped hollow structure for joining two trunk portions whose outer surface is configured to fit snugly inside a first trunk portion and whose inner surface is shaped to securely fit with an insertable portion at the end of the second trunk portion body to prevent rotational movement of the two trunk portions”

The parties next dispute the meaning of the term “coupling mechanism,” which appears in independent claim 1 of the ’617 Patent, from which asserted claims 4 and 11 depend. Claim 1 of the ’617 Patent describes the coupling mechanism as follows:

a coupling mechanism, the coupling mechanism including a male body portion at a first end and a terminal lip or flange portion at a second end

wherein the lip defines a portion of an inner cavity of the coupling mechanism, the inner cavity defined by an inner wall continuous with the lip, the inner wall further comprising a plurality of ribs.

The claims provide little description of a coupling mechanism. But the specification describes a coupling mechanism as follows:

[A] coupling mechanism like a securing sleeve or securing plug is provided to assist in joining two sections of artificial tree trunk.

...

The securing sleeve includes at least one flange of the same shape as the notch of the first trunk portion such that the sleeve is insertable and securable to the first trunk portion. The length of the sleeve is shaped to contour the shape of the second trunk portion such that the first trunk portion and second trunk portion make a snug fit and cannot rotate relative to each other.

And the specification describes several embodiments of the coupling mechanism, as follows:

Coupling mechanism **106** as depicted in FIGS. **1-3** comprises a substantially sleeve-shaped hollow structure including body portion **144** having a lower end **146**, an upper end **148**, an outside wall **150**, an inner surface **158** formed by the opposite side of outside wall **150**, and radially-extending ribs **156** that run along at least a portion of the length of the inner surface **158**. In an embodiment, outside wall **150** may also form multiple longitudinal rib-like projections **159** along a length of body portion **144**.

...

Coupling mechanism **110** comprises a substantially plug-shaped hollow structure including plug body **168** having a lower end **170**, an upper end **172**, an outside wall **174**, and a

top wall **180** formed orthogonally from the plug body **168** across the opening at upper end **172**.

...

Coupling mechanism **206** as depicted in FIGS. 7-9 comprises a substantially sleeve-shaped hollow structure including sleeve body **218** having a lower end **220**, an upper end **222**, an outside wall **224**, an inner surface **232** formed by the opposite side of outside wall **224**, and radially-extending ribs **230** that run along at least a portion of the length of the inner surface **232**.

When resolving a disputed claim construction, the “construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Phillips*, 415 F.3d at 1316 (internal quotation marks omitted). The disclosure of a particular embodiment of the claimed invention in the specification does not narrow the patent claims. *Laitram Corp.*, 163 F.3d at 1347–49. But a “claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.” *MBO Labs., Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007) (internal quotation marks omitted). As such, the Court must reject any aspect of the parties’ proposed constructions that either excludes an embodiment described in the specification or imposes a limitation based solely on a particular embodiment.

The first portion of Polygroup’s proposed construction, “a substantially sleeve-shaped hollow structure for joining two trunk portions,” excludes an embodiment that appears in the specification—namely, a coupling mechanism that “comprises a substantially plug-shaped hollow structure.” But aside from that omission, this first

portion of Polygroup's proposal is consistent with both the specification and the claim language. Indeed, the claims themselves describe the coupling mechanism as being a hollow structure by reference to an "inner cavity" with an "inner wall" and a "terminal lip." And the parties appear to agree that the purpose of the coupling mechanism is to join two trunk portions, which also is consistent with the claims and the specification. By contrast, the first portion of Willis Electric's proposed construction, "a sleeve or plug for mechanically aligning two trunk portions," does not identify the coupling mechanism as a hollow structure or clearly describe its purpose to join two trunk portions. As such, if "plug-shaped" were added to the beginning of Polygroup's proposal, this first portion of Polygroup's proposal would most naturally align with the patent's description of the invention and would aid a jury's understanding of the claims.

The middle portion of Polygroup's proposed construction describes the coupling mechanism as follows: "whose outer surface is configured to fit snugly inside a first trunk portion and whose inner surface is shaped to securely fit with an insertable portion at the end of the second trunk portion body."⁸ The claims clearly require the outer surface of a coupling mechanism to fit inside the trunk portion, providing that the coupling mechanism includes a "male body portion" that "inserts into the trunk cavity of the first trunk portion." Similarly, claim 2 of the '617 Patent provides that an "insertable portion of the second trunk portion is inserted into the inner cavity of the coupling mechanism." Willis Electric disputes, however, Polygroup's characterization of these fits as "snug"

⁸ Willis Electric's proposal has no analogue to this middle portion of Polygroup's proposal.

and “secure.” Indeed, the claims do not address the nature of the “fit” between the coupling mechanism and the trunk portions. Although the specification includes such details, it would be improper to import such limitations from the specification when those limitations find no support in the claim language. As such, if the descriptors “snugly” and “securely” were removed, this middle portion of Polygroup’s proposal would most naturally align with the patent’s description of the invention and would aid a jury in understanding the claims.

Finally, the last portion of Polygroup’s proposed construction provides that the coupling mechanism is designed “to prevent rotational movement of the two trunk portions.” By contrast, the last portion of Willis Electric’s proposed construction provides that the coupling mechanism is designed “such that the trunk portions have limited rotational movement relative to one another about a common axis.” As addressed in Part II.B. of this Order, nothing in the claim language addresses rotation, let alone requires the trunk portions to be strictly prevented from rotating. As such, this last portion of Polygroup’s proposal is inconsistent with the claim language. Instead, the last portion of Willis Electric’s proposal most naturally aligns with the patent’s description of the invention and would aid a jury’s understanding of the claims.

For these reasons, the Court rejects in part and adopts in part both parties’ proposed constructions of the term “coupling mechanism,” as modified. The Court construes the term “coupling mechanism” to mean “a substantially sleeve-shaped or plug-shaped hollow structure for joining two trunk portions, whose outer surface is configured

to fit inside a first trunk portion and whose inner surface is shaped to fit with an insertable portion at the end of the second trunk portion body, such that the trunk portions have limited rotational movement relative to one another about a common axis.”

C. “insertable portion”

Willis Electric’s Construction	Polygroup’s Construction
Plain and ordinary meaning or, in the alternative, “a part of the second trunk portion capable of being fit into the inner cavity of the coupling mechanism”	“the lower end of a trunk body portion having a cross-sectional shape complementary to the inside surface shape of the coupling mechanism”

The parties next dispute the meaning of the term “insertable portion,” which appears in claim 2 of the ’617 Patent, from which asserted claim 4 depends. Claim 2 of the ’617 Patent provides, in its entirety, as follows:

The artificial tree assembly of claim **1**, wherein the inner cavity defines a cross-sectional shape complementary to an **insertable portion** of a second trunk portion such that when the **insertable portion** of the second trunk portion is inserted into the inner cavity of the coupling mechanism, the second trunk portion is coupled to the first trunk portion in any of a plurality of relative rotational positions.

(Emphasis added.) Willis Electric contends that this term needs no construction and can be given its plain and ordinary meaning.

Some claim terms are simple enough that a lay person can understand their meaning. *Phillips*, 415 F.3d at 1314. As such, a district court need not construe terms that have ordinary meanings. *O2 Micro*, 521 F.3d at 1360. And “claim construction need not always purge every shred of ambiguity,” because “resolution of some line-drawing problems . . . is properly left to the trier of fact.” *Acumed LLC*, 483 F.3d at 806.

Here, nothing in the claim language or specification of the '617 Patent reflects that “insertable portion” has a specialized or technical meaning in the relevant art that deviates from its commonly understood meaning. To the contrary, the '617 Patent provides sufficient context from which “insertable portion” can be understood by a lay juror.

Polygroup’s proposed construction demonstrates why no construction is necessary. Claim 2 of the '617 Patent provides that the inner cavity of the coupling mechanism “defines a cross-sectional shape complementary to an insertable portion of a second trunk portion.” Polygroup’s proposal merely states a contrapositive: “the lower end of a trunk body portion having a cross-sectional shape complementary to the inside surface shape of the coupling mechanism.” Polygroup’s proposed construction would neither resolve an ambiguity nor assist a lay juror’s understanding of the claims. Moreover, to the extent that any minimal ambiguity exists as to this claim term, Polygroup has not demonstrated that a jury would be incapable of resolving that ambiguity by considering the claim language in context. *See id.* As such, Polygroup’s proposed construction is unnecessary.

The term “insertable portion” has its plain and ordinary meaning and requires no construction.

D. “plurality of recesses”

Willis Electric’s Construction	Polygroup’s Construction
Plain and ordinary meaning, or in the alternative, “the areas set back from the rest of the outer surface”	“the areas between rib like projections on the outer surface”

The parties next dispute the meaning of the term “plurality of recesses,” which appears in asserted claim 11 of the ’617 Patent. Claim 11 of the ’617 Patent provides, in its entirety, as follows:

The multi-positional interlocking artificial tree assembly of claim 1, wherein the coupling mechanism comprises an outer surface of the male body portion, the outer surface defining a **plurality of recesses**.

(Emphasis added.) The parties’ dispute pertains to the breadth of the term “recesses,” which Polygroup contends should be limited to “areas between rib like projections.”

Nothing in the claim language or specification of the ’617 Patent reflects that “recess” has a specialized or technical meaning in the relevant art that deviates from its commonly understood meaning.⁹ The ’617 Patent provides sufficient context from which the meaning of a “recess” can be understood by a lay juror. Moreover, nothing in the claim language supports Polygroup’s narrowing of the term “recesses” so as to limit it to “areas between rib like projections.” Polygroup’s basis for doing so is by reference to the figures in the specification, which depict several projections on the outside wall of the coupling mechanism, between which appear to be indentations or clefts. The specification describes this figure as follows: “In *an embodiment*, outside wall **150** may also form multiple longitudinal rib-like projections **159** along a length of body portion **144**.” (Emphasis added.) But these portions of the specification depict and describe only one particular embodiment of the invention. And “it is improper to read limitations

⁹ See, e.g., Merriam-Webster’s Collegiate Dictionary 1038 (11th ed. 2014) (providing one definition of a “recess” as an “indentation” or “cleft”).

from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1327 (Fed. Cir. 2012). Polygroup has not persuasively demonstrated that the patentee intended the term “recesses” to be limited to “areas between rib like projections.”¹⁰

Accordingly, the term “plurality of recesses” has its plain and ordinary meaning and requires no construction.

¹⁰ Polygroup contends that the figures and descriptions in the specification are limiting because Willis Electric added the term “recesses” during prosecution of the ’617 Patent and represented that no new matter was being added. It is true that “[n]o amendment [to a patent application] shall introduce new matter into the disclosure of the invention.” 35 U.S.C. § 132. “Thus, to avoid the new matter prohibition, an applicant must show that its original application supports the amended matter.” *Schering Corp. v. Amgen Inc.*, 222 F.3d 1347, 1352 (Fed. Cir. 2000). Typically, arguments pertaining to alleged “new matter” are not resolved during claim construction. *See, e.g., Pliant Corp. v. MSC Mktg. & Tech., Inc.*, 416 F. Supp. 2d 632, 643 n.5 (N.D. Ill. 2006); *Revlon Consumer Prods. Corp. v. L’Oreal S.A.*, 170 F.R.D. 391, 400 n.13 (D. Del. 1997). Moreover, here the parties appear to agree that the cited figures and descriptions in the ’617 Patent’s specification support the added “recesses” claim language. But Polygroup has not established that, consequently, the figures and descriptions in the specification must *limit* the claim language to something narrower than its plain and ordinary meaning. Nor has Polygroup demonstrated that Willis Electric somehow implicitly disavowed embodiments with recesses that differ from those depicted in the specification, *see, e.g., Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1324–25 (Fed. Cir. 2003) (providing that disavowal of claim scope in prosecution history must be unequivocal), or that Willis Electric must be estopped from asserting a broader construction, *see, e.g., Wang Labs., Inc. v. Mitsubishi Elecs. Am., Inc.*, 103 F.3d 1571, 1577–78 (Fed. Cir. 1997) (explaining that prosecution history estoppel precludes a patentee from “regain[ing], through litigation, coverage of subject matter relinquished during prosecution”). As such, Polygroup’s “new matter” argument is unavailing.

E. “the lip and the terminal end are both exposed”

Willis Electric’s Construction	Polygroup’s Construction
“the terminal end and the lip are not covered when the second trunk portion is not coupled to the first trunk portion”	“the terminal end and the lip are both visible when the second trunk portion is coupled to the first trunk portion”

The parties next dispute the meaning of the phrase “the lip and the terminal end are both exposed,” which appears in claim 1 of the ’617 Patent, from which asserted claims 4 and 11 depend. Claim 1 of the ’617 Patent provides, in relevant part:

the male body portion inserts into the trunk cavity of the first trunk portion, and the terminal end of first the trunk portion abuts the lip such that **the lip and the terminal end are both exposed**

(Emphasis added.)

The parties first disagree about the meaning of “exposed.” Nothing in the claim language or specification of the ’617 Patent reflects that “exposed” has a specialized or technical meaning in the relevant art that deviates from its commonly understood meaning. But the commonly understood meaning of “exposed” includes both Willis Electric’s “not covered” construction and Polygroup’s “visible” construction. *See* Merriam-Webster’s Collegiate Dictionary 441 (11th ed. 2014) (defining “exposed” as “**1** : open to view [and] **2** : not shielded or protected”). Neither the ’617 Patent nor the parties’ arguments suggest that one of these meanings is more appropriate than the other. Indeed, in its response brief, Polygroup concedes that either meaning is applicable, asserting that “the terminal end and lip must remain exposed (either visible or not

covered).” As such, the Court adopts both parties’ proposed constructions, thereby construing “exposed” to mean “visible and/or not covered.”

The parties’ remaining dispute as to this phrase pertains to *when* the terminal end and lip of the coupling mechanism must be exposed. Willis Electric asserts that these components must be exposed when the trunk portions are *not* coupled, whereas Polygroup asserts that those components must be exposed when the trunk portions *are* coupled.

When construing patent claims, if “some claims are broad and others narrow, the narrow claim limitations cannot be read into the broad [claims] . . . to escape infringement.” *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1054–55 (Fed. Cir. 1988) (internal quotation marks omitted); *accord N. Am. Vaccine, Inc. v. Am. Cyanamid Co.*, 7 F.3d 1571, 1577 (Fed. Cir. 1993) (“The dependent claim tail cannot wag the independent claim dog.”). Significantly, independent claim 1 of the ’617 Patent—which is the claim in which the disputed phrase appears—does not describe an *assembled* artificial tree. Rather, claim 1 merely describes the uncoupled components of the artificial tree and provides that, when the coupling mechanism is joined with the first trunk portion, the terminal end of the first trunk portion and the lip of the coupling mechanism are exposed. Only later, in dependent claim 2, is the coupling of a *second* trunk portion to a first trunk portion described. As Willis Electric correctly asserts, it would be improper to read a limitation from dependent claim 2 into independent claim 1.

According to Polygroup, the prosecution history of the '617 Patent establishes that Willis Electric added the “exposed” limitation to overcome a rejection based on prior art that involved a coupling mechanism that was exposed when assembled. “Prosecution history estoppel” prevents a patentee “from regaining, through litigation, coverage of subject matter relinquished during prosecution of the application for the patent.” *Wang Labs., Inc.*, 103 F.3d at 1577–78. “Arguments and amendment made to secure allowance of a claim, especially those distinguishing prior art, presumably give rise to prosecution history estoppel.” *Id.* at 1578.

The prosecution history belies Polygroup’s argument, however. The prior art involved a coupling mechanism in which the terminal end of the bottom trunk portion is not exposed when it is joined with the coupling mechanism. In other words, in the prior art, the terminal end of the bottom trunk portion was not exposed when joined with the coupling mechanism even before the bottom trunk portion was coupled to the top trunk portion. In overcoming a rejection based on this prior art, Willis Electric asserted that claim 1 of the '617 Patent—unlike the prior art—requires the terminal end of the first trunk portion to be exposed when joined with the coupling mechanism, before the second trunk portion is coupled to the first trunk portion. Willis Electric’s argument during prosecution did not involve a fully assembled tree and, contrary to Polygroup’s argument, is not inconsistent with the construction Willis Electric proposes now.

The only other asserted basis for Polygroup’s proposed construction is the specification of the '617 Patent, which depicts an assembled tree in which the terminal

end of the first trunk portion and the lip of the coupling mechanism are exposed. But, as addressed above, the disclosure of a particular embodiment of the claimed invention in the specification does not narrow the patent claims. *Laitram Corp.*, 163 F.3d at 1347.

For these reasons, the Court rejects Polygroup's proposed construction of this disputed phrase and adopts Willis Electric's proposed construction, as modified. In doing so, the Court construes "the lip and terminal end are both exposed" to mean "the terminal end and the lip are visible and/or not covered when the second trunk portion is not coupled to the first trunk portion."

ORDER

Based on the foregoing analysis and all the files, records and proceedings herein, **IT IS HEREBY ORDERED** that the disputed claim terms of United States Patent Nos. 8,454,186, 8,454,187, 8,936,379, 8,974,072 and 9,066,617 are construed as addressed herein.

Dated: December 6, 2021

s/Wilhelmina M. Wright
Wilhelmina M. Wright
United States District Judge