Appeal No. 2021-1401, -1402

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

POLYGROUP LIMITED MCO,

Appellant,

v.

WILLIS ELECTRIC COMPANY, LTD.,

Appellee.

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2016-01610, No. IPR2016-01612

COMBINED PETITION OF APPELLEE WILLIS ELECTRIC COMPANY, LTD. FOR PANEL REHEARING OR REHEARING EN BANC

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February 18, 2022

CERTIFICATE OF INTEREST

Case Number 2021-1401, -1402
Short Case Caption: Polygroup Ltd. MCO v. Willis Elec. Co., Ltd.
Filing Party/Entity: Willis Elec. Co., Ltd.

The counsel below for Petitioner Willis Electric Company, Ltd. certifies the following information is accurate and complete to the best of my knowledge:

1. **Represented Entities**. Fed. Cir. R. 47(a)(1). Provide the full names of all entities represented by undersigned counsel in this case.

Willis Electric Company, Ltd.

2. **Real Party in Interest**. Fed. Cir. R. 47(a)(2). Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities.

None/Not Applicable

3. **Parent Corporations and Stockholders**. Fed. Cir. R. 47.4(a)(3). Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities.

None/Not Applicable

4. **Legal Representatives**. List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

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Fox Rothschild LLP: Larina A. Alton, Lukas Toft, Gary Hansen, Archana Nath, Aaron M. Scott, Jeff E. Schwartz, Ryan N. Miller
Maslon LLP: Larina A. Alton

5. **Related Cases**. Provide the case titles and numbers of any case known to be pending in this court or any other court or agency that will directly affect or be directly affected by this court's decision in the pending appeal. Do not include the originating case number(s) for this case. Fed. Cir. R. 47.4(a)(5). See also Fed. Cir. R. 47.5(b).

Willis Electric Co., Ltd. v. Polygroup Ltd., No. 15-cv-3443 WMW/KMM (D. Minn.)

6. **Organizational Victims and Bankruptcy Cases**. Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).

None/Not Applicable

Date: February 18, 2022

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STATEMENT OF COUNSEL

Based on my professional judgment, I believe the panel decision is contrary to the following decisions of the Supreme Court of the United States or the precedents of this court: *D'Agostino v. MasterCard Int'l Inc.*, 844 F.3d 945 (Fed. Cir. 2016); *McClain v. Ortmayer*, 141 U.S. 419 (1891); *Nike, Inc. v. Adidas AG*, 812 F.3d 1326 (Fed. Cir. 2016); *Fed. Power Comm'n v. Idaho Power Co.*, 344 U.S. 17 (1952); *Gonzales v. Thomas*, 547 U.S. 183 (2006); *Engel Indus., Inc. v. Lockformer Co.*, 166 F.3d 1379 (Fed. Cir. 1999).

/s/Patrick M. Arenz
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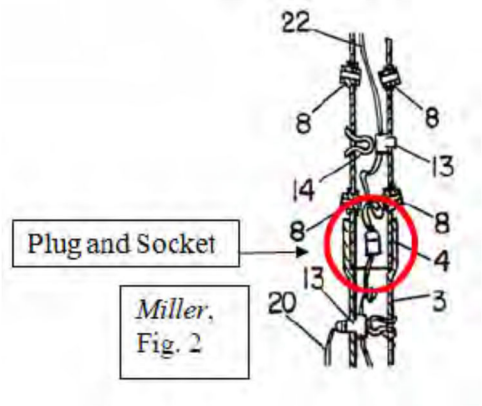
INTRODUCTION AND STATEMENT OF THE CASE

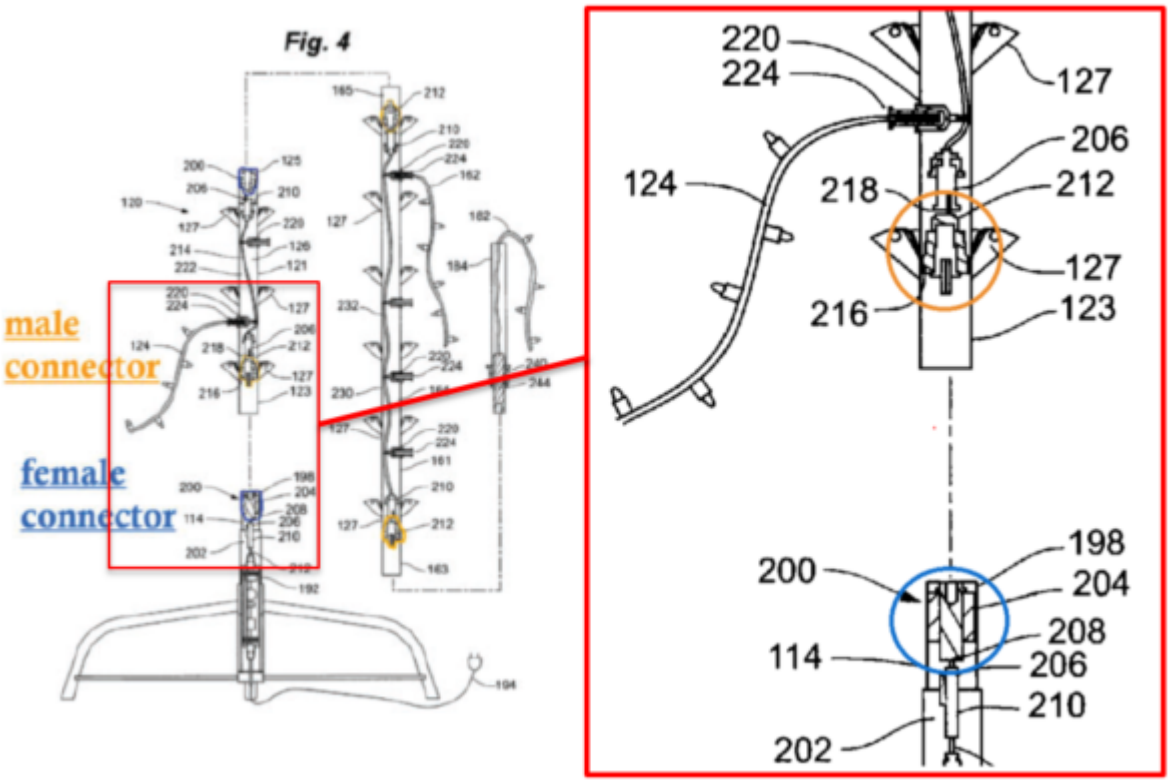
The artificial Christmas tree industry lacked innovation for decades. In 1977, for instance, Polygroup's asserted Miller prior art reference disclosed an artificial tree that used a free-floating traditional plug-and-socket electrical connector hanging within a hollow tree trunk:



Appx23; Appx474-475.

After a user connected the plug-and-socket to form an electrical connection, she then had to align and connect the trunk portions separately to form a mechanical connection. Appx804 (Polygroup's expert explaining that "Miller requires that the mechanical and electrical connection be done in separate steps"); Appx23 ("the electrical connection in Miller is independent of the mechanical connection of tree portions"). Artificial trees in general were notoriously difficult and time consuming to assemble. Appx2270-2271, Appx2570, Appx2679-2680.

Johnny Chen of Willis Electric disrupted this stale industry with his "One Plug Tree" invention in 2010. It involved a modular lighted artificial tree having multiple trunk sections with electrical wiring internal to the trunk and connectors secured at the end of the trunk sections. Those fixed connectors allowed a user to mechanically and electrically connect the trunk sections at the same time, with a single coupling of the trunk portions. Appx41-96, *e.g.* at '186 14:65-16:24, Figs. 14b, 15b;



Appx46 (Fig. 4) (annotation added). This One Plug Tree invention allowed for a far simpler and quicker assembly than the prior art, like Miller. Appx2365.

The Patent Office has extensively vetted the One Plug Tree inventions. In 2013, after a thorough prosecution over dozens of prior art references, the Patent Office issued U.S. Patent Nos. 8,454,186 and 8,454,187. *See* Appx41-42, Appx69-70. The Patent Office later confirmed the patentability of the claims in 2014 after an anonymous third party sought ex parte reexamination. *See* Appx1553. Polygroup—the world's largest manufacturer of artificial trees—then filed seven IPRs against the patents. *See* Appx2, Appx1552-1553. The Board concluded that Polygroup failed to prove unpatentability of any challenged claims in 2018. Addm4; Appx1550-1612. This court affirmed the Board's conclusion in part. *Polygroup Ltd. MCO v. Willis Elec. Co., Ltd.*, 759 F. App'x 934 (Fed. Cir. 2019). But the court remanded some claims for the Board to consider if Polygroup had proved them obvious based on Miller alone. *Id.* at 936, 943; Addm4-5.

Up to this point in these lengthy proceedings, everyone understood that the mechanical and electrical connection between trunk portions occurred at the same time in the '186 and '187 patents. The Board, for instance, explained this conclusion in its original decision:

- "Physically connecting the trunk sections during assembly of the tree *also* electrically connects the trunk sections." Appx1554 (emphasis added).

- "Structurally, that means that connecting one tree portion to another *connects them mechanically and electrically* because the tree portion module is designed such that the electrical and mechanical connectors are in certain locations and have certain structures to provide that modularity." Appx1565 (emphasis added).

This court likewise explained that "[t]he connectors are designed so that mechanically connecting trunk portions during assembly *also creates* an electrical connection between the trunk portions." *Polygroup*, 759 F. App'x at 936 (emphasis added). And even Polygroup's own expert understood the plain language of the claims to require an "electrical connection must occur" when any mechanical connection between trunk portions is made. Appx399-400; Appx797. Nor did Polygroup offer any claim construction to the Board to interpret the claims differently.

On remand from this court, the Board confirmed this established understanding for claims 10, 11, 16-22, 25, 26, and 28 of the '186 patent and claims 1-3, 5-9, 11, 12, 14 and 15 of the '187 patent, and that Miller is fundamentally different and thus does not alone render the claims obvious. Appx21-25. The plain language of those claims require that "the mechanical connection between the tree/trunk portions results in the electrical connections." Appx21; *see also* Appx24. Polygroup again appealed.

The panel issued a split decision. The Majority determined that "neither the claim language nor the specification requires such 'coupling' occur in a

single step." Addm9. Rather than remand, the Majority found the claims on appeal unpatentable. Addm11. Judge Stoll in dissent found otherwise: "the plain claim language dictates that when the mechanical connection is made, an electrical connection is also made." Addm13. Claim 1 of the '187 patent, for instance, states that an electrical connection is formed "*when the first tree portion and the second tree portion are mechanically coupled, ….*" *Id.* (citing '187 21:9-64) (emphasis in original). The claim language in the independent claims on appeal in the '186 patent also requires the mechanical coupling of the trunk portions to "'caus[e],' 'make,' or 'form' the electrical connection." Addm14. Thus, "the plain language of those claims also requires simultaneous electrical and mechanical connection." *Id.*

REASONS FOR GRANTING REHEARING

I. The Majority Overlooked Key Facts and Law.

A. The Majority misunderstood the specification to broaden the plain claim language.

The key dispute concerned what happens when the ends of the claimed trunk portions that contain trunk electrical connectors[1] connect. The '187 plain claim language says that an electrical connection is made "when" the ends of

[1] The claims require trunk portions that already include trunk electrical connectors and wiring harnesses/assemblies for light strings or such "connector assemblies." Appx66-67 *e.g.* at 22:37-40, 23:33-40, 24:31-38; Appx95-96 *e.g.* at 21:10-34, 22:31-35.

the trunk portions/bodies are coupled. Appx95 at 21:38-42, 21:56-64, 22:54-56. Claims 10 and 28 of the '186 patent state that the coupling of the ends of trunk bodies "thereby caus[es]" the trunk connectors to make electrical connection. Appx67-68 at 22:49-57, 24:52-60; *see also id.* 23:53-64 ('186 patent claim 20 stating tree portions are mechanically and electrically connectable by aligning trunk portions and receiving them into connection).[2] But the Majority never addressed the "thereby causing" language or the plain claim language that the electrical connection occurs "when" the mechanical coupling occurs in the '187 patent claims. Rather, the Majority reached its conclusion that an electrical connection does not necessarily occur when the trunk portions are coupled or mechanically connected based on a series of specification excerpts. The Majority erred for two reasons.

First, the Majority misconstrued the specification excerpts it relied on and overlooked the difference between manufacturing assembly steps of claimed tree/trunk portions and the consumer assembly of coupling of those trunk portions. Or the Majority overlooked the wherein claim limitations

[2] Even if the '186 claim 20 language were less clear than other independent claims on appeal that the electrical connection (connection of the trunk electrical connectors) happens when or is caused by the mechanical coupling of the trunk portions, nothing in the claim 20 language justifies ignoring the plain language of the other independent claims at issue.

recited the electrical and mechanical connection *between trunk portions* feature of the claimed artificial trees; it did not recite manufacturing wiring or connections steps *within* trunk portions. At base, the Majority conflated specification disclosures about (1) how the trunk portions are manufactured (assembled) to contain the connectors and wiring harnesses secured within each trunk portion, with (2) how the assembled/manufactured trunk portions are able to form electrical connection when the portions are mechanically coupled, as claimed (because the trunk portions have electrical connectors secured at their ends that connect as the trunk walls connect). Indeed, the specification describes the invention as artificial trees which have been manufactured/assembled with coaxial-nature trunk connectors fixed at the ends of the trunk portions that allow for electrical connection (at any rotational orientation) when trunk portions are coupled as intended by a consumer:[3]

- Appx57 at 2:54-62: "The second tree portion is mechanically and electrically connectable to the first tree portion by coupling a lower end

[3] The fact the connectors with electrical contacts are secured/fixed at the ends of the trunk portions as described in the specification is the structure that allows for electrical connection when or caused by the mechanical coupling of the trunk portions. While the coaxial nature of those fixed electrical contacts described in the specification is the structure that allows for that concurrent electrical connection independent of what rotational orientation at which the trunk portions are coupled as claimed in the independent claims at issue.

of the second trunk body to an upper end of the first trunk body … thereby causing the trunk connector of the first trunk portion to make an electrical connection with the trunk connector of the second trunk portion. …";

- Appx63 at 14:65-67: "connector assembly 212 is secured within lower end 123 of trunk body 121 of trunk portion 120, with plug 254 wedged tightly in place";
- Appx64 at 15:1-57: "Further, connector assemblies 200 and 212 are securely positioned within their respective trunk sections such that when [trunk portions are coupled] portions of connector assembly 200 and connector assembly 212 come into contact, thus forming a mechanical coupling … not only at the trunk walls, but also at the inside, center portions of [the trunk portions between parts of the connectors there]. … In addition to the mechanical coupling … the two portions become electrically connected. … the coaxial nature of connectors 200 and 212 permit the electrical connection of the connectors at any rotational orientation about a vertical axis. … A user simply aligns the trunk portion with the base portion or other trunk portion along a vertical axis and brings the trunk portion downward to couple with the stationary

base or trunk portion, thus mechanically coupling and electrically connecting the tree portions."; *see also* 15:60-16:61; Figs. 14b, 15b.

- *See also* Addm2-3 (summarizing Willis patents as directed to modular tree portions involving connector assemblies housed or "'securely positioned within their respective trunk sections'" "designed to 'permit the electrical connection of the connectors at any rotational orientation about a vertical axis'"); Addm10 (quoting specification disclosure at 16:14-17 re trunk wiring harness being "*already in electrical connection* with connector assembly 200" when trunk portions are joined to electrically connect the connector assembly of each trunk portion).

This court's description of the specification on its first review confirms this same understanding: "The *connectors* are designed so that mechanically connecting trunk portions during assembly *also creates* an electrical connection between the trunk portions. The connectors form this electrical connection regardless of the rotational alignment of the trunk portions." *Polygroup*, 759 F. App'x at 936 (emphasis added).

Second, even if the Majority's description of the specification excerpts was correct, established law does not allow the specification to broaden the plain claim language here. "The claim is the measure of [a patentee's] right to relief, and while the specification may be referred to to limit the claim, it can

never be made available to expand it." *McClain*, 141 U.S. at 424; *Johnson & Johnson Assocs. Inc. v. R.E. Serv. Co.*, 285 F.3d 1046, 1052 (Fed. Cir. 2002) (en banc) (reiterating same conclusion and holding that disclosure outside the plain claim language is an unclaimed disclosure). That the broadest reasonable interpretation standard applies is immaterial to this bedrock principle of patent law. *See, e.g., D'Agostino*, 844 F.3d at 948-50 (holding Board erred in interpreting claim to reach other specification "embodiments" outside the plain claim language of "single merchant"). Indeed, the Manual of Patent Examining Procedure requires plain meaning, unless such meaning is inconsistent with the specification, for the "broadest reasonable interpretation" of claim language. MPEP § 2111.01. But this court's own previous description confirms that the specification describes the plain meaning of the claims at issue. No "inconsistency" justifies reading the claims more broadly because the specification describes an invention within the plain meaning. Nor did Polygroup even argue that the specification broadened the plain claim language. Rehearing should be granted to correct this error, which the Majority overlooked.

B. Even under the Majority's incorrect construction, the Majority should have at least remanded because the record shows Miller still fundamentally differs from the claims on appeal and includes extensive objective evidence of nonobviousness.

The Majority erred when it found claims on appeal unpatentable because Willis Electric—as the prevailing party on the claims at issue at the Board below—has record evidence and arguments about what Miller fails to teach that have not been properly considered. A party has no duty or even "right of cross-appeal from a decision in its favor." *Nautilus Group, Inc. v. Icon Health and Fitness, Inc.*, 437 F.3d 1376, 1377 (Fed. Cir. 2006) (quotation omitted) (explaining appellee who received judgment in its favor may though present alternative grounds for affirmance arguments). For that reason, Willis Electric raised its evidence and arguments as alternative grounds for affirmance. AppelleeBr. 37-42 (explaining that Miller does not teach the "joined" branches with "affixed" light strings in the '187 patent claims, that Miller does not teach the complete limitation requiring electrical connection "independent of" rotational orientation for all claims, and that Miller does not teach the claims on appeal when considered as a whole). The Board's determination that Polygroup failed to prove unpatentability of these claims did not address these arguments and evidence, as it emphasized that Polygroup failed its burden "[f]or *at least* this reason" that Miller failed to teach a simultaneous connection. Appx25 (emphasis added); *see also* Appx23-24. The Majority's decision short-

cuts the due process of law for proper consideration of Willis Electric's evidence and arguments. *See, e.g., Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1056 (Fed. Cir. 2016) ("It is not [this court's] role to reweigh the evidence or consider what the record might have supported."). At minimum, the court should remand for further review.

The Majority's failure to consider secondary considerations of non-obviousness was error too. Secondary considerations evidence "must *always* when present be considered en route to a determination of obviousness." *TransOcean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) (emphasis added); *see also Nike*, 812 F.3d at 1339-40, 1347 (reversing Board decision for failure to consider secondary considerations in context of single reference obviousness argument).[4] And the Board originally found "remarkable" secondary considerations evidence of non-obviousness. Appx1592. Yet the court neither addressed nor remanded for the Board to consider that strong evidence for the claims on appeal when it found that Miller renders the claims under its new constructions unpatentable. Once again, at minimum this court should remand for a complete and proper obviousness analysis of all claims on appeal.

[4] *Nike* was overruled in part, in regard to a different issue. *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290, 1296 n.1 (Fed. Cir. 2017) (en banc).

The Majority also erred when it found claim 20 of the '186 patent unpatentable under its new construction. "Claim 20 provides that the tree portions can be connected mechanically and electrically '**by aligning**' the trunk portions 'such that a portion of the first trunk wall is coupled to a portion of the second trunk wall to form a *first* mechanical connection' between the trunk portions, and a 'portion of the first [trunk] connector is received by the second [trunk] connector, thereby forming a *second* mechanical connection between' the trunk portions 'and forming an electrical connection between' the trunk wiring assemblies." Addm10 (bold for emphasis; italics in original). Thus, the Majority found an "'aligning' step" forms the first mechanical connection, and an electrical connection follows. Addm10-11.

The Majority erred when it implicitly determined on its own that Miller teaches the electrical connection following after this aligning step. Not so. As Polygroup never disputed, the electrical connection can be created between Miller's trunk portions only by *first* aligning and connecting the standard plug-and-socket to first form an electrical connection and then separately *later* aligning (and connecting) the trunk portions. Appx2471. Put differently, Miller does *not* teach a structure that allows for aligning the trunk portions to form a mechanical connection, which then later allows for an electrical connection, as construed by the Majority. In fact, that would be impossible with Miller's

structure. The Board's decision should have been affirmed even under the new construction—not reversed—given the undisputed record evidence as to Miller's operation. At minimum, the Majority should have remanded '186 claim 20 (and its dependent claims) for the Board to consider obviousness under this court's new construction.

The Majority opinion is unclear if it construed the other independent claims differently from claim 20. To the extent the Majority rejected the Board's fact-finding that Miller differs from the other claims because, like claim 20, the mechanical and electrical connection of the trunk portions of the other claims could involve an alignment step followed by a receiving step instead of happening in a "single step," Addm9-11, this still indicates the claims require mechanical and electrical connection caused by a single alignment step. Yet, as the Board found (and Polygroup did not dispute), Miller only teaches an electrical connection made by aligning and connecting the standard plug and socket on free-floating electrical cords entirely separately (independent) from either aligning or connecting/receiving trunk portions. Appx20, Appx23, Appx25. In other words, the structure of Miller requires multiple alignment (and multiple receiving/connection) steps. And the structure of Miller is still fundamentally different than the claimed structure that provides for an electrical connection without any separate alignment of

electrical contacts apart from the mechanical alignment and receiving the trunk portions together. *See* Appx20 ("Miller's plug and socket connectors are loose, rather than fixed within the trunk portions like Patent Owner's connectors"). Thus, the Board's determinations that Polygroup failed to prove the claims obvious over Miller alone should have been affirmed. At a minimum, the case should have been remanded for the Board to consider obviousness in light of the Majority's construction.

C. The Board and Majority overlooked that the previous mandate precluded further adjudication over some claims on appeal.

The Majority overlooked that its reversal of claims 17, 18, 19, 22, 26, and 28 of the '186 patent and claims 1-15 of the '187 patent is outside the scope of the court's previous mandate. As the panel explained in discussing claim 7 of the '186 patent, the Board was precluded from further adjudication of "all issues within the scope of the appealed judgment." Addm8 (quoting *Hayward Indus., Inc., v. Pentair Water Pool & Spa, Inc.*, 814 F. App'x 592, 597 (Fed. Cir. 2020); *Engel*, 166 F.3d at 1338). But the Majority overlooked that the Board's decision on claims 17, 18, 19, 22, 26, and 28 of the '186 patent and claims 1-15 of the '187 patent also relied not on Miller alone given the arguments Polygraph presented as to these claims. Rather, the Board considered Miller in combination with at least Lessner, Pan, Yang, and/or Janning for these claims. Appx8-9 & nn.12, 15; *see also* Appx38. Indeed, the Board's decision

reflected Polygroup's reliance—even on remand—on those references beyond Miller alone to teach elements of these claims. *Id.; see also* Appx1640-1642, Appx1649-1652, Appx1971,[5] AppellantBr. 17-18 (Polygroup acknowledging reliance on art other than Miller for certain claim elements). Thus, the Board's review was outside the original mandate as interpreted by the panel and those claims should not have been adjudicated further. The Majority's reversal likewise violates the law of the case.

Nor should the panel have remanded claim 7 of the '186 patent. The mandate, as explained by the panel, limited review to Miller alone. Addm2, Addm7-8. Yet the panel acknowledged the Board's decision that Polygroup failed to prove the claim obvious over Miller alone reflected Polygroup "had conceded that Miller alone does not teach every limitation of that claim and instead" relied on modifying Miller in view of Lessner. Addm6. The panel noted Polygroup also admitted at oral argument that it relied on Miller in combination with Lessner as to the claim, and the panel acknowledged Polygroup's admission of reliance on other art to teach a claim element was appropriate evidence to consider Miller alone does not render unpatentable the

[5] Although Polygroup cited to pages of its remand brief related to the '187 patent, it appears to have included no pages from it in the Joint Appendix. This page can however be found in the record at page 3 of Paper 202 of IPR2016-01612.

claim. Addm8. The Board's determination that Polygroup failed to prove these claims unpatentable over Miller alone reflecting Polygroup's earlier same or similar admissions to the Board should have been affirmed. And the majority's new claim construction did not even apply to claim 7 of the '186 patent, so there was no reason (based on its claim construction or otherwise) to remand.

D. The Majority overlooked that Polygroup did not even appeal claim 17 of the '186 patent.

Polygroup *did not even appeal* the Board's determination that it failed to prove claim 17 of the '186 patent obvious based on its Miller plus at least Yang argument. AppellantBr. 18 & n.5; *see also* AppelleeBr. 17 n.5. The Majority's reversal of the Board's determination on claim 17 was an unequivocal error.

II. The Majority Opinion Is Contrary to Precedent.

Willis Electric identified key legal errors in the Majority's decision above that are contrary to precedent. These errors warrant review en banc, if not by the panel, to reconcile the majority decision with precedent. These errors contrary to precedent include:

- The Majority impermissibly relied on the specification to broaden the plain claim language. *Cf. D'Agostino*, 844 F.3d at 949-50 (holding Board erred in construing claims to reach "embodiments" described in specification outside the plain claim language of "single merchant"); *see also* § I.A, *supra*.

- The Majority reversed, rather than remanded, even though Willis Electric has never received the opportunity to litigate in full its alternative arguments for affirmance or have the fact-finder consider differences between Miller and the claims under any new constructions. *Cf. Fed. Power Comm'n*, 344 U.S. at 20 (holding court erred by usurping agency's function: "[T]he function of the reviewing court ends when an error of law is laid bare. At that point the matter once more goes to the Commission for reconsideration."); *Gonzales*, 547 U.S. at 187 (holding court erred by failing to apply "ordinary remand rule"); *see also* § I.B, *supra*.
- The Majority decided that the claims on appeal were obvious without considering evidence of secondary considerations, or having any fact-finder do so in considering obviousness of claims as newly construed over Miller. *Cf. Nike*, 812 F.3d at 1339-40, 1347 (reversing Board decision for failure to consider secondary considerations in context of single reference obviousness argument); *see also* p. 13, *supra*.
- The Majority ignored the law of the case in violation of its own interpretation of the court's prior mandate. *Cf. Engel,* 166 F.3d at 1383-84 (holding court lacked jurisdiction to further consider arguments foreclosed by previous mandate); *see also* § I.C, *supra.*

These errors warrant en banc review.

CONCLUSION

Rehearing, either by the panel or en banc, should be granted in order to square the majority opinion with precedent. The Board's determinations that Polygroup failed to prove the claims unpatentable should thus be affirmed. At a minimum, the clear errors in the opinion should be resolved.

Respectfully submitted,

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ADDENDUM

NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

POLYGROUP LIMITED MCO,
Appellant

v.

WILLIS ELECTRIC COMPANY, LTD.,
Appellee

2021-1401, 2021-1402

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2016-00800, IPR2016-00801, IPR2016-01609, IPR2016-01610, IPR2016-01611, IPR2016-01612.

Decided: January 19, 2022

DOUGLAS SALYERS, Troutman Pepper Hamilton Sanders LLP, Atlanta, GA, argued for appellant. Also represented by PUJA PATEL LEA; ROBERT A. ANGLE, CHRISTOPHER FORSTNER, Richmond, VA.

PATRICK M. ARENZ, Robins Kaplan LLP, Minneapolis, MN, argued for appellee. Also represented by BRENDA L. JOLY, EMILY ELIZABETH NILES, RONALD JAMES SCHUTZ.

Before DYK, HUGHES, and STOLL, *Circuit Judges*.

Opinion for the court filed by *Circuit Judge* HUGHES.

Opinion concurring-in-part and dissenting-in-part filed by *Circuit Judge* STOLL.

HUGHES, *Circuit Judge*.

This is a patent case involving lighted artificial trees. Polygroup Limited MCO appeals from the final written decision of the Patent Trial and Appeal Board in an inter partes review upholding the patentability of claims 7, 10, 11, 16–22, 25, 26, and 28 of U.S. Patent No. 8,454,186 and claims 1–3, 5–9, 11, 12, 14, and 15 of U.S. Patent No. 8,454,187. With respect to every claim except claim 7 of the '186 patent, we reverse the Board's determination that Polygroup failed to establish the unpatentability of the challenged claims. We conclude that the Board applied erroneous claim constructions and that, under the proper constructions, Miller teaches every limitation of claims 10, 11, 16–22, 25, 26, and 28 of the '186 patent and claims 1–3, 5–9, 11, 12, 14, and 15 of the '187 patent. Polygroup has, therefore, established that these claims are unpatentable.

For claim 7 of the '186 patent, the Board exceeded the scope of our remand when it considered a combination of Miller and Lessner. We therefore vacate and remand its decision with regard to claim 7 of the '186 patent.

I

A

Willis Electric Company, Ltd. owns the '186 and '187 patents, both of which are "directed to lighted artificial trees having separable, modular tree portions mechanically and electrically connectable between trunk portions." '186 patent 1:16–19; '187 patent 1:15–18. The trunk portions house connector assemblies containing electrical wiring and electrical connectors that provide a source of electricity for light strings. '186 patent 11:4–7, 11:57–67,

14:65–67. The connector assemblies "are securely positioned within their respective trunk sections" and designed to "permit the electrical connection of the connectors at any rotational orientation about a vertical axis," thus simplifying tree assembly. *Id.* 15:1–6, 15:45–59.

The patents share much of the same specification and their independent claims follow a common pattern, disclosing components of a first tree portion, components of a second tree portion, and—pertinent to this appeal—how those tree portions connect to each other. Claim 10 of the '186 patent is representative and is reproduced below.

10. A lighted artificial tree, comprising:

> 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, the first trunk portion having a first trunk body and a trunk connector, at least a portion of the trunk connector housed within the first trunk body and electrically connected to the first light string;
>
> a second tree portion including a second trunk portion, a second plurality of branches joined to the second trunk portion, and a second light string, the second trunk portion having a first trunk body and a trunk connector, at least a portion of the trunk connector housed within the second trunk portion and electrically connected to the second light string; and
>
> 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 rotation orientation of the first trunk portion relative the second trunk portion about the common vertical axis.

'186 patent 22:33–60 (emphasis added as by the Board at Appx21–22). Polygroup petitioned for and the Board instituted inter partes review of claims 1, 3, 4, 6–9, 11, 15–22, 25, 26, and 28 of the '186 patent and claims 1–15 of the '187 patent.

For every challenged claim, Polygroup relied on U.S. Patent No. 4,020,201 (Miller) as a primary reference for obviousness. Miller discloses an artificial tree "wherein the lighting system wiring is essentially housed and concealed within the trunk members" that are "removably sleeved together." Miller 1:5–6, 1:30–32. Miller uses a traditional plug and socket electrical connector within its hollow trunk to form an electrical connection between light strings. Appx11, 15.

The Board initially found that Polygroup had failed to prove by a preponderance of the evidence that any of the challenged claims were unpatentable. On appeal, we affirmed the Board's decision with respect to claim 15 of the '186 patent and claims 4, 10, and 13 of the '187 patent. *Polygroup Ltd. MCO v. Willis Elec. Co., Ltd.*, 759 F. App'x 934, 936 (Fed. Cir. 2009) (*Polygroup I*). But we vacated the Board's patentability determinations on the remaining claims because "the Board [had] applied erroneous claim constructions and [had] refused to consider Polygroup's arguments that a single reference renders many of the claims obvious." *Id.* We therefore instructed the Board to consider on remand "Polygroup's arguments based on

Miller . . . alone and whether those claims are unpatentable under a proper construction." *Id.*

B

On remand, the Board found that Polygroup had established by a preponderance of the evidence that claims 1, 3, 4, 6, 8, and 9 of the '186 patent are unpatentable in view of Miller alone,[1] but had failed to establish the same for the remaining challenged claims—specifically, claims 7, 10, 11, 16–22, 25, 26, and 28 of the '186 patent and claims 1–3, 5–9, 11, 12, 14, and 15 of the '187 patent.

1

Willis contended, and the Board agreed, that Miller "requires the separate steps of making an electrical connection between the first and second trunk members and making a mechanical connection between the trunk members."[2] Appx13–14, 23. Thus, the dispositive consideration, according to the Board, was whether the claims "require that the mechanical connection between the tree/trunk portions results in the electrical connections." Appx21, 24.

The Board found that independent claim 1 of the '186 patent had no such requirement, based on its reading of the following "wherein" clause:

> wherein the second tree portion is mechanically coupleable to the first tree portion about a central vertical axis, and the second tree portion is electrically connectable to the first tree portion such that a portion of the first trunk electrical connector of the first trunk portion contacts a portion of the second trunk electrical connector of the second trunk

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[1] The Board's decision with respect to the patentability of claims 1, 3, 4, 6, 8, and 9 of the '186 patent has not been challenged on appeal and is final.

[2] Polygroup does not dispute this.

> portion, thereby creating an electrical connection between the first wiring assembly and the second wiring assembly.

'186 patent 21:14–53. Under the Board's reading, "[c]laim 1 does not require structure that provides mechanical and electrical connection in a single step (e.g., when the mechanical connection is made, an electrical connection is also made)." Appx14 (internal quotation marks omitted). The Board acknowledged that this claim "requires that 'the second tree portion is mechanically coupleable to the first tree portion about a central vertical axis.'" Appx14. But it determined that "the claim permits that mechanical connection to be independent of the electrical connection." Appx14.

The Board concluded that Polygroup had established the unpatentability of claim 1 of the '186 patent in view of Miller alone. It further concluded that claims 3, 4, 6, 8, and 9—all of which depend from independent claim 1—of the '186 patent are obvious in view of Miller alone.

2

The Board separately considered the patentability of claim 7 of the '186 patent. Polygroup had conceded that Miller alone does not teach every limitation of that claim and instead asserted that "one skilled in the art would have modified Miller's teachings based on those" in U.S. Patent No. 3,409,867 (Lessner). Appx19. The Board was not persuaded. According to the Board, combining Miller and Lessner "adds an additional connection point in Miller's plug and socket connectors, further complicating assembly, rather than providing ease and speed of assembly and disassembly.'" Appx20. Because the Board found no motivation to combine, the Board concluded that Polygroup failed to establish the unpatentability of claim 7 of the '186 patent.

The Board found that Polygroup had failed to establish that the remaining challenged claims are unpatentable. Although all of the independent claims—i.e., claims 1, 10, 20, and 28 of the '186 patent and claims 1 and 7 of the '187 patent—generally follow a common pattern, the Board determined that only independent claim 1 of the '186 patent is obvious in view of Miller alone.

"Critically distinguishing" the remaining independent claims "from independent claim 1," the Board said, "is that they require that the mechanical connection between the tree/trunk portions results in the electrical connections." Appx21, 24. With little explanation, the Board relied upon the independent claims' similarly-patterned "wherein" clauses as support for reading a "results in" limitation into each respective claim. Appx21–22, 24–25 (quoting the "wherein" clauses in claims 10, 20, and 28 of the '186 patent and claims 1 and 7 of the '187 patent).

The Board proceeded to decide that, because "the electrical connection in Miller is independent of the mechanical connection [between] tree portions," Appx23, 25, Polygroup had failed to establish the unpatentability of claims 10, 20, and 28 of the '186 patent and claims 1 and 7 of the '187 patent based on Miller alone. Consequently, it also concluded that Polygroup had failed to establish the unpatentability of claims 11, 16–19, 21, 22, 25, and 26 of the '186 patent—all of which depend from either independent claim 10 or 20—and dependent claims 2, 3, 5, 6, 8, 9, 11, 12, 14, and 15 of the '187 patent—all of which depend from either independent claim 1 or 7.

Polygroup now appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

II

We first address claim 7 of the '186 patent. The Board should not have considered whether that claim was obvious

in view of Miller and Lessner because its consideration of Lessner was outside the scope of our mandate. "Unless remanded by [an appellate] court, all issues within the scope of the appealed judgment are deemed incorporated within the mandate and thus are precluded from further adjudication." *Hayward Indus., Inc. v. Pentair Water Pool & Spa, Inc.*, 814 F. App'x 592, 597 (Fed. Cir. 2020) (alteration in original) (quoting *Engel Indus., Inc. v. Lockformer Co.*, 166 F.3d 1379, 1383 (Fed. Cir. 1999)). Our mandate in *Polygroup I* remanded to the Board the question of whether, under a proper construction, the challenged claims are unpatentable in view of Miller alone. *See* 759 F. App'x at 936, 944. The Board went beyond that question when it rendered its obviousness determination based on a lack of motivation to combine Miller and Lessner.

We therefore vacate and remand the Board's decision concluding that Polygroup failed to establish the unpatentability of claim 7 of the '186 patent in view of Miller and Lessner. We note that Polygroup admitted that Miller does not teach every limitation in the claim. *See* Oral Argument at 5:35–54, https://oralarguments.cafc.uscourts. gov/default.aspx?fl=21-1401_10052021.mp3 (Oct. 5, 2021); Appx19. The Board may consider this statement on remand when it considers the unpatentability of claim 7 in view of Miller alone.

III

Polygroup asserts that the Board erroneously construed the challenged independent claims to "require that the mechanical connection between the tree/trunk portions results in the electrical connections." Appx21, 24. We agree.

We review the Board's ultimate claim construction de novo and any underlying factual determinations involving extrinsic evidence for substantial evidence. *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1280 (Fed. Cir. 2015). Because Polygroup filed its IPR petition before November

13, 2018, we apply the broadest reasonable interpretation standard. *See Ethicon LLC v. Intuitive Surgical, Inc.*, 847 F. App'x 901, 906 n.4 (Fed. Cir. 2021). Under this standard, claim terms are generally given their ordinary and customary meaning, as would be understood by a skilled artisan in the context of the entire disclosure. *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1061 (Fed. Cir. 2016).

Despite the similarities between the language in claims 1 and 10, the Board construed claim 10 to "require that the mechanical connection between the tree/trunk portions results in the electrical connections." Appx21. Said differently, the claim "require[s] structure that provides mechanical and electrical connection in a single step (e.g., when the mechanical connection is made, an electrical connection is made)." Appx14 (internal quotation marks omitted). Under the broadest reasonable interpretation standard, we cannot agree.

While the term "coupling" is broad enough to mean mechanically connecting or electrically connecting or both,[3] neither the claim language nor the specification requires such "coupling" occur in a single step. Indeed, the specification discloses embodiments in which a series of mechanical connections are made when assembling the lighted artificial tree's tree/trunk portions. *See, e.g.*, '186 patent 8:63–9:5 ("[S]uch mechanical and electrical connections are accomplished in part through a series of trunk connectors and wiring harnesses inserted into base 102 and trunk portions 120, 160, and 180."); *id.* 15:13–18 ("These multiple points of mechanical contact between connector assemblies 200 and 212 combined with the secure fit of connection

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[3] *See, e.g.*, *Couple*, *Merriam-Webster.com Dictionary*, https://www.merriam-webster.com/dictionary/couple (last visited Dec. 16, 2021) ("to join for combined effect"; "to fasten together"; "to bring (two electric circuits) into such close proximity as to permit mutual influence").

assemblies 200 and 212 to the trunk portions via plugs 254 creates a substantial mechanical coupling not only at the trunk walls, but also at the inside, center portions of base portion 102 and trunk portion 120."); *id.* 16:50–53 ("Consequently, a secondary mechanical coupling between connector assembly 212 and connector assembly 244, and between trunk portions 160 and 180, is formed."). And the specification also indicates that electrical connections can precede mechanical connections. *See id.* 16:14–17 ("[W]hen trunk portions 120 and 160 are joined, first trunk wiring harness 222, *already in electrical connection* with connector assembly 200, becomes electrically connected with second trunk wiring harness 230 via connector assembly 212." (emphasis added)).

Thus, under the broadest reasonable interpretation, we construe claim 10 of the '186 patent to permit the mechanical and electrical connections be made independently. For the same reasons that we reject the Board's construction of claim 10, we also reject the Board's identical constructions of claim 28 of the '186 patent and claims 1 and 7 of the '187 patent.

In addition, we conclude that claim 20 of the '186 patent does not require a mechanical connection to result in an electrical connection. Claim 20 provides that the tree portions can be connected mechanically and electrically "by aligning" the trunk portions "such that a portion of the first trunk wall is coupled to a portion of the second trunk wall to form a *first* mechanical connection" between the trunk portions, and a "portion of the first [trunk] connector is received by the second [trunk] connector, thereby forming a *second* mechanical connection between" the trunk portions "and forming an electrical connection between" the trunk wiring assemblies. *Id.* 23:52–24:3 (emphases added). This language makes clear that the mechanical and electrical connections need not occur in a single step. The "aligning" step forms the first mechanical connection, while the "receiving" step forms both the second mechanical connection

between the trunk portions and the electrical connection between the trunk wiring assemblies.

We accordingly conclude that the Board applied erroneous claim constructions when it upheld the patentability of independent claims 10, 20, and 28 of the '186 patent and independent claims 1 and 7 of the '187 patent. Under the proper construction, we conclude that Miller teaches every limitation of these claims and, therefore, that Polygroup has established the unpatentability of each independent claim challenged on appeal. *See In re Hodges*, 882 F.3d 1107, 1115–16 (Fed. Cir. 2018) (overturning the Board's claim construction and then finding claims unpatentable under the proper construction because that was the "only permissible factual finding"). As Willis admitted, the dependent claims all rise and fall with their corresponding independent claims. *See* Oral Argument at 25:08–30 (Oct. 5, 2021). Therefore, claims 11, 16–19, 21, 22, 25, and 26 of the '186 patent, which depend from either independent claim 10 or 20, are unpatentable. As are claims 2, 3, 5, 6, 8, 9, 11, 12, 14, and 15 of the '187 patent, which depend from either independent claim 1 or 7.

REVERSED-IN-PART, VACATED-IN-PART, AND REMANDED

COSTS

No costs.

NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

POLYGROUP LIMITED MCO,
Appellant

v.

WILLIS ELECTRIC COMPANY, LTD.,
Appellee

2021-1401, 2021-1402

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2016-00800, IPR2016-00801, IPR2016-01609, IPR2016-01610, IPR2016-01611, IPR2016-01612.

STOLL, *Circuit Judge,* concurring-in-part and dissenting-in-part.

I respectfully dissent-in-part. I agree with the Board's construction of claims 10, 20, and 28 of the '186 patent and claims 1 and 7 of the '187 patent, which, in my view, cover a different embodiment than claim 1 of the '186 patent. Thus, I would affirm the Board's patentability determinations. As to claim 7 of the '186 patent, however, I agree with the majority's analysis and therefore concur with the vacatur and remand of the Board's decision as to that claim.

The shared patent specification discloses two distinct embodiments relevant to this claim construction dispute: (1) an embodiment in which the mechanical coupling and electrical connection are made separately and independently, and (2) an embodiment in which the mechanical coupling simultaneously creates an electrical connection. In my view, Polygroup's construction, which the majority accepts, is erroneous because it fails to account for the claim language requiring a simultaneous connection.

Claim 1 of the '187 patent provides a particularly strong example:

> A lighted artificial tree, comprising: . . . a first tree portion . . . [and] a second tree portion . . .
>
> and the second tree portion is electrically connectable to the first tree portion such that a portion of the first trunk electrical connector of the first trunk portion contacts a portion of the second trunk electrical connector of the second trunk portion *when the first tree portion and the second tree portion are mechanically coupled*, . . .

'187 patent col. 21 ll. 9–64 (emphasis added). Claim 1 of the '187 patent clearly requires an electrical connection "when [the tree portions] are mechanically coupled." *Id.* at col. 21 ll. 41–42. In other words, the plain claim language dictates that when the mechanical connection is made, an electrical connection is also made. In contrast with claim 1 of the '186 patent, which recites a mechanical connection that is independent of the electrical connection, claim 1 of the '187 patent requires the mechanical and electrical connection to occur in a single step—the same step. Accordingly, claim 1 of the '187 patent requires structure that provides mechanical and electrical connection in a single step, whereas claim 1 of the '186 patent does not require such structural elements.

Similarly, claim 7 of the '187 patent, and claims 10, 20, and 28 of the '186 patent also require the mechanical coupling to "caus[e]," "make," or "form" the electrical connection. *See* '186 patent col. 24 ll. 51–63 ("the second trunk portion is mechanically and electrically connectable to the first trunk portion . . . thereby causing the trunk connector of the first trunk portion to make an electrical connection with the trunk connector of the second trunk portion . . ."); *see* '187 patent col. 15 ll. 48–52 ("A user simply aligns the trunk portion with the base portion or other trunk portion along a vertical axis and brings the trunk portion downward to couple with the stationary base or trunk portion, thus mechanically coupling and electrically connecting the tree portions."). As such, in my view, the plain language of those claims also requires simultaneous electrical and mechanical connection.

For these reasons, I respectfully dissent-in-part. I would affirm the Board's determination that Polygroup failed to prove that claims 10, 11, 16–22, 25, 26, and 28 of the '186 patent and claims 1–3, 5–9, 11, 12, 14, and 15 of the '187 patent are unpatentable over the prior art of record.

CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that this petition complies with the type-volume limitation of Federal Rules of Appellate Procedure 35(b)(2)(A), 40(b)(1). The brief contains 3,895 words, excluding the parts of the petition exempted by Federal Rule of Appellate Procedure 32(f) and/or Federal Circuit Rules 32(b), 35(c)(2), 40(c).

The undersigned also hereby certifies that this petition complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type style requirements of Federal Rule of Appellate Procedure 32(a)(6). The petition has been prepared in a proportionally spaced typeface using Microsoft Office Word 2016 in 14-point Calisto MT type style, with 14-point or larger Calisto MT type style headings.

As permitted by Federal Rule of Appellate Procedure 32(g), the undersigned has relied on the word count of this word processing system in preparing this certificate.

Dated: February 18, 2022

By: */s/Brenda L. Joly*
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PROOF OF SERVICE

I hereby certify that on February 18, 2022, the COMBINED PETITION OF APPELLEE WILLIS ELECTRIC COMPANY, LTD. FOR PANEL REHEARING OR REHEARING EN BANC was filed with the Clerk of the Court for the United States Court of Appeals for the Federal Circuit using the appellate CM/ECF system which constitutes service on all parties represented by attorneys who have registered for the CM/ECF system, and that a copy was served on counsel of record for all parties by email through the system.

Dated: February 18, 2022

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