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Paper 8
Entered: April 4, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CTC GLOBAL CORPORATION,
Petitioner,

v.

TS CONDUCTOR CORP.,
Patent Owner.

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PGR2022-00002
Patent 10,886,036 B2

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Before KEN B. BARRETT, ERIC C. JESCHKE, and ALYSSA A. FINAMORE, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

# DECISION
Denying Institution of Post-Grant Review
*35 U.S.C. § 324*

# I. INTRODUCTION

## *A. Background and Summary*

CTC Global Corporation ("Petitioner")[1] filed a Petition requesting post-grant review of U.S. Patent No. 10,886,036 B2 ("the '036 patent," Ex. 1001). Paper 1 ("Pet."). The Petition challenges the patentability of claims 1–6 of the '036 patent. TS Conductor Corp. ("Patent Owner")[2] filed a Preliminary Response to the Petition. Paper 7[3] ("Prelim. Resp.").

A post-grant review may be instituted only if "the information presented in the petition . . . demonstrate[s] that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable." 35 U.S.C. § 324(a) (2018). For the reasons given below, Petitioner has not established that it is more likely than not that at least one of the challenged claims of the '036 patent is unpatentable. Accordingly, we do not institute a post-grant review of the challenged claims.

## *B. Related Proceedings*

Both parties indicate that they are not aware of any related matter under 37 C.F.R. § 42.8(b)(2). Pet. 1; Paper 6, 2.

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[1] Petitioner identifies CTC Global Corporation as the real party-in-interest. Pet. 1.

[2] Patent Owner identifies assignee TS Conductor Corp. as the real party-in-interest. Paper 6, 2. The caption of the Petition lists Jianping Huang, named-inventor of the '036 patent, as the patent owner. The '036 patent was assigned to TS Conductor Corp. after the filing of the Petition. *See* Ex. 2001.

[3] The entire substance of the Preliminary Response is: "The patent owner elects not to present any arguments at this point in the proceedings, but will engage in a vigorous defense in subsequent points in this proceeding." Prelim. Resp. 2.

*C. The '036 Patent*

The '036 patent is titled "Energy Efficient Conductors with Reduced Thermal Knee Points and the Method of Manufacture Thereof," and issued January 5, 2021, from U.S. Application No. 16/423,116, filed May 27, 2019.[4] Ex. 1001, codes (21), (22), (45), (54).

The '036 patent pertains to electrical transmission and distribution conductors having strength members. *Id.* at 1:22–26. The Abstract provides the following description:

> The present invention relates to electrical conductors for electrical transmission and distribution with pre-stress conditioning of the strength member so that the conductive materials of aluminum, aluminum alloys, copper, copper alloys, or copper micro-alloys are mostly tension free or under compressive stress in the conductor, while the strength member is under tensile stress prior to conductor stringing, resulting in a lower thermal knee point in the conductor.

*Id.* at code (57). The '036 patent explains that "[t]he thermal knee point is relevant in conductors made of differing materials (e.g., strength member vs. conductive member) and is defined as the temperature above which the conductive constituents in the conductor are no longer carrying tensile load or are in compression." *Id.* at 1:52–56. The '036 patent further states that the conductor constituents typically remain under tensile stress after stringing, which results in a thermal knee point higher than the majority of operating temperatures. *Id.* at 1:56–61. "Until the conductor reaches above

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[4] The earliest filing date of a related application identified in the '036 patent is September 26, 2014. Ex. 1001, codes (60), (62). Because the earliest possible effective filing date for the '036 patent is after March 16, 2013 (the effective date for the first inventor to file provisions of the America Invents Act) and the Petition was filed within 9 months of its issue date, the '036 patent is eligible for post-grant review. *See* 35 U.S.C. § 321(c).

its thermal knee point, the conductor thermal expansion is substantially controlled by conductive material such as aluminum or copper with high thermal expansion coefficient, resulting in large sag, limiting the conductor's current carrying capacity." *Id.* at 1:61–65.

According to the '036 patent, "there remains a need for knee point suppressed conductor capable of high temperature operation without the need for conductor pre-stressing at the electric towers that may compromise the tower safety . . . [and] it is desirable to have a conductor solution using composite strength member that is cost effective, easy to work with." *Id.* at 5:25–30.

> The present invention solves these issues by providing a complete conductor system solution that is cost effective (conductor, installation, repair and hardware), high capacity and energy efficient, low sag under high temperature and heavy ice, and virtually no sag change with temperature variations by ensuring the strength member(s) in the conductor is under pre-stressed condition while substantial amount of the conductive media is under no tension or under compression without damaging the conductor integrity (e.g., birdcaging) prior to conductor installation onto the towers.

*Id.* at 5:34–44.

An embodiment "includes strength member(s) encapsulated with [conductive media] through a conforming machine or conforming unit for single layer conductive media or through a series of conforming machines for conductors of multiple layer configuration." *Id.* at 6:15–23.

Figure 8 of the ’036 patent is reproduced below.

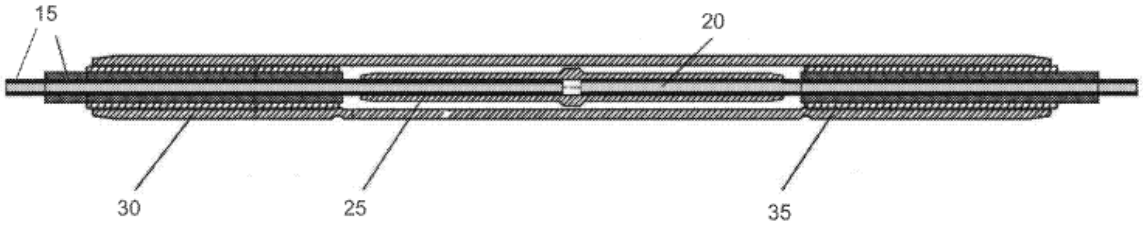



Figure 8 depicts a cross section of a splice assembly. *Id.* at 12:63. “[I]nstead of conforming machines or the like, integral tubes 25, 30, 35 may be extruded over the strength member(s) 20 or extruded profiles were folded over the strength members from a broad strip and longitudinally welded.” *Id.* at 20:39–43.

“The embodiment in the invention include[s] the option of stranding around the encapsulated pre-tensioned strength member(s) with additional layer(s) of conductive strands to increase conductor diameter for [ultra-high voltage] applications while facilitating easy handling (requiring smaller reels for wrapping).” *Id.* at 26:13–16; *see id.* at 6:38–41 (“Additional conductive layers may be optionally stranded around the pre-tension treated strength member(s) encapsulated with conductive material, and preferably this is for the outer layer.”).

### *D. Illustrative Claim*

Of the challenged claims of the ’036 patent, claim 1 is an independent claim. The remaining challenged claims depend directly from claim 1. Claim 1, reproduced below, is illustrative.

> 1. A method for the manufacture of an electrical conductor, comprising the steps of:
>
> feeding at least one strength member having at least one strand to a conforming unit suitable to work with conductive media, and the strength member being comprised of steel or is

comprised of fiber-reinforced longitudinally extending composite material;

extruding tubes and layers or other profiles from the conforming unit or other extrusion and folding machines, that sufficiently integrate onto the at least one strength member to encapsulate electrically conductive layers around the at least one strength member and form a metal encapsulated strength member;

stranding at least one additional layer of aluminum or copper or alloy strands around the metal encapsulated strength member to form an electrical conductor with more areas of conducting materials comprising aluminum or copper; and

collecting the electrical conductor on a spool.

Ex. 1001, 34:59–35:10.

*E. Evidence*

Petitioner relies on the following references:

| **Reference**[5] | | **Dates** | **Exhibit No.** |
|---|---|---|---|
| McCullough '228 | US 2005/0181228 Al | Filed Feb. 13, 2004; Published Aug. 18, 2005 | 1003 |
| Johnson | US 2005/0279527 Al | Filed June 17, 2004; Published Dec. 22, 2005 | 1004 |
| De Angeli Prodotti | EP 1 821 318 A2 | Filed Feb. 13, 2007; Published Aug. 22, 2007 | 1005 |
| Meyer | US 2012/0090892 Al | Filed Dec. 7, 2011; Published Apr. 19, 2012 | 1006 |
| Furukawa Electric | JP 2001-291429 A | Published Oct. 19, 2001 | 1007 |
| McCullough '312 | US 2012/0305312 Al | Filed Aug. 9, 2012; Published Dec. 6, 2012 | 1008 |

[5] Petitioner refers to Exhibit 1003 as "McCullough et al." and Exhibit 1008 as "McCullough et al. II." Pet. 13, 16. We use a different naming convention to avoid confusion.

*F. Asserted Grounds of Unpatentability*

Petitioner asserts that the challenged claims are unpatentable on the following grounds:

| Claim(s) Challenged | 35 U.S.C. § | Reference(s)/Basis |
|---|---|---|
| 1, 6 | 103 | McCullough '228, Johnson |
| 2–5 | 103 | McCullough '228, Johnson, McCullough '312 |
| 1, 6 | 103 | De Angeli Prodotti, Johnson |
| 2–5 | 103 | De Angeli Prodotti, Johnson, McCullough '312 |
| 1, 6 | 103 | Meyer, Johnson |
| 2–5 | 103 | Meyer, Johnson, McCullough '312 |
| 1, 6 | 103 | Furukawa Electric, Johnson |
| 2–5 | 103 | Furukawa Electric, Johnson, McCullough '312 |
| 6 | 112(d) | Improper Dependent Form |
| 1–5 | 112(b) | Indefiniteness |

## II. ANALYSIS

*A. Principles of Law*

Petitioner bears the burden of persuasion to prove unpatentability of the claims challenged in the Petition, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art;

(2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) any objective evidence of obviousness or non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

In this post-grant review proceeding, we apply the test for indefiniteness set out in *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898 (2014). *See* Memorandum on Approach to Indefiniteness Under 35 U.S.C. § 112 in AIA Post-Grant Proceedings (Jan. 6, 2021), 5, *available at* https://www.uspto.gov/sites/default/files/documents/IndefinitenessMemo.pdf ("The office now clarifies that the Board shall follow *Nautilus* in AIA post-grant proceedings."). Under *Nautilus*, a claim is unpatentable for indefiniteness under 35 U.S.C. § 112(b) if the claim, read in light of the patent specification and the prosecution history, fails to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *Nautilus*, 572 U.S. at 901; *see id.* at 902 n.1 (stating that the amendments of the Leahy Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (AIA), modified § 112 in minor respects not pertinent to the decision).

Section 112(d) provides, in pertinent part, that "a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed." 35 U.S.C. § 112(d). The U.S. Court of Appeals for the Federal Circuit has indicated that non-compliance with pre-AIA 35 U.S.C. § 112, fourth paragraph (now 35 U.S.C. § 112(d)), renders the claim unpatentable. *See* Manual of Patent Examining Procedure (MPEP) § 608.01(n) (9th ed., rev. 10.2019, June 2020) (citing *Pfizer, Inc. v. Ranbaxy Labs., Ltd.*, 457 F.3d 1284, 1291–92 (Fed. Cir. 2006) (holding a dependent claim in a patent invalid for failure to

comply with pre-AIA 35 U.S.C. § 112, fourth paragraph)). "A dependent claim does not lack compliance with 35 U.S.C. [§] 112(d) simply because there is a question as to the significance of the further limitation added by the dependent claim." *Id.*

> The fact that the independent and dependent claims are in different statutory classes does not, in itself, render the latter improper. Thus, if claim 1 recites a specific product, a claim for the method of making the product of claim 1 in a particular manner would be a proper dependent claim since it further specifies limitations relating to the method of making the product of claim 1. Similarly, if claim 1 recites a method of making a product, a claim for a product made by the method of claim 1 could be a proper dependent claim. On the other hand, if claim 1 recites a method of making a specified product, a claim to the product set forth in claim 1 would not be a proper dependent claim if the product can be made by a method other than that recited in the base method claim, and thus, does not include the limitations of the base claim.

*Id.*

*B. The Level of Ordinary Skill in the Art*

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (internal quotation marks and citation omitted).

Petitioner contends that "[a] person of ordinary skill in the art (POSITA) would typically have a Bachelor's or Master's Degree in engineering, e.g., mechanical or materials engineering, and at least 3 to 5 years of experience in the field of overhead electrical conductors." Pet. 7.

Patent Owner, at this stage, does not disagree or propose a different definition of the designer of ordinary skill in the art. *See* Prelim. Resp. 2.

Petitioner's definition is consistent with the level of ordinary skill reflected in the prior art references of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (recognizing that the prior art itself may reflect an appropriate level of skill in the art). For purposes of this decision, we apply Petitioner's definition of the person of ordinary skill in the art.

### *C. Claim Construction*

In a post-grant review requested in a petition filed on or after November 13, 2018, we apply the same claim construction standard used in district courts, namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.200(b) (2021). In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Independent claim 1 recites the step of feeding a strength member to a "conforming unit suitable to work with conductive media." Ex. 1001, 34:61–65. Claim 1 also recites the step of "extruding tubes and layers or other profiles from *the conforming unit* or other extrusion and folding machines, that sufficiently integrate onto the at least one strength member to

encapsulate electrically conductive layers around the at least one strength member and form a metal encapsulated strength member." *Id.* at 34:66–35:4 (emphasis added).

Petitioner proposes a construction for a "conforming unit suitable to work with conductive media." Pet. 5. Petitioner contends that this claim phrase should be construed to mean "any device capable of conformally placing a metallic layer over workpiece." *Id.* Petitioner's argument for this construction is, in its entirety:

> The specification and the file history give little guidance as to what constitutes a "conforming unit" or a "conforming machine." Therefore the term should be given its broadest reasonable construction.

*Id.*

We first note that Petitioner is utilizing the broadest reasonable interpretation (BRI) standard, which is not the correct claim construction standard for this proceeding. *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (amending 37 C.F.R. §§ 42.100, 42.200, the *inter partes* review and post-grant review rules, respectively).[6]

[6] Petitioner cites, in support of its use of BRI, *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261 (2016). Pet. 4. The relevant issue in *Cuozzo* was whether the pertinent statute granted the Office the authority to issue a regulation setting forth the claim construction standard for *inter partes* reviews, not whether the BRI standard must be used. *See Cuozzo*, 579 U.S. at 266; *see also id.* at 283 ("That [the appropriate claim construction standard for AIA proceedings] is a question that Congress left to the particular expertise of the Patent Office.").

Additionally, we find Petitioner's claim construction argument to be conclusory and lacking any meaningful analysis. As quoted above, Petitioner asserts that the Specification and prosecution history "give little guidance" and "[t]herefore the term should be given its broadest reasonable construction." Pet. 5. To the extent that Petitioner argues that the lack of intrinsic evidence requires the adoption of Petitioner's proposed interpretation, we disagree. Petitioner does not analyze adequately the various discussions of "conforming unit" and "conforming machine" in the Specification[7] and does not direct us to evidence of the ordinary and customary meaning of "conforming unit" to the person of ordinary skill in the art. For at least these reasons, we are reluctant to adopt a seemingly very broad construction that encompasses "any device capable of . . . ." Pet. 5.

On this record and for purposes of this Decision, we see no need to expressly construe any claim term in order to determine whether to institute a trial.

### *D. The Alleged Obviousness of Claims 1 and 6 Over McCullough '228 and Johnson (Ground 1)*

Petitioner alleges that claims 1 and 6 of the '036 patent would have been obvious over McCullough '228 and Johnson. *See* Pet. 13–16. We, for the reasons discussed below, determine that Petitioner has not made the necessary threshold showing regarding, at least, a reason why a person of ordinary skill would have combined the references' teachings and how the

[7] *E.g.*, Ex. 1001, 20:39–43 ("Referring to FIGS. 8 and 9, instead of conforming machines or the like, integral tubes 25, 30, 35 may be extruded over the strength member(s) 20 or extruded profiles were folded over the strength members from a broad strip and longitudinally welded.").

prior art teaches or suggests the "feeding . . . to a conforming unit" limitation.

*1. McCullough '228 (Ex. 1003)*

McCullough '228 discloses "wire and cable that include metal-cladded fiber reinforced metal matrix composites." Ex. 1003 ¶ 29. "The metal-cladded metal matrix composite wire of [McCullough '228] comprises a hot worked ductile metal cladding associated with the exterior surface of a metal matrix composite wire." *Id.* "At least one metal-cladded metal matrix composite wire according to [McCullough '228] may be combined into a cable, (e.g., an electric power transmission cable)." *Id.*

Figure 1 of McCullough '228 is reproduced below.

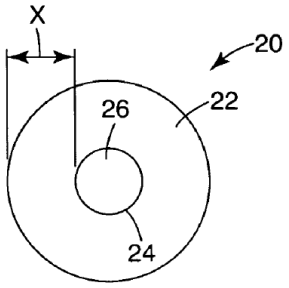



***Fig. 1***

Figure 1 depicts a metal-cladded composite wire or MCCW, that includes ductile metal cladding 22 and metal matrix composite wire 26 having exterior surface 24. *Id.* ¶ 30. "Metal matrix composite wire 26 may also be referred to as core wire 26." *Id.*

Figure 2 of McCullough '228 is reproduced below.

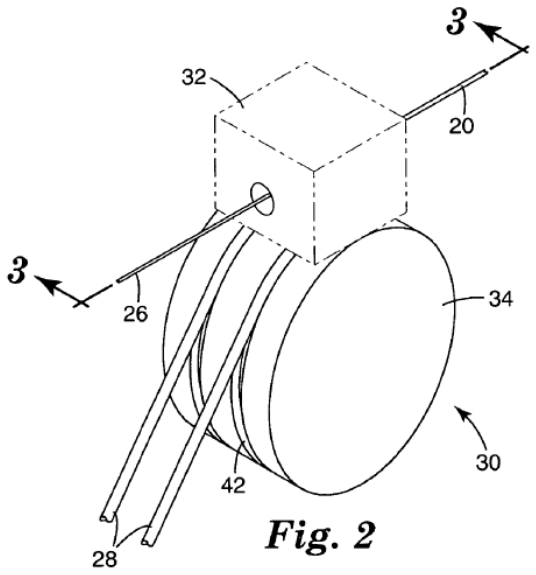



*Fig. 2*

Figure 2 "is a perspective view of an exemplary twin groove cladding machine run in tangential mode for making metal-cladded metal matrix composite wire." *Id.* ¶ 19.

Metal matrix composite wire 26 is cladded with ductile metal feedstock 28 via cladding machine 30. *Id.* ¶¶ 32–36, Figs. 2–3. Cladding machine 30 includes extrusion wheel 34 and shoe 32 having extrusion die chamber 36 into which the cladding material is fed. *See id.* ¶¶ 32–33, 35, 37–39, Figs. 2–3. "Core wire 26 passes directly through shoe 32 (i.e., extrusion tooling) by entering through inlet guide die 38, passing through die chamber 36 where cladding takes place, and exiting at exit extrusion die 40." *Id.* ¶ 35. "MCCW 20 is attached to a take-up drum . . . after exiting at the far side of shoe 32." *Id.*; *see id.* ¶ 41 ("After exiting the machine, MCCW 20 is passed through troughs . . . of water to cool it, and then is wound on a take-up drum.").

"[C]ore wire 26 . . . often includes at least one tow comprising a plurality of continuous, longitudinally positioned, fibers, such as ceramic

(e.g., alumina based) reinforcing fibers encapsulated within a matrix that includes one or more metals (e.g., highly pure, (e.g., greater than 99.95%) elemental aluminum or alloys of pure aluminum with other elements, such as copper)." *Id.* ¶ 45.

"Cables comprising metal-cladded metal matrix composite wires made according to the present invention may be homogeneous (i.e., including only wires such as MCCW 20) as in FIG. 7, or nonhomogeneous (i.e., including a plurality of secondary wires, such as metal wires) such as in FIGS. 5 and 6." *Id.* ¶ 86. "As an example of a nonhomogeneous cable, the cable core can include a plurality of metal-cladded and metal matrix composite wires . . . with a shell that includes a plurality of secondary wires (e.g., aluminum wires), for example as shown in FIG. 5." *Id.* Figure 5 is reproduced below.

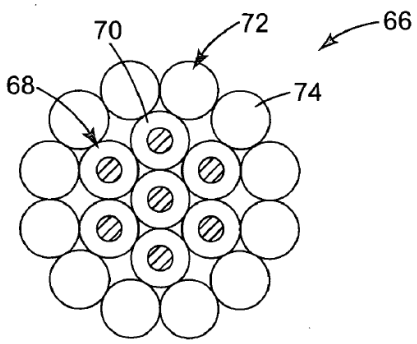



***Fig. 5***

Figure 5 is a schematic, cross-sectional view of an exemplary embodiment of an overhead electrical power transmission cable comprising metal-cladded metal matrix composite wires. *Id.* ¶ 22. As shown in Figure 5, "cable 66 may be a cable core 68 of [sic] comprising a plurality of individual metal-cladded composite metal matrix wires 70 surrounded by a jacket 72 of a plurality of individual aluminum or aluminum alloy wires 74." *Id.* ¶ 88. "Stranded cables comprising metal-cladded metal matrix

composite wires . . . are useful in numerous applications" . . . [including] for use in overhead electrical power transmission cables." *Id.* ¶ 91.

*2. Johnson (Ex. 1004)*

Johnson pertains to the "use of composite wire (e.g., metal matrix composite wire) . . . as a reinforcing member in bare overhead electrical power transmission cables." Ex. 1004 ¶ 2. Johnson's Figure 7 is reproduced below.

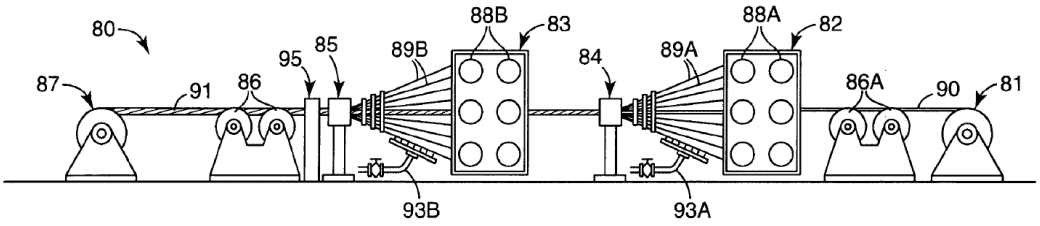



***FIG. 7***

Figure 7 is a schematic view of a stranding apparatus used to make cable. *Id.* ¶ 18. Figure 7 depicts apparatus 80 for making cable and having a spool 81 of core 90 material and individual wires 89A, which are helically stranded onto core 90. *Id.* ¶¶ 72–73. "The resulting cable may pass through other stranding stations, if desired, and ultimately wound onto take-up spool 87 of sufficient diameter to avoid cable damage." *Id.* ¶ 77.

*3. Discussion*

*a. Reason to Combine*

A successful obviousness challenge requires articulated reasoning as to why a person of ordinary skill in the art would have been motivated to combine the prior art references' teachings to arrive at the claimed subject matter. *See Regents of Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir. 2018) ("An obviousness determination requires finding that a person of ordinary skill in the art would have been motivated to combine or modify the teachings in the prior art . . . ."); *KSR*, 550 U.S. at 418 (citing

*In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness")).

The Petition does not contain adequate argument or evidence from which we, in a final written decision, could find in Petitioner's favor on a showing of a reason why a person of ordinary skill in the art would have combined the references' teachings.

Petitioner contends that McCullough '228 discloses the claimed invention except for the collecting step, and turns to Johnson. *See* Pet. 13–15. Specifically, Petitioner argues the following:

> McCullough et al. [(McCullough '228)] does not explicitly disclose the step of collecting the electrical conductor on a spool. However, Johnson et al. discloses that it is conventional in the art for stranded electrical cables having composite core wires to be collected on a spool; *see* Ex. 1004, ¶[0077] and FIG. 7.
>
> It would have been obvious to one of ordinary skill in the art to combine McCullough et al. with Johnson et al. to collect the electrical conductor of McCullough et al. on a spool after stranding the composite core wires with conductive aluminum wires. Therefore, Claim 1 is unpatentable over McCullough et al. in view of Johnson et al.

Pet. 15.

We disagree with Petitioner's argument that Johnson discloses that it was *conventional* in the art to collect on a spool cables with composite cores. The cited paragraph of Johnson states, in part: "The resulting cable may pass through other stranding stations, if desired, and ultimately wound onto take-up spool 87 of sufficient diameter to avoid cable damage." Ex. 1004 ¶ 77. The cited Figure 7 depicts a "schematic view[] of an exemplary

stranding apparatus used to make cable in accordance with the present invention" and includes take-up spool 87. *Id.* ¶¶ 18, 77. Thus, the cited evidence indicates that Johnson's disclosed apparatus collects a stranded cable on a spool; however, Petitioner does not explain adequately how that disclosure should be extrapolated to a finding that the step was *conventional* in the art. Although it may have been conventional in the art to perform the "collecting . . . on a spool" step on the claimed multi-layer conductor, Petitioner does not present us with adequate evidence from which to ultimately make that finding.

Petitioner's second quoted paragraph above merely is a conclusory assertion that it would have been obvious to combine the references' teachings. Petitioner does not articulate an adequate reason why a person of ordinary skill in the art would have combined Johnson's use of a spool with the method of manufacturing of the metal cladded metal matrix composite wire of McCullough '228.

Accordingly, we determine that Petitioner has not met its threshold burden with regard to the obviousness of the overall claimed subject matter having the recited collecting step.

*b. The Recited Step of Feeding a Strength Member to a Conforming Unit*

Claim 1 recites the step of "feeding at least one strength member having at least one strand to a conforming unit suitable to work with conductive media." Ex. 1001, 34:61–63.

Petitioner contends that McCullough '228 "discloses feeding a core wire ('at least one strength member having at least one strand') to a cladding machine that clads the core wire with a ductile metal feedstock ('to a conforming unit suitable to work with conductive media')." Pet. 14 (citing

Ex. 1003 ¶¶ 30–34; Figs. 2, 3). As Petitioner's argument indicates, McCullough '228 discloses the use of a "cladding machine." *See* Ex. 1003 ¶ 32. In effect, Petitioner merely is making a conclusory argument that the disclosed cladding machine is the recited conforming unit. However, Petitioner does not direct our attention to any portion of McCullough '228 referring to that cladding machine as a conforming unit, and Petitioner does not provide us with adequate argument or evidence from which we could eventually find that a person of ordinary skill in the art would have recognized McCullough's cladding machine to be a conforming unit.

We acknowledge Petitioner's assertion—apparently made in the context of the step reciting "extruding tubes and layers or other profiles from the conforming unit or other extrusion and folding machines"—that McCullough '228 discloses extruding aluminum at about 500° C during cladding and the '036 patent discloses that the encapsulating conductive material may reach up to 500° C or higher during conforming. *See* Pet. 14–15 (referring to the disclosures of both McCullough '228 and the '036 patent as pertaining to encapsulating; citing Ex. 1003 ¶¶ 122, 125, Figs. 2–4). To the extent that Petitioner is arguing that this assertion applies to the "feeding" limitation, we are not persuaded. Petitioner does not explain adequately how the use of the same processing temperature for a metal supports a finding that a cladding machine is a conforming unit.

Accordingly, we determine that Petitioner has not met its threshold burden with regard to the obviousness of the overall claimed subject matter having the recited "feeding . . . to a conforming unit" step.

*c. Conclusion Regarding Petitioner's Obviousness Challenge Based on McCullough '228 and Johnson*

Petitioner has not established that it is more likely than not that independent claim 1, or claim 6 depending therefrom[8], is unpatentable as obvious over McCullough '228 and Johnson.

*E. The Alleged Obviousness of Dependent Claims 2–5 Over McCullough '228, Johnson, and McCullough '312 (Ground 2)*

Petitioner contends that dependent claims 2–5 would have been obvious over McCullough '228, Johnson, and McCullough '312. Pet. 16–17. Each of claims 2–5 depends directly from independent claim 1, and each begins with the recitation "[t]he conductor of claim 1, wherein the conductor is connected . . ." followed by a recitation of details concerning the subject connection. Ex. 1001, 35:11–36:13. As a reminder, claim 1 recites "[a] method for the manufacture of an electrical conductor." *Id.* at 34:59–60. Petitioner notes that the subject dependent claims each recite "[t]he conductor," and Petitioner states that, "[a]s a result, Petitioner will treat Claims 2 to 6 herein as product-by process claims under MPEP §2113." Pet. 16 n.1; *see id.* at 32 ("[F]or purposes of this Petition, dependent Claims 2 to 6 are treated as 'product-by-process' claims.").

Dependent claim 2, for example, recites

> The conductor of claim 1, wherein the conductor is connected with a conventional fitting with steel tube attached from a deadend eyebolt, wherein the encapsulated strength member is directly inserted into the steel or aluminum tube, just

[8] Petitioner argues that dependent claim 6 fails to add a limitation to independent claim 1 and, therefore, also is obvious. Pet. 15.

> as steel core in conventional ACSR conductor[9], for direct crimping.

Ex. 1001, 35:11–15.

Petitioner contends that McCullough '312 discloses a termination arrangement and "the use of conventional fittings having inner sleeves and the like for similar composite core conductors." Pet. 17. Petitioner does not rely on McCullough '312 in any manner that would cure the defects in the underlying challenge to independent claim 1. *See id.* at 16–17.

Petitioner has not established that it is more likely than not that dependent claims 2–5 are unpatentable as obvious over McCullough '228, Johnson, and McCullough '312.

*F. The Remaining Obviousness Challenges (Grounds 3–8)*

Petitioner's remaining obviousness grounds—Grounds 3 through 8—are three pairs of grounds following a pattern similar to that of Grounds 1 and 2. *See* Pet. 17–28. Petitioner, in Grounds 3, 5, and 7, challenges claims 1 and 6. For each of those grounds, Petitioner contends that the respective primary reference (De Angeli Prodotti, Meyer, and Furukawa Electric) discloses the subject matter of claim 1 except for collecting the conductor on a spool and, like Ground 1, argues that the claimed subject matter would have been obvious in light of Johnson. *See id.* at 17–20, 21–23, 25–27. In each of those grounds, Petitioner reiterates the same argument that Johnson discloses that it was conventional to collect composite core stranded electrical cables on a spool and offers the conclusory assertion that

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[9] The '036 patent explains that "[c]onventional electrical transmission conductors, e.g., ACSR (Aluminum Conductor Steel Reinforced), are broadly used in electrical transmission and distribution networks." Ex. 1001, 1:37–39.

it would have been obvious to combine the references' teachings. *See id.* at 19, 23, 26–27. For the reasons discussed above, we determine that the Petition lacks an adequate articulation of a reason as to why a person of ordinary skill in the art would have combined the references' teachings so as to arrive at the claimed subject matter.

Additionally, the Petition, similar to Ground 1, is too terse and unsupported in these additional grounds regarding the "feeding . . . [a] strength member . . . to a conforming unit" limitation. Petitioner fails to adequately tie the respective reference's disclosed machine to the recited "conforming unit." For example, Petitioner contends, for Ground 3, that De Angeli Prodotti "discloses that an aluminum or aluminum alloy matrix is applied onto the composite wires by high pressure plastic extrusion" and, without further elaboration or adequate evidentiary support, maps that to the recited "feeding . . . to a conforming unit." *See* Pet. 18–19 (citing Ex. 1005 ¶ 14).

For Ground 5, Petitioner contends that Meyer discloses a folding machine that welds strips into tubes and maps that to the claimed extruding step. *See* Pet. 22. Petitioner further argues as follows:

> As set forth in the '036 Patent ". . . integral tubes 25, 30 and 35 may be extruded over the strength member(s) 20 ***or extruded profiles were folded over the strength members from a broad strip and longitudinally welded***." (emphasis added). Such a step would necessarily include "feeding at least one strength member having at least one strand to a conforming unit suitable to work with conductive media."

*Id.* at 22–23. First, Petitioner does not adequately explain why a claimed step (feeding to a conforming unit) that is not explicitly disclosed is nonetheless necessarily present due to the purported disclosure of the separate extruding step. Second, the portion of Petitioner's quote from

the ’036 patent that is replaced with ellipses contradicts Petitioner’s assertion that a conforming unit necessarily was used. The complete quote states:

> Referring to FIGS. 8 and 9, *instead of conforming machines or the like*, integral tubes 25, 30, 35 may be extruded over the strength member(s) 20 or extruded profiles were folded over the strength members from a broad strip and longitudinally welded.

Ex. 1001, 20:39–43 (emphasis added). Thus, the ’036 patent appears to distinguish, rather than equate, a conforming machine and a machine that folds and welds strips.

For Ground 7, Petitioner contends that Furukawa Electric discloses that, “[t]o manufacture the aluminum-coated carbon fiber composite aluminum wire 5a and 5b, an aluminum coating is integrated on the outer periphery of the uncoated carbon fiber composite aluminum wire manufactured by the conform method.” Pet. 26 (citing Ex. 1007 ¶ 16). Without more, we are unable to find that the mere mention of a phrase similar to the claim’s recitation of a “conforming unit” would have been understood by a person of ordinary skill in the art to disclose the step of feeding a strength member to a conforming unit. Additionally, and more importantly, the reference is an unreliable translation thereby calling into question the value of the mention of a “conform method.” In an AIA post-grant proceeding, “[w]hen a party relies on a document . . . in a language other than English, a translation of the document into English and *an affidavit attesting to the accuracy of the translation must be filed with the document*.” 37 C.F.R. § 42.63 (emphasis added). Here, Petitioner filed a machine translation that, rather than being accompanied by an affidavit attesting to accuracy, contains a warning notice stating:

> This translation is machine-generated. It cannot be guaranteed that it is intelligible, accurate, complete, reliable or fit for specific purposes. Critical decisions, such as commercially relevant or financial decisions, should not be based on machine-translation output.

Ex. 1007, 2; *see* Pet. 6 (identifying Exhibit 1007 as a machine translation). Having based its case on an unreliable translation, Petitioner has not met the threshold showing necessary for us to institute a trial on the grounds based on Furukawa Electric.

The second ground in each pair—Grounds 4, 6, and 8—are substantively the same as Ground 2. *See* Pet. 20–21, 24–25, 27–28. For those grounds, Petitioner, like for Ground 2, contends that neither the respective primary reference nor Johnson discloses the conductor connection recited in dependent claims 2–5, and turns to McCullough '312. *See id.* The articulation of each of these grounds does not cure the defects in the respective underlying challenge to independent claim 1. *Id.*

Petitioner has not established that it is more likely than not that any of claims 1–6 are unpatentable as obvious over the relied-on references of Grounds 3–8 (the grounds applying, as primary references, De Angeli Prodotti, Meyer, and Furukawa Electric).

*G. The Alleged Improper Dependent Form of Claim 6 (Ground 9)*

Petitioner contends that dependent claim 6 fails to further limit independent claim 1, from which it depends, and therefore is unpatentable. Pet. 29.

Dependent claim 6 recites: "The conductors of claim 1, wherein connecting tubes for splice and deadends are made from steel material or aluminum alloys." Ex. 1001, 36:14–16.

Petitioner argues that independent claim 1 lacks a recitation of connecting tubes and, even if it did, it lacks a recitation of a relationship between connecting tubes and the method or the conductor. Pet. 29. Petitioner, however, does not explain adequately how that, even if correct, equates to a problem under § 112(d).

As noted above, Petitioner contends that, for purposes of the Petition, dependent claim 6 is a product-by-process claim. *See* Pet. 16 n.1 ("Petitioner will treat Claims 2 to 6 herein as product-by-process claims under MPEP §2113."). Thus, under Petitioner's view, claim 6 limits the claim to a product whereas independent claim is directed to a method. Petitioner does not offer a discussion as to whether, on the particular facts of this case, a change in statutory class constitutes an appropriate further limitation on the method of claim 1. *See* MPEP § 608.01(n) ("[I]f claim 1 recites a specific product, a claim for the method of making the product of claim 1 in a particular manner would be a proper dependent claim since it further specifies limitations relating to the method of making the product of claim 1. Similarly, if claim 1 recites a method of making a product, a claim for a product made by the method of claim 1 could be a proper dependent claim."). We decline to reach, in the first instance, issues not developed adequately by Petitioner.

We determine that Petitioner's arguments do not rise to the threshold level necessary for us to institute a post-grant review under § 112(d).

*H. The Alleged Indefiniteness of Claims 1–5 (Ground 10)*

Petitioner contends that independent claim 1 and dependent claims 2–5 are indefinite. Pet. 30–35. For the reasons that follow, we determine that

Petitioner has not demonstrated that it is more likely than not that any of these challenged claims is unpatentable as being indefinite.

*1. Independent Claim 1*

Claim 1 recites, "extruding tubes and layers or other profiles from the conforming unit or other extrusion and folding machines." Ex. 1001, 34:66–35:1.

Petitioner argues that the phrase "or other profiles" does not provide clear notice of the boundaries on the limitation and further argues that "[i]t is not clear from the specification what the term 'other profiles' encompasses or how the 'other profiles' differ from the 'tubes and layers' that precede the term in Claim 1." Pet. 30, 32. Petitioner specifically argues that the Specification, including the figures, fails to meaningfully describe or illustrate the "other profiles." *See id.* at 30–31. To the extent that Petitioner argues that the Specification must explicitly describe the "other profiles" in order to be definite, we are not persuaded. Patent specifications are written for persons of ordinary skill in the art, and Petitioner does not adequately address whether such ordinary artisans would not be familiar with profiles used in an extruding process so as to not reasonably understand the scope of the claim. *See Nautilus*, 572 U.S. at 908–09 ("[D]efiniteness is to be evaluated from the perspective of someone skilled in the relevant art. . . . One must bear in mind, moreover, that patents are 'not addressed to lawyers, or even to the public generally,' but rather to those skilled in the relevant art." (citations omitted)).

*2. Dependent Claims 2 and 3*

Dependent claims 2 and 3 recite the term "conventional fitting." For example, claim 2 recites:

> The conductor of claim 1, wherein the conductor is connected with a *conventional fitting* with steel tube attached from a deadend eyebolt, wherein the encapsulated strength member is directly inserted into the steel or aluminum tube, just as steel core in conventional ACSR conductor, for direct crimping.

Ex. 1001, 35:11–15 (emphasis added).

Petitioner catalogs various occurrences in the Specification of the term "conventional," and argues that "[n]one of these passages describe to one of ordinary skill in the art what a 'conventional fitting' encompasses." Pet. 34. Petitioner further argues that "the prior art discloses many configurations for deadends and similar devices that could be considered 'convetional [sic].'" *Id.*

Petitioner's arguments are conclusory and not persuasive because Petitioner appears to incorrectly assert that the Specification must explicitly describe "conventional fittings," and because Petitioner fails to include adequate argument or evidence to show how the claim would have been understood from the perspective of a person of ordinary skill in the art. *See Nautilus*, 572 U.S. at 908–09. Further, Petitioner's argument that the prior art discloses configurations that could be considered conventional suggests that a person of the ordinary skill in the art would have had at least some understanding of the meaning in the art of the term "conventional fitting." *See* Pet. 34.

*3. Dependent Claims 4 and 5*

Dependent claim 4 recites that "the conductor is connected with a MaClean type of deadend or splice," and dependent claim 5 recites that "the conductor is connected with deadends from PLP or devices from other manufacturers." Ex. 1001, 36:4–5, 36:10–12.

Petitioner argues that "there is no disclosure in the specification of the '036 Patent as to what is meant by a MaClean type of deadend or splice, or a deadend from PLP or from other manufacturers." Pet. 35. This argument is not persuasive because Petitioner again has focused on the Specification in a vacuum rather than from the proper perspective. Petitioner fails to include adequate argument or evidence as to whether a person of ordinary skill in the art would have understood what is meant by those terms. *See Nautilus*, 572 U.S. at 908–09.

Petitioner further argues that, "[e]ven if these terms *were* defined, the addition of the word 'type' to an otherwise definite expression extends the scope of the expression so as to render it indefinite." Pet. 35 (citing *Ex parte Copenhaver*, 109 USPQ 118 (Bd. App. Mar. 21, 1955) (cited at MPEP § 2173.05(b)(III)(E)). There is a not a *per se* rule that the use of "type" renders a claim indefinite, as Petitioner implies. As nicely summarized in the introductory paragraph of the pertinent MPEP section and before discussing the term "type":

> The use of relative terminology in claim language, including terms of degree, does not automatically render the claim indefinite under 35 U.S.C. [§] 112(b) or pre-AIA 35 U.S.C. [§] 112, second paragraph. *Seattle Box Co., Inc. v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984). Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification.

MPEP § 2173.05(b); *see also Ex parte Fukasawa*, Appeal No. 2011-006301, 2012 WL 683735, at *3 (BPAI Feb. 28, 2012) (APJ McKelvey) ("It goes without saying, however, that a question of whether a term is indefinite, including the term 'type,' has to be decided on a case-by-case basis. To the

extent that *Copenhaver* holds that 'type' is per se indefinite, we decline to apply such a broad ruling in all circumstances.").

## III. CONCLUSION

Petitioner has not demonstrated that it is more likely than not that at least one of the challenged claims of the '036 patent is unpatentable.

## IV. ORDER

For the foregoing reasons, it is

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

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