

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CORNING OPTICAL COMMUNICATIONS RF, LLC,  
Petitioner,

v.

PPC BROADBAND, INC.,  
Patent Owner.

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Case IPR2013-00342  
Patent 8,323,060 B2

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Before JAMESON LEE, MICHAEL R. ZECHER, and  
JACQUELINE WRIGHT BONILLA, *Administrative Patent Judges*.

BONILLA, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

## I. BACKGROUND

Petitioner, Corning Optical Communications RF, LLC<sup>1</sup> (“Corning”), filed an amended Petition requesting an *inter partes* review of claims 10–25 of U.S. Patent No. 8,323,060 B2 (Ex. 1001, “the ’060 patent”). Paper 5 (“Pet.”). Patent Owner, PPC Broadband, Inc. (“PPC”), did not file a Preliminary Response. The Board determined that the information presented in the Petition demonstrated that there was a reasonable likelihood that Corning would prevail in challenging claims 10–25 as unpatentable under 35 U.S.C. § 103(a). Pursuant to 35 U.S.C. § 314, the Board instituted this proceeding on November 26, 2013, on the ground that those claims are unpatentable under 35 U.S.C. § 103(a) over Matthews<sup>2</sup> and Tatsuzuki.<sup>3</sup> . Paper 14 (“Dec.”).

During the course of this proceeding, PPC timely filed a Patent Owner Response (Paper 27, “PO Resp.”), and Corning timely filed a Reply to the Patent Owner Response (Paper 32, “Pet. Reply”). A consolidated oral hearing was held on July 24 and 25, 2014, in relation to this proceeding and the following four other related proceedings involving the same parties: (1) IPR2013-00340; (2) IPR2013-00345; (3) IPR2013-00346; and (4) IPR2013-00347. Transcripts of the entire consolidated oral hearing are included in the record. Papers 46–48. In particular, Paper 48 (“Tr.”) corresponds to the

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<sup>1</sup> During the course of this proceeding, Petitioner filed an updated mandatory notice indicating that Corning Gilbert Inc., the original Petitioner in this proceeding, changed its name to Corning Optical Communications RF, LLC. Paper 22, 1.

<sup>2</sup> Matthews, US 2006/0110977 A1, published May 25, 2006 (Ex. 1004).

<sup>3</sup> Tatsuzuki, JP 2002-015823, published Jan. 18, 2002 (Ex. 1032) (English translation Ex. 1002).

transcript from the third session of the consolidated oral hearing, held the afternoon of July 25, 2014, and pertains only to this proceeding.

We have jurisdiction under 35 U.S.C. § 6(c). This decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of claims 10–25 of the '060 patent. For the reasons discussed below, Corning has demonstrated by a preponderance of the evidence that these claims are unpatentable under 35 U.S.C. § 103(a).

#### *A. Related Matters*

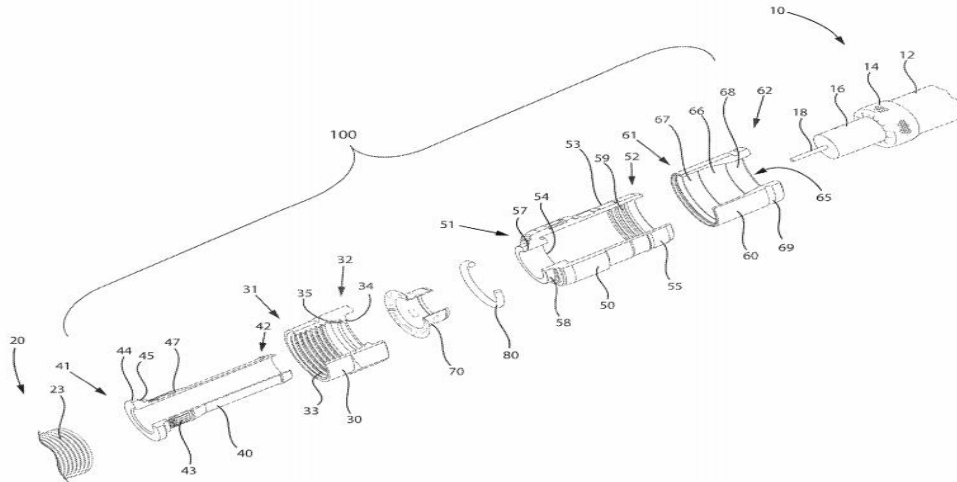
Corning indicates that PPC asserted the '060 patent against it in *PPC Broadband, Inc. v. Corning Gilbert Inc.*, 5:12-cv-0911-GLS-DEP, which was filed in the United States District Court for the Northern District of New York. Pet. 1. In addition, Corning filed five other petitions seeking *inter partes* review of the following patents owned by PPC: (1) the '060 patent (IPR2013-00340); (2) U.S. Patent No. 8,313,353 B2 (“the '353 patent”) (IPR2013-00343 and IPR2013-00345); and (3) U.S. Patent No. 8,287,320 B2 (IPR2013-00346 and IPR2013-00347). *Id.* at 1-2.

On April 15, 2014, we granted PPC’s request in IPR2013-00343 to cancel claims 1–6 of the '353 patent, i.e., all claims at issue in that proceeding, as well as PPC’s request for entry of adverse judgment against it in that case. IPR2013-00343, Paper 27.

#### *B. The '060 Patent*

The '060 patent generally relates to coaxial cable connectors having electrical continuity members that extend continuity of an electromagnetic interference shield from a cable through the connector. Ex. 1001, 1:18–22. Figure 1 of the '060 patent, reproduced below, illustrates a cut-away view of

the elements of coaxial cable connector 100 having electrical continuity member 70. *Id.* at 2:53–56, 5:66–6:1.



As shown in Figure 1 of the '060 patent, coaxial cable connector 100 may be affixed, or functionally attached, to coaxial cable 10 that includes protective outer jacket 12, conductive grounding shield 14, interior dielectric 16, and center conductor 18. Ex. 1001, 6:1–5. Coaxial cable connector 100 also may include threaded nut 30, post 40, connector body 50, fastener member 60, continuity member 70 formed of conductive material, and connector body sealing member 80, e.g., a body O-ring configured to fit around a portion of connector body 50. *Id.* at 7:10–16.

The '060 patent discloses that post 40 includes first forward end 41, opposing second rearward end 42, and flange 44 located at first forward end 41. Ex. 1001, 8:5–10. Post 40 also may include surface feature 47, such as a lip or protrusion, which engages a portion of connector body 50 to secure axial movement of post 40 relative to connector body 50. *Id.* at 8:17–21. Connector body 50 includes first end 51, opposing second end 52, and post mounting portion 57 proximate or otherwise near first end 51 that is configured to locate securely connector body 50 relative to a portion of the

outer surface of post 40. *Id.* at 8:66–9:9. The internal surface of post mounting portion 57 includes an engagement feature, which facilitates the secure location of continuity member 70 with respect to connector body 50 and/or post 40, by engaging physically continuity member 70 when assembled within coaxial cable connector 100. *Id.* at 9:9–14.

The '060 patent further discloses that threaded nut 30 includes first forward end 31, opposing second rearward end 32, and internal lip 34, e.g., an annular protrusion, located proximate to second rearward end 32. Ex. 1001, 7:17–26. In one embodiment, continuity member 70 includes first end 71, axially opposing second end 72, and post contact portion 77. *Id.* at 11:4–8. When coaxial cable connector 100 is assembled, post contact portion 77 makes physical and electrical contact with post 40, which, in turn, helps facilitate the extension of electrical ground continuity through post 40. *Id.* at 11:8–11.

### *C. Illustrative Claim*

Of the challenged claims, claim 10 is the only independent claim. Claims 11–25 directly or indirectly depend from independent claim 10. Independent claim 10 is illustrative of the '060 patent and reproduced below:

10. A coaxial cable connector for coupling an end of a coaxial cable, the coaxial cable having a center conductor surrounded by a dielectric, the dielectric being surrounded by a conductive grounding shield, the conductive grounding shield being surrounded by a protective outer jacket, the connector comprising:

a connector body having a forward end and an opposing rearward end, the rearward end configured to receive a portion of the coaxial cable;

a post, configured to engage the connector body, the post having a forward end including an external annular protrusion and a rearward end, the rearward end configured to be inserted

into an end of the coaxial cable around the dielectric and under at least a portion of the conductive grounding shield thereof to make electrical contact with the conductive grounding shield of the coaxial cable;

a nut, rotatable relative to the post and the connector body, the nut including a forward nut end portion configured for coupling to an interface port, a rearward nut end portion, and an internal lip, the internal lip having a forward lip surface facing the forward end portion of the nut and a rearward lip surface facing the rearward end portion of the nut; and

a continuity member having a nut contact portion positioned to electrically contact the nut and positioned to reside around an external portion of the connector body when the connector is assembled, wherein the continuity member helps facilitate electrical grounding continuity through the body and the nut and helps extend electromagnetic shielding from the coaxial cable through the connector to help prevent [radio frequency] ingress into the connector.

Ex. 1001, 22:5–36.

## II. ANALYSIS

### A. *Claim Construction*

In an *inter partes* review, we construe a claim by applying the broadest reasonable interpretation in light of the specification of the patent in which it appears. 37 C.F.R. § 42.100(b). Claim terms also are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). However, a “claim term will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.” *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002).

*1. Claim Phrases Construed in the Decision to Institute*

In its Petition, Corning provides claim constructions for a number of claim phrases recited in the '060 patent that lack antecedent basis. Pet. 5–6. In our Decision to Institute, we adopted some of the claim constructions proposed by Corning—namely, “the external protrusion of the post” (claims 18 and 19) and “the first end of the connector body” (claim 24)—and disagreed with others—namely, “the second surface of the internal lip of the nut” (claim 15), “the first surface” (claim 20), and “the second surface” (claim 20). Dec. 7–9. PPC does not propose alternative claim constructions for these claim phrases in its Patent Owner Response, nor did Corning challenge our constructions in its Reply. We discern no reason to alter our claim constructions in any respect for this Final Written Decision. For convenience, our claim constructions are reproduced in the table below.

<b>Claim(s)</b>	<b>Claim Phrase</b>	<b>Claim Construction</b>
15	“the second surface of the internal lip of the nut”	“the rearward lip surface of the internal lip of the nut”
18 and 19	“the external protrusion of the post”	“the external annular protrusion of the post”
20	“the first surface”	“the forward lip surface”
20	“the second surface”	“the rearward lip surface”
24	“the first end of the connector body”	“the forward end of the connector body”

*2. “reside around” (claim 10)*

In its Patent Owner Response, PPC contends that the claim phrase “reside around” should be construed to require that the continuity member “encircle or surround” an external portion of the connector body. PO Resp. 18–19. To support its claim construction, PPC directs us to various portions of the Specification of the '060 patent, dictionary definitions of “around”

and “about,” and the testimony of its expert, Dr. Charles A. Eldering. *Id.* at 17–19 (citing Ex. 1001, 14:47–52, 15:33–37, Figs. 21–26; Ex. 2019, 4, 5; Ex. 2020 ¶¶ 63–65).

In response, Corning contends that PPC construes the claim phrase “reside around” too narrowly. Pet. Reply 7–8. To support its argument, Corning asserts that the Specification of the ’060 patent does not set forth a special definition for this claim phrase. *Id.* Corning also asserts that this claim phrase does not appear in the Specification outside of independent claim 10. *Id.* at 8. Corning further argues that PPC’s proposed claim construction improperly imports limitations from the Specification into the claims, particularly from Figures 21–26, as well as improperly excludes embodiments disclosed in the ’060 patent. *Id.*

In addition, Corning contends that the broadest reasonable interpretation of the claim phrase “reside around” is not limited to “surround or encircle.” Pet. Reply 8–10. To support its argument, Corning directs us to dictionary definitions of “reside” and “around.” *Id.* at 8–9 (citing Ex. 1043; Ex. 1044). Based on these dictionary definitions, as well as the cross-examination testimony of Dr. Eldering, Corning asserts that the broadest reasonable interpretation of the claim phrase “reside around” is “in the immediate vicinity; near.” *Id.* at 9 (citing Ex. 2077, 216:10–11, 217:3–9; Ex. 2078, 37:6–20; Ex. 2019, 5).

We agree with Corning that PPC’s proposed claim construction for the claim phrase “reside around” does not constitute the broadest reasonable interpretation. We note that the claim phrase “reside around” does not appear in the Specification of the ’060 patent outside of independent claim 10. Put simply, the inventors of the ’060 patent did not act as their own



lexicographers to provide a special definition for the claim phrase “reside around” that differs from its recognized meanings to one of ordinary skill in the art. Thus, we refer to its ordinary and customary meaning, as would be understood by one of ordinary skill in the art, in the context of the entire disclosure. *Translogic*, 504 F.3d at 1257. Because the claim term “around” is a commonly understood word, we will rely on a general purpose dictionary in ascertaining its meaning. *See Agfa Corp. v. Creo Prods., Inc.*, 451 F.3d 1366, 1376 (Fed. Cir. 2006).

We note that to support their respective claim constructions for the claim term “reside around,” PPC and Corning provide competing dictionary definitions for the claim term “around.” PPC asserts that THE AMERICAN HERITAGE COLLEGE DICTIONARY (4th ed. 2002) defines “around” as “1. On all sides of: *trees around the field*. 2. In such a position as to encircle or surround: *a sash around the waist*.” Ex. 2019, 5.<sup>4</sup> On the other hand, Corning asserts that THE AMERICAN HERITAGE COLLEGE DICTIONARY (3rd ed. 1993) defines “around” as “in the immediate vicinity of; near.” Ex. 1044.

When considering these competing dictionary definitions offered by PPC and Corning, we note that at least one additional consideration supports Corning’s position that the claim phrase “reside around” means “in the immediate vicinity of; near.” “[T]he use of [two similar but different] terms in close proximity in the same claim gives rise to an inference that a different meaning should be assigned to each.” *Bancorp Services, L.L.C. v.*

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<sup>4</sup> We note that THE AMERICAN HERITAGE COLLEGE DICTIONARY (4th ed. 2002) provides many definitions for “around,” one of which is “in the immediate vicinity of; near.” Ex. 2019, 5.

*Hartford Life Ins. Co.*, 359 F.3d 1367, 1373 (Fed. Cir. 2004) (citing *Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 93 F.3d 1572, 1579 (Fed. Cir. 1996)). Here, the preamble of independent claim 10 recites, in relevant part, “the coaxial cable having a center conductor *surrounded* by a dielectric, the dielectric being *surrounded* by a conductive grounding shield, the conductive grounding shield being *surrounded* by a protective outer jacket.” Ex. 1001, 22:6–9 (emphasis added). If the inventors of the ’060 patent intended the claim terms “surrounded” and “reside around” to be mean the same thing, i.e., “encircle or surround,” one would have expected the ’060 patent to consistently use only one term, but not two different terms, especially within the same claim. Thus, in our view, the ordinary and customary meaning of “reside around” should not be construed such that “surrounded” and “reside around” are synonyms. PPC does not address this aspect of independent claim 10.

In considering the totality of the record before us, we adopt Corning’s claim construction of the claim phrase “reside around” to mean “in the immediate vicinity of; near.” This claim construction is consistent with the ordinary and customary meaning of “around,” as would be understood by one with ordinary skill in the art in light of the ’060 patent.

### 3. “axial lengthwise contact” (claim 13)

In its Patent Owner Response, PPC contends that the claim phrase “axial lengthwise contact” should be construed to require that the continuity member makes contact along the length of the post, i.e., some axial distance, but such contact requires more than simply point contact. PO. Resp. 25. To support its claim construction, PPC directs us to a portion of the

Specification of the '060, as well as the testimony of Dr. Eldering. *Id.* at 25–26 (citing Ex. 1001, 16:58–61, Figs. 33–38; Ex. 2020 ¶¶ 80–82).

In response, Corning contends that the claim phrase “axial lengthwise contact” does not require any particular amount of contact. Pet. Reply 12. Corning directs us to the cross-examination testimony of its expert, Dr. Robert S. Mroczkowski, to support its argument that this claim phrase should be construed according to its ordinary and customary meaning—namely, “if there is a contact along the axial portion [of a contact area] . . . then there would be an actual length connected with that contact area.” *Id.* at 13 (quoting Ex. 1036, 204:10–13). Corning further argues that PPC’s position that “axial lengthwise contact” requires more than simply point contact is inconsistent with at least one embodiment disclosed in the Specification of the '060 patent, as well as the cross-examination testimony of Dr. Eldering. *Id.* at 13–14 (citing Ex. 1001, 14:11–13, Fig. 16; Ex. 2076, 113:22–25; Ex. 2077, 222:21–25, 225:8–12).

We note that the claim phrase “axial lengthwise contact” does not appear in the Specification of the '060 patent outside dependent claim 13. Although the Specification describes an embodiment where “post contact portion 1077 . . . [has] an axial length, so as to facilitate axial lengthwise engagement with post 1040” (Ex. 1001, 16:58–64, Figs. 33–38), there is no indication that “axial lengthwise engagement” is synonymous with “axial lengthwise contact.” Nevertheless, even if we were to assume that “axial lengthwise engagement” is synonymous with “axial lengthwise contact,” there is no well-defined or otherwise recognizable standard for making an objective determination as to what degree of contact would satisfy these phrases.

It became evident during the oral argument that the dispute regarding the claim phrase “axially lengthwise contact” does not center on the term “axially,” which both parties agree means in the direction of, on, or along an axis, but instead centers on how much length is required to satisfy the term “lengthwise.” Tr. 9–15, 40–44. Neither PPC nor Corning provides a dictionary definition that would help us determine how much length is required to satisfy the term “lengthwise.” THE MERRIAM-WEBSTER DICTIONARY (New ed. 2005) defines “lengthwise” as “in the direction of the length.” Ex. 3001. We recognize, however, that contact “in the direction of the length” implies contact that has at least some length and, as a result, precludes point contact.

Applying the broadest reasonable construction standard, we construe the claim phrase “axially lengthwise contact” to mean “contact that is in the direction of, on, or along an axis that includes at least some length.” We note that, because the lengthwise contact includes at least some length, it precludes point contact. This claim construction is consistent with the ordinary and customary meaning of “lengthwise,” as would be understood by one with ordinary skill in the art in light of the ’060 patent.

*B. 35 U.S.C. § 103(a) Ground of Unpatentability Based on the Combination of Matthews and Tatsuzuki*

In its Petition, Corning contends that claims 10–25 are unpatentable under 35 U.S.C. § 103(a) over the combination of Matthews and Tatsuzuki. Pet. 39–59. In support of this asserted ground of unpatentability, Corning relies upon claim charts to explain how the proffered combination teaches the claimed subject matter recited in each of these challenged claims, as well as the Declaration of Dr. Mroczkowski (Ex. 1006 ¶¶ 93–162) to support its

positions. *Id.*

In its Patent Owner Response, PPC presents the following arguments: (1) the combination of Matthews and Tatsuzuki does not teach that the continuity member is positioned to reside around an external portion of the connector body when the connector is assembled, as required by independent claim 10; (2) the combination of Matthews and Tatsuzuki does not teach that the continuity member makes axially lengthwise contact with the post at a position axially rearward of the external annular protrusion, as required by dependent claim 13; and (3) Corning's expert, Dr. Mroczkowski, engaged in impermissible hindsight reconstruction when combining the teachings of Matthews and Tatsuzuki. PO Resp. 16–36.

We begin our analysis with the principles of law that generally apply to a ground of unpatentability based on obviousness, followed by our determination regarding the knowledge level of a person with ordinary skill in the art, as well as brief discussions of Matthews and Tatsuzuki, and then we address each of PPC's arguments in turn.

### *1. Principles of Law*

A claim is unpatentable under § 103(a) 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) where in evidence, so-called secondary considerations.

*Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We also recognize that prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (citing *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)).

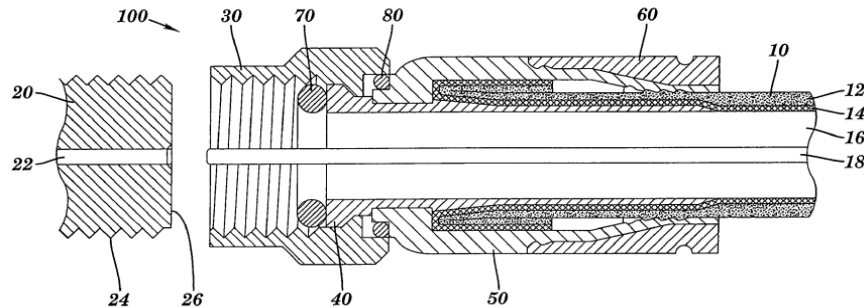
## 2. *Level of Skill in the Art*

In determining the level of skill in the art, various factors may be considered, including “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) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)).

There is evidence in the record before us that reflects the knowledge level of a person with ordinary skill in the art. Corning’s expert, Dr. Mroczkowski, attests that a person with ordinary skill in the art would be an individual who possesses a bachelor’s degree in engineering and several years of experience in the cable and telecommunications industry relating to the design and manufacture of coaxial cable connectors. Ex. 1006 ¶ 11. Dr. Mroczkowski also attests that ten or more years of experience in the art could be a substitute for a bachelor’s degree in engineering. *Id.* PPC’s expert, Dr. Eldering, generally agrees with Dr. Mroczkowski’s assessment of the knowledge level of a person with ordinary skill in the art. Ex. 2020 ¶ 10. In addition, the prior art of record in this proceeding also is indicative of the level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *GPAC*, 57 F.3d at 1579; *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

3. *Matthews (Ex. 1004)*

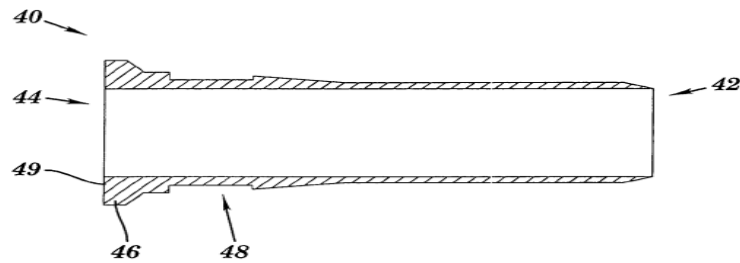
Matthews generally relates to a coaxial cable connector that includes at least one conductive member. Ex. 1004 ¶ 1. Figure 1 of Matthews, reproduced below, illustrates a sectional side view of coaxial cable connector 100. *Id.* ¶¶ 16, 26.



**FIG. 1**

As shown in Figure 1 of Matthews, coaxial cable connector 100 includes coaxial cable 10 that has protective outer jacket 12, conductive grounding shield 14, interior dielectric 16, and center conductor 18. Ex. 1004 ¶ 26. Coaxial cable connector 100 also may include threaded nut 30, post 40, connector body 50, fastener member 60, mating edge conductive member, e.g., O-ring 70, a connector body conductive member, e.g., O-ring 80, and a means for sealing and coupling connector body 50 and threaded nut 30. *Id.* ¶ 28.

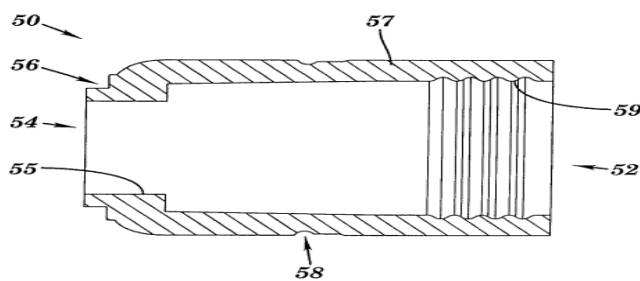
Figure 3 of Matthews, reproduced below, illustrates a sectional side view of post 40. Ex. 1004 ¶¶ 18, 30.



**FIG. 3**

As shown in Figure 3 of Matthews, post 40 includes first end 42, opposing second end 44, and flange 46 configured to contact internal lip 36 of threaded nut 30 (illustrated in Figure 2), thereby facilitating the prevention of axial movement of post 40 beyond contacted internal lip 36. Ex. 1004 ¶ 30. Post 40 also includes surface feature 48, e.g., a shallow recess, detent, cut, slot, or trough, and mating edge 49 configured to make physical and/or electrical contact with interface port 20 or mating edge member, e.g., O-ring 70 (illustrated in Figure 1). *Id.* In one embodiment, post 40 may be inserted into an end of coaxial cable 10, around interior dielectric 16 and under protective outer jacket 12 and conductive grounding shield 14. *Id.* Accordingly, substantial physical and/or electrical contact with conductive grounding shield 14 may be accomplished, thereby facilitating grounding through post 40. *Id.*

Figure 4 of Matthews, reproduced below, illustrates a sectional side view of connector body 50. Ex. 1004 ¶¶ 19, 31.

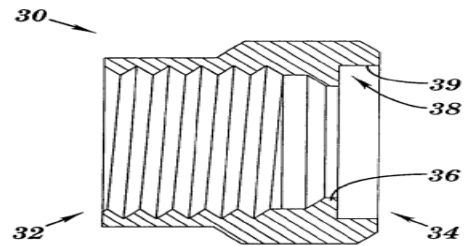


**FIG. 4**



As shown in Figure 4 of Matthews, connector body 50 includes first end 52, opposing second end 54, and internal annular lip 55 configured to engage surface feature 48 of post 40. Ex. 1004 ¶ 31.

Figure 2 of Matthews, reproduced below, illustrates a sectional side view of threaded nut 30. Ex. 1004 ¶¶ 17, 29.



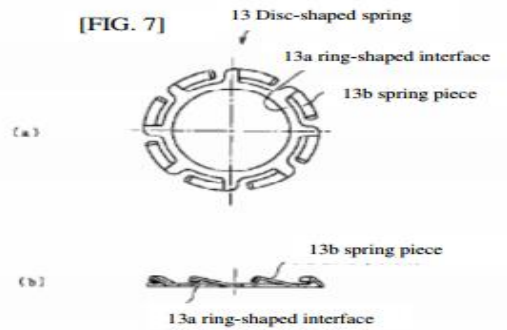
**FIG. 2**

As shown in Figure 2 of Matthews, threaded nut 30 includes first end 32, opposing second end 34, and internal lip 36 located proximate to second end 34 that is configured to hinder the axial movement of post 40. Ex. 1004 ¶ 29. Threaded nut 30 may be formed of conductive materials, thereby facilitating grounding through threaded nut 30. *Id.*

#### 4. *Tatsuzuki (Ex. 1032) (English Translation Ex. 1002)*

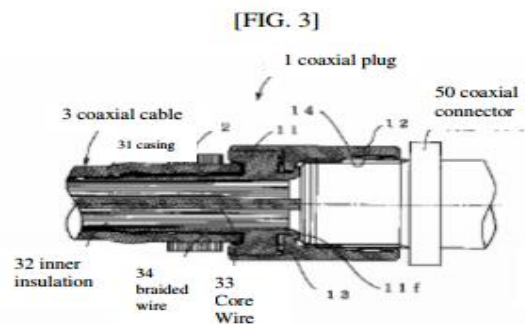
*Tatsuzuki* generally relates to a coaxial plug installed at the tip of a coaxial cable. Ex. 1002 ¶ 1. *Tatsuzuki* discloses installing a coaxial cable connector in reception devices, such as television satellite broadcasting tuners. *Id.* ¶ 2. Reception signals are inputted into these reception devices by fixing a coaxial plug installed at the tip of a coaxial cable to the coaxial cable connector. *Id.*

Figures 7(a) and 7(b) of Tatsuzuki, reproduced below, illustrate disc-shaped spring 13, and related side-view diagram, respectively. Ex. 1002 ¶ 17.



As shown in Figures 7(a) and 7(b) of Tatsuzuki, disc-shaped spring 13 is formed by stamp cutout processing of a thin metal plate possessing elasticity, e.g., phosphor bronze. Ex. 1002 ¶ 17. Disc-shaped spring 13 includes spring piece 13b and ring-shaped joining part 13a. *Id.* Spring piece 13b includes eight bent spring pieces, which are formed integrally by ring-shaped joining part 13a. *Id.*

Figure 3 of Tatsuzuki, reproduced below, illustrates a cross-section view of coaxial plug 1 securely installed in coaxial cable connector 50. Ex. 1002 ¶ 12.



As shown in Figure 3 of Tatsuzuki, coaxial plug 1 includes plug body 11 and rotary mounting element 12, which is fixed in a rotatable manner to plug body 11. Ex. 1002 ¶ 13. The electrical connection between ring-

shaped part 11c of plug body 11 and rotary mounting element 12 is facilitated by disc-shaped spring 13 interposed there between. *Id.* ¶ 17. Disc-shaped spring 13 is located within housing channel 11e (illustrated in Figure 2) and, therefore, is not pressed to the point of becoming flat, i.e., it does not lose its spring operation. *Id.*

5. *Claims 10–12 and 14–25*

In its Petition, Corning presents detailed claim charts and relies on supporting evidence demonstrating how Matthews teaches most of the limitations of independent claim 10. For example, Corning explains how Matthews’s coaxial cable connector 100 includes connector body 50, post 40 configured to engage the body, the post having an external annular protrusion (flange 46) and a rearward end (first end 42), and nut 30 including a forward nut end portion (first nut end 32), a rearward nut end (second end 34) and internal lip 36, and that those components correspond to the connector body, post, and nut features required by claim 10. Pet. 39–44. According to Corning, however, one limitation of claim 10 directed to the required “continuity member” is not expressly disclosed in Matthews. *Id.* at 43–44. Specifically, independent claim 10 recites, in relevant part, “a continuity member having a nut contact portion positioned to electrically contact the nut and positioned to reside around an external portion of the connector body when the connector is assembled.” Ex. 1001, 22:29–32.

Corning takes the position that Matthews and Tatsuzuki collectively teach the “continuity member” recited in claim 10. Pet. 42–44 (citing Ex. 1004 ¶¶ 28, 34–36, Figs. 1, 7; Ex. 1002 ¶¶ 1, 2, 16–20, Fig. 7; Ex. 1006 ¶¶ 100–103, 107). In particular, Corning acknowledges that, although Matthews discloses that connector 100 includes connector body conductive

member 80, Matthews does not indicate that connector body conductive member 80 directly contacts post 40 so as to extend electrical grounding through nut 30 and connector body 50. *Id.* at 42, 51 (citing Ex. 1004 ¶ 28; Fig. 1). Corning then relies upon Tatsuzuki's disc-shaped spring 13 that promotes electrical connection between components of connector 50. *Id.* at 42–43, 51 (citing Ex. 1002, Fig. 7).

Based on these cited disclosures, Corning asserts that both Matthews's connector body conductive member 80 and Tatsuzuki's disc-shaped spring 13 are positioned to contact the nut electrically. Pet. 51 (citing Ex. 1006 ¶ 104). Corning further asserts that both Matthews's connector body conductive member 80 and Tatsuzuki's disc-shaped spring 13 are positioned to reside around an external portion of a connector body when the corresponding connector is assembled. *Id.* Thus, Corning contends, Matthews's connector body conductive member 80 and Tatsuzuki's disc-shaped spring 13 are positioned in the same general location to perform the same function in a coaxial connector. By adding Tatsuzuki's disc-shaped spring 13 to Matthew's connector 100, however, disc-shaped spring 13 “would provide both the original ground path, i.e., between the coupler and the connector body as disclosed by Matthews, as well as an alternate ground path, i.e., directly between the rearward facing surface of the inward lip of the nut and the post via the continuity member.” *Id.* at 52. Thus, according to Corning, it would have been obvious to one with ordinary skill in the art to modify Matthews's connector 100 by incorporating Tatsuzuki's disc-shaped spring 13. *Id.* at 52 (citing Ex. 1004, Figs. 1, 7; Ex. 1006 ¶ 105).

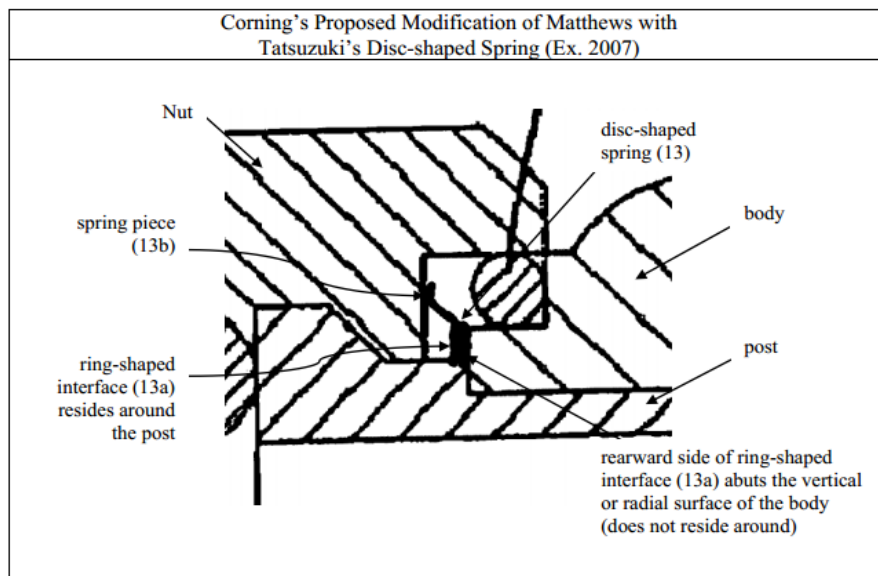
In its Patent Owner Response, PPC contends that the claim phrase “reside around” should be construed to require that the continuity member

“encircle or surround” an external portion of the connector body. PO Resp. 18–19. PPC directs us to the cross-examination testimony of Dr. Mroczkowski, as well as the testimony of Dr. Eldering, to support its argument that Tatsuzuki’s disc-shaped spring 13 does not encircle or surround an external portion of Matthews’s connector body 50 in the manner required by independent claim 10. *Id.* at 19–22 (citing Ex. 1036, 180:24–181:21, 182:11–16, 184:10–15, 185:18–187:21; Ex. 2007; Ex. 2020 ¶¶ 66–71).

In its Reply, Corning contends that the broadest reasonable interpretation of the claim phrase “reside around” is not limited to “surround or encircle,” but instead should be construed to mean “in the immediate vicinity of; near.” Pet. Reply 8–10. Corning argues that, when the proper claim construction is applied, Matthews and Tatsuzuki collectively teach a continuity member positioned to reside around an external surface of the connector body in the manner required by independent claim 10. *Id.* at 10. In addition, Corning directs us to two approaches taken by Dr. Mroczkowski during his cross-examination testimony, both of which teach this disputed claim limitation. *Id.* (citing Ex. 1034; Ex. 2007). Corning further asserts that, when it cross-examined Dr. Eldering regarding a figure reproduced on page 22 of his declaration (Ex. 2020)—which is a copy of the approach taken by Dr. Mroczkowski in Exhibit 2007—he agreed that the continuity member resides on the front face of the connector body. *Id.* (citing Ex. 2077, 219:15–16).

As discussed previously, we construe the claim phrase “reside around” to mean “in the immediate vicinity of; near.” During the course of this proceeding, Dr. Mroczkowski explained possible approaches, from the

perspective of one of ordinary skill in the art, in combining the teachings of the prior art so as to incorporate Tatsuzuki's disc-shaped spring 13 into Matthews's connector 100 in order to harness the electrical connection benefits of the disc-shaped spring. One such approach has received extensive evaluation by PPC, and is encompassed by a sketch provided by Dr. Mroczkowski during depositions taken in connection with this proceeding. An illustration of this sketch is reproduced below as it has been presented in the Patent Owner Response.



PO Resp. 12, 20.

As offered by PPC, this illustration reproduced above depicts an opinion of Dr. Mroczkowski as to an implementation of Tatsuzuki's disc-shaped spring 13 positioned with respect to coupler/nut 30 and connector body 50 of Matthews's connector 100. *Id.* In considering the proposed incorporation of Tatsuzuki's disc-shaped spring 13 into Matthews's connector 100 shown in the illustration reproduced above, we are satisfied that it establishes a continuity member positioned to make contact with a

surface of Matthews's coupler/nut 30, and positioned in the immediate vicinity or near, i.e., "resides around," an external portion of connector body 50, in the manner required by independent claim 10. In that regard, we conclude that Tatsuzuki's disc-shaped spring 13, when positioned in the manner depicted, would extend between, and facilitate electrical connection among, surfaces of a coupler/nut and a connector body of a coaxial cable connector. Furthermore, we also credit Dr. Mroczkowski's testimony to that effect. *See, e.g.*, Ex. 1006, ¶¶ 104, 105.<sup>5</sup> Thus, we are persuaded that Corning presents sufficient evidence to support a finding that the combination of Matthews and Tatsuzuki teaches the subject matter recited in claim 10.

In addition, upon reviewing the unchallenged contentions and supporting evidence regarding dependent claims 11, 12, and 14–25 that were presented by Corning in its Petition (Pet. 44–50, 52–59; Ex. 1006 ¶¶ 109–115, 120–162), we are persuaded that Corning presents sufficient evidence to support a finding that the combination of Matthews and Tatsuzuki teaches the claimed subject matter recited in those dependent claims.

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<sup>5</sup> We are not persuaded by PPC's argument that Dr. Mroczkowski's opinions should be accorded "little to no weight" because Dr. Mroczkowski has indicated that his experience is not directed specifically to the design and operation of the particular connectors associated in some respect to PPC's patents. PO Resp. 10. The record reflects that Dr. Mroczkowski has considerable background and experience relevant to the coaxial cable connector industry. Ex. 1006 ¶¶ 1–4; Ex. 1007. There is no requirement that a witness must have personal familiarity with a particular product to provide meaningful testimony as to the perspective of one of ordinary skill in a particular art or technological field. *See, e.g., SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360, 1373 (Fed. Cir. 2010).

6. *Claim 13*

Dependent claim 13 recites “the continuity member is configured to make axially lengthwise contact with the post at a position axially rearward of the external annular protrusion.” Ex. 1001, 22:43–46.

In its Petition, Corning contends that Matthews and Tatsuzuki collectively teach this disputed claim limitation. Pet. 45, 53–54 (citing Ex. 1002, Fig. 3; Ex. 1006 ¶¶ 117, 118). In particular, Corning argues that Figure 3 of Tatsuzuki illustrates that disc-shaped spring 13 makes axial lengthwise contact with post 11 at a position F2 axially rearward of external annular protrusion 11f. *Id.* at 45, 54. Corning further asserts that, when Tatsuzuki’s disc-shaped spring 13 is incorporated into Matthews’s connector 100, disc-shaped spring 13 makes contact at position axially rearward of Matthews’s flange 46 (external annular protrusion) because the disc-shaped spring maintains contact with Matthews’s internal lip 36 of nut 30. *Id.* at 54.

In its Patent Owner Response, PPC contends that the claim phrase “axial lengthwise contact” should be construed to require that the continuity member makes contact along the length of the post, i.e., some axial distance, but such contact requires more than simply point contact. PO. Resp. 25. PPC then argues that, in Corning’s proposed modification of Matthews with Tatsuzuki, Tatsuzuki’s disc-shaped spring 13 only is described as a thin metal plate and, as a consequence, it only makes point contact with Matthews’s post 40. *Id.* at 26–27 (citing Ex. 1002 ¶ 17; Ex. 2020 ¶ 83). PPC also contends that the inner edge of Tatsuzuki’s disc-shaped spring 13 contacts Matthews’s post 40 at point that is not axially rearward of Matthews’s flange 46 of post 40. *Id.* at 23–24 (citing Ex. 2020 ¶¶ 74–76). PPC direct us to the cross-examination testimony of Dr. Mroczkowski and



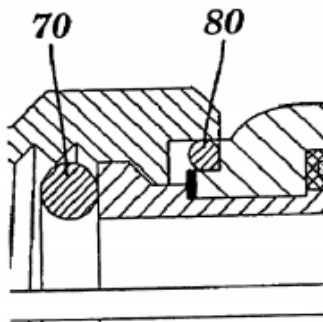
argues that the inner edge of Tatsuzuki's disc-shaped spring 13 is resting on top, and not rearward, of Matthews's flange 46 of post 40. *Id.* at 24 (citing Ex. 1036, 131:11–22; Ex. 2007).

In its Reply, Corning contends that the claim phrase “axial lengthwise contact” does not require any particular amount of contact. Pet. Reply 12. Corning also argues that PPC's position that “axial lengthwise contact” requires more than simply point contact is inconsistent with at least one embodiment disclosed in the '060 patent, as well as the cross-examination testimony of Dr. Eldering. *Id.* at 13–14 (citing Ex. 1001, 14:11–13, Fig. 16; Ex. 2076, 113:22–25; Ex. 2077, 222:21–25, 225:8–12). Corning further contends that, similar to nut contact tabs 1278a-b described in the Specification of the '060 patent, Tatsuzuki's disc-shaped spring 13 and corresponding spring pieces 13b provide enough axially lengthwise contact to perform the function of establishing electrical contact and maintaining continuity. *Id.* at 14 (citing Ex. 1001, 17:6–16, 18:58–65, Figs. 33–38, 50).

As discussed previously, we are not persuaded by Corning's argument that the claim phrase “axial lengthwise contact” does not require any particular amount of contact. Instead, we are persuaded by PPC's proposed claim construction for this claim phrase to the extent it requires more than simply point contact. In particular, we construe the claim phrase “axially lengthwise contact” to mean “contact that is in the direction of, on, or along an axis that includes at least some length.” We recognize, however, that because lengthwise contact includes at least some length, it precludes point contact. With this claim construction in mind, we turn to the portions of Matthews and Tatsuzuki relied upon by Corning to teach the configuration required by dependent claim 13.

According to Tatsuzuki, disc-shaped spring 13 is formed by stamp cutout processing of a thin metal plate possessing elasticity. Ex. 1002 ¶ 17. Disc-shaped spring 13 includes spring pieces 13b and ring-shaped surface 13a. *Id.* Although Tatsuzuki generally describes disc-shaped spring 13 as thin, it does not indicate that the outer dimension of ring-shaped surface 13a contacts the post at a point. Regardless of how thin the outer dimension of Tatsuzuki's ring-shaped surface 13a may be, in our view, it has a length of contact with the post that is beyond a point.

As we mentioned previously, during the course of this proceeding, Dr. Mroczkowski explained possible approaches, from the perspective of one of ordinary skill in the art, in combining the teachings of the prior art so as to incorporate Tatsuzuki's disc-shaped spring 13 into Matthews's connector 100 in order to harness the electrical connection benefits of the disc-shaped spring. Some of these possible approaches are encompassed by sketches provided by Dr. Mroczkowski during depositions taken in connection with this proceeding. The illustration reproduced below was introduced into the record by PPC, and is consistent with the testimony provided by Dr. Mroczkowski in support of the Petition.



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PPC EXHIBIT 2006

Ex. 2006; *see* Ex. 1006 ¶ 118.

This illustration reproduced above depicts an opinion of Dr. Mroczkowski as to one possible approach for incorporating Tatsuzuki's disc-shaped spring 13 into Matthews's connector 100, particularly in relation to Matthews's flange 46 of post 40. In considering the proposed incorporation of Tatsuzuki's disc-shaped spring 13 into Matthews's connector 100 shown in this illustration above, we are satisfied that Tatsuzuki's disc-shaped spring 13 contacts Matthews's post 40 in the direction of, on, or along an axis of the post, and such contact includes at least some length. We also are satisfied that Tatsuzuki's disc-shaped spring 13 is positioned in a direction of, on, or along an axis rearward of Matthews's flange 46 of post 40. In that regard, we conclude that the contact between Tatsuzuki's disc-shaped spring 13 and Matthews's post 40 may be understood reasonably as constituting axial lengthwise contact, and that Tatsuzuki's disc-shaped spring 13 is positioned axially rearward of Matthews's flange 46 of post 40, as required by dependent claim 13.

*7. Corning Provides a Sufficient Rationale to Combine the Teachings of Matthews and Tatsuzuki*

In the Petition, Corning contends that one of ordinary skill in the art would have appreciated that modifying Matthews's connector 100 by incorporating Tatsuzuki's disc-shaped spring 13, as discussed above, would have created an arrangement that promoted electrical continuity by providing alternative ground paths between Matthews's coupler/nut 30, post 40, and connector body 50. Pet. 52. Corning argues that Tatsuzuki's disc-shaped spring 13 would have been particularly advantageous in connector 100 illustrated in Figure 7 of Matthews because it did not have a continuity member positioned between coupler/nut 30 and connector body 50. *Id.*

(citing Ex. 1006 ¶ 1005). Corning relies upon the testimony of Dr. Mroczkowski to support its argument that a person with ordinary skill in the art at the time of the invention would have recognized the benefit of having a continuity member at this additional location and, therefore, would have been motivated to make the modification. *Id.* (citing Ex. 1006 ¶ 106).

In its Patent Owner Response, PPC relies upon the cross-examination testimony of Dr. Mroczkowski, including the sketches he produced during the course of his testimony that represent possible approaches for combining the teachings of Matthews and Tatsuzuki, to support its argument that Dr. Mroczkowski engaged in impermissible hindsight reconstruction when assessing whether the challenged claims are unpatentable over the cited prior art. PO Resp. 28–36 (citing Ex. 2005; Ex. 2007; Ex. 2008; Ex. 1034).

In its Reply, Corning relies upon Dr. Mroczkowski’s testimony to support its argument that one of ordinary skill in the art would have recognized that there are multiple ways to incorporate Tatsuzuki’s disc-shaped spring 13 into Matthews’s connector 100. Pet. Reply 3 (citing Ex. 1006 ¶¶ 105–107). Corning argues that, in one approach, Tatsuzuki’s disc-shaped spring 13 may be positioned on the outer surface of Matthews’s post 40. *Id.* (citing Exs. 2005–2007). Corning argues that, in a second approach, Tatsuzuki’s disc-shaped spring 13 may be sandwiched between Matthews’s post 40 and connector body 50. *Id.* (citing Ex. 1034; Ex. 1039; Ex. 2008). With respect to the second approach, Corning points our attention to another prior art reference directed to coaxial cable connectors—namely, U.S. Patent No. 7,114,990 (“the Bence ’990 patent”).<sup>6</sup> *Id.* at 5–6. Corning asserts that,

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<sup>6</sup> When Corning filed its Reply to the Patent Owner Response, it entered the

upon being questioned about the Bence '990 patent during cross-examination, Dr. Eldering admitted that sandwiching a continuity member between a post and a body was a well-known technique for incorporating a continuity member into a connector. *Id.* (citing Ex. 2076, 190:10–21).

We understand PPC's argument to be that our obviousness evaluation here requires that we consider only a single approach for combining the teachings of Matthews and Tatsuzuki that was presented by Dr. Mroczkowski—namely the approach illustrated in Ex. 2007 reproduced above—without recourse to any other assessment of the viewpoint of one of ordinary skill in the art in so combining the teachings. *See* PO Resp. 28–36. A person of ordinary skill in the art is a person of ordinary creativity, not an automaton. *KSR*, 550 U.S. at 421. A person of ordinary skill and creativity would have recognized that combining the teachings of Matthews and Tatsuzuki did not mandate a singular approach for combining those references that precluded consideration of other such approaches. Indeed, the evidence of record reflects that a person of ordinary skill in the art would have known of other approaches for positioning a continuity member in a coaxial cable connector. For instance, as we explained above, upon being questioned about the Bence '990 patent during cross-examination, PPC's own expert witness, Dr. Eldering, testified that it was known in the art that a continuity member may be “sandwiched” between the body and the post. Ex. 2076, 190:16-21.

Although the Bence '990 patent is not a reference that has been offered by Corning as the basis of its asserted ground of unpatentability

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Bence '990 patent into the record as Exhibit 1038. Paper 33.

instituted in this proceeding, it is a reference providing evidence of the level of ordinary skill in the art. “The person of ordinary skill in the art is a hypothetical person who is presumed to know the relevant prior art.” *GPAC*, 57 F.3d at 1579 (citing *Custom Accessories, Inc.*, 807 F.2d at 962). As noted above, the level of ordinary skill in the art is reflected by the prior art of record. What is described by the Bence ’990 patent is indicative of the level of ordinary skill in the art. Moreover, “the knowledge of such an artisan is part of the store of public knowledge that must be consulted when considering whether a claimed invention would have been obvious.” *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013).

According to the Supreme Court, “[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.” *KSR*, 550 U.S. at 421. In this case, there was a design need to solve a problem. Tatsuzuki provides evidence that its disc-shaped spring 13 operated to establish electrical connection between components in a coaxial cable connector, and that such an arrangement was intended to address “deterioration of insertion loss characteristics and reflection loss characteristics even in the state when the coaxial plug is loosened.” Ex. 1002 ¶ 7. There also were a finite number of identified, predictable solutions. Matthews, Tatsuzuki, and the Bence ’990 patent provide evidence that one of ordinary skill in the art would have known that there was not a sole location for positioning a continuity member in a coaxial cable connector, and that there were a limited number of possible positions for such a continuity member. Exs. 1002, 1004, 1038. As such, an ordinarily

skilled artisan would have had reason to pursue known options within his or her technical grasp when contemplating where, and how, to position Tatsuzuki's disc-shaped spring 13 in Matthews's connector 100.

In considering the entirety of the record, we are persuaded that Tatsuzuki's disc-shaped spring 13 corresponds to a continuity member as required by independent claim 10. We also are satisfied that one of ordinary skill in the art would have appreciated that Tatsuzuki's disc-shaped spring 13 may be arranged in Matthews's connector 100 so as to form a continuity member positioned in the manner required by independent claim 10. In that respect, Corning has articulated reasoning with rational underpinnings in urging that an ordinarily skilled artisan would have incorporated Tatsuzuki's disc-shaped spring 13 into connector 100 so as to harness the electrical connectivity benefits attributed to this arrangement.

### III. CONCLUSION

Corning has demonstrated by a preponderance of the evidence that claims 10–25 of the '060 patent are unpatentable under 35 U.S.C. § 103(a) over the combination of Matthews and Tatsuzuki.

### IV. ORDER

In consideration of the foregoing, it is

ORDERED that Corning has shown by a preponderance of the evidence that claims 10–25 of the '060 patent are unpatentable; and

FURTHER ORDERED that, because this is a final written decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2013-00342  
Patent 8,323,060 B2

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