

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VANGUARD PRODUCTS GROUP, INC., D/B/A VANGUARD PROTEX
GLOBAL

Petitioner

v.

INVUE SECURITY PRODUCTS, INC.

Patent Owner

Case No.: IPR2020-00069
U.S. Patent No. 10,043,358

PATENT OWNER RESPONSE
UNDER 37 C.F.R. § 42.120

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LIST OF PATENT OWNER EXHIBITS

Exhibit No.	Description
2001	Declaration of Thomas Blackburn (“Blackburn Decl.”)
2002	Declaration of Eric R. Pearson in support of Patent Owner Preliminary Response
2003	U.S. Publication No. US2006/0045449 (“Varner”)
2004	U.S. Patent 7,349,610 (“Ohsono”)
2005	Martin H. Weik, <i>Fiber Optics Standard Dictionary</i> (2d. ed. 1989)
2006	S1500 Recoiler Drawings
2007	U.S. Patent No. 7,272,289 (“Bickham”)
2008	U.S. Patent No. 7,680,381 (“Bookbinder”)
2009	U.S. Patent No. 8,698,618 (“Henson”)
2010	<i>Fiber Instrument Sales, Inc., Telecommunications Fiber Optic Product Catalog</i> (44th ed. 2020)
2011	<i>Fiber Optic Test and Measurement</i> (Dennis Derickson ed., 1998)
2012	<i>Optical Fiber Loss and Attenuation</i> , FOSCO, available at https://www.fiberoptics4sale.com/blogs/archive-posts/95048006-optical-fiber-loss-and-attenuation (last visited June 22, 2020).
2013	<i>What Are Bend Insensitive Fiber Optic Cables</i> , available at https://patchbox.com/blog/the-patchblogs-1/post/what-are-bend-insensitive-fiber-optic-cables-11 (last visited June 22, 2020).

2014	<i>Why Not Use Bend Insensitive Fiber Optic Cable to Reduce Bend Radius?</i> , FS.com, available at https://community.fs.com/blog/why-not-use-bend-insensitive-fiber-optic-cable-to-reduce-bend-radius.html (last visited June 22, 2020).
2015	Bob Chomycz, <i>Fiber-Optic Installations: A Practical Guide</i> (1996)
2016	<i>Plastic Optical Fiber: An Overview</i> , Science Direct, available at https://www.sciencedirect.com/topics/materials-science/plastic-optical-fiber (last visited June 22, 2020).
2017	Rüdiger Paschotta, <i>Numerical Aperture</i> , RP Photonics Encyclopedia, available at https://www.rp-photonics.com/numerical_aperture.html (last visited June 22, 2020).
2018	<i>Bend Insensitive Fiber</i> , Fiber Optic Ass'n, available at https://www.thefoa.org/tech/ref/fiber/BIfiber.html (last visited June 22, 2020).
2019	U.S. Patent Publication No. US2009/0060437 (“Fini”)
2020	U.S. Patent Publication No. US2010/0124396 (“Coon”)
2021	Declaration of Eric R. Pearson in Support of Patent Owner Response (“Pearson Decl.”)

I. INTRODUCTION

Patent Owner submits the following Response in opposition to the Petition for *Inter Partes* Review of U.S. Patent No. 10,043,358 (“Petition”). Petitioner challenged independent claim 1 and dependent claims 2–3, 16–20, 23, 28, and 29 of U.S. Patent No. 10,043,358 (“the ’358 patent”) based on four grounds, each of which rely on various combinations and sub-combinations of Grant, Marszalek, Wheeler, Brenner, Vogt, Fawcett, and U.S. Patent Pub. 2014/0335730 (Ex. VPG-1004 to VPG-1010, respectively). *See* Petition at 6. The Board subsequently instituted *inter partes* review (“IPR”) on all four grounds in the Decision Granting Institution of *Inter Partes* Review, IPR2020-00069, Paper No. 7 (Apr. 7, 2020) (“Decision”).

Patent Owner respectfully asserts that the Petition has failed to show that any one of the challenged claims is unpatentable in view of the cited references. For all four grounds asserted, Petitioner provides no evidence a person of ordinary skill in the art (“POSA”) would make Petitioner’s proposed combinations of prior art or would have a reasonable expectation of success in doing so. Petitioner asserts that a POSA would use an adapter cable to transfer power from a peripheral sensor of Marszalek to an auxiliary device, but Petitioner cannot show that a POSA would understand that such power is even available from the peripheral sensor.

For all four grounds asserted, Petitioner proposes a POSA would add Wheeler for purposes of securing two or more articles of merchandise. However, a POSA would not make such a combination because it would be redundant—i.e. Petitioner’s addition of Wheeler is to a combination Petitioner admits already secures two or more articles of merchandise.

For Ground 2, Petitioner asserts a POSA would modify a reference (Grant) because it “could potentially be improved.” However, Petitioner fails to identify how Grant is improved or otherwise provide evidence of why a POSA would combine the references in the way the claimed invention does. Regardless, a POSA would not make the proposed combination with Grant because such would be redundant.

As to Ground 4, Petitioner proposes modifying Brenner by replacing elements it deems unreliable. But this identical argument has been advanced by Petitioner in prior IPRs and the Board has already rejected it as unsupported and contrary to the cited art.

For at least these reasons, Patent Owner respectfully asserts the Petition has not shown that any one of the challenged claims is unpatentable in view of the cited references. Thus, Patent Owner respectfully submits that independent claim 1 and dependent claims 2–3, 16–20, 23, 28, and 29 should be confirmed.

II. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSA”) at the time of the effective filing date of the invention would have at least a Bachelor of Science degree in electrical engineering, mechanical engineering, materials science, or some equivalent level of education and at least some knowledge or experience with security devices, including alarms and sensors, the powering of electronic devices, and at least some knowledge or experience with applications using optical communication technology, including the design and application of fiber optic cabling, optical communication components, and data transmission. Declaration of Eric. R. Pearson, Ex. 2022 (Pearson Decl.) ¶ 38; Declaration of Thomas Blackburn. Ex. 2001 (Blackburn Decl.) ¶ 21–22.

Petitioner proposed that a POSA would have 4–5 years of experience with merchandise security systems and a bachelor’s degree in electrical engineering. Petition at 5. Patent Owner agrees with the Board’s rejection of Petitioner’s proposed level of ordinary skill for at least the following reasons.

The hypothetical person of ordinary skill in the art is determined by looking to the art “to which the claimed subject matter pertains” and then assessing “the capability of understanding the scientific and engineering principles applicable to the pertinent art.” *Ex parte Hiyamizu*, 10 U.S.P.Q.2d 1393, 1394 (B.P.A.I. Apr. 28, 1988); MPEP § 2141.03. A non-exhaustive list of factors that may be considered

in determining the level of skill required includes: “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007).

First, Petitioner’s proposed level of skill lacks any requirement that a POSA have any knowledge or experience with the powering of electronic devices. However, this subject matter is present in claim 1 and central to Petitioner’s arguments. For example, independent claim 1 of the ’358 patent requires, *inter alia*, a merchandise security system that includes “an auxiliary port that operably connects to the auxiliary device” and a base that “transfers power to the auxiliary port for powering the auxiliary device.” Ex. VPG-1001 (Emphasis added). Examples of the auxiliary devices that are powered include e.g., a stylus, a speaker, a keyboard, and Bluetooth device.

Second, Petitioner’s proposed level of skill lacks any requirement that a POSA have any knowledge or experience with applications using optical communication technology. However, this subject matter is present in dependent claims 19, 20, and 23 and is central to Petitioner’s arguments in challenging these claims. For example, dependent claim 19 of the ’358 patent requires, *inter alia*, a cable and a sensor that “communicate optical signals with one another for

detecting a security event associated with the sensor, the cable, or the item of merchandise.” Ex. VPG-1001. And dependent claim 23 requires a sensor that includes “an optical transceiver for communicating optical signals with the optical transceiver of the cable.” Ex. VPG-1001.

Third, Petitioner’s own arguments regarding the prior art indicate that a POSA would have at least some knowledge or experience with the powering of electronic devices. As noted above, one of the factors used to assess the level of ordinary skill is how the prior art has addressed problems in the art. *Daiichi*, 501 F.3d at 1256. Petitioner repeatedly asserts that the prior art provides solutions to powering electronic devices. *See, e.g.*, Petition at 27, 62.

Fourth, Petitioner’s own arguments regarding the prior art indicate that a POSA would have at least some knowledge or experience with applications using optical communication technology. For example, Petitioner asserts the prior art provides solutions where “optical transceivers would be configured to communicate optical signals to one another.” Petition at 45. Petitioner’s Ground 2 relies on the assertion that a POSA would have replaced the inductive coils of U.S. Patent Pub. 2015/0235533 (Ex. VPG-1004, “Grant”) with the optical transceivers of U.S. Patent No. 5,912,619 to Vogt (Ex. VPG-1008, “Vogt”). Petition at 43. Petitioner’s Ground 4 rests on the primary contention that a POSA would have recognized that the optical waveguide (i.e., optical fiber cable) disclosed in

Brenner is fundamentally unreliable and would have replaced it with the optical communication system disclosed in the U.S. Patent Pub. 2014/0335730 (Ex. VPG-1010, “the ’730 Publication”). Petition at 71–74. This contention rests on the POSA’s understanding of energy losses associated with the bending of the optical waveguide. *Id.* Thus, Petitioner ably demonstrates that an understanding of optical communication technology, including the design and application of fiber optic cabling, optical communication components, and data transmission is a necessary predicate for the POSA.

For these reasons, Patent Owner respectfully requests that the Board adopt the following definition for the level of ordinary skill in the art: A person of ordinary skill in the art (“POSA”) at the time of the effective filing date of the invention would have at least a Bachelor of Science degree in electrical engineering, mechanical engineering, materials science, or some equivalent level of education and at least some knowledge or experience with security devices, including alarms and sensors, the powering of electronic devices, and at least some knowledge or experience with applications using optical communication technology, including the design and application of fiber optic cabling, optical communication components, and data transmission.

III. CLAIM CONSTRUCTION

The Board interprets claim terms in accordance with the standard used in federal district court in a civil action involving the validity or infringement of a patent. 37 C.F.R. § 42.100(b) (2019); *see also* 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). The “words of a claim ‘are generally given their ordinary and customary meaning,’” as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). “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).

“auxiliary device of the article of merchandise”

Patent Owner submits that “auxiliary device of the article of merchandise” should be construed as a “device specifically designed to be used by the customer with the article of merchandise.” In its Decision, the Board preliminarily rejected Patent Owner’s proposed construction, stating that “Patent Owner fails to point us

to any intrinsic evidence more persuasive than that cited by Petitioner that auxiliary devices would have to be specifically designed for use with a specific article of merchandise.” Decision at 15. Instead of adopting Patent Owner’s proposed construction, the Board preliminarily construed “auxiliary device of the article of merchandise” to be a “device configured to operate with an article of merchandise, such as a stylus, speaker, keyboard, or Bluetooth device.” *Id.* at 16.

Patent Owner respectfully submits that the written description and claims of the ’358 patent support Patent Owner’s proposed construction. For instance, written description for the ’358 patent states that a base “may be configured to electrically connect to an auxiliary device, such as, for example, an auxiliary device for the item of merchandise 14 on display (e.g., a stylus, speaker, keyboard, Bluetooth device, etc.).” Ex. VPG-1001 at 5:48–52 (emphasis added). As would be understood by a POSA, an auxiliary device *for* an item of merchandise contemplates devices that are *intended for* use or functioning with the article of merchandise that is being secured. Ex. 2001 (Blackburn Decl.) ¶ 24. Additionally, a POSA would understand from these examples that, as used in the claims of the ’358 patent, “auxiliary devices of the article of merchandise” are not just devices that can be used at the same time as the article of merchandise nor devices required for use of the article of merchandise. *Id.* Instead, as “of the article of merchandise”

indicates, auxiliary devices are devices that are specifically designed to be used by the customer with the article of merchandise. *Id.*

Additional understanding is provided by claim 10, which refers to an auxiliary device as comprising “a stylus, speaker, a keyboard or a Bluetooth device each configured to operate with the article of merchandise.” (Emphasis added). Furthermore, at column 6, lines 6–8, the ’358 patent indicates: “[T]he auxiliary port 45 allows an auxiliary device to be displayed and used by a prospective customer in connection with an item of merchandise.” (Emphasis added).

Petitioner proposes that this term be construed as “an electronic device complementary to the article of merchandise.” However, “complementary” does not appear anywhere in the ’358 patent and its prosecution history in connection with “auxiliary device.” Definitions of the word “complementary” suggest it means something that is required for completeness. Ex. 2001 (Blackburn Decl.) ¶ 26 (referencing dictionary definitions including “serving to fill out or complete” and “mutually supplying each other’s lack”). Yet, as discussed above, the written description of the ’358 patent provides examples of auxiliary devices (“a stylus, speaker, keyboard, Bluetooth device, etc.”) that are not complementary and as such do not fit with these definitions. For example, where the item of merchandise is a mobile phone and the auxiliary device is a keyboard, the phone and keyboard can

be used together but such do not mutually supply some deficiency in each other nor is a keyboard necessarily required for use of a mobile phone or vice versa. *Id.*

Instead of being based on the intrinsic evidence as required, Petitioner's attempt to substitute "complementary" for "auxiliary" is driven solely by Petitioner's desire to provide a rationale for its prior art combinations. As further discussed below, Petitioner proposes combining the Wheeler reference (Ex. VPG-1006) with other prior art on the basis that Wheeler uses the term "complementary," which Petitioner attempts to build into claim 1 through claim construction. However, the Board should reject Petitioner's proposed claim construction for "auxiliary device of the article of merchandise" as inconsistent with the surrounding context of the claims and the specification of the '358 patent.

Accordingly, Patent Owner submits that "auxiliary device of the article of merchandise" should be construed as a "device specifically designed to be used by the customer with the article of merchandise."

IV. THE PETITIONER HAS FAILED TO ESTABLISH THE OBVIOUSNESS OF ANY OF THE CHALLENGED CLAIMS

The Board should confirm the challenged claims because the Petitioner failed to carry its burden of showing that any of the challenged claims of the '358 patent are unpatentable by a preponderance of the evidence under 35 U.S.C. § 316(e).

A. The Petition Fails to Provide Evidence a POSA Would Combine Grant and Marszalek or Would Have a Reasonable Expectation of Success in Doing So (Grounds One and Two: Claims 1–3, 16–20, 23, 28, and 29)

In order to invalidate any claim for obviousness, the Petitioner must provide evidence showing a POSA would have an apparent reason to combine known elements in the fashion claimed by the patent at issue and would have a reasonable expectation of success in doing so. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 991 (Fed. Cir. 2017). For both Grounds 1 and 2, Petitioner fails to present evidence that a POSA would combine the adapter cable of Grant (Ex. VPG-1004) with the peripheral sensor of Marszalek (Ex. VPG-1005) or that a POSA would have a reasonable expectation of success in doing so.

More particularly, Grounds 1 and 2 of the Petition each rely on a combination that includes Marszalek (Ex. VPG-1005), Wheeler (Ex. VPG-1006), and Grant (Ex. VPG-1004) as supposedly teaching claim 1’s requirement of a base that “transfers power to the auxiliary port for powering the auxiliary device.” Petition at 27, 39. For this claim limitation, Petitioner asserts that combining Marszalek and Wheeler provides a base that delivers power to a peripheral sensor that is attached to an auxiliary device. *Id.* at 27. Petitioner then asserts that Grant teaches that “power can be transferred from a sensor to an electronic device to which the sensor is attached using an adapter cable.” *Id.* As a result, Petitioner

concludes it would be “obvious to use an adapter cable to electrically connect the peripheral sensor to the auxiliary device to enable power transfer from the base to the auxiliary device.” *Id.* at 28 (emphasis added) (citations omitted). To summarize, for Grounds 1 and 2, Petitioner asserts that a POSA would use Grant’s adapter cable to connect between an auxiliary device and the peripheral sensor of Marszalek in order to provide power to the auxiliary device.

However, the factual predicate for Petitioner’s combination for Grounds 1 and 2 is false: A POSA would not believe that Marszalek’s peripheral sensor is provided with power that can be used to power an auxiliary device. Ex. 2001 (Blackburn Decl.) ¶¶ 30, 34, 36, 37. Instead, Marszalek indicates an article 12 may be tethered to the main body of alarm apparatus 2 with a peripheral tether cable 18. Ex. VPG-1005 at 11:13–14. This is illustrated in FIG. 1:

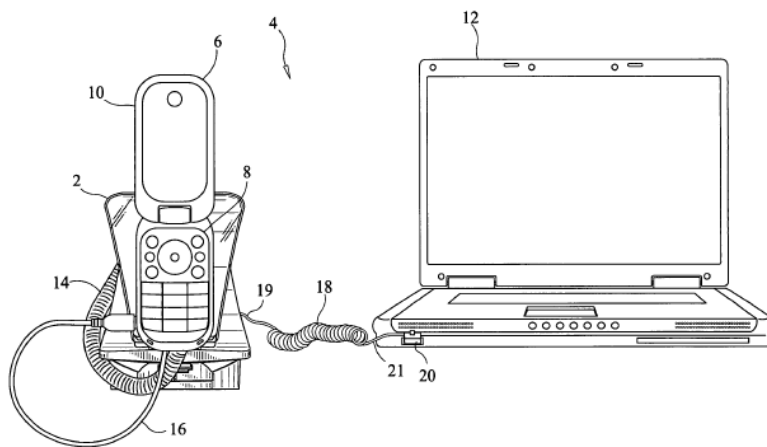


FIG. 1

As shown in Marszalek, one end 21 of peripheral tether cable 18 “may have a peripheral sensor 20 that is attached to the article 12.” Ex. VPG-1005 at 11:18–20.

The peripheral sensor 20 may have an LED to indicate its status. *Id.* at 11:22–23.

Marszalek states that “peripheral tether cable 18 may communicate power and/or data between the main body 36 and the peripheral sensor 20.” *Id.* at 11:24–26.

But Marszalek lacks any disclosure that would indicate to a POSA that either peripheral tether cable 18 or peripheral sensor 20 are supplying power to article 12. Ex. 2001 (Blackburn Decl.) ¶ 33. To the contrary, FIG. 1 shows peripheral sensor 20 is simply “attached” to the front of article 12—i.e. a laptop computer, which typically does not have a power connection along the front. *Id.* Additionally, peripheral sensor 20 is not described or shown as having a port for connecting to article 12 and is not otherwise described as being electrically connected with article 12. *Id.*

In fact, Marszalek also does not teach a POSA that peripheral sensor 20 is even supplied with power that would be sufficient for use with article 12 or that peripheral tether cable 18 carries power sufficient for use with article 12. *Id.* ¶ 34. Instead, A POSA would understand that the power requirements for a laptop would be much different than for peripheral sensor 20. *Id.* A POSA would know the voltages and amperages for a peripheral device such as a laptop would substantially exceed that required for peripheral sensor 20—even if peripheral sensor 20 is equipped with an LED or a plunger switch. *Id.*

For example, a laptop computer when either operating from AC power or local battery requires an input power of typically 20W to 60W, whereas a sensor device with an LED used for security purposes (such as Marszalek's peripheral sensor 20) would only require an input power of typically 0.1 W to power an LED. *Id.* Using for purposes of illustration a 60W requirement, such a peripheral device would require about 600 times more power than what is required for an LED. *Id.* This would then require a commensurate power supply and peripheral tether cable—none of which is taught by Marszalek. *Id.* In short, Marszalek contains no disclosure teaching a POSA that peripheral sensor 20 or cable 18 are equipped to provide power to article 12, which would have a significantly different power requirement than peripheral sensor 20. *Id.*

A POSA would also understand that different auxiliary devices (e.g., a speaker vs. another Bluetooth device) will have significantly different power requirements. *Id.* ¶ 35. Yet Marszalek does not disclose providing power to the peripheral sensor for any of these devices—much less a way of adjusting for these different requirements for different auxiliary devices. *Id.*

Therefore, whether Grant teaches power can be transferred from a sensor to an electronic device as Petitioner asserts (Petition at 27–28) is immaterial because a POSA would understand that Marszalek's peripheral sensor is not provided with power for transferring to an auxiliary device. Ex. 2001 (Blackburn Decl.) ¶ 36.

Accordingly, a POSA would not make the combination of Grant and Marszalek asserted in the Petition. *Id.* Furthermore, a POSA would not have a reasonable expectation of success in combining Grant with Marszalek's peripheral sensor because, again, Marszalek's peripheral sensor is not provided with power for transferring to an auxiliary device. *Id.*

Patent Owner respectfully asserts that the Board should confirm challenged claims 1–3, 16–20, 23, 28, and 29 because Grounds 1 and 2 each rely on this faulty combination of Marszalek and Grant.

B. The Petition Fails to Provide Evidence a POSA Would Combine Brenner and Marszalek or Would Have a Reasonable Expectation of Success in Doing So (Grounds Three and Four: Claims 1–3, 16, 18–20, 23, and 28)

For reasons similar to those set forth for Grounds 1 and 2, the claims challenged under Grounds 3 and 4 should be confirmed, because, in both Grounds 3 and 4, Petitioner fails to present evidence that a POSA would combine the adapter cable of Brenner (Ex. VPG-1007) with the peripheral sensor of Marszalek (Ex. VPG-1005) or that a POSA would have a reasonable expectation of success in doing so.

Grounds 3 and 4 of the Petition each rely on a combination that includes Marszalek (Ex. VPG-1005), Wheeler (Ex. VPG-1006), and Brenner (Ex. VPG-1007) as supposedly teaching claim 1's requirement of a base that "transfers power to the auxiliary port for powering the auxiliary device." Petition at 62, 70. For this

claim limitation, Petitioner asserts that combining Marszalek and Wheeler provides a base that delivers power to a peripheral sensor that is attached to an auxiliary device. *Id.* at 62. Petitioner then asserts that Brenner teaches that “power can be transferred from a sensor to an electronic device to which the sensor is attached using an adapter cable.” *Id.* As a result, Petitioner concludes it would be “obvious to use an adapter cable to electrically connect the peripheral sensor to the auxiliary device to enable power transfer from the base to the auxiliary device.” *Id.* at 62–63 (emphasis added) (citations omitted). To summarize, for Grounds 3 and 4, Petitioner asserts that a POSA would use Brenner’s adapter cable to connect between an auxiliary device and the peripheral sensor of Marszalek in order to provide power to the auxiliary device.

However, as in Grounds 1 and 2, the factual predicate for Petitioner’s combination for Grounds 3 and 4 is false: A POSA would not believe that Marszalek’s peripheral sensor is provided with power that can be used to power an auxiliary device. Ex. 2001 (Blackburn Decl.) ¶ 40, 44, 46, 47. Instead, Marszalek indicates an article 12 may be tethered to main body of alarm apparatus 2 with a peripheral tether cable 18. Ex. VPG-1005 at 11:13–14. This is illustrated in FIG. 1:

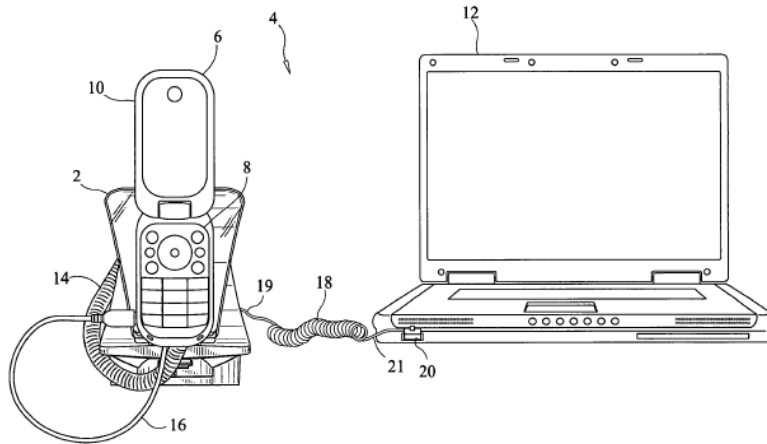


FIG. 1

As shown in Marszalek, one end 21 of peripheral tether cable 18 “may have a peripheral sensor 20 that is attached to the article 12.” Ex. VPG-1005 at 11:18–20. The peripheral sensor 20 may have an LED to indicate its status. *Id.* at 11:22–23. Marszalek states that “peripheral tether cable 18 may communicate power and/or data between the main body 36 and the peripheral sensor 20.” *Id.* at 11:24–26.

But Marszalek lacks any disclosure that would indicate to a POSA that either peripheral tether cable 18 or peripheral sensor 20 are supplying power to article 12. Ex. 2001 (Blackburn Decl.) ¶ 43. To the contrary, FIG. 1 shows peripheral sensor 20 is simply “attached” to the front of article 12—i.e. a laptop computer, which typically does not have a power connection along the front. *Id.* Additionally, peripheral sensor 20 is not described or shown as having a port for connecting to article 12 and is not otherwise described as being electrically connected with article 12. *Id.*

In fact, Marszalek also does not teach a POSA that peripheral sensor 20 is even supplied with power that would be sufficient for use with article 12 or that peripheral tether cable 18 carries power sufficient for use with article 12. *Id.* ¶ 44. Instead, A POSA would understand that the power requirements for a laptop would be much different than for peripheral sensor 20. *Id.* A POSA would know the voltages and amperages for a peripheral device such as a laptop would substantially exceed that required for peripheral sensor 20—even if peripheral sensor 20 is equipped with an LED or a plunger switch. *Id.*

For example, a laptop computer when either operating from AC power or local battery requires an input power of typically 20W to 60W, whereas a sensor device with an LED used for security purposes (such as Marszalek's peripheral sensor 20) would only require an input power of typically 0.1 W to power an LED. *Id.* Using for purposes of illustration a 60W requirement, such a peripheral device would require about 600 times more power than what is required for an LED. *Id.* This would then require a commensurate power supply and peripheral tether cable—none of which is taught by Marszalek. *Id.* In short, Marszalek contains no disclosure teaching a POSA that peripheral sensor 20 or cable 18 are equipped to provide power to article 12, which would have a significantly different power requirement than peripheral sensor 20. *Id.*

A POSA would also understand that different auxiliary devices (e.g., a speaker vs. another Bluetooth device) will have significantly different power requirements. *Id.* ¶ 45. Yet Marszalek does not disclose providing power to the peripheral sensor for any of these devices—much less a way of adjusting for these different requirements for different auxiliary devices. *Id.*

Therefore, whether Brenner teaches power can be transferred from a sensor to an electronic device as Petitioner asserts (Petition at 62) is immaterial because a POSA would understand that Marszalek’s peripheral sensor is not provided with power for transferring to an auxiliary device. Ex. 2001 (Blackburn Decl.) ¶ 46. Accordingly, a POSA would not make the combination of Brenner and Marszalek asserted in the Petition. *Id.* Furthermore, a POSA would not have a reasonable expectation of success in combining Brenner with Marszalek’s peripheral sensor because, again, Marszalek’s peripheral sensor is not provided with power for transferring to an auxiliary device. *Id.*

Patent Owner respectfully submits that the Board should confirm claims 1–3, 16, 18–20, 23, and 28, because Grounds 3 and 4 each rely on this faulty combination of Marszalek and Brenner.

C. The Petition Fails to Provide Evidence Showing a POSA Would Make the Redundant Combination of Grant, Marszalek, and Wheeler (Grounds One and Two: Claims 1–3, 16–20, 23, 28, and 29)

In a section entitled “Motivation for Combining Grant, Marszalek, and Wheeler . . . ,” Petitioner asserts there was a market need for “a system and/or method for securing *two or more articles* in a self-contained, all-in-one configuration.” Petition at 17. Because Grant only secures a single article, Petitioner asserts a POSA would be motivated to improve Grant “such that it could be used to secure two or more articles of merchandise—this motivation would have led to Marszalek and Wheeler.” *Id.* This purported motivation for combining Grant, Marszalek, and Wheeler is used for both Grounds One and Two. *Id.* at 17, 44.

Assuming *arguendo* Petitioner is correct regarding a market need for a system and/or method for securing two or more articles, such does not provide a rationale for combining Grant with both Marszalek and Wheeler. Petitioner relies particularly on the embodiment of Marszalek shown in FIG. 1 with two articles 6 and 12:

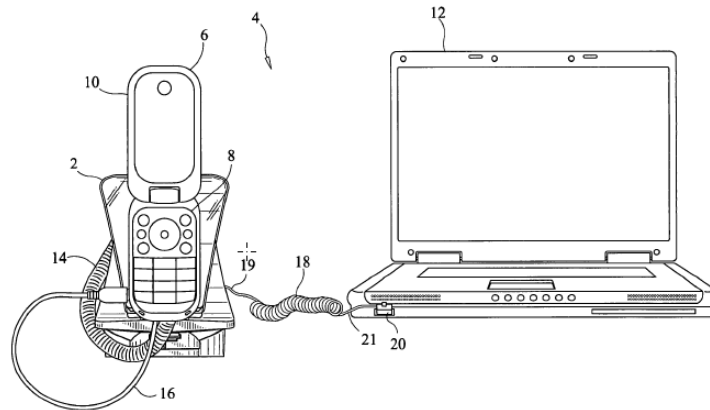


FIG. 1

As admitted by Petitioner, Marszalek discloses a device for securing a second article—i.e. two or more articles. Petition at 17–18 (citing Marszalek), and Petitioner is combining such with Grant in Grounds 1 and 2. As such, there is no reason a POSA would look further to Wheeler because Petitioner’s rationale of “securing *two or more* articles” is satisfied by the combination of just Grant and Marszalek, and Petitioner provides no evidence of a rationale for further combining Wheeler.

In fact, a POSA would not make the addition of Wheeler to the combination of Grant and Marszalek because such would be redundant. Again, as noted by Petitioner, Wheeler also teaches securing multiple articles. *Id.* But, as Petitioner admits the combination of Grant and Marszalek would already secure two articles, a POSA would not be motivated to further combine Wheeler to the Grant and Marszalek combination because such would be unnecessary and redundant. Prior Federal Circuit and Board decisions have previously concluded that where

combining prior art is unnecessary or redundant, there is no reasonable rationale for a POSA to do so. *See, e.g., Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1369 (Fed. Cir. 2012) (reversing district court finding of obviousness, noting: “[b]ecause each device independently operates effectively, a person having ordinary skill in the art, who was merely seeking to create a better device to drain fluids from a wound, would have no reason to combine the features of both devices into a single device”); *Ex parte Burns*, No. 2016-000351, 2017 Pat. App. LEXIS 4994, *4–5 (P.T.A.B. May 1, 2017) (rejecting the addition of Filliez in order to provide further reinforcement as “unnecessary (redundant)” where there was “no need for further reinforcing” of Paar); *Ex parte Chandrachood*, No. 2013-000202, 2015 Pat. App. LEXIS 1378, *6–7 (P.T.A.B. Mar. 9, 2015) (“Because the combination of Hanaoka, Masahiro, and Gondo already operates effectively in its radial control configuration, a person . . . who was merely seeking to create a better plasma reactor, would have no reason to add the circumferential control features of . . . Kholodenko to the combination of Hanaoka, Masahiro, and Gondo.”).

In its Decision, the Board preliminarily concluded that Marszalek and Wheeler were not redundant references because “Petitioner relies on different aspects of the references’ teachings in its challenge.” Decision at 33. However, Patent Owner respectfully submits that references need not be relied upon for the same teachings to be redundant. If relying on “different aspects of the references’

teachings” were sufficient to render references non-redundant, then the redundancy of references could never be found vis-à-vis a combination of references alleged to support a finding of obviousness under § 103. By definition, the combined references are relied upon to allege teachings of different aspects of a challenged claim.

The decision in *Kinetic Concepts* also supports the proposition that references may be redundant even if relied upon for different aspects. In that case, the patent claims at issue were directed to the treating of wounds by applying negative pressure. *Kinetic Concepts*, 688 F.3d at 1346. It was asserted that the claims were invalid as obvious over the combination of a number of references, but the court found that “none of the references disclose[d] treating wounds with negative pressure.” *Id.* at 1366. Instead, the obviousness challenge relied on different aspects of the combined references: one reference disclosed “treating or healing wounds,” and another disclosed “a seal that is capable of maintaining pressure.” *See id.* Notwithstanding the recognition that each of the references were relied upon to teach different aspects, the court found that both references “independently accomplish similar functions, namely, draining fluids.” *Id.* at 1369. Because each of the references “independently operates effectively” to accomplish those similar functions, a POSA “would have no reason to combine the features of both devices into a single device.” *Id.* at 1369.

Here, both Marszalek and Wheeler are directed to devices which independently accomplish the “similar function” of securing two or more articles of merchandise for display. Because each of the references independently accomplish this similar function, a POSA would have no motivation to combine the features of both Marszalek and Wheeler as Petitioner asserts. *See id.* Patent Owner respectfully submits that Petitioner’s reliance on different aspects of each of Marszalek and Wheeler is inapposite to the redundancy of the combined references.

Petitioner also asserts that “a POSA would have been motivated to adapt the security system attained by combining Grant and Marszalek to simultaneously secure an article of merchandise and its complementary auxiliary device, as taught in Wheeler.” Petition at 19 (emphasis added). Once again, however, Petitioner admits the combination of Grant and Marszalek would already secure two articles and thereby meets the supposedly motivating need. Petitioner provides no rationale for further combination of Wheeler to Grant and Marszalek—much less describes what Wheeler teaches a POSA must do in order to “adapt the security system attained by combining Grant and Marszalek.” *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (indicating that obviousness “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”).

Petitioner attempts to justify adding Wheeler to the Grant and Marszalek combination because of Wheeler's use of the term "complementary" for the second device and Petitioner's proposed claim construction for "auxiliary device." Specifically, Petitioner asserts that an "auxiliary device of the item of merchandise" should be construed as "an electronic device complementary to the article of merchandise." As already explained, Patent Owner disagrees with this construction. Regardless, the rationale of adding Wheeler to Grant and Marszalek simply because Wheeler secures a "complementary device" that Petitioner equates with the "auxiliary device" of claim 1 is a classic example of impermissible hindsight. *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) ("It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious."). Petitioner's attempt to use the claim or claim construction as a rationale for a POSA's motivation should be rejected.

D. The Petition Fails to Provide Evidence Showing a POSA Would Make the Combination of Grant and Vogt (Ground Two: Claims 19, 20, 23, and 28)

Ground 2 requires a combination of Grant and Vogt. Petition at 6. In its Decision, the Board requested additional briefing "as to whether the Petition provides sufficient evidence to support that a person of ordinary skill in the art would have been motivated to integrate Vogt's optical transceivers in Grant based

upon Vogt’s representations on improvements.” Decision at 40. Patent Owner respectfully asserts that the Petition fails to provide any such evidence, for at least the following reasons.

i. A POSA would not conclude that Grant’s inclusion of multiple examples suggests a potential for improvement.

Petitioner asserts the mere listing of multiple cable sensing techniques in Grant indicates a POSA would understand “that the security system of Grant is not limited to the sensing examples listed in its specification and could potentially be improved by employing a different sensing technique.” Petition at 42 (emphasis added). Petitioner relies on this premise to then summarily conclude, “A POSA would have been motivated to look at other security systems configured to monitor the integrity of cable connection” and that such would lead to Vogt. *Id.* Similar conclusory statements of Petitioner’s employee are cited as support. *Id.* (citing Ex. VPG-1012 (Figh Decl.) ¶ 48). In its Decision, the Board recognized the deficiency of Petitioner’s arguments, noting, “Petitioner’s argument appears to be based on whether an ordinarily skilled artisan “could” have improved Grant’s system, without sufficient reasoning with a rationale underpinning explaining *why* that artisan would have done so.” Decision at 39. Patent Owner respectfully asserts that Petitioner’s suggested motivation to improve Grant should be rejected for at least the following reasons.

Petitioner’s argument for Ground 2 is fundamentally flawed because its starting point is false. Grant’s mere listing of multiple examples does not suggest to a POSA that Grant could be potentially improved—much less should be improved. Ex. 2021 (Pearson Decl.) ¶ 45. While Grant discloses at ¶ 32 that “various sensing techniques may be employed for determining whether the cable 20 has been cut or removed from the sensor in an unauthorized manner,” Grant also provides examples of such techniques without ever suggesting to a POSA that such examples are somehow deficient or that Grant “could be improved by employing different sensing techniques” as asserted by Petitioner. *Id.*

Indeed, Petitioner fails to submit any evidence of a problem, market pressure or need that would lead a POSA to modify Grant. In short, Petitioner asserts that a POSA would understand Grant could “potentially be improved” and yet provides no evidence of anything in Grant that needs improvement or even evidence that adding Vogt actually results in any improvement. *Id.* Petitioner’s challenge fails because it has not provided evidence showing a POSA would have an apparent reason to combine known elements in the fashion claimed by the patent at issue. *See, e.g., Personal Web Techs.*, 848 F.3d at 991.

Stripped to its essentials, Petitioner’s argument is simply that a POSA would be motivated to “build something better” than Grant. This the same rationale found unacceptable in *TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1358–60

(Fed. Cir. 2019), because such fails to explain “why a person of ordinary skill in the art would have combined elements from specific references in the way the claimed invention does.” Instead, the Petitioner must “explain why a person of ordinary skill in the art would have combined elements from specific references *in the way the claimed invention does* – [k]nowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references.” *Id.* (alteration in original) (citations omitted).

ii. A POSA would not combine Grant and Vogt because such is unnecessary and does not result in any improvement.

Where combining prior art is unnecessary or redundant, there is no reasonable rationale for a POSA to do so. *See, e.g., Kinetic Concepts*, 688 F.3d at 1369 (finding that where “each device independently operates effectively,” there is no reason to combine); *Ex parte Burns*, 2017 Pat. App. LEXIS 4994, at *4–5 (rejecting the addition of Filliez in order to provide further reinforcement as “unnecessary (redundant)” where there was “no need for further reinforcing” of Paar); *Ex parte Chandrachood*, 2015 Pat. App. LEXIS 1378, at *6–7 (“Because the combination of Hanaoka, Masahiro, and Gondo already operates effectively in its radial control configuration, a person . . . who was merely seeking to create a better plasma reactor, would have no reason to add the circumferential control features of . . . Kholodenko to the combination of Hanaoka, Masahiro, and Gondo.”).

A POSA would not combine Grant and Vogt because such is unnecessary and does not result in any improvement. Ex. 2021 (Pearson Decl.) ¶¶ 46–48. If Vogt was added to Grant and the cable was disconnected or broken, power from the conductors that is delivered to the Vogt transceiver through the cable would be lost. *Id.* ¶ 46. Vanguard’s Petition admits this clearly: “If both units remain operational”—i.e., power conductors providing power to the optical transceivers—“and connected to one another, the signal exchange is successful. However, if one of the units fails to receive an expected optical signal from the other unit, an alarm is triggered, indicating that the units have been separated, or the security system has been compromised otherwise.” Petition at 40 (citation omitted). Thus, if Vogt was added to Grant and the cable was disconnected or broken, then an alarm would be generated because Vogt’s transceivers would lose connection. Ex. 2021 (Pearson Decl.) ¶¶ 46, 54.

However, if Vogt was not added to Grant and the cable was disconnected or broken, a security event/alarm would be generated. *Id.* ¶¶ 47, 53. Grant states this explicitly: “As such, the sense loop may be used to detect various security events associated with the cable 20, such as the cable being cut, shorted, and/or disconnected.” Ex. VPG-1004 ¶ 17. In other words, whether or not Vogt’s optical transceivers are present in Grant, a cut, shorted, or disconnected cable will result in an alarm. Ex. 2021 (Pearson Decl.) ¶¶ 47, 53, 54.

Thus, given that a break or disconnection in the cable of Grant, with and without Vogt, results in the same alarm—there would be no improvement by “employing a different sensing technique” as urged by Petitioner. *Id.* ¶ 48. As a result, a POSA would recognize there is no improvement by using Vogt as a different sensing technique. *Id.* In addition, and as further discussed below, without any resulting benefit, a POSA would choose the simpler Grant system, instead of more the complex combination of Grant and Vogt.

iii. Vogt’s self-accolades would not motivate a POSA to integrate Vogt’s optical transceivers into Grant.

Although failing to provide an acceptable a rationale for why a POSA would look beyond the merchandise security system of Grant, Petitioner nevertheless moves to Vogt, which relates generally to a security system that utilizes a pair of optical sensors. Petitioner then points to certain statements in Vogt (“security system having enhanced monitoring capability”; “highest level of assurance”; “security of the system of the invention is virtually assured”) as motivating a POSA to “use the sensing technique disclosed in Vogt to monitor the connection between the tether cable and the sensor in Grant’s security system.” Petition at 42–43; Ex. VPG-1012 (Figh Decl.) ¶ 48.

However, a POSA would not be motivated by Vogt’s generalized, self-accolades for the simple reason that Vogt does not describe or otherwise explain how its security system would provide such “assurance” or enhancements. Ex.

2021 (Pearson Decl.) ¶ 50. To be motivated to consider the combination of Grant and Vogt, the POSA would seek specific benefits, not vague and unsupported references to “assurance” or enhancements as found in Vogt. *Id.* This is particularly true when, as stated above, Grant does not identify any deficiencies with its security system—much less invite a POSA to make improvements as asserted by Petitioner. *Id.* Notably, the Petition and the declaration of Petitioner’s employee, Figh, also fail to point to any such benefits. *Id.*; *see generally* Ex. VPG-1012 (Figh Decl.).

Instead of being motivated by Vogt’s laudatory statements, a POSA would understand that such statements are ambiguous—i.e. Vogt does not describe to a POSA how Vogt’s system would provide an “enhanced monitoring capability” or “highest level of assurance,” or that “security of the system of the present invention is virtually assured.” Ex. 2021 (Pearson Decl.) ¶¶ 50, 55, 56.

Because of this ambiguity, if anything, a POSA could readily conclude that Vogt’s self-accolades are referring to improvements over conventional magnet and reed switch systems. *Id.* at 51. More particularly, Vogt repeatedly criticizes the use of security systems that utilize magnets and reed switches to monitor the relative displacement between two objects to create an alarm event. Ex. VPG-1008 at 1:24–66. Vogt indicates these type of systems can be compromised, *id.* at 1:59–66, and that Vogt’s optical sensors should be employed instead, *id.* at 2:9–20; 5:60–67.

Regardless, this would not motivate a POSA to modify Grant with Vogt because Grant does not rely upon a magnet and reed switch to monitor the connection between the tether cable and the sensor or base. Ex. 2021 (Pearson Decl.) ¶ 51.

Albeit without evidentiary support, Petitioner might attempt to assert that a POSA would understand Vogt's self-accolades (e.g., "highest level of assurance") refer to Vogt's description of utilizing coded signals between respective optical transducers in the first and second units. Specifically, Vogt indicates that a code generator 51 in a first unit 20 can generate a coded signal that is converted by optical transducer 23 into an optical signal that is transmitted to a second unit 21. Ex. VPG-1008 at Abstract, 5:67–6:64. There, another optical transducer 34 converts the optical signal back into an electrical signal supplied to another code generator 56 in the second unit 21. *Id.* The failure of the two units to either exchange the properly coded signals or to receive a return signal results in producing an alarm. *Id.* Vogt asserts that whereas with magnets and reed sensors "it may have been possible to fool the security system using other magnets," the use of coded optical signals in units 20 and 21 "cannot be readily decoyed." Ex. 1008 at 5:60–67.

However, even if a POSA would somehow understand that such coding is this basis for Vogt's undefined references to "highest level of assurance" or "enhanced monitoring," there are multiple reasons a POSA would not combine

Vogt with Grant based on Vogt's use of coded signals. Ex. 2021 (Pearson Decl.) ¶ 56.

First, as already stated, Grant does not use magnets and reed switches to monitor the cable. *Id.* ¶ 57. As such, a POSA would understand that Grant lacks the deficiency that Vogt references as overcoming with its coded signals. *Id.*

Second, a POSA would also recognize that substituting Vogt's optical sensors for Grant's inductive coils and using coded optical signals adds an unnecessary complexity to Grant with no resulting improvement or benefit. *Id.* ¶ 58. As described in Vogt, such coding requires coding an electrical signal, converting it to an optical signal, transmitting the optical signal, receiving the optical signal, converting such back into an electrical signal with a code that must be checked for correspondence. Ex. VPG-1008 at Abstract, 5:67–6:64. Such coding requires the addition of at least two optical transducers as well as two code generators/microprocessors. *Id.*

A POSA would understand such modifications from Vogt would create significant additional complexity to Grant with no corresponding benefit for monitoring Grant's cable 20—particularly when Grant does not rely on magnets and reed sensors for such anyway. Ex. 2021 (Pearson Decl.) ¶ 59. Instead, Grant uses a cable 20 that could include “one or more electrical conductors for transmitting electrical, security, and/or communication signals” that can be used in

determining whether the cable has been cut or disconnected. Ex. VPG-1004 ¶¶ 24,

31. The Petition points to no evidence that would provide a reason that a POSA would be motivated to employ in Grant the more complicated solution of Vogt requiring the conversion, back and forth, between coded, electrical signals and optical signals. Ex. 2021 (Pearson Decl.) ¶ 59.

Furthermore, even if there were some reason (which the Petition does not identify) to employ a coded signal, a POSA would readily understand that “electrical, security, and/or communication signals” described by Grant are either already coded or readily could be coded, all without the complications of Vogt. *Id.* ¶ 60. As such, a POSA would understand that conversion of the coded electrical signals to optical signals and the reverse conversion is unnecessary. *Id.*

Accordingly, even if coding is the benefit that Vogt is ambiguously referencing, a POSA would need to see some other, additional benefit, to the optical conversion because such is already understood from Grant. *Id.* The Petition, however, presents no such additional benefit or advantage.

Third, even if a POSA would somehow recognize a benefit (unidentified by Petitioner) in using a coded signal between Grant’s sensor and base in monitoring Grant’s cable 20, a POSA would also understand Grant explicitly provides for such a feature so that there would be no motivation for modifying with Vogt. *Id.* ¶ 61. Specifically, Grant describes the use of wireless signals between the base and the

sensor. Ex. VPG-1004 ¶¶ 5, 7, 8, 21, 28, 29, 34. A POSA would understand that wireless signals (e.g., Bluetooth, BLE, WiFi, and others) are coded signals. Ex. 2021 (Pearson Decl.) ¶ 61. Indeed, Grant even describes the transmission of a unique identifier—i.e., a code—wirelessly transmitted between the base and the sensor. Ex. VPG-1004 ¶ 29. Grant further describes that the sensor can transmit a wireless signal between the base and sensor in event the cable is disconnected. Ex. VPG-1004 ¶¶ 33–36. Accordingly, a POSA would not be motivated to substitute Vogt’s optical transceivers for the inductive coils in Grant, and the Petition provides no evidence otherwise. Ex. 2021 (Pearson Decl.) ¶ 62.

Because Ground 2 of the Petition fails to provide any plausible rationale or motivation to modify the Grant system as proposed by Petitioner, the Petition fails to establish the obviousness of the challenged claims 26, 27, and 28 of the ’358 patent.

E. The Petition Fails to Provide Evidence Showing a POSA Would Make the Redundant Combination of Brenner, Marszalek, and Wheeler (Grounds Three and Four: Claims 1–3, 16, 18–20, 23, and 28)

As previously stated, the Petitioner must provide evidence showing a POSA would have an apparent reason to combine known elements in the fashion claimed by the patent at issue and would have a reasonable expectation of success in doing so. *KSR Int’l Co.*, 550 U.S. at 418; *Personal Web Techs.*, 848 F.3d at 991. In a section entitled “Motivation for Combining Brenner, Marszalek, and Wheeler

...,” Petitioner asserts there was a market need for “a system and/or method for securing *two or more articles* in a self-contained, all-in-one configuration.”

Petition at 53. Because Brenner only secures a single article, Petitioner asserts a POSA would be motivated to improve Brenner by combination with Marszalek in order to “meet this known market need.” *Id.* Then, to justify the further addition of Wheeler, Petitioner asserts in conclusory fashion: “In addition, a POSA would have been motivated to adapt the security system to simultaneously secure an article of merchandise and its complementary auxiliary device as taught in Wheeler.” *Id.* at 54.

Assuming arguendo Petitioner is correct regarding a market need for a system and/or method for securing two or more articles, such does not provide a rationale for combining Brenner with both Marszalek and Wheeler. Petitioner relies particularly on the embodiment of Marszalek shown in FIG. 1 with two articles 6 and 12:

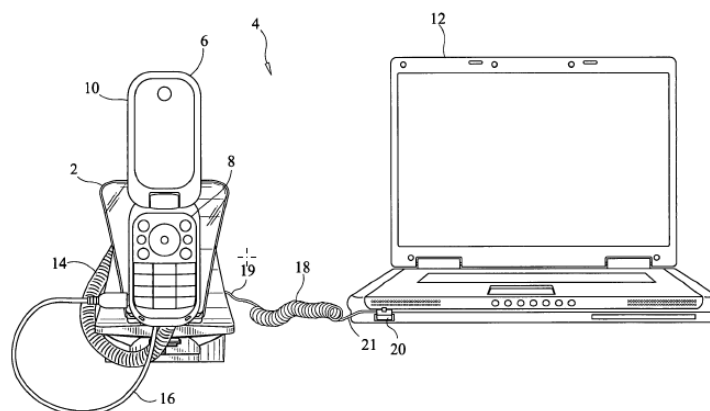


FIG. 1

As admitted by Petitioner, Marszalek discloses a device for securing a second article—i.e. two or more articles. Petition at 17–18, 53 (citing Marszalek), and Petitioner is combining such with Brenner in Grounds 3 and 4. As such, there is no reason a POSA would look further to Wheeler because Petitioner’s rationale of “securing *two or more* articles” is satisfied by the combination of just Brenner and Marszalek, and Petitioner provides no evidence of a rationale for further combining Wheeler.

In fact, a POSA would not make the addition of Wheeler to the combination of Brenner and Marszalek because such would be redundant. Again, as noted by Petitioner, Wheeler also teaches securing multiple articles. *Id.* But, as Petitioner admits the combination of Brenner and Marszalek would already secure two articles, a POSA would not be motivated to further combine Wheeler to the Brenner and Marszalek combination because such would be unnecessary and redundant. Prior Federal Circuit and Board decisions have previously concluded that where combining prior art is unnecessary or redundant, there is no reasonable rationale for a POSA to do so. *See, e.g., Kinetic Concepts, Inc.*, 688 F.3d at 1369 (reversing district court finding of obviousness, noting: “[b]ecause each device independently operates effectively, a person having ordinary skill in the art, who was merely seeking to create a better device to drain fluids from a wound, would have no reason to combine the features of both devices into a single device.”); *Ex*

parte Burns, 2017 Pat. App. LEXIS 4994, at *4–5 (rejecting the addition of Filliez in order to provide further reinforcement as “unnecessary (redundant)” where there was “no need for further reinforcing” of Paar); *Ex parte Chandrachood*, 2015 Pat. App. LEXIS 1378, at *6–7 (“Because the combination of Hanaoka, Masahiro, and Gondo already operates effectively in its radial control configuration, a person . . . who was merely seeking to create a better plasma reactor, would have no reason to add the circumferential control features of . . . Kholodenko to the combination of Hanaoka, Masahiro, and Gondo.”).

As Patent Owner notes above, in its Decision, the Board preliminarily concluded that Marszalek and Wheeler were not redundant references because “Petitioner relies on different aspects of the references’ teachings in its challenge.” Decision at 33. However, Patent Owner respectfully submits that references need not be relied upon for the same teachings to be redundant. If relying on “different aspects of the references’ teachings” were sufficient to render references non-redundant, then the redundancy of references could never be found vis-à-vis a combination of references alleged to support a finding of obviousness under § 103. By definition, the combined references are relied upon to allege teachings of different aspects of a challenged claim.

The decision in *Kinetic Concepts* also supports the proposition that references may be redundant even if relied upon for different aspects. In that case,

the patent claims at issue were directed to the treating of wounds by applying negative pressure. *Kinetic Concepts*, 688 F.3d at 1346. It was asserted that the claims were invalid as obvious over the combination of a number of references, but the court found that “none of the references disclose[d] treating wounds with negative pressure.” *Id.* at 1366. Instead, the obviousness challenge relied on different aspects of the combined references: one reference disclosed “treating or healing wounds,” and another disclosed “a seal that is capable of maintaining pressure.” *See id.* Notwithstanding the recognition that each of the references were relied upon to teach different aspects, the court found that both references “independently accomplish similar functions, namely, draining fluids.” *Id.* at 1369. Because each of the references “independently operates effectively” to accomplish those similar functions, a POSA “would have no reason to combine the features of both devices into a single device.” *Id.* at 1369.

Here, both Marszalek and Wheeler are directed to devices which independently accomplish the “similar function” of securing two or more articles of merchandise for display. Because each of the references independently accomplish this similar function, a POSA would have no motivation to combine the features of both Marszalek and Wheeler as Petitioner asserts. *See id.* Patent Owner respectfully submits that Petitioner’s reliance on different aspects of each of

Marszalek and Wheeler is inapposite to the redundancy of the combined references.

Petitioner also asserts that “a POSA would have been motivated to adapt the security system” attained by combining Brenner and Marszalek “to simultaneously secure an article of merchandise and its complementary auxiliary device, as taught in Wheeler.” Petition at 54. One again, however, Petitioner admits the combination of Brenner and Marszalek would already secure two articles and thereby meets the motivating need. Petitioner provides no rationale for further combination of Wheeler to the security system of Brenner and Marszalek—much less describes what Wheeler teaches a POSA must do in order to “adapt the security system attained by combining Brenner and Marszalek. *See In re Kahn*, 441 F.3d at 988 (indicating that obviousness “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”).

As in Grounds 1 and 2 discussed earlier, for Grounds 3 and 4 Petitioner attempts to justify adding Wheeler to the Brenner and Marszalek combination because of Wheeler’s use of the term “complementary” for the second device. Again, the purpose behind Petitioner’s claim construction for “auxiliary device” becomes clear: Petitioner is asserting that an “auxiliary device of the item of merchandise” should be construed as “an electronic device complementary to the

article of merchandise” in order to create a rationale. However, the rationale of adding Wheeler to Brenner and Marszalek simply because Wheeler secures a “complementary device” that Petitioner equates with the “auxiliary device” of claim 1 is a classic example of impermissible hindsight. *In re Fritch*, 972 F.2d at 1266 (“It is impermissible to use the claimed invention as an instruction manual or ‘template’ to pieced together the teachings of the prior art so that the claimed invention is rendered obvious.”). Petitioner’s attempt to use the claim or claim construction as a rationale for a POSA’s motivation should be rejected.

F. The Petition Fails to Provide a Reasonable Rationale for the Combination of Brenner and the ’730 Publication (Ground Four: Claims 19, 20, 23, and 28)

Ground 4 requires a combination of Brenner (WO 2011/045058) (Ex. VPG-1007) and the ’730 Publication (US Patent Publication No. 2014/0335730) (Ex. VPG-1010). *See* Petition at 6. In its Decision, the Board recognized “that Petitioner has not demonstrated a sufficient rationale for modifying Brenner in the manner asserted in the Petition” with respect to the ’730 Publication. Decision at 54–55. The Patent Owner submits that this preliminary determination should be affirmed for at least the following reasons.

The arguments advanced in Ground 4 of the Petition are predicated on the contention that “[a] POSA would have recognized that Brenner may suffer from reliability issues because the securing tether can be ‘*a spiral cable*’ or ‘*can be*

wound under tensile stress’ in a winding device.” Petition at 73 (emphasis in original). According to the Petition, these reliability concerns arise because when an optical waveguide, which is identified as the securing tether here, “is subjected to bending and winding, it is prone to at least two types of signal loss: ‘curvature loss’ and ‘microbend loss.’” *Id.*; Ex. VPG-1012 (Figh Decl.) ¶ 63. On this basis, the Petition concludes that a POSA would have been motivated to search for a solution that did not rely on the optical waveguide of Brenner. Petition at 74; Ex. VPG-1012 (Figh Decl.) ¶ 64.

The Board has already rejected the identical argument made by Petitioner in two prior petitions for *inter partes* review and should do so again here. *See* IPR2019-01206, Paper No. 8 at 14–18; IPR2019-01209, Paper No. 9 at 14–18. In any event, Petitioner identifies no support for the conclusion that the optical waveguide of Brenner would be unreliable, let alone that it would be prone to signal loss. The conclusion is pure speculation, as Brenner does not provide detail regarding the materials and dimensions of the disclosed system from which such a conclusion could be drawn. In short, Petitioner’s argument is that an optical waveguide is inherently unreliable in any application that involves the bending of the waveguide. Not only does Brenner itself teach away from this conclusion, but the state of the prior art as of the patent’s effective date—which Petitioner did not even address—refutes the contention, providing numerous examples of

waveguides used in such applications. Petitioner’s contention amounts to nothing more than hindsight analysis, substituting the patent as a guide for what should be an assessment of the rationale for the actions that POSA would have exercised as of the effective filing date of the patent. *Kinetic Concepts, Inc.*, 688 F.3d at 1368 (cautioning care “not to allow hindsight reconstruction of references to reach the claimed invention without any explanation as to how or why the references would be combined”).

i. The Board has already rejected this identical argument and issue preclusion should ultimately be applied to reject this argument in the instant proceeding.

The Board has already rejected this argument, which was made by Petitioner in two prior petitions for *inter partes* review. *See* IPR2019-01206, Paper No. 8 at 14–18; IPR2019-01209, Paper No. 9 at 14–18. The issue preclusion doctrine posits that “[w]hen an issue of fact or law is actually litigated and determined by a valid and final judgment, and the determination is essential to the judgment, the determination is conclusive in a subsequent action between the parties, whether on the same or a different claim.” *B & B Hardware, Inc. v. Hargis Indus., Inc.*, 135 S. Ct. 1293, 1303 (2015) (quoting Restatement (Second) of Judgments § 27, at 250 (1980)). Furthermore, the Federal Circuit recently confirmed that issue preclusion is applicable to decisions rendered in *inter partes* reviews, and thus is appropriate

here. *See Papst Licensing GmbH & Co. KG v. Samsung Elecs. Am., Inc.*, 924 F.3d 1243, 1250–51 (Fed. Cir. 2019).

The argument advanced here by Petitioner was actually litigated and essential to the judgment. Specifically, in both of its prior petitions, Petitioner argued that a POSA would be motivated to replace the optical waveguide of Brenner because the waveguide is subject to signal loss from bending and thus unreliable—the same argument advanced here. IPR2019-01206, Paper No. 8 at 14–15; IPR2019-01209, Paper No. 9 at 14–15. The Board considered that argument and rejected it on the basis that Brenner itself indicates that the optical waveguide is reliable and because Petitioner failed to provide support for its assertions. IPR2019-01206, Paper No. 8 at 16–17, 18; IPR2019-01209, Paper No. 9 at 16–17, 18. The Board’s decision rested solely on these conclusions and thus the decisions were essential to the judgment.¹ *See generally id.*

¹ While the current Petition and the prior petitions discussed here involved the same primary reference—Brenner—it is recognized that the prior petitions applied secondary art different than that which is at issue here. Although the Board’s decisions on those petitions mentioned the secondary references at issue there (i.e., Vogt and Chapman), they did so only in cataloging the arguments advanced by the Petitioner. The Board’s conclusions and its underlying reasoning were based solely

Brenner, of course, continues to refute Petitioner's argument that a POSA would have been motivated to reject Brenner's optical waveguide on reliability grounds, as detailed in the analysis below. Moreover, Petitioner has failed to cure its deficiencies in factual support for this contention. Indeed, as in the prior petitions, the current Petition relies solely on two dictionary definitions and the testimony of Petitioner's employee, which itself relies on these same dictionary definitions. *Compare* Petition at 73–74, *and* Ex. VPG-1012 (Figh Decl.) ¶ 63, *with* IPR2019-01206, Paper No. 8 at 17, *and* IPR2019-01209, Paper No. 9 at 17. Because the current Petition advances the same argument based on the same evidence that was offered in its prior petitions, which were denied institution, the issue has been actually litigated.

Additionally, the prior denials of institution are final judgments. Petitioner's arguments were rejected in prior institution denials issued on January 8, 2020. IPR2019-01206, Paper No. 8 at 1; IPR2019-01209 Paper No. 9 at 1. Both prior institution denials were subject to a Request on Rehearing, and both Requests were denied on May 26, 2020. IPR2019-01206, Paper No. 11 at 1; IPR2019-01209

on the evidence of Brenner and dictionary definitions provided by Petitioner—the same dictionary definitions provided in the current Petition. IPR2019-01206, Paper No. 8 at 16–18; IPR2019-01209, Paper No. 9 at 16–18.

Paper No. 12 at 1. The Supreme Court has confirmed that such denials of institution are not reviewable by the appellate court. *See Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016).

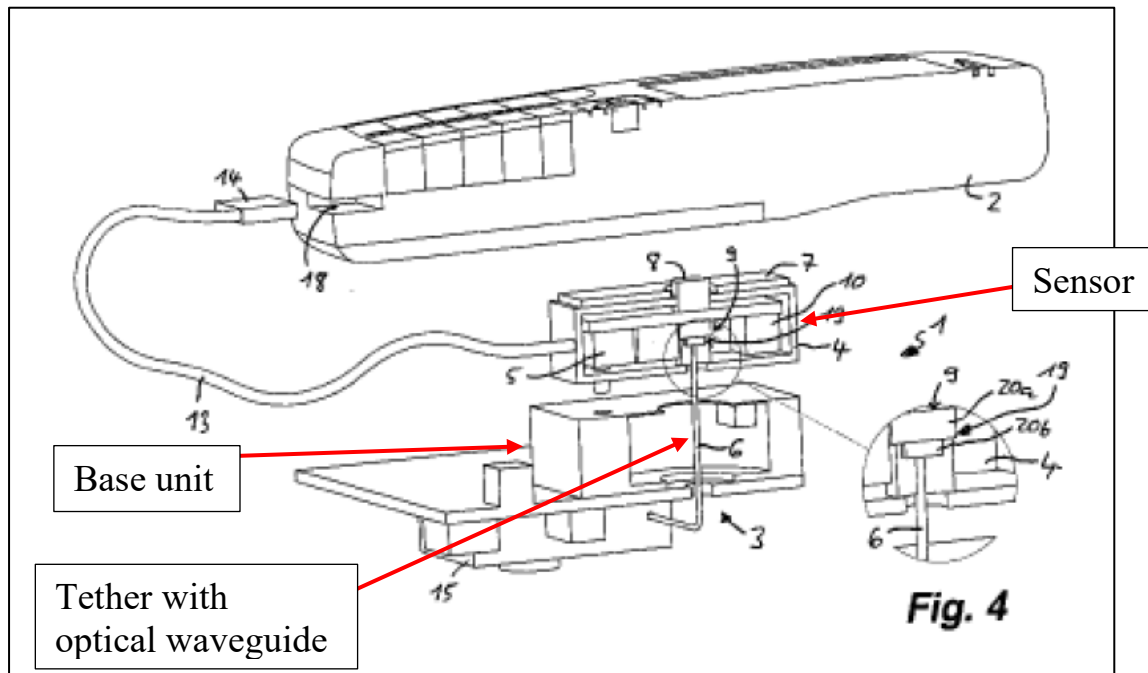
Thus, all the elements required to apply the doctrine of issue preclusion are present, and Patent Owner respectfully requests that the Board apply the doctrine to deny Ground 4 of the present Petition.

ii. Brenner teaches the feasibility of using an optical waveguide for communication in a retail security devices.

Even disregarding the application of issue preclusion, Ground 4 fails to establish obviousness because it does not provide any reasonable rationale for the proposed combination, as the Board recognized in its Decision. Decision at 55. Patent Owner respectfully submits that the Board's rejection of Petitioner's challenges under Ground 4 should be confirmed for at least the following reasons.

In order to understand the numerous flaws in Petitioner's rationale, it is useful to understand the security system disclosed in Brenner (Ex. VPG-1007). Brenner is directed to a security apparatus for protecting items in retail merchandise, including "demonstration devices that the customer should hold." Brenner at 1. As shown in the annotated figure below, the security system of Brenner includes a sensor unit, a base unit, and a securing tether connecting the sensor and base units. *Id.* The securing tether includes an optical waveguide (i.e., a

fiber optic cable) within the tether that is used to communicate optical signals between the sensor and base units. *Id.* at 2.



Brenner teaches various embodiments of the securing tether that might be useful in enabling handlers of the protected items to lift the item from its resting position and thus inspect the item. In one instance, Brenner suggests that the securing tether may constitute a spiral cable. *Id.* at 5. In another embodiment, Brenner teaches that the securing tether may be wound in a winding device under tensile stress. *Id.* Despite these types of tethers, and the bending inherent therein, Brenner teaches that “[i]n comparison with previously known securing devices, the apparatus according to the invention also has the advantage of reduced susceptibility to faults, because the optoelectronic signal transfer device operates practically without wear.” *Id.* at 3.

iii. Petitioner fails to provide a reasonable rationale for replacing Brenner’s optical waveguide.

Despite the teaching of Brenner, Petitioner asserts that a person of ordinary skill would replace the optical waveguide of Brenner because it “may suffer from reliability issues because the securing tether can be ‘*a spiral cable*’ or ‘*can be wound under tensile stress.*’” Ex. VPG-1012 (Figh Decl.) ¶ 63;² *see also* Petition at 73. The Petition then offers the conclusory assertion that “[i]t is a well-known fact that when an optical waveguide is subjected to bending or winding, it is prone to at least two types of signal loss: ‘curvature loss’ and ‘microbend loss.’” Petition at 73; Ex. VPG-1012 (Figh Decl.) ¶ 63. Based on the losses, Petitioner argues that “[a] POSA would have recognized that the security device of Brenner is prone to reliability issues due to signal loss in the waveguide and would have been motivated to look for a solution that would enable the optical transceiver of the sensor to communicate with the base without relying on an optical waveguide in the securing tether.” Petition at 74; Ex. VPG-1012 (Figh Decl.) ¶ 64.

² Mr. Figh’s curriculum vitae does not reflect any experience with the design and application of fiber optic cabling, optical communication components, and data transmission that are central to the claims and requisite of a person of ordinary skill in the art.

This rationale suffers from numerous deficiencies. First and foremost, Brenner itself teaches away from the rationale advanced by Petitioner. “A reference may be said to teach away when a person of ordinary skill, upon reading the reference, . . . would be led in a direction divergent from the path that was taken by the applicant.” *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1308 (Fed. Cir. 2006). As explained above, Brenner teaches optical transceivers in a sensor and a base connected by a tether, including an optical waveguide, for communicating between the two. Brenner at 1–2. Although Brenner expressly contemplates customer handling of merchandise attached to the sensor and tether, *id.* at 1, it nevertheless teaches that “the apparatus according to the invention also has the advantage of reduced susceptibility to faults, because the optoelectronic signal transfer device operates practically without wear,” *id.* at 3, 5.

This expressly teaches away from the path taken by the patent, which contemplates placing an optical transceiver in the cable, rather than the base, as required by the challenged claims. Ex. VPG-1001, claim 19.³ Moreover, a POSA would have to ignore this teaching to proceed in the manner suggested by Petitioner, which posits the direct opposite—that the tether of Brenner is subjected

³ Challenged claims 20, 23, and 28 of the ’358 patent all depend from claim 19 and therefore also require this feature.

to so much wear that signal loss results. Petition at 73; Ex. VPG-1012 (Figh Decl.)

¶ 63. Indeed, it is remarkable that Petitioner would rely on Brenner at all, given that it views the reference as inherently unreliable.⁴

In addition to directly contradicting Brenner’s teachings, Petitioner’s expressed rationale for replacing Brenner’s optical waveguide is also erroneous because it provides no justification or support for the conclusion that the waveguide is “prone to . . . signal loss,” the basis for its claim that the system is unreliable. Petition at 73; Ex. VPG-1012 (Figh Decl.) ¶ 63. Though Petitioner purports to support this argument by sole reliance on the dictionary definitions of “curvature loss” and “microbending loss,” it fails to inform the Board that such losses do not equate to signal loss, as Petitioner suggests. Petition at 63–64; Ex. VPG-1012 (Figh Decl.) ¶ 63. Nor does Petitioner proffer any explanation regarding what effect, if any, signal loss, curvature loss, or microbend loss would have in an optical waveguide when utilized in the security device disclosed in Brenner. Rather, Petitioner merely implies that any curvature loss or microbending

⁴ Not only does Brenner encourage the skilled artisan to employ the optical waveguide that Petitioner proposes discarding, but Petitioner’s proposed alternative use of electrical conductors is also discouraged by the prior art that the skilled artisan would have considered. *See infra* at 44–45.

loss would necessarily lead to signal loss, motivating a POSA to discard the optical waveguide of Brenner. Under Petitioner’s rationale, fiber optic cables could never be reliably employed in any application where bending was required.

The assumption that “curvature loss” and “microbend loss” necessarily result in “signal loss” is false. *See* Ex. 2021 ¶ 79 (Pearson Decl.). To explain the reasons why this is so, it is first necessary to understand what each of these terms means. “Curvature loss” refers to power loss associated with macrobending of optical fiber. *Id.* ¶ 77. Macrobending results in significant power losses only when the radius of a macrobend in optical fiber is less than a minimum critical “bend radius,” which differs based on the materials and dimensions of the fiber. *Id.*;⁵ Ex. VPG-1014 at 545. Similarly, “microbend loss” is attributed to “optical power loss caused by a microbend, i.e., a small bend, kink or abrupt discontinuity” in the optical fiber. Ex. 2021 (Pearson Decl.) ¶ 78; Ex. VPG-1014 at 575–76. In certain circumstances, these microbend conditions can result in a decrease in the power level in an optical fiber. Ex. 2021 (Pearson Decl.) ¶ 78. As with curvature loss,

⁵ Note that the Pearson declaration refers to the same dictionary reference at issue here (Ex. VPG-1014), but refers to it as Ex. VPG-1002, as that was the exhibit number of the dictionary in IPR2019-01206.

microbend loss is also dependent, in part, on the materials and dimensions of the fiber employed. *Id.*

Thus, both curvature loss and microbend loss address the issue of “power loss.” *Id.* ¶ 79. In optical fiber, “power loss” refers to a characteristic of the light transmitted, and particularly to the intensity of light traveling in an optical fiber. *Id.* ¶¶ 73–74. “Signal loss,” in contrast, refers to the threshold of light intensity at which an optical receiver can detect light. *Id.* ¶ 75. Only when the power level of the transmitted light at the optical receiver drops below an operational threshold does signal loss occur. *Id.*

Accordingly, a POSA would understand that optical fiber could experience power losses (i.e., curvature loss and microbend loss), but such a loss does not necessarily result in a signal loss. *Id.* Indeed, the same dictionary that Petitioner relies on for its definitions of curvature loss and microbend loss make this point: “Note: A macrobend will not cause a significant radiation loss if it is of sufficiently large radius, the loss depending on the radius and the type of optical fiber.” Ex. VPG-1014 at 545. Moreover, a POSA would also have been aware that microbend losses are insignificant over the short distances involved in a retail security application such as found in Brenner: “Microbend losses are usually negligible for short lengths of fiber.” U.S. Publication No. US2006/0045449 ¶ 20 (Ex. 2003); Ex.

2021 (Pearson Decl.) ¶¶ 12, 88 (distinguishing short range applications as “a matter of feet” and long range applications as a matter of kilometers).

Furthermore, a POSA would also understand that different receivers have different signal loss thresholds such that a given power loss in the transmission of light through an optical fiber may result in signal loss in one optical receiver but that same power loss may not result in signal loss in an optical receiver with a lower threshold. Ex. 2021 (Pearson Decl.) ¶ 76. Thus, to determine the likelihood of signal loss in the Brenner system, it would be necessary to know at least the power delivered by the optical transmitter in the sensor unit, the materials and composition of the optical fiber (from which an appropriate bend radius could be determined), whether the optical fiber employed a sheath to support the fiber and, if so, the material and composition of that sheath, the amount of power lost due to curvature loss and microbend loss, and the threshold of the receiver used to measure the light intensity. *Id.* ¶ 79. Petitioner does not perform this analysis, rendering its conclusion that Brenner is unreliable due to signal loss purely speculative.

In short, Petitioner fails to provide a reasonable rationale for discarding the optical waveguide in Brenner, negating any ground for obviousness dependent thereon. Because the Petitioner failed to carry its burden of showing that any of the challenged claims of Ground 4 of the '358 patent are unpatentable by a

preponderance of the evidence under 35 U.S.C. § 316(e), the Board should confirm claims 19, 20, 23, and 28.

iv. The state of the art demonstrates that waveguides are reliable in applications involving bending.

Not only does Petitioner fail to carry its burden of showing that a POSA would have had a reasonable rationale to modify Brenner as Petitioner suggests, but the state of the art, as it existed as of the effective filing date of the patent (i.e., February 2016, as identified by Petitioner⁶), effectively refutes Petitioner's proposed rationale. As previously noted, Petitioner seeks to establish that a POSA would replace the optical waveguide of Brenner because bending of the waveguide would result in signal loss, rendering the system unreliable. Petition at 73; Ex. VPG-1012 (Figh Decl.) ¶ 63. In addition to the reasons provided in the prior section, this analysis is also proved false because reliable systems employing optical fiber in applications that involve bending of that fiber existed in the art as of the effective date.

⁶ Solely for the purpose of this Patent Owner Response, Patentee accepts Petitioner's claim that the effective filing date of the '358 patent is February 19, 2016. Patent Owner reserves the right to challenge this claim in any subsequent filing or proceeding.

Aside from Brenner—which itself was part of the state of the art contradicting Petitioner’s contention—as early as 2005, art existed that disclosed optical fiber suitable for use in “coiled cords in which no damage is caused to the optical fiber cord when the optical fiber cord is tensioned.” U.S. Patent 7,349,610 to Ohsono at 2:37–40 (Ex. 2004) (emphasis added); Ex. 2021 (Pearson Decl.)

¶¶ 83–84. In the prior section of this Response, it was explained that curvature loss is significant only when a fiber is bent beyond its minimum “bend radius.” Ex. 2021 ¶ 77 (citing Martin H. Weik, *Fiber Optics Standard Dictionary* 158) (Ex. 2005). Addressing this very principle, Ohsono taught optical fiber which could be wound to a diameter of between 12 mm to 16 mm (approximately 1/2 inch), resulting in insignificant loss. Ex. 2004 at 4:36–49. As of 2016, retail security devices utilizing winding devices (i.e., recoilers) in the marketplace had diameters well in excess of the 12 mm to 16 mm diameter disclosed in Ohsono. For example, Patent Owner’s own product, the S1500, was commercially available at least as early as December 2014—before the effective filing date of the ’358 patent—and included a recoiler similar to that taught by Brenner. *See* Ex. 2006 at 7. The recoiler included a spool, around which a cable is wound, having a minimum radius of 26 mm (i.e., 52 mm diameter). *Id.* at 3. Thus, winding Ohsono’s fiber optic cable using the S1500 recoiler—presumed to be known to a POSA—would not have resulted in significant power losses. As such, as of the

effective filing date, a POSA would have understood that optical fiber could readily be used exactly as Brenner indicates and without concerns for “curvature loss” and “microbend loss” in the optical waveguide.

Furthermore, a POSA would not have been limited to employing glass fiber, as disclosed in Ohsono. Ex. 2021 (Pearson Decl.) ¶ 85. Other fiber materials were available well before May 2015 that a POSA could have considered utilizing in the Brenner system. For example, plastic optical fiber was commercially available and is substantially less sensitive to power losses than glass fibers. *Id.* ¶¶ 85–86.

Additionally, ‘bend insensitive’ fibers were commercially available at least as early as 2007 and designed specifically to minimize the power loss issues raised by Petitioner. *Id.* ¶ 87. These bend insensitive optical fibers could be bent to small radii (e.g., 10 mm) without significant loss. *Id.*; *see also* U.S. Patent No. 7,272,289 to Bickham at 1:50–62 (Ex. 2007) (disclosing in 2007 an operable optical waveguide fiber having a bend radius of 10 mm (i.e., a bend diameter of 20 mm)); U.S. Patent No. 7,680,381 to Bookbinder (Ex. 2008) (disclosing same in 2010).

A POSA would have known of the availability of these alternative fiber optic cables and could have employed them in the Brenner system if concerns regarding power loss were at issue. Ex. 2021 ¶ 87. Certainly, selecting an appropriate fiber for the waveguide taught by Brenner would have presented a far

simpler solution than unnecessarily designing an entirely new system that lacked such a waveguide, as Petitioner proposes. *Id.* ¶ 90.

Finally, while Petitioner contends that a POSA would have been concerned with power loss in the optical waveguide of Brenner, it fails to acknowledge other disadvantages associated with cables employing electrical conductors. Indeed, prior to May 2015, prior art taught that the use of standard electrical conductors presented its own set of problems, including fatigue failure from the same cable-bending concerns that were raised in Mr. Figh’s declaration. *Id.* ¶ 91. Specifically, U.S. Patent No. 8,698,618 to Henson, which issued in April 2014, taught the “need to completely eliminate multi-conductor retractors in the retail display industry.” Ex. 2009 at 2:47–3:3; 3:11–12. Therefore, Henson would have discouraged a POSA from using security cables including standard electrical conductors as suggested by Petitioner.

Because the state of the art would have taught a POSA that power losses in optical fibers were easily avoidable by selection of appropriate optical fibers and because the art discouraged the use of electric conductors in retail display applications, Petitioner’s contention that a POSA would have replaced the waveguide of Brenner with electrical conductors is without merit. Further, the state of the art refutes Petitioner’s assertion that a POSA would have been concerned with signal loss and reliability in the Brenner system. As such,

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Petitioner's Ground 4 for obviousness fails. For at least this additional reason, Patent Owner respectfully submits that the Board should confirm the challenged claims 19, 20, 23, and 28.

V. CONCLUSION

Petitioner has failed to support its proposed grounds for obviousness of claims 1–3, 16–20, 23, 28, and 29 of the '358 patent. On this basis, the Board should confirm claims 1–3, 16–20, 23, 28, and 29.

Dated: June 30, 2020

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CERTIFICATE OF COMPLIANCE

This Response complies with the type-volume limitation as mandated in 37 C.F.R. § 42.24, totaling 13,153 words. Counsel has relied upon the word count feature provided by Microsoft and manual counting of the words in the images contained herein.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(4)(i) *et seq.* and § 42.120, the undersigned certifies that on June 30, 2020, a complete and entire copy of this Patent Owner Response Under 37 C.F.R. § 42.120, including all exhibits (Nos. 2010–2021), was provided via email to Patent Owner, as consented to, by serving this upon counsel of record for the Petitioner as follows:

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