

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

STERLITE TECHNOLOGIES INC.
Petitioner,

v.

AFL TELECOMMUNICATIONS, LLC.
Patent Owner.

Case IPR2025-00127

U.S. Patent 11,287,591

Issued March 29, 2022

Title: OPTICAL FIBER CABLE

PATENT OWNER'S PRELIMINARY RESPONSE

37 C.F.R. § 42.107

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PATENT OWNER'S EXHIBIT LIST

- Ex-2001: U.S. Patent Application No. 2015/0192748 A1 by SATO et al.
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- Ex-2003: Statutory Disclaimer – Claim 14
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- Ex-2005: Office Action of August 31, 2021
- Ex-2006: U.S. Patent No. 6,963,686 to Moon
- Ex-2007: Other References Before the Office During Prosecution
- Ex-2008: Complaint, Case 1:23-cv-01202-UNA
- Ex-2009: D.I. 7 (November 28, 2023 Oral Order)
- Ex. 2010: D.I. 13 (January 16, 2024 Oral Order)
- Ex-2011: D.I. 16 (January 25, 2024 Oral Order)
- Ex-2012: D.I. 19 (February 21, 2024 Oral Order)
- Ex-2013: April 1, 2024 - Service of Discovery by Patent Owner
- Ex-2014: June 11, 2024 - Service of Discovery by Patent Owner
- Ex-2015: June 11, 2024 - Service of Subpoena by Patent Owner
- Ex-2016: Aug. 7, 2024 - Service of Discovery by Patent Owner
- Ex-2017: Sept. 30, 2024 - Service of Discovery by Plaintiff
- Ex-2018: June 26, 2024 Service of Infringement Contentions

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Ex-2019: Aug. 5, 2024 - Service of Invalidity Contentions

Ex-2020: June 24, 2024 – Plaintiff’s Infringement Contentions

Ex-2021: STL 2023-2024 Annual Report

Ex-2022: Defendant’s Answer, Case 1:23-cv-01202-UNA

Ex-2023: AFL v. Sterlite Correspondence

LIST OF ALL CLAIMS – U.S. PATENT NO. 11,287,591

Claim 1		
		An optical fiber cable comprising:
[1.1]		a sheath; and
[1.2]		a core that is housed in the sheath and comprises an intermittently-adhered optical fiber ribbon comprising:
[1.3]		optical fibers; and
[1.4]		adhesive portions that intermittently adhere the optical fibers together in a longitudinal direction, wherein
[1.5]		recesses and protrusions are disposed alternately in a circumferential direction on an outer circumferential surface of the sheath,
[1.6]		the recesses each comprise:
	[1.6a]	two connecting portions respectively connected to radial inner ends of two adjacent protrusions;
	[1.6b]	and a bottom surface positioned between the two connecting portions, and
[1.7]		in a transverse cross-sectional view, a cross-sectional area of the recesses that is enclosed by closed curves tangent to radial outer ends of the protrusions and all the recesses is 1.3 mm ² or greater and 4.8 mm ² or less.
Claim 2		
		The optical fiber cable according to claim 1, wherein the two connecting portions have a convex surface shape that is radially inward.
Claim 3		
		The optical fiber cable according to claim 1, wherein the optical fiber cable has a compressive strength of 12.8 N/mm ² or greater and 32.4 N/mm ² or less.

Claim 4		
		The optical fiber cable according to claim 1, wherein the core further comprises a wrapping tube that wraps the intermittently adhered optical fiber ribbon.
Claim 5		
		The optical fiber cable according to claim 4, wherein the wrapping tube comprises:
[5.1]	[5.1a]	a wrap portion where a first end portion of the wrapping tube overlaps with a second end portion of the wrapping tube;
	[5.1b]	and a non-wrap portion positioned between the first end portion and the second end portion.
Claim 6		
		The optical fiber cable according to claim 5, wherein the wrapping tube comprises:
[6.1]		a wrap rate R of the optical fiber cable is calculated as $R = W1 \div (W1 + W2) \times 100$, where W1 is a circumferential length of the wrap portion and W2 is a circumferential length of the non-wrap portion, and
[6.2]		the wrap rate R is 5% or greater and 20% or less.
Claim 7		
		The Optical fiber cable according to claim 1, wherein a twist angle of the sheath per 1 m along the longitudinal direction of the optical fiber cable is 10 degrees/m or greater and 180 degrees/m or less.
Claim 8		
		The optical fiber cable according to claim 1, wherein a radius of curvature of each outer circumferential surface of the protrusions is smaller than a radius of the sheath.
Claim 9		
		The optical fiber cable according to claim 1, further comprising:

[9.1]	tensile strength members embedded inside the protrusions on the sheath,
[9.2]	wherein the protrusions and the tensile strength members have a spirally twisted shape centered on a central axis of the optical fiber cable.
Claim 10	
	The optical fiber cable according to claim 1, further comprising:
[10.1]	tensile strength members embedded inside the protrusions on the sheath,
[10.2]	wherein the tensile strength members are made of polyparaphenylene benzobisoxazole fiber reinforced plastics (PBOFRP).
Claim 11	
	The optical fiber cable according to claim 1, further comprising:
[11.1]	tensile strength members embedded in the sheath,
[11.2]	wherein in a transverse cross-sectional view, the tensile strength members are disposed inside each of the protrusions on the sheath.
Claim 12	
	The optical fiber cable according to claim 1, further comprising:
[12.1]	intermittently-adhered optical fiber ribbons,
[12.2]	wherein an SZ-shaped twist is applied to the sheath by twisting the intermittently-adhered optical fiber ribbons in an SZ shape.

Claim 13	
	The optical fiber cable according to claim 1, wherein the sheath comprises:
[13.1]	a base material; and
[13.2]	a low friction material having a friction coefficient smaller than a friction coefficient of the base material, and
[13.3]	the low friction material is disposed at least on tops of the protrusions.
Claim 14	
	An optical fiber cable comprising:
[14.1]	a sheath;
[14.2]	a core that is housed in the sheath and comprises an intermittently-adhered optical fiber ribbon comprising:
[14.3]	optical fibers; and
[14.4]	adhesive portions that intermittently adhere the optical fibers together in a longitudinal direction; and
[14.5]	tensile strength members and ripcords embedded in the sheath,
[14.6]	wherein recesses and protrusions are disposed alternately in a circumferential direction on an outer circumferential surface of the sheath,

[14.7]		the recesses each comprise:
	[14.7a]	two connecting portions respectively connected to radial inner ends of two adjacent protrusions; and
	[14.7b]	a bottom surface positioned between the two connecting portions, and
[14.8]		in a transverse cross-sectional view, the ripcords are positioned inside some of the protrusions, and
[14.9]		the tensile strength members are positioned inside the remaining protrusions.

I. INTRODUCTION

Patent Owner AFL Telecommunications, LLC (“Patent Owner” or “AFL”) respectfully requests that the Board decline to initiate *inter partes* review of claims 1-4, 8, and 13 (the “Challenged Claims”) ¹ of U.S. Patent No. 11,287,591 (the “591 Patent”) because Petitioner Sterlite Technologies, Inc. (“Petitioner”) has failed to show it has a reasonable likelihood of prevailing with respect to any of the Challenged Claims. Patent Owner submits several reasons in this Preliminary Response that institution should be denied, which are summarized here.

The ‘591 Patent solves certain problems related to multi-fiber optical fiber cables and their installation into cable passageways. All Challenged Claims require an optical fiber cable that includes a sheath on which recesses and protrusions are disposed alternately along the circumferential direction, with the recesses including a bottom surface positioned between two connecting portions.

¹ Under 35 U.S.C. § 253(a), Patent Owner filed a statutory disclaimer of claim 14. Ex. 2004. As *inter partes* review cannot be instituted on this claim (37 C.F.R. § 42.107(e)), Ground 3 - directed only to claim 14 - is not addressed herein.

The Petition fails to identify the claimed recesses in the asserted prior art combinations used for Grounds 1 and 2.

All Challenged Claims also require that, in a transverse cross-sectional view, a cross-sectional area of the recesses that is enclosed by closed curves tangent to radial outer ends of the protrusions and all of the recesses is 1.3 mm² or greater and 4.8 mm² or less. The Petition fails to provide evidence of prior art recognition of any cross-sectional area as a result-effective variable — much less recognition of the cross-sectional area as claimed.

All Challenged Claims require an intermittently-adhered optical fiber ribbon with optical fibers and adhesive portions that intermittently adhere the optical fibers together. The Petition fails to identify differences between the asserted prior art and the Challenged Claims and fails to offer a proper rationale for its proposed prior art substitutions in both Grounds 1 and 2, even relying upon a rationale that goes against the art asserted by Petitioner.

Patent Owner also requests that the Board exercise its discretion to deny *inter partes* review because substantially the same prior art and arguments Petitioner uses for Grounds 1 and 2 were already before the Office during prosecution. Further, the Petitioner fails to identify any material error made by the Office during prosecution.

II. BACKGROUND

Optical fiber cables include one or more optical fibers for the transmission of data or information. Ex. 1005, 1:16-18. Optical fiber cables may be installed within ducts, conduits, or other passageways between locations of varying distances. *Id.*, 1:19-24. Such installation can be accomplished by different methods including pulling, pushing, and/or air blowing the optical fiber cable along the passageway. *Id.*, Ex. 2001, [0003]-[0008]

The use of a cable with multiple optical fibers can increase the amount of data communication capacity but generally results in larger diameter, heavier cable. Ex. 2001, [0007]. This is disadvantageous to the installation of an optical fiber cable through a passageway for reasons that include friction between the cable and passageway and reduced performance if air blowing is used. Ex. 1005, 1:26-44.

A larger diameter cable is also not as easy to install in cable passageways that may be narrow and contain bends and couplings that the cable must pass through during installation. *Id.* Unfortunately, bending of the optical fibers along the passageway can also cause signal transmission losses from bending stresses. Ex. 2002; [0058].

Another problem that can occur with cable installation is buckling. During air blown installation, the optical fiber cable can buckle in the cable passageway, which can stop the progress of the optical fiber cable. Ex. 1001, 7:1-12. This can occur when the compressive strength of the optical fiber cable is not sufficient. *Id.*

III. THE ‘591 PATENT

The ‘591 patent describes embodiments of an optical fiber cable that are advantageous for air-blown installation, diameter reduction, and signal transmission loss while increasing the strength of the cable sheath. Ex. 1001; 2:1-5. The ‘591 patent provides several solutions including solutions relating to problems encountered in the installation of a cable through a passageway by air blowing. For purposes of Patent Owners’ Preliminary Response (POPR), certain of these solutions as related to Grounds 1 and 2 of the Petition will be discussed.

As described by the ‘591 patent for certain disclosed embodiments, a cable 1 is provided with a sheath 10 having a plurality of recesses 12 and protrusions 11 formed on an outer circumferential surface as shown in the transverse, cross-sectional views of FIGS. 1A and 1B (repeated below):

FIG. 1A

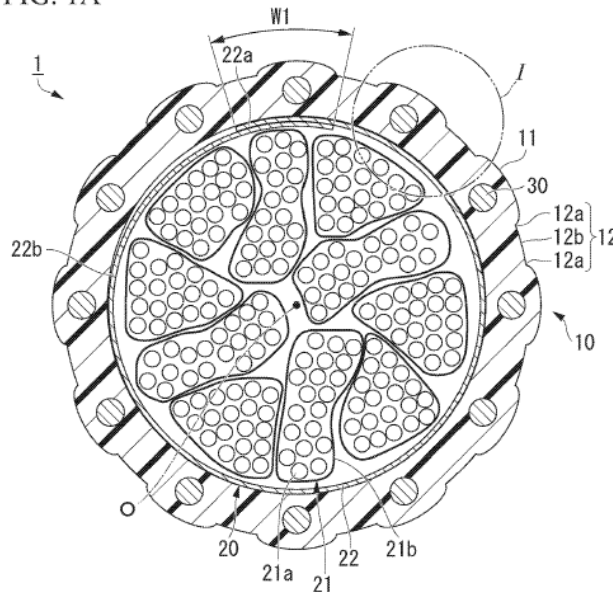
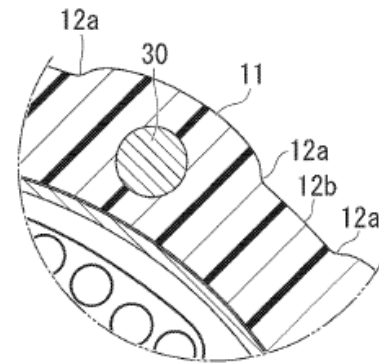


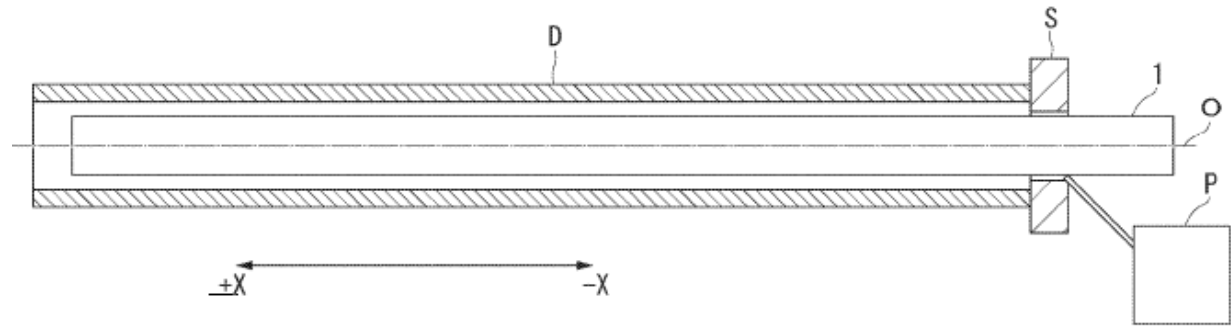
FIG. 1B



Ex. 1001, 4:22-28. For this disclosed embodiment, a recess 12 has two connecting portions 12a and a bottom surface 12b positioned therebetween. *Id.* 4:40-47. One problem encountered with conventional optical fiber cables is that stress on protrusions can lead to undesirable cracking. *Id.*, 1:30-34. The inventors determined that the connecting portions 12a can be formed into a curved surface shape that is radially inward convex, which can reliably suppress stress concentrations on connecting portions 12a and increase the strength of sheath 10. *Id.*, 5:8-12.

As described by the '591 patent with reference to FIG. 3 (repeated below), the installation by air blowing of an optical fiber cable 1 may be through a micro-duct D where the cable 1 is introduced through an opening of the seal S. *Id.*, 5:41-51.

FIG. 3

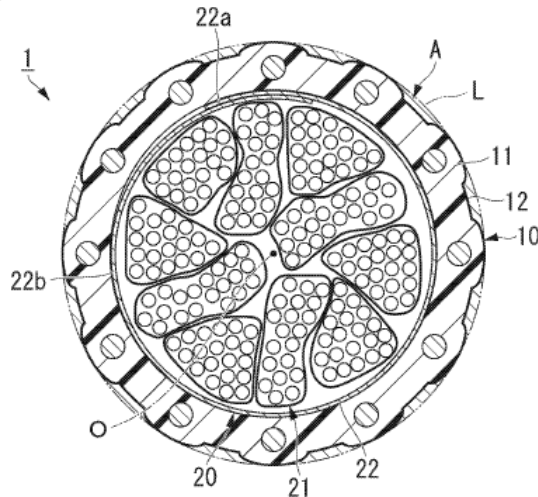


During installation through micro-duct D, a force needs to be transmitted along the optical fiber cable 1 from the upstream side (-X) to the downstream side (+X) in the longitudinal direction of cable 1. *Id.*, 5:52-58. The distance of travel of optical fiber 1 can be quite long— as much as 2000 meters or more. *Id.* Air can be introduced by a pump to allow air to flow along the cable passageway of micro-duct D in order to reduce friction between cable 1 and micro-duct D by the presence of air therebetween. *Id.*, 5:41-51.

The inventors determined that in order to effectively form an air layer for air blowing, a certain amount of a cross-sectional area should be present at recesses that are positioned between the protrusions on the outer circumferential surface of a cable. *Id.* Referring to element 1.7 of the Challenged Claims, this cross-sectional area is, with reference to a transverse view, the cross-sectional area of the recesses enclosed by curves tangent to radial outer ends of the protrusions and the recesses. For example, an exemplary embodiment of a cable

1 with a cross-sectional area A of the recesses is shown in FIG. 6 (repeated below):

FIG. 6



The inventors also determined that this transverse view, cross-sectional area can be both too small or too large for effective air blown installation. *Id.* As such, the inventors determined the amount of such cross-sectional area should be within a predetermined range for air-blowing into a passageway like micro-duct D. The '591 patent describes a 2000-meter track used to perform various air blowing tests through a micro-duct D. *Id.*, 5:65-7:38; 8:47-9:53.

Table 3 of the '591 patent indicates the results of different air blowing testing for cables having various values for the transverse view, cross-sectional area of the recesses:

TABLE 3

Test Example	34	3-2	3-3	3-4	3-5	3-6
Cross-sectional area A of recesses (mm ²)	5.2	4.8	3.4	7.8	1.3	0.0
Air-blowing test	NG	OK	OK	OK	OK	NG

Examination by the inventors determined that when this cross-sectional area A is significantly large as in Test Example 34, sealability between the seal S and the optical fiber cable is deteriorated, and the backflow of air from the inside of the micro-duct D is likely to occur. *Id.* at 9:18-32. When the amount of air flowing back from the inside of the micro-duct D is large, the amount of air intervening between the inner surface of the micro-duct D and the optical fiber cable is reduced, friction increases, and the progress of the optical fiber cable through micro-duct D stopped. *Id.* Conversely, when the cross-sectional area as defined for the recess is zero as in Test Example 3-6, friction causes progress of the optical fiber cable through micro-duct D to stop even though sealability may be good. *Id.* 9:45-48. However, the inventors determined that when the cross-sectional area of the recesses as set forth above is in the range of 1.3 mm² or more and 4.8 mm² or less, sealability with seal S and the optical fiber cable can be ensured and the workability of air-blowing can be improved. *Id.*, 9:49-53.

The inventors also determined that using an intermittently-adhered optical fiber ribbon could also be advantageous for air blowing even though the

adhesive portions may add weight to a cable that is being air blown through a cable passageway. The rigidity of the optical fiber cable can be ensured as compared to non-adhered fibers and can be advantageous for air blowing with resistance to buckling. *Id.*, 5:49-53.

IV. CLAIM CONSTRUCTION

For purposes of this Preliminary Response, Patent Owner accepts the claim constructions agreed upon in the co-pending district court litigation. *See* Ex. 1023; Pet. 12. However, Patent Owner notes that none of these constructions are actually applied by the Petitioner at any point.

Additionally, Patent Owner notes that element [1.7] of all Challenged Claims requires “in a transverse cross-sectional view, a cross-sectional area of the recesses that is enclosed by closed curves tangent to radial outer ends of the protrusions and all of the recesses is 1.3 mm² or greater and 4.8 mm² or less.” Ex. 1001. The Petition repeatedly refers to “cross-sectional area” throughout its treatment of Grounds 1 and 2 without construing this limitation and while omitting the “enclosed by . . .” portion of element [1.7] as further discussed below in Section V.

For purposes of this Preliminary Response, Patent Owner proposes that “cross-sectional area” as used in element [1.7] is defined as:

in a transverse view, the area of the recesses that is enclosed by closed curves tangent to radial outer ends of the protrusions and all of the recesses is 1.3 mm² or greater and 4.8 mm² or less

This construction tracks the language of element [1.7] of the Challenged Claims.

V. LEVEL OF ORDINARY SKILL IN THE ART

The inquiry into obviousness under 35 U.S.C. § 103 requires resolving “the level of ordinary skill in the pertinent art.” *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). The Petition extensively refers to a person of ordinary skill in the art (POSITA). *See* Pet. 13-49. However, Petitioner makes no attempt to define the level of ordinary skill or the pertinent art despite having “the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). Patent Owner reserves the right to define the person of ordinary skill in the art later should the Board decide to institute review.

**VI. PETITIONER HAS NOT SHOWN A REASONABLE
LIKELIHOOD OF PROVING THE UNPATENTABILITY OF ANY
CHALLENGED CLAIM.**

For an *inter partes* review, the Petitioner “has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). This burden never shifts to the Patent Owner. *Dynamic Drinkware LLC v Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

**A. For Grounds 1 and 2, the Petition Fails to Identify Differences
Between the Challenged Claims and the Asserted Prior Art
Precluding Reasonable Evaluation of the Proposed Rationales
to Combine**

The Petitioner asserts obviousness of the Challenged Claims based on two prior art combinations presented as Grounds 1 and Grounds 2. For each, the substitution of a secondary reference for portions of a primary reference is proposed. As set forth herein, the Petition should be denied because for each ground it fails to identify any differences between the asserted art and the Challenged Claims as required by *Graham v. John Deere*.

More particularly, the inquiry into obviousness under 35 U.S.C. § 103 requires that “the scope and content of the prior art are to be determined; *differences between the prior art and the claims at issue are to be ascertained*; and the level of ordinary skill in the pertinent art resolved.” *Graham v. John*

Deere Co., 383 U.S. 1, 17 (1966) (emphasis added). Applying *Graham*, the Board has made clear that a petitioner must identify the “precise difference or differences believed to exist” as between the subject matter of the Challenged Claims and the prior art. *Johns Manville Corporation v. Knauf Insulation, Inc.*, IPR2015-01402 (PTAB October 21, 2018) (Paper 18, page 12) (also stating “[o]ne of the underlying facts necessary to evaluate obviousness is identification of at least one difference”).

The failure to provide this required underlying factual support for the obviousness inquiry hinders the ability of both the PTAB and Patent Owner to properly evaluate any rationale offered by Petitioner for modifying one prior art reference in view of another and warrants a denial of institution. *Id.* at 13-14; *see also SAP America Inc. v. Clouding IP, LLC*, IPR2014-00299 (PTAB July 9, 2014) (Paper 8, pages 18–19) (“[w]ithout Petitioner having identified specifically the differences, we are unable to evaluate properly any rationale offered by Petitioner for modifying . . . [one reference] in view . . . [of another reference]”).

As discussed below, for both Grounds 1 and 2, Petitioner has not identified what it regards to be at least one difference between the Challenged Claims and the asserted prior art, warranting denial of institution.

1. Ground 1: Elements [1.2] & [1.4] - Summers in view of Kaji

Element [1.2] requires “a core that is housed in the sheath and comprises an intermittently bonded optical fiber ribbon,” and element [1.4] requires “adhesive portions that intermittently adhere the optical fibers together in a longitudinal direction.”

For elements [1.2] and [1.4] in Ground 1, Petitioner proposes a substitution of Kaji’s optical fiber tape 2A for Summers’ four-fiber ribbon 52 in cable 50. Pet. 15-18. Petitioner asserts that Kaji discloses connection parts 2C “intermittently disposed . . . for connecting adjacent optical fibers.” *Id.* 17. But Petitioner never identifies a difference between Summers or Kaji and the Challenged Claims. *Id.* 13-32. Petitioner even admits that Summers’ cable already includes fiber ribbons and fails to discuss any difference between this ribbon and the Challenged Claims. *Id.* 16, 19. Petitioner does not, for example, provide any evidence that Summers lacks an intermittently bonded ribbon. *Id.*

Omitting the required showing under *Graham*, Petitioner instead skips to the conclusion that a POSITA would turn to Kaji because “Summers is silent on how to implement multi-fiber optical fiber ribbons such as its four-fiber ribbons 52.” Pet. 16. But this statement still fails to identify differences between Summers and claim elements [1.2] and [1.4], and these claim elements are not

methods of “how to implement” a fiber ribbon anyway. Petitioner’s failure to make *Graham*’s required showing of differences between the prior art and the Challenged Claims handicaps the Patent Owner in responding to Petitioner’s obviousness rationale and invites the Board to “play archaeologist with the record.” *Johns Manville Corporation* at 13. By omitting the required factual underpinning for *Graham*’s obviousness analysis, Petitioner has not sustained its burden of showing a reasonable likelihood of success on Ground 1 for any Challenged Claim.

2. Ground 2: Elements [1.2] & [1.4] – Pausan in view of eABF

For elements [1.2] and [1.4] in Ground 2, Petitioner proposes a substitution of eABF’s fiber bundle into Pausan’s cable 51. Pet. 37-38. But Petitioner never identifies a difference between the Challenged Claims and Pausan or eABF. *Id.*, 34-38. Petitioner admits that Pausan already discloses the use of multiple optical fibers in its hollow channel 59 and provides no evidence of how this differs from the Challenged Claims. *Id.* at 35 (citing to Ex. 1007, [058]). Instead, in a manner similar to Ground 1, Petitioner skips to eABF with a conclusion that a POSITA would modify Pausan’s cable 51 by a “simple substitution of the optical fiber 53 residing within Pausan’s hollow channel 59 with eABF’s SWR fiber bundle.” *Id.* at 37. Petitioner also asserts that Pausan

and eABF can accommodate connectors for the optical fibers (*Id.* at 35-36), but elements [1.2] and [1.4] do not require connectors.

As with Ground 1, Petitioner's fails to make *Graham*'s required showing of differences between the prior art and the Challenged Claims. As with Ground 1, Petitioner has not sustained its burden of showing a reasonable likelihood of success on Ground 2 for any Challenged Claim, warranting denial of institution.

3. Grounds 1 and 2: Element [1.6]

Element [1.6] of the Challenged Claims requires:

the recesses each comprise:

[1.6a] two connecting portions respectively connected to radial

inner

ends of two adjacent protrusions, and

[1.6b] a bottom surface positioned between two connecting

portions,

For Ground 1, Petitioner asserts that Summers "discloses or renders obvious elements [1.6a] and [1.6b]," but Petitioner neither addresses whether these claim elements can be found in Summers nor discusses a comparison of these elements with Summers. Pet. 20-21. Other than repeating verbatim the language of these elements, Petitioner does not even discuss the limitations of *a*

bottom surface or *connecting portions* – much less explain how these compare with Summers. *Id.*

Similarly, for Ground 2, Petitioner asserts that Pausan “discloses or renders obvious elements [1.6a] and [1.6b],” but Petitioner does not identify where *connecting portions* can be found in Pausan. *Id.* at 40. In fact, aside from repeating verbatim the language of these elements, Petitioner does not even discuss the *connecting portions* limitations of elements [1.6a] and [1.6b]. *Id.*

Accordingly, for elements [1.2], [1.4], and [1.6] of the Challenged Claims, Petitioner fails to address the *differences between the prior art and the claims at issue* as required for the obviousness inquiry under *Graham v. John Deere Co.*. Patent owner submits this failure warrants a denial of institution as to both Grounds 1 and 2.

B. For Grounds 1 and 2, the Petition Fails to Provide a Sufficient Rationale for the Asserted Prior Art Substitutions

Petitioner is required to provide evidence of a sufficient rationale for its proposed combination of prior art references. *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993-994 (Fed. Cir. 2017). Showing that prior art references *could* be combined is not sufficient to show such *would* be combined by a POSITA as required for obviousness. *Id.* Further, as stated above, Petitioner’s failure to articulate differences between the asserted prior art and

Challenged Claims further hinders the evaluation of whether Petitioner has provided “some articulated reasoning with rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

1. Ground 1: Petitioner’s rationale for combining Summers and Kaji serves no purpose and is contrary to Summers’ teaching

For elements [1.2] and [1.4] of the Challenged Claims, as a rationale for the proposed substitution of Kaji’s ribbon for Summers’ ribbon, Petitioner first asserts that a POSITA “would have been motivated to look to similar references in the same field for further guidance on how to implement multi-fiber optical ribbons such as the four-fiber ribbon 52 of Summers.” Pet. 16. However, being within the “same field” does not provide sufficient evidence of a motivation to combine. *See Securus Techs., Inc. v. Global Tel*Link Corp.*, 701 F. App’x 971, 977 (Fed. Cir. 2017) (“a broad characterization of [prior art references] as both falling within the same alleged field . . . without more, is not enough for [Petitioner] to meet its burden of presenting a sufficient rationale to support an obviousness conclusion”).

Regardless, Petitioner presents no evidence that a POSITA would have lacked an understanding in “how to implement” a ribbon as described in

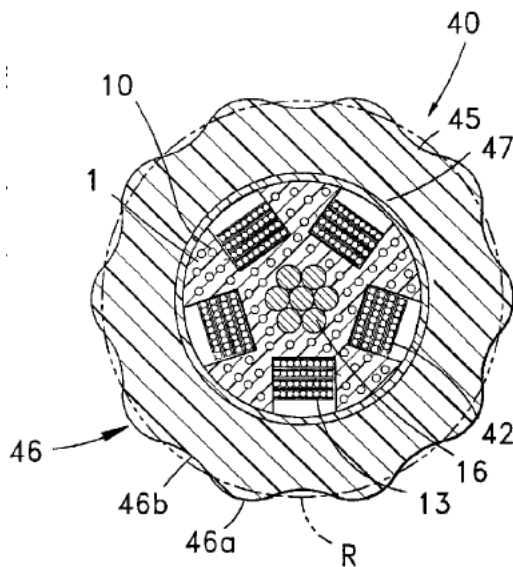
Summers. This is a necessary predicate to Petitioner's assertion that a POSITA would, for this reason, turn to a ribbon in Kaji for an understanding of how to make the tape of Summers. Pet. 16. And given that elements [1.2] and [1.4] are not directed at "how to implement" a ribbon, Petitioner's failure to explain the difference between Summers and the Challenged Claims as discussed above further clouds Petitioner's purported rationale to combine argument here.

Next, Petitioner asserts a POSITA would have been motivated to substitute Kaji's tape 2A for Summer's ribbon 52 "to obtain the predictable result of enabling a higher density of optical fibers to be packed in Summers' fiber optic cable 50, as contemplated by Kaji." Pet. 17. Petitioner provides no citation for this sentence nor articulates how or why a higher density of optical fibers would be obtained in Summer's fiber optic cable through such a substitution.

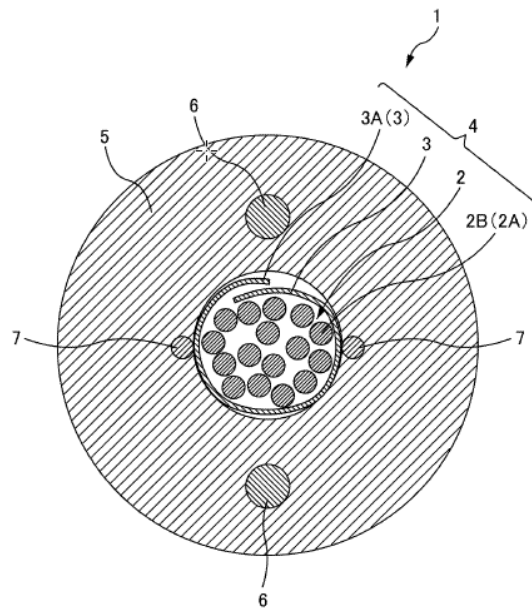
Instead, Petitioner quotes the following statement in Kaji: "This enables the intermittently-fixed optical tape 2A to be rolled up into a cylinder shape (bundle shape) or stored folded onto itself, enabling a high density of the optical fibers 2B to be packed in the optical cable 1." Pet. 17 (citing Ex. 1006, [0041]). But the proposed substitution would serve no such purpose here because Summers indicates that its cable 50 with optical fiber ribbons already results in a

lower weight cable allowing greater lengths to be rolled up onto a reel. Ex. 1005, 5:42-44; *see also id.*, 4:17-43 (describing rolling cable onto reel 26 in FIG. 5).

Petitioner also provides no explanation of how the combination of Summers and Kaji would supposedly work. *See Personal Web Techs.*; 848 F.3d at 994 (criticizing the failure to show “how the combination of the two references was supposed to work”). This is particularly important here where Summer’s optical cable 50 with ribbon 52 and Kaji’s cable 1 with tape 2A have different constructions as the comparison of figures below demonstrates:



Summers - FIG. 4



Kaji – FIG. 1

Yet, as discussed, Petitioner provides no comparison of the ribbon 52 or cable 50 of Summers with the tape 2A or cable 1 of Kaji. Further, Petitioner provides no evidence of how Kaji’s statement of high density for its own cable 1 teaches a

POSITA how to provide a “higher density of optical fibers” in Summers’ cable 50 - much less a density higher than Summers’ ribbon 52 already affords.

Additionally, Kaji indicates that optical fiber tapes 2A need not be used and, instead, single optical fibers of any number desired could be used in place of optical fiber tapes 2A for its cable 1. Ex. 1006, [0042]. Petitioner provides no explanation of why a POSITA would elect Kaji’s optical fiber tapes 2A with their added bulk of connection parts 2C between fibers 2B as opposed to simply using unbonded optical fibers as disclosed by Kaji to achieve the “higher density of optical fibers.”

Regardless, a POSITA would not be motivated to provide a higher density of optical fibers in Summers’ cable 50 anyway because this would contradict Summers. More particularly, Summers (which makes no mention of cable installation by air blowing) discloses that the installation of cables requires pulling through a passageway, which creates friction that resists installation. Ex. 1005, 1:20-31. Summers further indicates that a light-weight cable is easier to pull. *Id.*, 1:35-36. Accordingly, Summers states that one object of its invention is to “provide a fiber optic cable that is of a light weight and presents minimal resistance to a cable pulling force during installation.” *Id.*, 2:5-8. Summers even

describes, e.g., the use of *reduced density* components for its cable 50. *Id.*, 3:6-17

Against this backdrop, Petitioner provides no evidence regarding why a POSITA would be motivated to contradict Summers and increase its weight by having a “higher density of optical fibers to be *packed in* Summers’ fiber optic cable 50, as contemplated by Kaji.” Pet. 17 (emphasis added). Packing more weight into cable 50 is simply the opposite of Summers’ stated objective of a “light weight” fiber optic cable “that presents minimal resistance to cable pulling force during installation.” Ex. 1005, 2:5-8; *see, e.g., Depuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009) (“An inference of nonobviousness is especially strong where the prior art’s teachings undermine the very reason being proffered as to why a person of ordinary skill would have combined the known elements.”).

2. Ground 2: The rationale for combining Pausan in view of eABF in also deficient.

For elements [1.2] and [1.4] in Ground 2, Petitioner asserts: “A POSITA would have been motivated by eABF to modify Pausan’s cable 51 to include its SWR fiber bundle to obtain its described advantages of ‘round, high fiber density geometry’ and efficient connector installation.” Pet. 37. This unsupported assertion falls short of Petitioner’s burden.

Namely, Petitioner's argument assumes that the substitution of the multi-fiber bundle of eABF would improve Pausan's cable 51. But Petitioner provides no evidence comparing the fiber bundle of eABF with the multifiber core of Pausan's cable 51 to support the assertion that Pausan would benefit or improve by such substitution. This failure is even more problematic given that Pausan already discloses the use of multiple fibers in its cable 51. Ex. 1007 [058].

Additionally, Petitioner asserts that eABF adds bonding portions between fibers to adhere them together. Pet. 36-37. But Petitioner does not explain how the use of eABF fibers, with the addition of bonding portions therebetween, would actually increase the density of Pausan's core, which discloses having multiple fibers with no bonding portions therebetween. Ex. 1007 [058].

Petitioner also asserts that the purported motivation of using eABF "align[s] with Pausan's objective of 'provid[ing] a fiber optic cable with an extremely small outer diameter, [] and which has a centrally disposed optical fiber to be easily terminated to a connector.'" Pet. 37. But this assertion makes no sense: Petitioner proposes a substitution of the multiple fiber bundle of eABF for the multiple fibers of Pausan's cable 51. Petitioner does not explain how this substitution of *multiple optical fibers* for the *single, centrally disposed optical fiber* of Pausan would somehow result in a smaller diameter cable.

C. For Grounds 1 and 2, Petitioner Ignores Limitations of Element [1.7] and Presents No Supporting Claim Construction

As a threshold matter, for Grounds 1 and 2, Petitioner fails to address the complete language of element [1.7] of the Challenged Claims. Instead, Petitioner relies upon a truncated, broader version. Element 1.7 of Claim 1 requires:

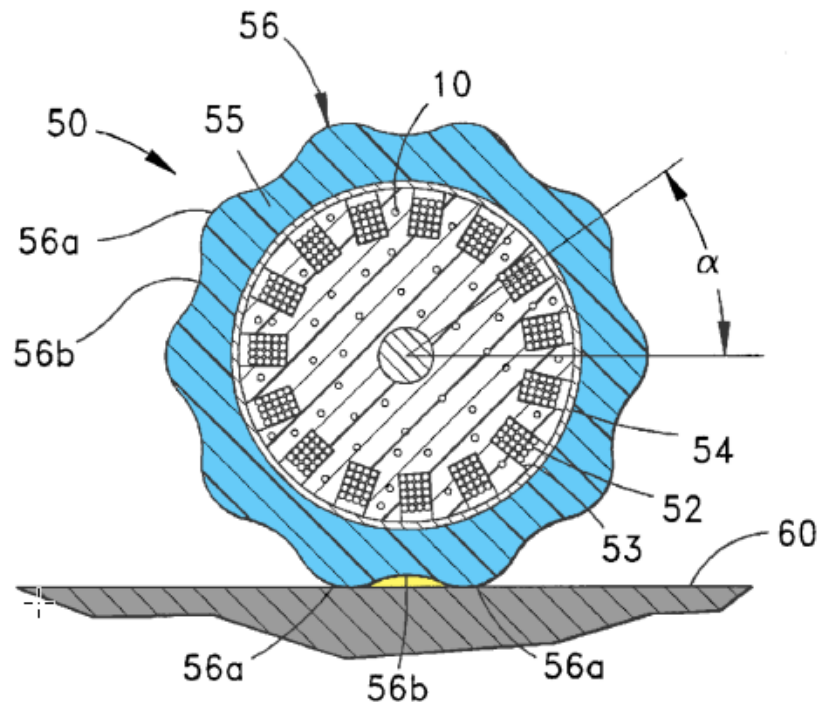
in a transverse cross-sectional view, a cross-sectional area of the recesses **that is enclosed by closed curves tangent to radial outer ends of the protrusions and all of the recesses** is 1.3 mm^2 or greater and 4.8 mm^2 or less.

Ex. 1001; Pet. viii (emphasis added). Petitioner wholly ignores the language in bold— this requirement of element [1.7] is never addressed. As result, Petitioner again omits a required step in the obviousness inquiry of identifying differences between the prior art and the claims at issue. *Graham*, 383 U.S. at 17 (1966).

More particularly, Petitioner never identifies differences between the prior art and element [1.7]’s cross-sectional area— i.e. one that is “enclosed by closed curves tangent to radial outer ends of the protrusions and all of the recesses.” Petitioner not only ignores how the cross-sectional area in element [1.7] is delineated but also ignores the requirement that “all of the recesses”—not just

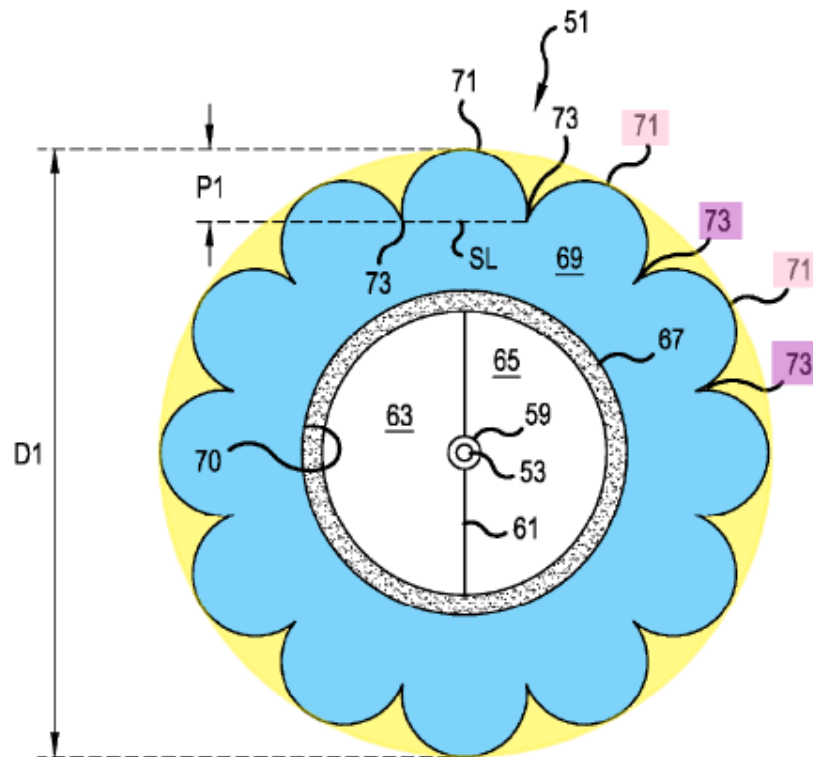
one—are to be considered. *See* Pet. 22 (“Summers discloses a non-zero (e.g., 0.1 mm²) cross-sectional area corresponding to *each hollow 56b. . .*”) (emphasis added). These omissions alone are sufficient to deny institution as to Grounds 1 and 2.

Turning to Ground 1, for the portion of the Challenged Claims in element [1.7] that Petitioner does treat, Petitioner ignores the requirement of 37 C.F.R. § 42.104(b)(3) that the petition “must set forth . . . how the challenged claim is to be construed” and applies some undisclosed construction thereof. Specifically, in its first treatment of element [1.7] for Ground 1, Petitioner annotates FIG. 6 from Summers (repeated below) to support its assertion that the space created between a *straight line* (at reference number 60 below) and cable 50 at hollow 56(b) is a “cross-sectional area (a subset of that cross-sectional area in yellow) of all hollows 56b” Pet. 22.



However, Petitioner offers no construction for element [1.7] that would support Petitioner's use of the straight line depicted in FIG. 6—much less how such meets element [1.7]'s requirement of “in a transverse cross-sectional view, a cross-sectional area of the recesses that is enclosed by closed curves tangent to radial outer ends of the protrusions and all of the recesses is 1.3 mm² or greater and 4.8 mm² or less.”

For Ground 2 and element [1.7], Petitioner annotates an image from Pausan (repeated below) using yellow highlighting—albeit now without the straight-line Petitioner used with Summers. Instead, here Petitioner simply asserts the highlighting shown below is “a “cross-sectional area of all valleys 73.” Pet. 41.



Pet. 42. Again, Petitioner offers no construction for element [1.7] that supports Petitioner’s interpretation that its highlighting meets element [1.7]’s requirement of “in a transverse cross-sectional view, a cross-sectional area of the recesses that is enclosed by closed curves tangent to radial outer ends of the protrusions and all of the recesses is 1.3 mm² or greater and 4.8 mm² or less.” Ex. 1001; Pet. viii.

Given the requirements of *Graham v. John Deere Co* and of 37 C.F.R. § 42.104(b)(3) that differences between the invention as claimed and the prior art must be considered, the Petition is flawed in failing to construe element [1.7] and failing to consider all limitations thereof.

D. Petitioner's Asserted Prior Art Does Not Recognize the Cross-Sectional Area Limitation of Element [1.7] As a Result-Effective Variable

For Grounds 1 and 2, Petitioner sets forth various arguments in an attempt to establish element [1.7] of the Challenged Claims is a result-effective variable. Pet. 21-28, 40-44. Specifically, Petitioner asserts that the prior art discloses ranges which overlap with the claimed range, and further asserts that the claimed range is obvious because routine experimentation to determine optimum or workable ranges of a result-effective variable are obvious. *Id.* These assertions are fundamentally flawed. A patent challenger must first provide evidence that the prior art recognized a parameter as a result-effective variable before it can be shown that optimization of that parameter is obvious. *In re Antonie*, 559 F.2d 618, 620 (CCPA 1977). Petitioner fails to make this showing.

More particularly, element [1.7] of the Challenged Claims recites:

in a transverse cross-sectional view, a cross-sectional area of the recesses that is enclosed by closed curves tangent to radial outer ends of the protrusions and all the recesses is 1.3 mm² or greater and 4.8 mm² or less

Ex. 1001, Pet. viii. Petitioner admits that neither Summers (Ground 1) nor Pausan (Ground 2) disclose the cross-sectional area range of element [1.7]. *Id.* at 23, 42. But the Petition is devoid not only of evidence of prior art recognition of the cross-sectional area range of element [1.7], it lacks evidence of any prior art

recognizing even the cross-sectional area of element [1.7] as a result-effective variable – much less the claimed range. In fact, for Grounds 1 and 2, Petitioner does not present any evidence of prior art recognition of *any* cross-sectional area parameter —much less recognition of the transverse view, cross-sectional area as recited in element [1.7].

Unable to make such showing, Petitioner argues instead that Summers (Ground 1) and Pausan (Ground 2) have both “dimensioned” their respective cable jackets in a way that results in having a “non-zero value” of a cross-sectional area “such as “0.1 mm²” - even though neither reference recognizes a “non-zero value” of any cross-sectional area as a parameter. Pet. 22, 41.

Nevertheless, on this premise, Petitioner argues various reasons that element [1.7] “does not render any Challenged Claim patentable” *Id.* at 23, 42.²

However, Petitioner’s “dimensioned” argument is not a substitute for providing evidence of prior art recognition of the claimed parameter in element [1.7] as a result-effective variable. Regardless, as set forth below, Summer and Pausan do not recognize “dimensioning” a cross-sectional area as a parameter nor

² The burden of showing *unpatentability* lies with Petitioner; there is no burden of showing *patentability* on the Patent Owner. *Harmonic Inc.*, 815 F.3d at 1363.

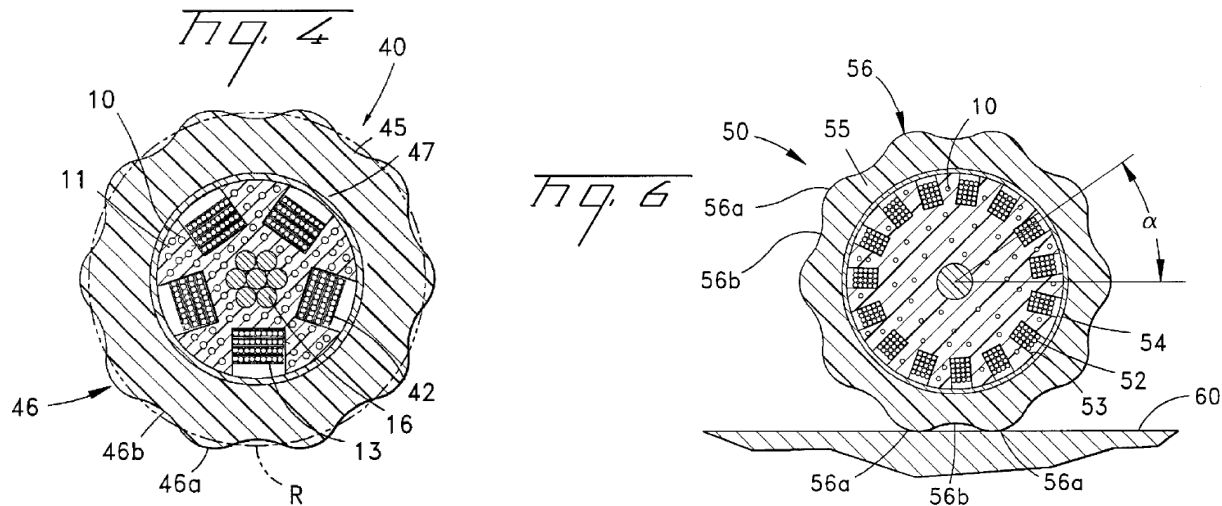
recognize “dimensioning” of their cable jackets to provide a “non-zero value” of the transverse view, cross-sectional area as recited in element [1.7].

**1. Ground 1: Summers Does Not Recognize
“Dimensioning” the Cross-Sectional Area of Element
[1.7] as a Result-effective Variable**

For element [1.7], Petitioner asserts that FIG. 6 of Summers (Ex. 1005) discloses a cable having crests 56a with hollows 56b “dimensioned” so that a cross-sectional area of “all hollows 56b is greater than zero (i.e., non-zero) such as 0.1 mm².” Pet. 22. As stated above, Petitioner does not actually construe or apply the language of element [1.7] in its treatment of Summers. *See* Section VI-C. Regardless, Summers does not recognize “dimensioning” a value for cross-sectional area much less a specific value such as 0.1 mm². Instead, Summers indicates minimizing *surface area* contact between a duct and a cable along its length.

Specifically, Summers discloses an objective of providing a light-weight cable with minimal resistance to cable pulling force during installation. Ex. 1005, 2:5-9. Summers identifies “minimized *surface area* contact” between cable jackets 45, 55 and a cable passageway (e.g., duct) to achieve this result. *Id.* 2:53-61; 3:58-64; 1:26-67 (emphasis added). For this purpose, Summers refers to the outside shape of cable jackets 45, 55 in FIGS. 4 and 6 (repeated below) as

having an “undulated profile” created by “surface irregularities.” *Id.* 2:49-51; 3:57-64.



Summers further indicates that a variety of “surface irregularities” other than the undulated profile in FIGS. 4 and 6 may also be used to minimize *surface area* contact so as to provide a cable “having a suitably lower resistance to cable pulling force.” *Id.* 6:7-11. This includes a variety of different shapes and features (“dimple-like indentations, a saw-tooth configuration, ripples, teat-like extensions, lines, grooves, etc.”) that Summers indicates can all be used as “surface irregularities.” *Id.* 6:11-19. But, contrary to the Petition, Summers never recognizes “cross-sectional area” as a parameter “dimensioned” by such different shapes and features—much less the cross-sectional area of element [1.7].

In fact, changing the shapes and features of the “surface irregularities” as indicated by Summers’ for cable 55 in FIG. 6 results in a myriad of different amounts for the highlighted space that *Petitioner* annotates and asserts is a non-zero value of cross-sectional area. *See* Pet. 22. Summers never recognizes the amount of such space as a parameter, much less as a cross-sectional area parameter. Instead, Summer requires only that “at least two crests 56a will support the cable on . . . virtually any surface . . . so that at least one hollow 56b is between the crests, thereby minimizing *the surface area contact* between cable jacket 55 and surface 60.” Ex. 1005, 3:58-64 (emphasis added).

Within this “at least two crests” requirement and Summers’ indication of different shapes of the undulated profile, a myriad of different shapes, heights, depths, thicknesses, spacings, and combinations thereof are possible for crests 56a and hollows 56b. This in turn results in a myriad of differently-sized spaces for the “non-zero value” space identified by *Petitioner*—a “dimension” as to which Summers is indifferent. Summer’s even expressly states “*at least two*”, thereby removing any upper limit on the total amount of such spaces or areas. *Id.* Summers simply does not recognize as a result-effective variable the amount or dimensioning of the highlighted space annotated by *Petitioner* in FIG. 6— much

less recognize as a parameter a cross-sectional area as set forth in element [1.7] of the Challenged Claims.

None of the references summarily treated by the Petition at pages 27-28 recognize a cross-sectional area as a result-effective variable either — let alone the cross-sectional area required by element [1.7]. Similar to Summers, Petitioner asserts these references are directed to “controlling *surface area* contact” between the cable and a cable passageway and/or provide for air flow. *Id.* But, like Summers, Petitioner fails to show how any of these references recognize “cross-sectional area” as required by element [1.7].

2. Ground 1: Summers Also Does Not Teach 0.1 mm²

Aside from not recognizing the claimed cross-sectional area as a result-effective variable, Summers also does not teach a value for it of 0.1 mm². This value is improperly selected by Petitioner in hindsight using element [1.7] of the Challenged Claims. *See, e.g., Sensonics Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570 (Fed. Cir. 1996) (“To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction—an illogical and inappropriate process by which to determine patentability.”).

More particularly, for purposes of supporting its “overlapping” range argument, Petitioner points to FIG. 6 of Summers and asserts a non-zero cross-sectional area is presented. Pet. 22. Then, Petitioner uses element [1.7] of the Challenged Claims improperly in hindsight to pick 0.1 mm² for one of Summer’s hollows 56b in order to create the lower end of a hypothetical cross-sectional area range. *Id.* (“a non-zero (e.g., 0.1 mm²) cross-sectional area corresponding to each hollow 56b”).

But Petitioner does not actually present evidence of Summers or other asserted prior art recognizing a value of 0.1 mm² for the traverse, cross-sectional area of an optical fiber cable as set forth in element [1.7]. Further, as set forth in the ‘591 patent, the inventors determined that not all values for cross-sectional area as delineated in element [1.7] will provide the desired effect for air-blowing a cable. *See, e.g.*, Ex-1001, 9:10-53. Petitioner also fails to consider element [1.7]’s requirement of “all the recesses” in its hindsight identification of a non-zero value for cross-sectional area and, instead, arbitrarily selects 0.1 mm² and one hollow 56b for its overlapping range argument. Pet. 22.

Perhaps most importantly, even if the space at hollow 56b were recognized by Summers as a cross-sectional area parameter that is a result-effective variable, the size of such cross-sectional area could just as well be a

value above element [1.7]’s entire range of 1.3 mm² to 4.8 mm² as below it, in which case, there would be no overlap with the claimed range of element [1.7] — and Petitioner’s overlapping range argument fails. Petitioner’s selection of its “0.1 mm²” value has no evidentiary support and could just as well be arbitrarily selected as 0.05 mm² as 6 mm². Again, Petitioner provides no evidence supporting its hindsight selection of 0.1 mm² for the space at hollow 56b of Summers. This is fatal to Petitioner’s obviousness argument of an overlapping range.

3. Ground 2: Pausan Does Not Recognize “Dimensioning” the Cross-Sectional Area of Element [1.7] as a Result-effective Variable

For element [1.7], Petitioner asserts that FIG. 6 of Pausan (Ex-1007) discloses a cable having projections 71 and valleys 73 “dimensioned” so that a cross-sectional area of “all valleys is greater than zero (i.e. non-zero) such as 0.1 square millimeters (‘mm²’).” Pet. 41. Here again, Petitioner never addresses the complete language of element [1.7] requiring “a cross-sectional area of recesses that is enclosed by curves tangent to radial outer ends of the protrusions and all of the recesses.”

Nor does Petitioner cite anywhere in Pausan where the claimed cross-sectional area in element [1.7] is recognized as a result-effective variable. As

with Summers, Petitioner does not cite any disclosure in Pausan that references a cross-sectional area and certainly not as claimed in element [1.7] – nor does it mention that features of cable 51 can or should be “dimensioned” for purpose of varying a cross-sectional area of a valley 73.

To the contrary, Pausan indicates that the number of projections (and therefore valleys) is arbitrary. For example, Pausan states “more or fewer projections may be included, such as six, eight, nine, ten, fourteen, fifteen, etc.” Ex-1007, [056]. Such changes to the number of projections would increase or decrease the number of valleys and, therefore, the amount spaces or cross-sectional areas relied upon by Petitioner as disclosing a “non-zero value” of cross-sectional area. But Pausan is indifferent to any such change and does not recognize any effective result from varying the number of valleys 73 nor, more importantly, does it recognize cross-sectional area as a result-effective variable.

Similarly, Pausan further indicates that the projections could be spaced from each other by a curved floor 75 as shown in FIG. 7. Ex-1007, [063]. This would also necessarily change the size of the valleys and, therefore, the space between projections relied upon by Petitioner. Again, however, Pausan provides no limitations of the size of curved floor 75 to be used nor indicates the effect, if any, of varying such feature. Instead, Pausan does not recognize the number or

size of valleys nor, more to the point, the cross-sectional area as set forth in claim element [1.7], as a result-effective variable.

4. Ground 2: Pausan Also Does Not Teach 0.1 mm²

As with Summers, Petitioner views Pausan improperly in hindsight, with the benefit of claim element [1.7], to construct an overlapping range argument. Pet. 41-42. Specifically, Petitioner points to FIG. 6 of Pausan, asserts that a non-zero cross-sectional area is disclosed by each valley 73, and then uses hindsight to pick 0.1 mm² as the magnitude for one such cross-sectional area. *Id.*, 42 (“Pausan discloses a non-zero (e.g., 0.1 mm²) cross-sectional area corresponding to each valley 73”). Of course, 0.1 mm² is selected improperly by Petitioner in hindsight because it is below the cross-sectional area range of element [1.7] and is necessary for Petitioner’s overlapping range argument. *See Sensonics Inc.*, 81 F.3d at 1570 (indicating the use of hindsight knowledge not contained or suggested in the prior art).

Once again, Petitioner does not point to Pausan or other prior art recognizing a value of 0.1 mm² for the transverse, cross-sectional area of an optical fiber cable as set forth in element [1.7]. And, as noted above, the inventors of the ‘591 patent determined that not all values for cross-sectional area as delineated in element [1.7] will provide the desired effect to air-blowing.

See, e.g., Ex-1001, 9:10-53. Petitioner again fails to consider element [1.7]’s requirement of “all the recesses” when determining the cross-sectional area and, instead, arbitrarily selects 0.1mm² and one valley 73 for its overlapping range argument. Pet. 22.

As with Summers, even if Pausan recognized the space identified by Petitioner as a cross-sectional area that is result-effective variable, the size of such cross-sectional area could just as well be a value above element [1.7]’s entire range of 1.3 mm² to 4.8 mm² as below it, in which case, there would be no overlap with the claimed range of element [1.7] and Petitioner’s overlapping range argument fails. Petitioner provides no evidence regarding why the amount of such cross-sectional area for a valley 73 falls below Patent Owner’s claimed range of 1.3 mm² to 4.8 mm² as opposed to above it. Again, Petitioner provides no evidence supporting its hindsight selection of 0.1 mm² for the space at valley 73 of Pausan. This is fatal to Petitioner’s obviousness argument of an overlapping range.

5. There is No “Routine Experimentation” Because Petitioner Fails to Show Prior Art Recognition of Element [1.7] as a Result-Effective Variable

For both Grounds 1 and 2, Petitioner asserts Element [1.7] is obvious as routine experimentation of a result-effective variable. Pet. 26-27, 44. However,

as already discussed above, Petitioner fails to present evidence of prior art recognition of claim element [1.7] as a result-effective variable, which is a necessary predicate to Petitioner's argument. Instead, citing multiple references with parentheticals that are not used in its prior art combinations for Grounds 1 and 2, Petitioner asserts repeatedly that "outer surface geometries" of a cable "with an uneven shape" were known to "affect cable/duct friction" by controlling *surface area* contact therebetween and allowing channels for air flow. *Id.* But Petitioner fails to cite anywhere that these references recognize any cross-sectional area as parameter, let alone recognize as a result-effective variable the cross-sectional delineated in element 1.7 ("in a transverse cross-sectional view, a cross-sectional area of the recesses that is enclosed by closed curves tangent to radial outer ends of the protrusions and all of the recesses").

E. The Petition Does Not Show that the Challenged Claims Are Merely Changes to the Size or Proportions of a Known Device

For Grounds 1 and 2, citing *Gardener* and *Powers-Kennedy*, Petitioner asserts that "merely changing the size of a device is not patentable." Pet. 23, 42. Petitioner's reliance on *Gardener* and *Powers-Kennedy* is misplaced because Petitioner has not shown that any Challenged Claim is merely changes in the size or proportion of a known device. In *Gardener*, for example, the prior art disclosed every element of a claimed device for drying ink used on high gloss

paper except for certain claimed dimensions of various components of the device. *Gardner v. TEC Sys.*, 725 F.2d 1338, at 1340, 1345 (Fed. Cir. 1984).

The Federal Circuit found the claims invalid because the challenger proved that the claimed device performed no differently than the prior art device, relying on proof that the claimed dimensional limitations made no “significant difference” relative to the prior art. *Id.* at 1347-49.

Petitioner makes no such showing here. Instead, Petitioner attempts to recreate a cable from a combination of asserted prior art (either *Summers and Kaji* or *Pausan* and *eABF*) but not a single cable or device as in *Gardener*. Further, Petitioner has not presented any evidence that its asserted combinations perform no differently from the optical fiber as claimed by Patent Owner. In fact, contrary to such requirement of *Gardener*, the first primary reference relied upon by Petitioner, *Summers*, does not even mention air blowing of a cable and the second primary reference, *Pausan*, asserts that the object of its invention is to provide a cable that can be installed without air blowing. Ex. 1007, [026].

The ‘591 Patent, on the other hand, describes performance benefits obtained from air blowing its optical fiber cables having the claimed cross-sectional area range. *See, e.g.*, Ex. 1001, 8:47-9:53. Again, Petitioner provides no evidence that the performance of the asserted prior art and the fiber optic

cable as set forth in the Challenged Claims are not significantly different or that the Challenged Claims merely change dimensions of a known prior art optical fiber cable otherwise meeting the limitations of the Challenged Claims. *Cf.*

Gardner at 1347; *Powers-Kennedy Contr. Corp. v. Concrete Mixing & Conveying Co.*, 282 U.S. 175, 183-184 (1930).

Therefore, for at least the reasons identified in Section VI of this Preliminary Response, Patent Owner respectfully submits the Board should deny institution on Grounds 1 and 2 because Petitioner has not shown a likelihood of proving the unpatentability of any Challenged Claim.

VII. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION UNDER § 325(d)

As provided in 35 U.S.C. § 325(d), the Board's decision on whether to institute an *inter partes* review is discretionary. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). Under § 325(d), the Board applies a two-part framework: “(1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of [the] first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability

of challenged claims.” *Advanced Bionics, LLC v. Med-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (Feb. 13, 2020).

The Board should deny institution here because substantially the same prior art was previously presented to the Office, and Petitioner makes no effort to identify whether an error was made by the Examiner during prosecution. *See, e.g., Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (Dec. 15, 2017) (exercising discretion where “Petitioner has not pointed to error by the Examiner”) (“*Becton, Dickinson*”).

A. Petitioner Relies on Art Substantially the Same or Cumulative to Art Previously Presented to the Office

Becton, Dickinson identifies non-exclusive factors for consideration in determining whether the same or substantially the same prior art or arguments were previously presented to the Office. *Becton, Dickinson & Co.*, 17. These factors include (a) the similarities and material differences between the asserted art and the prior art involved during examination; (b) the cumulative nature of the asserted art and the prior art evaluated during examination; (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection; (d) the extent of the overlap between the arguments made during examination and the manner in which petitioner relies on the prior art; (e) whether petitioner has pointed out sufficiently how the

examiner erred in its evaluation of the asserted prior art; and (f) the extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments. *Id.*

As explained below, Petitioner's art for Ground 1 (Summers and Kaji) includes substantially the same features as prior art used by the Examiner during prosecution of the Challenged Claims and is cumulative of art cited during prosecution. Similarly, Petitioner's art for Ground 2 (Pausan and eABF), also includes substantially the same features as prior art used by the Examiner during prosecution of the Challenged Claims and is cumulative of art cited during prosecution.

1. Ground 1: Summers in view of Kaji

For Ground 1, Petitioner relies on Summers as disclosing all elements of the Challenged Claims except for element [1.2] and [1.4]'s requirements of an intermittently bonded ribbon, element [1.6]'s requirement of connecting portions and a bottom portion, and element [1.7]'s requirement of a cross-sectional area range. (Pet. 16-17; 22-23). Petitioner asserts the intermittently bonded ribbon of elements [1.2] and [1.4] is provided by Kaji (*Id.* at 16-18, 19) and fails to address element [1.6] as already discussed. However, Petitioner's art and the art

considered by the Office during prosecution are substantially the same or cumulative of each other.

During prosecution, the Examiner found that *all* elements [1.1] to [1.7] of claim 1 were present in U.S. Patent No. 8,548,294 to Toge et al. (Ex. 2004) except for element [1.7]’s cross-sectional area range.³ *See* Ex. 2005 at 2-4, 6. This included a finding that Toge et al. disclosed the intermittently bonded ribbon required of elements [1.2] and [1.4] as well as the limitations of element [1.6] not even addressed by Petitioner. *Id.* at 4; *see also* Ex. 2004, FIG. 2). Petitioner has not identified any material differences between the Examiner’s application of Toge et al. and Petitioner’s proposed Summers/Kaji combination for Ground 1.

For element [1.7]. Petitioner does not assert that the Summers/Kaji combination discloses the cross-sectional area range of element [1.7]. Instead, Petitioner points to the surface features of Summer’s cable, asserts a non-zero

³ As originally filed, the application for the ‘591 patent included element [1.7]’s cross-sectional area limitation in dependent claim 7. The Office rejected both claim 1 and its dependent claim 7 under 35 U.S.C. §§ 102, 103 using only *Toge et al.* *See* Ex. 2006 at 2, 6.

cross-sectional area is present, and argues “it would have been *obvious to a POSITA to configure* Summers’ cable 50” to have the cross-sectional area range of element [1.7]. Pet. 22-23 (emphasis added). However, Petitioner’s “obvious to try” argument overlaps with an argument the Examiner applied using Toge. Specifically, the Examiner asserted that while Toge et al. did not disclose the claimed range of element [1.7], Toge et al.’s cable 50 had surface features (protrusions and recesses) with a cross-sectional area making it obvious to “try values” to reach the “predictable” range of element 1.7. Ex. 2005 at 6. The Examiner ultimately found claim 1 patentable, and Petitioner has not shown how the Examiner erred in making this decision or applying Toge et al..

Petitioner’s Ground 1 arguments are cumulative of Toge et al. in other ways as well. For example, Petitioner asserts that the motivation for its Summers/Kaji combination is to obtain “a higher density of optical fibers to be packed in Summers’ fiber optic cable 50.” Pet. 17. But Toge et al., which was applied by the Examiner to reject claim 1, already disclosed that its cable with intermittent bonding achieved “density [that] is extraordinarily high” and in a small diameter cable. Ex. 2004, 7:58-64; 3:36-43; 3:55-62.

Thus, the majority of the *Becton, Dickinson* factors favor a finding that the prior art relied on by Petitioner for Ground 1 is substantially similar to, and

cumulative of, the art considered by the Examiner during prosecution. Moreover, Petitioner has not provided any evidence that any of these factors weigh against such a conclusion.

2. Ground 2: Pausan in view of eABF

For Ground 2, Petitioner relies on Pausan as disclosing all elements of the Challenged Claims except for element [1.2] and [1.4]’s requirements of an intermittently bonded ribbon and element [1.7]’s requirement of a cross-sectional area range. (Pet. 36-37; 42). Petitioner fails to address element [1.6] as already discussed. Petitioner asserts the intermittently bonded ribbon of elements [1.2] and [1.4] is provided by eABF. *Id.* at 36-38. As with Ground 1, however, Petitioner’s art for Ground 2 and the art considered by the Office during prosecution are substantially the same or cumulative of each other.

As stated above, the Examiner found during prosecution that *all* elements [1.1] to [1.7] of claim 1 were present in Toge et al. except for element [1.7]’s cross-sectional area range. Ex. 2005 (Office Action at 2-4, 6). This included a finding that Toge disclosed the intermittently bonded ribbon required of element [1.2] and [1.4]. *Id.* at 4; *see also* FIG. 2 of. Ex. 2004). Petitioner has not identified any material differences between the Examiner’s use of Toge and Petitioner’s proposed Pausan/eABF combination for Ground 2.

Petitioner does not assert that the Pausan/eABF combination discloses the cross-sectional area range of element [1.7]. Instead, Petitioner points to the surface features of Pausan's cable, asserts a non-zero cross-sectional area is present, and argues "it would have been *obvious to a PHOSITA to configure* Pausan's cable 51" to have the cross-sectional area range of element [1.7]. Pet. 42 (emphasis added). However, as with Ground 1, Petitioner's "obvious to try" argument overlaps with an argument of the Examiner using Toge et al. Specifically, the Examiner asserted that while Toge et al. did not disclose the claimed range of element [1.7], Toge's cable 50 had surface features (protrusions and recesses) with a cross-sectional area making it obvious to "try values" to reach the "predictable" range of element 1.7. Ex. 2005 at 6. The Examiner ultimately found claim 1 patentable and Petitioner has not shown how the Examiner erred in making this decision.

Petitioner's Ground 2 arguments are cumulative of Toge in other ways as well. For example, Petitioner asserts that the motivation for its Pausan/eABF combination is to obtain higher density in a cable with a small outer diameter. Pet. 37. But Toge et al., which was applied by the Examiner to reject claim 1, already disclosed that its cable with intermittent bonding achieved "density [that] is extraordinarily high" in a small diameter cable. Ex. 2004; 7:58-64; *see*

also 3:36-43; 3:55-62. Thus, as with Ground 1, the *Becton, Dickinson* factors favor a finding that the prior art relied on by Petitioner for Ground 2 is substantially similar to, and cumulative of, prior art considered by the Examiner during prosecution. Moreover, Petitioner has not provided any evidence that any of these factors weigh against such a conclusion.

B. Petitioner’s Art for Grounds 1 and 2 Is Cumulative of Other Prior Art Considered by the Examiner

Petitioner’s art and arguments are cumulative of other art cited in the record as well. For example, the crux of Petitioner’s argument against element [1.7] is that the cross-sectional area range does not “render any Challenged Claim patentable” because the undulated profile or surface features of Summers and Pausan discloses *a non-zero cross-sectional area*. Pet. 23, 42. However, numerous references before the Examiner disclosed optical fiber cables having surface features that might form a space in a manner substantially similar to the art used in Petitioner’s *non-zero cross-sectional area* arguments.

For example, U.S. Patent No. 6,963,686 to Moon (Ex. 2006) is discussed in the ‘591 Patent. Ex. 1001, 1:16-51. Like Summers and Pausan, Moon has surface features that might form a *non-zero cross sectional area* as shown in the comparison below:

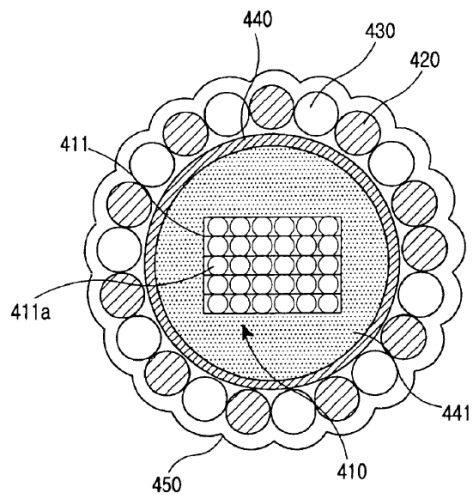


FIG. 4 of Moon

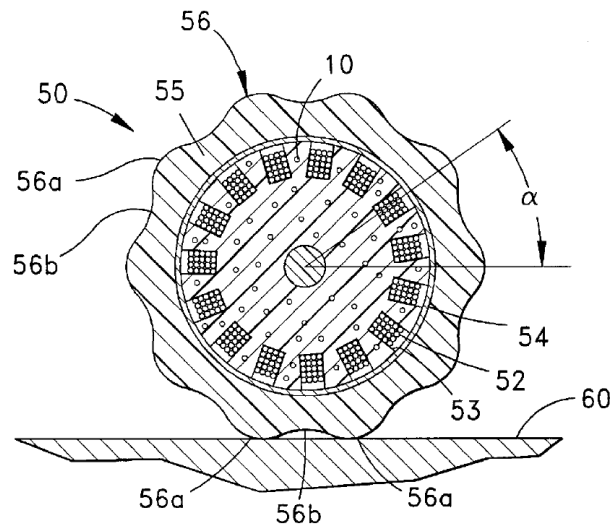


FIG. 6 of Summers

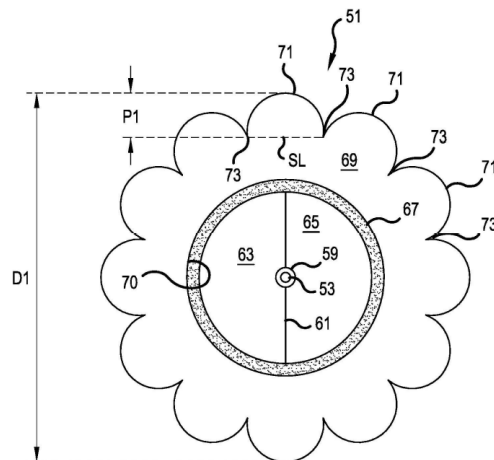


FIG. 6 of Pausan

U.S. Pub. 20150192748A1 to Sato et al., also cited during prosecution, discloses an optical fiber cable 10 for air blown installation. Ex. 2001, [0040].

FIG. 1 is repeated below:

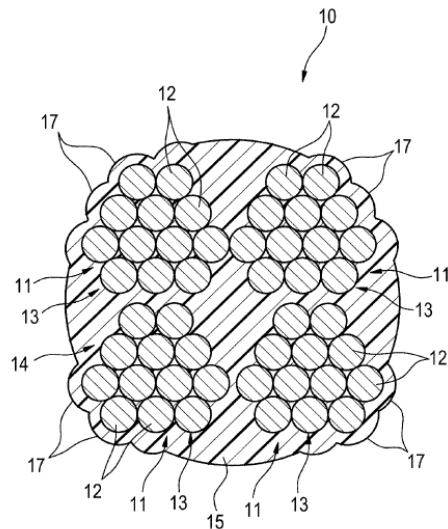


FIG. 1 of Sato

As shown in FIG. 1, Sato also has surface features 17 that might form a *non-zero cross sectional area*.

Petitioner relies on certain art as disclosing features that suppress friction created during installation of the cable in a duct. Pet. 27, 44. Sato et al. describes cable 10 as having surface features (concave-convex parts 17) that help “suppress the friction” during air blowing installation. Ex. 2001, [0053].

For elements [1.2] and [1.4], Petitioner relies on Kaji and eABF as disclosing intermittently bonded ribbon. Pet., 17, 36-37. Sato describes optical fiber assemblies 11 with ribbons 13 constructed from optical fibers 12 intermittently coupled along their length. Ex. 2001, [0040-41]. FIG. 2 of Sato et al. is provided below:

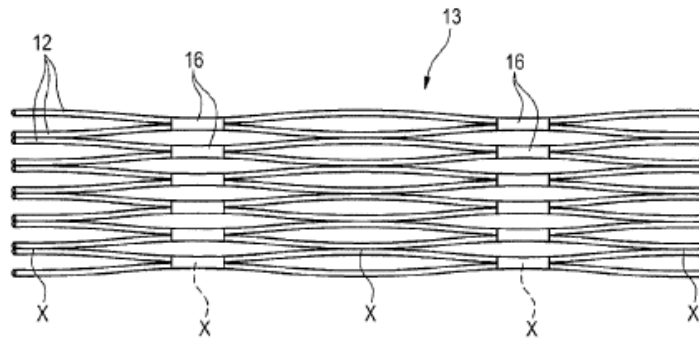


FIG. 2 of Sato

Sato et al. indicates that its optical fiber assemblies 11 with ribbons 13 help reduce weight and diameter of the cable for air blowing while also favorably increasing data capacity. *Id.* at [0055]. Thus, purported benefits of the art relied upon by Petitioner (*e.g.*, Pet. 35, 37 - “small outer diameter”) were also disclosed in the prior art relied upon by the Examiner.

Numerous other references cited during prosecution also show optical fiber cables with surface features and optical fibers that appear connected along their length. *See* Ex. 2007. Again, Petitioner has not shown any material difference between the art before the Examiner and the combinations of prior art proposed for Grounds 1 and 2.

C. Petitioner Has Not Shown Any Error by the Office

Because substantially the same prior art was previously presented during prosecution of the ‘591 patent, Petitioner is required to demonstrate that the Office erred in a manner material to the patentability of the Challenged Claims.

Advanced Bionics, IPR2019-10469, Paper 6 (Feb. 13, 2020). However, the Petition does not identify any supposed error by the Office during prosecution, much less one that is material to the patentability of the claims. The Petition simply fails to even address this requirement, resting instead on the incorrect conclusory assertion that neither the same nor substantially same prior art or arguments were before the Office. Pet. 59.

Accordingly, for the reasons stated here in Section VII of this Preliminary Response, Patent Owner respectfully asserts the Board should exercise its discretion under § 325(d) to deny institution on Grounds 1 and 2.

VIII. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION UNDER § 314(a)

Patent Owner and Defendant Sterlite Tech Holding, Inc. (“Defendant Sterlite”—a related company to Petitioner) are opposing parties in a suit for infringement of the ‘591 Patent that was filed by Patent Owner on October 23, 2023 in the United States District Court for the District of Delaware. Ex. 2008. (“Litigation”). Petitioner admits that the trial date for the Litigation—March 2, 2026—falls before the expected date of a final decision by the Board in this proceeding. Pet. 57. As set forth below, consideration of the *Fintiv* factors here supports discretionary denial of the Petition under 35 U.S.C. § 314(a). *See Apple*

Inc., v Fintiv, Inc., IPR2020-00019, Paper 11 (PTAB March 20, 2020). These factors are as follows:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board's exercise of discretion, including the merits.

Id. at 6.

The **first factor** under *Fintiv* weighs in favor of discretionary denial because there is no stay of the Litigation nor has any motion to stay been filed. A stay is also not likely to be granted because the close of fact discovery is May 26, 2025—only months away—near the time an institution decision could be

expected on the Petition. Ex. 1031, at 2. Patent Owner would oppose any motion by Defendant Sterlite for a stay.

The **second factor** also weighs in favor of discretionary denial because the expected trial date—March 2, 2026—falls before the expected date of a final decision by the Board in this proceeding. Ex. 1031, at 11. The trial date would fall even earlier, but Defendant Sterlite was granted multiple extensions in which to file an Answer in the Litigation. *See* Ex. 2009 (November 28, 2023 Oral Order); Ex. 2010 (January 16, 2024 Oral Order); Ex. 2011 (January 25, 2024 Oral Order); Ex. 2012 (February 21, 2024 Oral Order). Defendant Sterlite filed its Answer in the Litigation over four months after the Complaint was filed. (Ex. 2022). This is also another reason why a stay of the Litigation, even if it was requested by Defendant Sterlite, is not likely,

The **third factor** under *Fintiv* weighs in favor of discretionary denial of institution because the parties and court have already invested in the Litigation. Specifically, the Patent Owner and Defendant Sterlite began extensive written discovery in 2024 including the production of documents and a subpoena. *See, e.g.,* Ex. 2013 (April 1, 2024—Service of Discovery by Patent Owner); Ex. 2014 (June 11, 2024—Service of Discovery by Patent Owner); Ex. 2015 (June 11, 2024—Service of Subpoena by Patent Owner); Ex. 2016 (Aug. 7, 2024—

Service of Discovery by Patent Owner); Ex. 2017 (Sept. 30, 2024—Service of Discovery by Defendant Sterlite).

Also, in the Litigation, the parties have long since exchanged infringement contentions and invalidity contentions. Ex. 2018 (June 26, 2024 Service of Infringement Contentions); Ex. 2019 (Aug. 5, 2024 Service of Invalidity Contentions). Thus, the Petition was filed almost three months after invalidity contentions were served in the Litigation. Ex. 1. *See also Next Caller, Inc. v. TRUSTID, Inc.*, IPR2019-00961, Paper 10 at 16 (PTAB Oct. 16, 2019) (weighing the petitioner’s unexplained delay in filing the petition in favor of denial of the petition and noting that had the petitioner filed the petition around the same time as the service of its initial invalidity contentions, the PTAB proceeding may have resolved the issues prior to the district court). Also, after multiple exchanges, the parties in the Litigation also completed Claim Construction per the Litigation Scheduling Order on August 21, 2024.

The **fourth factor** under *Fintiv* also weighs in favor of denial of institution. Here, Petitioner argues against the patentability of Claims 1-4, 8,

and 13 of the ‘591 patent.⁴ However, in the Litigation, Patent Owner asserts infringement of Claims 1-6, and 8. Ex. 2020. Accordingly, claims 5 and 6 are non-overlapping claims that the Petition fails to challenge but which are asserted in the Litigation. As a result, regardless of the resolution of the Petition here, claims 5 and 6 will remain in the Litigation and require resolution by the district court. The interest of efficiency strongly supports discretionary denial because no matter the result of proceedings before the Board, it will not resolve the dispute between the Patent Owner and Defendant Sterlite and, instead, will unnecessarily expend the resources of the Board and the Parties.

While claim 13 is not asserted in the Litigation but is part of the Challenged Claims, Petitioner provides no reason for including that claim in its Petition except for the possibility of arguing that it is a non-overlapping claim. *See Cisco Sys., Inc. v. Oyster Optics LLC*, IPR202100238, Paper 10, 16 (PTAB June 1, 2021) (“The mere fact, however, that one claim being challenged here is not being asserted in the district court litigation without any explanation of why

⁴ While Petitioner lists claims 5 and 6 at pages ix-x, neither claim is part of the Challenged Claims argued by Petitioner.

the lack of challenge of that particular claim in the district court is significant is not enough to favor institution.”).

The **fifth factor** weighs against institution because the Petitioner is either the same as, or related to, Defendant Sterlite in the Litigation. Petitioner identifies itself as Sterlite Technologies, Inc. and submitted a power of attorney with its Petition. Ex. 2. Petitioner is otherwise silent as to its identity. In the Litigation, Defendant Sterlite identifies itself as Sterlite Tech Holding, Inc. Both entities are listed as subsidiaries of their parent, Sterlite Technologies Limited, in its Annual Report for 2023-2024:

NOTES TO THE STANDALONE FINANCIAL STATEMENTS	
For the year ended March 31, 2024	
47 RELATED PARTY TRANSACTIONS	
(A) Name of related party and nature of its relationship:	
(a) Related parties where control exists	
(i) Holding company	
	Twin Star Overseas Limited, Mauritius (Immediate holding company) Vedanta Incorporated, Bahamas (Ultimate holding company)
(ii) Subsidiaries	
	Jiangsu Sterlite Fiber Technology Co. Ltd. (Effective-05-Dec-2022) (formerly known as Jiangsu Sterlite Tongguang Fiber Co. Ltd.) Sterlite Global Ventures (Mauritius) Limited Sterlite Technologies UK Ventures Limited Speedon Network Limited Sterlite Telesystems Limited (struck off w.e.f. September 20, 2023) Elitecore Technologies (Mauritius) Limited Elitecore Technologies SDN BHD. (Malaysia) Sterlite (Shanghai) Trading Company Limited Sterlite Tech Holding Inc. Sterlite Technologies Inc. (South Carolina) Sterlite Technologies Inc. (Delaware) (Merged with Sterlite Tech Holding Inc. w.e.f. April 01, 2023) Metallurgica Bresciana S.p.A Sterlite Innovative Solutions Limited. (filed for struck off in March, 2024)

Ex. 2021 at p. 251 (emphasis added); *see also id.* at pp. 334, 367. Additionally, the attorneys for Defendant Sterlite in the Litigation and Petitioner here are the

same. Cf. Ex. 2 with Ex. 2022, p.8. And when Patent Owner subpoenaed Sterlite Technologies, Inc. (believed to be Petitioner here) in the Litigation, Patent Owner was informed that because Defendant Sterlite would be responding on behalf of Petitioner, the subpoena should be withdrawn. *See* Ex. 2023.

The **sixth factor** under *Fintiv* also weighs strongly against institution. For all the reasons stated in Sections V and VI herein, the merits of the Petition are not particularly strong, and Petitioner relies on substantially the same prior art and arguments already presented to the Office during prosecution as set forth in Section VII. Even if the merits of the Petition presented a “close[er] call,” which Patent Owner controverts, the other *Fintiv* factors still favor denial of institution here. *See Apple Inc., v Fintiv, Inc.*, IPR2020-00019, Paper 11, 15 (PTAB March 20, 2020).

Accordingly, for the reasons stated here in Section VIII of this Preliminary Response, Patent Owner respectfully asserts the Board should exercise its discretion under § 314(a) to deny institution on Grounds 1 and 2.

IX. CONCLUSION

For at least the foregoing reasons, Patent Owner respectfully requests that the Board deny institution of *inter partes* review on both Grounds 1 and 2 of the Petition.

Dated: February 21, 2025

Respectfully submitted,

By: /Tim F. Williams/
Tim F. Williams (Reg. No. 47,178)

IPR2025-00127
Patent 11,287,591

CERTIFICATE OF SERVICE

I certify that the Patent Owner Preliminary Response to Petition for *Inter Partes* Review under 35 U.S.C. § 42.107 in connection with *Inter Partes* Review Case IPR2025-00127 was served by electronic mail to: John.Scott@arlaw.com, and Farnan@RLF.com.

Dated: February 21, 2025

By: /Tim F. Williams/
Tim F. Williams (Reg. No. 47,178)

IPR2025-00127
Patent 11,287,591

CERTIFICATE OF WORD COUNT

Under 37 C.F.R. § 42.24(d), the undersigned attorney for the Patent Owner, declares this Patent Owner Preliminary Response has 12,414 words, according to Microsoft Word® word count tool, excluding the parts of the Response exempted by 37 C.F.R. § 42.24(a)(1).

Dated: February 21, 2025

By: /Tim F. Williams/
Tim F. Williams (Reg. No. 47,178)