

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

OMEGA LINER COMPANY, INC.,
Petitioner,

v.
BUERGOFOL GmbH,
Patent Owner.

IPR2023-01402
Patent 8,794,269 B2

Before GRACE KARAFFA OBERMANN, KIMBERLY McGRAW, and
JAMES J. MAYBERRY, *Administrative Patent Judges*.

OBERMANN, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Omega Liner Company, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) for *inter partes* review of claims 1–10 of U.S. Patent No. 8,794,269 B2 (Ex. 1001, “the ’269 patent”). Buergofol GmbH (“Patent Owner”) filed a Preliminary Response. Paper 10 (“Prelim. Resp.”).

A. *Real Parties-in-Interest*

Petitioner identifies itself as the sole real party-in-interest. Pet. 1. Patent Owner also identifies itself as the sole real party-in-interest. Paper 6, 2.

B. *Related Matters*

The parties identify *Buergofol GmbH v. Omega Liner Company, Inc.*, Case No. 22-cv-04112-KES (D. S.D.) (“the District Court action”) as a related matter. Pet. 1; Paper 6, 2. Patent Owner further indicates that IPR2023-01372 (“IPR1372”) involves U.S. Patent No. 9,657,882 B2, which also is asserted in the District Court action. Paper 6, 2. We concurrently enter a decision instituting review in IPR1372.

II. BACKGROUND

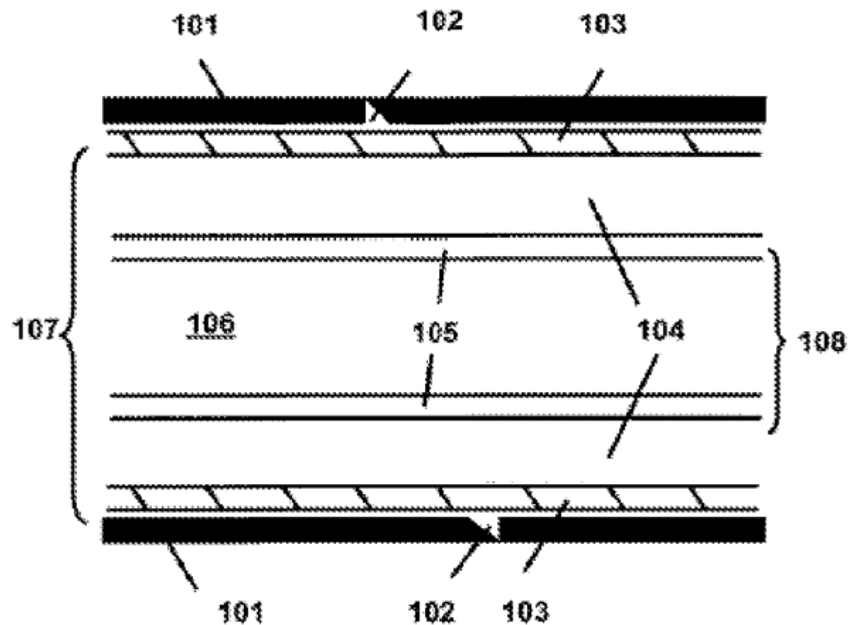
A. *The ’269 Patent (Ex. 1001)*

The ’269 patent is titled “Multi-Layer Film Permeable to UV Radiation” and describes a tubular film that is “impermeable to liquids” and, at least to some extent, “permeable to UV radiation.” Ex. 1001, codes (54), (57). The Specification indicates that the film is useful “in the renovation of pipes.” *Id.* at 1:28–29. The claims specify an insertion tube that includes a multilayer film “as” an “internally situated tube.” *Id.* at 14:46, 63 (claim 1, the sole independent challenged claim).

By way of background, known insertion tubes for pipe renovation included “two tubes” of different diameters, “between which a support material saturated with a reactive resin has been introduced.” *Id.* at 1:44–49. The claimed insertion

tube similarly includes an internally-situated tube, an externally-situated tube, and a support material saturated with a reactive synthetic resin and situated between the two tubes. *Id.* at 14:63, 14:67–15:2. During pipe renovation, the collapsed insertion tube “is drawn into the pipe requiring renovation” then inflated “to the diameter of the pipe.” *Id.* at 1:45–46, 1:51. After inflation, the reactive resin is “hardened between the two tubes in order to obtain, after removal of the inner tube, a stable pipe at the internal pipe wall requiring renovation.” *Id.* at 1:52–54.

The insertion tube of the claimed invention is illustrated in Figure 1, the sole figure provided in the '269 patent, which we reproduce below.



Id., Fig. 1. Figure 1 illustrates a longitudinal section through insertion tube 107 after insertion into pipe 101, where pipe 101 has a region 102 requiring renovation. Insertion tube 107 includes externally-situated tube 103, a tubular film “as internally situated tube” 105, and support material 104, which is “saturated with a reactive synthetic resin.” *Id.* at 7:17–29. Insertion tube 107 is inflated to the diameter of pipe 107 and “a source which emits UV radiation and/or shortwave, visible light” is introduced into cavity 106 to bring about hardening of the reactive

resin that saturates support material 104. *Id.* at 7:29–41. Renovated pipe 108 (“shown as comparatively small in Fig. 1 merely for reasons of clarity”) is formed after resin hardening and optional removal of internally-situated tube 105. *Id.*

The “multilayer film” of the claimed invention (element 105 in Figure 1) is “in the form of a tubular film” comprising five layers in sequence: (a) an external layer based on at least one thermoplastic olefin homo- or copolymer; (b) an adhesive-promoter layer; (c) an internally-situated layer based on at least one homo- or copolyimide; (d) an adhesive-promoter layer; and (e) an external layer based on at least one thermoplastic olefin homo- or copolymer. *Id.* at 2:31–47, 14:46–59. To be clear, this five-layer multilayer film serves “as” the “internally situated tube” of the specified “insertion tube” of claim 1. *Id.* at 14:43, 14:63.

Importantly, as shown in Figure 1, internally-situated tube 105 is located between a UV-radiation source (introduced into cavity 106) and resin-saturated support material 104 during the pipe renovation process. The relative positions of those elements illustrate why internally-situated tube 105 (made up of the specified five-layer sequence) must have at least some “permeability to UV radiation, in order to permit, in the inflated condition, the hardening procedure” on the UV-curable resin *Id.* at Fig. 1, 1:54–55, 1:61–64, 7:30–36.

The Specification states that the object of the claimed invention is to provide a multilayer tubular film “as [the] internally situated tube of an insertion tube” that “has not only the necessary permeability to UV radiation but also mechanical properties that are sufficiently good for it to withstand the high loads that arise during pipe renovation.” *Id.* at 2:24–27. The Specification indicates that the film of the invention “[s]urprisingly” confers “very good mechanical properties” to an insertion tube intended for renovating subterranean pipes. *Id.* at 2:48–67.

B. Challenged Claims

Claim 1, reproduced below, is the only independent challenged claim.

1. An insertion tube suitable for the renovation of subterranean pipes, optionally subterranean sewer pipes, comprising

an optionally nonconditioned multilayer film that is impermeable to liquids and that is at least to some extent permeable to UV radiation, comprising a layer sequence made of

(a) layer (a) comprised of at least one thermoplastic olefin homo- or copolymer, as one of the external layers,

(b) an adhesive-promoter layer (b),

(c) an internally situate layer (c) comprised of at least one homo- and/or copolyamide,

(d) an adhesive-promoter layer (d), and

(e) a layer (e) comprised of at least one homo- and/or copolyimide, as one of the external layers,

in the form of a tubular film,

wherein ***the VICAT softening point of the thermoplastic olefin homo- or copolymer of the layer (a) is at least 100°C.***;

as an internally situated tube, and

an externally situated single- or multilayer tubular film which is impermeable to liquids, and which reflects and/or absorbs UV radiation and/or short-wave, visible light, as externally situate tube, and

a support material situated therebetween and saturated with a reactive synthetic resin.

Ex. 1001, 14:43–15:2 (Board’s emphasis). The other challenged claims depend directly from claim 1 and, therefore, inherit the emphasized “VICAT softening point” limitation.¹ *Id.* at 15:3–16:24.

¹ The ’269 patent does not define the term “VICAT softening point,” except to state that it “is determined in accordance with DIN EN ISO 306/ASTM D1525.” Ex. 1001, 4:12–14.

C. Asserted Grounds of Unpatentability

The Petition advances two grounds of unpatentability, which we identify in the chart below.

Ground	35 U.S.C. § ²	Claims Challenged	Reference(s)/Basis
1	103	1–10	Glover ³ , Brandenburger ⁴
2	103	1–10	Khramenkov ⁵ , Jones ⁶

Pet. 19. The Petition is supported by the Declaration of Dr. Steven B. MacLean (Ex. 1003).

III. ANALYSIS

A. Level of Ordinary Skill in the Art

The level of ordinary skill in the art at the time of the invention is a factual determination that provides a primary guarantee of objectivity in an obviousness analysis. *Al-Site Corp. v. VSI Int’l Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991)). Petitioner argues that an ordinarily skilled artisan “would have at least a bachelor’s degree in Polymer Science and

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (Sept. 16, 2011), includes revisions to Section 103 that became effective on March 16, 2013. Because the challenged claims issued from an application filed before March 16, 2013, we apply the pre-AIA law to the challenges. *See* Ex. 1001, code (30); Pet. 10 (asserting an earliest priority date of June 15, 2010, based on the filing date of a foreign patent application). Neither party indicates, however, that the result would change based on which version of the law is applied.

³ EP 0267742 A2, published May 18, 1988 (Ex. 1005).

⁴ U.S. Patent No. 6,679,966 B1 issued Jan. 20, 2004 (Ex. 1006).

⁵ RU 2182999 C1, published May 27, 2002 (Ex. 1007) (certified translation).

⁶ EP 0342897 A2, published Nov. 23, 1989 (Ex. 1009).

Engineering Material Science and Engineering, or a related engineering field, combined with at least three years of experience in the formulation, manufacturing, and end-use performance of polymeric film and sheet products.” Pet. 3 (citing Ex. 1003 ¶ 23). However, “at least seven years of experience” in that field would suffice, “without possessing a bachelor’s degree.” *Id.*

Patent Owner disagrees, arguing that Petitioner’s proposed definition “completely ignores having any experience” within the field of “an insertion tube suitable for the renovation of subterranean pipes.” Prelim. Resp. 17. In Patent Owner’s view, the ordinarily skilled artisan would have had “some knowledge and experience in the end-use performance of polymeric films and sheet products” and, moreover, “would not necessarily have experience in the formulation or manufacturing of” those films and products. *Id.* On that basis, Patent Owner proposes modifying Petitioner’s definition by deleting “experience in the formulation or manufacturing of polymeric films and sheet products.” *Id.*

The prior art itself can reflect the appropriate level of ordinary skill in the art. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Each asserted reference in this case refers to manufacturing or formulating processes for polymeric materials useful in subterranean pipe renovation, which supports Petitioner’s proposed definition. *See* Ex. 1005, code (57), 3:33–4:58; Ex. 1006, code (57), 1:56–2:46, 4:8–41; Ex. 1007, code (57), 4:19–63; Ex. 1009, code (57), 2:28–3:5. Only Petitioner’s definition, moreover, is supported by declaration testimony. Pet. 3 (citing Ex. 1003 ¶ 23). In our analysis, therefore, we apply Petitioner’s definition, but note that neither party indicates that the result on institution would change under Patent Owner’s slightly different definition.

B. Claim Construction

In an *inter partes* review, the Board construes the terms of a patent claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). Under that standard, claim terms generally are given their plain and ordinary meaning as would have been understood by the ordinarily skilled artisan at the time of the invention and within the context of the entire patent disclosure. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). We construe terms in controversy only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner submits that “[n]o formal claim construction [is] necessary” for purposes of deciding whether to institute review. Pet. 19. Patent Owner does not address claim construction, except to observe that “Petitioner proposes no construction of the claims.” Prelim. Resp. 17.

On this record, no express claim construction is necessary. This Decision turns on the sufficiency of Petitioner’s showing that the asserted prior art suggests an internally situated tube having “a layer (a),” as specified in claim 1, which is characterized by a “VICAT softening point” that “is at least 100°C.” Ex. 1001, 14:50–63. Neither party argues that the result would change in this case based on the meaning applied to those terms. *See* Pet. 19; Prelim. Resp. 17.

C. The Patentability Challenges

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to

a person of ordinary skill in the art to which the subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). We apply that standard to assess whether Petitioner shows sufficiently that at least one challenged claim is unpatentable.

I. Asserted Obviousness over Glover and Brandenburger

Petitioner argues that claims 1–10 are unpatentable as obvious over Glover and Brandenburger. Pet. 20–41. We first provide an overview of the references then resolve a dispositive question whether Petitioner shows sufficiently that these references suggest an insertion tube meeting the VICAT softening point limitation.

a. Glover

Glover is titled “Multilayer carrier films.” Ex. 1005, code (54). Glover “is concerned with a multilayer carrier film for supporting a fluid synthetic resin composition impregnated fibrous mat against a surface,” such as “the inside surface of a pipe, during the curing of the resin.” *Id.* at code (57). Glover’s film is composed of “a layer of a nylon” that has “on one surface a layer of a polyamide copolymer” and, on the other surface, “a layer of a weldable synthetic plastic composition.” *Id.* at 2:15–23.

Glover identifies “a softening point” range associated with the “polyamide copolymer” disposed on the side of the nylon surface that is opposite to the “weldable synthetic plastic composition.” *Id.* When discussing the weldable synthetic plastic composition, by contrast, Glover provides a list of suitable materials ***without*** any discussion of the VICAT softening point associated with any particular material. *Id.* at 2:35–39 (Glover’s list of suitable materials, none of which is identified in terms of its VICAT softening point).

b. Brandenburger

Brandenburger is titled “Liner with a Tubular Film that is Coated with a Nonwoven.” Ex. 1006, code (54). Petitioner relies on Brandenburger to make out certain features of the claimed invention lacking in Glover, most notably the externally-situated tube. Pet. 20, 29–31. Petitioner does not rely on Brandenburger to make out the VICAT softening point limitation of claim 1. *Id.* at 26–28.

c. The VICAT Softening Point Limitation

Claim 1 requires that the thermoplastic olefin homo- or copolymer of “layer (a)” have a VICAT softening point that “is at least 100°C.” Ex. 1001, 14:60–62. Petitioner maps layer (a) of claim 1 to Glover’s layer of weldable synthetic plastic composition, which, according to Glover, is selected from the list consisting of “polyethylene, polypropylene, an ethylene/vinyl acetate copolymer, an ethylene/acrylic acid copolymer, an ethylene/ethyl acrylate copolymer, a polyurethane, a polycarbonate, or polyvinyl chloride.” Ex. 1005, 2:35–39; *see* Pet. 23, 26–28. Petitioner relies on Glover’s disclosure of this list to make out the VICAT softening point limitation, but does not argue that Glover expressly discloses the VICAT softening point for any material included in the list. Pet. 23, 26–28. Nor does Petitioner argue that any material included in Glover’s list inherently meets the VICAT softening point limitation of claim 1.⁷ Pet. 23, 26–28.

Instead, Petitioner focuses on polypropylene, one particular material included in Glover’s list, and asserts that polypropylene “typically” exhibits a VICAT softening point “in the range of 145–150°C,” and that, depending on the density, homopolymer polyethylene has a VICAT “softening point in the range

⁷ Patent Owner points out that a claim limitation may be obvious if it is the necessary result of the proposed prior art combination. Prelim. Resp. 9, 19, 25–32.

of 85 to 130°C.” Pet. 27 (citing Ex. ¶ 139). Petitioner further argues that materials meeting the VICAT softening point limitation “were well-known in the art and would yield predictable results of withstanding increased temperatures such as those incurred when using a heat-based curing process.” Pet. 27–28 (citing Ex. 1003 ¶ 140).

Those arguments are insufficient to support trial institution because neither Petitioner nor Dr. MacLean sufficiently explains why an ordinarily skilled artisan would have been interested in selecting a material capable of withstanding temperatures “incurred when using a heat-based curing process.” *Id.* To the contrary, elsewhere in the Petition, Petitioner consistently and repeatedly identifies UV-radiation curing (as opposed to heat-curing) as providing the impetus for selecting and combining other features from Glover and Brandenburger to attain a modified insertion tube that meets the challenged claims. Pet. 20–41 (relying on UV-radiation curable resins and UV-radiation curing). Critically lacking on this record is any explanation why an ordinarily skilled artisan would have been led to select one structural feature of the invention (the required “layer (a)” material, Ex. 1001, 14:50) to facilitate a heat-curing process, where the reasons for selecting every other structural feature of the invention are keyed to facilitating a UV-radiation curing process.

For example, Petitioner argues that Glover teaches that it would have been “well-known in the art to use UV curable resins and to use a corresponding tubular film that ‘permit[s] the passage of light to the resin to effect the curing.’” Pet. 22. Petitioner further argues, when articulating a reason to modify Glover’s insertion tube to include the externally-situated tube of Brandenburger, that “the *opaque* outer tubular film of Brandenburger” would have been combined “with the inner tubular film of Glover *when using a UV curable resin* to protect the UV curable

resin from premature hardening.” *Id.* at 30 (Board’s emphasis). In addition, Petitioner advances contentions about dependent claims 2–10 that repeatedly and consistently rely on an assumption that the modified apparatus of Glover includes a UV-radiation curable resin for use in a UV-radiation curing process. *Id.* at 32–41.

We recognize that Glover discloses both heat-curable and UV-radiation-curable resins. *See* Ex. 1003 ¶ 140 (citing Ex. 1005, 2:46–50). But the reasons articulated in the Petition for modifying Glover in view of Brandenburger plainly are tied to selecting Glover’s UV-curable resin for use in a UV-radiation curing process. Pet. 20–41. Petitioner’s unexplained pivot to a heat-curing process, for the sole purpose of supplying a reason to select a weldable synthetic plastic composition that meets the VICAT softening point limitation, suggests to us an exercise of impermissible hindsight reconstruction. Pet. 27–28 (citing Ex. 1003 ¶ 140). We emphasize here that the key circumstance, tipping the scales in that direction, is that neither Petitioner nor Dr. MacLean adequately explains the pivot. Pet. 22, 27–28, 30; Ex. 1003 ¶¶ 118–120, 140 (mixing-and-matching rationales to combine without adequate explanation); *see* Prelim. Resp. 16–17, 22–24 (persuasive counterarguments on point).

In addition, Petitioner’s argument that polypropylene “typically has a VICAT softening point significantly over 100°C in the range of 145–150°C” is not supported by the evidence cited in the Petition to sustain it. Pet. 27 (citing Ex. 1003 ¶ 139) (referring back to earlier testimony, including ¶ 61). We agree with Patent Owner that Petitioner here mischaracterizes the declaration testimony of its own witness, Dr. MacLean, who states only, on the relevant issue, that “[s]tandard *isotactic grades* of homopolymer polypropylene have VICAT softening points in the range of 145–150 °C.” Prelim. Resp. 30–31 (Patent Owner’s emphasis) (quoting Ex. 1003 ¶ 61). Patent Owner’s argument that Dr. MacLean selects “a

specific polypropylene needle” from within a “haystack of polymers” has merit, where the evidence of record indicates that as many as “1,303 different” grades of polypropylene homopolymer would have been available to the ordinarily skilled artisan.⁸ *Id.* at 29; *see id.* at 21 (citing Ex. 2012).

Under these particular circumstances, Petitioner does not explain sufficiently, if at all, why an ordinarily skilled artisan would have been prompted to select a polypropylene having “a VICAT softening point significantly over 100°C in the range of 145–150°C” as the weldable synthetic plastic composition in the proposed apparatus of Glover as modified by Brandenburger. Pet. 27 (citing Ex. 1003 ¶ 139).

Finally, we address Petitioner’s assertion that claim 1 of the ’269 patent “appears to” include “an arbitrary VICAT softening point.” Pet. 27. Petitioner stops short of arguing that this alleged circumstance authorizes the Board to read out or otherwise ignore the plain and unambiguous terms in claim 1 that specify the VICAT softening point limitation. *Id.*; *see* Ex. 1001, 14:60–63 (the limitation at hand). On this record, therefore, we decline to do so.

For the above reasons, Petitioner does not show sufficiently that the subject matter of claim 1, including the VICAT softening point limitation, would have been obvious over the combined disclosures of Glover and Brandenburger. Because that limitation is inherited by claims 2–10 through dependence on claim 1, we determine that Petitioner does not establish “a reasonable likelihood” of prevailing on this ground with respect to any challenged claim. 35 U.S.C. § 314(a).

⁸ Petitioner’s own witness, Dr. MacLean, directs us to objective proof that some forms of polypropylene have a VICAT softening point in the range of 85–87°C. Ex. 1003 ¶ 61 (citing Ex. 1032, 20, reporting that range for low-density polypropylene).

2. Asserted Obviousness over Khramenkov and Jones

Petitioner also asserts that the subject matter of claims 1–10 would have been obvious over Khramenkov and Jones. Pet. 41–71. When mapping claim 1 to those references, Petitioner relies on Khramenkov (without reference to Jones) to make out the specified features of layer (a) in claim 1, including the VICAT softening point limitation. *Id.* at 51–52. Specifically, Petitioner argues that Khramenkov teaches “a mixture of polyethylene in the amount of 20–40 wt.% with polypropylene in the amount of 80–60 wt.%” and that this mixture meets the VICAT softening point limitation. Pet. 51 (citing Ex. 1003 ¶¶ 238–240).

By way of support, Petitioner directs us to Dr. MacLean’s declaration testimony, which repeats or refers back to assumptions about polypropylene raised in connection with the ground that asserts Glover. *See* Ex. 1003 ¶¶ 238–249). For reasons well-stated by Patent Owner, our analysis set forth above in connection with the ground that asserts Glover applies with equal force to this ground. *See* Prelim. Resp. 41–46.

Alternatively, this ground is deficient because it rests on several additional unsupported assumptions advanced by Dr. MacLean. Pet. 51–52 (citing Ex. 1003 ¶¶ 237–242). Dr. MacLean assumes, without articulating any reason or citing to objective support, that an ordinarily skilled artisan would have been led to (1) select a 40%–60% blend of polyethylene–polypropylene, from the broader ranges disclosed in Khramenkov; and (2) select, for the polypropylene component of the mixture, a “homopolymer polypropylene” form having a VICAT softening point of 145°C (even though, as Dr. MacLean acknowledges, other available polypropylene forms would have had a VICAT softening point as low as 85°C). Ex. 1003 ¶¶ 239–240. Dr. MacLean further assumes, citing no objective proof or data, that the VICAT softening point is an additive property when mixtures of polymers are

employed. *Id.*; see Prelim. Resp. 44 (pointing out these conclusory assumptions in Petitioner’s evidence).

On this record, we agree with Patent Owner that this ground is deficient because it rests on conclusory assumptions. Prelim. Resp. 44–45. Specifically, “Khramenkov is silent as to any specific polypropylene to use or any specific VICAT softening temperature, leaving the selection of a suitable polypropylene to the discretion of” the ordinarily skilled artisan, “who had numerous materials having a wide range of VICAT softening temperatures from which to select.” *Id.* at 45. Against that backdrop, we determine that Petitioner does not establish “a reasonable likelihood” of prevailing with respect to any challenged claim on this ground. 35 U.S.C. § 314(a).

IV. CONCLUSION

We *deny* the Petition and do not institute an *inter partes* review.

V. ORDER

It is

ORDERED that the Petition is denied and no *inter partes* review is instituted.

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