

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HIRSCH GLASS CORP., d/b/a/ SPECTRUM QUARTZ,
Petitioner,

v.

CAMBRIA COMPANY LLC,
Patent Owner.

IPR2022-00589
Patent 9,993,942 B2

Before, KRISTINA M. KALAN, CHRISTOPHER M. KAISER, and
AVELYN M. ROSS, *Administrative Patent Judges*.

ROSS, *Administrative Patent Judge*.

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

I. INTRODUCTION

Hirsch Glass Corp., d/b/a Spectrum Quartz, (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–4 and 6–35 of U.S. Patent No. 9,993,942 B2 (Ex. 1001, “the ’942 patent”). Cambria Company LLC (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless the Director determines . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least [one] of the claims challenged in the petition.”

For the reasons set forth below, upon considering the Petition and evidence of record, we determine that Petitioner has not established a reasonable likelihood of prevailing with respect to at least one challenged claim. Accordingly, we deny the Petition, and do not institute an *inter partes* review.

A. *Real Parties-in-Interest*

Petitioner identifies “Hirsch Glass Corp.” as the real party-in-interest. Pet. 1. Patent Owner identifies “Cambria Company LLC” as the real party-in-interest. Paper 4 (Patent Owner’s Mandatory Notices).

B. *Related Proceedings*

Patent Owner identifies as related proceedings the pending district court litigation styled *Cambria Company LLC v. Hirsch Glass Corp., d/b/a Spectrum Quartz*, No. 3:21-cv-10092-MAS-LHG (D.N.J.) (originally filed

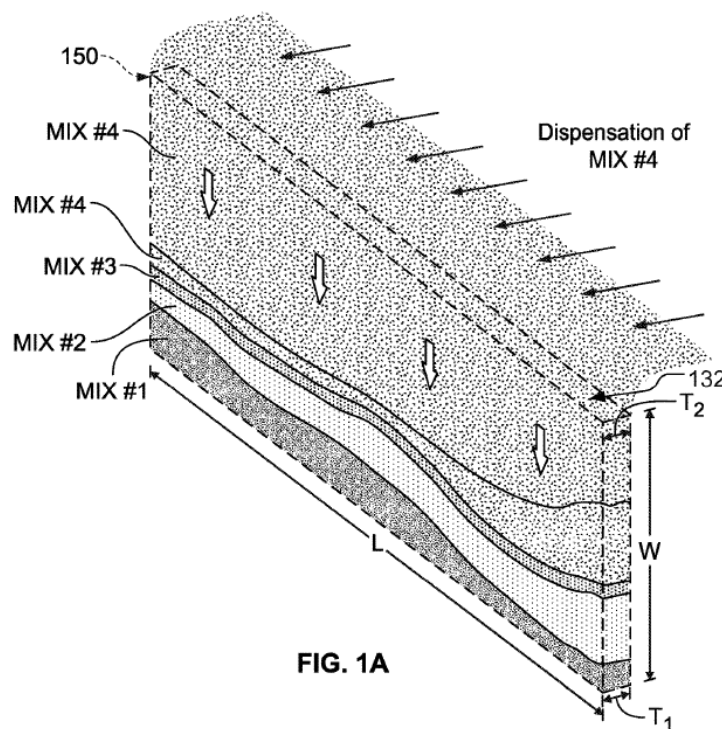
as No. 1:21-cv-143 (E.D. Va.)). Paper 4. Petitioner and Patent Owner identify as related to the '942 patent the following U.S. patents: Nos. 9,186,819; 9,917,303; 9,993,943; 10,300,626; and 10,981,346. Pet. 1; Paper 4. Petitioner and Patent Owner also identify as related matters the following proceedings: IPR2022-00583 (U.S. Patent No. 10,300,626) and IPR2022-00582 (U.S. Patent No. 9,718,303). Pet. 1; Paper 4.

C. The '942 Patent

The '942 patent, titled “Processed Slabs, and Systems and Methods Related Thereto,” issued on June 12, 2018. Ex. 1001, codes (45), (54). The '942 patent “describes systems and processes for forming synthetic mold slab products” such as “a synthetic mold slab that is thermoformed or otherwise compacted to a selected slab shape from a mixture including particulate mineral material, resin binder, and pigments so that the synthetic molded slab is suitable for use in living or working spaces.” *Id.* at 1:15–21. Such living or working spaces include “a countertop, table, floor, or the like.” *Id.* at 1:21. The '942 patent explains that granite, marble, soapstone, and other quarried stones have been used for “countertops due to their aesthetic properties” but “such quarried stone slabs can be quite expensive to obtain and are generally limited to naturally occurring color schemes.” *Id.* at 1:25–31. Engineered stone slabs, however, have been formed, which are “typically a combination of particulate mineral material and a binder, such as a polymer resin or cement,” but some “can fall noticeably short of the complicated look and texture of quarried stone slabs.” *Id.* at 1:32–40. The '942 patent purports to resolve such drawbacks by providing synthetic molded slabs that “can be manufactured so as to have a similar appearance to one another that, unlike quarried stone slabs taken from a quarry,” in that

the appearance “is generally repeatable and predefined as part of the manufacturing process” and “can provide complex striations or other veining patterns that emulate a quarried stone slab.” *Id.* at 1:44–54. Each slab “can be formed from a combination of differently pigmented particulate mineral mixes” to facilitate “the selected striations or other veining patterns.” *Id.* at 1:54–59. A synthetic molded slab can comprise a quartz material and “may have a major surface at least 2 feet wide by at least 6 feet long and extending perpendicularly to a slab thickness.” *Id.* at 1:65–2:2. The major surface may have “a first pigmented vein extending generally lengthwise from edge-to-edge that separates at least two other veins extending generally lengthwise and positioned on opposing edges of the first pigmented vein,” and the first pigmented vein may have “a vein thickness equal to and parallel to the slab thickness.” *Id.* at 2:2–8.

Figures 1A and 1B are illustrative and are reproduced below.



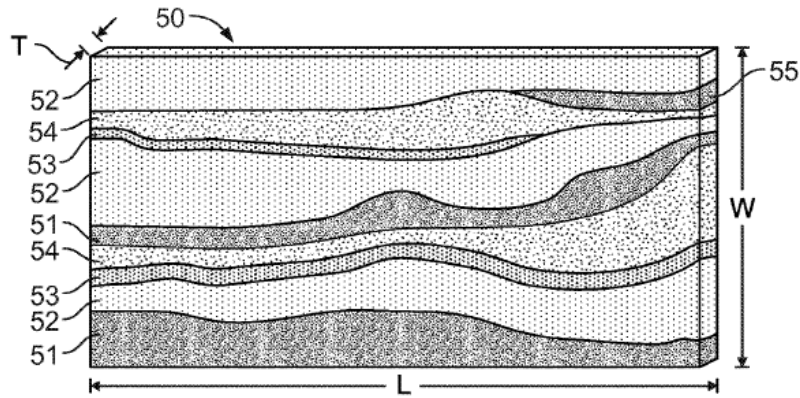


FIG. 1B

Figures 1A and 1B “are perspective views of a synthetic molded slab during and after formation,” respectively. *Id.* at 3:39–40. Synthetic molded slab 50 as shown in Figure 1B has “a number of striations or veins according to a predefined pattern.” *Id.* at 3:65–67. The predefined pattern can be formed by “a quartz material and/or other particulate mineral material that, when mixed with pigments and a resin binder and subsequently compressed and cured, provides a hardened slab product.” *Id.* at 3:67–4:3. A mold having length L, width W, and thickness T is used to form the slab having the equivalent dimensions depicted in Figure 1B, and the width can be 2 feet whereas the length can be 6 feet. *Id.* at 4:27–33, 5:59–61, 6:15–24. Slab 50 can have “differently pigmented veins 51, 52, 53, and 54 extend across the full length of the slab product” which “can also extend through the thickness of the slab 50” in order to provide “a natural vein appearance even when the slab is cut and edged to specific shapes.” *Id.* at 4:33–39. According to the ’942 patent, a system can be used to form a set of synthetic molded slab products such as slab 50 depicted in Figure 1B. *Id.* at 6:34–50.

Figure 8 is also illustrative and is reproduced below.

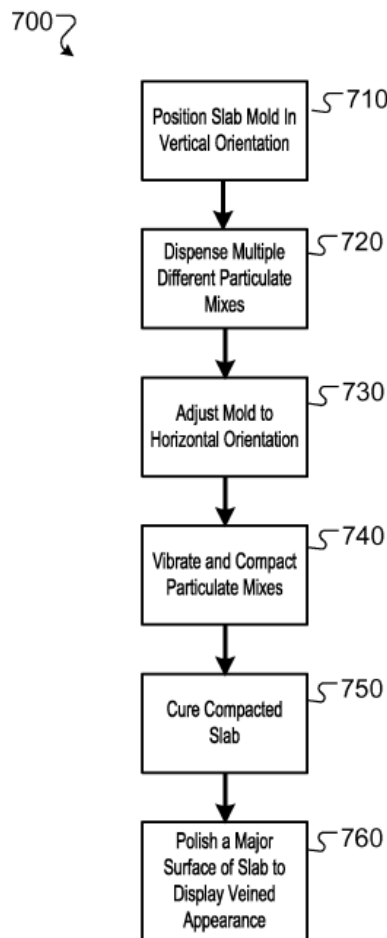


FIG. 8

Figure 8 “is a flow diagram of an example process for forming a synthetic molded slab product.” *Id.* at 3:59–60. Example process 700 for forming a synthetic molded slab product, such as slab 50, includes operations 710–760. *Id.* at 11:52–12:26. First, operation 710 includes “positioning a slab mold in a non-horizontal orientation, such as a substantially vertical orientation or another orientation that extends transverse to the horizontal.” *Id.* at 11:56–59. For example, as shown in Figure 1A, a mold “is pivoted to a horizontal orientation” and identified as “apparatus 150.” *Id.* at 4:18–19. Next, operation 720 includes “dispensing multiple different particulate mineral

mixes into the vertically oriented mold.” *Id.* at 12:2–4. For example, “differently pigmented mixes comprising predominantly a quartz material” can be fed into a vertical pour operation using a distributor. *Id.* at 12:5–9. Next, operation 730 includes “adjusting the mold to a horizontal orientation while the different particulate mineral mixes are positioned in the mold.” *Id.* at 12:10–13. Then, operation 740 includes “contemporaneously vibrating and compacting the particulate mineral mixes arranged in the mold while the mold is in the horizontal orientation.” *Id.* at 12:15–19. Thereafter, the compacted slab can be cured in operation 750 and a major surface of the slab is polished to provide a veined appearance on the polished surface of the slab in the operation 760. *Id.* at 12:21–25.

D. Illustrative Claims

Petitioner challenges claims 1–4 and 6–35 of the ’942 patent. Independent claims 1, 20, 27 are the independent claims challenged and are reproduced below.

1. A process of forming a processed slab from different particulate mineral mixes, comprising:

positioning a slab mold in a substantially non-horizontal orientation;

dispensing multiple different particulate mineral mixes into the substantially non-horizontally oriented mold so as to fill a mold space that is at least 6 feet long by at least 2 feet wide, the multiple different particulate mineral mixes being differently pigmented;

adjusting the mold to a substantially horizontal orientation while the multiple different particulate mineral mixes are in the mold; and

vibrating and compacting the multiple different particulate mineral mixes arranged in the mold while the mold is in the substantially horizontal orientation.

Ex. 1001, 12:38–52.

20. A process of forming a processed slab from particulate mineral mixes, comprising:

positioning a slab mold in a substantially vertical orientation;

dispensing at least first and second particulate mineral mixes into the substantially vertically oriented mold so as to fill a mold space that is at least 6 feet long by at least 2 feet wide;

adjusting the mold to a substantially horizontal orientation while the first and second particulate mineral mixes are positioned in the mold; and

compacting the particulate mineral mixes arranged in the mold while the mold is in the substantially horizontal orientation;

wherein the first and second particulate mineral mixes are dispensed according to a predefined pattern to provide at least a first vein extending generally lengthwise from edge-to-edge defined by the first particulate mineral mix.

Id. at 13:54–14:5.

27. A process of forming a processed slab, comprising:

positioning a slab mold in a substantially non-horizontal orientation;

dispensing more than one particulate mineral mixes into the slab mold while the slab mold is retained in the substantially non-horizontal orientation; and

vibrating and compacting the more than one particulate mineral mixes after adjusting the mold to a substantially horizontal orientation.

Id. at 14:31–39.

E. The Asserted Unpatentability Challenges

Petitioner asserts that claims 1–4 and 6–35 would have been unpatentable on the following grounds:

Claims Challenged	35 U.S.C. § ¹	References/Basis
1–4, 6–11, 14–35	103	Benito Lopez ² in view of Liu ³
1–4, 6–11, 14–35	103	Liu in view of Benito Lopez
12, 13	103	Benito Lopez in view of Liu, Toncelli '044 ⁴
12, 13	103	Liu in view of Benito Lopez, Toncelli '044

Pet. 15, 49, 75, 78. Petitioner also relies on declaration testimony of Pierpaolo Tassone (Ex. 1004).

II. ANALYSIS

A. *Principles of Law*

“In an IPR [*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) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. Because the '942 patent has an effective filing date after the effective date of the applicable AIA amendments, we refer to the AIA version of § 103.

² Benito Lopez et al., US 2015/0360507 A1, published December 17, 2015 (Ex. 1005, “Benito Lopez”).

³ Liu, CN 1718403 A, published January 11, 2006 (Ex. 1006). Petitioner provides a certified English-language translation of Liu (Ex. 1007). Any reference to Liu hereinafter will be to the English-language translation.

⁴ Toncelli, US 2004/0032044 A1, published February 19, 2004 (Ex. 1011, “Toncelli '044”).

never shifts to the patent owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review). Furthermore, a petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Obviousness is a question of law based on underlying determinations of fact. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966); *Richardson-Vicks, Inc. v. Upjohn Co.*, 122 F.3d 1476, 1479 (Fed. Cir. 1997). A claim is unpatentable as obvious, under 35 U.S.C. § 103, if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time of the invention to a person having ordinary skill in the art. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness.⁵ *Graham*, 383 U.S. at 17–18. Consideration of the *Graham* factors “helps inform the ultimate obviousness determination.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc), cert. denied, 138 S. Ct. 420 (2017). To prevail in an *inter partes* review, Petitioner must explain how the proposed combinations of prior art would have rendered the challenged claims unpatentable. Subsumed within the *Graham* factors are the requirements that all claim limitations be found in the prior art references and that the skilled artisan would have had a

⁵ At this stage of the proceeding, the parties have not asserted or otherwise directed our attention to any objective evidence of nonobviousness.

reasonable expectation of success in combining the prior art references to achieve the claimed invention. *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007). “Obviousness does not require absolute predictability of success . . . all that is required is a reasonable expectation of success.” *In re O’Farrell*, 853 F.2d 894, 903–04 (Fed. Cir. 1988) (citations omitted).

At this preliminary stage, we determine whether the information presented shows a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims would have been obvious over the proposed prior art.

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention. *Graham*, 383 U.S. at 17.

Petitioner contends that a person of ordinary skill in the art “would have an educational background, such as a Bachelor of Science degree, in chemistry, chemical engineering and/or material science or a related field, as well as some understanding of mechanics or manufacturing” and “would have at least two to four years of practical experience in manufacturing or designing composite materials, such as engineered stone or ceramic tiles” but that “[a]dditional practical or work experience can result in a lower level of education being necessary, and vice versa.” Pet. 8–9 (citing Ex. 1004 ¶ 46). Patent Owner does not, at this time, dispute Petitioner’s proposed definition. See Prelim. Resp., *passim*.

On this record, we determine that Petitioner’s proposed definition is consistent with the prior art of record, and apply it for this Decision, with the exception of the open-ended phrase “at least,” which expands the range of experience indefinitely without an upper bound. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (explaining that specific findings on ordinary skill level are not required “where the prior art itself reflects an appropriate level and a need for testimony is not shown” (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985))).

C. *Claim Construction*

We construe claim terms according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc); 37 C.F.R. § 42.100(b) (2021). Under *Phillips*, we give claim terms “their ordinary and customary meaning.” *Phillips*, 415 F.3d at 1312. “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. “Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.*

Petitioner states that “no terms require express construction because the patent claims encompass the below prior-art mappings under any reasonable construction consistent with the *Phillips* standard.” Pet. 9. Patent Owner does not, at this time, seek construction of any terms. *See* Prelim. Resp. 28.

For purposes of this Decision, we need not expressly construe any claim terms. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that “only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

D. Challenges based on Benito Lopez and Liu with or without Toncelli '044

Petitioner alleges that the combination of Benito Lopez and Liu would have rendered obvious claims 1–4, 6–11, and 14–35 of the '942 patent and that claims 12 and 13 of the '942 patent would have been rendered obvious with the addition of Toncelli '044. Pet. 15–49, 75–76. Petitioner relies on the testimony of Mr. Tassone to support its arguments. *See id.*

1. Overview of the Prior Art

a) Benito Lopez (Ex. 1005)

Benito Lopez “relates to those articles that include any kind of agglomerated artificial stone and polymerisable resin, such as tiles or slabs, to be used as construction material” having “different strati or veins, of heterogeneous variable mass that provide a special aesthetic effect similar to the natural stone products.” Ex. 1005 ¶ 2. These articles “are used as decorative surfaces in interior and exterior spaces, such as kitchen worktops, bathrooms, flooring, exterior staircases, etc.” *Id.* ¶ 5. According to Benito Lopez, the articles would have “a look as close as possible to natural stone which design can be defined by different layered minerals, with different granulometries and varied colours.” *Id.*

Benito Lopez discloses that from its system of application of layers by the creation of different mixes, the dimensions of the veins “reach[] a stratum width from 10 mm to 3400 mm[,], preferably 500 mm and lengths that could cross the product in length and width.” *Id.* ¶ 24. Benito Lopez further discloses that the “strati (or large size veins)” provide a product that looks natural. *Id.* Stages of manufacturing Benito Lopez’s product include crushing different materials, mixing the crushed material with a resin and a binding material, homogenizing the mixture to achieve pastes or masses of different granulometry, transporting the different mixtures or strati by a conveyor belt to a feeding or distribution mechanism, downloading the strati to a mold, compressing the mixtures or pastes in the mold by vacuum vibro-compression, allowing hardening via polymerization, and finally sizing or cutting into a final product. *Id.* ¶¶ 27–36. Materials used with “variable granulometry” include quartz. *Id.* ¶ 48. Benito Lopez discloses that “the preparation of up to 20 different compositions of masses with fillers of different granulometry” can be used, “pending on the final product to be achieved.” *Id.* ¶ 68. Benito Lopez discloses that one stage of the manufacturing process produces “different masses, pastes or strati which are independently prepared in each mixer and always avoiding a later homogenization existing in the regular processes.” *Id.* ¶ 74. Weighting and movement means can be used to allow “controlling the strati dimensions, for example, width, length, shape, etc. in the final product.” *Id.* ¶ 77.

Figure 2 is illustrative and is reproduced below.

FIG.2

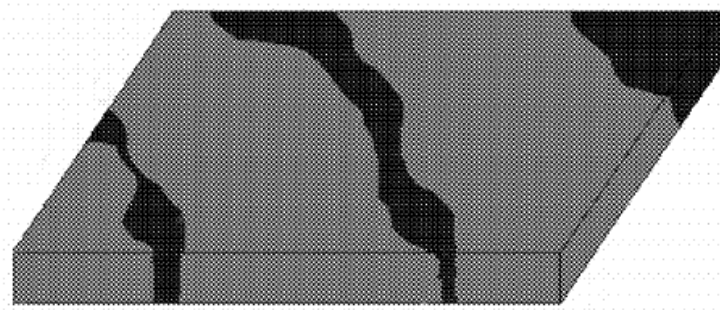


Figure 2 “represents the effect achieved in the final product from the distribution of the strati,” from Benito Lopez’s stages of manufacturing. *Id.* ¶ 43.

b) Liu (Ex. 1007)

Liu “relates to a processing method of ceramic tiles and, more particularly, to a processing method of unburned imitation natural stone textured ceramic tiles.” Ex. 1007 ¶ 1. In particular, Liu explains that due to the low controllability of prior grid strip texture distribution methods, the imitation natural stone textured ceramic tiles produced via those methods “only have some approximate and rugged textured lines” and “thus limiting its simulation to some rugged textured stones.” *Id.* ¶ 2. Liu purports to resolve these problems by “providing a processing method of unburned imitation natural stone textured ceramic tiles that have the advantages of natural textured lines, color richness, good simulation effects, good controllability, pattern stability and process simplicity.” *Id.* ¶ 3.

Figure 1 of Liu, reproduced below, is a flow diagram of its processing method. *Id.* ¶ 8.

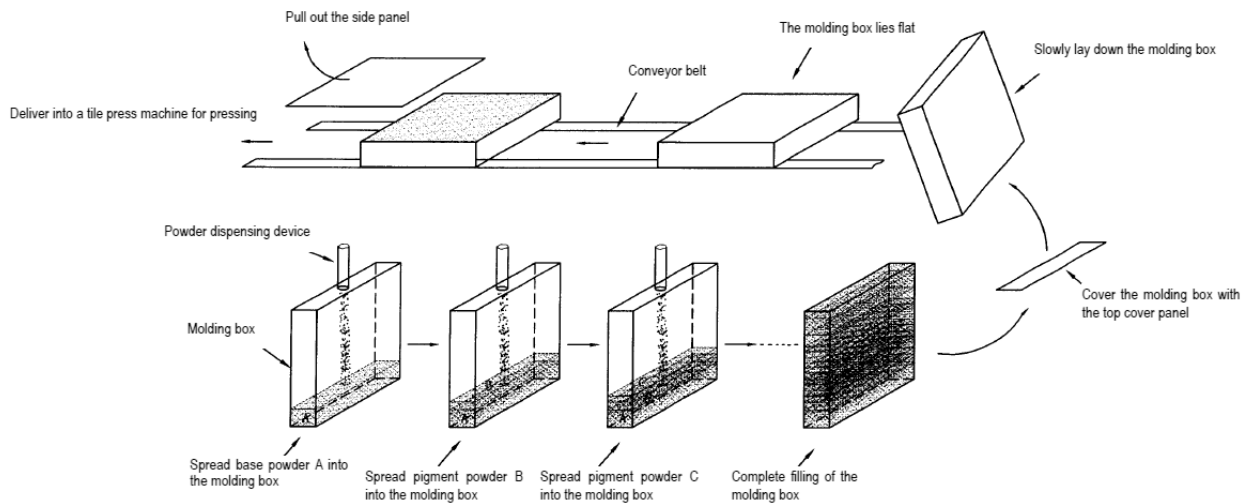


Figure 1

Figure 1 shows a process flow diagram including firstly (starting at the bottom left of the figure) “installing a fabricated molding box vertically on a material distribution equipment” and spreading “a layer of base powder A on the inner bottom of the molding box according to the designed quantity by means of the powder dispensing device of the material distribution equipment.” *Id.* ¶ 13. Then, different pigment powders, such as pigment powders B and C, “can be spread uniformly or randomly according to design requirements by controlling the powder dispensing device until the bottom of the molding box is fully filled or filled to a certain height according to design requirements.” *Id.* Thereafter, base powder A is spread “until the molding box is filled according to design requirements.” *Id.* The following steps include covering the top cover panel of the molding box, positioning “the molding box filled with powder to lie flat on a conveyor belt for delivery to a tile press machine,” pulling out the side panel on the molding box, and finally, delivering “the molding box into the mold cavity of the tile press machine for pressing.” *Id.*

Figures 2 and 3 of Liu, reproduced below, are a schematic view of a processed unburned ceramic tile and a schematic sectional view of the unburned ceramic tile, respectively. *Id.* ¶¶ 9–10.

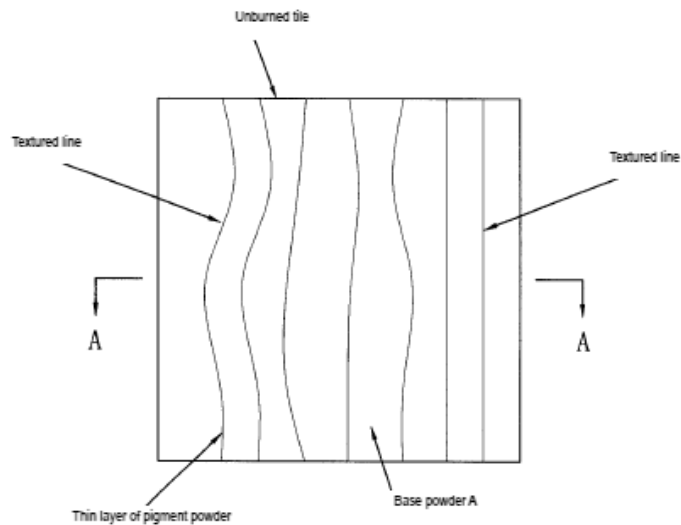


Figure 2

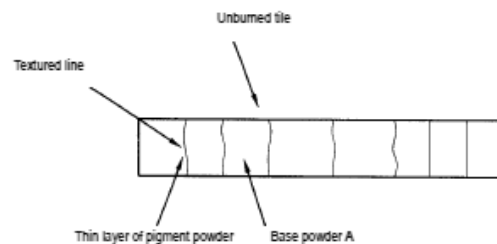


Figure 3

As shown in Figures 2 and 3, “the textured lines formed are straight lines or curved lines” because “when the powder dispensing device of the material distribution equipment is controlled to spread a layer of powder A uniformly on the inner bottom of the molding box, the textured lines embodied by the unburned tile produced are straight lines” and “when the powder dispensing device of the material distribution equipment is controlled to spread a layer

of powder A randomly on the inner bottom of the molding box, the textured lines embodied by the unburned tile produced are irregular curved lines.”

Id. ¶ 13. Liu discloses that “[t]he thickness or fineness of the textured line formed in the process is determined by the height or thickness of the powder layer whose determination can be made by controlling the amount of powder spread by the powder dispensing device.” *Id.*

c) *Toncelli '044*

Toncelli '044 “relates to the manufacture of stone conglomerate products, in particular slabs with a veined effect.” Ex. 1011 ¶ 1.

Toncelli '044 explains that slabs or tiles have been made of “a granulate, preferably natural stone material, and a binder, consisting of a cement or synthetic resin.” *Id.* ¶ 2. A mix is poured into a rubber mold and the layer of mixture is subjected to vibrocompaction. *Id.* ¶¶ 3–4. Toncelli '044 discloses that it is desirable to provide the surface of the slab with a “veined” effect so that the surface “resembles even more closely the natural stone material.” *Id.* ¶ 9. Toncelli '044’s manufacturing process includes, after the formation of a non-colored layer of mix on a temporary support or tray mold, a step is added “involving the formation of irregular grooves or roughness, which causes the distribution of the dye also to become even more irregular and random.” *Id.* ¶ 36.

2. *Analysis of Claim 1*

Petitioner alleges that Benito Lopez discloses all elements of claim 1, “except that *Benito Lopez* does not teach dispensing the material mixes into the mold while the mold is in a non-horizontal orientation.” Pet. 15. But Petitioner asserts that “*Liu* discloses these elements.” *Id.* Specifically, Petitioner alleges that the preamble of claim 1 is disclosed by Benito Lopez,

which explains that “[t]he present invention is a process to manufacture artificial stone products, amongst others, tiles or slabs” and that the slabs are formed of different particulate mineral mixes, as claimed. *Id.* at 23 (quoting Ex. 1005 ¶ 27; citing Ex. 1005 ¶¶ 2, 28–30, 48; Ex. 1004 ¶¶ 127–130). Petitioner contends that Benito Lopez describes depositing mineral mixes in an ordered manner but “does not teach that the mold is in a non-horizontal orientation when the strati are downloaded.” *Id.* (citing Ex. 1005 ¶¶ 32, 62, 78, 103; Ex. 1004 ¶ 138). But, Liu describes “orient[ing] a ‘molding box’ vertically prior to distribution of pigmented powder.” *Id.* at 24–25 (citing Ex. 1007 ¶¶ 4, 6, 11, 13, Fig. 1; Ex. 1004 ¶¶ 137–140, 468–488); *see also id.* at 25–26 (describing “dispensing multiple different particulate mineral mixes into the substantially non-horizontally oriented mold”) (citing Ex. 1005 ¶¶ 28–30, 32, 38, 48, 62, 68–69, 78, 103; Ex. 1007 ¶¶ 4, 6, 11, 13, Fig. 1; Ex. 1004 ¶¶ 138, 142–148, 468–488).

Petitioner also argues that Benito Lopez teaches a “processed slab (and veins) [that] can be up to 3400mm (11ft, 2 inches) long and 3400mm (11ft, 2 inches) wide,” thus meeting the requirement of claim 1 that the mold space is “at least 6 feet long by at least 2 feet wide. *Id.* at 26 (citing Ex. 1005 ¶¶ 24, 47; Ex. 1004 ¶¶ 150–151). Petitioner also contends that Benito describes use of a “colouring agent” that may be added to the different mineral mixtures to create the strati. *Id.* (citing Ex. 1005 ¶¶ 4, 29, 56, 69, 72, 85; Ex. 1004 ¶¶ 154–155).

Petitioner further contends that Benito Lopez describes a mold having a horizontal orientation while the different mineral mixtures are in the mold. *Id.* at 27–28 (citing Ex. 1005 ¶ 82; Ex. 1004 ¶¶ 158–160). Petitioner explains that “[t]o the extent the recitation of ‘adjusting’ requires re-

orienting the slab from a non-horizontal orientation to a horizontal orientation, *Liu* explicitly discloses that step.” *Id.* at 28 (citing Ex. 1007 ¶ 13, Fig. 1; Ex. 1004 ¶¶ 161–164). Lastly, Benito Lopez teaches compressing and vibrating the particulate mixtures in a horizontal orientation as claimed. *Id.* at 29–30 (citing Ex. 1005 ¶ 82; Ex. 1004 ¶¶ 166–168; Ex. 1010⁶, 3:38–42, 4:17–18).

Petitioner contends that Benito Lopez and Liu are analogous art to the ’942 patent as both references are within the same field of endeavor and reasonably pertinent to the particular problem faced by the inventor. *Id.* at 15–18. Petitioner reasons that a person of ordinary skill in the art would have been motivated to combine the methods of Benito Lopez and Liu because “[t]here has been a pervasive motivation to improve engineered stone and ceramic tile products to look as close as possible to their natural stone counterparts since at least the early 2000s.” *Id.* at 18 (citing Ex. 1004 ¶¶ 69, 74–80, 470–471). According to Petitioner, both Benito Lopez and Liu “recognize the desirability of generating veins of lines in synthetic slabs or tiles to the end goal of emulating natural stone slabs or tiles.” *Id.* at 19 (citing Ex. 1005 ¶¶ 12, 26; Ex. 1007 ¶ 2; Ex. 1004 ¶¶ 98–101, 108–109, 472–473); *see also id.* at 19–20 (citing Ex. 1005 ¶¶ 7–21, 24, 26; Ex. 1007 ¶ 3; Ex. 1004 ¶¶ 87–96, 107, 475–477). Therefore, a person of ordinary skill in the art “would have been motivated to try *Liu*’s vertical distribution with the other aspects of *Benito Lopez*’s method . . . to improve the appearance of the veins and/or the manufacturing processes” and “to try known alternative

⁶ Toncelli, US 4,698,010, issued October 6, 1987 (Ex. 1010, “Toncelli ’010”).

processes to achieve that goal,” with a reasonable expectation of success. *Id.* at 20, 22–23 (citing Ex. 1004 ¶¶ 479–483).

Patent Owner does not dispute many of Petitioner’s allegations above. Instead, Patent Owner argues that Petitioner failed to show that the combination of Benito Lopez and Liu teaches the dimensions claimed by the ’942 patent. Prelim. Resp. 46–49. In addition, Patent Owner contends that Petitioner fails to demonstrate a reason to combine Benito Lopez and Liu, or a reasonable expectation of success in the proposed combination. *Id.* at 29–46. Because we are persuaded by Patent Owner’s argument that Petitioner failed to establish a reason to combine Benito Lopez with Liu, we limit our discussion to that argument below.

Patent Owner contends that Petitioner’s stated motivation—that is, to make a processed slab that mimics the veining pattern of natural stone slabs—is “generic,” conclusory, and lacks “reasoning with some rational underpinning.” Prelim. Resp. 30–31. Patent Owner further alleges that “[t]he Federal Circuit has rejected nearly identical motivations that a skilled artisan would have ‘wanted to build something better’ and ‘more attractive to [] customers’ as ‘generic and bear[ing] no relation to any specific combination of prior art elements.’” *Id.* at 31 (quoting *ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012)).

We agree with Patent Owner that Petitioner’s rationale for combining Benito Lopez and Liu is insufficient and fails to provide the necessary factual support.

In making a determination of obviousness, it is not enough that each claimed limitation be found in one or more prior art references. *In re*

Kotzab, 217 F.3d 1365, 1371 (Fed. Cir. 2000) (explaining that obviousness “cannot be predicated on the mere identification . . . of individual components of claimed limitations”). Instead, Petitioner must also show that the skilled artisan would have had a reason to combine each of the prior art references to achieve the claimed subject matter and a reasonable expectation of success in making the combination. *PAR Pharm., Inc. v. TWi Pharm. Inc.*, 773 F.3d 1186, 1193 (Fed. Cir. 2014). A generic reason to combine references fails to “explain why a person of ordinary skill in the art would have combined elements from specific references *in the way the claimed invention does.*” *ActiveVideo*, 694 F.3d at 1328; *see also Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 381 F.3d 1371, 1377 (2004) (explaining that “[r]ecognition of a need does not render obvious the achievement that meets that need” because “[t]here is an important distinction between the general motivation to cure an uncured disease . . . and the motivation to create a particular cure.”).

Here, Petitioner combines Benito Lopez’s method—involving dispensing a particulate mineral mixture into a horizontally-oriented mold—with Liu’s method—dispensing into a vertically-oriented mold. Pet. 15. Petitioner reasons that the person of ordinary skill in the art would have been motivated to combine the teachings of these references as part of the “pervasive motivation to improve engineered stone and ceramic tile to look as close as possible to their natural stone counterparts.” *Id.* at 18 (citing Ex. 1004 ¶¶ 69, 74–80, 470–471), 20 (citing Ex. 1004 ¶¶ 479–481). According to Petitioner, a person of ordinary skill in the art “would have been motivated to try alternative known methods for manufacturing engineered stone slabs that could better emulate natural stone at competitive

costs.” *Id.* at 18–19 (citing Ex. 1004 ¶ 470). Petitioner’s proffered reason to modify Benito Lopez with Liu, however, merely addresses a *generalized desire* in the industry to improve the aesthetic quality of engineered stone slabs and does not provide a reason to adopt Liu’s vertically-oriented dispensing method. *Cardiac Pacemakers*, 381 F.3d at 1377. Petitioner fails to direct our attention to any record evidence that the specific dispensing method described in Liu improves the overall aesthetics of the engineered slab beyond that described in Benito Lopez. Rather, the record evidence shows that each of Benito Lopez and Liu product artificial stone products that mimic the veining patterns of natural stone. Pet. 10, 12–14; Prelim. Resp. 33 (explaining that the “Petition recognizes that Benito Lopez *already achieves* this goal”); *see also* Ex. 1007 ¶¶ 3 (Liu describing the goal to create “unburned imitation natural stone textured ceramic tiles”), 5 (“the present invention . . . produce[s] imitation natural stone textured ceramic tiles with color richness and good simulation effects”), 6, 12–13; Ex. 1005 ¶¶ 4 (Benito Lopez stating that it achieves “an aesthetic look similar to natural stone . . . surpassing the existing technical limitation”), 26 (providing a method that produces slabs “with a similar design to that of natural stone, created by a tri-dimensional stratus”). The mere fact that Benito Lopez and Liu share a common goal of producing products that mimic natural stone fails to identify what *would have* prompted the skilled artisan to arrive at the combination in the first place. This is especially true where Petitioner seeks to add—not substitute—a process step, thereby introducing added complexity into Benito Lopez’s method. *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1329, 1332 (Fed. Cir. 2019) (affirming the Board’s decision that a person of ordinary skill in the art would not have reason to

make a modification that “introduce[s] additional complexity and inefficiencies” into a process). As Patent Owner aptly points out, “the Petition contains no analysis of the costs required to add machinery that rotates the mold from a vertical to horizontal orientation” and fails to “account for the additional time required for this step.” Prelim. Resp. 40.

Petitioner also relies on the testimony of Mr. Tassone, but Mr. Tassone’s testimony similarly falls short. *See* Ex. 1004 ¶¶ 69, 74–80, 470–471, 479–481. Mr. Tassone’s testimony is entitled to little weight because it fails to explain how the alleged market pressures or commercial need would motivate one of ordinary skill in the art to make the specific proposed modification, and it is not otherwise apparent that it does. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *see also Velander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) (“It is within the discretion of the trier of fact to give each item of evidence such weight as it feels appropriate.”); *cf. Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (“Lack of factual support for expert opinion going to factual determinations, however, may render the testimony of little probative value in a validity determination.”).

As a result, Petitioner’s reason to combine is generic and untethered from the modification being made, and, therefore, is insufficient to support a determination of obviousness.

3. *Remaining Claims (Claims 2–4, 6–13, and 14–35)*

Petitioner’s alleges that the combination of Benito Lopez and Liu renders claims 2–4, 6–11, and 14–35 obvious, and that Toncelli ’044

suggests the added subject matter of claim 12 and 13. *See* Pet. 25–49, 75. Patent Owner does not challenge Petitioner’s allegations as to dependent claims 2–4, 6–11, and 14–35, but rests on its arguments discussed above for independent claim 1. *See generally* Prelim. Resp. Having determined that Petitioner failed to satisfy the threshold showing under 35 U.S.C. § 314(a) for institution of trial with respect to independent claim 1 of the ’942 patent (*see supra* Section II.D.2.), we similarly determine Petitioner has failed to demonstrate a likelihood that the subject matter of claims 2–4, 6–13, and 14–35 would have been obvious over the disclosures of Benito Lopez, Liu, and Toncelli ’044.

E. Challenge based on Liu and Benito Lopez, with or without Toncelli ’044

Petitioner alleges that the combination of Benito Lopez and Liu would have rendered obvious claims 1–4, 6–11, and 14–35 of the ’942 patent and that claims 12 and 13 of the ’942 patent would have been rendered obvious with the addition of Toncelli ’044. Pet. 49–75, 78–79. Petitioner also relies on the testimony of Mr. Tassone to support its arguments. *See id.*

1. Analysis of Claim 1

Petitioner alleges that Liu modified by Benito Lopez similarly renders the subject matter of claim 1 obvious. Specifically, Petitioner alleges that Liu discloses the preamble of claim 1 in that it “teaches ‘ . . . feeding prepared base powder A and pigment powders of various colors (powder B, powder C, powder D, powder E, powder F, etc) into a powder dispensing device.’” Pet. 49 (quoting Ex. 1007 ¶ 4; citing Ex. 1007 ¶¶ 6, 11, 13). According to Petitioner, a person of ordinary skill in the art “would know that ceramic powder would include minerals, such as granite, quartz, and marble.” *Id.* at 50 (Ex. 1004 ¶¶ 132–136). Petitioner also contends that Liu

describes distributing pigmented powder into a “molding box” that is oriented vertically as shown in Figure 1. *Id.* at 50 (citing Ex. 1007 ¶¶ 4, 6, 11, 13). Petitioner asserts that deposited pigments describe “multiple different particulate mineral mixes” as claimed. *Id.* at 51 (citing Ex. 1004 ¶¶ 146–148). Petitioner acknowledges that Liu “does not disclose the specific dimensions for its ceramic tiles,” but that it would have been obvious to a person of ordinary skill in the art and that Benito Lopez “discloses these dimensions for a processed slab.” *Id.* (citing Ex. 1005 ¶¶ 24, 47; Ex. 1004 ¶¶ 150–151). Further, Petitioner alleges that Liu “teaches to adjust the mold from the vertical orientation (during filling) to a horizontal orientation: [to] ‘. . . slowly cause the molding box filled with powder to lie flat on a conveyor belt for delivery to a tile press machine.’” *Id.* at 52 (quoting Ex. 1007 ¶ 13; citing Ex. 1004 ¶¶ 161–164). Lastly, Petitioner asserts that Liu delivers the filled molding box “to a ‘tile press machine for pressing.’” *Id.* at 53 (citing Ex. 1007 ¶ 13, Fig. 1). Petitioner explains that a person of ordinary skill in the art “would have known to simultaneously ‘vibrate’ the powder, in addition to compacting it when using *Liu*’s method to make a ceramic slab (instead of tile)” because Toncelli ’223⁷ and Benito Lopez both describe compacting mineral powders using a vibro-compression method. *Id.* at 53 (citing Ex. 1004 ¶¶ 166–172; Ex. 1008, 1:11–32; Ex. 1005 ¶ 82; Ex. 1010, 3:38–42, 4:17–18).

Patent Owner does not dispute many of Petitioner’s allegations above. Instead, Patent Owner argues that Petitioner failed to show that the combination of Benito Lopez and Liu teach multiple particulate mineral

⁷ Toncelli, US 8,940,223 B2, issued January 27, 2015 (Ex. 1008, “Toncelli ’223”).

mixes, a mold space having the recited dimensions, or the vibration step claimed by the '942 patent. Prelim. Resp. 55–60. In addition, Patent Owner contends that Petitioner fails demonstrate a reason to combine Benito Lopez and Liu. *Id.* at 50–55. Because we are persuaded by Patent Owner's argument that Petitioner failed to establish a reason to combine Benito Lopez with Liu, we limit our discussion to those arguments below.

For the same reasons discussed above (Section II.D.2.) Petitioner's rationale for combining Liu and Benito Lopez is insufficient and fails to provide the necessary factual support. Petitioner presumably relies on the same reason to combine the teachings of Liu and Benito Lopez as it did to combine Benito Lopez and Liu, despite the fact that the proposed modification is entirely different. Here, Petitioner modifies the teachings of Liu to include a mold space of at least 6 feet by 2 feet taught by Benito Lopez. Petitioner fails to direct our attention to any record evidence that the mold space or slab size in Benito Lopez would improve the overall aesthetics of the engineered slab or create a slab that better emulates natural stone. Further, Petitioner's statement that a person of ordinary skill in the art "would know that the ceramic powders discussed in *Liu* could be used to make ceramic slabs, which would be of the same sizes as the engineered stone slabs discussed in the '942 Patent and *Benito Lopez*" (Pet. 51), is conclusory and similarly fails to provide any reason for the skilled artisan to have selected the dimensions described in Benito Lopez. And, for the same reasons discussed above (Section II.D.2.), Mr. Tassone's testimony regarding the combination of Liu and Benito Lopez is entitled to little weight because it fails to explain what would have motivated the skilled

artisan to make the modifications identified. Ex. 1004 ¶¶ 69, 74–80, 150–152, 470–471, 479–481.

As a result, Petitioner’s reason to combine is generic and untethered from the modification being made, and, therefore, is insufficient to support a determination of obviousness.

2. *Remaining Claims (Claims 2–4, 6–13 and 14–35)*

Petitioner’s alleges that the combination of Liu and Benito Lopez render claims 2–4, 6–11, and 14–35 obvious, and that Toncelli ’044 suggests the added subject matter of claim 12 and 13. *See* Pet. 53–75, 78–79. Patent Owner does not challenge Petitioner’s allegations as to dependent claims 2–4, 6–11, and 14–35, but rather rests on its arguments discussed above for independent claim 1. *See generally* Prelim. Resp. Having determined that Petitioner failed to satisfy the threshold showing under 35 U.S.C. § 314(a) for institution of trial with respect to independent claim 1 of the ’942 patent (*see supra* Section II.E.2.), we similarly determine Petitioner has failed to demonstrate a likelihood that the subject matter of claims 2–4, 6–13, and 14–35 would have been obvious over the disclosures of Benito Lopez, Liu, and Toncelli ’044.

F. Discretion Under 35 U.S.C. § 314(a) and § 325(d)

Petitioner argues that the Board should not exercise its discretion to deny institution under 35 U.S.C. § 314(a) in view of the District Court litigation. Pet. 79–80 (citing *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential)). Patent Owner asserts that “[t]he Board should exercise its discretion to deny institution under 35 U.S.C. § 325(d) . . . because the Examiner considered the same prior art and arguments presented in the Petition,” but does not address whether we

should exercise our discretion to deny institution under 35 U.S.C. § 314(a). Prelim. Resp. 19–28. For the reasons stated above, we decline to institute *inter partes* review. Because we base our denial of institution on the merits of this case, it is unnecessary for us to analyze whether we should also discretionarily deny institution under 35 U.S.C. § 314(a) or 35 U.S.C. § 325(d).

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition. Accordingly, we do not institute an *inter partes* review of the '942 patent.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, the Petition is *denied* as to all challenged claims of U.S. Patent No. 9,993,942 B2 and no trial is instituted

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Patent 9,993,942 B2

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