

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MARKFORGED INC.,

Petitioner,

v.

CONTINUOUS COMPOSITES, INC.,

Patent Owner.

IPR2022-01431

Patent 11,173,660 B2

Before GRACE KARAFFA OBERMANN, JO-ANNE M. KOKOSKI,
and SHELDON M. McGEE, *Administrative Patent Judges*.

McGEE, *Administrative Patent Judge*.

DECISION

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

I. INTRODUCTION

Petitioner filed a Petition (Paper 2, “Pet.”) for institution of an *inter partes* review of claims 1–4 of U.S. Patent No. 11,173,660 B2 (Ex. 1001, “the ’660 patent”).

Patent Owner filed a Preliminary Response (Paper 6, “Prelim. Resp.”). The parties identify a district court action as a related matter: “*Continuous Composites, Inc. v. Markforged, Inc.*, No. 1:21-cv-00998-MN” (DDE). Pet. 1; Paper 5, 1. Patent Owner also identifies IPR2022-00548, IPR2022-00652, IPR2022-00679, IPR2022-00732, IPR2022-01218, and IPR2022-01220, as well as pending US Patent Applications 16/946,469, 17/481,147, 17/453,309, and 17/453,313 as related matters. Paper 5, 1.

II. BACKGROUND

A. *The ’660 Patent (Ex. 1001)*

The ’660 patent relates to “[a] method and apparatus for the additive manufacturing of three-dimensional objects” where “[t]wo or more materials are extruded simultaneously as a composite, with at least one material in liquid form and at least one material in a solid continuous strand completely encased within the liquid material.” Ex. 1001, code (57). According to the ’660 patent, this “method is called Continuous Composite Three-Dimensional Printing (CC3D).” *Id.* at 2:15–16.

The ’660 patent indicates that the primary material is a curable liquid, such as a photosensitive resin, and the secondary material is a solid strand, such as carbon fiber. “These two materials are extruded together, with the secondary material fully encased within the primary material,” creating a composite material. *Id.* at 2:28–33.

B. Challenged Claims

We reproduce below¹ claims 1, 2, and 4 which are the challenged independent claims, and which illustrate the subject matter of the '660 patent.

1. [pre] An apparatus for additive manufacturing of a three-dimensional object, comprising:
 - [a] an extruder configured to emit a fiber and a polymer;
 - [b] at least one of a robot arm or a gantry system configured to move the extruder during emitting to form the three-dimensional object from the fiber and the polymer;
 - [c] a device configured to cause the polymer to harden after emission from the extruder, the device being attached to and moveable with the extruder;
 - [d] a component configured to allow the fiber to enter a nozzle of the extruder from a feeder and to prevent the polymer from entering the feeder from the nozzle; and
 - [e] a blade for cutting the fiber at a location upstream of the device.
2. [pre] An apparatus for additive manufacturing of a three-dimensional object, comprising:
 - [a] a nozzle configured to emit a fiber together with a polymer;
 - [b] a feeder configured to feed the fiber to the nozzle;
 - [c] a blade for cutting the fiber at a location upstream of the nozzle; and
 - [d] a mechanical apparatus configured to move the nozzle during emitting to form the three-dimensional object from the fiber and the polymer.
4. [pre] An apparatus for additive manufacturing of a three-dimensional object, comprising:
 - [a] a nozzle configured to emit a fiber reinforced material;
 - [b] a heater configured to heat the fiber reinforced material;

¹ We include Petitioner's claim element reference numerals, e.g., 1[a], 1[b].

[c] a mechanical apparatus configured to move the nozzle during emitting to form the three-dimensional object from the fiber reinforced material; and

[d] a control unit programmed to cause the mechanical apparatus to move the nozzle relative to an anchor during emitting, such that the fiber is pulled through the nozzle by the movement.

Ex. 1001, 10:58–67; 11:1–32.

C. Grounds of Unpatentability Asserted in the Petition

Petitioner advances three grounds of unpatentability asserting that the subject matter of claims 1–4 would have been obvious under 35 U.S.C. § 103(a)² as set forth in the following table.

Claims Challenged	Statutory Basis §	Reference(s)
1–3	103(a)	Lipsker ³
4	103(a)	Lipsker, Ma ⁴
1–4	103(a)	Ma, Lipsker

Pet. 3, 15. Petitioner relies on the Declaration of Dr. David Rosen (Ex. 1002) in support of its challenges.

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. Because the ’660 patent claims priority to a provisional application filed before March 16, 2013 (Ex. 1001, codes (22), (60)), we refer to the pre-AIA version of Section 103.

³ US 6,153,034, issued November 28, 2000 (Ex. 1010).

⁴ Erjian Ma, *Solid Freeform Fabrication of Continuous Fiber Reinforced Composite Materials* (August 6, 2001) (Ph.D. dissertation, Auburn University) (UMI Number 3016100) (Ex. 1011).

III. ANALYSIS

We have authority to institute an *inter partes* review only where “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). Our findings and conclusions set forth in this Decision are provided for the exclusive purpose of explaining our determination that Petitioner has not met that standard on this record.

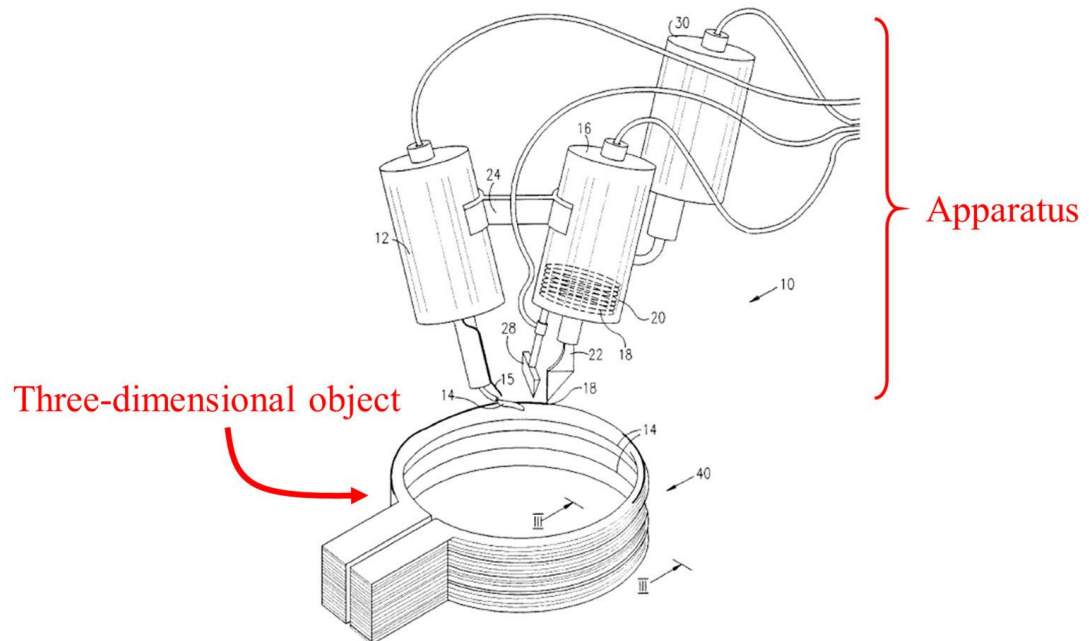
A. *Overview of the Prior Art*

1. *Lipsker (Ex. 1010)*

Lipsker is directed “to rapid prototype deposition modeling techniques and apparatus.” Ex. 1008, 1:4–6. In particular, Lipsker “seeks to provide improved rapid prototype deposition modeling techniques and apparatus, wherein a building material is added layer by layer to build an accurate replica of a given object, without having to remove building material to arrive at the finished prototype.” *Id.* at 1:52–56.

Lipsker’s Figure 2, as annotated by Petitioner (Pet. 28), is reproduced below.

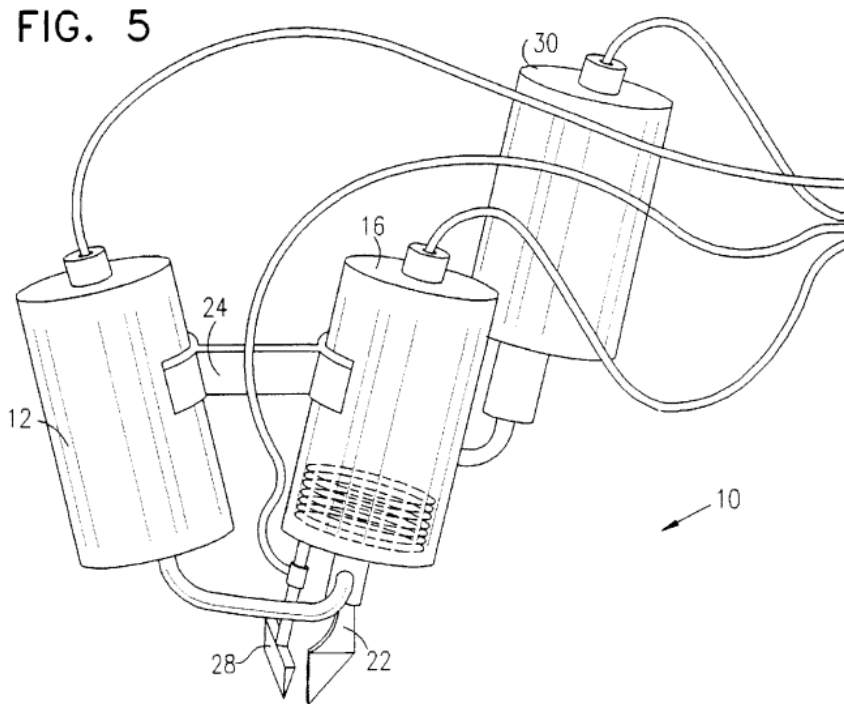
FIG. 2



Petitioner's annotated version of Lipsker's Figure 2 illustrates rapid prototype apparatus 10 forming prototype 40 of a three-dimensional object. Ex. 1010, 5:22–31. Lipsker explains that actuator 30 “dispenses layers of wire 18 in accordance with the geometry of object 34, and adhesive dispenser 12 applies adhesive 14 to wire 18 so as to bond a previously dispensed portion of wire 18 to a presently dispensed portion of wire 18.” Ex. 1008, 5:24–28. When adhesive 14 cures, the layers of wire 18 form prototype 40 of object 34. *Id.* at 5:30–31. “[O]ptic fiber 15 may be used to transmit ultraviolet energy to the adhesive for curing purposes.” *Id.* at 3:41–43.

Lipsker also discloses “an alternative method of applying adhesive 14 to wire 18,” where “[a]dhesive dispenser 12 may be located so as to dispense adhesive 14 into nozzle 22 such that wire 18 is dispensed from wire dispenser 16 pre-coated with adhesive 14.” Ex. 1010, 5:53–60. This

alternative method is illustrated in the device depicted in Lipsker's Figure 5, reproduced below:



Lipsker's Figure 5 illustrates rapid prototype apparatus 10 containing adhesive dispenser 12 connected directly to nozzle 22, "such that wire 18 is dispensed from wire dispenser 16 pre-coated with adhesive 14." Ex. 1010, 5:56–59.

2. *Ma (Ex. 1011)*

Ma is a dissertation relating to rapid prototyping and manufacturing technology. Ex. 1011, 7. Ma discloses an "Active Material Supplying" method where "[t]he material is affected by the pressure inside the nozzle that pushes the fluent material out of the orifice." *Id.* at 53. Ma also discloses a "Passive Material Supplying" method where "the towpreg is pulled out by the object instead of being pushed out by nozzle pressure." *Id.* at 54.

Ma distinguishes between these two methods, noting that with the “active” method, “[t]he forming quality of a previous layer does not influence the forming of the current layer,” while with the “passive” method, “the quality of a previous layer has a profound effect on the forming quality of the current layer.” Ex. 1011, 53. Ma sets forth other problems with using the “passive” method. *See, e.g., id.* at 95–96, 98–107, 143, 145–147, 149. For example, Ma teaches that during deposition using the “passive” method, “it is possible to make a big error, especially when the nozzle makes a big-angle turn” (*id.* at 98), and that “[a] toolpath error could be generated if an anchoring point is not formed properly” when using the “passive” method (*id.* at 143). Ma also discloses that forming speed is an issue with the “passive” method, (*id.* at 146), but discloses “[o]ne of the advantages [of the “active” method] is that the forming speed is not limited by the solidification condition of the towpreg during the forming process” (*id.* at 168).

B. Level of Ordinary Skill in the Art

Petitioner contends that a person having ordinary skill in the art (“POSITA”) would have had “a master’s degree in mechanical engineering, materials science, or a related degree, and at least 3–5 years of experience in composite materials or additive manufacturing,” or a bachelor’s degree in the same fields and at least 5–6 years of experience. Pet. 14 (citing Ex. 1002 ¶ 36). Patent Owner states that it “does not agree that Petitioner’s proposed level of skill in the art accurately reflects the level of ordinary skill in the art as of the priority date . . . [but] regardless of what level of skill is applied . . . the Petition does not show a reasonable likelihood to prevail.” Prelim. Resp. 10. Patent Owner does not propose a different level of skill in the art at this stage of the proceeding. *See id.* (“Patent Owner reserves the right to propose

a level of ordinary skill in the art in this proceeding should it be instituted, or in other proceedings.”).

On this record, we determine that the level of ordinary skill is reflected in the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (specific findings on the 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))). A more specific definition is not necessary for purposes of deciding whether to institute review. To the extent a more specific definition is required, however, we adopt Petitioner’s proposed definition because, on this record, it is consistent with the disclosures of the asserted prior art references. In any event, for the reasons explained below, even under Petitioner’s definition, Petitioner fails to establish a reasonable likelihood of prevailing at trial with respect to any challenged claim based on the grounds of unpatentability advanced in the Petition.

C. *Claim Construction*

In an *inter partes* review, we construe a claim in an unexpired patent “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) (2020). “[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.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). “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.*

We determine that no claim term requires express construction for purposes of this Decision. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’”).

D. Obviousness over Lipsker

1. Petitioner’s assertions⁵

Petitioner asserts that claims 1–3 are unpatentable as obvious over Lipsker. Pet. 28–46. In particular, Petitioner contends that “Lipsker discloses each and every limitation of Claim 1.” *Id.* at 28. For example, Petitioner argues that Lipsker’s Figure 2 discloses claim 1’s preamble and element 1[e]⁶—“a blade for cutting the fiber at a location upstream of the device” defined in element 1[c]. *Id.* at 28–30, 38–39. Petitioner asserts that Lipsker’s Figure 5 discloses element 1[a] (“an extruder configured to emit a fiber and a polymer”). *Id.* at 30–32. For element 1[c], Petitioner points to Lipsker’s disclosure “that ultraviolet (UV) energy, or even heat, can be used to cure the adhesive.” *Id.* at 34 (citing Ex. 1010, 3:33–46; Ex. 1002 ¶ 93). Petitioner maps the claimed “device configured to cause the polymer to harden after emission from the extruder” to Lipsker’s combination of UV lamp 84 and optic fiber 86 illustrated in Figure 6. *Id.* at 35, 39. Petitioner asserts that “because optic fiber 86, which is part of the” device and is also

⁵ We need only identify the parties’ positions relevant to our disposition of Petitioner’s challenges.

⁶ For brevity, we refer to Petitioner’s claim element reference numerals as set forth in the Petition.

attached to and is moveable with the extruder, Lipsker discloses element 1[c]. *Id.* at 35–36. Petitioner relies on other disclosures of Lipsker for elements 1[b] and 1[d]. *Id.* at 32–34, 36–37.

2. *Patent Owner’s arguments*

Patent Owner asserts that “Petitioner relies on distinct embodiments of Lipsker for different elements of independent claims 1, 2, and 4 without providing any reason to combine the various embodiments.”

Prelim. Resp. 20. According to Patent Owner, “Petitioner relies simultaneously on Lipsker’s distinct precoating actuator embodiment of Figure 5 for element 1[a][] (an ‘extruder configured to emit a fiber and a polymer’) and Lipsker’s non-precoating actuator embodiment of Figure 2 for elements 1[c] . . . and 1[e].” *Id.* at 20–21. Patent Owner asserts that such reliance is improper because “[t]he aspects that Petitioner relies on . . . are not compatible” because the non-precoating embodiment of Lipsker’s Figure 2 “only dispenses wire 18 and cannot be ‘configured to emit a fiber and a polymer,’ as required by the claim.” *Id.* at 22. According to Patent Owner, Petitioner relies on the embodiment illustrated in Figure 2 for the “device configured to cause the polymer to harden after emission from the extruder, the device being attached to and moveable with the extruder,” and “a blade for cutting the fiber at a location upstream of the device” because these features are missing from Lipsker’s pre-coating actuator embodiment illustrated in Figure 5. *Id.* Patent Owner contends that “[t]he optic fiber that Petitioner asserts constitutes the claimed device is not disclosed in Figure 5 at all.” *Id.*

Patent Owner asserts that because Petitioner provided no reason to combine these disparate embodiments, Petitioner has failed to establish that

their combination would have been obvious. Prelim. Resp. 22–23. Specifically, Patent Owner asserts that Petitioner’s statement that “Lipsker discloses that combinations of disclosed embodiments and features are possible and proper” (Pet. 20) at best amounts to an assertion that the ordinarily skilled artisan could have combined Lipsker’s embodiments and “does not show *how* or *why* a POSITA *would* have combined Lipsker’s embodiments to arrive at the claimed invention.” Prelim. Resp. 23. Patent Owner also contends that Petitioner further failed to show how the proffered combination of disparate embodiments could have been made with a reasonable expectation of success. *Id.* Patent Owner asserts that Petitioner “relies on its mistreatment of Lipsker” for claim 2 challenged in this ground. Prelim. Resp. 24.

3. *Discussion*

We agree with Patent Owner that Petitioner’s reliance on multiple embodiments in Lipsker falls short of establishing a reasonable likelihood that claims 1–3 would have been obvious over Lipsker.

Patent Owner is correct that Petitioner relies on the precoating actuator embodiment of Figure 5 and the non-precoating actuator embodiment of Figure 2 to establish that the claimed elements were known in the prior art. Prelim. Resp. 20–22. For example, each claim challenged under this ground requires an extruder or a nozzle configured to emit a fiber and a polymer. Ex. 1001, 10:60, 11:8–9. Petitioner relies on Lipsker’s precoating actuator embodiment illustrated in Figure 5 to evince this particular limitation. Pet. 30–32. Petitioner does not point to any disclosure within Lipsker, however, that discusses how the polymer adhesive that precoats wire 18 is “harden[ed] after emission from the extruder” in

accordance with claim 1. Indeed, Figure 5 does not illustrate optic fiber 15, which is depicted in the *non*-precoating actuator embodiment of Figure 2 as attached to the outlet of adhesive dispenser 12. Ex. 1010, Figs. 2, 5. Nor does Lipsker's description of its precoating actuator embodiment address how the adhesive coating the wire is cured or hardened. *Id.* at 5:53–60. Thus, it is unclear on this record whether Lipsker's precoating actuator embodiment contains “a device configured to cause the polymer to harden after emission from the extruder,” much less whether that device is “attached to and moveable with the extruder” as recited in limitation 1[c]. That lack of clarity naturally extends to limitation 1[e], which requires a specific location of the blade vis-à-vis the device of limitation 1[c].

We also agree with Patent Owner that Petitioner relies on aspects of Lipsker's non-precoating actuator embodiment illustrated in Figure 2 and Lipsker's precoating actuator embodiment illustrated in Figure 5 to evince that the limitations of independent claim 2 were known in the prior art. Prelim. Resp. 24. Namely, Petitioner again relies on Lipsker's precoating actuator embodiment to teach limitation 2[a], which requires “a nozzle configured to emit a fiber together with a polymer,” but turns to aspects of Lipsker's non-precoating embodiment to evince “blade” limitation 2[c]. Pet. 40–42. Here, Petitioner relies on Lipsker's disclosure of wire dispenser 19 “which doubles as a cutter” to satisfy limitation 2[c]. Pet. 41–42. Wire dispenser 19, however, is described by Lipsker as “a holding instrument, such as tweezers, tongs or pliers.” Ex. 1010, 4:28–29. Petitioner has not explained how Lipsker's holding instrument could operate with a precoated

wire, particularly if that wire's adhesive is uncured.⁷ Petitioner furthermore fails to discuss how the skilled artisan would have incorporated blades 21 on dispenser 19 in Lipsker's precoating actuator embodiment, or why those blades would have been necessary in view of blade 28 already present in this embodiment. Ex. 1010, Fig. 5.

We also agree with Patent Owner that Petitioner has not sufficiently explained why the ordinarily skilled artisan would have combined the non-precoating embodiment of Lipsker's Figure 2 and the precoating embodiment of Lipsker's Figure 5, much less with a reasonable expectation of successfully arriving at the subject matter of challenged claims 1–3. Prelim. Resp. 22–23. As Patent Owner correctly observes (*id.*), Petitioner's general assertion that “Lipsker discloses that combinations of disclosed embodiments and features are possible and proper” (Pet. 20) does not constitute a reasoned explanation regarding why the skilled artisan would have combined Lipsker's precoating and non-precoating actuator embodiments to arrive at the claimed subject matter. Moreover, Dr. Rosen's declaration testimony on this point is entitled to little to no weight as it merely parrots the Petition. *Compare* Pet. 20, *with* Ex. 1002 ¶ 69. 37 C.F.R. § 42.65(a).

For these reasons, we determine that Petitioner has failed to establish a reasonable likelihood of prevailing with respect to its challenge of claims 1–3 based on the disclosure of Lipsker.

⁷ As explained, *supra*, Lipsker does not describe or illustrate how its precoating actuator embodiment cures or hardens the adhesive.

E. Obviousness over Lipsker and Ma

1. Petitioner's assertions

Petitioner asserts that claims 1–4 are unpatentable as obvious based on the combined disclosures of Lipsker and Ma. Pet. 46–84. Specifically, Petitioner asserts claim 4 is obvious over Lipsker in view of Ma (Ground 2) and that claims 1–4 are obvious over Ma in view of Lipsker (Ground 3). We address these challenges together for brevity.

Petitioner sets forth where each of the limitations for claims 1–4 are disclosed in Lipsker and/or Ma. Pet. 46–84. Petitioner asserts that the skilled artisan would have been motivated to combine Lipsker and Ma for essentially the following reasons:

- 1) Lipsker and Ma are in the same field of endeavor (Pet. 46–47);
- 2) Lipsker and Ma “are responding to shortcomings arising from the use of monolithic building materials . . . such as, the lack of rigidity and strength in fabricated 3D products” and, as such, the skilled artisan, “eager to address the aforementioned shortcomings, expand his/her own knowledge on rapid prototyping methods, and get informed about the equipment options and materials used in rapid prototyping, would be highly motivated to seek” these references (*id.* at 47);
- 3) Lipsker and Ma contain complementary teachings and a person of ordinary skill in the art “would have been motivated to combine them so as to benefit from their respective teachings” (*id.* at 47–48); and
- 4) “the teachings and considerations of Lipsker would allow a POSITA to improve upon Ma’s methods effortlessly (and vice-

versa),” and therefore “would have been motivated to seek and combine” these references (*id.* at 48).

Petitioner also asserts that the ordinarily skilled artisan would have “considerable expectation of success” in combining the teachings of these references. *Id.*; *see also id.* at 60 (relying on these motivations for Ground 3).

2. *Patent Owner’s arguments*

Regarding Petitioner’s proffered motivations to combine, Patent Owner contends that Petitioner fails to provide sufficient reasons why the skilled artisan would have been motivated to combine the different embodiments within Lipsker. Prelim. Resp. 20–23.⁸ Patent Owner also asserts that Petitioner has similarly failed to provide reasons why the skilled artisan would have combined or modified the different embodiments of Ma in the challenges of claim 4. Prelim. Resp. 24–27.

Furthermore, Patent Owner asserts that Petitioner failed to articulate sufficient reasons why the skilled artisan would have combined Lipsker and Ma, and “never articulates *any* particular combination of the references *at all*.” Prelim. Resp. 29. According to Patent Owner, the Petition “lacks any discussion of *how* or *why* a POSITA *would* have combined [Lipsker and Ma] at all, much less in the way required by any claim element.” *Id.* at 30.

Specifically, Patent Owner asserts that even if Lipsker and Ma were considered to be analogous art, this does not mean that the skilled artisan would have combined them “for the sake of it,” i.e., without a specific

⁸ These are the same arguments as set forth in our discussion of Petitioner’s Ground 1 and need not be repeated here.

reason to do so. *Id.* at 31 (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417, 419 (2007)).

Patent Owner also contends that Petitioner’s second reason to combine Lipsker and Ma is similarly deficient because it lacks an explanation as to how the skilled artisan would have combined these references to render any claim element obvious. Prelim. Resp. 32–34. For example, Patent Owner also argues that “[e]ven if Ma disclosed the additional details Petitioner alleges, [Petitioner does] not provide a reason to modify Lipsker’s pushing system to ‘pull’ as required” by claim 4. *Id.* at 33–34.

Patent Owner also contends that Petitioner’s third reason to combine the Lipsker and Ma references amounts to what an ordinarily skilled artisan could have done with a reasonable expectation of success, and fails to address how or why that artisan would have combined the relied-upon reference teachings. Prelim. Resp. 34–35.

Patent Owner contends that Petitioner’s assertion that the teachings of Lipsker and Ma would allow the ordinarily skilled artisan “to improve on Ma’s methods effortlessly (and vice-versa)” is conclusory and lacks appropriate explanation and specificity. Prelim. Resp. 37.

With respect to Petitioner’s reliance on Ma, Patent Owner asserts that “Ma explores ‘two main fabrication processes’ for computer-controlled composite layering manufacturing (CLM):” an “active” method which pushes the composite material from an extruder’s orifice, and a “self-anchoring or ‘passive’” method. Prelim. Resp. 15. “In the passive method, rather than pushing, ‘the object is moved relative to the nozzle during the

forming process,” and the composite material “is pulled out by the object instead of being pushed out by nozzle pressure.” *Id.* at 16.

Patent Owner asserts that “Ma extensively criticizes and teaches away from the passive method in favor of the active method,” and concludes “that the passive method was so ‘limited’ that ‘other effective forming methods are highly desired and must be investigated.’” Prelim. Resp. 16. Patent Owner provides eight examples of how it believes Ma discusses drawbacks of the passive method and benefits of the active method. *Id.* at 16–19.

3. *Discussion*

We agree with Patent Owner that Petitioner fails to demonstrate a reasonable likelihood of prevailing with respect to these challenges of claims 1–4.

First, even if we were to agree with Petitioner that Lipsker and Ma are in the same field of endeavor, that fact alone would be insufficient to demonstrate that the ordinarily skilled artisan would have been motivated to combine these references at the time of the invention. Indeed, our reviewing court has held that merely asserting that two references are drawn from the same field of art is “simply too conclusory” to show that an ordinarily skilled artisan would have combined the references in the way of the claimed invention. *Securus Techs., Inc. v. Glob. Tel*Link Corp.*, 701 F. App’x 971, 976 (Fed. Cir. 2017); *see Microsoft Corp. v. Enfish, LLC*, 662 F. App’x 981, 990 (Fed. Cir. 2016) (determining that “the Board correctly concluded” that a petitioner “did not articulate a sufficient motivation to combine” where the only reason given was “that references were directed to the same art or same techniques.”).

The question of whether the prior art references are in the same field of endeavor is merely a threshold issue that must be satisfied *before* an obviousness determination can be made. *See K-Tec, Inc. v. Vita-Mix, Corp.*, 696 F.3d 1364, 1375 (Fed. Cir. 2012) (to qualify as prior art in an obviousness analysis, references must be analogous art—either in the same field of endeavor, or reasonably pertinent to the problem with which the inventor is involved). In other words, once it is determined that the prior art is analogous to the claimed invention, it is then necessary to show that it would have been obvious for the skilled artisan to select and combine the teachings of the prior art in the manner claimed.

Thus, we agree with Patent Owner that the Petition needs to set forth specific reasoning as to *why* an ordinarily skilled artisan would have been motivated to combine these references even if they are in the same or similar fields. Prelim. Resp. 31. Petitioner fails to do so on this record. The absence of such reasoning is particularly noteworthy here in view of Ma’s numerous teachings which appear to discredit the “passive” method of pulling the composite strand from the extruder as recited in claim 4, which is challenged in each of Grounds 2 and 3. Patent Owner identifies no fewer than eight disclosures within Ma that seemingly disparage the passive “pulling” method and discuss benefits of the active “pushing” method. Prelim. Resp. 16–19 (citing Ex. 1007, 53, 95–96, 98–107, 143–147, 149, 167–168). In the absence of any explanation from Petitioner on this point, we are not persuaded that the skilled artisan would have ignored those teachings and selected Ma’s pulling method.

Petitioner’s second proffered reason to combine these references is also unpersuasive. Pet. 47. Even if we were to agree with Petitioner that

“Lipsker and Ma are responding to shortcomings arising from the use of monolithic building materials,” Petitioner’s assertion that the skilled artisan “would be highly motivated to seek Lipsker and Ma” falls short of establishing a motivation to combine these references. *Id.*; see *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1373 (Fed. Cir. 2008) (“The district court was nevertheless correct that knowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references.”). Here, Petitioner is not sufficiently specific regarding how or why these references would have been combined to arrive at the challenged claims. Pet. 47.

Petitioner’s third proffered reason to combine Lipsker and Ma is similarly unavailing because it, too, lacks an explanation as to what specific disclosures in Lipsker and Ma would have been combined and for what reason(s). Instead, Petitioner provides little more than a conclusory assertion that these references are complementary and would provide some unarticulated “benefit.” Pet. 47–48. Bare assertions such as these fall far short of providing the requisite rationale sufficient to support a conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (*cited with approval in KSR*, 550 US at 418).

Petitioner’s final reason (Pet. 48) is similarly deficient because it fails to address the teachings of Lipsker and Ma with any degree of specificity and again does not elaborate on how or why the ordinarily skilled artisan would have combined the teachings of these references to arrive at the claimed subject matter. There is simply no discussion on this record precisely how Lipsker would allow the skilled artisan to “improve on Ma’s methods effortlessly (and vice-versa).” Pet. 48; *Kahn*, 441 F.3d at 988.

Finally, we determine that Dr. Rosen’s testimony supporting Petitioner’s proffered motivations to combine is entitled to little to no weight. Prelim. Resp. 29 (citing 37 C.F.R. § 42.65(a)). Here, the relied-upon portions of Dr. Rosen’s Declaration simply parrot Petitioner’s conclusory assertions. *Compare* Pet. 46–48, 60, *with* Ex. 1002 ¶¶ 140–144, 199.

For these reasons, Petitioner does not establish a reasonable likelihood of prevailing with respect to these challenges of claims 1–4.

IV. CONCLUSION

Based on the information presented in the Petition and the Preliminary Response, 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.

IPR2022-01431
Patent 11,173,660 B2

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