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Paper No. 39
Date: July 26, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EXTRACTIONTEK SALES LLC,
Petitioner,

v.

GENE POOL TECHNOLOGIES, INC.,
Patent Owner.

IPR2022-00625
Patent 9,587,203 B2

Before JEFFREY N. FREDMAN, CYNTHIA M. HARDMAN, and JAMIE T. WISZ, *Administrative Patent Judges.*

HARDMAN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

This is a Final Written Decision in an *inter partes* review challenging the patentability of claims 1–20 of U.S. Patent No. 9,587,203 B2 ("the '203 patent," Ex. 1001). We have jurisdiction under 35 U.S.C. § 6.

Petitioner has the burden of proving unpatentability of the challenged claims by a preponderance of the evidence. 35 U.S.C. § 316(e). Having reviewed the parties' arguments and cited evidence, for the reasons discussed below, we find that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 7–17 are unpatentable, but has not demonstrated by a preponderance of the evidence that claims 2–6 and 18–20 are unpatentable.

A. Procedural History

Petitioner ExtractionTek Sales LLC filed a Petition requesting *inter partes* review of claims 1–20 of the '203 patent. Paper 1 ("Pet."). Patent Owner Gene Pool Technologies, Inc. filed a Preliminary Response. Paper 12. In view of the then-available preliminary record, we instituted an *inter partes* review. Paper 14 ("Dec.").

After institution, Patent Owner filed a (corrected) Response to the Petition. Paper 19 ("PO Resp."). Petitioner filed a Reply. Paper 24 ("Reply"). Patent Owner filed a Sur-reply. Paper 25 ("Sur-reply").

On May 17, 2023, we held an oral hearing, the transcript of which is of record. Paper 37 ("Tr.").

B. Real Parties in Interest

The parties each identify themselves as the real parties in interest. Pet. 2;[1] Paper 8, 1.

C. Related Matters

Petitioner states that the '203 patent is among several patents asserted in *Gene Pool Technologies, Inc. v. ANM, Inc.*, Case No. 1:21-cv-01154-CL (D. Oregon). Pet. 2. According to Petitioner, this case was transferred to the United States District Court for the Central District of California, where it was captioned *Gene Pool Technologies, Inc. v. ANM, Inc.*, Case No. 2:21-cv-08756-JWH-SHK, and then consolidated into *Gene Pool Technologies, Inc. v. Coastal Harvest, LLC*, Case No. 5:21-cv-01328-JWH-SHK (C.D. California). *Id.* at 2–3. Patent Owner identifies the same two California cases (2:21-cv-08756-JWH-SHK; 5:21-cv-01328-JWH-SHK). Paper 8, 1.

Patent Owner identifies related U.S. Patent Nos. 9,682,333, 9,926,513, 10,595,555, and 10,974,165. *Id.* at 2.

Although not identified by either party,[2] we note that Petitioner filed IPR2022-00832 against Patent Owner's U.S. Patent No. 9,145,532 B2, and IPR2022-01011 against Patent Owner's U.S. Patent No. 9,144,751 B2. We instituted *inter partes* reviews in those proceedings, and they remain pending.

[1] Petitioner states that it has "two trade names: ExtractionTek Solutions and ExtractionTek Stainless." Pet. 2.

[2] We remind the parties of their continuing obligation to update their Mandatory Notices. *See* 37 C.F.R. § 42.8(a)(3).

D. The ’203 Patent (Ex. 1001)

The ’203 patent is titled “Methods for Extracting Solute from a Source Material,” and relates to “systems for extracting solute from source materials.” Ex. 1001, code (54), 1:14–15.

According to the Specification, “many existing systems are configured to extract solute from a single container of source material,” and thus are “unable to simultaneously extract solute from materials stored in a plurality of distinct containers,” leading to a “bottleneck.” *Id.* at 1:20–26. The Specification also states that “many conventional extraction systems do not allow extraction to be performed in a single, closed loop process that reclaims solvent and re-introduces the reclaimed solvent in subsequent cycles of the system.” *Id.* at 1:32–38.

The Specification identifies “a need for cooling reclaimed solvent to a liquid state prior to collecting the solvent,” because “[l]iquid solvent may be more efficiently stored” than gaseous solvent. *Id.* at 1:51–54.

Figure 1 of the ’203 patent is reproduced below.

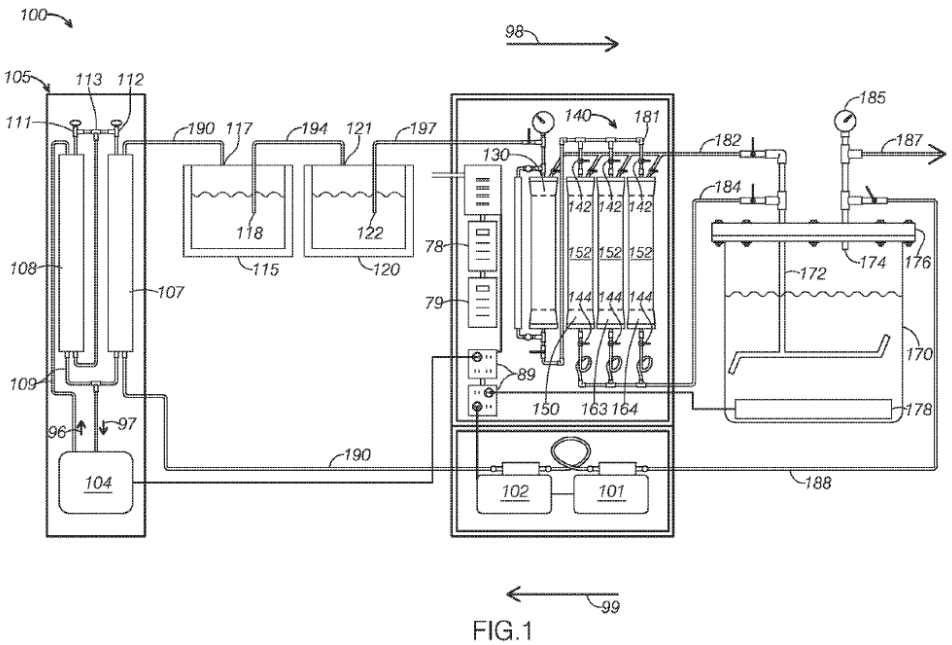

FIG.1

Figure 1 depicts a system for extracting solvent from a source material. *Id.* at 2:19–20. The system includes solvent source container 120, solvent compressor 130, detachable canister system 140, extract container 170, first pump 101, second pump 102, condensing system 105, and solvent collection container 115. *Id.* at 3:5–11.

The Specification explains that "[s]ource container output 122 is configured to direct solvent contained in solvent source container 120 to solvent compressor 130 via a solvent source line 197."[3] *Id.* at 3:64–66. The Specification explains that "[s]olvent compressor 130 may be used to compress solvent to an extraction pressure, the extraction pressure selected to maintain solvent in a liquid state even when exposed to an elevated extraction temperature." *Id.* at 4:55–59.

According to the Specification, "detachable canister system 140 allows a user to refill a selected canister as one or more of the other canisters remain closed and to continue extracting solute from contained source material." *Id.* at 5:23–28. Additionally, "solvent compressor 130 is configured to communicate with each detachable canister individually." *Id.* As a result, "when one canister is attached and extracting, solvent compressor 130 may charge solvent for a second canister." *Id.* at 6:23–25.

The Specification describes an example in which butane is used to extract essential oils from lavender plants contained within a canister to produce an extract solution. *Id.* at 3:18–25. The extract mixture is heated "to a distilling temperature to produce an evaporated portion of the solvent

[3] Throughout this Decision, we omit bolding of reference numbers in quotes from the challenged patent and prior art references.

in extract container 170," where the distilling temperature "is greater than the boiling point of butane and less than typical essential oil boiling points." *Id.* at 8:30–36. Condensing system 105 is configured to cool post-extraction solvent before the solvent reaches solvent collection container 115. *Id.* at 3:51–54.

E. The Challenged Claims

Petitioner challenges all 20 claims of the '203 patent. Claims 1, 15, and 18 are independent. Claim 1, reproduced below with bracketed letter and number designations added, is illustrative:

> 1. A method for extracting solute from a source material, the method comprising:
> [1(a)] depositing the source material having a solute in a canister;
> [1(b)] introducing a solvent into the canister;
> [1(c)] exposing the source material to the solvent to create an extract mixture having the solute in solution with the solvent;
> [1(d)] fluidly communicating the extract mixture to one or more extract containers, the one or more extract containers being in fluid communication with the canister;
> [1(e)] separating the solute from the extract mixture to define a recycled solvent by heating the one or more extract containers to evaporate the recycled solvent;
> [1(f)] collecting the recycled solvent in a solvent collection container in fluid communication with the one or more extract containers; and
> [1(g)] cooling the recycled solvent within the solvent collection container.

Ex. 1001, 21:63–22:14.[4]

[4] For ease of reference, we adopt the letter and number designations Petitioner uses in the Petition. *See* Pet. 22 n.1.

Independent claims 15 and 18 contain features similar to independent claim 1, with a few differences. For example, claim 15 recites "cooling the evaporated solvent to a temperature below the boiling point of the solvent to define a recycled liquid solvent." *Id.* at 23:17–19. Claim 18 recites "wherein the one or more extract containers comprise a first extract container and a second extract container." *Id.* at 24:16–17.

The challenged dependent claims add additional features. For example, claims 2–6 depend directly or indirectly from claim 1 and relate to coupling or uncoupling the canister and extract container(s). *Id.* at 22:15–40. Claims 19 and 20 depend directly or indirectly from independent claim 18 and recite similar limitations. *Id.* at 24:21–37.

Claim 7 depends from claim 1 and requires the heating step to comprise heating the one or more extract containers to a temperature greater than a boiling point of the solvent and less than a boiling point of the solute. *Id*. at 22:41–47. Claim 8 depends from claim 7 and requires that the collection of recycled solvent comprises displacing the recycled solvent, in vapor form, via a pump. *Id.* at 22:48–52.

Claims 9–12 depend directly or indirectly from claim 1 and relate to a cooling mechanism coupled to the solvent storage container or maintaining the solvent below its boiling point. *Id.* at 22:53–67. Claims 16 and 17 depend directly or indirectly from independent claim 15 and recite similar limitations. *Id.* at 23:27–36.

Claim 13 depends from claim 1 and requires that the source material is a plant material and the solute is an essential oil. *Id.* at 23:1–3. Claim 14 depends from claim 1 and recites that the solvent is butane. *Id.* at 23:4–5.

F. The Asserted Grounds of Unpatentability

We instituted trial based on the following grounds of unpatentability:

Ground	Claim(s) Challenged	35 U.S.C. §[5]	Reference(s)/Basis
1	1, 7, 9–13, 15–17	102	Britt[6]
2	2–6, 8, 14, 18–20	103	Britt, Buese,[7] Main[8]
3	1–13, 18–20	103	Hebert,[9] Buese, Main
4	15–17	103	Hebert, Britt

Dec. 8, 34; Pet. 5–6.

Petitioner supports its contentions with a declaration from Fritz Chess (Ex. 1003), among other evidence. Patent Owner supports its contentions with a (corrected) declaration from Gregory P. Miller, Ph.D. (Ex. 2007), among other evidence.

Based on their statements of qualifications and curricula vitae, and in view of the discussion below in Section II.A.2 regarding Dr. Miller's

[5] Petitioner asserts that the effective filing date of the challenged claims is November 4, 2013. Pet. 17. Patent Owner does not dispute this date or propose a different date. *See generally* PO Resp. For purposes of this Decision, we use November 4, 2013, as the effective filing date. *See* Ex. 1001, code (63).

[6] Britt, U.S. Patent Pub. 2006/0041154 A1, published February 23, 2006 ("Britt," Ex. 1006).

[7] Buese et al., U.S. Patent No. 9,242,189 B2, issued January 26, 2016 ("Buese," Ex. 1007).

[8] Main, U.S. Patent No. 2,457,251, issued December 28, 1948 ("Main," Ex. 1008).

[9] Hebert et al., U.S. Patent No. 5,516,923, issued May 14, 1996 ("Hebert," Ex. 1009).

qualifications, we find Petitioner's declarant Mr. Chess, and Patent Owner's declarant Dr. Miller, qualified to provide technical opinions from the perspective of a person of ordinary skill in the art in this proceeding. Ex. 1003 (Chess Decl.) ¶¶ 2–5, pp. 63–64 (Mr. Chess's statement of qualifications and curriculum vitae); Ex. 2007 (Miller Decl.) ¶¶ 4–10, pp. 40–50 (Dr. Miller's statement of qualifications and curriculum vitae).

II. ANALYSIS

A. Level of Ordinary Skill in the Art

1. Defining the Level of Ordinary Skill in the Art

We consider the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art as of the effective filing date of the challenged claims. *See, e.g.*, *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Petitioner contends that one of ordinary skill in the art would typically have either:

> (1) a bachelor's degree in mechanical engineering, chemical engineering, petroleum engineering, or an equivalent field; and some academic or industry experience working with, designing, or studying methods of extracting solute from a source material or similar devices; or
>
> (2) at least four years of industry experience working with, designing, or studying methods of extracting solute from a source material or similar devices.

Pet. 17 (citing Ex. 1003 (Chess Decl.) ¶ 11).

Patent Owner "propose[s] to expand the level of ordinary skill in the art to include educational experience in chemistry, biology, or equivalent fields of physical or life science," as follows (Patent Owner's proposed additions are shown in bold):

> (1) a bachelor's degree in **chemistry, biology,** mechanical engineering, chemical engineering, petroleum engineering, or an equivalent field **of physical science, life science, or engineering**; and some academic or industry experience working with, designing, or studying methods of extracting solute from a source material or similar devices; or
>
> (2) at least four years of industry experience working with, designing, or studying methods of extracting solute from a source material or similar devices.

PO Resp. 4; Ex. 2007 (Miller Decl.) ¶¶ 36–37. Patent Owner contends that this modification is appropriate, because "[t]he 'educational level of the inventor' is relevant in determining the level of skill in the art," and one of the inventors has a life sciences degree. PO Resp. 4, n.1 (citing *Envtl Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983)); Ex. 2007 (Miller Decl.) ¶ 37.

On the full trial record, we adopt Petitioner's proposed level of ordinary skill in the art, as modified by Patent Owner. Patent Owner's proposed additions to the educational level are consistent with the evidence of record. For example, we find that adding chemistry degrees is appropriate in view of Dr. Miller's testimony that "extractive technologies are chemistry," and that college level chemistry typically includes training on extractive technologies. Ex. 1023 (Miller Tr.), 35:9–22, 38:25–39:18. Similarly, adding biology degrees is appropriate because Dr. Miller testified that in training for a biology degree, one is exposed to college-level chemistry and training in extractive technologies. *Id.* at 38:9–24. We also agree with Patent Owner that the educational level of the inventors may be considered (*see Envtl Designs, Ltd.*, 713 F.2d at 696), and on this record, we accept Patent Owner and Dr. Miller's undisputed representation that "named

inventor Jason Wasserman had a bachelor's degree in Agricultural Science and Sustainable Agriculture, a life sciences degree." Ex. 2007 (Miller Decl.) ¶ 37; PO Resp. 4.

2. Whether Dr. Miller Qualifies as a Person of Ordinary Skill in the Art

Petitioner argues that Dr. Miller does not qualify as a person of ordinary skill in the art based on education because he holds degrees in geology and earth and environmental sciences, which are not specifically recited in the proposed level of ordinary skill in the art. Reply 3. Petitioner characterizes Dr. Miller's degrees as "advanced degrees in life sciences" (*id.* at 3), while Patent Owner characterizes them as "at least an 'equivalent physical science degree'" (Sur-reply 5). On this record, we determine that we need not resolve whether Dr. Miller's degrees qualify him as a person of ordinary skill in the art, because we find that he is qualified based on his experience.

Dr. Miller has "decades (1988 to present) of direct experience in the use of partial and complete extractions of diverse materials in environmental studies." Ex. 2007 (Miller Decl.) ¶ 8. He has also "studied, used, and developed thousands of extractions to solubilize and remove oils, wastes, metals, and other toxins from soil, water, plants, and animal tissues for analysis." *Id.* He avers that "[e]xtractive chemistry was core to [his] business practice in 1988 and remains so to this day," and that "[b]y 1992 [he] would have developed ordinary skill in the art having 4 years of experience relevant to the current subject." *Id.* ¶ 10. Based on this experience, we determine that Dr. Miller qualifies as a person of ordinary skill in the art because by 1992, he had "at least four years of industry

experience working with, designing, or studying methods of extracting solute from a source material or similar devices," as required by the level of ordinary skill we adopt herein. He also gained additional training and engaged in additional extraction work prior to the effective filing date. *Id.*

Additionally, between 2015 and 2020, Dr. Miller "enter[ed] the cannabis extraction and concentration industry, designing, building, and operating [his] own facility," further qualifying him as a person of ordinary skill in the art. Ex. 2007 (Miller Decl.) ¶ 10. Petitioner concedes that this experience is "very relevant," but seeks to discount it because this work started in 2015—two years after the effective filing date of 2013. Tr. 10:11–20. Petitioner's argument is unavailing. A person of ordinary skill in the art "need not have been one of ordinary skill at the time of a patent's filing date." Sur-reply 5–6; *U.S. Endoscopy Group, Inc. v. CDX Diagnostics, Inc.*, IPR2014-00639, Paper 27, at 18 (Sept. 14, 2015) ("A witness must provide testimony about the level of skill in the art as of the critical date; however, the witness need not have acquired that knowledge as of the critical date."). Petitioner has not identified any case law indicating that a declarant must have acquired the knowledge that qualifies them as a person of ordinary skill in the art as of the effective filing date of the patent.

Petitioner also questions the relevance of Dr. Miller's earlier experience, arguing that "between 1988 and 2015 [Dr. Miller] had not performed any organic butane extraction, organic propane extraction, or CO2 organic material extraction." Reply 3–4 (citing Ex. 1023 (Miller Tr.), 58:7–18). Petitioner further argues that between 1988 and 2015, "the only organic closed-loop extraction" Dr. Miller had performed was "Soxhlet-style extraction," which Petitioner contends is "not analogous" to the systems and

methods described in the '203 patent and prior art. *Id.* at 4 (citing Ex. 1023 (Miller Tr.), 59:4–16); *see also id.* at 5 (criticizing Dr. Miller's experience ordering extractions of lab samples).

We reject Petitioner's arguments. We agree with Patent Owner that on Reply, "Petitioner is improperly trying to limit the clause 'experience working with, designing, or studying methods of extracting solute from a source material' as requiring specific experience with 'closed loop extraction systems.'" Sur-reply 3. Petitioner's original proposal was much more broadly drawn. As explained in our Trial Practice Guide, in a reply brief, a party is not permitted to "proceed in a new direction with a new approach as compared to the positions taken in a prior filing," as Petitioner attempts to do here. Trial Practice Guide,[10] 74; *see also* 37 C.F.R. § 42.23(b). We do not consider Petitioner's belated arguments seeking to narrow its broad proposal of "experience working with, designing, or studying methods of extracting solute from a source material" to experience with "closed loop extraction systems."[11] For the reasons discussed above, we determine that Dr. Miller's experience qualifies him as a person of ordinary skill in the art.

B. Claim Construction

In an *inter partes* review, we interpret a claim "using the same claim construction standard that would be used to construe the claim in a civil

[10] PTAB Consolidated Trial Practice Guide (Nov. 2019) ("Trial Practice Guide"), *available at* https://www.uspto.gov/TrialPracticeGuide Consolidated.

[11] We note that in any event, Petitioner fails to demonstrate, with persuasive argument and evidence, why narrowing the extraction experience to "closed loop extraction systems" is appropriate here.

action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b). Under this standard, we construe a 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." *Id.*

Petitioner asserts that "the claim terms should be construed according to their ordinary and customary meaning," but also notes that certain terms "warrant clarification." Pet. 18. Prior to institution, Patent Owner requested "that the Board adopt the ordinary and customary meaning of the claim terms as understood by one of ordinary skill in the art," and did not address Petitioner's "clarifications" or offer any other proposed constructions. Paper 12, 3.

In our Institution Decision, we adopted Petitioner's proposed constructions for the terms "canister," "extract container," and "solvent collection container." Dec. 14–16. Following institution, Patent Owner indicated that it does not dispute our preliminary constructions for these terms. PO Resp. 4. We adhere to those preliminary constructions, which we reiterate below.

Following institution, Patent Owner requests that we construe certain of the claimed method steps "as distinct, sequential, and non-continuous steps." PO Resp. 5; Sur-reply 6–9. Petitioner opposes, arguing that the claims do not exclude conducting the method steps simultaneously. Reply 6–10. We address this issue below.

Other than the terms we address below, we determine that we need not construe any other term, including two additional terms Petitioner addresses in the Petition (i.e., "essential oil" and "boiling point"). *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) ("The

Board is required to construe 'only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.'") (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)); Pet. 19–20.

1. "canister"

Petitioner contends that the claimed "canister" "serves as a repository of a source material," and "[w]ithin the canister, the source material is exposed to a solvent to create an extract mixture." Pet. 18 (citing Ex. 1001, 2:1–3). We adopt this understanding of the term "canister," because it is supported by the cited portion of the Specification and is undisputed on this record.

2. "extract container"

Petitioner contends that the claimed "extract container" "serve[s] as a repository for the extract mixture created in the 'canister', wherein the extract container is configured to evaporate the solvent to separate the solvent from the extract solution." Pet. 18–19 (citing Ex. 1001, 3:30–39). We adopt this understanding of the term "extract container," because it is supported by the cited portion of the Specification and is undisputed on this record. *See also* Ex. 1001, 3:44–45 (noting that the extract container is configured to separate the solvent from the extracted solute).

3. "solvent collection container"

Petitioner contends that the claimed "solvent collection container" " serve[s] as a repository for post-process solvent separated from the extract solution in the 'extract container(s)', wherefrom the solvent is reused in following extraction processes." Pet. 19 (citing Ex. 1001, 3:40–50, 4:30–40). We adopt this understanding of the term "solvent collection

container(s)," because it too is supported by the cited portions of the Specification and is undisputed on this record.

4. Whether Certain Method Steps are "Distinct, Sequential, and Non-Continuous"

The parties dispute whether the claims require "distinct, sequential, and non-continuous" steps. *See* PO Resp. 5; Sur-reply 6–9; Reply 6–10. In essence, Patent Owner contends that the claims are limited to batch processes wherein the method steps are distinct, sequential, and non-continuous, while Petitioner contends that the claims cover not only batch processes, but also continuous processes, wherein the recited method steps can occur simultaneously. *See, e.g.*, Tr. 20:12–21:7, 26:14–17 (Patent Owner's counsel arguing that the claims cover a batch process); *id.* at 13:14–24 (Petitioner's counsel arguing that the claims are not limited to a batch process, but also cover continuous processes).

More specifically, Patent Owner proposes that method steps 1(c) ("exposing the source material to the solvent to create an extract mixture") and 1(d) ("fluidly communicating the extract mixture to one or more extract containers") (and the analogous steps in the other independent claims) "be construed as distinct, sequential, and non-continuous steps." PO Resp. 5. Dr. Miller elaborates, stating:

> Only in step 1(d), after the extract mixture is created [in step 1(c)], does one perform the step of opening the path to communicate the extract mixture to one or more extract containers. This understanding of the steps reflects the key features of the '203 patent's disclosed extraction method: a

> step-wise, batch process that allows precise control over the time source material is exposed to solvent in a canister.

Ex. 2007 (Miller Decl.) ¶ 40. Patent Owner argues that "[t]his understanding is [consistent] with the plain language of the claims, the opinion of our expert, as well as every relevant disclosure in the '203 patent emphasizing the claimed invention always includes control over when the extract mixture is communicated to the extract containers." PO Resp. 5 (citing Ex. 2007 (Miller Decl.) ¶¶ 30–33; Ex. 1001, 5:29–36, 5:37–44).

Petitioner responds that "[t]he claim language does not require control over when the extract mixture is communicated to the extract containers." Reply 7–8.

After considering the arguments and cited evidence, we disagree with Patent Owner that steps 1(c) and 1(d) must be distinct, sequential, and non-continuous. We begin by reproducing the relevant steps as recited in representative claim 1:

> [1(c)] exposing the source material to the solvent to create an extract mixture having the solute in solution with the solvent;
>
> [1(d)] fluidly communicating the extract mixture to one or more extract containers, the one or more extract containers being in fluid communication with the canister;

Ex. 1001, 22:1–6. We agree with Petitioner this language does not require control over when the extract mixture formed in step 1(c) is communicated to the extract containers in step 1(d). Reply 7. Dr. Miller conceded that "[e]xtraction is going to start instantaneous[ly]," such that at least some portion of an extract mixture is instantaneously created in step 1(c).

Ex. 1023 (Miller Tr.), 67:23–68:7, 120:8–13. Thus, "the next step could occur instantaneously." Reply 9.

We see nothing in the claim language requiring any degree of completion of step 1(c), or any waiting period, before step 1(d) begins. Nor do Patent Owner's briefs point to any particular aspect of these limitations that allegedly demand such an interpretation. *See generally* PO Resp. 5; Sur-reply 6–9. Dr. Miller asserts that the plain meaning of steps "does not allow for a passive, automatic, and continuous flow of extract mixture from the canister to one or more extract containers" (Ex. 2007 (Miller Decl.) ¶¶ 30–31), but he too fails to identify what in the language of these terms prohibits this. The claims here "do not exclude a continuous process, in which later steps are initiated as soon as at least some product from the previous step forms, while previous steps are still ongoing." *Kaneka Corp. v. Xiamen Kingdomway Group Co.*, 790 F.3d 1298, 1306 (Fed. Cir. 2015).

This understanding is consistent with the Specification, which likewise does not exclude a continuous process. Patent Owner points to various portions of the Specification which indicate that a user may control the timing between steps 1(c) and 1(d) using valves. For example, Patent Owner points to statements indicating that "[w]hen an output valve is opened, the associated canister is placed in fluid communication with extract mixture line 184," and that "[a] user may use the output valves to direct the extract mixture contained in an associated canister to extract container 170." Ex. 1001, 5:34–39; Sur-reply 6; Ex. 2007 (Miller Decl.) ¶¶ 31–32.

We disagree that these disclosures limit the claims to a batch process or non-overlapping steps. Petitioner correctly notes that these disclosures indicate a user *may* control when the extract mixture is communicated to the

canister, but they nowhere *require* any degree of completion of creation of the extract mixture in step 1(c) before the mixture is fluidly communicated to the canister in step 1(d). *See* Reply 7; *see also* Ex. 1001, 14:39–43 ("The created extract mixture ***may*** be communicated to the extract container by opening a fluid communicative path between a canister containing created extract mixture and the extract container.") (emphasis added). Again, nothing in these disclosures prohibits initiation of step 1(d) as soon as at least some product from step 1(c) forms—which Dr. Miller acknowledged happens instantaneously. Ex. 1023 (Miller Tr.), 67:23–68:7, 120:8–13.

Patent Owner argues that "the patent nowhere describes or suggests that the 'exposing' and 'communicating' steps may occur simultaneously or continuously." Sur-reply 7. While this is true, the Specification also nowhere describes or suggests that these steps *cannot* occur simultaneously or continuously. Moreover, as both parties acknowledge, the Specification expressly permits other steps—namely the solvent collection and reintroduction steps—to occur simultaneously with other steps. *See* Ex. 1001, 4:12–15; 13:58–62 ("In some examples, solvent collection and reintroduction may occur simultaneously with other steps of the disclosed methods."); Reply 9; Sur-reply 7–8. Patent Owner does not adequately explain why, if the Specification expressly acknowledges that at least some steps can occur simultaneously, we should understand it—in the absence of any express disclosure—as prohibiting other steps from similarly occurring simultaneously.

Finally, even if Patent Owner were correct that the Specification "consistently describes the 'exposing' step as being completed before the communicating' step" (Sur-reply 7), the Federal Circuit has made clear that

"merely because the specification only describes one embodiment is not a sufficient reason to limit the claims to that embodiment." *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1372 (Fed. Cir. 2003). "We depart from the plain and ordinary meaning of claim terms based on the specification in only two instances: lexicography and disavowal." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014). Here, Patent Owner has not pointed to any such disclaiming or disavowal language in the Specification or prosecution history.

For the above reasons, we decline Patent Owner's request to construe the independent claims to require that the "exposing" and "communicating" steps be distinct, sequential, and non-continuous. We instead agree with Petitioner that the plain language of the claims permits these steps to occur simultaneously, such that the claims encompass continuous extraction processes.

C. Overview of Asserted Prior Art

1. Britt (Ex. 1006)

Britt, titled "Oil Extraction Method," "relates to methods for extracting oils from oil bearing materials." Ex. 1006, code (54), ¶ 2. We reproduce Britt's Figure 2 below.

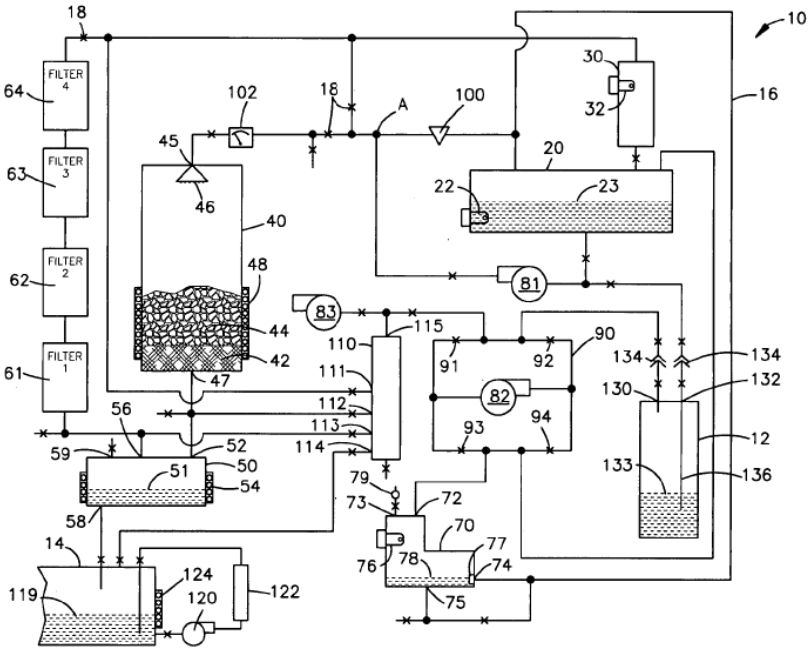

Fig.2

Britt's Figure 2 is a schematic diagram of an oil extraction system, which can be used to extract oil from plant materials. *Id.* ¶¶ 5–6, 10. During system operation, plant materials such as rose petals 44 are placed in extraction tank 40. *Id.* ¶¶ 13, 23. Solvent 23 is pumped from reservoir 20 through the rose petals to extract rose oil and yield a mixture of solvent and oil. *Id.* ¶¶ 12, 13. Distillation tank 50 receives the solvent/oil mixture from extraction tank 40. *Id.* ¶ 14. The mixture is heated "to a temperature that is high enough to evaporate the solvent, but low enough to avoid decomposing or evaporating the oil." *Id.* ¶¶ 28, 14. Evaporated solvent vapor flows out of distillation tank 50, leaving the oil in distillation tank 50. *Id.* ¶¶ 15, 28. The solvent continues through filter tanks 61–64 to remove particles, water, and acid, and then flows through chiller 30 back to the reservoir 20. *Id.* ¶¶ 15, 28. Chiller 30 has a cooling coil 22 for condensing solvent vapor into a liquid and maintaining the solvent in the liquid phase. *Id.* ¶ 12.

2. Buese (Ex. 1007)

Buese, titled "Continuous Extractor, Concentrator and Dryer," relates "to a continuous immersion extraction system." Ex. 1007, code (54), 2:18–19. Buese describes a unit that allows "the recycling of the extraction solvent, and the drying of the extracted plant material while all are fully contained within the unit." *Id.* at 1:35–40. "The unit employs a plurality of extraction chambers such that one extraction chamber is removed and replaced without halting the extraction process in other extraction chambers." *Id.* at 1:41–44. Buese describes the use of connectors, such as quick release connectors, for its system. *Id.* at 4:48–51.

Buese explains that "[t]he temperature at which the solvent is introduced into the extraction chambers can be controlled by employing a heater, chiller, or other heat exchanger in the solvent reservoir or the conduits situated prior to flow into the extraction chambers." *Id.* at 5:10–14. Buese discloses butane as a suitable solvent. *Id.* at 7:7–65.

3. Main (Ex. 1008)

Main, titled "Quick Connect Self-Sealing Coupling," describes a coupling sleeve that advantageously enables quick coupling or uncoupling by rotating the sleeve a fractional turn relative to another part. Ex. 1008, 1:28–33, 3:15–22. The coupling is self-sealing. *Id.* at 1:5–9.

4. Hebert (Ex. 1009)

Hebert, titled "Extracting Oil from Oil Bearing Plant Parts," "relates to a method for extracting oil from oil-bearing plant parts." Ex. 1009, code (54), 1:16–18. Hebert's Figure 1 is reproduced below.

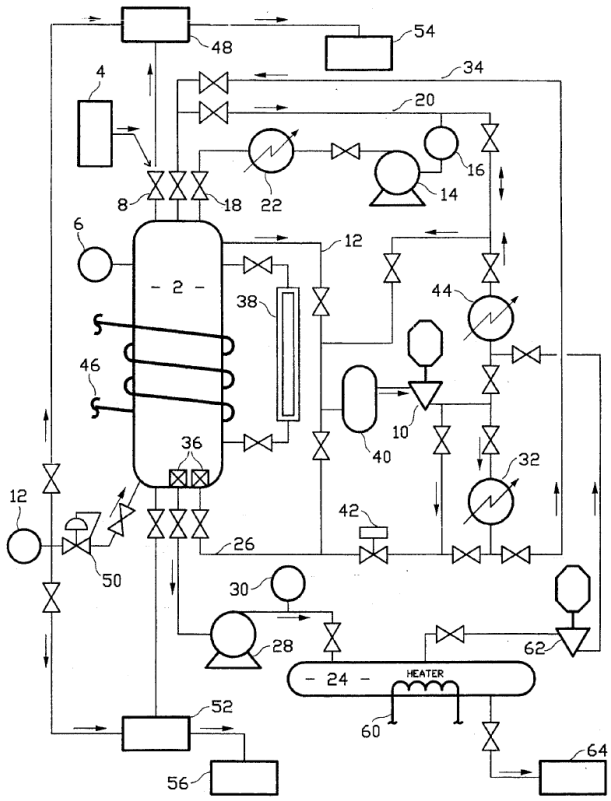

FIGURE 1

Hebert Figure 1, reproduced above, is a schematic illustration of an oil extraction system. *Id.* at 3:49–53. The system includes reactor vessel 2, which is "designed to receive an oil bearing plant material, for example, rice bran." *Id.* at 3:62–67. Liquid solvent, such as propane, is pumped by pump 14 from tank 16 into reactor 2. *Id.* at 4:25–28. The solvent contacts the rice bran for a time sufficient to dissolve a substantial portion of the rice's oil. *Id.* at 2:62–64. The liquid solvent and oil combination is transferred from reactor 2 to separator 24. *Id.* at 4:59–62. In separator 24, the solvent and oil combination is heated to vaporize the solvent, and the solvent vapor is drawn from separator 24 by compressor 62. *Id.* at 7:34–38. The solvent vapor is then liquified by condenser 44 and sent to storage tank 16. *Id.* at 7:38–39.

D. Legal Standards

"In an [inter partes review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016); 37 C.F.R. § 42.104(b). This burden of persuasion 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). To prevail, Petitioner must demonstrate patentability by a preponderance of the evidence. 35 U.S.C. § 316(e).

To show anticipation under 35 U.S.C. § 102, each and every claim element, arranged as in the claim, must be found in a single prior art reference. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359 (Fed. Cir. 2008). To find anticipation, the prior art need not use the same words as the claims. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009). In evaluating an alleged anticipatory prior art reference, it is permissible to consider not only the literal teachings of the reference, but also the inferences a person of ordinary skill in the art would draw from the reference. *Eli Lilly and Co. v. Los Angeles Biomedical Res. Inst*., 849 F.3d 1073, 1074–75 (Fed. Cir. 2017).

A claim is unpatentable as obvious "if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains." 35 U.S.C. § 103; *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved based on 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) any objective indicia of nonobviousness. *Graham*, 383 U.S. at 17–18. An obviousness determination requires a reason to combine "accompanied by a reasonable expectation of achieving what is claimed in the patent-at-issue." *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016).

E. Alleged Anticipation By Britt (Ground 1)

Petitioner asserts that Britt anticipates claims 1, 7, 9–13, and 15–17 under 35 U.S.C. § 102. Pet. 20–26. Patent Owner opposes. PO Resp. 5–6. For the reasons discussed below, on the full trial record, we determine that Petitioner has shown by a preponderance of the evidence that Britt anticipates claims 1, 7, 9–13, and 15–17.

For claim 1, Petitioner asserts that Britt discloses the preamble ("[a] method for extracting solute from a source material, the method comprising:") because it discloses "methods for extracting oils from oil bearing materials."[12] Pet. 22 (quoting Ex. 1006 (Britt) ¶ 2). For limitation 1(a) ("depositing the source material having a solute in a canister"), Petitioner cites Britt's teaching that a user deposits a load of rose petals in extraction tank 40. *Id.* (citing Ex. 1006 (Britt) ¶ 23); *see also id.* at 21 (arguing that Britt's "extraction tank" is analogous to claim 1's "canister").

[12] Generally, a preamble does not limit a claim. *See Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002). The parties do not address whether the preamble is limiting. We need not decide whether it is limiting because even if it were limiting, we find that Petitioner sufficiently demonstrates that Britt discloses the preamble. Pet. 22; Ex. 1006 (Britt) ¶ 2.

For limitation 1(b) ("introducing a solvent into the canister"), Petitioner cites Britt's disclosure of pumping solvent into extraction tank 40. *Id.* at 22 (citing Ex. 1006 (Britt) ¶ 13). For limitation 1(c) ("exposing the source material to the solvent to create an extract mixture having the solute in solution with the solvent"), Petitioner cites Britt's teaching that "[t]he solvent then flows through the petals 44, extracting oil from the petals 44 to yield a mixture of the solvent and the oil." *Id.* (quoting Ex. 1006 (Britt) ¶ 13).

For limitation 1(d) ("fluidly communicating the extract mixture to one or more extract containers, the one or more extract containers being in fluid communication with the canister"), Petitioner cites Britt's teaching that "distillation tank 50 receives the solvent/oil mixture 51 through its inlet 52 from the extraction tank 40." *Id.* (quoting Ex. 1006 (Britt) ¶ 14; citing *id.* at Figs. 1–10); *see also id.* at 21 (arguing that Britt's "distillation tank" is analogous to claim 1's "extract container").

For limitation 1(e) ("separating the solute from the extract mixture to define a recycled solvent by heating the one or more extract containers to evaporate the recycled solvent"), Petitioner points to Britt's disclosure of heating the distillation tank "to a temperature that is high enough to evaporate the solvent, but low enough to avoid decomposing or evaporating the oil." *Id.* at 22 (quoting Ex. 1006 (Britt) ¶ 28).

For limitation 1(f) ("collecting the recycled solvent in a solvent collection container in fluid communication with the one or more extract containers"), Petitioner asserts that in Britt's system, "[t]he solvent is 'recovered' in that it is separated from the oil and returned to the reservoir 20." *Id.* at 22–23 (quoting Ex. 1006 (Britt) ¶ 33); *see also id.* at 21

(arguing that Britt's "reservoir" is analogous to claim 1's "solvent collection container").

Finally, for limitation 1(g) ("cooling the recycled solvent within the solvent collection container"), Petitioner cites Britt's teaching that "[t]he reservoir and chiller 20 and 30 are cooled by activating their cooling coils 22 and 32." *Id.* at 23 (quoting Ex. 1006 (Britt) ¶ 25).

After considering all of the arguments and evidence of record, we find that Petitioner has demonstrated by a preponderance of the evidence that Britt teaches each and every limitation of challenged claim 1, and therefore anticipates claim 1, for the reasons in the Petition and as summarized above. Pet. 22–23. We similarly find that for the reasons set forth in the Petition, Petitioner has demonstrated by a preponderance of the evidence that Britt teaches each and every limitation of challenged claims 7, 9–13, and 15–17, and therefore anticipates each of those claims. *See id.* at 23–26.

Patent Owner makes one argument against anticipation, namely that Britt discloses a continuous extraction method, and thus does not teach the "discrete, sequential steps" of "(1) 'introducing a solvent into the canister,' (2) 'exposing the source material to the solvent to create an extract mixture,' and (3) 'communicating the extract mixture to one or more extract containers,'" as recited in independent claims 1, 15, and 18. PO Resp. 5–6. This argument is unavailing, because it is premised on Patent Owner's proposed construction of certain method steps as "distinct, sequential, and non-continuous." As discussed above (*see supra* Section II.B.4), we reject Patent Owner's proposed claim construction, and find that the claims do not exclude continuous processes like that described in Britt. *See, e.g.*, Ex. 1006

(Britt) ¶ 30 (describing steps as "performed simultaneously and continuously").

For the reasons discussed above, we find that Petitioner has demonstrated by a preponderance of the evidence that Britt anticipates claims 1, 7, 9–13, and 15–17.

F. Alleged Obviousness Over Britt, Buese, and Main (Ground 2)

Petitioner argues that claims 2–6, 8, 14, and 18–20 are unpatentable as obvious over Britt, Buese, and Main. Pet. 26–36. Patent Owner opposes. PO Resp. 5–14. For the reasons discussed below, on the full trial record, we determine that Petitioner has shown by a preponderance of the evidence that claims 8 and 14, but not claims 2–6 and 18–20, would have been obvious over Britt, Buese, and Main.

Petitioner argues that Britt teaches each limitation of independent claims 1 and 15, and turns to Buese and/or Main for additional limitations of independent claim 18 and dependent claims 2–6, 8, 14, 19, and 20 that it concedes are missing from Britt. *See, e.g.*, Pet. 27–28. We first discuss claims 8 and 14, then turn to claims 2–6 and 18–20.

1. Claims 8 and 14

We have reviewed the arguments and evidence of record and find that Petitioner has demonstrated by a preponderance of the evidence that claims 8 and 14 would have been obvious over Britt and Buese.[13] *See* Pet. 26–30, 31–34. Other than its argument that Britt does not anticipate claim 1 (which

[13] Although Petitioner includes Main in Ground 2, Petitioner does not cite Main for any limitation in claims 8 and 14. *See* Pet. 5, 33–34.

we addressed above, *supra* Section II.E), Patent Owner does not make arguments specific to claims 8 and 14. *See generally* PO Resp. 5–10.

Claim 8

Claim 8 depends from claim 7, which in turn depends from claim 1. Ex. 1001, 22:41–52. Claim 8 further recites: "wherein collecting the recycled solvent comprises displacing, with a pump, the recycled solvent in vapor form from the one or more extract containers to the solvent collection container." *Id.* at 22:48–52.

As discussed above, we find that Petitioner has demonstrated by a preponderance of the evidence that Britt anticipates claims 1 and 7. *See supra* Section II.E. Regarding the additional limitation of claim 8, Petitioner demonstrates that Britt collects recycled solvent in vapor form, but acknowledges that Britt does not teach doing so "with a pump." Pet. 33; Ex. 1006 (Britt) ¶ 28. Britt instead teaches against mechanical pumping of solvent vapor "to prevent overheating through compression." Pet. 33; Ex. 1006 (Britt) ¶ 31.

Nevertheless, Petitioner demonstrates that a person of ordinary skill in the art would have appreciated "that pumping the solvent vapor through application of a vacuum does not compress the solvent vapor and would reduce the temperature of the solvent vapor the vacuum is applied to." Pet. 33–34; Ex. 1003 (Chess Decl.), XIV.8. Petitioner also demonstrates that Buese teaches using a vacuum pump to displace recycled solvent vapor between the separation chamber and the solvent reservoir. Pet. 34; Ex. 1007 (Buese), 3:32–35, Fig. 1. Based on these teachings, we credit Mr. Chess's testimony that a person of ordinary skill in the art "would have found it obvious to modify [Britt] to displace the recycled solvent in vapor form from

the one or more extract containers to the solvent collection container using a pump" with a vacuum. Ex. 1003 (Chess Decl.), XIV.8. Again, Patent Owner does not specifically dispute Petitioner's arguments regarding claim 8. *See generally* PO Resp. 5–10.

For the above reasons, we find that Petitioner has demonstrated by a preponderance of the evidence that claim 8 would have been obvious over Britt and Buese.

Claim 14

Claim 14 depends from claim 1 and specifies that the solvent is butane. Ex. 1001, 23:4–5. Although Britt teaches solvent extraction of plant material, it does not specify that the solvent is butane. Ex. 1006 (Britt) ¶ 26. Buese, however, also teaches extraction of plant material with a solvent, and teaches that the solvent can be butane. Ex. 1007 (Buese), 1:35–41, 7:63–65.

Based on these teachings, we determine that Petitioner has demonstrated by a preponderance of the evidence that it would have been obvious to a person of ordinary skill in the art to use Britt's method with butane as a solvent, as taught in Buese. Pet. 34; Ex. 1003 (Chess Decl.), XIV.14.

2. Claims 2–6 and 18–20

Claim 2 depends from claim 1, and recites "a first extract container and a second extract container," and that the "canister is releasably coupled to each of the first extract container and the second extract container." Ex. 1001, 22:15–20. Claims 3–6 depend directly or indirectly from claim 2, and thus inherit these limitations. *Id.* at 22:21–24.

Independent claim 18 similarly recites "a first extract container and a second extract container," and that the "canister is releasably coupled to

each of the first extract container and the second extract container." *Id.* at 24:16–20. Claims 19 and 20 depend from claim 18 (directly and indirectly, respectively), and thus inherit these limitations. *Id.* at 24:21–37.

As we will discuss below, on the full trial record, we determine that Petitioner has not shown by a preponderance of the evidence that claims 2–6 and 18–20 would have been obvious over Britt, Buese, and Main.

Before turning to the parties' arguments, we pause here to address the different terminology used between the challenged claims and prior art to describe analogous containers.

Buese's container that is analogous to the claimed "canister"—i.e., where source material is exposed to a solvent to create an extract mixture—is called an "extraction container." *See supra* Section II.B.1; Pet. 29; Ex. 1007 (Buese), 2:18–36.

Buese's container that is analogous to the claimed "extract container"—which serves as a repository for the extract mixture and is configured to separate the solvent from the extracted solute—is called a "separation chamber." *See supra* Section II.B.2; Pet. 29; Ex. 1007 (Buese), 2:18–36, 3:7–15.

a) Reason to Combine Britt, Buese, and Main (Claims 2–6, 18–20)

Petitioner concedes that "Britt does not explicitly describe a first extract container and a second extract container, and wherein the canister is releasably coupled to each of the first extract container and the second extract container," as recited in claims 2 and 18. Pet. 27. For these limitations, Petitioner points to Buese's teaching of using a "redundancy of . . . separation chambers" in the system. *Id.* at 30 (citing Ex. 1007

(Buese), 4:55–59); *see also* Reply 17 (arguing that Buese's teaching of using "redundancy" shows a known "need for parallelism"). Petitioner further points to Buese's teaching of using multiple extraction chambers (analogous to the claimed canisters), such that "an extraction chamber completely depleted of extract can be evacuated of solvent and replaced with an extraction chamber containing fresh extractable material," without halting the extraction process in the other canisters/extraction chambers. Pet. 30–31(quoting Ex. 1007 (Buese), Abstract), 26 (citing Ex. 1007 (Buese), 1:41–44).

Petitioner's arguments are not persuasive. It is true that Buese teaches a redundancy of system components, including separation chambers:

> In addition to the redundancy of extraction chambers, a redundancy of conduits, filters, liquid pumps, receivers, separation chambers, condensers, and vacuum pumps can be included in the system, as is readily appreciated by those skilled in the art.

Ex. 1007 (Buese), 4:55–59. Petitioner does not argue that a person of ordinary skill in the art would have duplicated every system component. Rather, Petitioner specifically argues that a person of ordinary skill in the art would have duplicated the extract containers/separation chambers in particular. *See, e.g.*, Pet. 30 (arguing that Buese's teaching of "a redundancy of . . . separation chambers" would have led a person of ordinary skill in the art to modify Britt "to include a first extract container and a second extract container"). We find that Petitioner has not adequately explained why a person of ordinary skill in the art would have read Buese's general statement regarding redundancy or parallelism throughout the system to specifically

teach or suggest using two extract containers/separation chambers as claimed.[14]

Petitioner cites Buese's teaching of using multiple canisters/extraction chambers to allow replacement of depleted source material with fresh extractable material without interrupting the process. Pet. 30–31 (citing Ex. 1007 (Buese), Abstract); Reply 17. This rationale, however, does not apply to the extract containers/separation chambers, which do not contain fresh extractable material.

Further, Britt and Buese disclose continuous extraction methods, wherein the fluid path between the source material repository and the vessel where solvent is removed is always open. *See* PO Resp. 1–2, 6; Ex. 1006 (Britt) ¶ 30; Ex. 1007 (Buese), 5:4–6; Ex. 2007 (Miller Decl.) ¶¶ 42, 55. We credit Dr. Miller's unrebutted testimony that "changing Britt's or Buese's system to stop the continuous flow of solvent during extraction"—which would happen if one were to connect a second extract container to a

[14] On Reply, Petitioner newly relies on Britt's Figure 1 as teaching "multiple distillation tanks, as well as redundant components and parallelism throughout its disclosure." Reply 15. This argument comes too late. In the Petition, Petitioner stated that Britt does not explicitly describe two extract containers, and relied solely on Buese for teaching redundant components. *See* Pet. 27–28, 30–31. However, even if we were to consider Britt's Figure 1, it merely shows duplication of the entire system. *See* Ex. 1006 (Britt) ¶ 5 (describing Figure 1 as a "schematic diagram of first and second oil extraction systems interconnected with an oil collection tank"). Much like Buese's teaching regarding redundancy, this is not a teaching or suggestion of duplication of only the extract containers/separation chambers, as claimed, and Petitioner does not otherwise explain why a person of ordinary skill in the art would have had reason to duplicate the extract containers/separation chambers.

canister—"would fundamentally alter the nature [of] those systems."[15] Ex. 2007 (Miller Decl.) ¶ 55; *cf. id.* ¶ 64 (asserting that the "'203 patent recognizes the advantages of selectively coupling a first and second extract container to collect portions of an extract solution in the stepwise, non-continuous, batch system," at, e.g., Ex. 1001, 18:21–46, 19:31–49). Petitioner does not articulate any reason why a person of ordinary skill in the art would have reason to use more than one extract container/separation chamber in the context of Britt and Buese's continuous processes.

Petitioner argues that a "motivation [exists] to combine Britt with Buese and Main . . . to inform possible improvements or alternative approaches to perform the same functions within the same general structure." Pet. 28. Petitioner also asserts that a person of ordinary skill in the art "would have seen advantages to applying the techniques of the secondary references to improve the oil extraction systems of the primary references." Reply 15–16. But Petitioner never identifies what the "possible improvements" or "advantages" are of using multiple extract containers/separation chambers. Nor does Petitioner identify why a person of ordinary skill in the art would have had a reason to carry out the "alternative approach" of using multiple extract containers/separation chambers. Obviousness arguments "cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). At best, Buese's statement

[15] At the oral hearing, Petitioner for the first time argued that Britt is not limited to continuous processes. *See, e.g.*, Tr. 44:21–45:4. This argument is untimely and we do not consider it.

regarding redundancy suggests that a person of ordinary skill in the art *could have* duplicated system components, but the record falls short of demonstrating a reason why a person of ordinary skill in the art *would have* specifically duplicated the extract containers/separation chambers as claimed. *See, e.g.*, *Belden Inc. v. Berk-Tek*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) ("[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art.").

For the reasons discussed above, we find that Petitioner has not demonstrated by a preponderance of the evidence that claims 2–6 and 18–20 would have been obvious over Britt, Buese, and Main.

b) Whether the Combination Teaches or Suggests the Claimed "Extraction Chambers" (Claims 2–6, 18–20)

Although the above reason is sufficient to dispose of this ground for claims 2–6 and 18–20, for completeness we address Patent Owner's additional argument directed to these claims.

Patent Owner argues that "Buese's separation chambers are not 'extraction chambers' as claimed by the '203 patent." PO Resp. 7; Sur-reply 10. This is because, Patent Owner argues, Buese's separation chambers use low pressure to instantaneously vaporize solvent, whereas the claimed "extraction chambers" are heated to evaporate solvent.[16] PO Resp. 7–8 (citing Ex. 1007 (Buese), 2:26–31, 2:61–65; Ex. 2007 (Miller Decl.) ¶¶ 58–59). Patent Owner's argument is unavailing, because it

[16] Limitation [1(e)] recites "separating the solute from the extract mixture to define a recycled solvent by heating the one or more extract containers to evaporate the recycled solvent." Ex. 1001, 22:7–8.

misconstrues Petitioner's argument. We do not understand Petitioner to be arguing for the bodily incorporation of Buese's specific separation chambers into Britt's system. Instead, we understand Petitioner to be relying on Buese for its general teaching of redundancy of system components, which Petitioner asserts would have led a person of ordinary skill in the art to modify Britt to duplicate Britt's separation chambers/extraction chambers. *See* Pet. 30.

In any event, we agree with Petitioner that Patent Owner has not established that Buese's separation chambers solely use low pressure to instantaneously vaporize solvent. *See* Reply 12–13. Buese teaches that in its separation chamber, "solvent from a solution is vaporized," and *in one embodiment*, the extract solution enters "a low-pressure separation chamber 140 where the extraction solvent is separated as a volatile." Ex. 1007 (Buese), 2:26–31, 2:61–65. As Dr. Miller acknowledges, Buese *also* teaches that "depending on the pressure and solvent volatility, the separation chamber and/or the piping preceding the nozzle 130 can include a means for heating." Ex. 1007 (Buese), 3:7–9; Ex. 2007 (Miller Decl.) ¶ 58. In other words, Buese teaches that solvent is vaporized[17] using low pressure and/or a heater. Accordingly, Patent Owner has not established that Buese is limited to extract containers that use low pressure to instantaneously vaporize solvent, or that Buese fails to teach extract containers that use heat to evaporate solvent as claimed.

[17] Dr. Miller testifies that evaporation [which is recited in claim limitation 1(e)] is a form of vaporization. Ex. 2007 (Miller Decl.) ¶ 49.

c) Whether the Combination Teaches or Suggests the Claimed Selective Coupling/Uncoupling of the Extraction Chambers to Separately Collect and Store a First and Second Portion of the Extract Solution (Claims 3–6, 19, 20)

Although Petitioner's lack of showing of a persuasive reason to combine Britt and Buese (*see supra* Section II.F.2.a) is sufficient to dispose of this ground for claims 3–6, 19, and 20, for completeness we address Patent Owner's additional argument directed to these claims.

Claims 3–6, 19, and 20 generally claim the steps of selectively coupling, uncoupling, and sealing the first extract container and the second extract container to separately collect and store a first and second portion of the extract solution. Ex. 1001, 22:21–40 (claims 3–6), 24:21–37 (claims 19, 20). Petitioner concedes that Britt fails to disclose these limitations, and argues that "Buese with Main to show the state of the art, cures this deficiency and provides a rationale for a [person of ordinary skill in the art] to incorporate multiple, releasably coupled extract containers capable of sealing . . . ." Pet. 27–28.

In particular, Petitioner contends that "Buese discloses quick release connectors and Main shows, that at the time of the '203 Patent priority date, that quick connectors had capabilities of quick connection and disconnection, specifically self-sealing capabilities." *Id.* at 28 (citing Ex. 1007 (Buese), 4:48–51 ("[C]onnectors, for example, quick release connectors can be included within the system."); Ex. 1008 (Main), 1:28–33, 3:15–22 (discussing self-sealing quick connectors); Ex. 1003 (Chess Decl.) ¶ 74). Petitioner asserts that a person of ordinary skill in the art "viewing Britt would have looked to Buese (and vice versa) with Main, to inform

possible improvements or alternative approaches to perform the same functions within the same general structure." *Id.* (citing Ex. 1003 (Chess Decl.) ¶ 74); *see also id.* at 31–33, 35–36 (claim charts for claims 3–6, 19, 20).

Patent Owner argues that although Buese discloses adding quick release connectors to its system, it never suggests that they should be added to allow the coupling and uncoupling of an extract container/separation chamber for storing portions of the extract solution, and Petitioner provides no rationale for why a person of ordinary skill in the art would have read Buese to suggest this. PO Resp. 8.

We agree with Patent Owner. Petitioner does not articulate any specific reason why a person of ordinary skill in the art would have had reason to separately collect and store first and second portions of the extract mixture (facilitated by the self-sealing, quick release connectors) in the context of Britt and Buese's continuous processes. Accordingly, we agree with Patent Owner that even if Buese discloses the use of quick connectors *somewhere* in its system, Petitioner has not adequately explained why a person of ordinary skill in the art would have had reason either to use them on the extract containers/separation chambers in particular, or to selectively couple or uncouple the extract containers/separation chambers to separately collect and store first and second portions of the extract mixture. Collecting and storing portions of the extract mixture would interrupt the continuous processes, and Petitioner has not explained why a person of ordinary skill in the art would have had reason to do so.

Petitioner asserts that "Buese discloses a rationale for incorporating the need for quick and efficient connections by disclosing that 'components

can be plumbed to permit their emptying and evacuation for exchange without stopping the continuous extraction system.'" Reply 14 (quoting Ex. 1007 (Buese), 5:4–6); *see also* Pet. 31–32 (citing same reason in connection with arguments regarding claim 4). Petitioner, however, fails on this record to adequately explain why a person of ordinary skill in the art would have wanted to empty and evacuate the extract containers/separation chambers in particular without stopping the continuous extraction process. Although Buese identifies a reason to use multiple extraction chambers/canisters, i.e., to provide fresh extractable material without halting the extraction process, this reason does not apply to the extract containers/separation chambers, which do not contain fresh extractable material. Ex. 1007 (Buese), Abstract, 1:41–44.

Petitioner additionally fails on this record to adequately explain why a person of ordinary skill in the art would have wanted to separately collect and store first and second portions of the extract mixture in the context of a continuous process. If there is a reason to swap extract containers/separation chambers and store portions of the extract mixture in the context of a continuous process, Petitioner has not identified it on this record.

Accordingly, for this additional, independent reason, we find that Petitioner has not demonstrated by a preponderance of the evidence that claims 3–6, 19, and 20 would have been obvious over Britt, Buese, and Main.

3. Summary of Ground 2

For the reasons discussed above, on the full trial record, we determine that Petitioner has shown by a preponderance of the evidence that claims

8 and 14, but not claims 2–6 and 18–20, would have been obvious over Britt, Buese, and Main.

G. Alleged Obviousness Over Hebert, Buese, and Main (Ground 3)

Petitioner argues that claims 1–13 and 18–20 are unpatentable as obvious over Hebert, Buese, and Main. Pet. 37–51. Patent Owner opposes. PO Resp. 5–14. For the reasons discussed below, on the full trial record, we determine that Petitioner has shown by a preponderance of the evidence that claims 1 and 7–13, but not claims 2–6 and 18–20, would have been obvious over Hebert, Buese, and Main. We first discuss claims 1 and 7–13, then turn to claims 2–6 and 18–20.

1. Claims 1 and 7–13

For claim 1, Petitioner asserts that Hebert discloses the preamble ("[a] method for extracting solute from a source material, the method comprising:") because it discloses "a process for extracting oil from an oil bearing plant material with the use of a solvent suitable for dissolving the oil in the plant material."[18] Pet. 37 (quoting Ex. 1009 (Hebert), Abstract).

For limitation 1(a) ("depositing the source material having a solute in a canister"), Petitioner cites Hebert's teaching that "[r]eactor vessel 2 is loaded with rice bran through an opening in the top." *Id.* (quoting Ex. 1009 (Hebert), 4:1–2); *see also id.* at 39 (arguing that Hebert's "reactor vessel" is analogous to claim 1's "canister").

For limitation 1(b) ("introducing a solvent into the canister"), Petitioner cites Hebert's disclosure of pumping solvent into the reactor

[18] Again, we need not decide whether the preamble is limiting because even if it were limiting, we find that Petitioner sufficiently demonstrates that Hebert discloses the preamble. Pet. 37; Ex. 1009 (Hebert), Abstract.

vessel. *Id.* at 41 (citing Ex. 1009 (Hebert), 4:25–28). Regarding limitation 1(c) ("exposing the source material to the solvent to create an extract mixture having the solute in solution with the solvent"), Petitioner cites Hebert's teaching of "allowing the liquid solvent to contact the rice bran for a time sufficient to dissolve a substantial portion of the rice oil." *Id.* (quoting Ex. 1009 (Hebert), 2:62–64).

For limitation 1(d) ("fluidly communicating the extract mixture to one or more extract containers, the one or more extract containers being in fluid communication with the canister"), Petitioner cites Hebert's teaching that "the liquid solvent and oil combination is then transferred from the bottom of reactor 2 to the top of separator 24." *Id.* (quoting Ex. 1009 (Hebert), 4:60–62); *see also id.* at 39–40 (arguing that Hebert's "separator vessel" is analogous to claim 1's "extract container").

Regarding limitation 1(e) ("separating the solute from the extract mixture to define a recycled solvent by heating the one or more extract containers to evaporate the recycled solvent"), Petitioner points to Hebert's disclosure that "[t]he liquid within separator 24 is heated," which "vaporizes the solvent." *Id.* at 41 (quoting Ex. 1009 (Hebert), 7:34–37).

For limitation 1(f) ("collecting the recycled solvent in a solvent collection container in fluid communication with the one or more extract containers"), Petitioner asserts that in Hebert's system, "[s]olvent vapor is drawn from separator 24 by compressor 62 and is liquified in condenser 44 and then sent to storage tank 16." *Id.* (quoting Ex. 1009 (Hebert), 7:37–39); *see also id.* at 40 (arguing that Hebert's "solvent storage vessel/storage vessel/tank/solvent storage tank/storage tank" is analogous to claim 1's "solvent collection container").

Finally, Petitioner concedes that Hebert does not explicitly describe limitation 1(g) ("cooling the recycled solvent within the solvent collection container"). *Id.* at 37. Petitioner thus turns to Buese's teaching that the solvent reservoir (storage tank) can be chilled to control the temperature at which the solvent is subsequently introduced into the extraction chamber. *Id.* at 41 (citing Ex. 1007 (Buese), 5:10–13). Petitioner asserts that in view of this teaching, a person of ordinary skill in the art would have modified Hebert's method to cool the recycled solvent within the solvent collection container as claimed. *Id.* at 42 (citing Ex. 1003 (Chess Decl.), XV.1(g)).

After considering all of the arguments and evidence of record, we find that Petitioner has demonstrated by a preponderance of the evidence that claim 1 would have been obvious over Hebert and Buese, for the reasons summarized above.[19]

Patent Owner argues that Petitioner has not met its burden for limitation 1(g) ("cooling the recycled solvent within the solvent collection container"), because Petitioner fails to explain why a person of ordinary skill in the art would have modified Hebert to cool the solvent tank per Buese. PO Resp. 11. We disagree. We find that cooling the solvent storage tank as taught in Buese would maintain the recycled solvent in liquid form for reuse in Hebert's system. *See, e.g.*, Ex. 1009 (Hebert), 4:25–28 (discussing pumping of *liquid* solvent from solvent storage tank 16 to reactor 2); Ex. 1007 (Buese), 5:10–13 (teaching chilling of solvent reservoir to control temperature at which solvent is introduced into the extraction chamber). On

[19] Although Petitioner includes Main in Ground 3, Petitioner does not cite Main for any limitation in claims 1 or 7–13. *See* Pet. 5, 41–42, 45–49.

this record, we find that this is a sufficient reason for a person of ordinary skill in the art to have modified Hebert's system in view of Buese.

Patent Owner contends that "Hebert relies on pressure, not temperature, to keep solvent in liquid form," but it provides no citation to support this assertion. PO Resp. 11. However, even if this were true, Patent Owner fails to explain the basis for its attorney argument that "adding a cooling mechanism in Hebert's solvent tank would likely disrupt Hebert's extraction method at several steps." *Id.* Indeed, Dr. Miller does not appear to support this argument. *See* Ex. 2007 (Miller Decl.) ¶ 69 (stating that he "disagree[s]" with Petitioner's argument regarding modifying Hebert's method to cool the solvent using a chiller, but failing to explain any reasoning for the alleged disagreement).

Patent Owner also argues that neither Petitioner nor Hebert "identify any fault in Hebert's system that would be improved by adding cooling within the solvent tank." PO Resp. 11. This argument is unavailing, because the Federal Circuit has held that "a challenger need not provide that there was a known problem with the prior art in order to demonstrate that there was a motivation to combine prior art references." *Arctic Cat Inc. v. Polaris Indus., Inc.*, 795 F. App'x 827, 833 (Fed. Cir. 2019); *see also Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002–03 (Fed. Cir. 2016) (finding that patent challenger need not establish "a known problem with the prior art system in order to articulate the required rational underpinning for the proposed combination"); Dec. 33–34; Reply 19. Patent Owner later concedes the futility of this argument by acknowledging on Sur-reply that "Petitioner need not prove there was a known problem in the prior art." Sur-reply 15.

For the reasons discussed above, we find that Petitioner has demonstrated by a preponderance of the evidence that claim 1 would have been obvious over Hebert and Buese. We similarly find that Petitioner has demonstrated by a preponderance of the evidence that claims 7–13 would have been obvious over Hebert and Buese for the reasons specified in the Petition. *See* Pet. 45–49. Other than arguments it presented for claim 1, Patent Owner did not specifically address Petitioner's arguments for claims 7–13. *See generally* PO Resp. 10–14.

2. Claims 2–6 and 18–20

As noted above, each of claims 2–6 and 18–20 contain limitations (directly, or via dependence) relating to two extract containers. *See supra* Section II.F.2. Petitioner concedes that Hebert does not explicitly describe "a first extract container and a second extract container." Pet. 37. Similar to Petitioner's arguments discussed above for Ground 2, Petitioner here argues that a person of ordinary skill in the art would have included two extract containers in Hebert's system in view of Buese's teaching regarding "a redundancy of . . . separation chambers." *See* Pet. 42 (claim 2), 50 (for limitation 18(f), pointing back to arguments for claim 2).

We first address Petitioner's arguments regarding a reason to combine Hebert, Buese, and Main. We then address Patent Owner's arguments that Buese and Main fail to disclose the limitations that are missing from Hebert, namely (1) "a first extract container and a second extract container" (claims 2–6 and 18–20); and (2) selectively coupling, uncoupling, and sealing the first and second extract containers in order to separately collect and store a first and second portion of the extract solution (claims 3–6, 18, and 19). PO Resp. 12 (citing Ex. 2007 (Miller Decl.) ¶¶ 70–73).

For the reasons discussed below, on the full trial record, we determine that Petitioner has not shown by a preponderance of the evidence that claims 2–6 and 18–20 would have been obvious over Hebert, Buese, and Main.

a) Reason to Combine Hebert, Buese, and Main (Claims 2–6, 18–20)

As discussed above, each of claims 2–6 and 18–20 contain limitations (directly, or via dependence) relating to two extract containers. *See supra* Section II.F.2. Petitioner concedes that Hebert does not explicitly describe these limitations, and thus turns to Buese's teaching of using a "redundancy of . . . separation chambers" in the system. Pet. 37, 42 (citing Ex. 1007 (Buese), 4:55–59); 50 (for limitation 18(f), referring back to arguments made for claim 2). Petitioner further points to Buese's teaching of using multiple extraction chambers/canisters, so that "an extraction chamber completely depleted of extract can be evacuated of solvent and replaced with an extraction chamber containing fresh extractable material." *Id.* at 42 (quoting Ex. 1007 (Buese), Abstract).

Petitioner's arguments are not persuasive. As discussed above, Petitioner has not adequately explained why a person of ordinary skill in the art would have read Buese's general statement regarding redundancy or parallelism throughout the system to specifically suggest using two extract containers/separation chambers as claimed. Ex. 1007 (Buese), 4:55–59; *supra* Section II.F.2.a. Additionally, Buese's more specific teaching of multiple canisters/extraction chambers is of no help to Petitioner, because the rational Buese provides—to allow replacement of depleted source material with fresh extractable material without interrupting the process—does not apply to the extract containers/separation chambers, which do not

contain fresh extractable material. Pet. 42; Ex. 1007 (Buese), Abstract. Petitioner also does not articulate any specific reason why a person of ordinary skill in the art would have had reason to separately collect and store separate portions of the extract mixture.

Petitioner merely argues that a person of ordinary skill in the art "viewing Hebert would have looked to Buese (and vice versa) with Main, to inform possible improvements or alternative approaches to perform the same functions within the same general structure." Pet. 39. But Petitioner never identifies what the "possible improvements" are of using multiple extract containers/separation chambers. Nor does Petitioner identify why a person of ordinary skill in the art would have had a reason to carry out the "alternative approach" of using multiple extract containers/separation chambers. Obviousness arguments "cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Kahn*, 441 F.3d at 988. At best, Buese's statement regarding redundancy suggests that a person of ordinary skill in the art *could have* duplicated system components, but the record falls short of demonstrating a reason why a person of ordinary skill in the art *would have* specifically duplicated the extract containers/separation chambers. *See, e.g.*, *Belden Inc.*, 805 F.3d at 1073 ("[O]bviousness concerns whether a skilled artisan not only *could have* made but *would have been motivated to make* the combinations or modifications of prior art."). Although a person of ordinary skill in the art may have had a reason to use two extract containers/separation chambers in the context of Hebert's process, on this record the Petition fails to identify such a reason.

For the reasons discussed above, we find that Petitioner has not demonstrated by a preponderance of the evidence that claims 2–6 and 18–20 would have been obvious over Hebert, Buese, and Main.

b) Whether the Combination Teaches or Suggests the Claimed "Extraction Chambers" (Claims 2–6, 18–20)

Patent Owner and Dr. Miller assert that for the same reasons discussed above for Ground 2, "Buese's separation chambers are not extraction containers that use heating and evaporation to separate solute from an extract mixture," as claimed. Ex. 2007 (Miller Decl.) ¶ 71; PO Resp. 12. We find this argument unavailing for similar reasons discussed above in Section II.F.2.b, i.e., Petitioner's arguments do not require physical incorporation of Buese's separation chambers into Hebert's system (*see, e.g.*, Pet. 42), and in any event, Patent Owner has not adequately established that Buese fails to teach or suggest heating the separation chamber to evaporate solvent.

c) Whether the Combination Teaches or Suggests the Claimed Selective Coupling/Uncoupling of the Extraction Chambers to Separately Collect and Store a First and Second Portion of the Extract Solution (Claims 3–6, 19, 20)

Claims 3–6, 19, and 20 generally claim the steps of selectively coupling, uncoupling, and sealing the first extract container and the second extract container to separately collect and store a first and second portion of the extract solution. Ex. 1001, 22:21–40 (claims 3–6), 24:21–37 (claims 19, 20). Petitioner concedes that Hebert fails to disclose these limitations, and again argues that "Buese with Main to show the state of the art, cures this deficiency and provides a rationale for a [person of ordinary skill in the art] to incorporate multiple, releasably coupled extract containers capable of sealing . . . ." Pet. 37–38. Petitioner contends that "Buese discloses quick

release connectors and Main shows, that at the time of the '203 Patent priority date, that quick connectors had capabilities of quick connection and disconnection, specifically self-sealing capabilities." *Id.* at 38–39 (citing Ex. 1007 (Buese), 4:48–51 ("[C]onnectors, for example, quick release connectors can be included within the system."); Ex. 1008 (Main), 1:28–33, 3:15–22 (discussing self-sealing quick connectors); Ex. 1003 (Chess Decl.) ¶ 78). Petitioner asserts that a person of ordinary skill in the art "viewing Hebert would have looked to Buese (and vice versa) with Main, to inform possible improvements or alternative approaches to perform the same functions within the same general structure. *Id.* (citing Ex. 1003 (Chess Decl.) ¶ 78); *see also id.* at 42–44, 50–51 (claim charts for claims 3–6, 19, 20).

Patent Owner refers to the arguments it made for Ground 2, i.e., that although Buese discloses the possibility of adding quick release connectors to its system, it never specifies or suggests that they should be added so as to allow the coupling and uncoupling of an extract container/separation chamber to separately collect and store first and second portions of the extract mixture. PO Resp. 12, *see also id.* at 8.

We agree with Patent Owner. As discussed above, even if Buese discloses the use of quick connectors *somewhere* in its system, Petitioner has not adequately explained why a person of ordinary skill in the art would have had reason to either use them on the extract containers/separation chambers in particular, or to selectively couple or uncouple the containers to collect and store first and second portions of the extract mixture. *See supra* Section II.F.2.c. Although a person of ordinary skill in the art may have had

a reason to do so in the context of Hebert's process, on this record the Petition fails to identify such a reason.

Accordingly, for this additional, independent reason, we find that Petitioner has not demonstrated by a preponderance of the evidence that claims 3–6, 19, and 20 would have been obvious over Hebert, Buese, and Main.

3. Summary of Ground 3

For the reasons discussed above, on the full trial record, we determine that Petitioner has shown by a preponderance of the evidence that claims 1 and 7–13, but not claims 2–6 and 18–20, would have been obvious over Hebert, Buese, and Main.

H. Alleged Obviousness Over Hebert and Britt (Claims 15–17) (Ground 4)

Petitioner argues that independent claim 15 and its dependent claims 16–18 are unpatentable as obvious over Hebert and Britt. Pet. 51–55. Patent Owner opposes. PO Resp. 12–14. For the reasons discussed below, on the full trial record, we determine that Petitioner has shown by a preponderance of the evidence that claims 15–17 are unpatentable as obvious over Hebert and Britt.

For claim 15, Petitioner asserts that Hebert discloses the preamble, limitations 15(a)–15(c), and limitation 15(e) for the same reasons discussed above for the analogous terms in claim 1 (i.e., the preamble and limitations 1(c)–(e) and 1(f), respectively). *See* Pet. 53; *supra* Section II.G.1.

For limitation 15(d) ("cooling the evaporated solvent to a temperature below the boiling point of the solvent to define a recycled liquid solvent"), Petitioner asserts that although Hebert does not explicitly teach this

limitation, it discloses condensing the solvent vapor into a liquid, and a person of ordinary skill in the art would have "appreciated that in order to condense a substance from a gaseous state into a liquid state, it must be cooled to a temperature equal to or less than the boiling point of the substance." *Id.* at 53–54 (citing Ex. 1003 (Chess Decl.), XVI.15(d)).

For limitation 15(f) ("maintaining a temperature of the recycled liquid solvent within the solvent collection container"), Petitioner asserts that in view of Britt's teaching to maintain and pump solvent at a specified temperature, an ordinarily skilled artisan would have modified Hebert to maintain the temperature of the recycled liquid solvent within the solvent container, resulting in the invention as claimed. *Id.* at 54 (citing Ex. 1006 (Britt) ¶ 32; Ex. 1003 (Chess Decl.), Section XVI.15(f)).

Claim 16 further specifies that the temperature of the recycled liquid solvent is maintained via a cooling mechanism coupled to the solvent collection container, and claim 17 further specifies that the cooling mechanism comprises a coiled freezing tube configured to maintain the recycled liquid solvent at a temperature below its boiling point. Ex. 1001, 23:27–36. For these claims, Petitioner cites Britt's disclosure of using a cooling coil with the solvent collection container, to "condens[e] solvent vapor into a liquid and for keeping it in liquid phase." *Id.* at 54–55 (citing Ex. 1006 (Britt) ¶ 12; Ex. 1003 (Chess Decl.), Section XVI.16–17).

After considering all of the arguments and evidence of record, we find that Petitioner has demonstrated by a preponderance of the evidence that claims 15–17 would have been obvious over Hebert and Britt for the reasons presented in the Petition and as summarized above. *See* Pet. 51–55.

Patent Owner disputes whether Petitioner has carried its burden for claims 15–17, focusing on limitation 15(f) ("maintaining a temperature of the recycled liquid solvent within the solvent collection container"). We find that Petitioner has demonstrated by a preponderance of the evidence that a person of ordinary skill in the art would have modified Hebert in view of Britt in a manner that meets limitation 15(f). Specifically, in Hebert's solvent recycling step, solvent vapor is liquified, then sent to storage tank 16. Ex. 1009 (Hebert), 7:37–39. When the recycled solvent is reused in Hebert's process, it is in the form of a liquid. *See id.* at 4:25–28 (discussing pumping of liquid solvent from solvent storage tank 16 to reactor 2); Reply 21. As we pointed out in the Institution Decision (and Patent Owner does not dispute), chilling Hebert's solvent storage tank by using a cooling coil as taught in Britt would maintain the recycled solvent in liquid form for reuse (also in liquid form) in Hebert's system. Dec. 29. On this record, we find this to be a sufficient reason to combine Hebert and Britt.

Patent Owner argues that "Hebert and Britt describe distinctly different extraction systems," and "cooling the tank of Hebert would introduce many disadvantages and disrupt several steps of Hebert's method." PO Resp. 13 (citing Ex. 2007 (Miller Decl.) ¶¶ 77–83). This argument is unavailing. "[A] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine." *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006). The record reflects that using Britt's cooling coil is one known means of maintaining the recycled solvent in liquid form for reuse (also in liquid form) in Hebert's system. The record does not support that the alleged "disadvantages" of using a cooling coil that Dr. Miller

identified—namely, allegedly "disrupt[ing] the loading and introduc[ing] inefficient heating of cold solvent"—would actually come to pass, or could not be addressed by a person of ordinary skill in the art. Ex. 2007 (Miller Decl.) ¶ 80.

For the above reasons, on the full trial record we determine that Petitioner has shown by a preponderance of the evidence that claims 15–17 are unpatentable as obvious over Hebert and Britt.

III. CONCLUSION[20]

Based on the information presented, we conclude that that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 7–17 are unpatentable, but has not demonstrated that claims 2–6 and 18–20 are unpatentable.

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 7, 9–13, 15–17	102	Britt	1, 7, 9–13, 15–17	
2–6, 8, 14, 18–20	103	Britt, Buese, Main	8, 14	2–6, 18–20

[20] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this Decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–13, 18–20	103	Hebert, Buese, Main	1, 7–13	2–6, 18–20
15–17	103	Hebert, Britt	15–17	
Overall Outcome			1, 7–17	2–6, 18–20

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 7–17 of U.S. Patent 9,587,203 B2 are unpatentable, but has not demonstrated that claims 2–6 and 18–20 of this patent are unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to this proceeding seeking judicial review of this Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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