

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EXTRACTIONTEK SALES LLC,
Petitioner,

v.

GENE POOL TECHNOLOGIES, INC.,
Patent Owner.

IPR2022-01011
Patent 9,144,751 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. 9,144,751 B2 (“the ’751 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 1–7 and 9–11 are unpatentable, but has not demonstrated by a preponderance of the evidence that claims 8 and 12–20 are unpatentable.

A. *Procedural History*

Petitioner ExtractionTek Sales LLC filed a Petition requesting *inter partes* review of claims 1–20 of the ’751 patent. Paper 1 (“Pet.”). Patent Owner Gene Pool Technologies, Inc. did not file a Preliminary Response. In view of the then-available preliminary record, we instituted an *inter partes* review. Paper 12 (“Inst. Dec.”).

After institution, Patent Owner filed a Response to the Petition. Paper 20 (“PO Resp.”). Petitioner filed a Reply. Paper 25 (“Reply”). Patent Owner filed a Sur-reply. Paper 28 (“Sur-reply”).

On July 31, 2023, we held an oral hearing, the transcript of which is of record. Paper 33 (“Tr.”).

B. Real Parties in Interest

The parties each identify themselves as the real parties in interest. Pet. 2;¹ Paper 8 (Patent Owner’s Mandatory Notices), 1.

C. Related Matters

Petitioner states that the ’751 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 and captioned *Gene Pool Technologies, Inc. v. ANM, Inc.*, Case No. 2:21-cv-08756-JWH-SHK, and was then consolidated into *Gene Pool Technologies, Inc. v. Coastal Harvest, LLC*, Case No. 5:21-cv-01328-JWH-SHK (C.D. California) (the “California Action”). *Id.* at 2–3. Patent Owner identifies the California Action and *Gene Pool Technologies, Inc. v. ANM, Inc.*, 2:21-cv-08756 (C.D. California), which it indicates is also consolidated into the California Action. Paper 8 (Patent Owner’s Mandatory Notices), 1. Petitioner is not a party in the co-pending litigation.

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

The parties also identify IPR2022-00832, which concerns U.S. Patent No. 9,145,532, and IPR2022-00625, which concerns U.S. Patent No. 9,587,203. *Id.* at 2–3; Pet. 3; Paper 9 (Petitioner’s Updated Mandatory Notices).

¹ Petitioner states that it has “two trade names: ExtractionTek Solutions and ExtractionTek Stainless.” Pet. 2.

D. The '751 Patent (Ex. 1001)

The '751 patent relates to systems and methods for extracting solute from source material. Ex. 1001, codes (54), (57), 1:7–8. According to the Specification, “many existing systems are configured to extract solute from a single container of source material,” and are thus “unable to simultaneously extract solute from materials stored in a plurality of distinct containers,” leading to a “bottleneck.” *Id.* at 1:11–18. Per the Specification, “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,” and manual reclaiming and reuse of solvent is inefficient. *Id.* at 1:25–31. 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 1:45–48.

Figure 1 of the '751 patent is reproduced below.

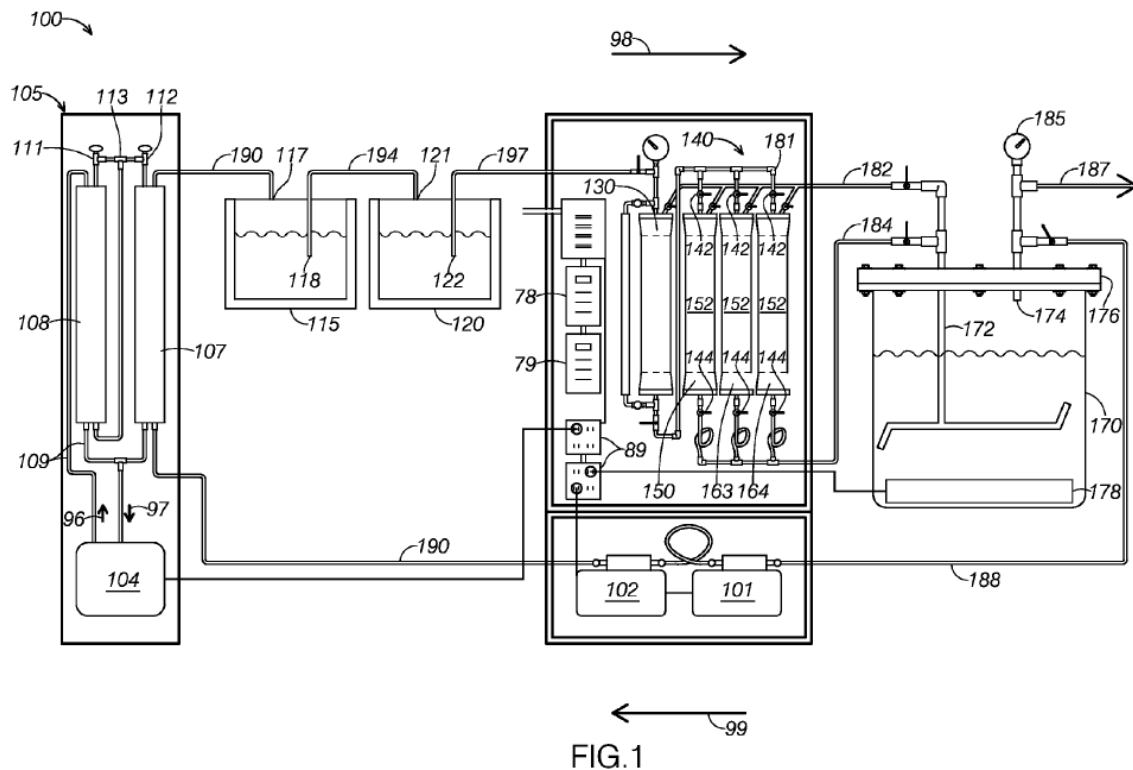


Figure 1, reproduced above, depicts a system for extracting solvent from a source material. *Id.* at 2:17–18. The system includes solvent source container 120, solvent compressor 130, detachable canister system 140, extract container 170, first pump 101, second pump 102, condensing system 105, and solvent collection container 115. *Id.* at 2:60–64.

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.”² *Id.* at 3:49–51. The Specification states that “solvent source line 197 may include an internal

² Throughout this Decision, we omit bolding of reference numbers in quotes from the challenged patent and prior art references.

filter,” which “may be used to remove impurities in solvent prior to introducing the solvent to detachable canister system 140.” *Id.* at 3:54–57. “Solvent 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 4:36–39.

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 5:5–8. Additionally, “solvent compressor 130 is configured to communicate with each detachable canister individually,” so that “when one canister is attached and extracting, solvent compressor 130 may charge solvent for a second canister.” *Id.* at 5:1–4, 6:1–3.

The Specification describes an example in which butane is used to extract essential oils from lavender plants. *Id.* at 3:2–4. The extract mixture is heated “to a distilling temperature to produce an evaporated portion of the solvent in extract container 170,” where “[t]he distilling temperature . . . is greater than the boiling point of butane and less than typical essential oil boiling points.” *Id.* at 8:6–10. Condensing system 105 is configured to cool post-extraction solvent before the solvent reaches solvent collection container 115. *Id.* at 8:67–9:2.

E. The Challenged Claims

Petitioner challenges all twenty claims of the '751 patent. Claims 1, 15, and 18 are independent. Claim 1, reproduced below with bracketed letter and number designations added, is illustrative:

1. [1(a)] A system for extracting essential oil from a plant material, the system comprising:
 - [1(b)] a solvent source container configured to store a solvent;
 - [1(c)] a canister being:
 - in fluid communication with the solvent source container;
 - [1(d)] configured to contain the plant material; and
 - [1(e)] configured to receive solvent from the solvent container in its interior to produce an extract solution having the solvent and the essential oil extracted from the plant material;
 - [1(f)] an extract container in fluid communication with the canister, the extract container being configured to fluidly receive and collect the extract solution from the canister; and
 - [1(g)] a heating element thermally coupled with the extract container and configured to heat the extract container to a distilling temperature, the distilling temperature being greater than or equal to a boiling point of the solvent and below a boiling point of the essential oil to produce a post-extraction portion of the essential oil in the extract container, wherein the solvent source container is in fluid communication with the extract container.

Ex. 1001, 17:8–31.³

Independent claims 13 and 17 contain features similar to independent claim 1, with a few differences. For example, claim 13 recites that the canister is “detachably connected in fluid communication with the solvent

³ For ease of reference, we adopt the letter and number designations Petitioner uses in the Petition. *See* Pet. 14 n.1.

source container,” and includes a limitation directed to “a canister interface.” *Id.* at 18:51–52, 19:1–5. Claim 17 recites, among other things, “a solvent collection line” and “a coolant thermally coupled with the solvent collection line.” *Id.* at 20:8–17.

The challenged dependent claims add additional features. For example, claims 2–12 depend directly or indirectly from claim 1 and relate to features such as a solvent collection container, the solvent being butane, a pump, a solvent collection line, a solvent compressor, and a canister interface. *Id.* at 17:32–18:47.

Claims 14–16 depend directly or indirectly from claim 13 and relate to features such as the canister interface, a solvent compressor, and a canister heating element. *Id.* at 19:7–31.

Claims 18–20 each depend directly from claim 17 and relate to features such as a coolant line and pump, a coolant loop line, and a canister interface. *Id.* at 20:18–50.

F. The Asserted Grounds of Unpatentability

We instituted trial based on the following grounds of unpatentability:

Ground	Claim(s) Challenged	35 U.S.C. § ⁴	Reference(s)/Basis
1	1–3, 6–9, 17	103	Britt ⁵

⁴ Petitioner and Patent Owner both assert that the effective filing date of the challenged claims is November 4, 2013. Pet. 9; PO Resp. 1. We similarly use November 4, 2013, as the effective filing date for purposes of this Decision. *See* Ex. 1001, code (22).

⁵ Britt, U.S. Patent Pub. 2006/0041154 A1, published February 23, 2006 (“Britt,” Ex. 1005).

Ground	Claim(s) Challenged	35 U.S.C. § ⁴	Reference(s)/Basis
2	18	103	Britt, Joseph ⁶
3	4, 5, 10–12, 20	103	Britt, Buese ⁷
4	13–16	103	Buese, Britt
5	19	103	Britt, Buese, Joseph

Inst. Dec. 7–8, 23; Pet. 5–6.

Petitioner supports its contentions with a declaration from Mr. Fritz Chess (Ex. 1002), among other evidence. Patent Owner supports its contentions with a declaration from Gregory P. Miller, Ph.D. (Ex. 2002), 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 qualifications, we find that Petitioner’s declarant Mr. Chess, and Patent Owner’s declarant Dr. Miller, are qualified to provide technical opinions from the perspective of a person of ordinary skill in the art in this proceeding. Ex. 1002 (Chess Decl.) ¶¶ 2–5, pp. 65–66 (Mr. Chess’s statement of qualifications and curriculum vitae); Ex. 2002 (Miller Decl.) ¶¶ 4–12, pp. 31–41 (Dr. Miller’s statement of qualifications and curriculum vitae).

⁶ Joseph, U.S. Patent No. 9,132,363 B2, issued September 15, 2015 (“Joseph,” Ex. 1007).

⁷ Buese et al., U.S. Patent No. 9,242,189 B2, issued January 26, 2016 (“Buese,” Ex. 1006).

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 a person of ordinary skill in the art (sometimes referred to herein as a “POSITA”) 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. 9 (citing Ex. 1002 (Chess Decl.) ¶ 13).

Patent Owner “propose[s] to expand the level of ordinary skill in the art” recited in Petitioner’s proposal “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. 5; Ex. 2008 (Miller Decl.) ¶¶ 30–33. Patent Owner contends that these additions are 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 listed on the ’751 patent has a life sciences degree. PO Resp. 5, n.1 (citing *Env’t Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983)); Ex. 2008 (Miller Decl.) ¶ 32.

On the full trial record, we adopt Petitioner’s proposed level of ordinary skill in the art, with Patent Owner’s additions. The additions are consistent with the evidence of record. For example, we find that adding chemistry and biology degrees is appropriate in view of Dr. Miller’s testimony that college-level chemistry and biology courses typically include training on extractive technologies. Ex. 1017 (Miller Tr.), 38:9–39:18. We also agree with Patent Owner that the educational level of the inventors may be considered (*see Env’t 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. 2008 (Miller Decl.) ¶ 32; PO Resp. 5.

Thus, for the reasons above, we define a person of ordinary skill in the art as someone who would have had

(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.

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 because “he lacks the specific academic or industry experience working with, designing, or studying methods of extracting solute from a source material or similar devices.” Reply 4. Petitioner argues that “between 1988–2015 [Dr. Miller] performed no organic butane extraction, organic propane extraction, or CO₂ organic material extraction.” *Id.* (citing Ex. 1017 (Miller Tr.), 58:7–18). Petitioner further argues that between 1988 and 2015, “[t]he sole organic closed-loop extraction” Dr. Miller performed was “Soxhlet-style extraction,” which Petitioner contends is “rudimentary and provides insufficient basis in establishing one’s standing as a PHOSITA.” *Id.* at 4 (citing Ex. 1017 (Miller Tr.), 59:4–16).

We are not persuaded that Dr. Miller fails to qualify as a person of ordinary skill in the art. As an initial matter, we note that Petitioner is improperly trying to narrow its original proposed level of skill in the art to now require specific experience with “organic extractions” and/or “closed loop extraction systems.” *See* Reply 5 (“Dr. Miller cannot testify to the knowledge of one skilled in the art at the time of the ‘751 Patent because as of 2013, Dr. Miller had never performed *organic extractions*.”), 6 (criticizing Dr. Miller’s experience because “his experience and expertise in

closed loop extraction systems began only after 2015”) (emphases added). Petitioner’s original proposal was much more broadly drawn to any type of extraction, i.e., to “experience working with, designing, or studying methods of extracting solute from a source material.” Pet. 9. 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,⁸ 74; *see also* 37 C.F.R. § 42.23(b). We do not consider Petitioner’s belated arguments seeking to narrow its initial broad proposal to now require experience with “organic extractions” or “closed loop extraction systems.”

Petitioner acknowledges that “Dr. Miller has advanced degrees in life sciences,” which comports with the educational requirement specified in part (1) of the level of skill we use herein. Reply 4; *supra* Section II.A.1 (referring to “a bachelor’s degree in . . . **biology**, . . . or an equivalent field of . . . **life science**”). Additionally, 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. 2002 (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

⁸ PTAB Consolidated Trial Practice Guide (Nov. 2019) (“Trial Practice Guide”), *available at* <https://www.uspto.gov/TrialPracticeGuide> Consolidated.

“[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 avers that he 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. 2002 (Miller Decl.) ¶ 10; *see also* Reply 6 (acknowledging Dr. Miller’s post-2015 “experience and expertise in closed loop extraction systems”). Although this work started in 2015 (two years after the effective filing date of 2013), 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. *See 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.”).

For the reasons discussed above, we determine that Dr. Miller is qualified in this proceeding to testify from the perspective of 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 action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b). Under this standard, we construe the 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 states that certain terms “warrant clarification.” Pet. 10. In our Institution Decision, we adopted Petitioner’s proposed constructions for the terms “canister,” “extract container,” and “solvent source container.” Inst. Dec. 9–10. Following institution, Patent Owner indicates that it does not dispute our constructions for these terms. PO Resp. 6. We adhere to those constructions, which we reiterate below.

Although it does not formally request construction of the term “line” (recited in claims 8 and 17–19), Patent Owner nevertheless presents arguments regarding the meaning of this term. *See* PO Resp. 29–32. We determine that this term warrants construction, and thus we address it below. Patent Owner also requests construction of the term “support” (recited in claims 12, 13, and 20), but for the reasons discussed below in Section II.E.3.b, we determine that we need not construe this term. *See* PO Resp. 27–28.

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. 10 (citing Ex. 1001, 2:16–20). We adopt this understanding of the term “canister,” because it is supported by the cited portion of the Specification.

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. 10–11 (citing Ex. 1001, 2:20–25). We adopt this understanding of the term “extract container,” because it is supported by the cited portion of the Specification. *See also* Ex. 1001, 3:30–31 (noting that the extract container is configured to separate the solvent from the extracted solute).

3. “*solvent source container*”

Petitioner contends that the claimed “solvent source container” “serves as a repository for post-process solvent separated from the extract solution in the ‘extract container(s).’” Pet. 11 (citing Ex. 1001, 2:3–7, 4:30–40). We adopt this understanding of the term “solvent source container,” because it too is supported by the cited portions of the Specification.

4. “*line*”

Certain claims recite the term “line.” For example, claims 8, 17, and 18 recite a “solvent collection line.” Ex. 1001, 18:15, 20:8, 20:22. Claims 18 and 19 additionally recite a “coolant line.” *Id.* at 20:19, 20:27. Claim 19 additionally recites a “coolant loop line.” *Id.* at 20:25–26.

Patent Owner argues that “[t]he ’751 patent consistently describes ‘solvent collection line’ as a line, a pipe, hose, or tube used for the transport of gasses or liquids,” and that “every use of ‘line’ in the ’751 patent supports

this understanding.” PO Resp. 29 (citing Ex. 1001, 9:16–10:41; 14:65–15:10, Figs. 1, 2, 5). Patent Owner further argues that both parties’ declarants use the term “line” consistent with this understanding. *Id.* (citing Ex. 2002 (Miller Decl.), ¶ 60; Ex. 2003 (Chess Depo. Tr.), 100:6–17 (referring to “lines” as “piping”), 145:20–146:7 (describing a line as “tubing”), 169:18–171:2 (using “piping line,” “piping,” and “line” interchangeably)).

Patent Owner further argues that “[t]he ’751 patent consistently describe the engaging of coolant or a coolant line along a portion of the solvent collection line as involving the cooling of solvent vapor while it is in a line—i.e., a tube, pipe, or hose.” *Id.* at 29–30 (citing Ex. 1001, 14:65–15:10, 9:51–54, Fig. 5; Ex. 2002 (Miller Decl.), ¶ 61). To demonstrate, Patent Owner cites Figure 5 of the ’751 patent as depicting coolant line 109 “thermally coupled” to solvent collection line 190. *Id.* at 30. We reproduce Figure 5 below:

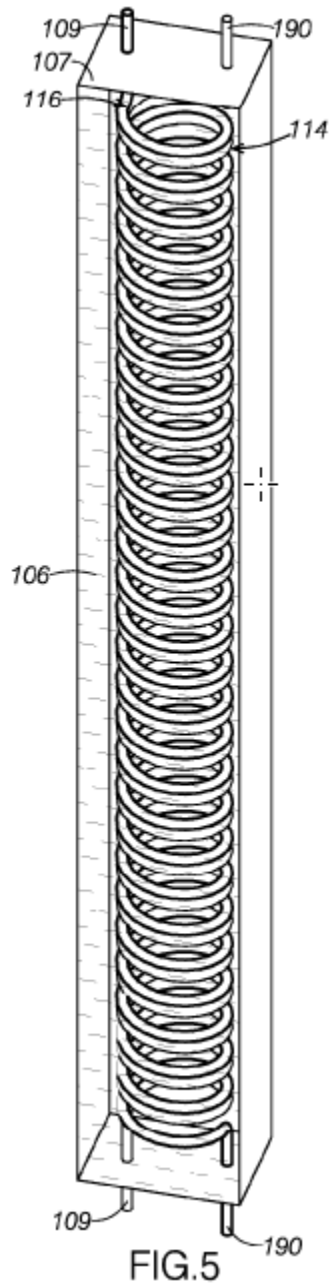


Figure 5 of the '751 patent shows two coiled lines (solvent collection line 190 and coolant line 109) passing through condenser column 107. *See* Ex. 1001, 9:26–36. The Specification explains that these two lines are “sufficiently close with one another for coolant line 109 and solvent collection line 190 to be thermally coupled through first condenser column

107.” *Id.* Based on its arguments, we understand Patent Owner to be arguing that “line” should be construed to mean “a tube, pipe, or hose.”

Petitioner responds that Patent Owner “attempts to narrowly construe the term ‘line’” by improperly limiting the term to specific examples within the Specification. Reply 17 (citing, *e.g.*, *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346–47 (Fed. Cir. 2015)). Petitioner asserts that the term “line” expansively refers to other elements or components associated along the line. *Id.* As support, Petitioner asserts that in Figure 1 of the ’751 patent, coolant line (109) has coolant pump (104) along its path. *Id.* at 17–18 (citing Ex. 1001, 9:20–33).

We find that Patent Owner has the better argument. Patent Owner’s citations demonstrate that “[t]he ’751 patent consistently describes ‘solvent collection line’ as a line, a pipe, hose, or tube used for the transport of gasses or liquids,” and that this usage is consistent with the way both parties’ declarants use the term “line.” PO Resp. 29–30; Ex. 1001, 9:16–10:41, 14:65–15:10, Figs. 1, 2, 5; Ex. 2002 (Miller Decl.), ¶ 60; Ex. 2003 (Chess Depo. Tr.), 100:6–17, 145:20–146:7, 169:18–171:2. In contrast, Petitioner’s argument is undermined by the same passage it cites. Specifically, “what the ’751 Patent explains in the same paragraph Petitioner cites is that the ‘solvent collection line 190 is configured **to pass through** condensing system 105 between second pump 102 and solvent collection container 15.” Sur-reply 14–15 (quoting Ex. 1001, 8:60–63) (emphasis Patent Owner’s). “Figure 5 shows that both ‘solvent collection line 190’ and ‘coolant line 109’ are still ‘lines’ as they pass through ‘first condenser column 107.’” *Id.* at 15 (citing Ex. 1001, Fig. 5, 9:48–58). Figure 1, in contrast, shows that

coolant pump 104 is a component that is distinct from coolant line 109.

See id. (citing Ex. 1001, Fig. 1, 9:6–25).

For the above reasons, we construe “line” to mean “a pipe, hose, or tube.”

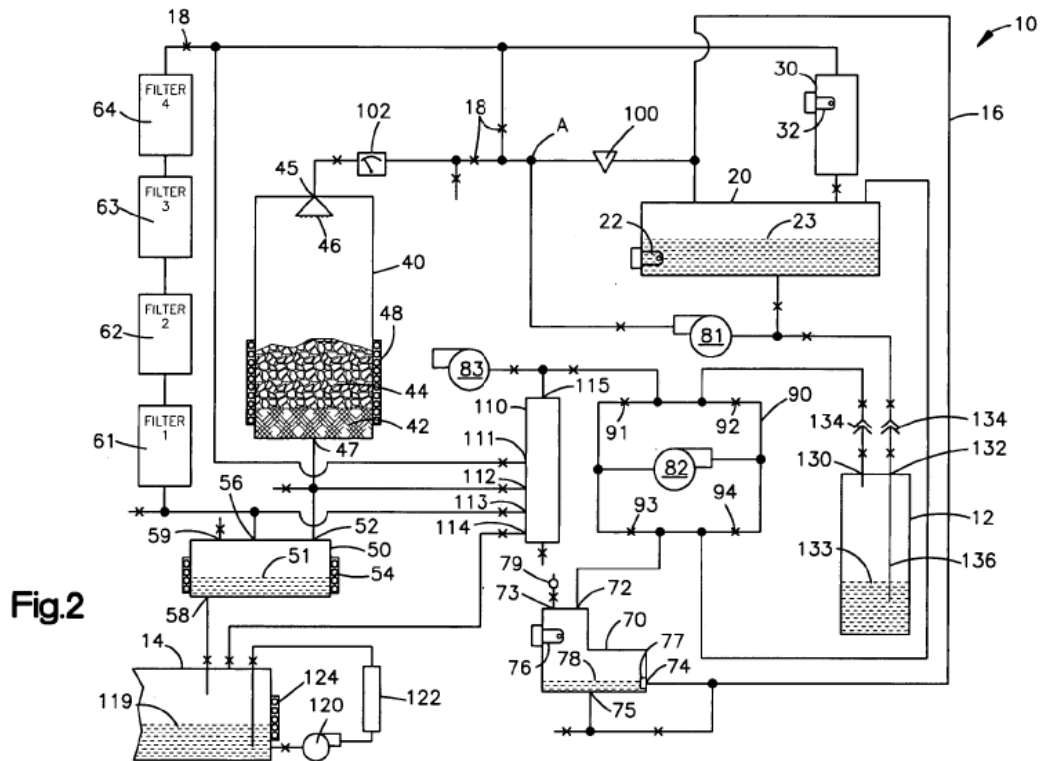
5. Conclusion

Other than the terms we address above, we determine that we need not construe any other term, including two additional terms Petitioner addresses (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. 11–12.

C. Overview of Asserted Prior Art References

1. Britt (Ex. 1005)

Britt, titled “Oil Extraction Method,” “relates to methods for extracting oils from oil bearing materials.” Ex. 1004, code (54), ¶ 2. We reproduce Britt Figure 2 below.



Britt 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. 1006)*

Buese, titled “Continuous Extractor, Concentrator and Dryer,” relates “to a continuous immersion extraction system.” Ex. 1006, 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 solvent. *Id.* at 7:7–65.

3. *Joseph (Ex. 1007)*

Joseph, titled “Extraction System,” describes “[a]n extraction apparatus [that] comprises an extraction vessel configured to remove an extracted material from a source material in contact with a process fluid to form a mixture.” Ex. 1007, code (57). The apparatus “comprises a temperature regulator configured to permit re-circulation of a temperature regulation fluid and regulate the temperature of the process fluid.” *Id.* The temperature regulator can include “a chiller/heater 144 with temperature

regulation fluid circulation line 142 running through the extraction apparatus 100 to regulate temperature of the process fluid.” *Id.* at 6:56–63.

“[T]emperature regulation fluid circulation line 142 can run in close proximity to the process fluid circulation conduit [130],”⁹ and “can form a coil around the temperature regulation fluid circulation line 142.” *Id.* at 6:65–7:2.

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).

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

⁹ Although in this sentence Joseph refers to “process fluid circulation conduit 142,” we understand this to be a typographical error. Ex. 1007, 6:65–7:2. Joseph elsewhere uniformly refers to the process fluid circulation line of Figure 1 using reference number 130, not 142. *See, e.g., id.* at 4:33–5:19.

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. Analysis of Unpatentability Grounds

Petitioner presents five Grounds of alleged obviousness. We review each Ground below.

1. Ground 1 – Alleged Obviousness of Claims 1–3, 6–9, and 17 Over Britt

In Ground 1, Petitioner argues that claims 1–3, 6–9, and 17 would have been obvious over Britt. Pet. 12–25. Patent Owner opposes. After considering all of the arguments and evidence of record, we find that Petitioner demonstrates by a preponderance of the evidence that Britt renders claims 1–3, 6, 7, and 9 unpatentable as obvious over Britt, but does not demonstrate the same for dependent claim 8 and independent claim 17. We start by addressing claims 1–3, 6, 7, and 9, then turn to claims 8 and 17.

a) Claims 1–3, 6, 7, 9

We begin with analysis of claim 1. For this claim, Petitioner asserts that Britt discloses the preamble (“[a] system for extracting essential oil from a plant material, the system comprising:”), because it discloses systems that can “extract oil from an oil bearing material,” including plant materials

such as rose petals.¹⁰ Pet. 14 (quoting Ex. 1005 ¶ 10). Regarding limitation 1(b) (“a solvent source container configured to store a solvent”), Petitioner cites Britt’s “reservoir 20,” which is “a tank that holds the solvent.” *Id.* (quoting Ex. 1005 ¶ 12); *see also id.* at 13 (arguing that Britt’s “reservoir” is analogous to claim 1’s “solvent source container”).

For limitation 1(c) (“a canister being: in fluid communication with the solvent source container;”), Petitioner cites Britt’s teaching that extraction tank 40 receives solvent from reservoir 20. *Id.* at 14 (citing Ex. 1005 ¶ 27); *see also id.* at 13 (arguing that Britt’s “extraction tank” is analogous to claim 1’s “canister”). Regarding limitation 1(d) (canister “configured to contain the plant material”), Petitioner cites Britt’s teaching that extraction tank 40 holds plant material, such as rose petals. *Id.* at 14 (citing Ex. 1005 ¶ 13). For limitation 1(e) (canister “configured to receive solvent from the solvent container in its interior to produce an extract solution having the solvent and the essential oil extracted from the plant material;”), Petitioner cites Britt’s teaching that solvent is sprayed into extraction tank 40 and flows through the petals to “yield a mixture of the solvent and the oil.” *Id.* (quoting Ex. 1005 ¶ 13).

Regarding limitation 1(f) (“an extract container in fluid communication with the canister, the extract container being configured to fluidly receive and collect the extraction solution from the canister”),

¹⁰ 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 Petitioner sufficiently demonstrates that Britt discloses the preamble.

Petitioner cites Britt's disclosure of "distillation tank 50," which "receives the solvent/oil mixture 51 through its inlet 52 from the extraction tank 40." *Id.* at 14 (quoting Ex. 1005 ¶ 14); *see also id.* at 13 (arguing that Britt's "distillation tank" is analogous to claim 1's "extract container").

For the portion of limitation 1(g) relating to a heating element and distilling temperature ("a heating element thermally coupled with the extract container and configured to heat the extract container to a distilling temperature, the distilling temperature being greater than or equal to a boiling point of the solvent and below a boiling point of the essential oil to produce a post-extraction portion of the essential oil in the extract container"), Petitioner cites Britt's teaching that "distillation tank 50 is heated by its heating coil 54 to a temperature that is high enough to evaporate the solvent, but low enough to avoid decomposing or evaporating the oil." *Id.* at 41–42 (quoting Ex. 1005 ¶ 28). Petitioner explains that a person of ordinary skill in the art would have appreciated that "evaporative separation of a solvent from an oil . . . is most efficient at the boiling point of the solvent," and that "an oil decomposes at or near its own boiling point." Pet. 15–16 (citing Ex. 1002 ¶ 61 (limitation 1(g))). As such, Mr. Chess opines that a person of ordinary skill in the art would have been found it obvious "to separate the solvent from the solute by heating the extract container to a distilling temperature . . . greater than or equal to a boiling point of the solvent and below a boiling point of the essential oil." Ex. 1002 ¶ 61 (limitation 1(g)); Pet. 15–16.

For the remaining portion of limitation 1(g) ("wherein the solvent source container is in fluid communication with the extract container"), Petitioner explains that in Britt's system, the solvent flows out of distillation

tank 50, through chiller 30, and returns to reservoir 20. Pet. 15–16 (citing Ex. 1005 ¶ 28, Fig. 5).

Patent Owner does not dispute Petitioner’s mapping of Britt to claim 1, except as to the portion of limitation 1(g) that recites heating an extract container to a distilling temperature that is “greater than or equal to a boiling point of the solvent.”¹¹ Ex. 1001, 17:25–26. Patent Owner argues that Britt does not teach or suggest this limitation, because it “never discusses boiling solvent but merely discloses heating a distillation tank ‘to a temperature that is **high enough to evaporate the solvent.**’” PO Resp. 15 (quoting Ex. 1005 (Britt) ¶ 20 (emphasis Patent Owner’s)). Patent Owner contends that “for many solvents, such as volatile solvents, evaporation begins well below the solvent’s boiling point.” *Id.* (citing Ex. 2002 (Miller Decl.) ¶ 35; Ex. 2003 (Chess Depo. Tr.), 162:3–5 (agreeing that “evaporation can occur below a boiling point”)).

Patent Owner argues that a person of ordinary skill in the art would have understood Britt’s teaching about evaporating the solvent as “teaching that this evaporation should take place below the boiling point of the solvent.” PO Resp. 15–16; Ex. 2002 (Miller Decl.) ¶ 39. This is because, Patent Owner argues, Britt “is particularly concerned with degradation of the solvent” and “teaches away from heating any more than necessary to evaporate solvent.” PO Resp. 16 (citing Ex. 1005 (Britt) ¶ 31 (teaching that solvent is not compressed or pumped at certain steps in order to reduce the

¹¹ This same limitation is recited in independent claim 17, and our analysis here applies equally to that claim. *See* Ex. 1001, 19:47–48; *see also* Pet. 15 , 22–23 (limitation 17(e)).

chance of heat degradation)), 19; Ex. 2002 (Miller Decl.) ¶ 36. Patent Owner also argues that “[a]lthough Britt never specifies what specific solvents are appropriate for its system,” a person of ordinary skill in the art would have understood that *n*-hexane, which tends to evaporate before reaching its boiling point, is appropriate for Britt’s system. PO Resp. 16–17 (citing Ex. 1005 (Britt) ¶¶ 3, 10, 20, 32; Ex. 2002 (Miller Decl.) ¶¶ 38–39). Patent Owner also argues that a person of ordinary skill in the art would not have found it “efficient” to evaporate the solvent at its boiling point because it would require unnecessary input of energy and risk damaging the solvent or solute, given that a volatile solvent can evaporate below its boiling point. PO Resp. 18; Ex. 2002 (Miller Decl.) ¶ 40.

We have reviewed the arguments and evidence of record, and find that Petitioner demonstrates by a preponderance of the evidence that Britt teaches or suggests each limitation of claim 1, and renders that claim unpatentable as obvious, for the reasons discussed in the Petition and summarized above. *See* Pet. 12–16.

Patent Owner’s argument is unavailing. Although Britt does not expressly disclose heating a solvent to a temperature greater than or equal to its *boiling point* as recited in limitation 1(g), it does teach heating it to a temperature “that is high enough to *evaporate* the solvent.” Ex. 1005 (Britt) ¶ 28. Dr. Miller testified that evaporation takes place at, above, and below a boiling point. Ex. 1017 (Miller Tr.), 130:1–21; Reply 10. Accordingly, Britt’s teaching is broad enough to encompass heating a solvent to a temperature greater than or equal to its boiling point. *See* Reply 11. Under the circumstances here, this is sufficient for obviousness. *See, e.g., Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1321 (Fed. Cir. 2004)

(“Where the ‘prior art . . . discloses a range encompassing a somewhat narrower claimed range,’ the narrower range may be obvious,” absent criticality) (quoting *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003)).

Moreover, Patent Owner’s effort to limit Britt’s broad teaching to “low-temperature, evaporative distillation” is unavailing. Sur-reply 7. Patent Owner’s arguments are largely based on reading Britt as limited to a system for extracting rose petals. From that vantage point, and “[a]lthough Britt never specifies what specific solvents are appropriate for its system,” Patent Owner makes arguments based on the characteristics of *n*-hexane and other volatile solvents appropriate for extracting rose petals. PO Resp. 16–17. But Britt is not so limited. It discloses a system to “extract oil from an oil bearing material.” Systems for extracting oil from plant material—and from rose petals in particular—are merely provided as an example. *See* Ex. 1005 (Britt), ¶ 10.

We agree with Petitioner that “Britt does not teach against the boiling of a solvent,” and find that Patent Owner does not establish that a person of ordinary skill in the art would have understood Britt’s broad teaching regarding evaporating a solvent as limited to low-temperature evaporative distillation.” Reply 10. That the prior art “discloses a multitude of effective combinations does not render any particular [combination] less obvious.” *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989). Accordingly, Patent Owner’s arguments do not undermine Petitioner’s showing that Britt teaches the limitation of independent claim 1 directed to heating an extract container to a distilling temperature that is “greater than or equal to a boiling point of the solvent.” Ex. 1001, 17:25–26, 19:47–48.

For the reasons above, we find that Petitioner has established by a preponderance of the evidence that claim 1 is unpatentable as obvious over Britt. We have also reviewed Petitioner’s contentions regarding claims 2, 3, 6,¹² and 9, which all depend from claim 1. *See* Pet. 16–19, 21. Beyond the arguments we already discussed above with respect to claim 1, Patent Owner did not make any additional arguments specific to any of these claims. *See generally* PO Resp.

Before finding in favor of Petitioner on these claims, however, we considered Patent Owner’s arguments that the Chess Declaration is unreliable and “should be given little if any weight.” PO Resp. 8. Although Patent Owner quotes excerpts of testimony that criticize the figures of certain prior art references (as well as those of the challenged patent) (*see id.* at 8–14), based on this record and the circumstances of this case, we are not persuaded to accord the entirety of the Chess Declaration no weight based on these cited excerpts or on the totality of the deposition as characterized by Patent Owner.

First, Patent Owner does not persuade us that Mr. Chess’s testimony indicating that the figures were “nonsensical” or depicted systems that would not work, demonstrates that he “never fully understood the challenged

¹² Claims 6 and 8, which each depend directly from claim 1, recite “the solvent collection container.” Claim 1, however, does not recite a solvent collection container. As we noted in our Institution Decision, Petitioner changes the first recitation of “the solvent collection container” in claims 6 and 8 to “[a] solvent collection container.” *See* Inst. Dec. 17 n.9; Pet. 17, 20. Patent Owner did not comment on this change. *See generally* PO Resp. In our analysis, we construed claims 6 and 8 consistent with Petitioner’s change.

patents and prior art.” PO Resp. 8–9. An examination of the cited testimony in context does not demonstrate a wholesale misunderstanding of the art. For example, Patent Owner quotes Mr. Chess’s testimony that the system depicted in Britt Figure 2 would not work because it failed to depict a valve below the extractor vessel, to prevent fluid from passing immediately out the bottom of the vessel. PO Resp. 9 (quoting Ex. 2003 (Chess Depo. Tr.), 145:14–16, 171:10–17). In context and on this record, Mr. Chess appeared to be addressing whether the schematic figures presented a complete, working, commercial embodiment. We do not view this testimony as necessarily undermining the opinions in his Declaration, which are unrelated to this question. And we agree with Petitioner that focusing only on a reference’s figures “provides only a myopic view of the entirety of the disclosure, teachings, and permutations available for prior art within any given reference.”¹³ Reply 8–9. Mr. Chess indicated as much, testifying that although the prior art “diagrams don’t really prove a whole lot,” the analysis presented in the claim charts in his Declaration show that the challenged

¹³ The parties dispute why Mr. Chess’s deposition testimony focused on the figures in the prior art. Petitioner contends that “Patent Owner cross-examined Mr. Chess by presenting figures rather than discussing the references as a whole,” while Patent Owner contends that “Mr. Chess, not Patent Owner, directed his testimony to the diagrams and figures rather than the descriptions in the specification.” *Compare* Reply 8, *with* Sur-reply 3 (citing Ex. 2003 (Chess Depo. Tr.), 55:25–56:3) (noting problems in Britt and Buese’s “piping diagrams”). Even if Patent Owner’s contention is accurate, however, it appears that Mr. Chess also indicated that identifying problems in Britt and Buese’s diagrams was not something he had spent a lot of time on because that was not the focus of his assignment. *See* Ex. 2003 (Chess Depo. Tr.), 56:16–57:15.

claims and prior art have “obvious similarities, and beyond similarities, the identical description.” Ex. 2003 (Chess Depo. Tr.), 143:17–144:6.

Patent Owner also appears to suggest that Mr. Chess misunderstood the analysis in his declaration because “he understood his obviousness opinions to be based on the overlap of the claims of the challenged patents and the claims of the prior art patents.” PO Resp. 11–12. Patent Owner quotes testimony where Mr. Chess indicates he compared the challenged claims to Britt and Buese’s claims. *See id.* On this record, however, it is not clear that Mr. Chess was consistently using the term “claims” to literally refer to the claims of the prior art patents. For example, at one point Mr. Chess appears to distinguish patent claims from the rest of a patent. *See* Ex. 2003 (Chess Depo. Tr.), 139:11–16 (testifying, in response to the question “So you did not look at the rest of the patent in understanding the claim language?”, “I read the entire patent, but my understanding of the law is that it comes down to the claims. So I studied, you know, how the claims intersected with each other.”). But in other testimony discussing the claim charts in his Declaration, he stated, “suffice it to say that I relied mostly on claims, and the claims between Claim 14 and all these other claims having to do with [Patent Owner] and looking at Britt and Buese, and you can see the obvious similarities, and beyond similarities, the identical description,” and “when you read these claims, and this chart lays it out so eloquently, we’re talking about the same thing here.” Ex. 2003 (Chess Depo. Tr.), 143:17–144:6. The claim charts in Mr. Chess’s Declaration largely quote the specifications of the prior art patents, not their claims, which on this record suggests that Mr. Chess may have been using the term “claims” either inconsistently or unartfully throughout his deposition.

Although we are not persuaded to accord the entirety of the Chess Declaration no weight, we further examine Petitioner’s specific arguments for each of claims 1–3, 6, 7, and 9, and consider these arguments against the backdrop of the deposition as characterized by Patent Owner. With only three exceptions (limitations 1(g) and 3(d) and claim 6), Petitioner’s proofs for each of these claims consist largely of direct quotes from Britt, without direct reliance on Mr. Chess’s Declaration. *See* Pet. 14–19, 21. With respect to the specific declaration testimony Petitioner relies on for limitations 1(g) and 3(d) and claim 6, Patent Owner has not explained, and on this record we do not otherwise ascertain, how the cited deposition testimony disavows or contradicts the limited opinions Mr. Chess provided in his Declaration for these limitations and claim. Indeed, although Patent Owner disputed Petitioner’s specific arguments for limitation 1(g) (as we discussed above), Patent Owner does not dispute the specific analyses Mr. Chess provided for limitation 3(d) or claim 6.

Patent Owner argues that “Mr. Chess directly contradicted or undercut several positions taken in the Petition and his Declaration.” PO Resp. 13. Patent Owner’s examples, however, relate to testimony regarding Buese and a motivation to combine Britt and Buese. *See id.* Ground 1, however, is based only on Britt; a combination with Buese is not implicated.¹⁴ Accordingly, for the above reasons, Patent Owner has not persuaded us to

¹⁴ Buese is at issue in at least Ground 3, and we discuss the relevant testimony below in connection with our analysis of Ground 3. *See infra* Section II.E.3.a.

accord no weight to the entire Chess Declaration (or the portions regarding claims 1–3, 6, 7, and 9).

Based on the full trial record, we find that Petitioner demonstrates by a preponderance of the evidence that Britt teaches or suggests each limitation of claims 1–3, 6, 7, and 9 and renders each of these claims unpatentable as obvious, for the reasons discussed in the Petition. *See* Pet. 14–19, 21.

b) Claims 8 and 17

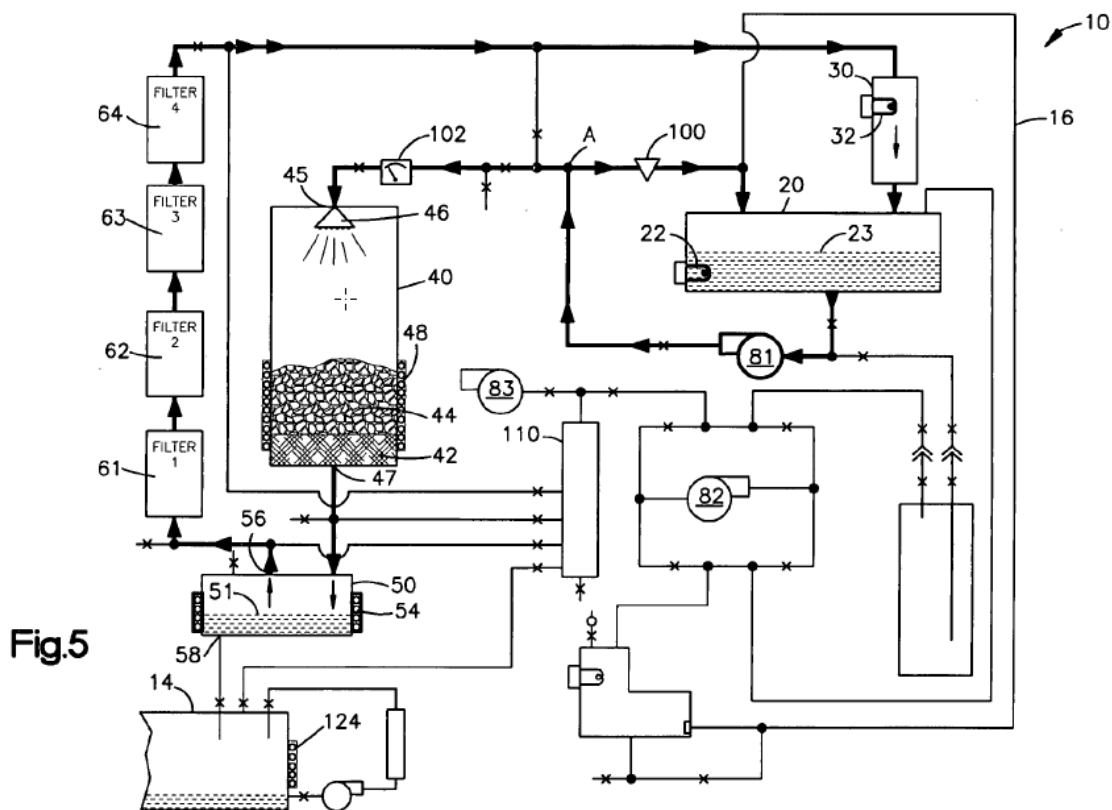
Patent Owner argues that Petitioner has not demonstrated by a preponderance of the evidence that Britt discloses the requirement in dependent claim 8 and independent claim 17 of “a coolant thermally coupled with the solvent collection line.” As discussed below, we agree with Patent Owner.

Claim 8 depends from claim 1 and recites “a solvent collection line connected between the extract container and the solvent collection container,” and “a coolant thermally coupled with the solvent collection line.” Ex. 1001, 18:15–18. Independent claim 17 recites the same limitations. *See id.* at 20:8–9, 20:13–14.

Regarding “a solvent collection line,” Petitioner argues that Britt teaches solvent collection line (16), which “draws solvent from the extraction tank 40, through distillation tank 50, the manifold filter 110 and the second pump 82, into the purge tank 70,” wherein the solvent ultimately returns to reservoir 20. Pet. 20 (for limitation 8(a), citing Ex. 1005 (Britt), ¶ 36, Figs. 6, 7).

Regarding “a coolant thermally coupled with the solvent collection line,” Petitioner argues that Britt teaches or suggests this limitation by

teaching the use of cooling coils (1) within the purge tank 70, and (2) above the reservoir 20, to condense the solvent to liquid form. *Id.* at 20–21 (citing Ex. 1005 (Britt), ¶¶ 12, 16; Ex. 1002 (Chess Decl.), XIII.8(b)). Petitioner argues that in view of Britt’s teaching of using cooling coils along the fluid line above the reservoir, a person of ordinary skill in the art would have found it obvious “to interconnect a chiller to the fluid line, before the purge tank of Britt, to condense the solvent vapor into a liquid to be received by the purge tank.” *Id.* at 21. To elucidate its arguments, Petitioner cites Britt Figure 5, which we reproduce below:



Reply 19. Britt Figure 5 depicts an oil extraction system. With reference to Figure 5, Petitioner argues that “[a] portion of the solvent collection line flows through the chiller (30), which comprises cooling coils (32)

configured to condense the solvent vapor into a liquid.” Reply 18. We understand Petitioner to be arguing that a person of ordinary skill in the art would have removed the cooling coils that are inside purge tank 70 and replaced them with a chiller positioned along the fluid line, before the purge tank, such that the solvent line would empty into the chiller.

Petitioner does not persuade us that this arrangement reaches the claim limitations reciting “a coolant thermally coupled with the solvent collection line.” Per our construction of “line,” the claimed “solvent collection line” is “a pipe, hose, or tube.” *See* Section II.B.4. As discussed above, the chiller is a separate component from the solvent collection line. *See id.* We agree with Patent Owner that “[a]t best, Britt discloses a solvent collection line that empties into a chiller,” but having “solvent travel[] through a line that merely empties into the chiller” does not satisfy the claim limitations reciting “a coolant thermally coupled with the solvent collection line.” PO Resp. 4, 32¹⁵; Ex. 2002 (Miller Decl.), ¶ 63.

In its Reply, Petitioner contends that Britt teaches or suggests this claim limitation even if “line” is construed to mean “a pipe, hose, or tube.” Reply 20. Specifically, Petitioner argues that

Patent Owner points out the coolant line and solvent collection line are only required to be sufficiently close to one another. (POR, Page 30 citing Exhibit 1001 at 9:51–54). If the solvent collection line of Britt stopped at the top of the chiller and started again at the bottom of the chiller, the coolant of the cooling coils could either be located within the tank sufficiently

¹⁵ Here the Patent Owner Response references claim 15, but based on the context provided by the heading of this section and the argument, we assume this is a typographical error, and that Patent Owner intended to cite claims 8 and 17.

close to the solvent collection line at the inlet or could be wrapped about the tank and once again be sufficiently close to the solvent collection line at inlet of the chiller. (Exhibit 1005, ¶11).

Id. We are not persuaded by this argument. The Specification describes the coiled portions of the solvent collection and coolant lines as “sufficiently close with one another for coolant line 109 and solvent collection line 190 to be thermally coupled through first condenser column 107.” Ex. 1001, 9:29–32, Fig. 5. Patent Owner correctly notes that “Figure 5 shows that the coiled portions of the lines are touching each other along their length.” Sur-reply 16. We agree with Patent Owner that “[t]his disclosure of lines touching each other being ‘sufficiently close’ for purposes of thermal coupling does not support Petitioner’s expansion of the meaning of ‘thermally coupled’ to encompass disclosures like Britt where neither coolant nor a coolant line touches or is even adjacent to a solvent collection line.” *Id.* Moreover, Petitioner’s attorney argument is insufficient carry its burden. Petitioner does not cite any evidence of record to support its argument that the arrangement Petitioner posits (i.e., where a solvent collection line empties into a chiller) satisfies the claim limitations reciting “a coolant thermally coupled with the solvent collection line.” *See Johnston v. IVAC Corp.*, 885 F.2d 1574, 1581 (Fed. Cir. 1989) (noting that attorney argument is “no substitute for evidence”).

For the above reasons, we determine that Petitioner has not established by a preponderance of the evidence that Britt would have rendered claims 8 and 17 unpatentable.

c) Conclusion on Ground 1

For the reasons discussed above, we determine that Petitioner has established by a preponderance of the evidence that claims 1–3, 6, 7, and 9 would have been obvious over Britt, but has not established the same for claims 8 and 17.

2. Ground 2 – Alleged Obviousness of Claim 18 Over Britt and Joseph

In Ground 2, Petitioner argues that claim 18, which depends from claim 17, would have been obvious over Britt and Joseph. Pet. 25–29. As discussed above with respect to Ground 1, we determine that Petitioner has not established by a preponderance of the evidence that Britt would have rendered claim 17 unpatentable. *See supra* Section II.E.1.b. Petitioner relies on its arguments made for claim 17, and relies on Joseph only for its purported teaching or suggestion of the additional limitations added by claim 18. *See* Pet. 28–29.

Because claim 18 depends from claim 17, and because Petitioner’s arguments for claim 18 do not rectify the deficiencies discussed above for claim 17, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claim 18 would have been obvious over Britt and Joseph.

3. Ground 3 – Alleged Obviousness of Claims 4, 5, 10–12, and 20 Over Britt and Buese

In Ground 3, Petitioner argues that dependent claims 4, 5, 10–12, and 20 would have been obvious over Britt and Buese. Pet. 29–39. We first address claims 4, 5, 10, and 11, and then separately address each of claims 12 and 20.

a) Claims 4, 5, 10, and 11

Each of claims 4, 5, 10, and 11 depend from claim 1. Claim 4 recites, among other things, a supplemental extract container and a supplemental solvent collection container. Ex. 1001, 17:49–58. Petitioner cites Buese’s teaching regarding a redundancy of receivers and separation chambers, and asserts that a person of ordinary skill in the art would have included such redundant containers to scale the system capacity and enhance commercial opportunities. Pet. 32–34 (citing Ex. 1006 (Buese), 4:55–59; Ex. 1002 (Chess Decl.) ¶¶ 67–69).

For claim 5, which recites that the solvent is butane, Petitioner cites Buese’s teaching that “the solvent can be . . . butane.” Ex. 1001, 17:59–60; Pet. 34 (citing Ex. 1006 (Buese), 7:63–65; Ex. 1002 (Chess Decl.) ¶ 69).

Claim 10 recites limitations on the location of the input and output for the extract container. *See* Ex. 1001, 18:27–32. Petitioner maps these limitations to the location of the ports on Buese’s separation chamber, noting that the location of the valves allows for collecting solute under the influence of gravity. Pet. 34–35 (citing Ex. 1006 (Buese), 2:61–63, 3:3–6, 3:15–16, Fig. 1; Ex. 1002 (Chess Decl.) ¶¶ 67–69); *see also id.* at 32 (equating Buese’s “separation chamber” with the claimed “extract container”).

Claim 11 recites that the system of claim 1 further comprises a solvent compressor configured to heat the solvent to a predetermined temperature and compress it to a predetermined pressure. *See* Ex. 1001, 18:34–41. Petitioner asserts that Buese teaches or suggests these additional limitations, noting that a person of ordinary skill in the art would have appreciated that “having the ability to control the temperature and the pressure of the solvent

entering the extraction chambers, implies that an operator might select the most efficient solvent parameters to provide ‘a system running at it[s] highest efficiency.’” Pet. 37 (quoting Ex. 1006 (Buese), 3:62–63); *see also* Pet. 35–38 (additionally citing Ex. 1006 (Buese), Abstr., 4:59–62, 6:4–7, 6:16–20, 8:3–6, 12:45–46; Ex. 1002 (Chess Decl.) ¶¶ 67–69).

We find Petitioner’s arguments in the Petition to be supported by the cited evidence. *See* Pet. 29–38. Patent Owner does not make arguments specific to the additional limitations of claims 4, 5, 10, and 11; instead, it only makes an argument that Britt does not teach a limitation of claim 1, which we addressed above. *See supra* Section II.E.1.a. However, Patent Owner’s arguments regarding the Chess Declaration are implicated here, given that Petitioner’s arguments for claims 4, 5, 10, and 11 depend, in part, on Mr. Chess’s Declaration. PO Resp. 8–14.

Although we are not persuaded to accord the entirety of the Chess Declaration no weight for the reasons discussed above (*see supra* Section II.E.1.a), we further examine Petitioner’s specific arguments for each of claims 4, 5, 10, and 11 against the backdrop of the deposition as characterized by Patent Owner.

Ground 3 is based on the combination of Britt and Buese, and Patent Owner contends that Mr. Chess “directly contradicted or undercut several positions in the Petition and his Declaration” regarding Buese and a motivation to combine Britt and Buese. PO Resp. 13. First, Patent Owner argues that “Petitioner and Mr. Chess’s Declaration repeatedly rely on a paragraph in Buese, *see* Ex. 1006, 4:48 – 5:16, that provides a generalized, laundry list of possible modifications to the embodiment of Figure 1,” but “Mr. Chess conceded that it was[] a ‘throw-away paragraph’ that was not

helpful in understanding how to modify the system in the diagram of Figure 1.” *Id.* (quoting Ex. 2003 (Chess Depo. Tr.), 168:14–25).

Patent Owner does not persuade us that Mr. Chess’s description of this portion of Buese as a ““throw-away paragraph” demonstrates that Mr. Chess directly contradicted or undercut several positions in the Petition and his Declaration. Petitioner and the Declaration rely on this paragraph in Buese as teaching or suggesting the limitations of claim 4 regarding adding a supplemental extract container and supplemental solvent collection container to the system of claim 1. *See* Pet. 32–34. Mr. Chess provided extensive testimony about this paragraph that is consistent with this reliance on Buese in the Petition and Declaration. For example, in response to a question asking him to explain this paragraph in Buese in his own words, he testified:

[I]t’s giving a wide amount of latitude towards all the gizmos you can put on this machine and you can have quick disconnects for pulling off extractor vessels, but you can -- you’re designing the thing so that, you know, all conduits, filters, gauges, pumps and other components can be plumbed to permit their emptying and evacuation for exchange without stopping the continuous extraction system. . . . So basically, the system is designed so that you can pull off vessels, filters, pumps, anything, and keep the whole thing still running with or without quick disconnects. You could be just closing valves and undoing compression fittings. They’re not super specific, but they give the option of quick disconnects. But I guess the idea here is while the machine is running you can yank things off of it and put things back on it.

Ex. 2003 (Chess Depo. Tr.), 163:23–164:24. This explanation is consistent with Mr. Chess’s Declaration, which states that this paragraph in Buese would have motivated including a redundancy of distillation tanks and

solvent purge tanks to Britt's system in order to scale the system's capacity. Ex. 1002 (Chess Decl.) ¶ 69; Pet. 32–34.

Patent Owner's counsel continued to examine Mr. Chess regarding this paragraph, asking for example, whether it “give[s] guidance on how to modify Figure 1 of Buese.” Ex. 2003 (Chess Depo. Tr.), 166:1–11.

Mr. Chess responded that the paragraph “tells me I can hook everything together with, you know, valving and quick disconnects so that I can pull parts off of it as I desire. Other than that, it wouldn't really change the diagram [i.e., Buese Figure 1].” *Id.* After continued questions and answers along these same lines (*see id.* at 166:12–168:13), counsel asked whether the paragraph “explain[s] how to pipe components that you make redundant in the system.” *Id.* at 168:14–16. Mr. Chess responded:

No, it doesn't. You know, in my opinion, it's kind of a throw-away paragraph. It just says, “Yeah, you can put it all together so you can pull parts on and off,” but the diagram doesn't really show that. The diagram doesn't show, you know, valves that necessarily isolate everything so you could do that. Yeah, I can clearly see that it doesn't. So yeah, it's a throw-away paragraph.

Ex. 2003 (Chess Depo. Tr.), 168:14–25. Patent Owner does not convince us that this testimony contradicts or undercuts Mr. Chess's Declaration. The Declaration opines that Buese motivates adding a redundancy of certain chambers, to enhance system capacity and commercial opportunities.

Ex. 1002 (Chess Decl.) ¶ 69. Mr. Chess's deposition testimony is consistent with this—he repeatedly testified that this paragraph in Buese teaches the designing the system to have redundancy so that you can add and remove components without interrupting operation of the system. Counsel's final question was directed to whether the paragraph explains how to specifically

pipe the components, and Mr. Chess fairly answered that it does not. Ex. 2003 (Chess Depo. Tr.), 168:14–25.

In context, we understand Mr. Chess’s testimony to assert that Buese’s paragraph teaches that “you can put it all together so you can pull parts on and off,” but does not detail how to pipe the systems depicted in the figures to carry out this teaching. We find that this is wholly consistent with the Chess Declaration and with a plain reading of Buese’s paragraph. That paragraph is high-level and does not purport to offer precise instruction on how to pipe the system of Buese Figure 1 to implement the concept expressed in the paragraph.

Patent Owner next points to testimony where Mr. Chess indicates he wouldn’t combine the prior art, but rather would use “an ETS extractor,” which appears to be a reference to Petitioner’s commercial system. Ex. 2003 (Chess Depo. Tr.), 115:1–11. This testimony was elicited in response to a line of questioning about how Mr. Chess would combine the systems of Britt Figure 2 and Buese Figure 2. *See id.* at 110:14–22 (“How would you combine the systems shown in Figures 2 of these patents?”). After some back and forth and an attempt by counsel to restate the question, Mr. Chess asked, “So you’re asking like if I take these two and someone says make a hybrid out of the two of them, how would [I] do it?,” to which counsel responds, “Sure.” *Id.* at 113:24–114:5. It was in this context that Mr. Chess responded “So I wouldn’t really combine any of these. I would just use the ETS extractor.” PO Resp. 13–14 (quoting Ex. 2003 (Chess Depo. Tr.), 115:1–11). In context and on this record, Mr. Chess appears to be answering this question in terms of making an ideal extraction system at the present time, as opposed to explaining any opinion in his Declaration.

Accordingly, we are not persuaded that this testimony demonstrates that Mr. Chess contradicted or undercut any position in the Petition or in his Declaration.

Finally, Patent Owner cites testimony indicating that Mr. Chess is “personally not motivated combine anything from any of these guys together.” PO Resp. 14 (quoting Ex. 2003 (Chess Depo. Tr.), 185:2–6, citing *id.* at 184:24–25). This testimony was elicited in response to a specific opinion in Mr. Chess’s declaration in a related proceeding, concerning a motivation to combine Britt with a reference (Hebert) that is not at issue in this proceeding. Ex. 2003 (Chess Depo. Tr.), 183:5–185:7. Given that this testimony was specific to a proposed prior art combination that is not at issue in this proceeding, we are not persuaded that this testimony demonstrates that Mr. Chess contradicted or undercut any position in the Petition or in his Declaration here.

We have reviewed the arguments and evidence of record for claims 4, 5, 10, and 11, and find that Petitioner has demonstrated by a preponderance of the evidence that these claims would have been obvious over Britt and Buese, for the reasons set forth in the Petition. *See* Pet. 29–38.

b) Claim 12

Dependent claim 12 recites a “canister interface” that is configured to removably support the canister and detachably support a supplemental canister. Ex. 1001, 18:42–47. Petitioner cites Buese’s disclosure of multiple extraction chambers that can be removed and exchanged. Pet. 38 (citing Ex. 1006 (Buese), 4:19–24; Ex. 1002 (Chess Decl.) ¶ 69).

Claim 12 depends from claim 1, and Patent Owner reiterates the arguments it made against claim 1, i.e., that Britt does not teach the

limitation of claim 1 that recites heating an extract container to a distilling temperature that is “greater than or equal to a boiling point of the solvent.” *See* PO Resp. 24. We address that argument above. *See supra* Section II.E.1.a.

Patent Owner makes an additional argument specific to claim 12, namely that the cited references fail to disclose a “canister interface,” let alone one configured to “removably support the canister” and “detachably support a supplemental canister.” PO Resp. 24 (citing Ex. 2002 (Miller Decl.) ¶¶ 53–58). First, Patent Owner argues that Petitioner’s explanations in the Petition as to how Buese teaches or suggests these limitations are lacking. *See id.* at 25. Second, Patent Owner suggests that the claimed “canister interface” is “more than a mere connector,” and is instead a “distinct component” of the claimed system that must “support” a canister, which is a capability Patent Owner contends is “not supplied by a mere connector.” *See id.* at 25–27 (citing Ex. 2001 (District Court Claim Construction Order), 13–16; Ex. 1001, 12:17–33; Ex. 2002 (Miller Decl.) ¶ 55). Third, Patent Owner argues that “support” should be construed to mean “bear all or part of the weight of,” and asserts that Petitioner provides no explanation for how Buese discloses a “canister interface” configured to “removably support” a canister and “detachably support” a supplemental canister. *Id.* at 27–28 (citing Ex. 2001 (District Court Claim Construction Order), 12; Ex. 1001, 6:4–7, 6:25–60, 12:19–22; Ex. 2002 (Miller Decl.) ¶¶ 57, 64–67).

Petitioner disputes that a “canister interface” is “more than a mere connector,” and Patent Owner’s suggestion that “support” encompasses the concepts of “hold[ing] up” or “prop[ping] up” a container. Reply 14–16

(citing Ex. 2001 (District Court Claim Construction Order), 12, 16; Ex. 2003 (Chess Depo. Tr.), 182:10–16). Nevertheless, Petitioner does not further explain how Buese meets the “canister interface” claim limitations, and instead merely “re-asserts the arguments and positions from the Petition.” *Id.* at 15, 16.

We need not define the exact contours of a “canister interface,” including deciding whether it is “more than a mere connector.” Nor do we need to construe the claim term “support.” It is sufficient to note that a canister interface is not simply the system’s canisters themselves. The plain language of the claims recite that the “canister interface” must be configured to “support” the canisters (thereby distinguishing the canister interface from the canisters themselves). The Specification likewise distinguishes the canister interface and the canisters, indicating that the canister interface “allow[s] canisters to be easily detached and reattached.” Ex. 1001, 11:61–62. Similarly, Mr. Chess distinguished a “detachable canister interface” from the system’s canisters/containers, characterizing the former as a “*fitting of some sort* so that you can disconnect or connect the solvent source container to the extraction vessel or canister.” Ex. 2003 (Chess Depo. Tr.), 182:10–16 (emphasis added).

Petitioner’s proofs, however, cite only the extraction chambers of Buese. *See* Pet. 38. Petitioner quotes Buese’s discussion of extraction chambers that can be removed and exchanged after closing their valves. *See id.* (citing Ex. 1066 (Buese), 4:19–24). This is a discussion of removal of the canisters or extract containers; it does not disclose a canister interface, which is distinct from these vessels. After quoting this discussion in Buese, Petitioner states, “Accordingly, based on the teachings of Britt, in view of

Buese, a PHOSITA would have found it obvious to define [insert quote of claim language].” *Id.* This simply asserts a legal conclusion. The Petition nowhere points to a canister interface in Buese, or otherwise describes the canister interface that a person of ordinary skill in the art would have alleged “defined.” Nor does Petitioner explain how or why a person of ordinary skill in the art would have modified Buese or Britt to meet the canister interface limitations. *See* PO Resp. 4. Accordingly, we agree with Patent Owner that Petitioner’s explanation in the Petition as to how Buese teaches or suggests these limitations is lacking. *See id.* at 25.

For the above reasons, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claim 12 would have been obvious over Britt and Buese.

c) Claim 20

Petitioner argues that claim 20, which depends from claim 17, would have been obvious over Britt and Buese. Pet. 38–39. As discussed above with respect to Ground 1, we determine that Petitioner has not established by a preponderance of the evidence that Britt would have rendered claim 17 unpatentable. *See supra* Section II.E.1.b. For claim 20, Petitioner relies on its arguments for claim 17, and uses Buese only as teaching or suggesting the additional limitations added by claim 20. *See* Pet. 38–39.

Because claim 20 depends from claim 17, and because Petitioner’s arguments for this claim do not rectify the deficiencies discussed above for claim 17, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claim 20 would have been obvious over Britt and Buese.

d) Conclusion on Ground 3

For the reasons discussed above, we determine that Petitioner has established by a preponderance of the evidence that claims 4, 5, 10, and 11 would have been obvious over Britt and Buese, but has not established the same for claims 12 and 20.

4. Ground 4 – Alleged Obviousness Over Buese and Britt (Claims 13–16)

In Ground 4, Petitioner argues that claims 13–16 would have been obvious over Buese and Britt. Pet. 39–46; Ex. 1002 ¶¶ 71–74.

Independent claim 13 recites limitations directed to a “canister interface” that is configured to removably support the canister and detachably support a supplemental canister. Ex. 1001, 19:1–6; *see also* Pet. 42 (limitation 13(f)). Petitioner cites Buese’s disclosure of exchanging a depleted extraction chamber with a fresh extraction chamber. Pet. 42 (citing Ex. 1006 (Buese), 4:19–24).

For these claim limitations, Patent Owner makes the same arguments we discussed above in Section II.E.3.b for claim 12. We reiterate our analysis there, i.e., Petitioner’s proofs relate only to the extraction chambers of Buese; Petitioner does not point to a canister interface in Buese. In fact, Petitioner’s contentions for claim 13 are even briefer than those for claim 12. Here, Petitioner does not even allege, as it did for claim 12, that a person of ordinary skill in the art “would have found it obvious to define” the claimed canister interface. *Compare* Pet. 38, *with* Pet. 42; *see also* PO Resp. 25. Accordingly, for the same reasons discussed above for claim 12, we agree with Patent Owner that Petitioner’s explanation in the Petition as to how

Buese teaches or suggests these limitations in independent claim 13 is lacking. *See* PO Resp. 25.

For the above reasons, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claim 13 would have been obvious over Buese and Britt. Because claims 14–16 depend from claim 13, and because Petitioner’s arguments for these claims do not rectify the deficiencies discussed above for claim 13 (*see* Pet. 42–46), we also determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 14–16 would have been obvious over Buese and Britt.

5. *Ground 5 – Alleged Obviousness Over Britt, Buese, and Joseph (Claim 19)*

In Ground 5, Petitioner argues that dependent claim 19 would have been obvious over Britt, Buese, and Joseph. Pet. 46–49. Claim 19 depends from independent claim 17 and further recites a coolant loop line having particular characteristics, including an expansion valve and coiled portions. *See* Ex. 1001, 20:25–44.

As discussed above with respect to Ground 1, we determine that Petitioner has not established by a preponderance of the evidence that Britt would have rendered claim 17 unpatentable. *See supra* Section II.E.1.b. Petitioner relies on its arguments made for claim 17, and uses Buese and Joseph only as purportedly teaching or suggesting the additional limitations added by claim 18. *See* Pet. 46–49.

Because claim 19 depends from claim 17, and because Petitioner’s arguments for this claim do not rectify the deficiencies discussed above for claim 17, we determine that Petitioner has not demonstrated by a

preponderance of the evidence that claim 19 would have been obvious over Britt, Buese, and Joseph.

III. CONCLUSION¹⁶

Based on the information presented, we conclude that Petitioner has demonstrated by a preponderance of the evidence that claims 1–7 and 9–12 are unpatentable, but has not demonstrated by a preponderance of the evidence that claims 8 and 12–20 are unpatentable.

In summary:

Claims	35 U.S.C. §	Reference(s) /Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–3, 6–9, 17	103	Britt	1–3, 6, 7, 9	8, 17
18	103	Britt, Joseph		18
4, 5, 10–12, 20	103	Britt, Buese	4, 5, 10, 11	12, 20
13–16	103	Buese, Britt		13–16
19	103	Britt, Buese, Joseph		19
Overall Outcome			1–7, 9–11	8, 12–20

¹⁶ 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).

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 1–7 and 9–11 of U.S. Patent 9,144,751 B2 are unpatentable, but has not demonstrated by a preponderance of the evidence that claims 8 and 12–20 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.

IPR2022-01011
Patent 9,144,751 B2

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