

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DECENT ESPRESSO INTERNATIONAL LTD.,
Petitioner,

v.

DUVALL ESPRESSO IP ENFORCEMENT, LLC,
Patent Owner.

IPR2024-01492
Patent 10,772,456 B2

Before LINDA E. HORNER, ERIC C. JESCHKE, and
RICHARD H. MARSCHALL, *Administrative Patent Judges*.

MARSCHALL, *Administrative Patent Judge*.

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

Petitioner Decent Espresso International Ltd. filed a Petition requesting *inter partes* review of claims 1–9¹ of U.S. Patent No. 10,772,456 B2 (Ex. 1001, “the ’456 patent”). Paper 1 (“Pet.”). Patent Owner Duvall Espresso IP Enforcement, LLC filed a Preliminary Response. Paper 13 (“Prelim. Resp.”). With our authorization, Petitioner filed a Preliminary Reply to Patent Owner’s Preliminary Response (Paper 14 (“Prelim. Reply”)) and Patent Owner filed a Preliminary Sur-reply (Paper 15 (“Prelim. Sur-reply”)).

We have jurisdiction under 35 U.S.C. § 314. Under § 314, an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the challenged claims in the petition.”

For the reasons that follow, we determine that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to any of the challenges in the Petition. Accordingly, we do not institute an *inter partes* review.

BACKGROUND

A. Real Parties-in-Interest and Related Matters

Petitioner identifies itself as the only real party-in-interest. Pet. 86. Patent Owner identifies itself as the only real party-in-interest and states that it “is majority owned by Duvall Espresso, Inc.” Paper 7 (Patent Owner’s Mandatory Notices), 2.

¹ Petitioner also challenges claims 11–16 in the Petition, but Patent Owner disclaimed claims 11–16 after Petitioner filed the Petition. *See* Pet. 70–79; Prelim. Resp. 32; Ex. 2003. We do not address claims 11–16 in this Decision.

The parties indicate that the following infringement action involves the '456 patent: *Duvall Espresso IP Enforcement, LLC v. Decent Espresso International Ltd.*, 9:23-cv-81246 (S.D. Fla.). Pet. 86; Paper 7, 2. Petitioner also seeks *inter partes* review of a related patent, U.S. Patent No. 11,576,524 B2, in IPR2024-01483.

B. The '456 Patent

The '456 patent relates to an “infused beverage brewing assembly having a solvent flow management system” and “a solvent temperature modulation system.” Ex. 1001, code (57). The '456 patent states that the beverage brewing system utilizes “pressure, temperature, and flow of a solvent through a solute” to produce the beverage. *Id.* at 1:20–22. The disclosed device seeks to allow “independent, dynamic variation of brewing variables” to optimize beverage flavor. *Id.* at 2:34–41.

We reproduce Figure 3 below to illustrate the key features of the inventions claimed in the '456 patent.

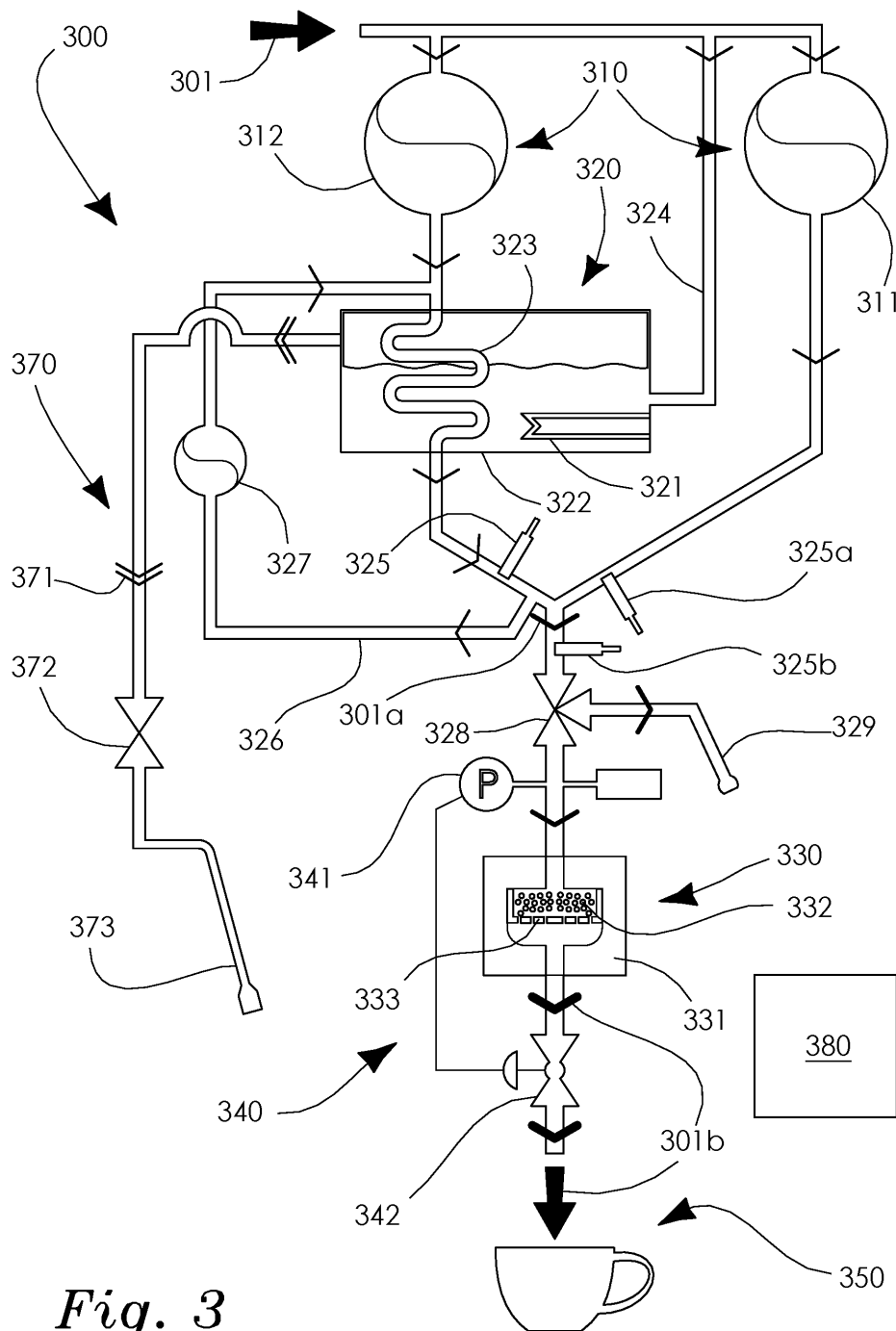


Fig. 3

Figure 3 depicts “a schematic diagram depicting an independently controlled beverage brewing system.” Ex. 1001, 7:19–20. Figure 3 shows solvent 301 entering brewing system 300 via a conduit that includes branches delivering solvent 301 to solvent pumps 311, 312. *Id.* at 11:43–45. A conduit exiting

pump 312 passes through heat exchanger 323, which heats the solvent within the conduit to a desired temperature with the aid of an associated solvent recirculation system 326 in fluid communication with heat exchanger 323. *Id.* at 11:46–57. The conduit carrying heated solvent exiting heat exchanger 323 combines with a conduit carrying unheated solvent exiting pump 311 to form a single conduit carrying resulting solvent 301a. *Id.* at 12:28–33. Resulting solvent 301a then passes through valve 328 configured to perform three functions in certain states: (1) “prevent or inhibit the flow” of resulting solvent 301a; (2) facilitate flow of resulting solvent 301a to a non-brewing location such as dispensing spout 329; and (3) facilitate flow of resulting solvent 301a to brewing chamber 330. *Id.* at 12:47–55, 12:63–65.

After resulting solvent 301a passes through brewing chamber 330, brewed solution 301b passes through valve 342 and into removable cup 350. *Ex. 1001*, 13:30–43. Figure 3 also shows control system 380, which the ’456 patent describes as “communicatively coupled to one or more devices in the system 300” to ensure that the user’s specifications are met. *Id.* at 13:51–59.

C. The Asserted Challenges

Petitioner challenges claims 1–9 on the following grounds (Pet. 10):

Claims Challenged	35 U.S.C. § ²	Basis ³
1	103	Coccia, ⁴ Anson ⁵
2	103	Coccia, Startz, ⁶ Majer, ⁷ Porzio, ⁸ Buttiker, ⁹ Anson
3–6, 9	103	Coccia, Lai, ¹⁰ Santi, ¹¹ Anson
7	103	Coccia, Lai, Santi, Porzio, Anson

² The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Petitioner contends that we should apply the AIA version of the statute because none of the challenged claims are entitled to priority prior to March 16, 2013. *See* Pet. 18–20. We apply the AIA version of the statute, although our analysis would not change if we applied the pre-AIA version of the statute.

³ Petitioner refers to “the knowledge of” a person of ordinary skill in the art in its challenges and includes an “and/or” prior to listing Anson in the list of references, which potentially increases the number and complexity of the challenges. *See* Pet. 10. Because these aspects of the challenges are not germane to our Decision, we omit them from the summary table.

⁴ U.S. Patent Appl. Pub. No. 2011/0097454 A1, published April 28, 2011 (Ex. 1006, “Coccia”).

⁵ U.S. Patent Appl. Pub. No. 2006/0042470 A1, published March 2, 2006 (Ex. 1018, “Anson”).

⁶ US 8,973,487 B2, filed May 21, 2012 (Ex. 1008, “Startz”).

⁷ WO 2011/151703 A2, published December 8, 2011 (Ex. 1013, “Majer”).

⁸ WO 2011/158131 A1, published December 22, 2011 (Ex. 1014, “Porzio”).

⁹ EP 2 612 577 A1, filed January 6, 2012 (Ex. 1003, Ex. 1004 (translation), “Buttiker”).

¹⁰ U.S. Patent Appl. Pub. No. 2012/0171332 A1, filed December 28, 2011 (Ex. 1012, “Lai”).

¹¹ U.S. Patent Appl. Pub. No. 2014/0053734 A1, filed April 26, 2012 (Ex. 1010, “Santi”).

8	103	Coccia, Lai, Santi, Porzio, Aigner, ¹² Majer II, ¹³ White, ¹⁴ Anson
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In support of these challenges, Petitioner relies on the Declaration of Ian Tinkler. *See* Ex. 1002. Patent Owner relies on the Declaration of Gideon Duvall. *See* Ex. 2001.

D. Challenged Claims

Petitioner challenges claims 1–9 of the ’456 patent, with claim 1 the only independent claim. Claim 1 is illustrative and recites:

1. An infused beverage brewing assembly comprising:
 - a solvent flow management system with at least one solvent pump operably configured to receive a solvent and induce a flow of the solvent through a first solvent conduit and a second solvent conduit;
 - a solvent temperature modulation system in fluid communication with the solvent flow management system and operably configured to thermally modulate the solvent disposed within the first solvent conduit to a raised temperature higher and different than a temperature of the solvent disposed within the second solvent conduit, the first and second solvent conduits directly coupled together to form a conduit joint downstream of the solvent temperature modulation system to form a resulting solvent conduit with a resulting solvent disposed therein at a resulting temperature;
 - a brewing chamber in fluid communication with the resulting solvent conduit and for housing a solute disposed to receive the resulting solvent to produce an infused beverage;

¹² EP 1 986 530 B1, published October 7, 2009 (Ex. 1019, Ex. 1020 (translation), “Aigner”).

¹³ U.S. Patent Appl. Pub. No. 2008/0050480 A1, published February 28, 2008 (Ex. 1022, “Majer II”).

¹⁴ WO 2013/003891 A1, filed June 29, 2012 (Ex. 1023, “White”).

an outlet for discharging the infused beverage; and
a resulting solvent valve disposed upstream of the brewing chamber, downstream of the conduit joint, and in fluid communication with the solvent conduit, the valve operably configured to selectively have a closed state inhibiting flow of the resulting solvent to the brewing chamber and an active state that includes a first selective directional flow path directing the flow of the resulting solvent to a removal conduit without passing the resulting solvent through the brewing chamber and a second selective directional flow path directing the flow of the resulting solvent to the brewing chamber, thereby enabling resulting solvent delivered to the brewing chamber at a desired temperature.

Ex. 1001, 18:8–42.

ANALYSIS

A. Level of Ordinary Skill in the Art

The level of ordinary skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant art at the time of the invention. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including: “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Best Med. Int’l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1353 (Fed. Cir. 2022) (quoting *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007)). “The patent’s purpose can also be informative.” *Id.*

Petitioner contends that a person having ordinary skill in the art at the time of the invention “would have had at least the following (or equivalents): a B.S. degree in mechanical engineering with at least five years of experience in product design; or an M.S. degree in mechanical engineering with at least two years of experience in product design.” Pet. 17 (citing Ex. 1002, 13). Patent Owner “submits a person of ordinary skill in the art (‘POSITA’) would be a mechanical or materials engineer, or other similar degree, having at least two to three years of personal experience in designing or development of espresso machines.” Prelim. Resp. 7. In the alternative, Patent Owner states that “because Petitioner’s definition is so close to that of Patent Owner’s definition, that no express finding is necessary to find Petitioner has not met its burden to show with particularity that claim 1 is unpatentable.” *Id.*

We find Petitioner’s definition to be consistent with the problems and solutions disclosed in the ’456 patent and prior art of record, and adopt it as our own for purposes of this Decision. *See, e.g., GPAC*, 57 F.3d at 1579 (approving the determination of the level of ordinary skill in the art by appeal to the references of record). The outcome of this case would remain the same if we applied Patent Owner’s similar proposal.

B. Claim Construction

Pursuant to 37 C.F.R. § 42.100(b), we apply the claim construction standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Under that standard, we give the words of a claim their plain and ordinary meaning as would have been understood by one skilled in the art at the time of the invention and in the context of the entire patent disclosure. *Id.* at 1312–13. Only terms in controversy need be construed, and only to

the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Patent Owner proposes a construction for the “resulting solvent valve” limitation in claim 1, which bears on one of the central disputes between the parties. Prelim. Resp. 9–10. The relevant portion of claim 1 requires “a resulting solvent valve . . . operably configured to” have three states or positions, (1) “selectively have a closed state inhibiting flow;” (2) “an active state that includes a first selective directional flow path directing the flow of the resulting solvent to a removal conduit without passing the resulting solvent through the brewing chamber;” and (3) an active state with “a second selective directional flow path directing the flow of the resulting solvent to the brewing chamber.” Ex. 1001, 18:29–39.

Patent Owner takes issue with Petitioner’s allegedly “unsupported and nonsensical interpretation” of the limitation in the Petition, where Petitioner states that because “a” or “an” means “one or more than one,” the claimed “a resulting solvent valve” means one or more valves. Prelim. Resp. 9 (quoting Pet. 35); Pet. 35 (quoting Ex. 1001, 6:40–41). According to Patent Owner, the “letter ‘a’ before resulting solvent valve does not mean that multiple distinct structures with their operability could be used to equate to one claimed distinct structure with its operability.” Prelim. Resp. 10. Instead, the letter “a” in the claim “was just utilized to describe a scenario where an assembly that may include multiple resulting solvent valves having the same operability and location as claimed will not avoid infringement and *may* still read on the claims.” *Id.*

In its Preliminary Reply, Petitioner argues that Patent Owner improperly “suggests that ‘a . . . valve’ can only be met by a single valve,

rather than by one or more valves combined to perform the claimed functions.” Prelim. Reply 3. Petitioner also contends that controlling case law makes clear that the use of “a” or “an” means “one or more” such that “‘a resulting solvent valve’ means ‘one or more valves’ satisfying the claimed configuration of having a closed state, and an active state with at least two flow paths.” *Id.* at 3–4 (citing *Convolve Inc. v. Compaq Computer Corp.*, 812 F.3d 1313, 1321 (Fed. Cir. 2016); *ABS Global, Inc. v. Cytonome/ST, LLC*, 84 F.4th 1034, 1040 (Fed. Cir. 2023)). Petitioner also contends that the specification supports its interpretation by defining “a” or “an” as “one or more than one” and, in a different context, describing “at least one pressure regulation component” as “a valve 242.” *Id.* at 4 (citing Ex. 1001, 10:22–25).

In its Preliminary Sur-reply, Patent Owner contends that Petitioner’s citations to case law and the specification fail to “support what Petitioner is attempting to do in its analysis in order to disclose ‘the resulting solvent valve.’” Prelim. Sur-reply 3–4. According to Patent Owner, Petitioner improperly “picks and chooses different valves and partial functionality of said valves in the system and prior art and equates all of those to ‘the resulting solvent valve’ and its claimed functionality.” *Id.* at 5 (citing *Salazar v. AT&T Mobility LLC*, 64 F.4th 1311, 1317 (Fed. Cir. 2023)).

Based on our review of the argument and evidence, Patent Owner has the better position. The claim language itself directly supports Patent Owner’s position by requiring “a resulting solvent valve . . . operably configured to” have three states or positions as recited above. *See* Ex. 1001, 18:29–39. The claim language does not suggest that multiple valves may be combined to meet the three claimed configurations. *See id.* The

specification reinforces this reading by describing a single resulting solvent valve 328 configured to have three states or positions. *See id.* at 12:47–55, 12:63–65 (describing flow of resulting solvent 301a through valve 328 configured to perform three functions: (1) “prevent or inhibit the flow” of resulting solvent 301a; (2) facilitate flow of resulting solvent 301a to a non-brewing location such as dispensing spout 329; and (3) facilitate flow of resulting solvent 301a to brewing chamber 330).

Petitioner argues that “a” or “an” means “one or more than one,” and cites the specification for support, but that argument largely misses the point and elides the claim requirements tied to the resulting solvent valve. *See* Pet. 35; Prelim. Reply 4. Patent Owner agrees with the general proposition that “a resulting solvent valve” means one or more resulting solvent valves. *See* Prelim. Resp. 10 (acknowledging that “two duplicative resulting solvent valves having the three positions” could each qualify as “a resulting valve”); Prelim. Sur-reply 4–5 (“Had Petitioner cited to multiple ‘resulting solvent’ valves that each” meet the claim requirements, “Patent Owner would not have raised an issue.”). The general statement that “a” or “an” means “one or more than one,” however, does not support Petitioner’s argument that the limitation broadly covers systems where no single resulting valve meets the three claimed valve positions. The dispute does not turn on whether “a” means “one or more than one”; the dispute, rather, concerns whether the claim allows for multiple valves to meet the three claimed states or whether a single valve must meet those claim requirements.

The cases Petitioner relies on do not support its position because they merely stand for the general proposition that “a” or “an” means “one or more.” *See Convolv*, 812 F.3d at 1321 (“a processor” means “one or more

processors”); *ABS*, 84 F.4th at 1040–42 (“a sample stream” encompasses plural streams). *Convolve* arguably supports *Patent Owner’s* position by holding that the “a processor” limitation, in some claims requiring specific functionality, requires at least one processor that performs all of the claimed functions. *Convolve*, 812 F.3d at 1321 (concluding that although the preamble refers to “a processor,” the body of the claim makes clear that “the processor” associated with the claimed user interface performs all of the recited steps). Challenged claim 1 similarly recites “a resulting solvent valve” and then subsequently refers to “the valve” as operably configured to define the three positions. Ex. 1001, 18:29–39. *ABS* addressed the claim language “a fluid focusing region configured to focus the sample stream,” where “the sample stream” referred back to the previous limitation, “a sample stream.” *ABS*, 84 F.4th 1040. That language does not track the language at issue here, which requires a single structure (a valve) configured to meet three claimed states. *See id.*

We find other cases more directly on point and persuasive. In *Salazar*, for example, the Federal Circuit addressed a claim reciting “a microprocessor for generating . . . , said microprocessor creating . . . , a plurality of parameter sets retrieved by said microprocessor . . . , said microprocessor generating” *Salazar*, 64 F.4th at 1317. The court construed that language “to mean ‘one or more microprocessors, at least one of which is configured to perform the generating, creating, retrieving, and generating functions’ and noted that such a construction “does not require there be only one microprocessor.” *Id.* In this situation, “the subsequent limitations referring back to ‘said microprocessor’ require that at least one microprocessor be capable of performing each of the claimed functions.” *Id.*

Similarly, the claim language at issue here requires “a resulting solvent valve . . . operably configured to selectively have” three states that all relate to the same claimed valve. *See* Ex. 1001, 18:29–39.

In *In re Varma*, 816 F.3d 1352 (Fed. Cir. 2016), the Federal Circuit addressed another claim that introduced a claim element with an indefinite article followed by specific functionality. The claim language at issue in *Varma* recited “a statistical analysis request corresponding to two or more selected investments.” *Id.* at 1362. The Board held that the limitation could be satisfied even if two statistical analysis requests were required to analyze the “two or more selected investments,” but the Federal Circuit reversed, holding that

the question is not whether there can be more than one request in a claim-covered system: there can. Rather, the question is whether “a” can serve to negate what is required by the language following “a”: a “request” (a singular term) that “correspond[s]” to “two or more selected investments.” It cannot. For a dog owner to have “a dog that rolls over and fetches sticks,” it does not suffice that he have two dogs, each able to perform just one of the tasks. In the present case, no matter how many requests there may be, no matter the variety of the requests the system may receive, the system must be adapted to receive a request that itself corresponds to at least two investments.

Id. at 1362–63. Applying that approach to “a resulting valve” here makes clear that a single valve must meet all of the claimed valve states, even though the claim may cover a system having more than one such valve. *See also Finjan LLC v. SonicWall, Inc.*, 84 F.4th 963, 974–75 (Fed. Cir. 2023) (viewing the general proposition that an indefinite article means “one or more” as “a separate issue from whether the claims require the same component to perform multiple functions or satisfy multiple limitations of a

claim” and concluding that “the plain language of the claims requires at least one of those computers to perform all the functions listed in the claims”).

Based on the foregoing, we disagree with Petitioner’s proposed construction that allows “a resulting solvent valve” and its related requirements to be met by multiple valves, with no single valve configured to meet the three claimed valve states. *See* Prelim. Reply 3–4. Instead, we agree with Patent Owner that the claim limitation requires at least one resulting solvent valve configured to meet all of the claimed states. *See* Prelim. Resp. 9–10; Prelim. Sur-reply 3–5.

The parties propose constructions for additional claim terms. For example, Petitioner contends that we should construe “conduit,” “coupled,” and “dynamically modulate” consistent with the definitions provided in the specification of the ’456 patent. *See* Pet. 15–17. Patent Owner reserves its right to challenge Petitioner’s constructions and proposes its own construction for “inhibiting.” Prelim. Resp. 8–9. We determine that we need not construe any of these additional terms to determine whether Petitioner met its burden as to any of its challenges in the Petition.

C. Obviousness Based on Coccia and Anson

Petitioner argues that claim 1 would have been obvious based on Coccia and Anson. Pet. 29–42. Patent Owner raises several arguments against this ground. *See* Prelim. Resp. 11–30. We first provide a brief overview of the prior art and then address the parties’ arguments.

1. Overview of Coccia

Coccia discloses “a coffee machine for producing and dispensing coffee-based beverages.” Ex. 1006, code (57). The coffee machine includes

a pump and dispensing device having a filter unit that contains ground coffee and a supply of hot water. *Id.*

We reproduce Coccia’s Figure 2 below.

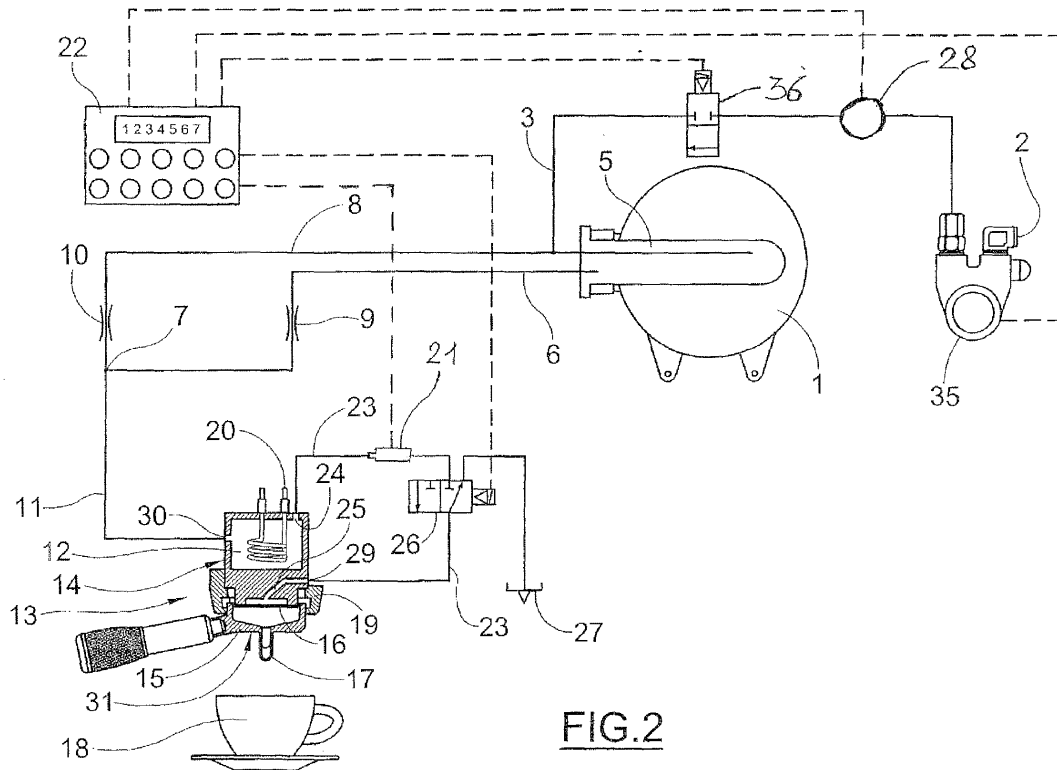


Figure 2 depicts a hydraulic circuit, control circuit, and dispensing device in Coccia's coffee machine. Ex. 1006 ¶ 33. Figure 2 shows water source 2 connected to hydraulic pump 35, with duct 3 conveying water to valve 36. *Id.* ¶¶ 37, 69, 71. Duct 3 continues past valve 36, with one branch sending water to heat exchanger 5 and duct 6, which meets up with the unheated water in duct 8 at mixingpoint 7 and on to supply duct 11, which conveys the water to heating chamber 12. *Id.* ¶¶ 37–38, 40–41, 71. Duct 23 conveys heated water to electrovalve 26, “which has two operating positions,” with one position causing “the water to be supplied to the filter-holder and thus

the formation of the beverage, and in the other position it discontinues the supply of the water and communicates with a discharge 27 external to the machine.” *Id.* ¶ 46. When electrovalve 26 sends water to dispensing device 13 for brewing, heated water passes through ducts 23, 25 and into the filter unit 31, including filter-holder 15 and filter 16, to create coffee discharged at nozzle 17. *Id.* ¶¶ 41, 45.

Coccia also describes control unit 22 connected to pressure sensor 21, electrovalve 26, valve 36, temperature sensors, and flow rate measurements 28 to dynamically modulate the temperature of the solvent. Ex. 1006 ¶¶ 48–50, 53–54, 71, Fig. 2. “The control unit in particular regulates the flow rate of water output from the valve [36], thereby making it possible to control the pressure introduced into the supply duct of the hydraulic circuit and therefore into the dispensing device.” *Id.* ¶ 71.

2. Overview of Anson

Anson discloses a hot water dispensing system. Ex. 1018, code (54). The system includes two tanks holding water at different temperatures, and a controller. *Id.*, code (57).

We reproduce Anson's Figure 1 below.

FIG. 1

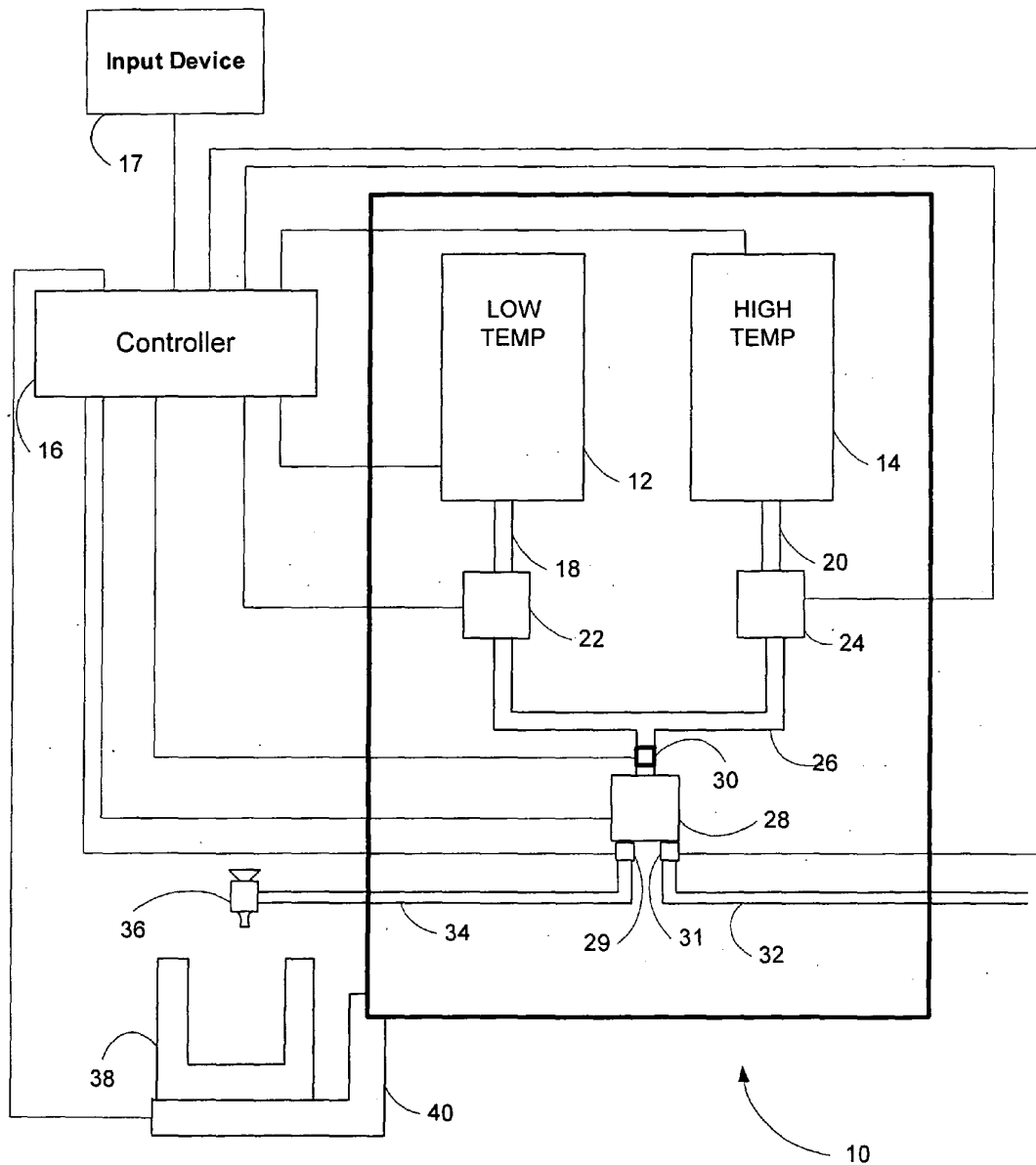


Figure 1 depicts “a simplified diagram” of Anson’s “apparatus for dispensing a variety of water temperatures and volumes of hot water.”
Ex. 1018 ¶ 7. Figure 1 shows a lower temperature tank providing a first temperature water source 12 fluidly coupled to first valve 22 and a higher

temperature tank providing a second temperature water source 14 fluidly coupled to second valve 24. Ex. 1018 ¶¶ 12, 14. Controller 16 selectively actuates valves 22, 24 to convey water into common passage 26 “where water is mixed” and then proceeds into mixing valve 28. *Id.* ¶ 14. “Mixing valve 28 may be a single valve that selectively shuts off or permits flow to one of multiple outlets or may take the form of two valves, dispense valve 29, drain valve 31 which are coupled to and controllably operated by controller 16 to allow flow to only a desired outlet.” *Id.*

Anson further states that mixing valve 28 “may be operated by controller 16 to selectively permit flow to dispensing tube 34 or drain tube 32.” Ex. 1018 ¶ 15. Water directed through dispensing tube 34 may be further directed out dispensing device 36 to container 38. *Id.* ¶¶ 15–16. Anson further teaches that when “the mixed volume has reached the Dispense Temperature, mixing valve 28 closes drain tube 32” and “opens dispensing tube 34 until” a certain volume of heated water has been dispensed.” *Id.* ¶ 20.

3. Discussion

A claim is unpatentable under 35 U.S.C. § 103 “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 on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and

(4) when of record, objective evidence of obviousness or non-obviousness. *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966).

We focus on the parties’ arguments addressing the claimed “resulting solvent valve” because we find it determinative. Using its proposed construction, where “a resulting solvent valve” means “one or more valves,” Petitioner relies on Coccia’s “combination of two valves (26 and 36)” to disclose this limitation. Pet. 35. Petitioner asserts that “Coccia discloses a resulting solvent valve (electrovalve 26, variable-flow valve 36) disposed upstream of brewing chamber (31), downstream of conduit joint (7), and in fluid communication with the solvent conduit (any one or more of 3, 6, 8, 11, 12, 23, or 25).” *Id.* (citing Ex. 1002, 44). Petitioner contends that it would have been obvious to one of ordinary skill in the art to place Coccia’s valve 36 in the claimed location—upstream of the brewing chamber and downstream of the conduit joint—based on Coccia alone “and/or Anson.” *Id.* at 36–39 (citing Ex. 1002, 45–49). As to the claimed states of the resulting solvent valve, Petitioner contends that “Coccia discloses valve (26 and 36) operably configured to selectively have a closed state inhibiting flow of the resulting solvent (mixed water)” and that the combination of valves 26 and 36 also disclose the two claimed active states. *Id.* at 39–42 (citing Ex. 1002, 49–52). Petitioner’s declarant testimony generally tracks the arguments in the Petition without any substantive changes. *See* Ex. 1002, 44–52).

Patent Owner, based on its construction of “a resulting solvent valve,” argues that Petitioner improperly equates both electrovalve 26 and flow regulation valve 36 to the “resulting solvent valve.” Prelim. Resp. 20–21.

Patent Owner asserts that Petitioner’s “illogical and unsupported construction alone dooms Petitioner’s arguments.” *Id.* at 21.

In its Preliminary Reply, Petitioner argues that “Coccia’s disclosure of the claimed ‘resulting solvent valve’ is in the form of more than one valve that, when combined, embody the claimed functions.” Prelim. Reply 4. Petitioner also asserts that “[e]ven if PO’s construction was adopted, it would not support ruling in PO’s favor regarding institution” because “Anson’s valve 28 would have been combined with Coccia by a person of ordinary skill.” *Id.* at 5 (citing Pet. 38–39). According to Petitioner, Anson’s “valve 28 performs the claimed functions, i.e., it ‘shuts off’ or ‘permits flow to one of multiple outlets.’” *Id.* (citing Ex. 1018 ¶ 14). In its Preliminary Sur-reply, Patent Owner continues to assert that Petitioner gets the claim construction of “a”/“an” wrong and improperly “picks and chooses different valves and partial functionality of said valves . . . and equates all of those to ‘the resulting solvent valve’ and its claimed functionality.” Prelim. Sur-reply 5.

Based on our review of the arguments and evidence, we agree with Patent Owner that Petitioner fails to establish that Coccia discloses the claimed “resulting solvent valve.” Importantly, Petitioner premises its argument for this limitation on a claim construction that we rejected in our analysis above. Because we determine that the claim requires at least one resulting valve to meet the three claimed states identified in the claim, Petitioner may not rely on a combination of Coccia’s valves 26 and 36 to provide the three claimed states, as Petitioner does throughout its analysis. *See* Pet. 35–42; Prelim. Reply 4.

As to Petitioner’s alternative argument that Anson discloses the claimed resulting solvent valve, we decline to consider the argument because it was not included in the Petition and was made for the first time in Petitioner’s Preliminary Reply. *See* Pet. 35–42; Prelim. Reply 5. Petitioner relied on Anson in the Petition as an alternative reason to find that it would have been obvious to place Coccia’s valve 36 in the claimed *location* (downstream of the conduit joint and upstream of the brewing chamber), not to meet all of the limitations associated with the resulting solvent valve. *See* Pet. 38–39. Moreover, Petitioner’s limited argument and evidence in the Preliminary Reply lacks adequate development and fails to persuade us that Anson’s valve 28 performs all of the “claimed functions” associated with the resulting solvent valve, including the two “active” states that the Petition addresses with reliance on Coccia alone. *See* Pet. 40–42; Prelim. Reply 5.

Based on the foregoing, we conclude that Petitioner fails to establish that Coccia discloses “a resulting solvent valve” as required by claim 1 and as alleged in the Petition. *See* Pet. 35–42.

4. Conclusion

Based on our review of the current record, Petitioner does not establish a reasonable likelihood of proving that claim 1 would have been obvious based on Coccia and Anson. The remaining challenged claims, claims 2–9, all ultimately depend from claim 1. *See* Ex. 1001, 18:42–19:48. Petitioner’s obviousness challenges to claims 2–9 build on its analysis for claim 1. *See* Pet. 10, 43–70, 79–86. Accordingly, for the same reasons we discuss above in the context of claim 1, Petitioner has not shown a reasonable likelihood in prevailing on its challenge to any of the dependent claims.

CONCLUSION

After considering the evidence and arguments presented in the current record, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail in proving unpatentability of any claims of the '456 patent challenged in the Petition. Therefore, we do not institute *inter partes* review.

ORDER

Accordingly, it is

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

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