

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 No. 10,772,456

PATENT OWNER'S PRELIMINARY RESPONSE

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I. INTRODUCTION AND BACKGROUND

A. THE PETITION

On September 26, 2024, the Petitioner filed its Petition in the above-referenced proceeding requesting *inter partes* review of (“IPR”) claims 1-9 and 11-16 of U.S. Patent No. 10,772,456 (Ex. 1001, “the 456 Patent”). *See* Paper 1 (“Pet.”). Although the Petition references anticipation of the claimed invention and “four different primary prior art publications and patents” that purportedly render the claimed invention invalid, the Petition does not allege any § 102 challenges and only utilizes one primary reference¹. *See* Pet., at 6–7, 14.

B. UNDERLYING LITIGATION

As noted by Petitioner, the parties to this IPR are also involved in an underlying (and currently stayed) litigation, wherein said lawsuit was filed by Patent Owner in 2023 and from which Petitioner filed this Petition just short of the one-year deadline provided in 35 U.S.C. § 315(b). *See* Pet., at 86. Patent Owner is owned by a practicing entity, Duvall Espresso, Inc., a Delaware corporation operating out of Georgia under the name Duvall Espresso. *See* <https://www.duvallespresso.com/>. Ex. 2001, at ¶ 2. The president and principal owner of Duvall Espresso, Inc. is Gideon Duvall, who is also the sole inventor on the ’456 Patent. *Id.* at ¶ 1.

¹ Coccia, U.S. Patent Application Publication No. 2011/0097454 (Ex. 1006).

C. THE '456 PATENT

The '456 Patent is entitled “a device and system for brewing infused beverages”, was filed on September 14, 2020, and has an effective filing date of August 16, 2012. Ex. 1001 (cover page). Ex. 2001, at ¶ 29. The '456 Patent has a total of 16 claims, wherein claims 1 and 11 are independent claims and claims 2-10 and 12-16 are dependent claims. *Id.* Claim 10 was not challenged by Petitioner. Patent Owner has filed a statutory disclaimer of claims 11-16, thereby making analysis of said claims unnecessary. *See* Ex. 2001, at ¶ 29; Ex. 2003. Independent claim 1 (which was different in scope than claim 11) is directed toward a specially configured brewing assembly structure and system 300 designed to rapidly control temperature of solvents used to infuse a solute 333 in the brewing chamber. Ex. 1001, at 15:62–64 (“The STMS , 120 , 220, 320 is a system for providing rapidly variable, accurate and precise temperature solvent to the brewing chamber”); Ex. 2001, at ¶ 29.

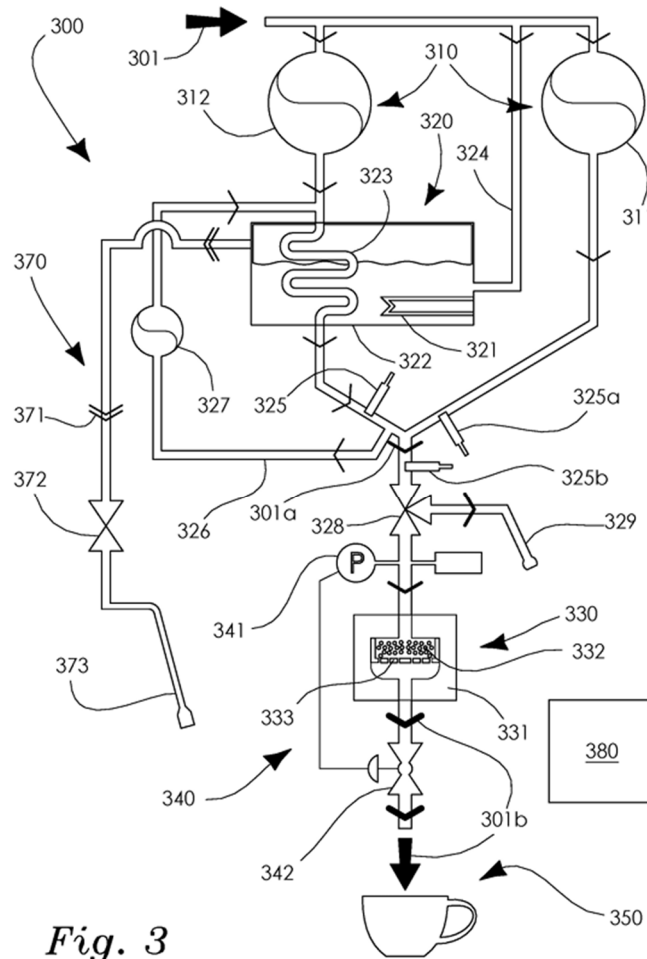


Fig. 3

Claim 1 requires a brewing assembly 300 that is operable to induce a flow of a solvent 301 and control the temperature of said solvent 301 in the brewing assembly to a desired temperature by heating one of two solvents (e.g., solvent disposed in the conduit downstream of pump 312) with a “solvent temperature modulation system” (“STMS”) 320 that is mixed with another solvent downstream (e.g., solvent disposed in the conduit downstream of pump 311) to create a singular “resulting solvent” 301a at a “resulting temperature” that is then heated to the desired temperature by utilizing a “resulting solvent valve” 328 configured to flow said

resulting solvent back through the STMS 320 through a solvent recirculation system 326 until the resulting temperature reaches the desired temperature. Ex. 1001, at 11:58–67, 12:27–36, 12:47–55; Ex. 2001, at ¶ 31. **Importantly**, claim 1 requires the resulting solvent valve 328 to have *three positions or states* in order to direct the resulting solvent until reaching the resulting temperature, i.e., the resulting valve has to have a *closed state or position* not allowing any resulting solvent through the resulting solvent valve 328 (e.g., for recirculation and heating), a *first active state or position* that directs resulting solvent through the resulting valve to a removal conduit 328 without passing said resulting solvent through the brewing chamber, and a *second active state or position* that directs resulting solvent through the resulting valve to the brewing chamber. Ex. 1002, at 12:47–67 to 13:1–33; Ex. 2001, at ¶ 32. The claimed valve configuration enables the rapid temperature control described above without having to heat a comparatively larger fluid mass. *See* Ex. 1001, at 15:62–64; Ex. 2001, at ¶ 32.

The '456 Patent was examined with a single non-final office action refusing a single claim (i.e., originally filed independent claim 11), wherein the following reasons were noted for allowability in said rejection:

Because the prior art depicts, as set forth in claim 11, noted above, the modification of the temperature feed into a brewing process with a feedback loop monitoring the temperature, this is not patentable. The inclusion of the two conduits feeding into the system changes the nature

of the device and makes the invention non-obvious, since in the prior art there is not any apparent reason to include a dual input type solvent flow system. In the past the problem of accurately heated water is solved by providing a tank that is monitored, not as a post hoc temperature sensor that is modulated with a heater and mixing of a non-heated (or less heated) conduit source, as in claims 12 and 1.

Ex. 1007, at 97. Patent Owner amended originally filed claim 11 (now disclaimed) and a notice of allowance issued subsequently thereto noting that the “two conduits as claimed, in combination with the other features, and including a feedback loop monitoring the temperature as claimed is not seen in the prior art.” *Id.* at 113–14, 128.

II. LEGAL STANDARD

“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) (citing 35 U.S.C. § 312(a)(3) (requiring inter partes review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must establish by a preponderance of the evidence that the challenged claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

A claim is unpatentable under 35 U.S.C. § 103 if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *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, i.e., secondary considerations. *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966)

III. ANALYSIS

A. LEVEL OF ORDINARY SKILL IN THE ART

In determining whether an invention would have been obvious at the time it was made, 35 U.S.C. § 103(a) requires us to resolve the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). The person of ordinary skill in the art (“POSITA”) is a hypothetical person who is 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). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to the “type of problems encountered in the art; prior art solutions to those problems;

rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *Id.* In a given case, one or more factors may predominate. *Id.* 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 or, 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. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

B. CLAIM CONSTRUCTION

Under *Phillips v. AWH Corp.*, claim terms are generally given their ordinary and customary meaning, as would be understood by a POSITA at the time of the invention and in view of the intrinsic evidence that consists of the language of the claims, the specification, and the prosecution history. 415 F.3d 1303, 1313–14 (Fed. Cir. 2005) (en banc). Extrinsic evidence, such as dictionary definitions, may also be useful when construing claim terms but said evidence should be considered in the context of the intrinsic evidence. *Id.* at 1317–19. Said another way, “while extrinsic evidence can shed useful light on the relevant art, . . . it is less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Id.* at 1317 (internal quotation marks omitted).

Patent Owner submits the plain meaning of the claim terms should be utilized, but submits that none of the asserted grounds disclose or render obvious the Challenged Claims under either the plain meaning of the claims or Petitioner's constructions. *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."). Reserving Patent Owner's right to challenge Petitioner's proposed claim constructions, Patent Owner asserts the following term should be construed as follows and is aligned the intrinsic evidence of the '456 Patent.

1. "Inhibiting"

This term appears in claim 1 and 14 of the '456 Patent and is not argued as needing construction by Petitioner. That said, because it appears Petitioner is taking an unsupported and nonsensical interpretation of said term in its analysis, Patent Owner submits the term inhibiting modifies the "closed state" of the resulting valve 328, whereby in the closed state the resulting valve "does not allow" any resulting solvent to pass through to the brewing chamber. Ex. 1001, at claim 1 and 14; *see also* Ex. 1001, at 12:55–57 ("In practice, when brewing system 300 is in its default state, the valve 328 is closed thereby preventing or otherwise inhibiting fluid flow."). The active state of the system 300 may include, but is not necessarily limited to, when the user desires to dispense a specific temperature and/or volume of resulting

solvent 301 a without passing the solvent 301 a through the brew chamber 330 or desires to pass the solvent 301 a through the brewing chamber.”). This construction is aligned with the plain and ordinary meaning of inhibit, which is to prevent, and allows the two other position of the valve 328, which is to either pass the resulting solvent to the brewing chamber 330 or back through a removal conduit (e.g., for heating by the STMS 320). *See supra* § I.C.

2. “a resulting solvent valve”

This term appears in claim 1 and 5 of the ’456 Patent and is not argued as needing construction by Petitioner. That said, because it appears Petitioner is again taking an unsupported and nonsensical interpretation of said term in its analysis, Patent Owner addresses the same. Specifically, Petitioner states that because the specification states that the “terms ‘a’ or ‘an,’ as used herein, are defined as one or more than one.”, that the “resulting solvent valve” means one or more valves”. Pet., at 35. There are many issues with such a non-sensical construction. First, the prior sentence to Petitioner’s quote states that “[b]efore the present invention is disclosed and described, it is to be understood that the terminology used herein is *for the purpose of describing particular embodiments only and is not intended to be limiting.*” Ex. 1001, at 6:37–40. The following sentence reflect a scenario when two more of something is required (like Petitioner is suggesting), i.e., “the term ‘plurality,’ as used herein, is defined as two or more than two.” *Id.* at 6:41–43.

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 (as Petitioner attempts to do); rather, it 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 (e.g., if there were two duplicative resulting solvent valves having the three positions downstream of a conduit joint and upstream of the brewing chamber, each could qualify as “*a* resulting solvent valve”). Taking such a non-sensical interpretation as Petitioner suggests would allow multiple different structures and terms to also have nonsensical meanings, i.e., “solvent flow management systems”, “solvent temperature modulation systems”, “first solvent conduits”, “second solvent conduits”, “raised temperatures”, “temperatures of the solvents”, etc., could be satisfied by utilized distinct separate structures and terms. Hammering home how illogical such a construction is, the term “an outlet” could be equated to the combination of any outlet(s) in utilized in a brewing system (e.g., the outlet from the SFMS, the outlet from the STMS, the outlet from the conduit joint, the outlet from any valves, the outlet from brewing chamber, the outlet(s) from the device, etc.

C. GROUND 1: ASSERTED OBVIOUSNESS OF CLAIM 1 BASED ON COCCIA² IN VIEW OF IN VIEW OF ONE OR MORE OF THE KNOWLEDGE OF A POSITA³ AND/OR ANSON⁴

Petitioner challenges claim 1 as unpatentable under 35 U.S.C. § 103(a) based on the combination of Coccia in view of Anson and the testimony of its purported expert, Ian Tinkler. Pet., at 29–42.

1. *Coccia (Ex. 1006)*

Petitioner utilizes Coccia as its primary reference for both independent claims 1 and 11. With reference below to FIG. 1 from Coccia, it teaches a coffee machine for producing and dispensing coffee-based beverages with a specific structure and method associated with “controlling the dispensing pressure” and “regulat[ing] the flow rate of water output as a function of a detected dispensing pressure valve”, wherein the “dispensing pressure” is the pressure of the solvent in the machine “supplied to the filter unit [31] which contains the ground coffee.” Ex. 1006, Abstract, at ¶ 0025; Ex. 2001, at ¶ 33. More specifically, Coccia’s machine is addressing the issues with prior coffee machines having a hydraulic circuit that can increase pressure in the infusion chamber “without having to vary the temperature”, but that often exceed the desired dispensing pressure, leading to “adverse effects,” and those machines that may account for the infusion pressure, but do not account

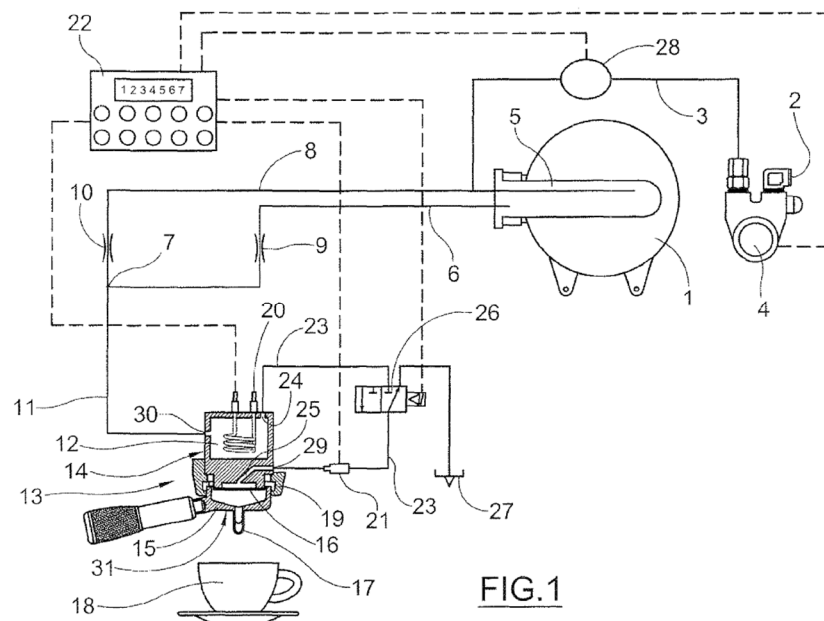
² Coccia, U.S. Patent Application Publication No. 2011/0097454 (Ex. 1006)

³ Declaration of Ian Tinkler (Ex. 1002)

⁴ Anson, U.S. Patent Application Publication No. 2006/0042470 (Ex. 1018)

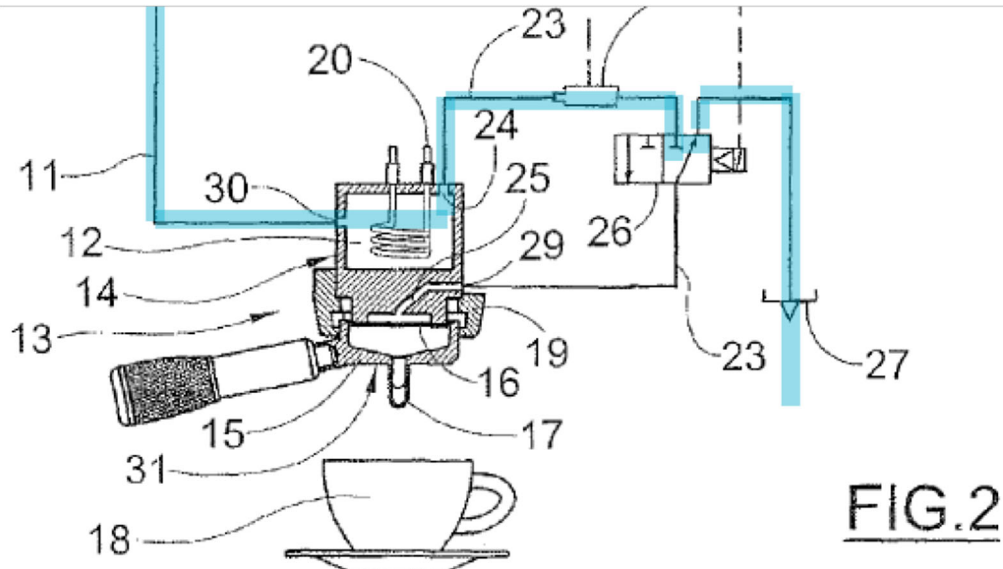
for the needed flow rate at the infusion chamber to avoid “excessive extraction”, or not enough extraction. Ex. 1006, at ¶¶ 0011, 0020; Ex. 2001, at ¶ 34. These issues are principally caused because the coffee ground size and compaction is inconsistently generated from each brewing cycle, or “dispensing operation”, to the next. Ex. 1006, at ¶¶ 0020, 0057; Ex. 2001, at ¶ 34.

Thus, Coccia states that “Applicant’s have observed that it would be advantageous in particular to be able to dispense the beverage in a controlled manner, and possibly to act on the water pressure in response to a variation in the grain size of the coffee.” *Id.* at ¶ 0022; *see also id.* at ¶ 0024 (discussing Coccia’s intent to “provide a coffee machine which makes it possible to control the whole cycle of pressurisation [sic] of the coffee during dispensing by acting on the value of the flow of water in order to enable a regulation of the preparation of the beverage”).

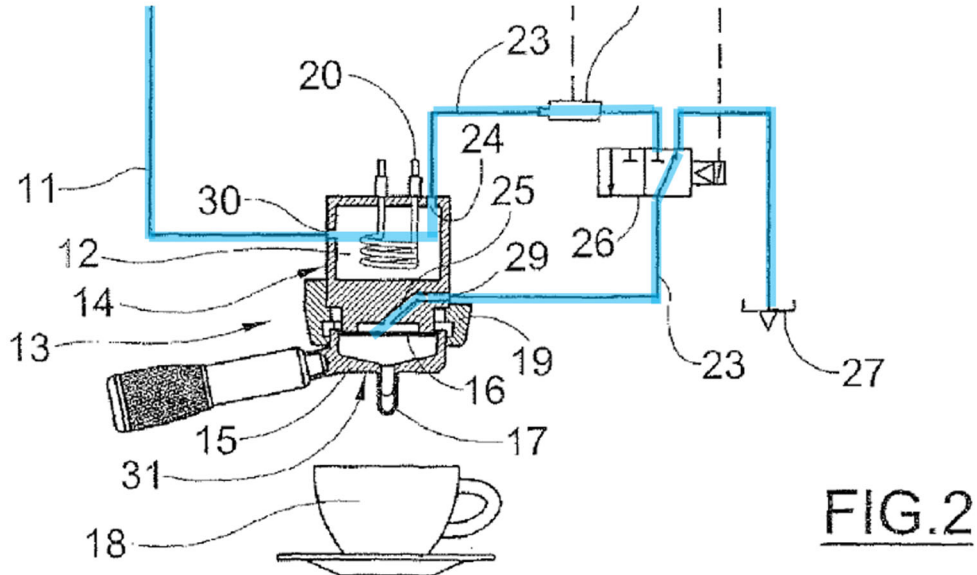


Therefore, Coccia discloses a hydraulic pump 4 that is configured to pump water through ducts 3, 6, 8, 11 until reaching a heating chamber 12 where the solvent (which may be preheated) is heated to the “dispensing temperature T2” before it is introduced into the filter unit 31 through ducts 23, 25. Ex. 1006, at ¶¶ 0043–45; Ex. 2001, at ¶ 36. Separating the duct 23 and the “dispensing duct” 25 is an “electrovalve 26 which has *two* operating positions”, i.e., “one position, causes 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.” Ex. 1006, at ¶ 0046 (emphasis added); Ex. 2001, at ¶ 36. ***Importantly, and in direct contradiction to Petitioner’s annotation on page 40 of its Petition***, when the electrovalve 26 is in its “other position” where it “discontinues the supply of the water and communicates with a discharge 27 external to the machine”, it does *not* direct “the flow of the resulting solvent to a removal conduit without passing the resulting solvent through the brewing chamber”, but rather takes resulting solvent supplied to the filter holder after the formation of the beverage back through connection duct 23, through electrovalve 26 and out discharge 27 in order to depressurize the filter holder. *Id.* A comparison between Petitioner’s mischaracterization of Coccia and the actual flow is reproduced below. The use of valve 26 to supply brewing water to the filter holder and depressurization of the filter holder after the formation of the beverage is clearly described by Coccia

and utilized on the vast majority of all modern espresso machines and should be known by a POSITA. Ex. 2001, at ¶ 36.



Petitioner's Mischaracterization

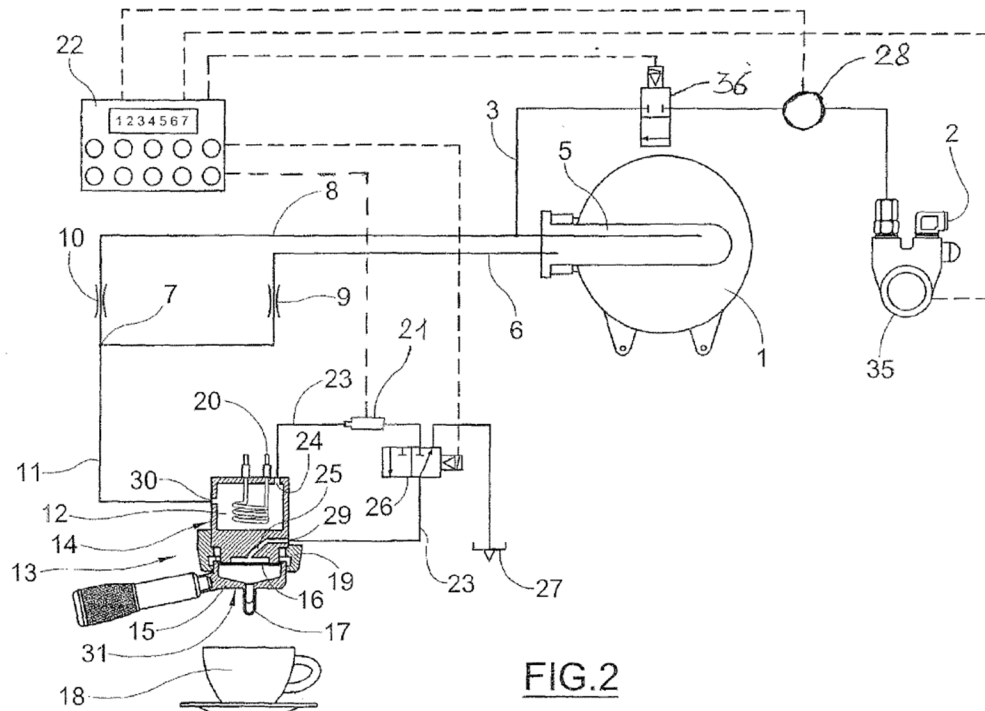


Coccia's Actual Flow

In any given brewing cycle when the machine 13 in Coccia is “operating” (or in a “dispensing operation”), its device is configured to either **(1)** when the valve 26

in the position to direct the resulting solvent to the brewing chamber pump preheated or heated solvent directly to the dispensing duct 25 and vary the dispensing pressure and/or flow rate by changing the pump speed or, as shown in FIG. 2, modifying (*but never closing*) a flow regulation valve 36 upstream of the heating chamber 12 or (2) when the valve 26 in the other position (depicted and annotated immediately above) to direct the remaining resulting solvent from and through the brewing chamber to the duct 23 and out through the discharge 27. Ex. 1006; *see also id.* at ¶¶ 0057, 0074 (“The pump is, for example, actuated by a variable frequency electronic drive, whose frequency variation corresponds to a variation of the speed of rotation of the pump. In this way it is possible to vary the flow of water supplied the pump to the duct 3 and therefore the water pressure. The quantity of water supplied to the hydraulic circuit corresponding to one dispensing operation, or in one dispensing step, depends on the type of coffee, for example 20 cm³ for an espresso coffee.”) (“[A] machine of this type, by monitoring the dispensing pressure, it is possible to adjust the value of the pressure when the coffee dispensing step is taking place by acting on the output of flow rate of water from the flow regulation valve 36.”); Ex. 2001, at ¶ 37. Said another way, to modify dispensing pressure in Coccia’s design, the embodiment in FIG. 1 may use a pump to modify flow rate, wherein the embodiments in FIGS. 2-4 (as illustrated below) utilize the flow regulation valve 36 to either add or remove

resistance to the flow (i.e., there are no positions to direct flow—much less a “resulting solvent” flow). *Id.*



2. *POSITA (Ex. 1002)*

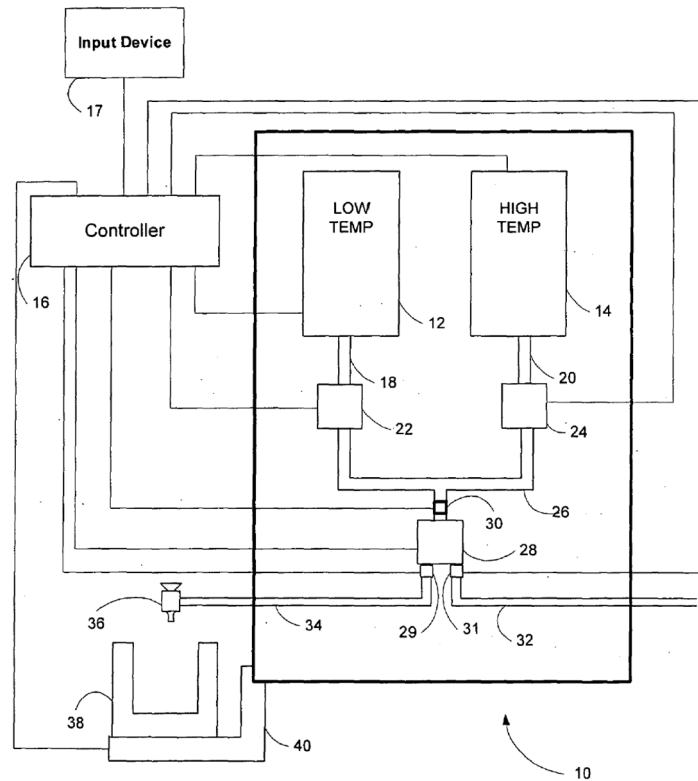
Petitioner utilizes the declaration of Mr. Tinkler as a secondary reference, to insert his opinion on interpreting some of the references cited by the Petition, and/or to conclude what a POSITA “could” have done. As set forth herein, however, a bulk of Mr. Tinkler’s statements are uncorroborated and conclusory and thus should be given little, if any, value in the obviousness analysis.

3. *Anson (Ex. 1018)*

Petitioner utilizes Anson as a secondary reference to purportedly teach a valve placed downstream of a conduit joint where two solvents are mixed and upstream of

a brewing chamber. Pet., at 38. With reference below to FIG. 1 from Anson, said reference is directed to “an apparatus 10 for dispensing hot water at a variety of volumes and at a variety of temperatures and volumes” as it “is desirable in restaurants and other institutional cooking establishments to have a source of hot water for various cooking purposes,” “preparation of hot chocolate, tea, coffee,” and “cleaning purposes”. Ex. 1018, at ¶¶ 0002, 0014; Ex. 2001, at ¶ 38. Anson effectuates the same by using a low temperature tank 12 fluidly coupled to a “first valve 22” and a “high temperature tank 14” fluidly coupled to a “second valve 24”, wherein said valves are electronically controlled to flow into “a common passage 26 where water is mixed” and into a “mixing valve 28.” Ex. 1018, at ¶ 0014; Ex. 2001, at ¶ 38. The “[m]ixing 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.” Ex. 1018, at ¶ 0014; Ex. 2001, at ¶ 39. Importantly, there is no disclosure in Anson of the “mixing valve 28” (whether singular or broken into two valves) being upstream of any brewing chamber. Ex. 2001, at 39.

FIG. 1



Rather, Anson teaches that the:

Mixing valve 28 may be operated by controller 16 to selectively permit flow to dispensing tube 34 or drain tube 32. Water flowing through drain tube 32 can be directed to any other application, including being recycled, disposed or otherwise used or not used. Water that is directed through the dispensing tube 34 may be further directed out a dispensing device 36, shown in FIG. 1 as a faucet. Water may then be directed to a container 38, such a tank, carafe, cup, pitcher, bowl, or any other type of container or be directed directly into another portion of food or beverage making equipment for use in a particular food or beverage making application.

Ex. 1018, at ¶¶ 0015–16. Anson further teaches that the when “the mixed volume has reached the Dispense Temperature, mixing valve 28 closes drain tube 32. Mixing valve 28 opens dispensing tube 34 until 1 gallon has been dispensed. The dispensed volume can be controlled using any of the methods described above for measuring the volume released from water sources 12, 14 or can also be based on weighing the container 38 using scale 40.” *Id.* at ¶ 0020.

4. *Independent Claim 1*

Claim 1 of the '456 Patent recites the following:

1. 1[pre] An infused beverage brewing assembly comprising:

1[a] 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;

1[b] 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;

1[c] 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;

1[d] an outlet for discharging the infused beverage; and

1[e] 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.

While reserving Patent Owner's right to challenge Petitioner's other assertions in the Petition, Patent Owner submits the Petitioner's clear failure to show that the prior art teaches or renders obvious limitation 1[e] warrants denial of the Petition and that the Petitioner has failed to establish a reasonable likelihood that Petitioner would prevail in showing that claim 1 unpatentable.

Petitioner equates both the "electrovalve 26" and the "flow regulation valve 36" to the "resulting solvent valve" to purportedly teach limitation 1[e]. Pet., at 35.

As stated above, this illogical and unsupported construction alone dooms Petitioner's arguments. *See supra* § III.B.2.

- a. The hydraulic variable-flow valve 36 in Coccia is not downstream of any equated conduit joint and upstream of a brewing chamber, nor would it have been obvious utilizing Anson to make it such

Claim 1 requires that any equated “resulting solvent valve” be disposed upstream of the brewing chamber and downstream of the conduit joint, which Coccia teaches it clearly is not (whether explicitly, implicitly, or inherently). Ex. 1001, at FIG. 2; Ex. 2001, at ¶¶ 41–42. In an attempt to navigate around this clear deficiency, Petitioner cites to Mr. Tinkler's declaration stating that a POSITA “would have understood that valve 36 *could be* disposed upstream of the brewing chamber 31 and downstream of the conduit joint 7, based on Coccia.” Pet., at 36 (citing Ex. 1002, at ¶ 87) (emphasis added). Like most of Mr. Tinkler's statements that the Petition mimics, it is conclusory (i.e., not based on any factual underpinnings or articulated reasoning explaining how, or more importantly why, a POSITA would make such a modification or why said flow regulation valve 36 is utilized by Coccia) and thus should be disregarded by the Board. 37 C.F.R. § 42.65(a); Nobel Biocare Services AG v. Intradent USA, Inc., 903 F.3d 1365, 1382 (Fed. Cir. 2018) (explaining that the Board can reject arguments based on expert testimony that lacks specificity or detail).

Further, Mr. Tinkler's assertion that the flow regulation valve 36 would teach the limitation 1[e] is also inaccurate because said valve, as discussed above, is for (as its name provides) "flow regulation", i.e., an inline flow restrictor. *See supra* § III.C.1; Ex. 2001, at ¶ 42. Said another way, it does not teach moving from one position to another as limitation 1[e] requires and any other interpretation demonstrates a lack of understanding of said limitation or the Coccia reference. *See supra* § III.C.1; Ex. 2001, at ¶ 43. More specifically, a "flow regulation valve" simply adds or removes resistance to flow and does not change the direction of flow from one conduit to another and thus has no relation to the resulting solvent valve configuration discussed in limitation of 1[e]. *See id.* Additionally (perhaps based on Petitioner's illogical construction), the configuration and functionality of the flow regulation valve 36 also has no effect on the configuration and functionality of valve 26. Ex. 2001, at ¶ 43.

Petitioner and Mr. Tinkler also assert that because Coccia states that the "hydraulic variable-flow valve 36 is disposed along the hydraulic circuit which brings the hydraulic pump into fluid communication with the dispensing device 13" it could just simply be moved or located anywhere in the hydraulic circuit before the dispensing device 13. Pet., at 36 (citing Ex. 1002, at ¶ 87); Ex. 2001, at ¶ 44. What Petitioner and its purported expert strategically omit or fail to discuss, however, is that when the pump 4 is not used to control dispensing pressure (FIG. 1) during the

“whole cycle of pressurisation [sic] of the coffee during dispensing”, the hydraulic variable-flow valve 36 is used to do so (FIGS. 2-4). Ex. 1006, at ¶¶ 0024, 0026, 0046, 0057, 0074; Ex. 2001, at ¶ 44. To that end, the purpose of the variable-flow valve 36 is to “control the pressure *introduced into* the supply duct 11” and “supply variable quantities of water to the at least one dispensing device”. Ex. 1006 *Id.* at ¶¶ 0026, 0071 (emphasis added); Ex. 2001, at ¶ 44. Mischaracterizing or rewriting Coccia to suggest that the variable-flow valve 36 is downstream of the equated conduit joint 7 (i.e., *in* the supply duct instead of *into* the supply duct) would lead to the very same problems in the art Coccia was trying to address, i.e., generating very high pressures throughout the system until reaching said valve 36 that jeopardize the structural integrity of seals and ducts in the hydraulic circuit. Ex. 1006, at ¶¶ 0011, 0026, 0071 (emphasis added) (“It has nevertheless been observed that the use of a pressure above 10 bar may have adverse effects. Raising the pressure beyond a certain value makes it necessary in practice to grind the coffee very finely and thus to refine the filters with the result that the excessively fine grinding could ultimately cause the filter to become obstructed leading to problems of high stresses on the sealing members and ducts, thereby worsening the quality of the beverage.”); Ex. 2001, at ¶ 45. This is why in *all* of the figures in Coccia that depict the two ducts 6, 8 utilized to form a conduit joint 7, the hydraulic variable-flow valve 36 is *upstream*

of said conduit joint 7 (along with the ducts 6, 8, boiler 1, and heat exchanger). Ex. 1006, at FIGS. 2–5; Ex. 2001, at ¶ 45.

Likely acknowledging Coccia’s failure to teach the claimed circuit position of the hydraulic variable-flow valve 36, Petitioner next asserts it just would have been obvious to modify Coccia’s system to do so using the teachings of Anson and Mr. Tinkler. Pet., at 38–39 (citing Ex. 1002, at ¶¶ 0089–91); Ex. 2001, at ¶ 46. This assertion should be rejected for multiple reasons. Petitioner equates the “mixing valve 28” in Anson to the “resulting solvent valve” in limitation 1[e]. As discussed above, Anson does not teach the mixing valve 28 (whether singular or broken into two valves) being upstream of any *brewing chamber*. See *supra* § III.C.3; Ex. 2001, at ¶ 46. Rather, the mixed water either goes to a dispense tube 34 when reaching the desired temperature and “directed out a dispensing device 36” (like a faucet) or a drain tube 32 (to be recycled, disposed, or used). *Id.* Petitioner’s purported expert does nothing more than regurgitate the same portions from Anson cited by the Petition; therefore, because Anson does not teach said limitation, Petitioner’s assertion fails. See *id.*

Even if Anson did somehow teach said portion of limitation 1[e], the Petitioner and its purported expert fail to articulate any reasoning or factual underpinning explaining how and why a POSITA would have made said changes, particularly considering Petitioner’s assertions (that Patent Owner does not dispute)

that Coccia already teaches a valve upstream of the brewing chamber and downstream of a conduit, i.e., the “electrovalve 26”. Pet., at 35; Ex. 2001, at ¶ 47. Said differently, Petitioner and its purported expert make no effort to explain why would a POSITA would add another valve in a redundant configuration/position within the hydraulic circuit. Ex. 2001, at ¶ 48. This is just one of the issues with proposing such a combination with Coccia and it goes unaddressed by Petitioner or its purported expert. *Id.* And while Petitioner and its purported expert state that Coccia “*could*” include another position of the hydraulic variable-flow valve 36 as claimed in limitation 1[e], it is insufficient for a Petitioner to simply state what a POSITA *could* have done, but rather said assertions must be based on what a POSITA *would* have done or been motivated to do. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (“[O]bviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention.”).

- b. Both the hydraulic variable-flow valve 36 and the electrovalve 26 in Coccia are not configured to operate as claimed by limitation 1[e] and it would not have been obvious to modify them as such

Claim 1 requires that any equated “resulting solvent valve” also be “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. 2001, at ¶ 50. Said differently, there are three positions required of a valve receiving the resulting solvent are: (1) closed position that does not allow resulting solvent to the brewing chamber, (2) an open position that just directs the resulting solvent to a removal conduit (for reheating) and also not to the brewing chamber, and (3) an open position that just directs the resulting solvent to the brewing chamber when the heated resulting solvent reaches the desired temperature. *Id.*

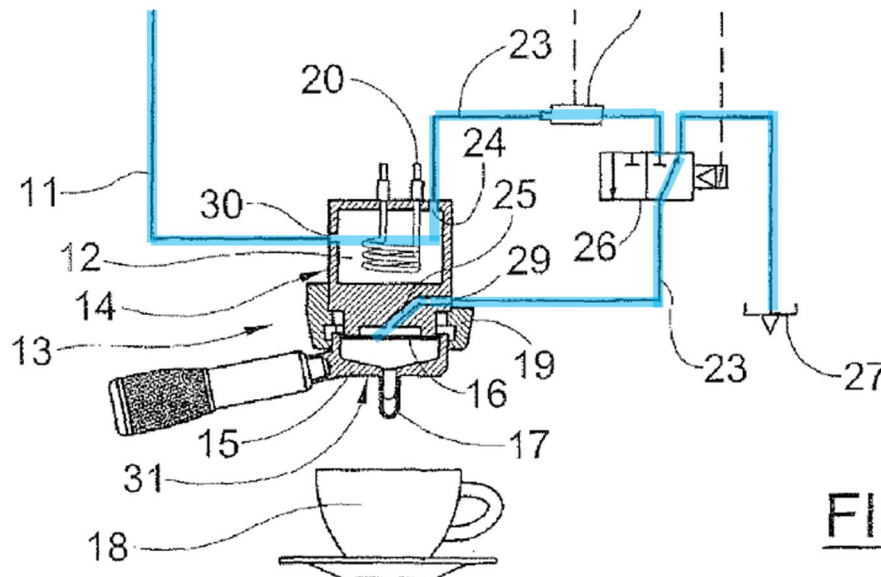
This portion of limitation 1[e] is likely the biggest point of distinction between Coccia, as Coccia’s coffee machine was not designed to utilize any of its valves to direct a resulting solvent back through any equated STMS 320 until the resulting temperature of the resulting solvent reaches the desired temperature (like claim 1 of the 456 Patent). Ex. 2001, at ¶ 51. Rather, like many other known pressurized coffee assemblies, Coccia is utilizing the two-position valve to simply depressurize the group head/brewing chamber. *Id.*

To purportedly teach that the hydraulic variable-flow valve 36 and the electrovalve 26 have a closed position that does not allow flow of resulting solvent to the brewing chamber, the Petitioner cites to page 49 of Mr. Tinkler’s declaration

and paragraphs 0086-87 of Coccia, stating that “Coccia states ‘the variable-flow valve 36 is actuated in order to supply a predetermined flow rate of water to the dispensing device...The control unit closes the opening of the valve when the quantity of water metered by the flow measurement device is equal to the quantity of water corresponding to one dispensing operation.’”. Pet., at 39; Ex. 2001, at ¶ 52. Noticeably absent from said quotation or Mr. Tinkler’s declaration is any reference or support for the electrovalve 26 being operably configured to be in a closed position, thereby requiring a finding that Petitioner has failed to show Coccia discloses the same. Ex. 2001, at ¶ 53; *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1327 (Fed. Cir. 2008) (“Failure to prove the matter as required by the applicable standard means that the party with the burden of persuasion loses on that point—thus, if the fact trier of the issue is left uncertain, the party with the burden loses.”); 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *see also Nobel Biocare Services AG v. Intradent USA, Inc.*, 903 F.3d 1365, 1382 (Fed. Cir. 2018) (finding that the Board can reject arguments based on expert testimony that lacks specificity or detail).

As discussed above and as depicted in all of the figures, the electrovalve 26 is has only two operating positions, i.e., “one position, causes 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.” *See supra* § III.C.1 (quoting Ex. 1006, at ¶ 0046); Ex. 2001, at ¶ 53. Coccia also does not disclose the portion of limitation 1[e] demonstrating that the electrovalve 26 has a position that directs “the flow of the resulting solvent to a removal conduit without passing the resulting solvent through the brewing chamber”. *Id.* In an attempt to meet its burden, Petitioner mischaracterizes FIG. 2 of Coccia to explain how Coccia’s electrovalve 26 teaches said limitation, but it can be clearly seen that the actual flow provided for the other position of the electrovalve 26 (as depicted below) takes any equated “resulting solvent” from and through the brewing chamber to the discharge conduit 27 to depressurize the brewing chamber/head. Ex. 2001, at ¶ 54.



Coccia's Actual Flow

While not argued by Petitioner, Patent Owner also submits a POSITA would not have been motivated to make said change because the valve being placed in the closed position serves no purpose with Coccia's teachings. Ex. 2001, at ¶ 55. Further, Patent Owner also submits a POSITA would have modified the electrovalve 26 in Coccia because doing would require a reworking of the circuit and render the heating chamber 12/boiler 1 or dual conduit 6, 8 superfluous and not needed (i.e., new conduit would be required and that conduit would need to route the resulting solvent from the valve 26 to either the heating chamber 12 (rendering heat exchanger unneeded) or to the boiler 1 (rendering the heating chamber 12 unneeded). *Id.*

Petitioners' quotation from ¶¶ 86-87 of Coccia also does **not** disclose the hydraulic variable-flow valve 36 having a closed position that does not allow flow of resulting solvent to the brewing chamber; rather, it only discusses actuating the valve to adjusting the opening in the valve to control the dispensing pressure. Ex. 1006, ¶¶ 0086–87; Ex. 2001, at ¶ 56. As discussed above, the purpose of the hydraulic variable-flow valve 36 is to modify (but never close) the cross-section of the opening of the valve 36 to adjust dispensing pressure or flow rate in any given “dispensing operation”, at which the point the pump stops (thereby not requiring the need for the valve 36 to be closed). *See supra* § III.C.1; *see also* Ex. 1006, at ¶¶ 0074, 0086, 0106–07, claim 10; Ex. 2001, at ¶ 56. Therefore, Petitioner has also failed to prove Coccia discloses this portion of limitation 1[e] as well.

The Petitioner also asserts both the hydraulic variable-flow valve 36 and the electrovalve 26 disclose the two open positions, but the Petitioner provides zero support with respect to said positions for the hydraulic variable-flow valve 36. Pet., at 40–42; Ex. 2001, at ¶ 57. Rather, the Petitioner simply states: “valve 36 open”, without anything more. Ex. 2001, at ¶ 57. Like many other assertions by Petitioner, this is woefully short of meeting Petitioner’s burden to show the hydraulic variable-flow valve 36 teaches the aforementioned open positions. *Id.* And while the electrovalve 26 does teach two open positions, it does not teach any of said positions directing flow of any “resulting solvent to a removal conduit without passing the resulting solvent through the brewing chamber” as required by claim 1, nor does it teach the closed state or position of said valve 26. *See supra* § III.C.1; Ex. 2001, at ¶ 57. Rather, the other position of the electrovalve 26 is configured to direct any equated “resulting solvent” ***from and through*** the brewing chamber to the discharge conduit 27 to depressurize the brewing chamber/head, thereby failing to teach or render obvious said portion of limitation 1[e]. *Id.*

For the foregoing reasons, Patent Owner submits that Petitioner has not met its burden to show a reasonable likelihood it would prevail with respect to the contention that claim 1 is unpatentable over the combination of Coccia in view of any of Anson or its purported expert.

D. GROUND 2: ASSERTED OBVIOUSNESS OF CLAIM 2 BASED ON COCCIA IN VIEW OF ONE OR MORE OF THE KNOWLEDGE OF A POSITA, STARTZ⁵, MAJER⁶, PORZIO⁷, BUTTIKER⁸, AND/OR ANSON

Petitioner challenges claim 2 as unpatentable under 35 U.S.C. § 103(a) based on the combination of Coccia and view of five secondary references and the testimony of its purported expert, Mr. Tinkler. Pet., at 43–49. Ground 2 suffers from the same deficiencies noted above in connection with Ground 1 as dependent claim 2 incorporates all of the limitations in independent claim 1. *See supra* § III.C. Therefore, for the same reasons discussed above, Patent Owner submits that the information presented in the Petition fails to establish a reasonable likelihood that Petitioner would prevail in showing that claim 1 unpatentable.

E. GROUND 3: ASSERTED OBVIOUSNESS OF CLAIMS 3-6, 9, AND 11-16 BASED ON COCCIA IN VIEW OF ONE OR MORE OF THE KNOWLEDGE OF A POSITA, LAI⁹, SANTI¹⁰, AND/OR ANSON

Petitioner challenges claims 3-6, 9, and 11-16 as unpatentable under 35 U.S.C. § 103(a) based on the combination of Coccia and in view of three secondary references and the testimony of its purported expert, Mr. Tinkler. Pet., at 49–79. Ground 3 suffers from the same deficiencies noted above in connection with Ground

⁵ Startz, U.S. Patent No. 8,973,487 (Ex. 1008) and Startz, U.S. Patent Application Publication No. 2012/0291634 (Ex. 1009).

⁶ Majer, International Publication No. WO2011151703 (Ex. 1013)

⁷ Porzio et al., International Publication No. WO2011158131 (Ex. 1014)

⁸ Buttiker, European Patent No. EP 2612577 (Ex. 1004)

⁹ Lai et al., U.S. Patent Application Publication No. 2012/0171332 (Ex. 1012)

¹⁰ Santi, U.S. Patent Application Publication No. 2014/00553734 (Ex. 1010)

1 as dependent claims 3-6 and 9 incorporate all of the limitations in independent claim 1. *See supra* § III.C. Therefore, for the same reasons discussed above, Patent Owner submits that the information presented in the Petition fails to establish a reasonable likelihood that Petitioner would prevail in showing that claim 1 unpatentable.

With respect to Petitioner's challenges to claim 11 and its dependent claims as unpatentable under 35 U.S.C. § 103(a), Patent Owner has decided to file a statutory disclaimer of claims 11-16 contemporaneously hereto. *See* Ex. 2003; *see also* 35 U.S.C. § 253(a). Said differently, this disclaimer is not to be interpreted or construed as an admission that Petitioner has met its burden to show claims 11-16 are invalid, but rather was made for the sole purpose of focusing on the clear deficiencies associated with Petitioner's obviousness assertions of claim 1.

F. GROUND 4: ASSERTED OBVIOUSNESS OF CLAIM 7 BASED ON COCCIA IN VIEW OF ONE OR MORE OF THE KNOWLEDGE OF A POSITA, LAI, SANTI, PORZIO, AND/OR ANSON

Petitioner challenges claim 7 as unpatentable under 35 U.S.C. § 103(a) based on the combination of Coccia and view of four secondary references and the testimony of its purported expert, Mr. Tinkler. Pet., at 72–75. Ground 4 suffers from the same deficiencies noted above in connection with Ground 1 as dependent claim 7 incorporates all of the limitations in independent claim 1. *See supra* § III.C. Therefore, for the same reasons discussed above, Patent Owner submits that the

information presented in the Petition fails to establish a reasonable likelihood that Petitioner would prevail in showing that claim 1 unpatentable.

G. GROUND 5: ASSERTED OBVIOUSNESS OF CLAIM 8 BASED ON COCCIA IN VIEW OF ONE OR MORE OF THE KNOWLEDGE OF A POSITA, LAI, SANTI, PORZIO, AIGNER¹¹, MAJER II¹², AND/OR WHITE¹³

Petitioner challenges claim 8 as unpatentable under 35 U.S.C. § 103(a) based on the combination of Coccia and view of four secondary references and the testimony of its purported expert, Mr. Tinkler. Pet., at 72–75. Ground 4 suffers from the same deficiencies noted above in connection with Ground 1 as dependent claim 7 incorporates all of the limitations in independent claim 1. *See supra* § III.C. Therefore, for the same reasons discussed above, Patent Owner submits that the information presented in the Petition fails to establish a reasonable likelihood that Petitioner would prevail in showing that claim 1 unpatentable

IV. RELIEF REQUESTED

For the reasons set forth above, Patent Owner submits the information presented in the Petition fails to establish a reasonable likelihood that Petitioner would prevail in showing that claim 1 unpatentable and institution should be denied.

Respectfully submitted,

¹¹ Aigner et al., European Patent No. EP 1986530 (Ex. 1020)

¹² Majer, U.S. Patent Application Publication No. 2008/0050480 (Ex. 1022)

¹³ White et al., International Publication No. WO2013003891 (Ex. 1023)

Dated: February 3, 2025

/Mark C. Johnson/

Mark C. Johnson

Counsel for Patent Owner

Reg. No. 69,349

JOHNSON | DALAL

111 N. Pine Island Road

Suite 105

Plantation, FL 33324

Tel: 954-507-4500

Fax: 954-507-4502

Email: MJ@JohnsonDalal.com

Service@JohnsonDalal.com

CERTIFICATION UNDER 37 C.F.R. 42.24(D)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Patent Owner's Preliminary Response to Petition totals 7,446 dwhich is less than the 14,000 allowed under 37 CFR § 42.24(b)(1)).

Respectfully submitted,

/Mark C. Johnson/

Mark C. Johnson

Counsel for Patent Owner

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e)(4), I hereby certify that the foregoing document and its supporting exhibits were served on February 3, 2025, via email to counsel for Petitioner, i.e., Perry S. Clegg (perry.clegg@johnsonmartinlaw.com), Matthew S. Nelles (matt.nelles@johnsonmartinlaw.com), and James David Johnson (david.johnson@johnsonmartinlaw.com).

Respectfully submitted,

/Mark C. Johnson/

Mark C. Johnson

Counsel for Patent Owner