

Petition for *Inter Partes* Review of U.S. Pat. No. 10,772,456
Claims 1-9 and 11-16

Filed on behalf of Decent Espresso International Ltd.

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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

Case IPR2024-_____

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT 10,772,456
CHALLENGING CLAIMS 1-9 and 11-16**

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NOTE REGARDING CITATIONS: Exhibits and page numbers are cited herein in the form Ex[number]-[page(s)] or Ex[number], for example, Ex1001-9-11 means Exhibit 1001 pages 9-11. and Ex1008 means Exhibit 1008.

I. Introduction

Decent Espresso International Ltd. (“Decent” or “Petitioner”) respectfully requests *inter partes* review of claims 1-9 and 11-16 of U.S. Patent No. 10,772,456 (the “456 patent”) (Ex1001) pursuant to 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.1 *et seq.*

All concepts claimed in the 456 patent were well-known and included in a large variety of prior art, including both numerous machines that were sold into the market (not available as prior art in IPRs) and numerous patents and publications before the Effective Filing Date. Expert witness Tinkler worked for Keurig and collaborated with numerous coffee machine companies during the period from 2005-2015, surrounding the filing dates of the 456 patent’s earliest provisional and non-provisional applications, in 2012 and 2013. Ex1002-6-7. During that time, expert Tinkler directed the design of over 60 coffee machines and collaborated on many others. *Id.*

Expert Tinkler confirms that numerous control systems of the type claimed in the 456 patent were known by August 2012. Ex1002-37-38.

The undersigned notes that at least four different primary prior art

publications and patents, along with several actual machines, that anticipate or render obvious various claims of the 456 patent were located, but due to the prohibition against using machines as prior art along with the word count limitations for petitions, Petitioner provides one primary patent reference in this petition that clearly evidences unpatentability.

The 456 patent exists in a crowded technology field, and the submitted prior art patents and publications provide compelling evidence of unpatentability.

II. Certification of Grounds for Standing

Petitioner certifies pursuant to Rule 42.104(a) that the patent for which review is sought is available for *inter partes* review and that Petitioner is not barred or estopped from requesting an *inter partes* review challenging the patent claims on the grounds identified in this Petition.

III. Overview of Challenge and Relief Requested

Pursuant to Rules 42.22(a)(1) and 42.104(b)(1)-(2), Petitioner challenges claims 1-9 and 11-16 of the ‘456 Patent.

A. Prior Art Patents and Printed Publications

The application for the ‘456 patent claims priority to a provisional application that was filed before the America Invents Act (“AIA”) and a non-provisional application that was filed after the AIA. As discussed further, below §VIII-A, the ‘456 patent contains at least one claim that is not entitled to claim priority to the pre-AIA filing; thus, AIA §3(n)(1) mandates treatment of all claims

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of the '456 patent under the AIA first-to-file rules and the challenged claims are entitled to an effective date no earlier than August 16, 2013.

The following references are pertinent to the grounds of unpatentability:

1. U.S. Patent Application Publication No. 2011/0097454A1 (“Coccia”) (Ex1006), published Apr. 28, 2011, filed Oct. 21, 2010, is prior art under at least 35 U.S.C. §102(a).

2. European Patent Publication EP 2612577A1 (“Buttiker”) (Ex1003, Ex1004 (translation)), published July 10, 2013, filed January 6, 2012, is prior art under at least 35 U.S.C. §102(a). The translation of this publication, Ex1004, has been certified by sworn declaration, Ex1005.

3. U.S. Patent No. 8,973,487 B2 (Ex1008) (collectively with Ex1009, “Startz”), filed May 21, 2012, issued March 10, 2015, is prior art under at least 35 U.S.C. §102(a) (and 35 U.S.C. §102(e) (pre-AIA)).

4. U.S. Patent Application Publication No. 2012/0291634A1 (Ex1009) (collectively with Ex1008, “Startz”), filed May 21, 2012, published Nov. 22, 2012, is prior art under at least 35 U.S.C. §102(a) (and 35 U.S.C. §102(e) (pre-AIA)).

5. International Publication No. WO2011/151703A2 (Ex1013) (“Majer”), published Dec. 8, 2011, is prior art under at least 35 U.S.C. §102(a).

6. International Publication No. WO2011/158131 (Ex1014) (“Porzio”), published Dec. 22, 2011, is prior art under at least 35 U.S.C. §102(a).

7. U.S. Patent Application Publication No. 2014/0053734 (Ex1010)

(“Santi”), filed April 26, 2012, published Feb. 27, 2014, is prior art under at least 35 U.S.C. §102(a) (and 35 U.S.C. §102(e) (pre-AIA)). Santi was filed under the PCT, in English, and identified the United States as a designated state. Ex1011-1 (items 25 and 81).

8. U.S. Patent Application Publication No. 2012/0171332A1 (Ex1012)

(“Lai”), filed Dec. 28, 2011, published Feb. 27, 2014, is prior art under at least 35 U.S.C. §102(a) (and 35 U.S.C. §102(e) (pre-AIA)).

9. U.S. Patent Application Publication No. 2006/0042470A1 (Ex1018)

(“Anson”), published March 2, 2006, is prior art under at least 35 U.S.C. §102(a).

10. European Patent Publication EP1986530B1 (“Aigner”) (Ex1019, Ex1020 (translation)), published October 7, 2009, is prior art under at least 35 U.S.C. §102(a). The translation of this publication, Ex1020, has been certified by sworn declaration, Ex1021.

11. U.S. Patent Application Publication No. 2008/0050480A1 (Ex1022)

(“Majer II”), published Feb. 28, 2008, is prior art under at least 35 U.S.C. §102(a).

12. International Publication No. WO2013/003891A1 (Ex1023) (“White”), published January 10, 2013, filed June 29, 2012, is prior art under at least 35 U.S.C. §102(a).

B. Grounds for Challenge

Petitioner requests cancellation of claims 1-9 and 11-16 of the '456 patent as unpatentable under 35 U.S.C. §103. This Petition, supported by the Declaration of Ian Tinkler (Ex1002), demonstrates a reasonable likelihood that Petitioner will prevail with respect to cancellation of at least one challenged claim and that each challenged claim is not patentable. See 35 U.S.C. §314(a).

The grounds for challenge are:

	References for §103 Grounds	Challenged Claims
1.	Coccia in view of one or more of the knowledge of a POSA and/or Anson	1
2.	Coccia in view of one or more of the knowledge of a POSA, Startz, Majer, Porzio, Buttiker, and/or Anson	2
3.	Coccia in view of one or more of the knowledge of a POSA, Lai, Santi, and/or Anson	3-6, 9, 11-16
4.	Coccia in view of one or more of the knowledge of a POSA, Lai, Santi, Porzio, and/or Anson	7
5.	Coccia in view of one or more of the knowledge of a POSA, Lai, Santi, Porzio, Aigner, Majer II, White, and/or Anson	8

IV. Discretion Under 35 U.S.C. §314(a) and §325(d)

The prior art provides compelling evidence of unpatentability. Moreover, Petitioner is filing a Sotera stipulation herewith.

Petitioner urges the board to grant review according to the compelling substantive merit of this petition.

V. Overview of the ‘456 Patent

A. Brief Technology Description

The ‘456 patent relates to brewing coffee in an electro-mechanical device.

B. The Alleged Problem

The ‘456 patent acknowledges well-known problems/goals:

- a. “Therefore, a beverage brewing system that affords precise, accurate and dynamic temperature control would enable optimization of beverage flavor and is needed.”
- b. “As previously explained, there is an acute need for a brewing system that affords the brewer independent, dynamic variation of brewing variables of temperature, pressure and flow rate during the production of infused beverages.”
- c. “Furthermore, there is a need for a brewing system that mitigates and/or eliminates the impact of external factors such as solute particle size variations and solute compaction on the beverage flavor.”

The claims of the ‘456 patent are directed to the first problem, as they address neither independent variation of brewing variables nor solute particle size/compaction. Ex1002-16. As expert Mr. Tinkler confirms, this problem was well-known in the art, with numerous devices on the market seeking precise, accurate, dynamic control. Ex1002-37-38.

C. The 456 Patent

With respect to the claims, the specification describes a system in which solvent (301) is pumped through two conduits by two pumps (311, 312) through a heat exchanger (323). The conduits are joined at a conduit joint, forming a resulting conduit for mixing the solvents. The mixed solvents (301a) are pumped into a brewing chamber (330) where they encounter a solute (e.g., ground coffee) to create a solution (e.g., espresso coffee) that is discharged into a receptacle (350). A valve (328) has three states, in which it can (1) remain closed, (2) direct solvent flow to the brewing chamber (330), or (3) direct solvent flow to a drain (not shown). A recirculation conduit (326) having a third pump (recirculation pump (327)) is also provided to recirculate solvent back to the heat exchanger. See FIG. 3, below:

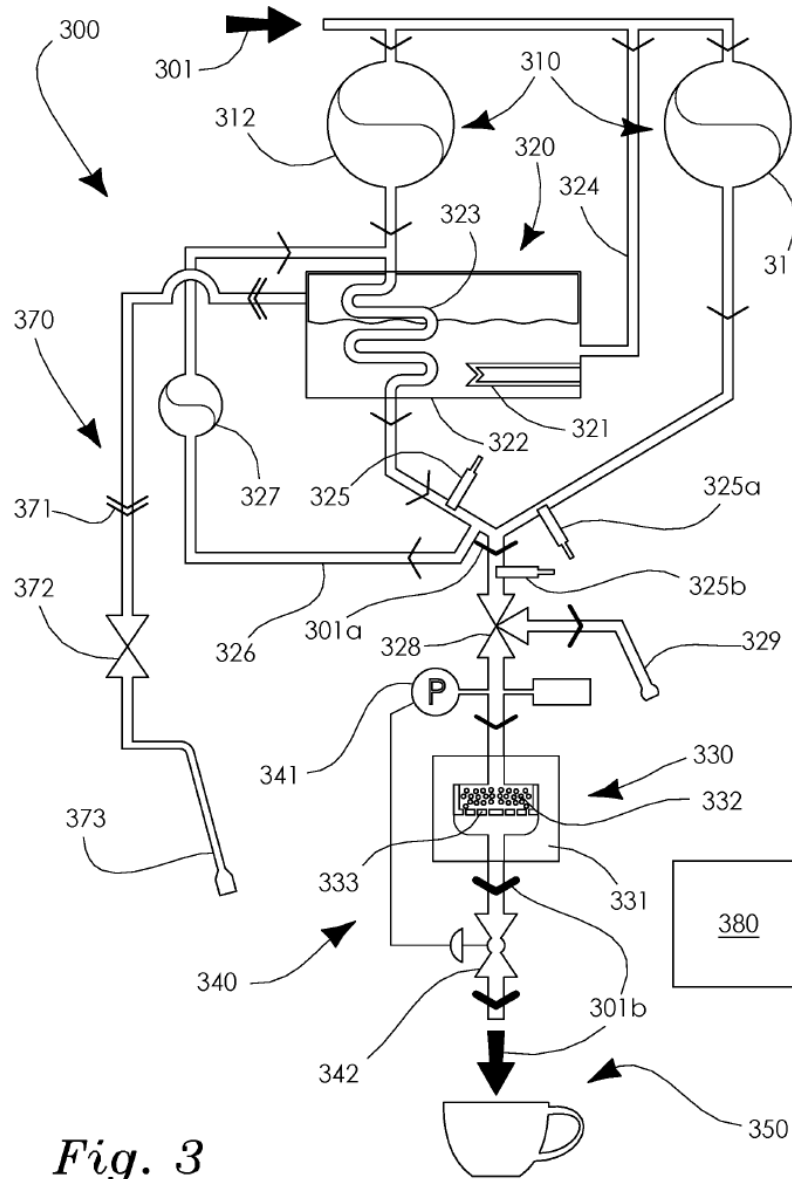


Fig. 3

The 456 Patent uses an electronic controller (380) to modify flow rate, temperature, and/or pressure, by receiving data from flow meters, pressure sensors, and/or temperature measuring devices, then using that data to control/modulate one or more of the pumps and/or thermal modulators to affect temperature, flow, and/or pressure.

D. The Alleged Invention

The '456 patent claims purportedly novel concepts: (1) formation of a solvent joint by directly connecting conduits; (2) including a valve with three states between the conduit joint and the brewing chamber; and (3) dynamic modulation of the solvent heat sensor readings and/or brewing parameters. Ex1001 claims 1-16.

These concepts were well-known and included in a large variety of prior art, including numerous machines that were sold (unavailable as prior art in IPRs) and numerous patents and publications before the Effective Filing Date. Expert Tinkler worked for Keurig and collaborated with numerous coffee machine companies during the period from 2005-2015, surrounding the potential effective filing dates in 2012 and 2013. Ex1002-7. During that time, expert Tinkler directed the design of over 60 coffee machines and collaborated on many others. *Id.*

Expert Tinkler confirms that numerous control systems of the type claimed in the 456 patent were known by August 2012 (and by August 2013). Ex1002-37-38.

The undersigned notes that at least four different primary prior art publications and patents, and several actual machines, that anticipate or render obvious claims of the 456 patent were located, but due to the prohibition against using machines as prior art and the word count limitations, Petitioner provides one

primary patent reference in this petition that clearly evidences unpatentability.

The 456 patent exists in a crowded technology field, and the submitted prior art patents and publications provide compelling evidence of unpatentability.

E. Summary of Prosecution History

The '456 patent issued from Application No. 16/383,607 (Ex1007). The original claims claimed subject matter almost identical to the issued claims. Ex1007-36-41.

A first office action issued on April 29, 2020, in which claims 1-10 were allowed, claim 11 was rejected over prior art, and claims 12-17 were objected to. Ex1007-93-98.

The applicant amended claim 11 to include the subject matter of claim 12 and cancelled claim 12. Ex1007-109-117.

The application was allowed to issue. Ex1007-123-129.

VI. Claim Construction

In an *inter partes* review, a patent claim “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action...” 37 C.F.R. § 42.100(b).

A. “Conduit”

The patent applicant acted as lexicographer: “The term ‘conduit’ is defined as any channel through which something is conveyed.” Ex1001, 7:63-64.

“Conduit” should be so construed.

B. “Coupled”

The patent applicant acted as lexicographer: “The term ‘coupled,’ as used herein, is defined as connected, although not necessarily directly, and not necessarily mechanically.” Ex1001, 6:46-48. “Coupled” should be so construed.

C. Dynamically Modulate

Claims 4, 5, 9, 11, 13, and 16 use “dynamically” to modify “modulate.”

The patent applicant appears to have used the term “dynamically” outside of its ordinary meaning, defining “dynamically” as “during the brewing cycle,” by stating: “However, few, if any, brewing systems facilitate dynamic, i.e., within the brewing cycle, modulation...during an infusion.” Ex1001, 1:35-40. The patent states, “As previously explained, there is an acute need for a brewing system that affords the brewer independent, dynamic variation of brewing variables...during the production of infused beverages.” Ex1001, 2:37-41. Further, “The present invention...satisfies the outlined need, facilitating dynamic, independent control of pressure, temperature and flow rate of solvent through solute contained within a filter during the infusion process.” Ex1001, 2:47-53. Also, “During an infusion process, one or more of the aforementioned infusion parameters may be selectively modified during said infusion. This dynamic modification of said variables...” Ex1001, 8:26-32. And, “A preferred beverage may be produced by...the

dynamically adjustable systems...any of the system 100 components...are operable to adjust solvent/infusion parameters during an infusion process.”

Ex1001, 8:65-9:3. Finally, “...said control system is preferably capable of enabling the user to dynamically (i.e., during the brewing process) modify all the brew variables...” Ex1001, 16:66-17:2.

Applicant defined “dynamically modulates” as “keep constant or change,” noting, “...a Solvent Temperature Management System (STMS) that selectively and dynamically modulates (i.e., keep constant or change) the infusion temperature.” Ex1001, 2:56-59.

The term “dynamically modulate” should be construed as “keep constant or change during the brewing cycle.”

VII. Level of Ordinary Skill in the Art

A POSA at the time of the alleged 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. Ex1002-13.

VIII. Prior Art Overview

Prior art disclosed all elements of the challenged claims—including the

purportedly novel features—before the effective filing date. Ex1002-37-39.

A. Effective Filing Date and AIA Treatment

The challenged claims are not entitled to the August 16, 2012 filing date of the provisional application to which they claim priority. Instead, the claims are entitled to an effective filing date no earlier than the August 16, 2013 date to which they claim priority to a non-provisional application. Thus, the challenged claims are subject to the America Invents Act (“AIA”), and not entitled to pre-AIA treatment.

Claims 1-10 and 14-16 are not entitled to the priority date of provisional application serial no. 61/742,688 (the 688 application) (Ex1015) because each claim requires a “resulting solvent valve.” Ex1001, 18:29-41, 20:41-53. However, the 688 application neither teaches nor discloses any such valve. *See generally* Ex1015. The “resulting solvent valve” was new matter added to application serial no. 14,421,362 (the 362 application) and filed August 16, 2013.

Thus, claims 1-10 and 14-16 are entitled to an effective filing date no earlier than August 16, 2013. *See, e.g.*, 35 U.S.C. §119(e); *New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1294 (Fed. Cir. 2002) (“[T]o be afforded the priority date of the provisional application,...the written description of the provisional must adequately support the claims of the non-provisional

application...”).

Claims 11-16 are not entitled to the priority date of the 688 application because each claim requires a “temperature measuring device fluidly coupled to at least one of the first solvent conduit downstream of the solvent temperature modulation system and a resulting solvent conduit and a conduit joint...and the temperature measuring device fluidly coupled upstream of the brewing chamber.” Ex1001, 20:12-21. However, the 688 application neither teaches nor discloses such positioning of a temperature measuring device (*see generally* Ex1015), but rather discloses only that sensors may be positioned throughout the system. Ex1015, 10:139-145, 15:238-242. The “temperature measuring device” having a definite and required position was new matter added to the 362 application and filed August 16, 2013.

Thus, claims 11-16 are entitled to an effective filing date no earlier than August 16, 2013.

Claim 8 is not entitled to the filing date of the 688 application because this claim requires “a recirculation conduit” and “a recirculation pump.” However, the 688 application neither teaches nor discloses any such recirculation conduit or recirculation pump. *See generally* Ex1015. The “recirculation conduit” and “recirculation pump” were new matter added to the 362 application and filed August 16, 2013.

Thus, claim 8 is entitled to an effective date no earlier than August 16, 2013.

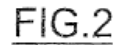
Based on their effective date, claims 1-16 are subject to the first-to-file mandate of the AIA; none of claims 1-16 is entitled to first-to-invent status of the pre-AIA statutes.

Moreover, because at least one claim is not entitled to a filing date before March 15, 2013, pursuant to AIA §3(n)(1), all claims are subject to the first-to-file invalidity provisions of the AIA.

B. Coccia - U.S. Patent Application Publication No. 2011/0097454A1 (Ex1006)

Coccia describes an “infusion” beverage maker for “wetting of the coffee powder” and brewing coffee. Coccia describes a system in which solvent (cold water 2) is pumped by hydraulic pump (4, 35) through two conduits (6, 8) and a heat exchanger (5, 1). The conduits are joined at a conduit joint (7) to form a resulting conduit (11) for mixing hot and cold solvent. The mixed solvent may be further heated by resistance 20 before traveling along conduits (23, 25) and into the brewing chamber (31, 15, 16) to create an infused beverage (e.g., coffee) that is discharged at an outlet (17). Coccia’s machine includes a valve (26, 36) that can be positioned downstream of junction (7), upstream of brewing chamber (31, 15, 16), and can have three operational states: i) closed; ii) open to brewing chamber;

iii) open to discharge (27). Ex1002-22-23. See FIG. 2:



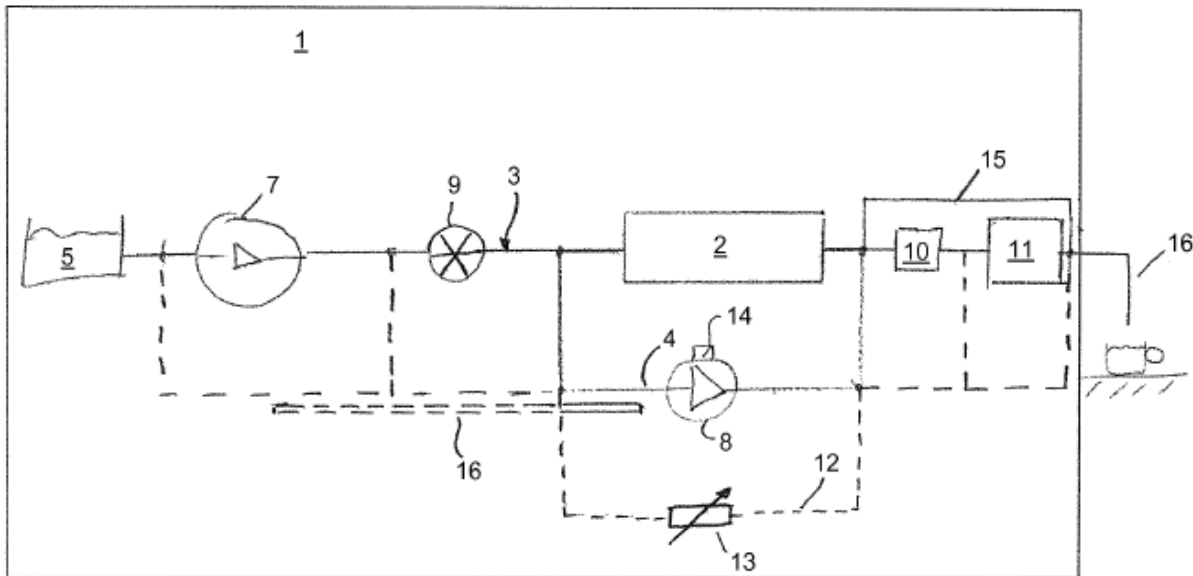
Coccia describes electronic controller (22) using temperature sensors (not shown), pressure sensors (21), and flow rate measurements (28) to dynamically modulate the temperature of the solvent. Ex1002-23.

C. Startz - U.S. Patent No. 8,973,487B2 (Ex1008) (and U.S. Patent Application Publication No. 2012/0291634A1 (Ex1009))

Startz describes “A beverage machine (1), in particular to a coffee machine...” In Startz’s system, solvent (mixing water and admixing water) is pumped through two conduits (paths 3, 4) by two pumps (7, 8) through at least one heating device (2, 16). The conduits are joined at a conduit joint (return of bypass flow path between 2 and 10) to form a resulting conduit for mixing the solvent.

The mixed solvent is pumped into a brewing device (11) where the mixed solvent encounters a solute (e.g., ground coffee) to create an infused beverage (e.g., coffee) that is dispensed at dispensing location (6, mislabeled as 16). Ex1002-24. See

FIG. 1:



2. Startz uses control device (14) to modify one or more of flow rate, temperature, and pressure, by receiving data from flow meter (9) and/or temperature sensors (not shown), then using that data to control/modulate one or more of the pumps and/or thermal modulators to affect temperature or flow.

Ex1002-25.

D. Santi - U.S. Patent Application Publication No. 2014/0053734 (Ex1010)

In various embodiments of Santi's system, solvent (hot and cold water from

tank 101) is pumped through two conduits by a pump (200) through at least one heating means (40). The conduits meet at conduit joint (21) to form a resulting conduit (between 21 and 15) for mixing the solvents. The mixed solvents are pumped into brewing chamber (16) where they encounter a solute (e.g., coffee powder) to create a solution (e.g., espresso coffee) discharged by dispensing spout (18). Santi provides a valve (7) that allows cold water remaining in the ducts to be discharged. Ex1002-25. See FIG. 6:

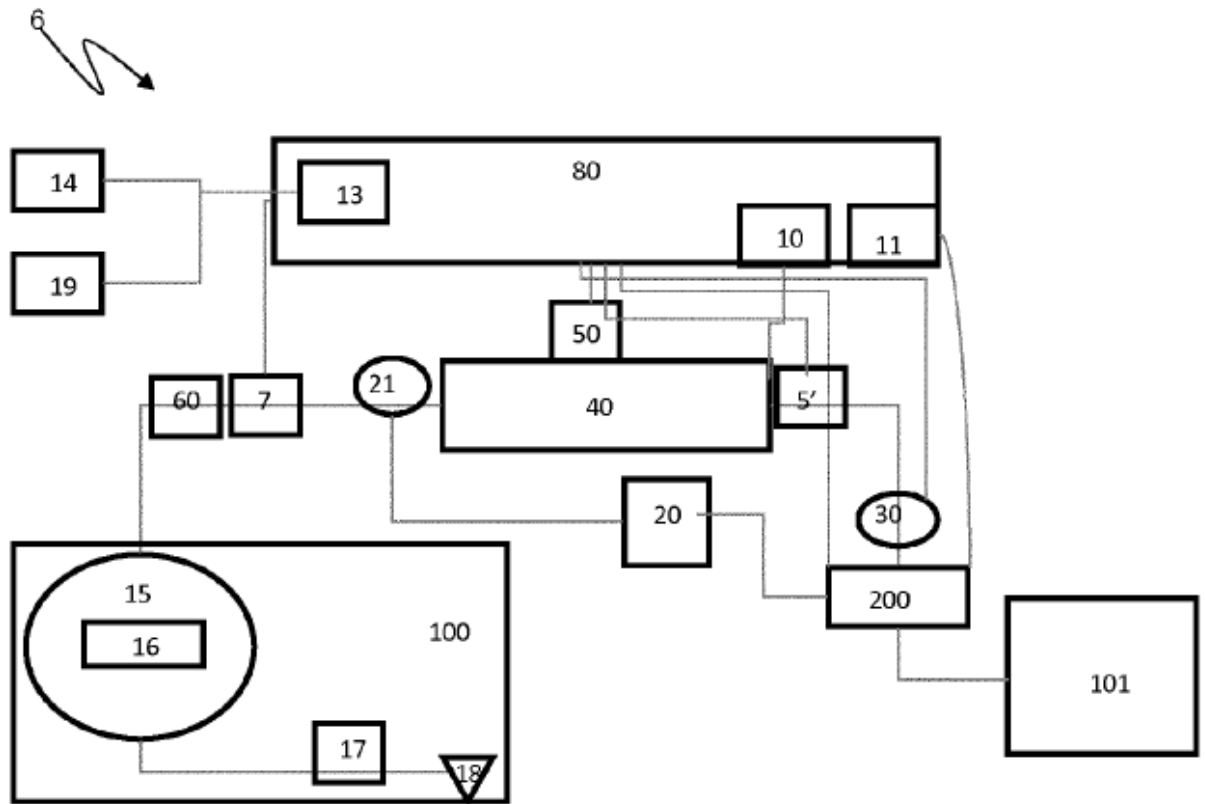


FIG. 6

Santi uses electronic control means (80) to modify one or more of flow rate, temperature, and pressure, by receiving data from pressure sensors (e.g., 30),

and/or temperature measuring devices (e.g., 5', 50, 60), then using that data to control/modulate one or more of the pumps and/or thermal modulators to affect temperature, flow, and/or pressure. Ex1002-26.

E. Lai - U.S. Patent Application Publication No. 2012/0171332A1 (Ex1012)

In Lai's system, solvent (water from reservoir 116) is pumped through a conduit by a pump (138) through at least one heater (136). Solvent is pumped into a brewing chamber (filter cup 10, FIG. 1) where it encounters solute (coffee beans 18) to create a solution (coffee) discharged into a cup (108). Lai's valve (151) controls the flow path by diverting solvent to drain (120). Ex1002-26-27. See FIG. 60:

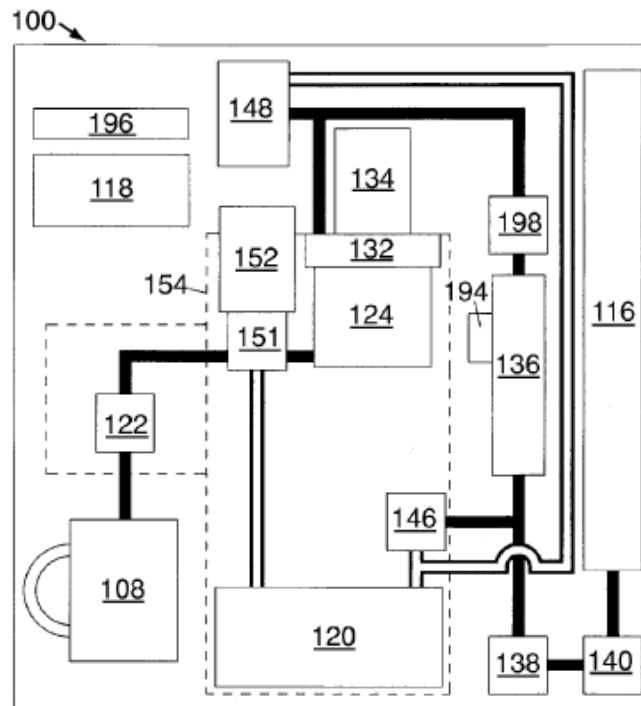


FIG. 60

Lai uses electronic controller (control panel 118, PCB 196) to modify one or more of flow rate, temperature, and pressure, by receiving data from flow meters (140) and/or temperature sensors (194, 198), then using that data to control/modulate the pump and/or heater to affect temperature and/or flow. Ex1002-27.

F. Majer - International Publication No. WO2011/151703A2 (Ex1013)

In Majer's system, two solvents (water from water source 3; milk) are pumped through two conduits (C1, C2) by two pumps (4, 4bis) through at least one heating means (5, 5bis).

Solvent (hot water) is pumped into a brewing means (2) where it encounters solute (ground coffee) to create a solution (espresso coffee) that is discharged into a beverage container (7). Ex1002-28.

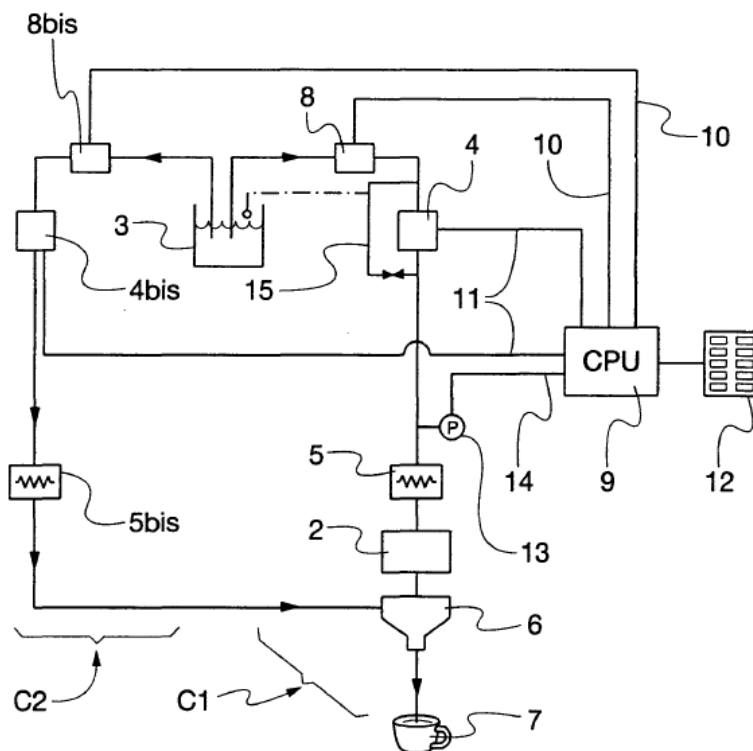


Fig. 1

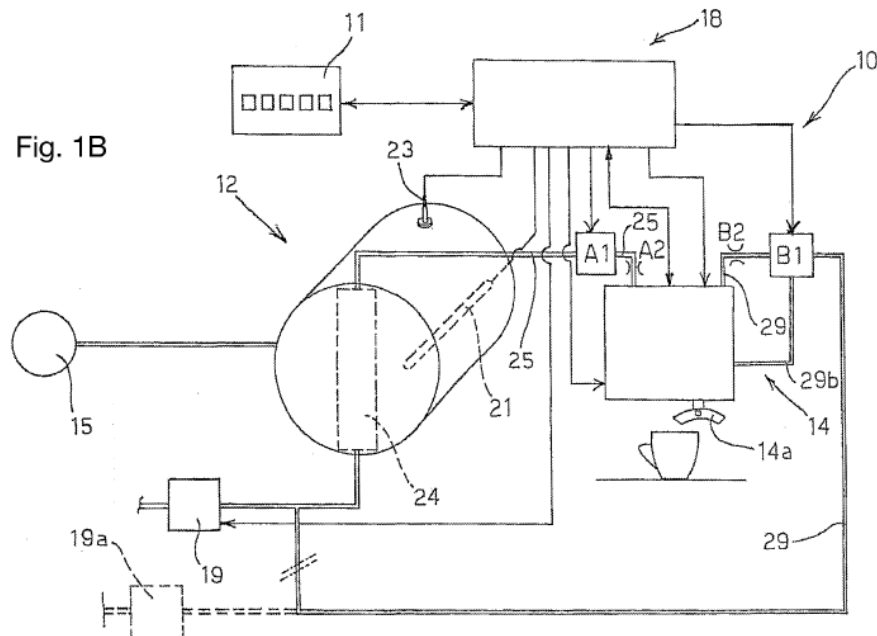
Majer uses electronic controller (CPU 9) to modify one or more of flow rate,

temperature, and pressure, by receiving data from flow meters (8, 8bis), pressure meter (13), and/or temperature monitors, then using that data to control/modulate one or more of the pumps and/or heating means to affect temperature, flow, and/or pressure. Ex1002-29.

G. Porzio - International Publication No. WO2011/158131 (Ex1014)

In Porzio's system, two solvents (water, aromatic liquid) are pumped through two conduits (25, 29) by two pumps (19, 19a) through at least one thermal modulator (heat exchanger 24). The conduits join at brew group 14 for mixing the solvents. The mixed solvents are pumped into a brewing chamber (brew group 14) where they encounter solute (ground coffee) to create a solution (espresso coffee) discharged into a receptacle (via spout 14a).

Porzio's valves (A1, B1) control flow and temperature of the water. Ex1002-29. See FIG. 1B:



Porzio uses electronic controller (control unit 18) to modify one or more of flow rate, temperature, and pressure, by receiving data from temperature measuring devices (23), then using that data to control/modulate one or more of the pumps and/or thermal modulators to affect temperature, flow, and/or pressure. Ex1002-30.

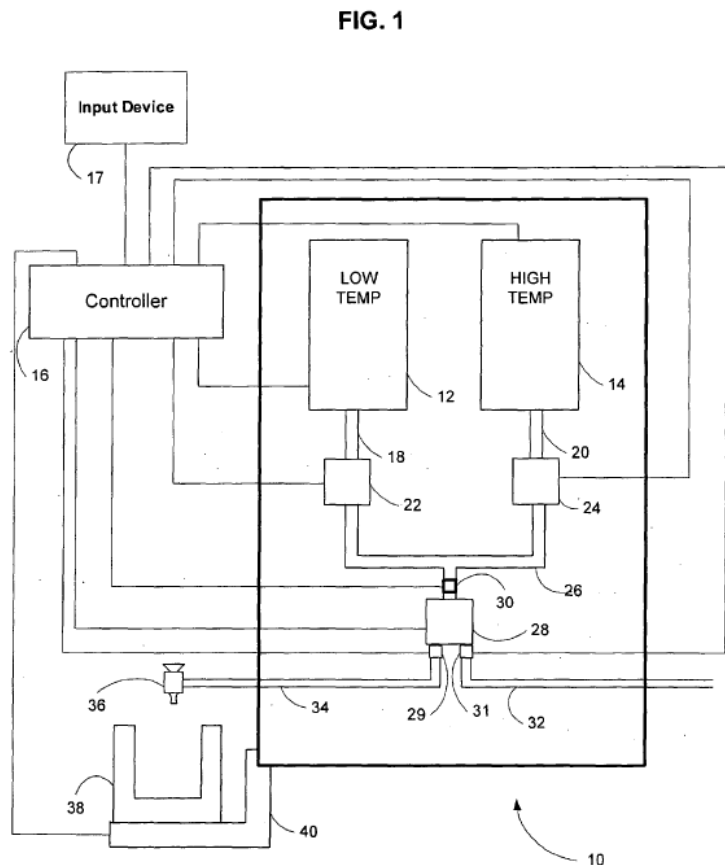
H. Anson - U.S. Patent Application Publication No. 2006/0042470A1 (Ex1018)

Anson describes hot water dispensing apparatus for use “in connection with a variety of beverage making machines used to brew a variety of beverages”

including “brewing of coffee.”

Low temperature water (12) and high temperature water (14) are fed through two conduits (18, 20) that form a conduit joint for mixing. Anson’s valves (22, 24, 28) control the water temperature.

Ex1002-30-31. See FIG. 1:



Controller (16) receives data from temperature sensor (30) regarding the

mixed water temperature and uses such data to control the operation of valves (22, 24, 28) to achieve the desired temperature. The controller directs mixing valve (28) to either send water to a brewing chamber (not shown, along conduit 34) or direct water to a drain conduit (32). Ex1002-31-32.

I. Buttiker - European Patent Publication EP2612577A1 (Ex1003, Ex1004 (translation))

In Buttiker's coffee brewing system, two pumps (31, 32) pump solvent (water from liquid container 10) along two conduits (31a, 31b, 32a, 32b) through two heaters (41, 42) and on to a brewing chamber (60). The two conduits form a conduit joint (53) and the solvent travels through a resulting conduit (54) before being dispensed (outlet unit 70). Buttiker's valves (50, 55) have states including closed, active - directed toward dispensing (outlet unit 70), and active - directed toward discharge (72). Ex1002-32. See FIG. 1:

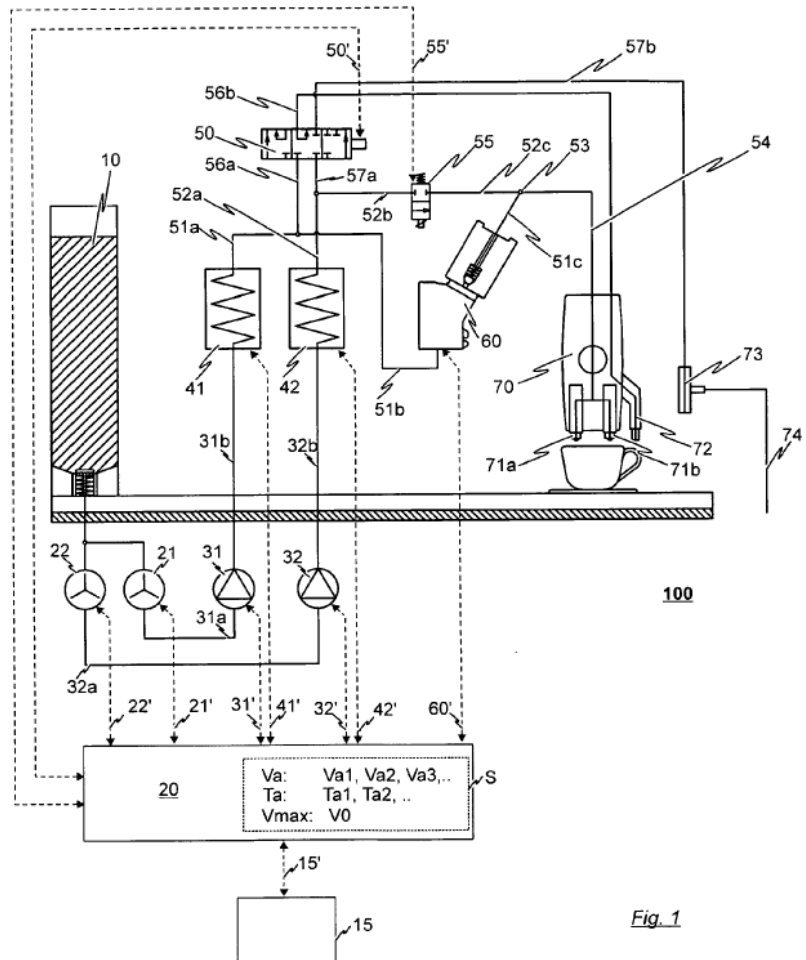


Fig. 1

Buttiker's controller (20) controls pumps (31,32), heaters (41,42), and valves (50,55) based on data received from flow meters (21,22) and temperature sensors (not shown, via 41',42') to achieve optimal temperatures. Ex1002-33.

J. Aigner (Ex1019, Ex1020 (Translation)), Majer II (Ex1022), White (Ex1023)

Aigner, Majer II, and White are not summarized here, but are summarized below in the analysis of claim 8. All three provide recirculation conduits and recirculation valves.

IX. Grounds

A. Ground I: Claim 1 is Obvious Over Coccia in View of One or More of the Knowledge of a POSA and/or Anson

1. Claim 1

(a) “1. An infused beverage brewing assembly comprising:”

Coccia discloses an infused beverage brewing assembly. Ex1006-Abstract, ¶0029, Ex1002-39.

Coccia describes, “a coffee machine for producing and dispensing coffee-based beverages.” Ex1006-Abstract. Coccia confirms, “...‘infusion’ indicates the step of wetting of the coffee powder contained in the filter...” Ex1006-¶0029;

Ex1002-39.

- (b) “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;”**

Coccia discloses a solvent flow management system with at least one solvent pump (hydraulic pump 4 or 35) operably configured to receive a solvent (water) and induce a flow of the solvent through a first solvent conduit (duct 6) and a second solvent conduit (duct 8).

Coccia states, “The water source 2, by means of a duct 3 and a hydraulic pump 4, supplies a heat exchanger 5, also conventional, disposed within the boiler 1. The hydraulic pump 4 is a motor pump actuated by an electronic drive. The output of the heat exchanger 5 supplies heated water via a duct 6 to a mixing point 7 which is also reached by a duct 8 connected to the duct 3 supplying cold water.”
Ex1006-¶¶0037-0038. Coccia describes, “The embodiment of FIG. 2 differs from the embodiment of FIG. 1 chiefly in that it comprises a hydraulic pump 35 which is not necessarily of variable speed.” Ex1006-¶¶0069; Ex1002-40.

- (c) **“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,”**

Coccia discloses a solvent temperature modulation system (heat exchanger 5 in boiler 1) in fluid communication (via duct 3) with the solvent flow management system (4 or 35) and operably configured to thermally modulate (heat) the solvent (water) disposed within the first solvent conduit (6) to a raised temperature higher and different than a temperature of the solvent (cold water) disposed within the second solvent conduit (8). Ex1002-40-41.

Coccia states, “The water source 2, by means of a duct 3 and a hydraulic pump 4, supplies a heat exchanger 5, also conventional, disposed within the boiler 1...The output of the heat exchanger 5 supplies heated water via a duct 6 to a mixing point 7 which is also reached by a duct 8 connected to the duct 3 supplying cold water.” Ex1006-¶¶0037-0038.

Additionally, the solvent temperature management system may include electrical resistance 20 / heating resistance 20 in heating chamber 12. Ex1006-¶¶0044, 0051-0053; Ex1002-41.

As displayed in Fig. 2 (below), Coccia discloses first (6) and second (8) solvent conduits directly coupled together to form a conduit joint (mixing point 7) downstream of solvent temperature modulation system (5,1) to form a resulting solvent conduit (supply duct 11) with a resulting solvent (mixed water) disposed therein at a resulting temperature (supply temperature T1). Ex1002-41-42.

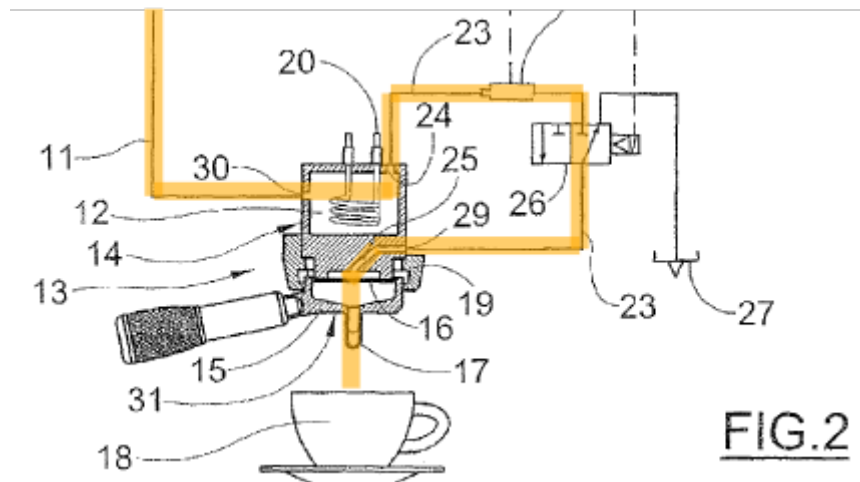


- 32 -

optionally included on the hot water duct 6 and on the cold water duct 8, upstream of the mixing point 7. These flow calibrators make it possible to regulate the quantity of cold with respect to hot water so as to obtain a flow of mixed water in the supply duct 11 at a supply temperature T1. Downstream of the mixing point 7, the mixed water reaches the dispensing device 13.” Ex1006-¶¶0038-0040; Ex1002-42.

- (e) **“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;”**

Coccia discloses brewing chamber (filter unit 31) in fluid communication (yellow highlighting via heating chamber 12, connection duct 23, and dispensing duct 25) with the resulting solvent conduit (11) and for housing solute (ground coffee, coffee powder) disposed to receive the resulting solvent (mixed water) to produce an infused beverage (coffee). Ex1002-43.



Coccia describes, "...a coffee machine...comprising...a filter unit (31) apt to contain ground coffee..." Ex1006-Abstract. Coccia describes brewing within the filter, "In the present description and the accompanying claims, 'infusion' indicates the step of wetting of the coffee powder contained in the filter and 'extraction' indicates the step of using the technical process which forces the hot water under pressure through the ground coffee." Ex1006-¶0029. Coccia describes fluid communication, "The hot water under pressure is caused to flow through the supply duct 11 to the heating chamber 12...and is then introduced into the filter unit 31....the water is introduced into the filter-holder 15 via a duct 23 which connects the outlet 24 of the heating chamber 12 to the inlet 29 of the dispensing duct 25." Ex1006-¶0045; Ex1002-43-44.

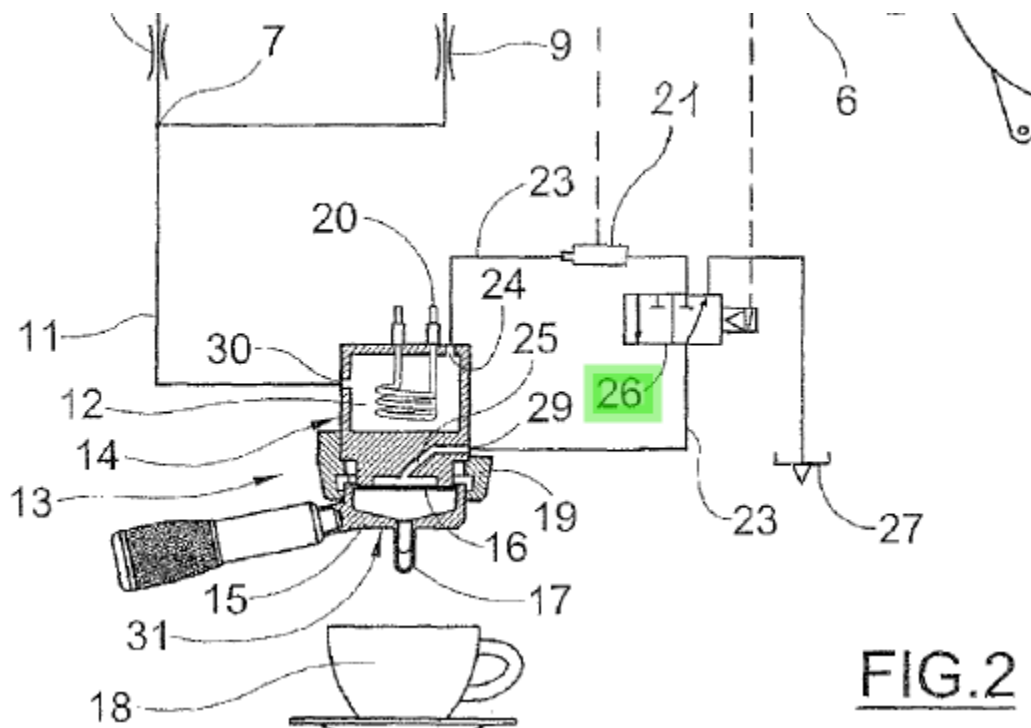
(f) "an outlet for discharging the infused beverage; and"

Coccia discloses an outlet (nozzle 17) for discharging the infused beverage (dispensing coffee into cup 18). Ex1002-44.

Coccia states, "The dispensing device 13 comprises...a nozzle 17 for dispensing the coffee under which a collection cup 18 is disposed in operation. Ex1006-¶0041; Ex1002-44.

- (g) **“a resulting solvent valve disposed upstream of the brewing chamber, downstream of the conduit joint, and in fluid communication with the solvent conduit,”**

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). Ex1002-44.



The applicant acted as lexicographer: “The terms ‘a’ or ‘an,’ as used herein, are defined as one or more than one.” Ex1001, 6:40-41. Thus, “a resulting solvent valve” means one or more valves. Coccia provides a combination of two valves (26 and 36) that disclose this limitation. Coccia states, “The duct 23 is provided with an electrovalve 26 which has two operating positions.” Ex1006-¶0046.

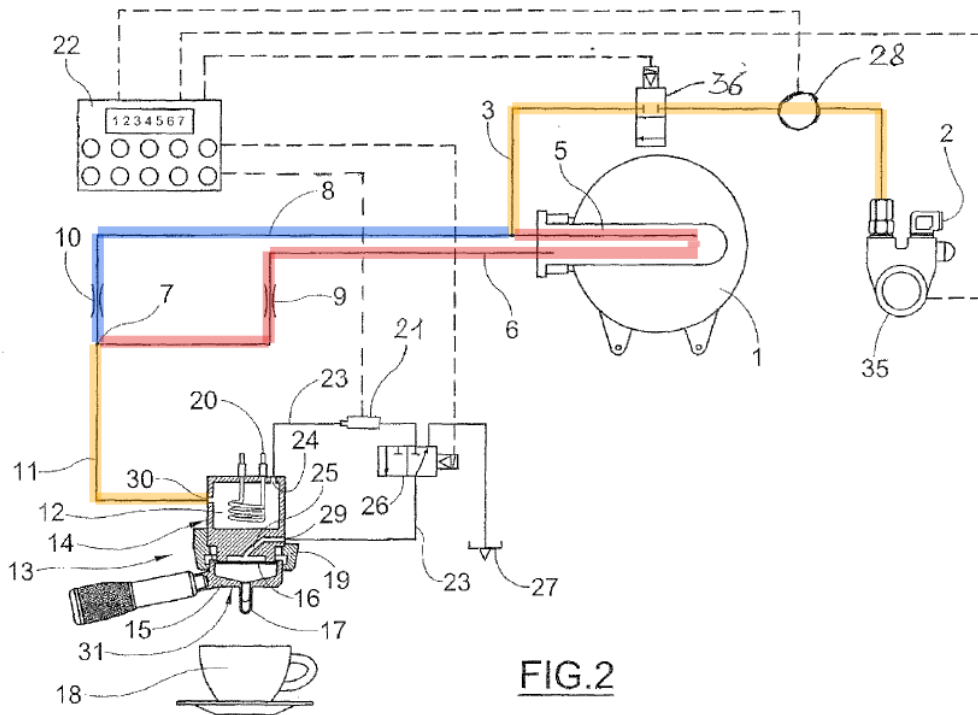
Coccia states, “A hydraulic variable-flow valve 36 is disposed along the hydraulic circuit which brings the hydraulic pump into fluid communication with the dispensing device 13.” Ex1006-¶0071; Ex1002-45.

The claim language “the solvent conduit” does not specify which of the many pre-defined conduits must be in fluid communication with the valve. Thus, Petitioner contends that, for purposes of this proceeding, fluid communication with any of the conduits will be sufficient. (Petitioner does not waive its right to argue that “the solvent conduit” is indefinite in proceedings wherein indefiniteness can be considered.) As shown, above, analysis of claim limitations (a) through (g), conduits 3, 6, 8, 11, 12, 23, and 25 are all in fluid communication with one another. In FIG. 2, valve 26 is shown regulating the flow of water from one portion of conduit 23 to another portion of conduit 23. And valve 36 brings the pump into fluid communication, meaning that valve 36 is in fluid communication with various conduits. Ex1002-45-46.

A POSA 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. Ex1002-46. Coccia states, “A hydraulic variable-flow valve 36 is disposed along the hydraulic circuit which brings the hydraulic pump into fluid communication with the dispensing device 13.” Ex1006-¶0071, Ex1002-46. In annotated FIG. 2 below, the highlighting indicates the “hydraulic circuit which

brings the” pump 35 into communication with device 13. Orange highlighting indicates single conduits where a single valve could block flow, while red and blue highlighting indicates parallel conduits where a single valve could not block flow.

Ex1002-46.



A POSA would have known that the valve 36 must be located along an orange portion to accomplish restricting or blocking flow. Ex1002-47. Thus, even though Coccia states a preferred location (i.e., “The valve 36 is preferably disposed along the cold water duct 3, more preferably downstream of the flow rate measurement device 28.”), a POSA would have understood that the preference did not limit the location of the valve. Ex1002-47. Thus, a POSA would have understood that

Coccia's language regarding "disposed along the hydraulic circuit" encompasses a valve 36 disposed between conduit joint 7 and device 13, i.e., along conduit 11.

Therefore, Coccia discloses the claimed location of the valve. Ex1002-47.

If Coccia does not disclose the claimed location of the valve, it would have been obvious to a POSA to

place the valve

downstream of the conduit

joint and upstream of the

brewing chamber, as

disclosed by Anson.

Anson discloses valve (28)

downstream of a conduit

joint (common passage

26), that is controlled by

controller 16 to control

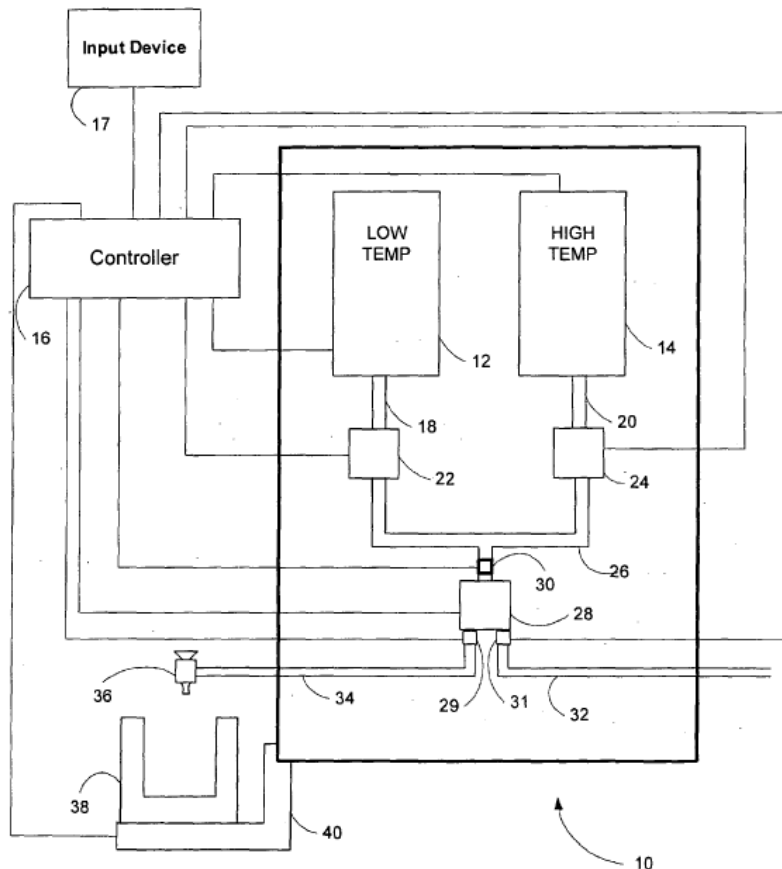
flow of water. Ex1002-

47-48.

Ex1018, FIG. 1.

Anson states, "Mixing valve 28 may be operated by controller 16 to

FIG. 1



selectively permit flow to dispensing tube 34 or drain tube 32.” Ex1018 ¶0015.

Coccia in view one or more of the knowledge of a POSA and/or Anson renders this element obvious. Ex1002-49.

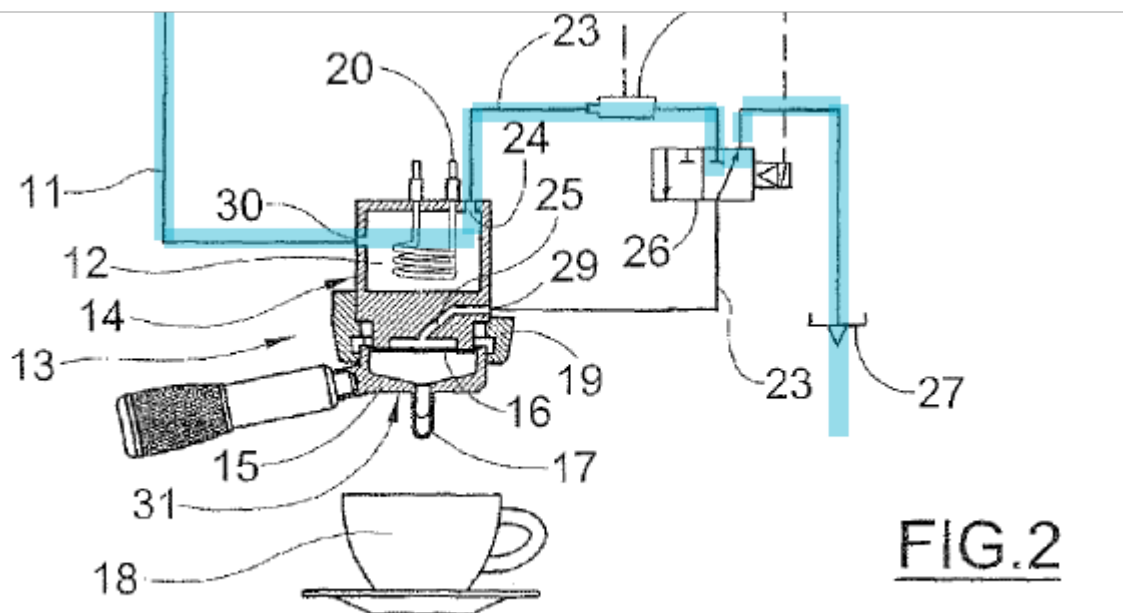
(h) “the valve operably configured to selectively have a closed state inhibiting flow of the resulting solvent to the brewing chamber and”

Coccia discloses valve (26 and 36) operably configured to selectively have a closed state inhibiting flow of the resulting solvent (mixed water) to brewing chamber (31). Ex1002-49.

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.” Ex1006-¶¶0086-0087. When the valve is closed, the flow of water to the brewing chamber will be inhibited. Ex1002-49.

- (i) **“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”**

Coccia discloses that the valve(s) have an active state (valve 36 open) that includes a first selective directional flow path (to discharge 27) directing the flow of the resulting solvent (mixed water) to a removal conduit (conduit to discharge 27) without passing the resulting solvent (mixed water) through the brewing chamber (31); see highlighted excerpt of FIG. 2. Ex1002-50.



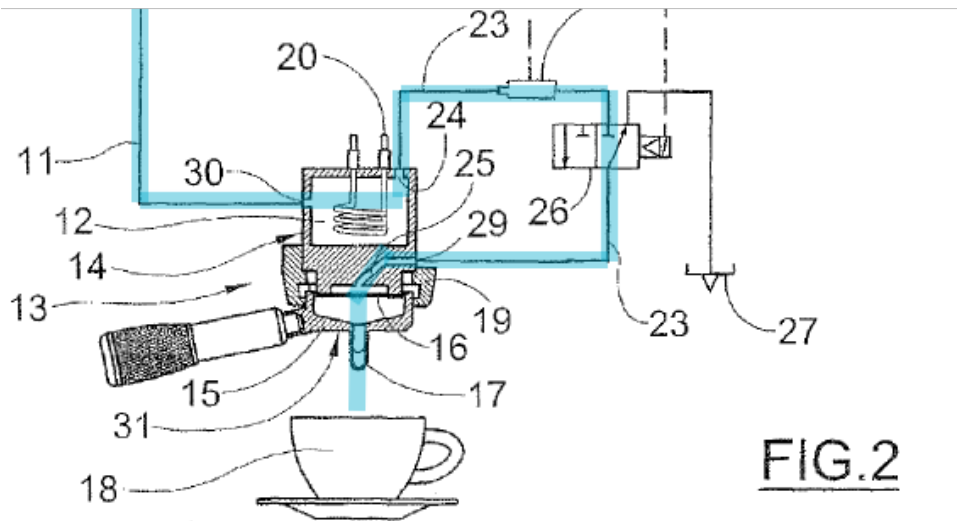
Coccia states, “The duct 23 is provided with an electrovalve 26 which has two operating positions. This electrovalve 26, in one position, causes the water to be supplied to the filter-holder and thus the formation of the beverage, and in the

other position it discontinues the supply of the water and communicates with a discharge 27 external to the machine.” Ex1006-¶0046; Ex1002-50-51.

- (j) “a second selective directional flow path directing the flow of the resulting solvent to the brewing chamber, thereby enabling resulting solvent delivered [sic] to the brewing chamber at a desired temperature.”

Coccia discloses that the active state (valve 36 open) of valve (26) has a second selective directional flow path (to filter holder 15 of filter unit 31) directing the flow of the resulting solvent (mixed water) to the brewing chamber (31), thereby enabling resulting solvent (mixed water) delivery to the brewing chamber (31) at a desired

temperature
(optimum
temperature T2);
see highlighted
excerpt of FIG. 2.
Ex1002-51.



Coccia states, “The duct 23 is provided with an electrovalve 26 which has two operating positions. This electrovalve 26, in one position, causes the water to

be supplied to the filter-holder and thus the formation of the beverage...” Ex1006-¶0046. Coccia confirms heating to a desired temperature: “...the water supplied to the inlet 30 of the heating chamber 12 from the supply duct 11...is already at a relatively high supply temperature T1 (...approximately 80° C.) and therefore the heating time needed to reach the optimum temperature T2 for the formation of the beverage (...approximately 90° C.) is short...” Ex1006-¶0051. Coccia confirms that water is delivered to the brewing chamber at the desired temperature (T2): “In the heating chamber 12 an electrical resistance 20 is provided for heating the water to a dispensing temperature T2 suitable for the formation of the coffee beverage, which temperature is greater than the temperature T1 of the water downstream of the mixing point 7 which acts as a source as regards the heating chamber 12. The hot water under pressure is caused to flow through the supply duct 11 to the heating chamber 12 via the inlet 30, in which chamber is stabilised in temperature, and is then introduced into the filter unit 31.” Ex1006-¶¶0044-0045; Ex1002-51-52.

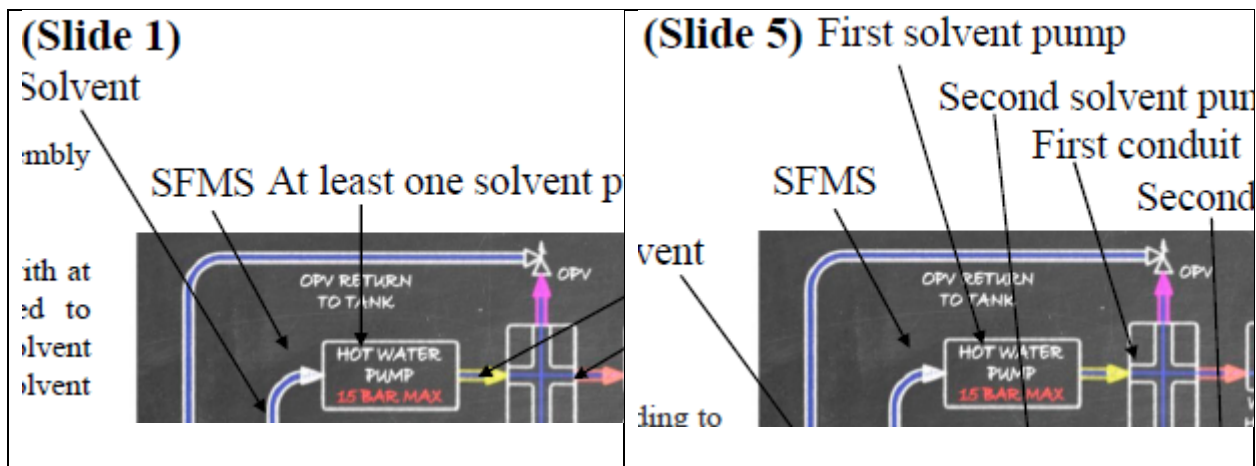
Accordingly, Coccia in view of one or more of the knowledge of a POSA and/or Anson renders claim 1 obvious. Ex1002-52.

B. Ground 2: Claim 2 is Obvious over Coccia in View of One or More of the Knowledge of a POSA, Startz, Majer, Porzio, Buttiker, and/or Anson

1. Claim 2

- (a) **“The infused beverage brewing assembly according to claim 1, wherein the solvent flow management system further comprises: a first solvent pump fluidly coupled to the first solvent conduit and operably configured to receive the solvent and induce the flow of the solvent therethrough; and”**

By use of the term “further comprises”, claim 2 appears to add a second pump (called “a first solvent pump”) and a third pump (called “a second solvent pump”) to the already existing pump (“at least one solvent pump”) of claim 1. Thus, it appears that claim 2 requires three pumps. However, in infringement contentions (Exs. 1016, 1017), Patent Owner alleged that the same pump (i.e., the “HOT WATER PUMP”) fulfilled both the “at least one solvent pump” and the “a first solvent pump” limitations of claims 1 and 2:



Ex1016 page 1, Ex1017 pages 1, 5.

Petitioner reserves the right to seek a different claim construction in court,

but relies upon Patent Owner's construction for purposes of this petition.

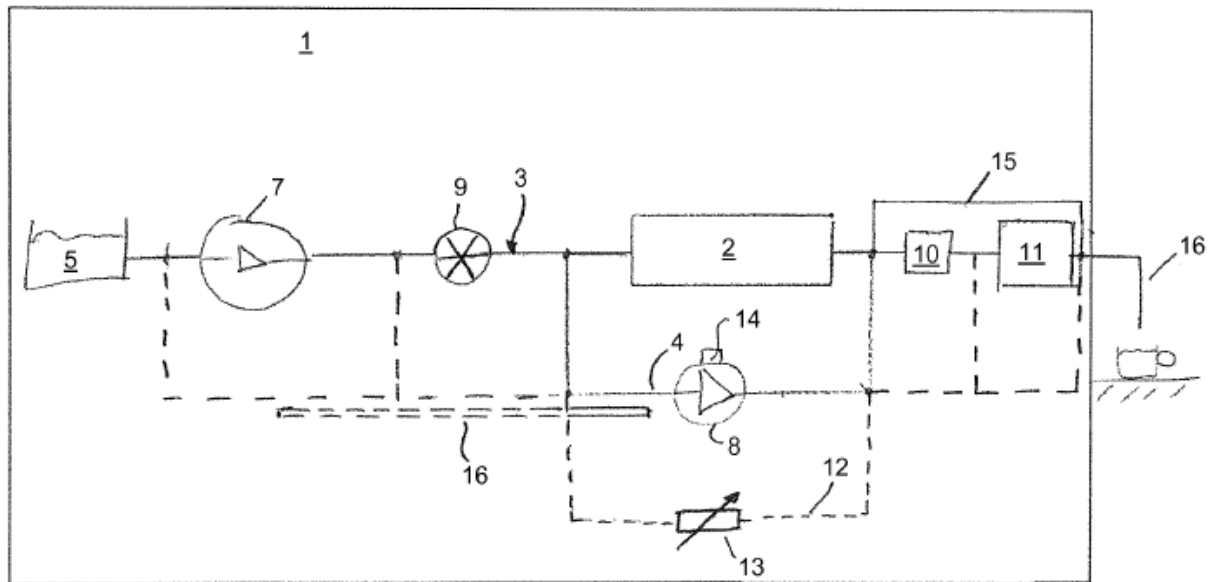
Accordingly, analysis of claim limitation 2(a) is the same as the analysis of claim limitation 1(b). That analysis is incorporated herein. Ex1002-53.

(b) “a second solvent pump fluidly coupled to the second solvent conduit and operably configured to receive the solvent and induce the flow of the solvent therethrough.”

Coccia does not disclose a second solvent pump. However, a POSA would have found the inclusion of a second solvent pump as claimed to be obvious in view of one or more of the knowledge of a POSA, Startz, Majer, Porzio and/or Buttiker. Ex1002-54.

A POSA would have had knowledge of each of the disclosures of Startz, Majer, Porzio, and Buttiker as described below, and would have known that it would have been obvious to include a second solvent pump to pump the water through the second conduit 8. This limitation would have been obvious in view of the knowledge of a POSA. Ex1002-54.

Startz discloses a coffee machine with first solvent pump 7 inducing the flow of solvent (water) through first conduit (3) and second solvent pump 8 inducing the flow of solvent (water) through second conduit (4); see FIG. 1:



Startz states, "...a beverage machine 1...which can be embodied as a coffee machine,...In the main flow path 3, a main flow pump 7 is thereby arranged between the water tank 5 and the heating device 2. According to the invention, a bypass flow pump 8 is now arranged in the bypass flow path 4..." Ex1008, 3:9-23, Ex1002-55.

Majer discloses a coffee machine with first solvent pump 4 inducing flow of solvent (water) through first conduit (C1) and second solvent pump 4bis inducing flow of solvent (water) through second conduit (C2), see FIG. 1:

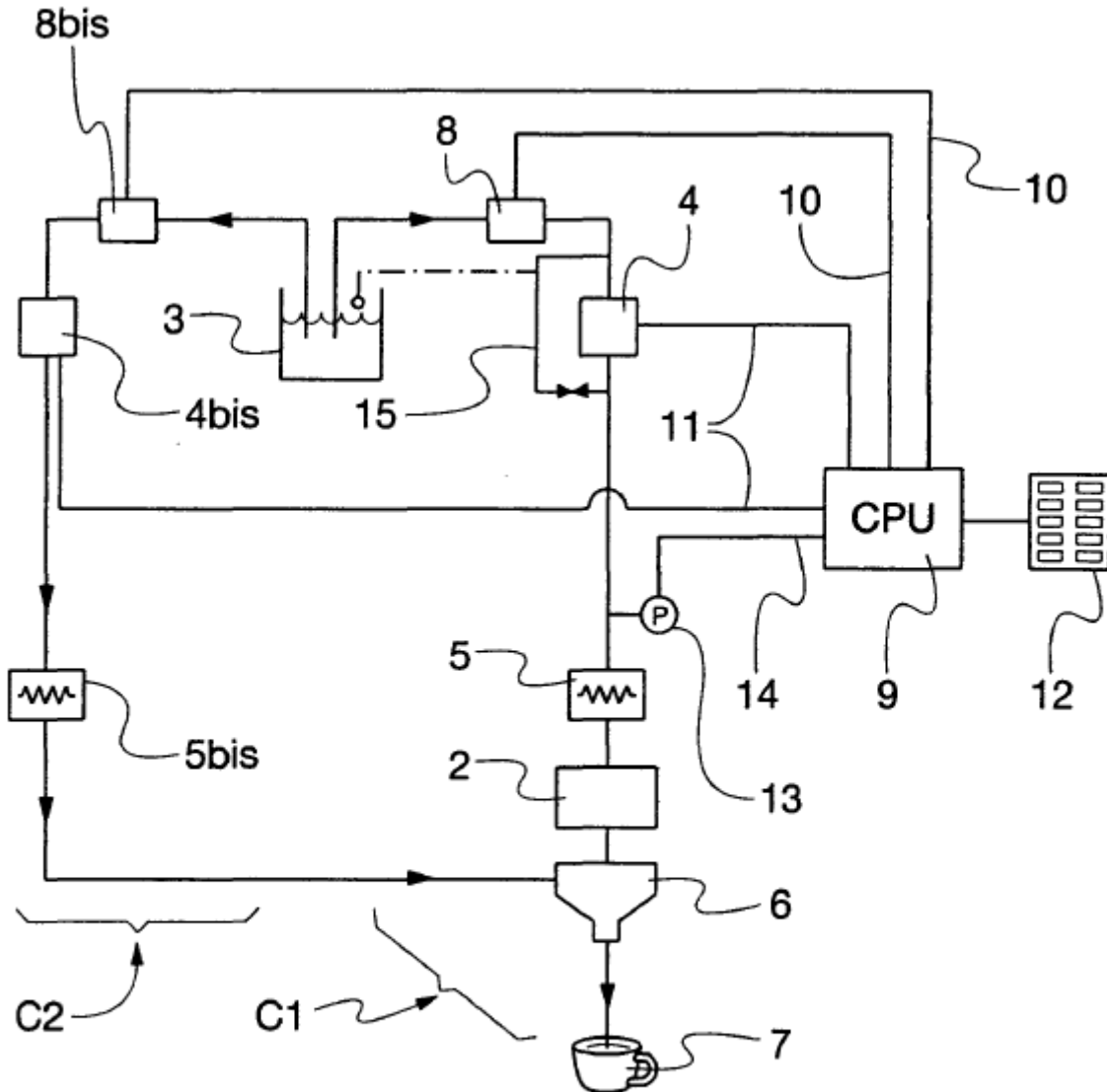
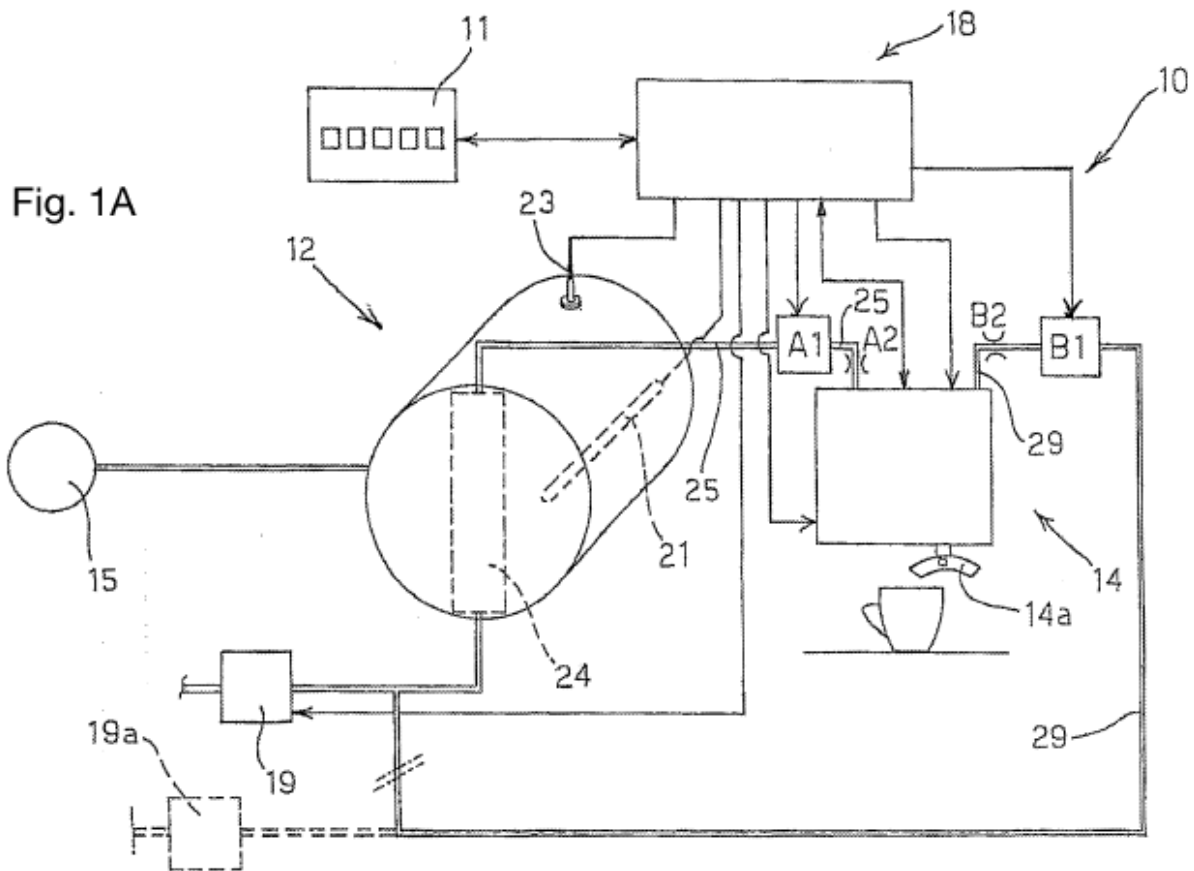


Fig. 1

Majer claims, “A beverage dispensing machine (1) comprising a first

hydraulic circuit (C1) including a water source (3), a pump (4),...a brewing means (2),...further comprising a second hydraulic circuit (C2) that includes a second pump (4bis)...” Ex1013-Claim 1; Ex1002-56.

Porzio discloses a coffee machine with a first solvent pump (19) inducing flow of solvent (water) through first conduit (25) and second solvent pump (19a) inducing flow of solvent (water) through second conduit (29), see FIG. 1A:



Porzio describes, “...an espresso coffee machine...In the first embodiment...heat exchange unit (heat exchanger) 24 fed with mains water by means of a pump 19...Heat exchanger is connected by means of a conduit

Ex1003 page 10.



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Coccia in view of one or more of the knowledge of a POSA, Startz, Majer, Porzio, Buttiker, and/or Anson renders claim 2 obvious. Ex1002-58.

C. Ground 3: Claims 3-6, 9, and 11-16 are Obvious over Coccia in View of One or More of the Knowledge of a POSA, Lai, Santi, and/or Anson

1. Claim 3

- (a) “The infused beverage brewing assembly according to claim 1, further comprising: a temperature measuring device coupled to and in fluid communication with the resulting solvent conduit and operably configured to measure the resulting solvent temperature and communicate the resulting solvent temperature to an electronic controller.”**

Coccia discloses a temperature measuring device (temperature sensor-not shown) coupled to (indirectly coupled) and in fluid communication with (via heating chamber 12) resulting solvent conduit (11) and operably configured to measure resulting solvent temperature (measure T1) and communicate resulting solvent temperature (T1) to electronic controller (CPU 22). Ex1002-58

Coccia states, “In the heating chamber 12 an electrical resistance 20 is provided for heating the water to a dispensing temperature T2 suitable for the formation of the coffee beverage, which temperature is greater than the temperature T1 of the water downstream of the mixing point 7 which acts as a source as regards the heating chamber 12...operation of the heating resistance 20 is preferably controlled by a temperature sensor (not shown...) in contact with the water in the heating chamber in order to detect the dispensing temperature T2 and

is logically connected to the CPU 22.” Ex1006-¶¶0044, 0052-0053. Coccia states, “in one embodiment, the heating chamber receives water at ambient temperature which is heated to the temperature T2...in the heating chamber. Ex1006-¶¶0078, Ex1002-58-59.

A POSA would have understood this disclosure as disclosing this claim element. Ex1002-59. As Coccia describes, when the heating chamber receives water either at ambient temperature or at temperature T1, it is heated until it reaches temperature T2. Ex1002-59. Coccia describes that the temperature sensor is logically connected to the CPU 22 and that operation of the heating is controlled by a temperature sensor. Thus, a POSA would have understood that the temperature sensor was reading the temperature of the mixed water entering or within the heating chamber and relaying that temperature to the CPU. Ex1002-59. The CPU could then activate or deactivate the heating based on the temperature read by the temperature sensor. A POSA would have understood that the temperature sensor would have been configured to measure the resulting solvent temperature and communicate that measurement to the electronic controller. Ex1002-59.

This temperature sensor was “in contact with the water in the heating chamber” and, thus, “in fluid communication with the resulting solvent conduit,” as water flows from duct 11 into chamber 12. The temperature sensor was indirectly “coupled to...the resulting solvent conduit.” As noted above, the term

“coupled” can include indirect coupling. The temperature sensor is part of the heating chamber 12, which is coupled to supply duct 11 (i.e., the resulting solvent conduit); thus, it is indirectly coupled to the resulting solvent conduit. Ex1002-60.

If Coccia does not disclose the claimed temperature measuring device, use of such a device would have been obvious to a POSA in view of one or more of Lai and/or Santi. Ex1002-60.

Lai teaches, “As shown in FIG. 59, the heater may include a sensor 194 that controls the heater 136 so that a suitable temperature (or temperature range) for brewing is obtained. The heater sensor 194 is electrically coupled to the PCB 196 of the control panel 118 such that the PCB 196 may control the temperature of the heater 136 through the heater sensor 194.” Ex1012, ¶97. Lai states, “Importantly, the water temperature is regulated throughout the brewing process for optimum brewing and taste. In connection with this, a water temperature sensor 198 detects a temperature of the water exiting the heater 136 and relays this temperature to the PCB 196 of the control panel 118. The heater power and pump rate may then be adjusted to keep the water temperature within the optimal range.” Ex1012-¶98. Lai confirms fluid coupling: “a temperature sensor in fluid communication with an outlet of said heater and electrically coupled to said control unit.” Ex1012, claim 31. Lai also confirms complete fluid coupling between sensor and outlet: “Normal brewing is then commenced wherein water is continuously pumped through the

heater 136 and into the filter cup 10.” Ex1012-¶98, Ex1002-60-61.

Santi describes a prior art system, “This is subsequently sent, again by pumping, to a brewing chamber inside which there is inserted a temperature sensor. This sensor is connected to a control device capable of interrupting the flow of the pump and/or the heating of the heating device when the temperature exceeds a given threshold value.” Ex1010-¶0012. Santi describes a second prior art system, “This machine also has a temperature sensor, connected to a control device, capable of detecting the temperature of the water supplied to the brewing chamber. By means of the control device, the temperature of the water is therefore regulated...to perform brewing.” Ex1010-¶0014; Ex1002-61.

Santi, referring to his own FIG. 4, describes embodiments with up to three temperature sensors, “FIG. 4 illustrates a fourth embodiment in which the device 4 also comprises third sensor means 5' for measuring third temperature data of the input water to the heating means 40. The advantage of a further temperature sensor that detects the temperature of the input water lies in greater precision of the operating phase. In fact, in this way the variations in temperature of the input water can be kept under control, whatever the supply source...Therefore, by means of the control means 80, the number of calories to be produced and the energy required for this purpose are calculated. In this case, the second temperature sensor 60 performs a control for the feedback which can subsequently trigger corrective

actions...” Ex1010-¶0092, claims 10-14. The first sensor means 50 comprise a temperature sensor at the heating means 40. Ex1010-¶0066. Santi confirms that the sensors are in fluid communication with the water flowing through the system: “These can be positioned at the input of the brewing portion to ensure precise control of the temperature to be used in contact with the coffee. The temperature sensor can also, or concurrently, be positioned at the heating means. In particular, it can be positioned in contact with the heating means and/or at the hot water dispensing point thereof.” Ex1010-¶0038. Santi teaches an embodiment using temperature sensors in the “resulting solvent conduit” (i.e., mixing means): “in this embodiment, the device 5 comprises mixing means 21 for mixing the hot water produced by the heating means 40 with the input cold water to these latter. Furthermore, the mixing means 21 can comprise at least one temperature sensor, operatively connected to the control means 80.” Ex1010-¶0098. And Santi confirms the communication between other sensors and controller: “The control means 80 receive from the temperature sensor 50 the temperature data relating to the water...” Ex1010-¶0073; Ex1002-61-63.

Accordingly, Coccia in view of the knowledge of a POSA, Lai, and/or Santi renders claim 3 obvious. Ex1002-63.

2. Claim 4

- (a) “The infused beverage brewing assembly according to claim 3, wherein: the electronic controller communicatively is coupled to the solvent temperature modulation system, the valve, the temperature measuring device,”**

Coccia discloses that the electronic controller (CPU 22) communicatively is coupled to the solvent temperature modulation system (at least heating resistance 20), the valve (26, 36), and the temperature measuring device (not pictured). Ex1002-63.

As noted above, in the analysis of claim limitation 1(c), the solvent temperature modulation system (“STMS”) is not limited solely to the boiler 1 and heat exchanger 5, such that the STMS may include resistance 20. Thus, a coupling between resistance 20 and CPU 22 is a coupling between the electronic controller and the STMS. Ex1002-63.

Coccia states, “The control lines through which the control signals from and to the control unit 22 pass are shown by dashed lines in the drawings.” Ex1006-¶0050. Highlighted reproductions of FIGS. 1 and 2 (below) show that the control lines extend between the CPU 22 and each of heating resistance 20, valve 26, and valve 36:



Ex1006, FIGS. 1-2; Ex1002-63-65.

¶0053.

If the Board determines that this limitation requires a connection between the controller and the primary heating system, a POSA would have understood that such connections were well known in the prior art including at least by Lai and Santi. Ex1002-65.

Lai teaches, “Importantly, the water temperature is regulated throughout the brewing process for optimum brewing and taste. In connection with this, a water temperature sensor 198 detects a temperature of the water exiting the heater 136 and relays this temperature to the PCB¹ 196 of the control panel 118. The heater power and pump rate may then be adjusted to keep the water temperature within the optimal range.” Ex1012, ¶0098. Thus, a POSA would have understood that Lai discloses that the heater is also communicatively connected to the electronic controller. Ex1002-65.

Santi teaches a “device for producing hot beverages” having “at least one brewing chamber”, wherein “said device also comprising control means, operatively connected to said first sensor means and to said second sensor means, for continuous monitoring of said first temperature data and of said first pressure data during the operating phase of said device; said control means being operatively connected to said heating means and to said pumping means for

¹ Lai refers to PCB 196 as “printed circuit board 196.” Ex1012 ¶0082. And control panel 118 is described as having an LCD display 200, confirming that Lai’s controller is electronic. Ex1012, ¶0100; Ex1002-65.

continuous and combined control of said temperature and of said pressure during said operating phase of said device;...” Ex1010-¶¶0026-0031. In describing the “control means”, Santi confirms that the control means is electronic by noting “the first storage means 13...operatively connected to the control means, and also comprise selection actuator means 19. The first storage means 13 are produced by means of a non-volatile memory...selection actuator means 19, such as...a touch screen system...Moreover, the different extraction profiles can be modified in the machine through access to programming mode...these selection means comprise second storage means 14...second storage means 14 consist of a portable non-volatile memory, such as a memory card (SD, MMC or the like),...a Bluetooth device, a USB key or the like...storage means 14 could use an extraction profile taken from a web page...” Ex1010-¶¶0084-0086. Santi teaches, “the control means 80 performs continuous and combined control of the temperature and of the pressure during the operating phase...” Ex1010-¶¶0088; Ex1002-65-66.

- (b) **“the electronic controller operably configured to at least one of dynamically modulate the solvent temperature modulation system and selectively maintain the valve in the first selective directional flow path of the active state until the desired temperature of the resulting solvent is ascertained by the temperature measuring device,”**

Coccia discloses that the electronic controller (CPU 22) is operably configured to at least one of (only one option required) dynamically modulate the solvent temperature modulation system (20) and selectively maintain the valve (26) in the first selective directional flow path (to discharge 27) of the active state until the desired temperature (T2) of the resulting solvent (mixed water) is ascertained by the temperature measuring device (not picture). Ex1002-67.

Coccia’s controller only needs to perform one of the “at least one of” operations. Coccia discloses both. As noted above in the claim construction, the term “dynamically modulate” means to keep the same or change during the brewing process. Ex1002-67.

Coccia discloses stabilizing the temperature at T2: “In a preferred embodiment, the water supplied to the inlet 30 of the heating chamber 12 from the supply duct 11 downstream of the mixing point 7 is already at a relatively high supply temperature T1...In the case of a relatively high temperature T1, the electrical power needed for the electrical resistance 20 to start and to stabilise the temperature to the temperature T2 for the preparation of the beverage is relatively

low...The operation of the heating resistance 20 is preferably controlled by a temperature sensor (not shown in the figure) in contact with the water in the heating chamber in order to detect the dispensing temperature T2 and is logically connected to the CPU 22.” Ex1006-¶¶0051-0053, Ex1002-67-68.

Coccia teaches that the temperature is stabilized in chamber 12 before the water is introduced to the brewing chamber: “The hot water under pressure is caused to flow through the supply duct 11 to the heating chamber 12 via the inlet 30, in which chamber is stabilised in temperature, and is then introduced into the filter unit 31.” Ex1006-¶¶0045. A POSA would have understood that use of the term “then introduced into the filter unit 31” meant that the water was not permitted to enter filter unit 31 until it reached the stabilized temperature T2, and that water flowing into the chamber 12 would need another outlet until temperature T2 was reached. Ex1002-68. A POSA would have understood that the only other outlet provided by Coccia was to discharge 27 via valve 26, meaning that valve 26 would have stayed open to discharge 27 and closed to filter unit 31 until temperature T2 was reached: “The duct 23 is provided with an electrovalve 26 which has two operating positions. This electrovalve 26, in one position, causes the water to be supplied to the filterholder 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.” Ex1006-¶¶0045-0046, Ex1002-68.

If Coccia does not disclose that the controller dynamically thermally modulates the STMS, a POSA would have understood that Lai and Santi both disclose such a feature and that it would have been obvious to combine Coccia with one or more of the knowledge of a POSA, Lai, and/or Santi. Ex1002-68-69.

Lai teaches, “Importantly, the water temperature is regulated throughout the brewing process for optimum brewing and taste. In connection with this, a water temperature sensor 198 detects a temperature of the water exiting the heater 136 and relays this temperature to the PCB 196 of the control panel 118. The heater power and pump rate may then be adjusted to keep the water temperature within the optimal range.” Ex1012, ¶0098; Ex1002-69.

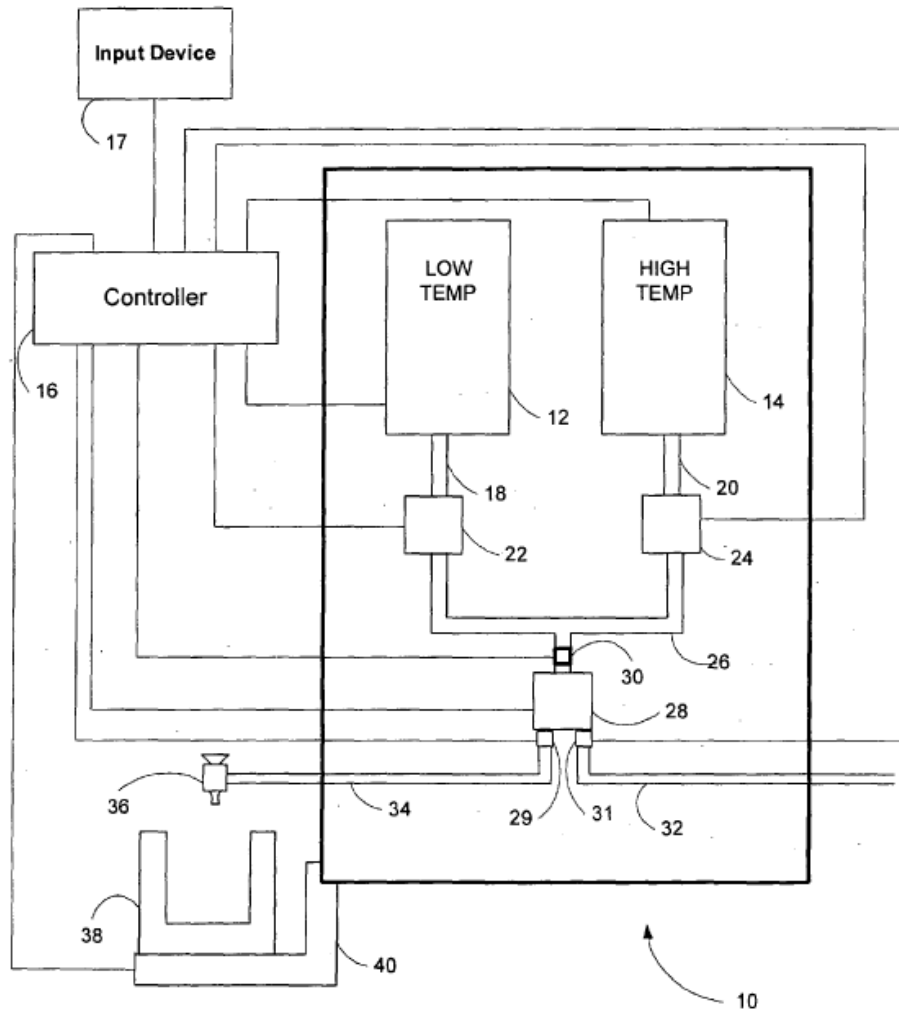
Santi teaches, “said control means being operatively connected to said heating means and to said pumping means for continuous and combined control of said temperature and of said pressure during said operating phase of said device;...” Ex1010-¶¶0026-0031. Santi teaches, “the control means 80 performs continuous and combined control of the temperature and of the pressure during the operating phase...” Ex1010-¶¶0088; Ex1002-69.

If Coccia does not disclose this limitation, a POSA would have understood that Anson discloses a hot water device for brewing coffee, in which the controller (16) selectively maintaining the valve (28) in the first selective directional flow path (toward dispensing tube 34) of the active state until the desired temperature

(desired Dispense Temperature) of the resulting solvent (mixed water) is
ascertained by the temperature measuring device (temperature sensor 30).

Ex1002-69-70.

FIG. 1



Ex1018, FIG. 1.

Anson states, “Low and high temperature tanks, water sources 12, 14, are associated with low and high temperature outlet tubes, first outlet tube 18, second outlet tube 20...Low and high temperature valves, first valve 22 and second valve

24 are in communication with and controllably operated by controller

16....Temperature sensor 30 is associated with the common passage 26 in a position to sense the water's temperature in the common passage 26. 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...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...directly into another portion of food or beverage making equipment for use in a particular food or beverage making application. In use, a user inputs a desired Dispense Temperature...into the controller 16 using input device 17...Temperature sensor 30 senses the temperature of the mixed volume to verify the mixed volume temperature is at the Dispense Temperature, in this example, at 72° F. If the mixed volume temperature is not correct, controller 16 may operate first and second valves 22, 24 to dispense more high or low temperature water to achieve the desired temperature.” Ex1018, ¶¶0014-0019. Anson explains, “...the desired hot water characteristics, such as temperature and volume, are entered...In a next step 52, a volume of water from each tank...dispensed into common dispensing passage 26 to form a mixed volume. The temperature of mixed volume is sensed in step 56 and compared to the selected Dispense Temperature in step 58. If the mixed

volume temperature does not match the Dispense Temperature within acceptable tolerances, the valves 22, 24 are operated to dispense either cooler or hotter water to adjust the mixed volume's temperature (step 60). Excess water building up in common tube 26 may be drained via drain tube 32 (step 62). If the mixed volume temperature matches the Dispense Temperature, drain tube 32 is closed and the selected or recalled volume of water is dispensed to container 38 or to another portion of the beverage making process (step 64).” Ex1018, ¶0023, Ex1002-70-72.

(c) “the electronic controller selectively switching from the first selective directional flow path of the active state to the second selective directional flow path of the active state.”

Coccia discloses the controller switching valve 26 between the two states.

Coccia states, “The operating positions of the electrovalve 26 are preferably controlled by the control unit 22.” Ex1006-¶0049. Coccia further states, “...electrovalve 26, in 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.” Ex1006-¶¶0045-0046; Ex1002-72.

If Coccia does not disclose this element, a POSA would have understood that such connections were well known in the prior art including at least by Anson. Ex1002-72.

Anson states, “Mixing valve 28 may be operated by controller 16 to selectively permit flow to dispensing tube 34 or drain tube 32...” Ex1018, ¶¶0015; Ex1002-72-73.

Accordingly, Coccia in view of the knowledge of a POSA, Lai, Santi, and/or Anson renders claim 4 obvious. Ex1002-73.

3. Claim 5

- (a) **“The infused beverage brewing assembly according to claim 4, wherein: the resulting solvent valve is disposed downstream of the conduit joint,”**

The language of this limitation is almost identical to a portion of the language of claim limitation 1(g). Accordingly, the above analysis regarding claim limitation 1(g) applies equally to this limitation. Ex1002-73.

- (b) **“the first solvent conduit having a temperature measuring device coupled thereto, in fluid communication therewith downstream of the solvent temperature management system, and communicatively coupled to the electronic controller,”**

Coccia does not disclose this limitation.

A POSA would have understood that this feature was commonly known in the prior art, including disclosures by Lai and Santi. Ex1002-73.

Lai teaches, “Importantly, the water temperature is regulated throughout the brewing process for optimum brewing and taste. In connection with this, a water temperature sensor 198 detects a temperature of the water exiting the heater 136 and relays this temperature to the PCB 196 of the control panel 118. The heater power and pump rate may then be adjusted to keep the water temperature within the optimal range.” Ex1012, ¶98. Lai confirms the fluid coupling: “a temperature sensor in fluid communication with an outlet of said heater and electrically coupled to said control unit.” Ex1012, claim 31, Ex1002-73-74.

Santi, referring to his own FIGS. 3-4, discloses, “a second temperature sensor 60, positioned downstream of the hot water dispensing point of the same heating means 40...by means of the control means 80, the number of calories to be produced and the energy required for this purpose are calculated. In this case, the second temperature sensor 60 performs a control for the feedback which can subsequently trigger corrective actions...” Ex1010-¶¶0089, 0092, claims 10-14. Santi confirms that the sensors are in fluid communication with the water flowing through the system: “These can be positioned at the input of the brewing portion to ensure precise control of the temperature to be used in contact with the coffee. The temperature sensor can also, or concurrently, be positioned at the heating means. In particular, it can be positioned in contact with the heating means and/or at the hot water dispensing point thereof.” Ex1010-¶0038; Ex1002-74.

- (c) **“the electronic controller operably configured to send a control signal to the solvent temperature management system to dynamically and thermally modulate the solvent disposed within the first solvent conduit to the raised temperature when receiving a temperature from the temperature measuring device coupled to the first solvent conduit.”**

Coccia does not disclose this limitation.

A POSA would have understood that this feature was commonly known in the prior art, including disclosures by Lai and Santi. Ex1002-75.

Lai teaches, “Importantly, the water temperature is regulated throughout the brewing process for optimum brewing and taste. In connection with this, a water temperature sensor 198 detects a temperature of the water exiting the heater 136 and relays this temperature to the PCB 196 of the control panel 118. The heater power and pump rate may then be adjusted to keep the water temperature within the optimal range.” Ex1012, ¶98, Ex1002-75.

Santi teaches, “...by means of the control means 80, the number of calories to be produced and the energy required for this purpose are calculated. In this case, the second temperature sensor 60 performs a control for the feedback which can subsequently trigger corrective actions...” Ex1010-¶¶0089, 0092, claims 10-14; Ex1002-75.

Accordingly, Coccia in view of one or more of the knowledge of a POSA, Lai, Santi, and/or Anson renders claim 5 obvious. Ex1002-75.

4. Claim 6

- (a) “The infused beverage brewing assembly according to claim 4, wherein: the desired temperature is greater than the resulting solvent temperature.”**

Coccia discloses the desired temperature (T2) is greater than the resulting solvent temperature (T1).

Coccia states: “...the water supplied to the inlet 30 of the heating chamber 12 from the supply duct 11...is already at a relatively high supply temperature T1 (for example not lower than approximately 80° C.) and therefore the heating time needed to reach the optimum temperature T2 for the formation of the beverage (for example, approximately 90° C.) is short...” Ex1006-¶0051; Ex1002-76.

Accordingly, Coccia in view of one or more of the knowledge of a POSA, Lai, Santi, and/or Anson renders claim 6 obvious. Ex1002-76.

5. Claim 9

- (a) **“The infused beverage brewing assembly according to claim 1, further comprising: an electronic controller operably configured to send a control signal to the solvent temperature management system to dynamically and thermally modulate the solvent disposed within the first solvent conduit with respect to a brew parameter that includes at least one of an overall time and dispensed volume of the infused beverage.”**

Coccia does not disclose this limitation.

A POSA would have understood that this feature was commonly known in the prior art, including disclosures by Lai and Santi. Ex1002-84.

Lai teaches, “...the PCB 196 may control the temperature of the heater 136 through the heater sensor 194.” Ex1012, ¶97. Lai states, “Importantly, the water temperature is regulated throughout the brewing process for optimum brewing and taste. In connection with this, a water temperature sensor 198 detects a temperature of the water exiting the heater 136 and relays this temperature to the PCB 196 of the control panel 118. The heater power and pump rate may then be adjusted to keep the water temperature within the optimal range.” Ex1012, ¶98. Lai teaches that the operation is based upon user-selectable brew parameters, including volume (serving size) and/or overall time (timer setting): “A user then selects the desired coffee/beverage settings from the control panel 118. Settings may include

selectable options such as coffee strength and serving size, timer setting, automatic brew, etc.” Ex1012 ¶0076, Ex1002-84-85.

Santi describes a prior art system with, “...a control device capable of interrupting the flow of the pump and/or the heating of the heating device when the temperature exceeds a given threshold value.” Ex1010-¶0012. Santi describes a second prior art system, “This machine also has a temperature sensor, connected to a control device, capable of detecting the temperature of the water supplied to the brewing chamber. By means of the control device, the temperature of the water is therefore regulated...to perform brewing.” Ex1010-¶0014; Ex1002-85.

Santi, referring to his own FIG. 4, describes control during brewing, “The advantage of a further temperature sensor that detects the temperature of the input water lies in greater precision of the operating phase. In fact, in this way the variations in temperature of the input water can be kept under control, whatever the supply source...Therefore, by means of the control means 80, the number of calories to be produced and the energy required for this purpose are calculated. In this case, the second temperature sensor 60 performs a control for the feedback which can subsequently trigger corrective actions...” Ex1010-¶0092, claims 10-14. Santi confirms that heat is modulated with respect to a brew parameter (volume): “By means of this embodiment, also controlling parameters such as the pressure and the volume of the water effectively dispensed through the pumping

means 200, constituted by a volumetric dosing device, it is possible to calculate the thermal gradient necessary to obtain the desired temperature of the water dispensed by the heating means 40.” Ex1010-¶0092.

Accordingly, Coccia in view of one or more of the knowledge of a POSA, Lai, Santi, and/or Anson renders claim 9 obvious. Ex1002-86.

6. Claim 10

Claim 10 is not challenged in this petition.

7. Claim 11

- (a) “An infused beverage brewing assembly comprising:”**
- (b) “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 at least one solvent conduit having a first solvent conduit and a second solvent conduit;”**
- (c) “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 at least one solvent conduit to a raised temperature;”**

Claim 11 limitations (a), (b), and (c) are almost identical to the language of claim 1 limitations (a), (b), and (c). The only significant difference is that claim 1(b) term “induce a flow of the solvent through a first solvent conduit and a second

solvent conduit” has been changed in claim 11(b) to “induce a flow of the solvent through at least one solvent conduit having a first solvent conduit and a second solvent conduit.” The analysis of claim 1(b) and Coccia’s FIGS. 1-2 show that the pump (4, 35) induce flow through multiple conduits (3, 6, 8, 11, etc.). Ex1002-86-87.

Accordingly, the above analysis regarding claim 1 limitations (a), (b), and (c) applies equally to claim 11 limitations (a), (b), and (c). Ex1002-87.

(d) “a brewing chamber in fluid communication with the at least one solvent conduit and for housing a solute disposed to receive the solvent to produce an infused beverage;”

(e) “an outlet for discharging the infused beverage; and”

Claim 11 limitations (d) and (e) are almost identical to the language of claim 1 limitations (e) and (f). The only significant difference is that claim 1(e) term “in fluid communication with the resulting solvent conduit” has been changed in claim 11(d) to “in fluid communication with the at least one solvent conduit.” As shown in the analysis of claim 1 limitations (a) through (h), conduits 3, 6, 8, 11, 12, 23, and 25 are all in fluid communication with one another. Thus, being in fluid communication with the resulting solvent conduit (11) is the same as being in fluid communication with the at least one solvent conduit (6). Ex1002-87-88.

Accordingly, the above analysis regarding claim 1 limitations (e) and (f) applies equally to claim 11 limitations (d) and (e). Ex1002-88.

- (f) “an electronic controller communicatively coupled to the solvent temperature modulation system and operably configured to send a control signal to the solvent temperature management system to dynamically and thermally modulate the solvent disposed within the first solvent conduit to a raised temperature”**

Claim 11 limitation (f) is almost identical to the language of claim 4 limitation (a) and a large portion of claim 5 limitation (c). The only significant differences are that claim 1 limitation (a) has additional requirements not required by claim 11 limitation (f) and that claim 5 limitation (c) includes additional requirements not required by claim 11 limitation (f). Ex1002-88.

Accordingly, the above analysis regarding claim 4 limitation (a) and claim 5 limitation (c) applies equally to claim 11 limitation (f). Ex1002-88.

- (g) “when receiving a temperature from a temperature measuring device fluidly coupled to at least one of the first solvent conduit downstream of the solvent temperature modulation system and”**

Claim 11 limitation (g) is almost identical to a large portion of the language of claim 5 limitation (b) and the last part of claim 5 limitation (c). The only significant differences are that the language is rearranged in claim 11 limitation (g) and that the claim 5(c) term “coupled to the first solvent conduit” has been

changed in claim 11(g) to “coupled to at least one of the first solvent conduit...and...” Ex1002-88-89.

Accordingly, the above analysis regarding claim 5 limitations (b) and (c) applies equally to claim 11 limitation (g). Ex1002-89.

- (h) “a resulting solvent conduit and a conduit joint formed by the first and second solvent conduits directly coupling together, the resulting solvent conduit with a resulting solvent disposed therein at a resulting temperature and the temperature measuring device fluidly coupled upstream of the brewing chamber.”**

Much of the language of claim 11 limitation (h) is almost identical to a large portion of the language of claim 1 limitation (d) and the last part of claim 5 limitation (c). However, where claim 1 limitation (d) defines the requirements of the “resulting solvent conduit” and “conduit joint,” claim 11 limitation (h) provides the requirements of the “resulting solvent conduit” and “conduit joint” as an alternative location for coupling the temperature measuring device of claim 11 limitation (g), and also specifies that the temperature measuring device is upstream of the brewing chamber. Ex1002-89.

As noted in the claim construction, the patent applicant stated that “coupling” may be indirect coupling. Thus, coupling the “temperature measuring

device” to the “resulting solvent conduit” may be accomplished by coupling the “temperature measuring device” to any of the conduits (3, 6, 8, 11, 12, 23, 25), which would ensure that the device was indirectly coupled to the resulting solvent conduit. As shown in the analysis of claim 1 limitations (a) through (h), conduits 3, 6, 8, 11, 12, 23, and 25 are all in fluid communication with one another.

Ex1002-89-90.

Accordingly, the above analysis of the “resulting solvent conduit” and “conduit joint” in claim 5 limitation (c) and claim 1 limitation (d) applies equally to claim 11 limitation (h). And the analysis of claim 3, showing a “temperature measuring device coupled to and in fluid communication with the resulting solvent conduit” also applies equally to claim 11 limitation (h). Coccia in view of one or more of the knowledge of a POSA, Lai, Santi, and/or Anson renders claim 11 obvious. Ex1002-90.

8. Claim 12

- (a) “The infused beverage brewing assembly according to claim 11, wherein the electronic controller is operably configured to send a control signal to the solvent flow management system 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.”**

Claim 12 is almost identical to a large portion of the language of claim 5 limitation (c) and the “higher and different...” language of claim 1(c). The only

significant difference is that the claim 5(c) term “signal to the solvent temperature management system” has been changed in claim 12 to “signal to the solvent flow management system.” Ex1002-90-91.

Accordingly, much of the above analysis regarding claim 5 limitation (c) applies equally to claim 12. Ex1002-91.

As noted in the analysis of Lai and Santi with respect to claim 5 limitation (c), the pump can be signaled for thermal modulation:

Lai teaches, “Importantly, the water temperature is regulated throughout the brewing process for optimum brewing and taste. In connection with this, a water temperature sensor 198 detects a temperature of the water exiting the heater 136 and relays this temperature to the PCB 196 of the control panel 118. The heater power and pump rate may then be adjusted to keep the water temperature within the optimal range.” Ex1012, ¶98, Ex1002-91.

Santi teaches, “...by means of the control means 80, the number of calories to be produced and the energy required for this purpose are calculated. In this case, the second temperature sensor 60 performs a control for the feedback which can subsequently trigger corrective actions...” Ex1010-¶¶0089, 0092, claims 10-14; Ex1002-91.

Accordingly, Coccia in view of one or more of the knowledge of a POSA, Lai, Santi, and/or Anson renders claim 12 obvious. Ex1002-91-92.

9. Claim 13

- (a) “The infused beverage brewing assembly according to claim 12, wherein the electronic controller is operably configured to send a control signal to the solvent temperature management system to dynamically and thermally modulate the solvent disposed within the first solvent conduit with respect to a brew parameter that includes at least one of an overall time and dispensed volume of the infused beverage.”**

Claim 13 is almost identical to the language of claim 9. Accordingly, the above analysis regarding claim 9 applies equally to claim 13. Coccia in view of one or more of the knowledge of a POSA, Lai, Santi, and/or Anson renders claim 13 obvious. Ex1002-92.

10. Claim 14

- (a) **“The infused beverage brewing assembly according to claim 12, further comprising: a resulting solvent valve disposed upstream of the brewing chamber, downstream of the conduit joint, and in fluid communication with the resulting 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.”**

Claim 14 is almost identical to the language of claim 1 limitations (g), (h), (i), and (j). The only significant difference is that claim 1’s term “in fluid communication with the solvent conduit” has been changed in claim 14 to “in fluid communication with the resulting solvent conduit.” The analysis of claim 1 addresses the “resulting” solvent conduit. Ex1002-93.

Accordingly, the above analysis regarding claim 1 limitations (g), (h), (i), and (j) applies equally to claim 14. Ex1002-93.

11. Claim 15

- (a) **“The infused beverage brewing assembly according to claim 14, wherein: the temperature measuring device is coupled to and in fluid communication with the resulting solvent conduit and operably configured to measure the resulting solvent temperature and communicate the resulting solvent temperature to the electronic controller.”**

Claim 15 is almost identical to the language of claim 3. Accordingly, the above analysis regarding claim 3 applies equally to claim 15. Coccia in view of one or more of the knowledge of a POSA, Lai, Santi, and/or Anson renders claim 15 obvious. Ex1002-94.

12. Claim 16

- (a) **“The infused beverage brewing assembly according to claim 15, wherein: the electronic controller communicatively is coupled to the solvent temperature modulation system, the valve, the temperature measuring device, the electronic controller operably configured to at least one of dynamically modulate the solvent temperature modulation system and selectively maintain the valve in the first selective directional flow path of the active state until the desired temperature of the resulting solvent is ascertained by the temperature measuring device, the electronic controller selectively switching from the first selective directional flow path of the active state to the second selective directional flow path of the active state.”**

Claim 16 is almost identical to the language of claim 4. Accordingly, the above analysis regarding claim 4 applies equally to claim 16. Coccia in view of

one or more of the knowledge of a POSA, Lai, Santi, and/or Anson renders claim 16 obvious. Ex1002-94-95.

D. Ground 4: Claim 7 is Obvious over Coccia in View of One or More of the Knowledge of a POSA, Lai, Santi, Porzio and/or Anson

1. Claim 7

- (a) “The infused beverage brewing assembly according to claim 6, wherein: the solvent temperature modulation system is a heating exchanging container having a heating element and solvent disposed therein.”**

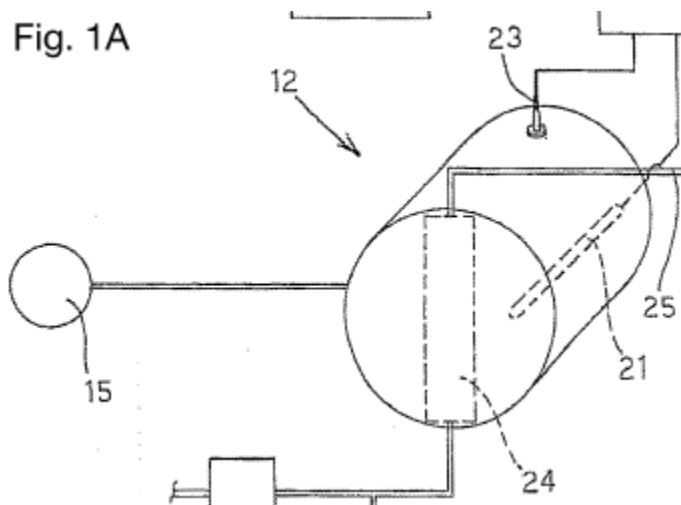
Coccia discloses that the solvent temperature modulation system (boiler 1, heat exchanger 5) is a heating exchanging container (boiler 1) having a heating element (not pictured) and solvent (heated water) disposed therein. Ex1002-76.

Coccia states, “A conventional boiler 1 for the production of hot water and steam is supplied in a conventional manner (not shown in the figure) by an external water source of cold water 2. The water source 2, by means of a duct 3 and a hydraulic pump 4, supplies a heat exchanger 5, also conventional, disposed within the boiler 1.” Ex1006-¶0037; Ex1002-77.

A POSA would have recognized that description of a “conventional” heat exchanger would have included the limitations of claim 7. Ex1002-77. A POSA would have recognized that the “convention boiler” supplied by “an external water source of cold water” would have had a solvent (i.e., water) disposed in the boiler

and would have had an internal heating element to allow “for the production of hot water and steam.” Ex1002-77.

If Coccia does not disclose these limitations, Porzio discloses that the solvent temperature modulation system (12) is a heating exchanging container (12, 24) having a heating element (heating unit 21) and solvent (mains water) disposed therein:



Porzio states, “Boiler 12, of a known type, comprises in the preferred embodiment a heating unit 21...Boiler 12 is preferably fed with mains water...In the first embodiment boiler 12 also comprises a heat exchange unit (heat exchanger) 24” Ex1014, page 6:17-26; Ex1002-78.

Accordingly, Coccia in view of the knowledge of a POSA, Lai, Santi, Porzio, and/or Anson renders claim 7 obvious. Ex1002-78.

E. Ground 5: Claim 8 is Obvious over Coccia in View of One or More of the Knowledge of a POSA, Lai, Santi, Porzio, Aigner, Majer II, White, and/or Anson

1. Claim 8

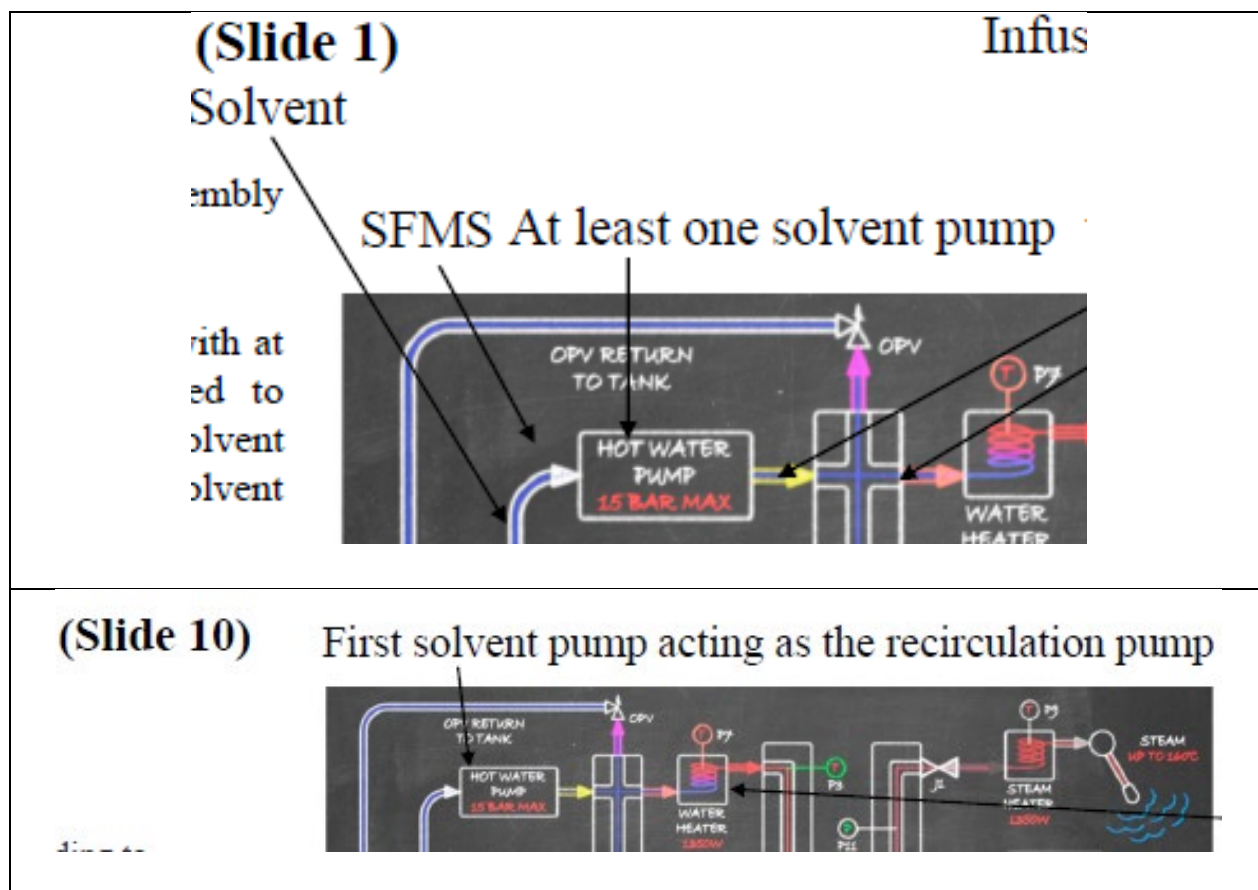
- (a) “The infused beverage brewing assembly according to claim 7, wherein: the removal conduit spans from the resulting solvent valve to the heating exchanging container to form a recirculation conduit, the recirculation conduit having a recirculation pump fluidly coupled thereto and operably configured to induce a flow of the resulting solvent to the heating exchanging container.”**

Coccia does not disclose a removal conduit spanning from the valve to the heat exchanger or a recirculation pump coupled thereto. Instead, Coccia discloses that the electrovalve 26, in one position, “discontinues the supply of the water and communicates with a discharge 27 external to the machine.” Ex1006 ¶0046.

Coccia disclosed a machine in which water was supplied by “an external water source of cold water 2.” Ex1006 ¶0037. However, a POSA designing a machine that included a finite, refillable water source, such as a tank, would have been motivated to preserve water to reduce the number of refills needed. Thus, a POSA would have found the inclusion of a recirculation conduit, as claimed to be obvious in view of one or more of the knowledge of a POSA, Aigner, Majer II, and/or White. Ex1002-78-79.

In construing this claim, Petitioner reserves the right to seek a different construction in district court, but notes that Patent Owner has construed the claim

such that the “at least one solvent pump” of claim 1(b) is also the “a recirculation pump” of this claim. This is apparent in the infringement contentions, where Patent Owner asserts that the “HOT WATER PUMP” satisfies both limitations:



Ex1017-1, Ex1017-10. Thus, for purposes of this proceeding only, Patent Owner’s assertion should be adopted.

Accordingly, Coccia discloses the claimed recirculation pump (4, 35) operably configured to induce a flow of the resulting solvent (mixed water) to the heat exchanging container (5, 1). The recirculation conduit could have been realized by connecting discharge 27 to the input of the pump (4, 35). Ex1002-80.

A POSA would have been motivated to do so, and would have had knowledge of each of the disclosures of Aigner, Majer II, and/or White. Ex1002-80. Thus, this limitation would have been obvious in view of the knowledge of a POSA. Ex1002-80.

Aigner discloses a coffee machine (10) with a first solvent pump (20) inducing the flow of solvent (water) through a first conduit (water pipe 18) and heater 14 past a temperature sensor 32, and to a valve 36. Ex1020 ¶¶0017, 0023. Controller 34 receives a signal from temperature sensor 32 and controls valve 36 to direct water to recirculate via recirculation conduit (return pipe 24) to pump 20 and heater 14 until a predetermined temperature has been reached, at which time controller 34 controls valve 36 to direct water to brewing chamber 16. Ex1020

¶¶0023-

0025;

Ex1002-80.

See FIG. 2:

Ex1019-9.

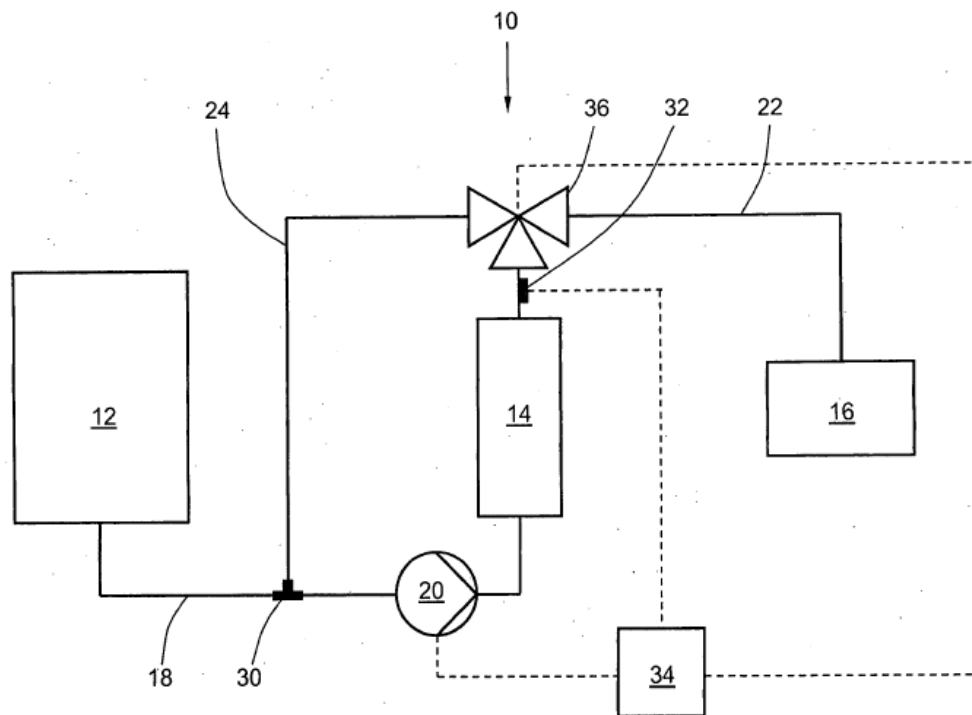
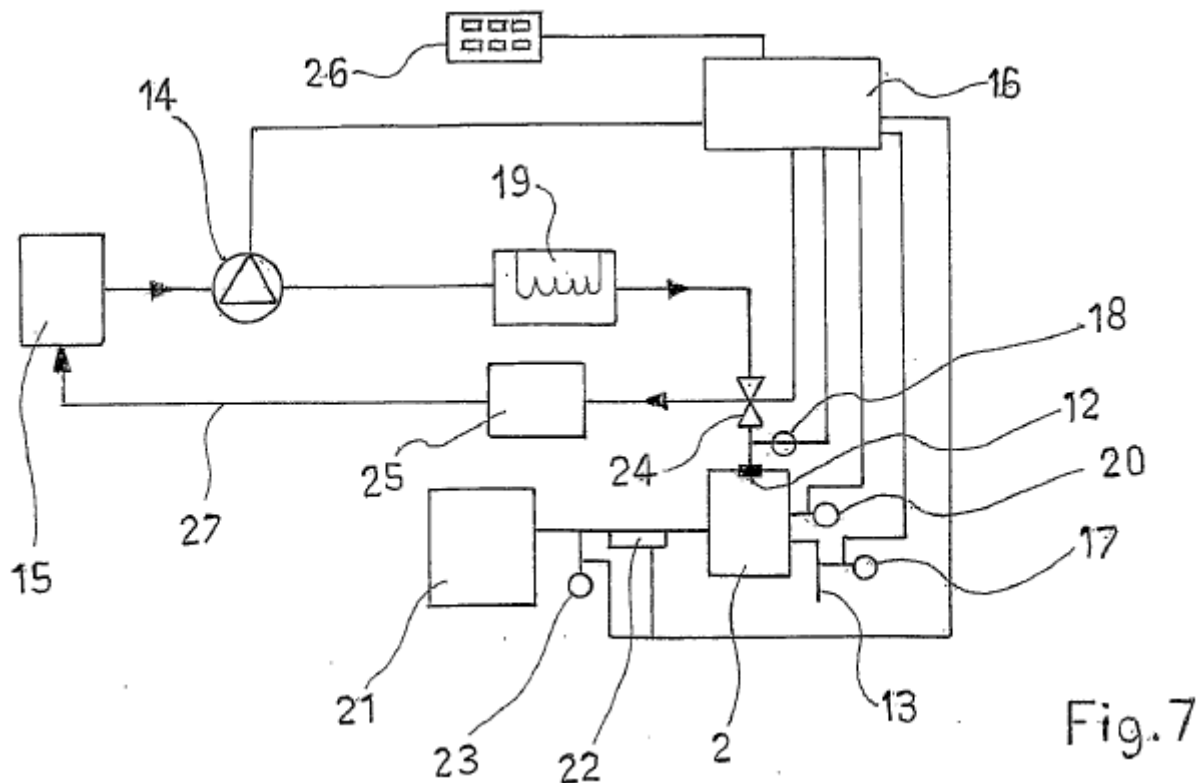


Fig. 2

Aigner states, “Depending on the switching position of the 2-way valve 36, the water can now flow either into the water pipe 22 or into the return pipe 24.”
Ex1020 ¶0024; Ex1002-81.

Majer II discloses a coffee machine with a first solvent pump (14) inducing the flow of solvent (water) through a first conduit and heating device 19 to a valve 24. Ex1022 ¶¶0052-0054, 0078. Controller 16 receives a signal from sensor 18 and controls valve 24 to direct water to recirculate via recirculation conduit (27) to reservoir 15, pump 20, and heater 14 until controller 16 controls valve 24 to direct water to brewing chamber 2. Ex1022 ¶¶0052-0054, 0078; Ex1002-81-82. This machine is shown in FIG. 7:

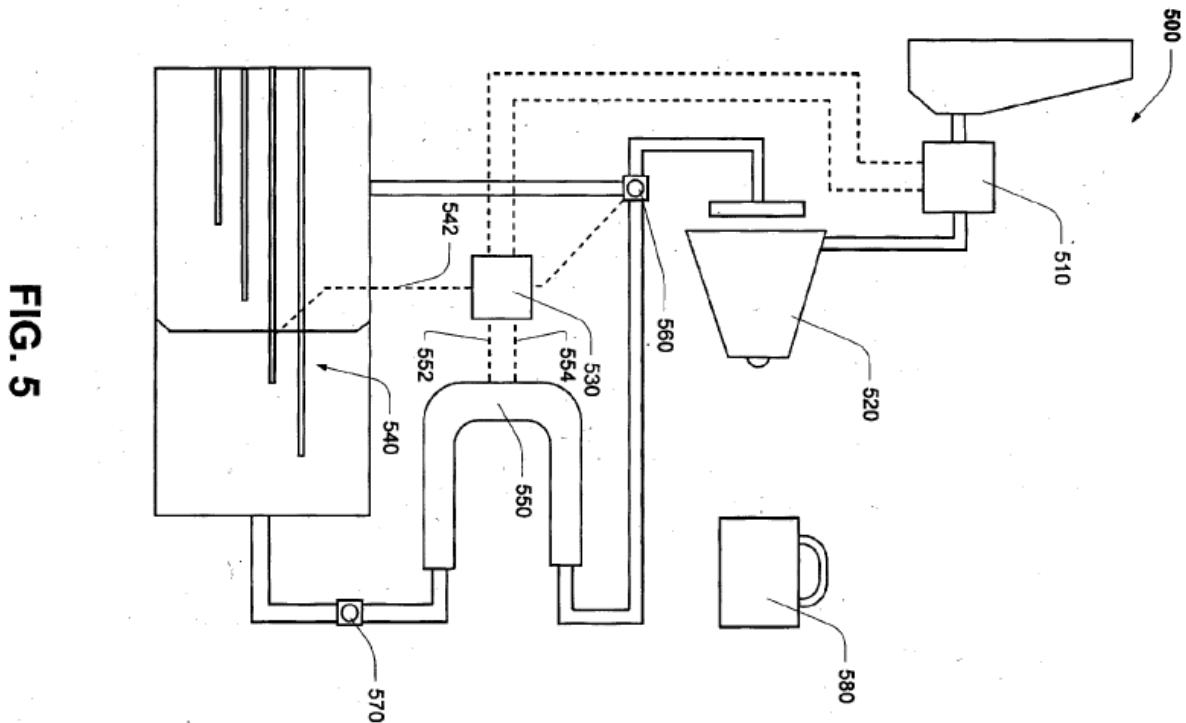


Ex1022-4.

Majer II states, “valve 24 is operated to send a portion of the flow of water to a circuit...connected to reservoir 15, or to the pump or to a discharge means.”

Ex1022 ¶0078; Ex1002-82.

White discloses a beverage brewing machine (500) with a first solvent pump (not shown) inducing the flow of solvent (fluid in reservoir) through a first conduit and heater 550 to a recycle valve 560. Ex1023-9:23-27, 14:12-15:3. Controller 530 receives a signal from temperature sensor (not shown) and controls recycle valve 560 to direct solvent to recirculate to reservoir, pump, and heater 560 until a condition is met, at which time controller 530 controls valve 560 to direct water to brewing chamber 520. *Id.*; Ex1002-82-83. This machine is shown in FIG. 5:



Ex1023.

White states, “These embodiments include...a recycle valve 560 controlled by the processor element to inhibit or allow a determined fluid temperature within the riser to pass towards the brew chamber or reservoir...”
Ex1023-12:27-30; Ex1002-83.

Accordingly, Coccia in view of knowledge of a POSA, Lai, Santi, Porzio, Aigner, Majer II, White, and/or Anson renders claim 8 obvious. Ex1002-83-84.

X. Mandatory Notices

A. Real Party-In-Interest

Decent Espresso International Ltd. is the real party-in-interest.

B. Related Matters

Duvall Espresso IP Enforcement, LLC (“Duvall” or “Patent Owner”) asserted the ‘456 patent against Petitioner in *Duvall Espresso IP Enforcement, LLC v. Decent Espresso International Ltd. et al.*, Case No. 9:23-cv-81246-DMM (S.D. Fla.).

C. Counsel

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Petitioner consents to email delivery on lead and backup counsel.

XI. Conclusion

Based on the foregoing, claims 1-9 and 11-16 of the '456 patent are unpatentable, and Petitioner requests institution of an *inter partes* review to cancel them.

Respectfully submitted,

By: /s Perry S. Clegg/

Perry S. Clegg, Reg. No. 65,304

Appendix of Exhibits for U.S. Patent 10,772,456 – Petition for *Inter Partes* Review

Exhibit	Description
1001	U.S. Patent No. 10,772,456
1002	Declaration of Ian Tinkler, dated September ***, 2024
1003	European Patent Publication EP 2 612 577 A1 (“Buttiker”)
1004	Translation of European Patent Publication EP 2 612 577 A1
1005	Declaration Certifying Translation of European Patent Publication EP 2 612 577 A1
1006	U.S. Patent Application Publication No. 2011/0097454A1 (“Coccia”)
1007	File History for U.S. Pat. App. Serial No. 16/383,607
1008	U.S. Patent No. 8,973,487 B2 (collectively with Ex1009, “Startz”)
1009	U.S. Patent Application Publication No. 2012/0291634A1 (collectively with Ex1008, “Startz”)
1010	U.S. Patent Application Publication No. 2014/0053734A1 (“Santi”)
1011	International Publication No. WO2012/146660A1
1012	U.S. Patent Application Publication No. 2012/0171332A1 (“Lai”)
1013	International Publication No. WO2011/151703A2 (“Majer”)
1014	International Publication No. WO2011/158131A1 (“Porzio”)
1015	File History for U.S. Pat. App. Serial No. 61/742,688
1016	Patent Owner Infringement Contention Pleading
1017	Patent Owner Claim Chart for 456 Patent
1018	U.S. Patent Application Publication No. 2006/0042470A1 (“Anson”)
1019	European Patent Publication 1 986 530 B1 (“Aigner”)
1020	Translation of European Patent Publication 1 986 530 B1
1021	Declaration Certifying Translation of European Patent Publication 1 986 530 B1
1022	U.S. Patent Application Publication No. 2008/0050480 (“Majer II”)
1023	International Publication WO/2013/003891A1 (“White”)

CERTIFICATE OF COMPLIANCE REGARDING WORD COUNT

I hereby certify that the foregoing, Petition for *Inter Partes* Review of U.S. Patent 10,772,456, contains 13,971 words as measured by the word processing software used to prepare the document, in compliance with 37 C.F.R. § 42.24 (d), and excluding the table of contents, mandatory notices, certificate of service, certificate of compliance regarding word count, and appendix of exhibits.

Respectfully submitted,

By: /s Perry S. Clegg/

Perry S. Clegg, Reg. No. 65,304

CERTIFICATE OF SERVICE

I hereby certify that on September 26, 2024, I caused a true and correct copy
of the foregoing materials:

- Petition for Inter Partes Review
- Certificate of Compliance Regarding Word Count
- Decent Espresso International Ltd. Power of Attorney
- Fee Authorization
- Exhibits 1001-1023

to be served via FedEx on the following correspondence address as listed on PAIR,
by depositing same with FedEx for overnight delivery:

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Respectfully submitted,

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