

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To: STEPHEN E. MURRAY PANITCH SCHWARZE BELISARIO & NADEL LLP TWO COMMERCE SQUARE 2001 MARKET STREET, SUITE 2800 PHILADELPHIA, PA 19103
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Date of mailing (day/month/year)	JUL 27 2023
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Applicant's or agent's file reference 689010-72WO		FOR FURTHER ACTION See paragraph 2 below	
International application No. PCT/US 23/21099	International filing date (day/month/year) 05 May 2023 (05.05.2023)	Priority date (day/month/year) 10 June 2022 (10.06.2022)	
International Patent Classification (IPC) or both national classification and IPC IPC - INV. B67D 7/06, B67D 1/08 (2023.01) ADD. B67D 1/00, A47J 31/00 (2023.01) CPC - INV. B67D 1/0054, B67D 7/06, B67D 1/08 ADD. B67D 1/00, A47J 31/00			
Applicant QUENCH USA, INC.			

1. This opinion contains indications relating to the following items: ☒ Box No. I Basis of the opinion ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☐ Box No. VII Certain defects in the international application ☒ Box No. VIII Certain observations on the international application	
2. FURTHER ACTION If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered. If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later. For further options, see Form PCT/ISA/220.	

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Date of completion of this opinion 07 July 2023 (07.06.2023)	Authorized officer Kari Rodriguez PCT Help Desk Telephone No. 571-272-4300
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US 23/21099

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:



the international application in the language in which it was filed.



a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(b)).

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

a. ☐

forming part of the international application as filed.

b. ☐

furnished subsequent to the international filing date for the purposes of international search (Rule 13ter.1(a)),



accompanied by a statement to the effect that the sequence listing does not go beyond the disclosure in the international application as filed.

4. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established to the extent that a meaningful opinion could be formed without a WIPO Standard ST.26 compliant sequence listing.

5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US 23/21099

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-18	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-18	NO
Industrial applicability (IA)	Claims	1-18	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-3 and 10-13 lack an inventive step under PCT Article 33(3) as being obvious over US 2015/0128615 A1 to Hu et al. (hereinafter 'Hu') in view of JP 8-238178 A to HOSHIZAKI ELECTRIC CO LTD (hereinafter 'HOSHIZAKI').

Regarding claim 1, Hu discloses a water-dispensing device (Fig. 1; para[0037]) comprising:

a water tank (1, Fig. 1; para[0031], 'In the present invention the term "beverage" represents either a beverage that can be readily drunk like a prepared beverage (often called ready-to-drink) or water'; para[0037], 'a beverage cooling reservoir 1');

a dispensing line in fluid communication with the water tank (9, Fig. 1; para[0039], 'The beverage flows out of the reservoir 1 through an outlet 9 that is preferably a plunger tube of which inlet 91 is positioned near from the bottom of the reservoir');

a pump configured to draw water from the water tank into the dispensing line (4, Fig. 1 - see pump 4 configured to draw water from the tank 1 into the dispensing line 9; para[0041], 'When the dispense valve 51 is opened, the selector valve 7 is positioned so as to close the recirculation line 6 and the pump 4 is activated to deliver the cold beverage from the reservoir 1 to the dispense valve 51 through the dispensing line 5');

an outlet line (5, Fig. 1; para[0041], 'dispensing line 5');

a dispensing valve (51, Fig. 1; para[0041], 'dispensing valve 51');

a valveless directional fitting that couples the dispensing line to the outlet line for enabling fluid communication therebetween (8, Fig. 1 - see valveless directional fitting 8 that couples the dispensing line 9 to the outlet line 9 for enabling fluid communication therebetween; para[0041], 'According to the invention the dispenser comprises a beverage recirculation line 6 for recirculating the beverage from the beverage cooling reservoir outlet 9 through the selector valve 7 and the pump 4 back to the reservoir 1. This line is connected to the reservoir outlet 9 and to the dispensing line 5 by a three-way connector 8 like a T-tube', the fitting having a hollow main body extending between an inlet port and a dispensing port (Fig. 1 - see how the fitting 8 has a hollow main body extending between a bottom inlet port and right dispensing port), the dispensing line being connected to the inlet port and the outlet line being connected to the dispensing port (Fig. 1; para[0041]), the fitting having a recirculation port that intersects an interior of the hollow main body (Fig. 1 - see how the fitting 8 has a left recirculation port connected to the recirculation line 6, said port intersecting the interior of the body; para[0041]); and

a recirculation line connected at one end to the recirculation port of the fitting and at an opposing end to the water tank to place the water tank in fluid communication with the recirculation port (6, 12, Fig. 1 - see recirculation line comprising line 6 and line 12 connected at one end to the recirculation port of fitting 8, and at an opposing end to the tank 1 to place the tank in fluid communication with the port; para[0041], 'According to the invention the dispenser comprises a beverage recirculation line 6 for recirculating the beverage from the beverage cooling reservoir outlet 9 through the selector valve 7 and the pump 4 back to the reservoir 1. This line is connected to the reservoir outlet 9 and to the dispensing line 5 by a three-way connector 8 like a T-tube. The other side of the recirculation line 6 is connected to the pump 4...When the dispense valve 51 is closed and the recirculation is activated, the selector valve 7 is positioned so as to close the supply of water 3 to the reservoir 1 and so as to connect the recirculation line 6 with the inlet 12 and the pump 4 is activated'); but does not specifically teach a spigot downstream of the outlet line and in selective fluid communication therewith via the dispensing valve; and the recirculation port having a diameter that is smaller than a diameter of the dispensing port. While Hu does not specifically teach the recirculation port having a diameter that is smaller than a diameter of the dispensing port, it is well known in the art that routine experimentation and various engineering design choices could have been used in order to have arrived at the recirculation port having a diameter that is smaller than a diameter of the dispensing port. Accordingly, it would have been obvious to one of ordinary skill in the art to have arrived at the recirculation port having a diameter that is smaller than a diameter of the dispensing port for Hu's dispensing device, in order to have allowed for a more efficient dispensing device that encourages flow through the dispensing port over the recirculation port when dispensing is desired.

Further, Hu does not specifically teach a spigot downstream of the outlet line and in selective fluid communication therewith via the dispensing valve.

However, HOSHIZAKI discloses a water-dispensing device (Fig. 5, 7; para[0010] - see translation) comprising: a water tank (10, Fig. 5, 7; para[0003], 'hot water storage tank 10' - see translation); a dispensing line in fluid communication with the water tank (26, Fig. 7 - see dispensing line 26 extending from pump 22 to the T-fitting; para[0003], 'a suction pipe 24...a discharge pipe 26' - see translation); a pump configured to draw water from the water tank into the dispensing line (22, Fig. 7; para[0003], 'a hot water supply pump 22 is communicatively connected to the bottom of the hot water storage tank 10, and a discharge pipe 26 of the pump 22' - see translation); an outlet line (Fig. 7 - see outline line extending to the right of the T-fitting to the valve 30 and spigot 28); a dispensing valve (30, Fig. 7 - see dispensing valve 30; para[0003], 'a pouring valve 30' - see translation); a spigot downstream of the outlet line and in selective fluid communication therewith via the dispensing valve (28, Fig. 7 - see spigot 28 downstream of the outlet line and in selectively communication with the valve 30; para[0003], 'a beverage pouring nozzle 28' - see translation). Accordingly, it would have been obvious to one of ordinary skill in the art to have modified the dispensing arrangement of Hu's system by employing the dispensing valve and connected spigot as taught by HOSHIZAKI, in order to have allowed for a more effective and user friendly dispensing device.

-*-Continued in Supplemental Box-*-

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US 23/21099

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 7: The term "the maximum recirculation time" is confusing and lacks proper antecedent basis on claim 7, from which claim 7 is dependent. Specifically, claim 7 is improperly dependent upon itself. For purposes of this opinion, claim 7 is interpreted as being dependent from claim 6, which provides proper antecedent basis.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US 23/21099

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

-*-Box V.2 - Citations and Explanations--*-

Regarding claim 2, Hu in view of HOSHIZAKI disclose the device of claim 1, and Hu further teaches the device further comprising a controller in wired or wireless communication with the pump (15, Fig. 1; para[0046], 'Finally the beverage dispenser comprises a controller 15 that receives information from the temperature sensor 10 about the temperature of the beverage far above the thermo-electric device 11. The temperature sensor 10 is also preferably far from the reservoir inlet 12. Depending on the value of said temperature the controller is configured for simultaneously activating the selector valve 7 and the pump 4 for recirculating the beverage through the recirculation line 6').

Regarding claim 3, Hu in view of HOSHIZAKI disclose the device of claim 2, and Hu further teaches wherein the controller is configured to perform a recirculation operation by, with the dispensing valve in a closed position, activating the pump (Fig. 1; para[0041], 'When the dispense valve 51 is closed and the recirculation is activated, the selector valve 7 is positioned so as to close the supply of water 3 to the reservoir 1 and so as to connect the recirculation line 6 with the inlet 12 and the pump 4 is activated'; para[0046], 'Depending on the value of said temperature the controller is configured for simultaneously activating the selector valve 7 and the pump 4 for recirculating the beverage through the recirculation line 6').

Regarding claim 10, Hu in view of HOSHIZAKI disclose the device of claim 1, and Hu further teaches wherein the main body of the fitting has an elbow bend between the inlet port and the dispensing port (Fig. 1 - see how the main body of fitting 8 has an elbow bend between the bottom inlet port and the right side dispensing port).

Regarding claim 11, Hu in view of HOSHIZAKI disclose the device of claim 1, and Hu further teaches wherein a diameter of inlet port is substantially equal to the diameter of the dispensing port (Fig. 1 - see how the inlet port and dispensing port of the fitting 8 have substantially equal diameters).

Regarding claim 12, Hu in view of HOSHIZAKI disclose the device of claim 1, and Hu further teaches wherein the recirculation port extends generally perpendicularly away from the hollow main body of the fitting (Fig. 1 - see how the left recirculation port extends generally perpendicularly away from the bottom vertical portion of the fitting 8).

Regarding claim 13, Hu in view of HOSHIZAKI disclose the device of claim 1, and Hu further teaches wherein a location of the recirculation port is offset on the hollow main body of the fitting relative to a location of the dispensing port (Fig. 1 - see how the location of the left recirculation port is offset on the main hollow body of the fitting 8 relative to the right-side location of the dispensing port).

-*-Continued in next Supplemental Box--*-

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

-*-Supplemental Box - Box V.2 - Citations and Explanations--*-

Claims 1 and 8-9 lack an inventive step under PCT Article 33(3) as being obvious over HOSHIZAKI in view of Hu.

Regarding claim 1, HOSHIZAKI discloses a water-dispensing device (Fig. 5, 7; para[0010] - see translation) comprising:

a water tank (10, Fig. 5, 7; para[0003], 'hot water storage tank 10' - see translation);

a dispensing line in fluid communication with the water tank (26, Fig. 7 - see dispensing line 26 extending from pump 22 to the T-fitting;

para[0003], 'a suction pipe 24...a discharge pipe 26' - see translation);

a pump configured to draw water from the water tank into the dispensing line (22, Fig. 7; para[0003], 'a hot water supply pump 22 is communicatively connected to the bottom of the hot water storage tank 10, and a discharge pipe 26 of the pump 22' - see translation);

an outlet line (Fig. 7 - see outline line extending to the right of the T-fitting to the valve 30 and spigot 28);

a dispensing valve (30, Fig. 7 - see dispensing valve 30; para[0003], 'a pouring valve 30' - see translation);

a spigot downstream of the outlet line and in selective fluid communication therewith via the dispensing valve (28, Fig. 7 - see spigot 28

downstream of the outlet line and in selectively communication with the valve 30; para[0003], 'a beverage pouring nozzle 28' - see translation);

a valveless directional [fitting] connection that couples the dispensing line to the outlet line for enabling fluid communication therebetween (Fig. 7 - see valveless direction fitting comprising the T-fitting splitting the dispensing line into the outlet line and recirculating line 32;

para[0003] - see translation), the [fitting] connection having a hollow main body extending between an inlet port and a dispensing port (Fig. 7 - see how the fitting has a hollow main body extending between a bottom inlet port and a right dispensing port), the dispensing line being

connected to the inlet port and the outlet line being connected to the dispensing port (Fig. 7), the [fitting] connection having a recirculation

port that intersects an interior of the hollow main body (Fig. 7 - see left side recirculation port that intersects the interior of the main body);

and

a recirculation line connected at one end to the recirculation port of the [fitting] connection and at an opposing end to the water tank to

place the water tank in fluid communication with the recirculation port (32, 34, Fig. 7 - see recirculation line 32/34 connected at one end to

the recirculation port of the connection and at an opposing end to the water tank to place the water tank 10 in fluid communication with the

recirculation port; para[0004], 'That is, when the supply pump 22 is operated with the pouring valve 30 closed, the hot water in the lower

portion stored in the hot water storage tank 10 is sucked into the pump 22 and then flows through the discharge pipe 26 and the return

pipe 32 to the top of the tank. By circulating the hot water in the lower part of the hot water storage tank 10 to the upper part in this way,

the temperature of the whole hot water in the tank is kept uniform' - see translation); but does not specifically teach a valveless directional

fitting that couples the dispensing line to the outlet line for enabling fluid communication therebetween, the fitting having a hollow main

body extending between an inlet port and a dispensing port, the dispensing line being connected to the inlet port and the outlet line being

connected to the dispensing port, the fitting having a recirculation port that intersects an interior of the hollow main body, the recirculation

port having a diameter that is smaller than a diameter of the dispensing port.

However, Hu discloses a water-dispensing device (Fig. 1; para[0037]) comprising: a water tank (1, Fig. 1; para[0031], 'In the present

invention the term "beverage" represents either a beverage that can be readily drunk like a prepared beverage (often called ready-to-drink)

or water'; para[0037], 'a beverage cooling reservoir 1'); a dispensing line in fluid communication with the water tank (9, Fig. 1; para[0039],

'The beverage flows out of the reservoir 1 through an outlet 9 that is preferably a plunger tube of which inlet 91 is positioned near from the

bottom of the reservoir'); a pump configured to draw water from the water tank into the dispensing line (4, Fig. 1 - see pump 4 configured to

draw water from the tank 1 into the dispensing line 9; para[0041], 'When the dispense valve 51 is opened, the selector valve 7 is

positioned so as to close the recirculation line 6 and the pump 4 is activated to deliver the cold beverage from the reservoir 1 to the

dispense valve 51 through the dispensing line 5'); an outlet line (5, Fig. 1; para[0041], 'dispensing line 5'); a dispensing valve (51, Fig. 1;

para[0041], 'dispensing valve 51'); a valveless directional fitting that couples the dispensing line to the outlet line for enabling fluid

communication therebetween (8, Fig. 1 - see valveless directional fitting 8 that couples the dispensing line 9 to the outlet line 9 for enabling

fluid communication therebetween; para[0041], 'According to the invention the dispenser comprises a beverage recirculation line 6 for

recirculating the beverage from the beverage cooling reservoir outlet 9 through the selector valve 7 and the pump 4 back to the reservoir 1.

This line is connected to the reservoir outlet 9 and to the dispensing line 5 by a three-way connector 8 like a T-tube'), the fitting having a

hollow main body extending between an inlet port and a dispensing port (Fig. 1 - see how the fitting 8 has a hollow main body extending

between a bottom inlet port and right dispensing port), the dispensing line being connected to the inlet port and the outlet line being

connected to the dispensing port (Fig. 1; para[0041]), the fitting having a recirculation port that intersects an interior of the hollow main

body (Fig. 1 - see how the fitting 8 has a left recirculation port connected to the recirculation line 6, said port intersecting the interior of the

body; para[0041]); and a recirculation line connected at one end to the recirculation port of the fitting and at an opposing end to the water

tank to place the water tank in fluid communication with the recirculation port (6, 12, Fig. 1 - see recirculation line comprising line 6 and line

12 connected at one end to the recirculation port of fitting 8, and at an opposing end to the tank 1 to place the tank in fluid communication

with the port; para[0041], 'According to the invention the dispenser comprises a beverage recirculation line 6 for recirculating the beverage

from the beverage cooling reservoir outlet 9 through the selector valve 7 and the pump 4 back to the reservoir 1. This line is connected to

the reservoir outlet 9 and to the dispensing line 5 by a three-way connector 8 like a T-tube. The other side of the recirculation line 6 is

connected to the pump 4...When the dispense valve 51 is closed and the recirculation is activated, the selector valve 7 is positioned so as

to close the supply of water 3 to the reservoir 1 and so as to connect the recirculation line 6 with the inlet 12 and the pump 4 is activated').

Accordingly, it would have been obvious to one of ordinary skill in the art to have modified the connection of HOSHIZAKI's device by

employing the valveless directional fitting as taught by Hu, in order to have allowed for a more modular and adjustable dispensing device.

Further, neither HOSHIZAKI nor Hu specifically teach the recirculation port having a diameter that is smaller than a diameter of the

dispensing port. While neither HOSHIZAKI nor Hu specifically teach the recirculation port having a diameter that is smaller than a

diameter of the dispensing port, it is well known in the art that routine experimentation and various engineering design choices could have

been used in order to have arrived at the recirculation port having a diameter that is smaller than a diameter of the dispensing port.

Accordingly, it would have been obvious to one of ordinary skill in the art to have arrived at the recirculation port having a diameter that is

smaller than a diameter of the dispensing port for HOSHIZAKI in view of Hu's dispensing device, in order to have allowed for a more

efficient dispensing device that encourages flow through the dispensing port over the recirculation port when dispensing is desired.

-*-Continued in next Supplemental Box--*-

Regarding claim 8, HOSHIZAKI in view of Hu disclose the device of claim 1, and HOSHIZAKI further teaches wherein the recirculation line connects to a top of the water tank (Fig. 7 - see how the recirculation line 32/34 is connected to a top of the water tank 10).

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US 23/21099

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

-*-Supplemental Box - Box V.2 - Citations and Explanations--*-

Regarding claim 9, HOSHIZAKI in view of Hu disclose the device of claim 8, and HOSHIZAKI further teaches wherein an air gap is maintained between the top of the water tank and a level of water in the water tank (Fig. 7 - see how the upper limit switch 18 allows for an air gap to be maintained between the top of the water tank 10 and the level of water in the tank).

Claims 4-7 and 14-18 lack an inventive step under PCT Article 33(3) as being obvious over Hu in view of HOSHIZAKI in further view of US 2008/0087036 A1 to Tavalazzi et al. (hereinafter 'Tavalazzi').

Regarding claim 4, Hu in view of HOSHIZAKI disclose the device of claim 3, but do not specifically teach wherein the controller is configured to perform the recirculation operation upon determining that a designated time for automatic recirculation has been reached. However, Tavalazzi discloses a water-dispensing device (Fig. 3; para[0017]) comprising: a water tank (5, Fig. 3; para[0015], 'a water reservoir 5'); a dispensing line (2, Fig. 3; para[0017], 'a pipe 2'); a pump (10, Fig. 3; para[0018], 'a pump 10'); an outlet line (Fig. 3 - see outlet line with valve 6); a dispensing valve (6, Fig. 3; para[0017], 'the water circuit comprises a pipe 2 which goes through the door and then to the dispenser area through an electrovalve 6'); and a recirculation line (9, Fig. 3; para[0018], 'an auxiliary recirculation pipe 9'); the device further comprising a controller in communication with the pump (Fig. 3; para[0018], 'the electronic control'), wherein the controller is configured to perform a recirculation operation by, with the dispensing valve in a closed position, activating the pump (Fig. 3; para[0018], 'Whenever is needed, either after every dispensing, or after a predetermined fixed time, the electronic control which is provided with a predetermined simple algorithm opens an electrovalve 4 and switches on a pump 10 mounted on an auxiliary recirculation pipe 9'), and wherein the controller is configured to perform the recirculation operation upon determining that a designated time for automatic recirculation has been reached (Fig. 3 - see how the controller performs the recirculation operation upon determining that a designated time for automatic recirculation has been reached; para[0018], 'Whenever is needed, either after every dispensing, or after a predetermined fixed time, the electronic control which is provided with a predetermined simple algorithm opens an electrovalve 4 and switches on a pump 10 mounted on an auxiliary recirculation pipe 9...The electronic control runs this cycle automatically at selected time sequence to maintain the water into the pipe always at the correct temperature substantially identical to the temperature of water in the water reservoir 5'). Accordingly, it would have been obvious to one of ordinary skill in the art to have modified the controller of Hu's dispensing device by employing the additional controller settings as taught by Tavalazzi, in order to have allowed for a more efficient and controlled water-dispensing device capable of recirculating the water within the dispensing line and outlet line at predetermined time intervals.

Regarding claim 5, Hu in view of HOSHIZAKI in further view of Tavalazzi disclose the device of claim 4, and Tavalazzi further teaches wherein the designated time is a preset period of inactivity of the pump (Fig. 3 - see how the designated time is a preset period of inactivity of the pump; para[0018], 'Whenever is needed, either after every dispensing, or after a predetermined fixed time, the electronic control which is provided with a predetermined simple algorithm opens an electrovalve 4 and switches on a pump 10 mounted on an auxiliary recirculation pipe 9...The electronic control runs this cycle automatically at selected time sequence to maintain the water into the pipe always at the correct temperature substantially identical to the temperature of water in the water reservoir 5').

Regarding claim 6, Hu in view of HOSHIZAKI disclose the device of claim 2, but does not specifically teach wherein the controller is configured to deactivate the pump after a maximum recirculation time has been reached. However, Tavalazzi discloses a water-dispensing device (Fig. 3; para[0017]) comprising: a water tank (5, Fig. 3; para[0015], 'a water reservoir 5'); a dispensing line (2, Fig. 3; para[0017], 'a pipe 2'); a pump (10, Fig. 3; para[0018], 'a pump 10'); an outlet line (Fig. 3 - see outlet line with valve 6); a dispensing valve (6, Fig. 3; para[0017], 'the water circuit comprises a pipe 2 which goes through the door and then to the dispenser area through an electrovalve 6'); and a recirculation line (9, Fig. 3; para[0018], 'an auxiliary recirculation pipe 9'); the device further comprising a controller in communication with the pump (Fig. 3; para[0018], 'the electronic control'), wherein the controller is configured to deactivate the pump after a maximum recirculation time has been reached (Fig. 3 - see how the controller performs the recirculation operation in preset time intervals, such that the controller deactivates the pump after a maximum recirculation time has been reached; para[0018], 'Whenever is needed, either after every dispensing, or after a predetermined fixed time, the electronic control which is provided with a predetermined simple algorithm opens an electrovalve 4 and switches on a pump 10 mounted on an auxiliary recirculation pipe 9...The electronic control runs this cycle automatically at selected time sequence to maintain the water into the pipe always at the correct temperature substantially identical to the temperature of water in the water reservoir 5'). Accordingly, it would have been obvious to one of ordinary skill in the art to have modified the controller of Hu's dispensing device by employing the additional controller settings as taught by Tavalazzi, in order to have allowed for a more efficient and controlled water-dispensing device capable of recirculating the water within the dispensing line and outlet line at predetermined time intervals.

Regarding claim 7, Hu in view of HOSHIZAKI in further view of Tavalazzi disclose the device of claim 6 (Note: see Box VIII), and Tavalazzi further teaches wherein the maximum recirculation time is based on a predetermined time required to displace stagnant water residing in the dispensing line and the recirculation line (Fig. 3 - see how the maximum recirculation time is based on the predetermined time required to displace stagnant water in the dispensing and recirculation lines, thus ensuring the water in the lines is fresh and at the predetermined temperature; para[0018], 'Whenever is needed, either after every dispensing, or after a predetermined fixed time, the electronic control which is provided with a predetermined simple algorithm opens an electrovalve 4 and switches on a pump 10 mounted on an auxiliary recirculation pipe 9...The electronic control runs this cycle automatically at selected time sequence to maintain the water into the pipe always at the correct temperature substantially identical to the temperature of water in the water reservoir 5').

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US 23/21099

Supplemental Box

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Continuation of:

—*-Supplemental Box - Box V.2 - Citations and Explanations-*

Regarding claim 14, Hu discloses a method (Fig. 1; para[0037]) for performing an automatic recirculation operation in a water dispenser (Fig. 1; para[0037]) having a water tank (1, Fig. 1; para[0031], 'In the present invention the term "beverage" represents either a beverage that can be readily drunk like a prepared beverage (often called ready-to-drink) or water'; para[0037], 'a beverage cooling reservoir 1'), a controller (15, Fig. 1; para[0046], 'Finally the beverage dispenser comprises a controller 15 that receives information from the temperature sensor 10 about the temperature of the beverage far above the thermo-electric device 11. The temperature sensor 10 is also preferably far from the reservoir inlet 12. Depending on the value of said temperature the controller is configured for simultaneously activating the selector valve 7 and the pump 4 for recirculating the beverage through the recirculation line 6'), a dispensing line (9, Fig. 1; para[0039], 'The beverage flows out of the reservoir 1 through an outlet 9 that is preferably a plunger tube of which inlet 91 is positioned near from the bottom of the reservoir'), a pump (4, Fig. 1 - see pump 4 configured to draw water from the tank 1 into the dispensing line 9; para[0041], 'When the dispense valve 51 is opened, the selector valve 7 is positioned so as to close the recirculation line 6 and the pump 4 is activated to deliver the cold beverage from the reservoir 1 to the dispense valve 51 through the dispensing line 5'), an outlet line (5, Fig. 1; para[0041], 'dispensing line 5'), a dispensing valve (51, Fig. 1; para[0041], 'dispensing valve 51'), a recirculation line (6, 12, Fig. 1 - see recirculation line comprising line 6 and line 12 connected at one end to the recirculation port of fitting 8, and at an opposing end to the tank 1 to place the tank in fluid communication with the port; para[0041]), and a valveless directional fitting that couples the dispensing line to the outlet line for enabling fluid communication therebetween (8, Fig. 1 - see valveless directional fitting 8 that couples the dispensing line 9 to the outlet line 9 for enabling fluid communication therebetween; para[0041], 'According to the invention the dispenser comprises a beverage recirculation line 6 for recirculating the beverage from the beverage cooling reservoir outlet 9 through the selector valve 7 and the pump 4 back to the reservoir 1. This line is connected to the reservoir outlet 9 and to the dispensing line 5 by a three-way connector 8 like a T-tube'), the fitting having a hollow main body extending between an inlet port and a dispensing port (Fig. 1 - see how the fitting 8 has a hollow main body extending between a bottom inlet port and right dispensing port), the dispensing line being connected to the inlet port and the outlet line being connected to the dispensing port (Fig. 1; para[0041]), the fitting having a recirculation port that intersects an interior of the hollow main body (Fig. 1 - see how the fitting 8 has a left recirculation port connected to the recirculation line 6, said port intersecting the interior of the body; para[0041]), the recirculation line being connected between the recirculation port and the water tank to place the water tank in fluid communication with the recirculation port (6, 12, Fig. 1 - see recirculation line comprising line 6 and line 12 connected at one end to the recirculation port of fitting 8, and at an opposing end to the tank 1 to place the tank in fluid communication with the port; para[0041], 'According to the invention the dispenser comprises a beverage recirculation line 6 for recirculating the beverage from the beverage cooling reservoir outlet 9 through the selector valve 7 and the pump 4 back to the reservoir 1. This line is connected to the reservoir outlet 9 and to the dispensing line 5 by a three-way connector 8 like a T-tube. The other side of the recirculation line 6 is connected to the pump 4...When the dispense valve 51 is closed and the recirculation is activated, the selector valve 7 is positioned so as to close the supply of water 3 to the reservoir 1 and so as to connect the recirculation line 6 with the inlet 12 and the pump 4 is activated'), the method comprising:

with the dispensing valve in the closed position, activating, by the controller, the pump to circulate water from the water tank into the dispensing line, through the hollow main body of the fitting into the recirculation port, through the recirculation line, and back into the water tank (15, Fig. 1; para[0041], 'When the dispense valve 51 is closed and the recirculation is activated, the selector valve 7 is positioned so as to close the supply of water 3 to the reservoir 1 and so as to connect the recirculation line 6 with the inlet 12 and the pump 4 is activated'; para[0046], 'Finally the beverage dispenser comprises a controller 15 that receives information from the temperature sensor 10 about the temperature of the beverage far above the thermo-electric device 11. The temperature sensor 10 is also preferably far from the reservoir inlet 12. Depending on the value of said temperature the controller is configured for simultaneously activating the selector valve 7 and the pump 4 for recirculating the beverage through the recirculation line 6'); but does not specifically teach a spigot downstream of the outlet line and in selective fluid communication therewith via the dispensing valve; the recirculation port having a diameter that is smaller than a diameter of the dispensing port; the method comprising: determining, by the controller, whether a designated time for automatic recirculation has been reached; when the designated time has been reached, checking, by the controller, whether the dispensing valve is in a closed position. While Hu does not specifically teach the recirculation port having a diameter that is smaller than a diameter of the dispensing port, it is well known in the art that routine experimentation and various engineering design choices could have been used in order to have arrived at the recirculation port having a diameter that is smaller than a diameter of the dispensing port. Accordingly, it would have been obvious to one of ordinary skill in the art to have arrived at the recirculation port having a diameter that is smaller than a diameter of the dispensing port for Hu's dispensing device, in order to have allowed for a more efficient dispensing device that encourages flow through the dispensing port over the recirculation port when dispensing is desired.

Further, Hu does not specifically teach a spigot downstream of the outlet line and in selective fluid communication therewith via the dispensing valve; the method comprising: determining, by the controller, whether a designated time for automatic recirculation has been reached; when the designated time has been reached, checking, by the controller, whether the dispensing valve is in a closed position. However, HOSHIZAKI discloses a water-dispensing device (Fig. 5, 7; para[0010] - see translation) comprising: a water tank (10, Fig. 5, 7; para[0003], 'hot water storage tank 10' - see translation); a dispensing line in fluid communication with the water tank (26, Fig. 7 - see para[0003], 'hot water storage tank 10' - see translation); a suction pipe 24...a discharge pipe 26' - see translation); a pump configured to draw water from the water tank into the dispensing line (22, Fig. 7; para[0003], 'a hot water supply pump 22 is communicatively connected to the bottom of the hot water storage tank 10, and a discharge pipe 26 of the pump 22' - see translation); an outlet line (Fig. 7 - see outline line extending to the right of the T-fitting to the valve 30 and spigot 28); a dispensing valve (30, Fig. 7 - see para[0003], 'a pouring valve 30' - see translation); a spigot downstream of the outlet line and in selective fluid communication therewith via the dispensing valve (28, Fig. 7 - see spigot 28 downstream of the outlet line and in selectively communication with the valve 30; para[0003], 'a beverage pouring nozzle 28' - see translation). Accordingly, it would have been obvious to one of ordinary skill in the art to have modified the dispensing arrangement of Hu's system by employing the dispensing valve and connected spigot as taught by HOSHIZAKI, in order to have allowed for a more effective and user friendly dispensing device. Further, neither Hu nor HOSHIZAKI specifically teach the method comprising: determining, by the controller, whether a designated time for automatic recirculation has been reached; when the designated time has been reached, checking, by the controller, whether the dispensing valve is in a closed position.

— Claim 14 continued in next Supplemental Box —

—*-Continued in next Supplemental Box-*

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US 23/21099

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

***-Supplemental Box - Box V.2 - Citations and Explanations*-**

— Continuation of Claim 14 —

However, Tavolazzi discloses a water-dispensing device (Fig. 3; para[0017]) comprising: a water tank (5, Fig. 3; para[0015], 'a water reservoir 5'); a dispensing line (2, Fig. 3; para[0017], 'a pipe 2'); a pump (10, Fig. 3; para[0018], 'a pump 10'); an outlet line (Fig. 3 - see outlet line with valve 6); a dispensing valve (6, Fig. 3; para[0017], 'the water circuit comprises a pipe 2 which goes through the door and then to the dispenser area through an electrovalve 6'); and a recirculation line (9, Fig. 3; para[0018], 'an auxiliary recirculation pipe 9'); the device further comprising a controller in communication with the pump (Fig. 3; para[0018], 'the electronic control'), wherein the controller is configured to determine whether a designated time for automatic recirculation has been reached (Fig. 3 - see how the controller performs the recirculation operation upon determining that a designated time for automatic recirculation has been reached; para[0018], 'Whenever is needed, either after every dispensing, or after a predetermined fixed time, the electronic control which is provided with a predetermined simple algorithm opens an electrovalve 4 and switches on a pump 10 mounted on an auxiliary recirculation pipe 9...The electronic control runs this cycle automatically at selected time sequence to maintain the water into the pipe always at the correct temperature substantially identical to the temperature of water in the water reservoir 5'); when the designated time has been reached, checking, by the controller, whether the dispensing valve is in a closed position, and with the dispensing valve in the closed position, activating, by the controller, the pump to circulate water from the water tank into the dispensing line, through the hollow main body of the fitting into the recirculation port, through the recirculation line, and back into the water tank (Fig. 3; para[0018], 'Whenever is needed, either after every dispensing, or after a predetermined fixed time, the electronic control which is provided with a predetermined simple algorithm opens an electrovalve 4 and switches on a pump 10 mounted on an auxiliary recirculation pipe 9'). Accordingly, it would have been obvious to one of ordinary skill in the art to have modified the controller of Hu's dispensing device by employing the additional controller settings as taught by Tavolazzi, in order to have allowed for a more efficient and controlled water-dispensing device capable of recirculating the water within the dispensing line and outlet line at predetermined time intervals.

Regarding claim 15, Hu in view of HOSHIZAKI in further view of Tavolazzi disclose the method of claim 14, and Tavolazzi further teaches the method further comprising:

determining, by the controller, if a maximum recirculation time has been reached; and when the maximum recirculation time has been reached, deactivating, by the controller, the pump (Fig. 3 - see how the controller performs the recirculation operation in preset time intervals, such that the controller deactivates the pump after a maximum recirculation time has been reached; para[0018], 'Whenever is needed, either after every dispensing, or after a predetermined fixed time, the electronic control which is provided with a predetermined simple algorithm opens an electrovalve 4 and switches on a pump 10 mounted on an auxiliary recirculation pipe 9...The electronic control runs this cycle automatically at selected time sequence to maintain the water into the pipe always at the correct temperature substantially identical to the temperature of water in the water reservoir 5').

Regarding claim 16, Hu in view of HOSHIZAKI in further view of Tavolazzi disclose the method of claim 15, and Tavolazzi further teaches wherein the maximum recirculation time is based on a predetermined time required to displace stagnant water residing in the dispensing line and the recirculation line (Fig. 3 - see how the maximum recirculation time is based on the predetermined time required to displace stagnant water in the dispensing and recirculation lines, thus ensuring the water in the lines is fresh and at the predetermined temperature; para[0018], 'Whenever is needed, either after every dispensing, or after a predetermined fixed time, the electronic control which is provided with a predetermined simple algorithm opens an electrovalve 4 and switches on a pump 10 mounted on an auxiliary recirculation pipe 9...The electronic control runs this cycle automatically at selected time sequence to maintain the water into the pipe always at the correct temperature substantially identical to the temperature of water in the water reservoir 5').

Regarding claim 17, Hu in view of HOSHIZAKI in further view of Tavolazzi disclose the method of claim 14, and Hu modified by Tavolazzi further teaches the method further comprising:

when the dispensing valve is found by the controller to be in an open position, closing, by the controller, the dispensing valve (Hu - Fig. 1 - see how the dispensing valve needs to be closed prior to the water being recirculated)(Tavolazzi - Fig. 3 - see how the controller controls the electrovalve 6, and see how the controller closes the valve prior to recirculating the fluid; para[0018]).

Regarding claim 18, Hu in view of HOSHIZAKI in further view of Tavolazzi disclose the method of claim 14, and Tavolazzi further teaches wherein the designated time is a preset period of inactivity of the pump (Fig. 3 - see how the designated time is a preset period of inactivity of the pump; para[0018], 'Whenever is needed, either after every dispensing, or after a predetermined fixed time, the electronic control which is provided with a predetermined simple algorithm opens an electrovalve 4 and switches on a pump 10 mounted on an auxiliary recirculation pipe 9...The electronic control runs this cycle automatically at selected time sequence to maintain the water into the pipe always at the correct temperature substantially identical to the temperature of water in the water reservoir 5').

Claims 1-18 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.