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(71) Applicant: **BSH Hausgeräte GmbH**
81739 München (DE)

(72) Inventors:
- **Guo, Guangtao**
  Nanjing (CN)
- **Zhang, Qi**
  Nanjing, 210046 (CN)
- **Zhao, Jiajun**
  Nanjing, 210046 (CN)
- **Wang, Yongjia**
  Nanjing, 210000 (CN)
- **Liu, Yun(PLC2)**
  Nanjing, 210046 (CN)

(54) **CLOTHING HANDLING DEVICE**

(57) An embodiment of the present invention relates to a clothing handling device (10), including a clothing handling chamber (12); a circulation pipe (14) being in fluid communication with the clothing handling chamber(12); a gas channel (16) being in fluid communication with the clothing handling chamber(12); a flushing pipe (18) being in fluid communication with the gas channel (16); and a pressure member (20), including an input end (21) and an output end (23), the input end (21) being in communication with a bottom part of the clothing handling chamber (12), and the output end (23) being optionally in communication with one or both of the circulation pipe (14) and the flushing pipe (18), to transport a liquid. This embodiment of the present invention can help to ensure a power source of the circulation pipe (14) and the flushing pipe (18), and prevent pollution of a water supply pipe network and the like.

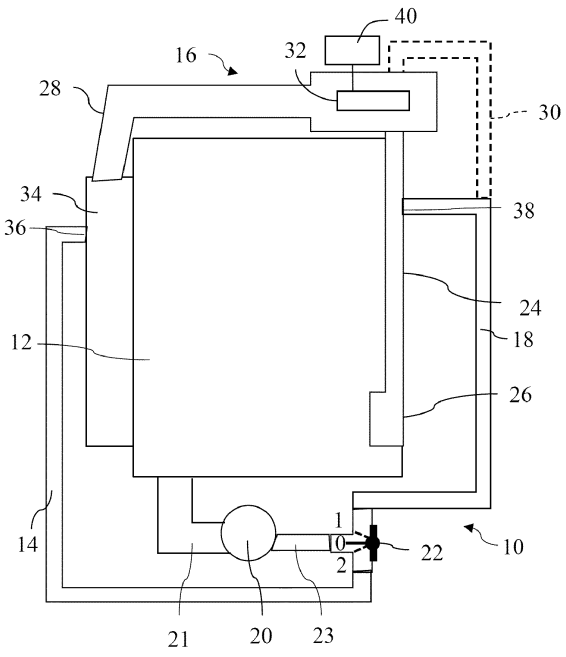

FIG. 1

EP 4 144 906 A1

Description

[0001] The present invention relates to the field of clothing handling technologies, and in particular, to a clothing handling device.

[0002] Some existing clothing handling devices directly access water from a water supply pipe network to flush a position in the clothing handling device where fluff or dirt needs to be removed. To prevent a liquid in the clothing handling device from flowing back to the water supply pipe network because of siphoning or other reasons and causing pollution to the water supply pipe network, a flushing water path directly connected to the water supply pipe network generally needs to be modified. However, a disadvantage brought about by this is that a power provided by the liquid used for flushing may be insufficient, and consequently the flushing effect is unsatisfactory.

[0003] Therefore, there is a need for improvement.

[0004] The objective of the present invention is to solve at least one of the problems described above.

[0005] To achieve the objective, an aspect of an embodiment of the present invention relates to a clothing handling device, including a clothing handling chamber; a circulation pipe being in fluid communication with the clothing handling chamber; a gas channel being in fluid communication with the clothing handling chamber; a flushing pipe being in fluid communication with the gas channel; and a pressure member, including an input end and an output end, the input end being in communication with a bottom part of the clothing handling chamber, and the output end being optionally in communication with one or both of the circulation pipe and the flushing pipe, to transport a liquid.

[0006] This embodiment of the present invention can help to ensure a power source of the circulation pipe and the flushing pipe, and prevent pollution of a water supply pipe network and the like.

[0007] Optionally, the clothing handling device includes a switching valve, being located between the pressure member, the circulation pipe, and the flushing pipe.

[0008] In this way, the pressure member can be switched to be in communication with one or both of the circulation pipe and the flushing pipe.

[0009] Optionally, the gas channel includes a condenser being in fluid communication with the flushing pipe.

[0010] In this way, a liquid in the flushing pipe can flush the condenser, to remove remaining fluff or dirt therein.

[0011] Optionally, the condenser makes the clothing handling chamber and the flushing pipe communicate.

[0012] In this way, a liquid can flow from the flushing pipe through the condenser and into the clothing handling chamber.

[0013] Optionally, the condenser includes a liquid outlet, and the liquid outlet is in fluid communication with the clothing handling chamber.

[0014] In this way, a liquid discharged from the condenser can enter the clothing handling chamber through the liquid outlet.

[0015] Optionally, the clothing handling device includes a drying tunnel component, and the flushing pipe includes a branch being in fluid communication with the drying tunnel component.

[0016] In this way, a liquid can enter the drying tunnel component through the branch of the flushing pipe, to flush to clean fluff or dirt therein.

[0017] Optionally, the drying tunnel component includes an impeller capable of driving air to flow, and an outlet of the branch is close to the impeller.

[0018] In this way, a liquid flowing out of the branch can flush the impeller, to clean and remove fluff or dirt thereon.

[0019] Optionally, the clothing handling device includes a control member, being arranged to rotate the impeller during a communication of the pressure member with the flushing pipe.

[0020] In this way, fluff or dirt on the impeller can be flushed away more easily and comprehensively by a liquid from the pressure member and the flushing pipe.

[0021] Optionally, the clothing handling device includes a door seal, being in fluid communication with the drying tunnel component and the clothing handling chamber respectively.

[0022] In this way, a liquid flowing out of the drying tunnel component can enter the clothing handling chamber through the door seal.

[0023] Optionally, the clothing handling device includes a door seal, being in fluid communication with the circulation pipe and the clothing handling chamber.

[0024] In this way, a liquid flowing out of the circulation pipe can enter the clothing handling chamber through the door seal.

[0025] Optionally, the pressure member includes a pump.

[0026] In this way, a power source can be provided for a liquid in one or both of the circulation pipe and the flushing pipe.

[0027] Optionally, a position of the pressure member is lower than a circulation outlet of the circulation pipe and a flushing outlet of the flushing pipe.

[0028] In this way, a liquid can be transported from a lower place to a higher place.

[0029] If technical conditions permit, the subject matter protected by any independent claim of the present invention may be combined with a single subject matter or a combination of a plurality of subject matters protected by any dependent claim to form a new protected subject matter.

[0030] The present invention will be further described below with reference to the accompanying drawings. Same or similar labels are used in the accompanying drawings to denote same or similar elements, shapes, and structures in different embodiments, and the descriptions of the same or similar elements, shapes, and structures in different embodiments may be omitted.

FIG. 1 is a schematic structural diagram of a clothing

handling device according to an embodiment of the present invention;

FIG. 2 is a schematic diagram of a liquid flow of the clothing handling device of FIG. 1;

FIG. 3 is a schematic diagram of another liquid flow of the clothing handling device of FIG. 1; and

FIG. 4 is a schematic diagram of still another liquid flow of the clothing handling device of FIG. 1.

[0031] FIG. 1 is a schematic structural diagram of a clothing handling device according to an embodiment of the present invention. As shown in FIG. 1, an aspect of an embodiment of the present invention relates to a clothing handling device 10, including a clothing handling chamber 12; a circulation pipe 14 being in fluid communication with the clothing handling chamber 12; a gas channel 16 being in fluid communication with the clothing handling chamber 12; a flushing pipe 18 being in fluid communication with the gas channel 16; and a pressure member 20, including an input end 21 and an output end 23, the input end 21 being in communication with a bottom part of the clothing handling chamber 12, and the output end 23 being optionally in communication with one or both of the circulation pipe 14 and the flushing pipe 18, to transport a liquid.

[0032] This embodiment of the present invention can help to ensure a power source of the circulation pipe 14 and the flushing pipe 18, and prevent pollution of a water supply pipe network and the like.

[0033] For example, a liquid (water) in the circulation pipe 14 and the flushing pipe 18 can obtain a power with the help of the pressure member 20, to ensure a circulation and flushing effect. In addition, the circulation pipe 14 and the flushing pipe 18 may be in communication with the pressure member 20 without being directly connected to the water supply pipe network, thereby eliminating or reducing the possibility that the liquid in the circulation pipe 14 and the flushing pipe 18 will flow back to the water supply pipe network because of siphoning or other reasons, causing pollution to the water supply pipe network. Furthermore, the clothing handling device 10 can pass the certification of standards and associations such as GB/T 23127, IEC: 61770, Verband Deutscher Elektrotechniker (VDE), and Deutscher Verein des Gas-und Wasserfaches (DVGW).

[0034] The orientation and relationship represented by terms such as "bottom" and "low" in this specification may be shown with reference to those shown in the accompanying drawings, and may also correspond to the orientation and relationship of the clothing handling device 10 in actual use.

[0035] The clothing handling device 10 may be a washing and drying machine for washing and drying clothing.

[0036] Optionally, the clothing handling device 10 includes a switching valve 22, being located between the pressure member 20, the circulation pipe 14, and the flushing pipe 18.

[0037] In this way, the pressure member 20 can be switched to be in communication with one or both of the circulation pipe 14 and the flushing pipe 18.

[0038] The switching valve 22 may be a three-position switching valve with three valve positions: 0, 1, and 2. When the switching valve 22 is at the position 0, the pressure member 20 may communicate with and transport a liquid to both the circulation pipe 14 and the flushing pipe 18.

[0039] When the switching valve 22 is at the position 1, the pressure member 20 may communicate with and transport a liquid to the circulation pipe 14.

[0040] When the switching valve 22 is at the position 2, the pressure member 20 may communicate with and transport a liquid to the flushing pipe 18.

[0041] Optionally, the gas channel 16 includes a condenser 24, being in fluid communication with the flushing pipe 18.

[0042] In this way, a liquid in the flushing pipe 18 can flush the condenser 24, to remove remaining fluff or dirt therein.

[0043] In a process of condensing, by the condenser 24, humid air to remove moisture therein, clothing fluff or dirt carried in the humid air may remain in the condenser 24 and may block the condenser 24. A liquid flowing through the flushing pipe 18 flushes the condenser 24, which can remove the remaining fluff or dirt therein, thereby reducing or avoiding a blockage of the condenser 24.

[0044] Optionally, the condenser 24 makes the clothing handling chamber 12 and the flushing pipe 18 communicate.

[0045] In this way, a liquid can flow from the flushing pipe 18 through the condenser 24 and into the clothing handling chamber 12. The liquid may be discharged from the clothing handling device 10 through the clothing handling chamber 12 with fluff or dirt flushed out from the condenser 24, or recycled by the clothing handling chamber 12.

[0046] Optionally, the condenser 24 includes a liquid outlet 26, and the liquid outlet 26 is in fluid communication with the clothing handling chamber 12.

[0047] In this way, a liquid discharged from the condenser 24 can enter the clothing handling chamber 12 through the liquid outlet 26. The liquid may be discharged from the clothing handling device 10 through the clothing handling chamber 12 with fluff or dirt flushed out from the condenser 24, or recycled by the clothing handling chamber 12.

[0048] Optionally, the clothing handling device 10 includes a drying tunnel component 28, and the flushing pipe 18 includes a branch 30 being in fluid communication with the drying tunnel component 28.

[0049] In this way, a liquid can enter the drying tunnel component 28 through the branch 30 of the flushing pipe 18, to flush to clean fluff or dirt therein.

[0050] In a process of drying clothing by the clothing handling device 10, clothing fluff or dirt carried by airflow may stay and accumulate in the drying tunnel component 28, blocking the drying tunnel component 28. A liquid

enters the drying tunnel component 28 through the branch 30 of the flushing pipe 18, and can flush to clean the fluff or dirt therein, thereby reducing or avoiding a blockage of the drying tunnel component 28.

[0051] Optionally, the drying tunnel component 28 includes an impeller 32 capable of driving air to flow, and an outlet of the branch 30 is close to the impeller 32.

[0052] In this way, a liquid flowing out of the branch 30 can flush the impeller 32, to clean and remove fluff or dirt thereon.

[0053] In a process of drying clothing by the clothing handling device 10, clothing fluff or dirt carried by airflow may stay and accumulate in the impeller 32, affecting an operation of the impeller 32 and a flow of the driven air. A liquid reaches the impeller 32 through the branch 30 of the flushing pipe 18, and can flush to clean the fluff or dirt thereon, reducing or avoiding an impact of the stay and accumulation of the fluff or dirt on the impeller 32 and the air driven by the impeller 32.

[0054] Optionally, the clothing handling device 10 includes a control member 40, being arranged to rotate the impeller 32 during a communication of the pressure member 20 with the flushing pipe 18.

[0055] In this way, fluff or dirt on the impeller 32 can be flushed away more easily and comprehensively by a liquid from the pressure member 20, the flushing pipe 18, and the branch 30.

[0056] Optionally, the clothing handling device 10 includes a door seal 34, being in fluid communication with the drying tunnel component 28 and the clothing handling chamber 12 respectively.

[0057] In this way, a liquid flowing out of the drying tunnel component 28 can enter the clothing handling chamber 12 through the door seal 34. The liquid may be discharged from the clothing handling device 10 through the clothing handling chamber 12 with fluff or dirt flushed out from the drying tunnel component 28, or recycled by the clothing handling chamber 12.

[0058] Optionally, the clothing handling device 10 includes a door seal 34, being in fluid communication with the circulation pipe 14 and the clothing handling chamber 12.

[0059] In this way, a liquid flowing out of the circulation pipe 14 can enter the clothing handling chamber 12 through the door seal 34. The liquid may improve the efficiency of the clothing handling device 10 in washing clothing and the solubility of a detergent used in water in the clothing handling chamber 12.

[0060] Optionally, the pressure member 20 includes a pump.

[0061] In this way, a power source can be provided for a liquid in one or both of the circulation pipe 14 and the flushing pipe 18.

[0062] Optionally, a position of the pressure member 20 is lower than a circulation outlet 36 of the circulation pipe 14 and a flushing outlet 38 of the flushing pipe 18.

[0063] In this way, a power for a liquid to go from a lower place to a higher place can be provided, to realize a circulation of the liquid or make the liquid have a sufficient pressure to flush the gas channel 16.

[0064] FIG. 2 is a schematic diagram of a liquid flow of the clothing handling device of FIG. 1. Referring to FIG. 2, in some embodiments, when a circulation function and a flushing function of the clothing handling device 10 are enabled, the switching valve 22 is at the position 0, and the pressure member 20 may communicate with and transport a liquid 25 to the circulation pipe 14 and the flushing pipe 18.

[0065] The liquid 25 entering the circulation pipe 14 may enter the clothing handling chamber 12 through the door seal 34, to improve the efficiency of the clothing handling device 10 in washing clothing and the solubility of a detergent used in the liquid (water).

[0066] Part or all of the liquid 25 entering the flushing pipe 18 may enter the clothing handling chamber 12 with the flushed-out clothing fluff or dirt after flushing the condenser 24, and the liquid 25 may be recycled by the clothing handling chamber 12 or discharged from the clothing handling device 10 along with the fluff or dirt.

[0067] Part or all of the liquid 25 entering the flushing pipe 18 may also enter the clothing handling chamber 12 with the fluff or dirt through the door seal 34 after flushing the drying tunnel component 28 such as the impeller 32 through the branch 30, and be recycled by the clothing handling chamber 12 or discharged from the clothing handling device 10 along with the fluff or dirt.

[0068] Meanwhile, the liquid 25 at a bottom part of the clothing handling chamber 12 may be inputted into the pressure member 20 through the input end 21 of the pressure member 20, and then outputted to the circulation pipe 14 and the flushing pipe 18 through the output end 23, and this process is repeated.

[0069] FIG. 3 is a schematic diagram of another liquid flow of the clothing handling device of FIG. 1. As shown in FIG. 3, in some embodiments, when a circulation function of the clothing handling device 10 is enabled, the switching valve 22 is at the position 1, and the pressure member 20 may communicate with and transport a liquid 25 to the circulation pipe 14.

[0070] The liquid 25 entering the circulation pipe 14 may enter the clothing handling chamber 12 through the door seal 34, to improve the efficiency of the clothing handling device 10 in washing clothing and the solubility of a detergent used in water.

[0071] Meanwhile, the liquid 25 at a bottom part of the clothing handling chamber 12 may be inputted into the pressure member 20 through the input end 21 of the pressure member 20, and then outputted to the circulation pipe 14 through the output end 23, and this process is repeated.

[0072] FIG. 4 is a schematic diagram of still another liquid flow of the clothing handling device of FIG. 1. Referring to FIG. 4, in some embodiments, when a flushing function of the clothing handling device 10 is enabled, the switching valve 22 is at the position 2, and the pressure member 20 may communicate with and transport a

liquid 25 to the flushing pipe 18.

[0073] Part or all of the liquid 25 entering the flushing pipe 18 may enter the clothing handling chamber 12 with fluff or dirt after flushing the condenser 24, and the liquid 25 may be recycled by the clothing handling chamber 12 or discharged from the clothing handling device 10 along with the fluff or dirt.

[0074] Part or all of the liquid 25 entering the flushing pipe 18 may also enter the clothing handling chamber 12 with the fluff or dirt through the door seal 34 after flushing the drying tunnel component 28 such as the impeller 32 through the branch 30, and be recycled by the clothing handling chamber 12 or discharged from the clothing handling device 10 along with the fluff or dirt.

[0075] Meanwhile, the liquid 25 at a bottom part of the clothing handling chamber 12 may be inputted into the pressure member 20 through the input end 21 of the pressure member 20, and then outputted to the flushing pipe 18 through the output end 23, and this process is repeated.

[0076] The various specific implementations described above and shown in the accompanying drawings are only used to illustrate the present invention, but are not all of the present invention. Any variation made by a person of ordinary skill in the art to the present invention within the scope of the basic technical concept of the present invention shall fall within the protection scope of the present invention.

Claims

1. A clothing handling device (10), **characterized by** comprising:

   a clothing handling chamber (12);
   a circulation pipe (14) being in fluid communication with the clothing handling chamber (12);
   a gas channel (16) being in fluid communication with the clothing handling chamber (12);
   a flushing pipe (18) being in fluid communication with the gas channel (16); and
   a pressure member (20), comprising an input end (21) and an output end (23), the input end (21) being in communication with a bottom part of the clothing handling chamber (12), and the output end (23) being optionally in communication with one or both of the circulation pipe (14) and the flushing pipe (18), to transport a liquid.

2. The clothing handling device (10) according to claim 1, **characterized by** comprising: a switching valve (22), being located between the pressure member (20), the circulation pipe (14), and the flushing pipe (18).

3. The clothing handling device (10) according to claim 1, **characterized in that**: the gas channel (16) comprises a condenser (24) being in fluid communication with the flushing pipe (18).

4. The clothing handling device (10) according to claim 3, **characterized in that**: the condenser (24) makes the clothing handling chamber (12) and the flushing pipe (18) communicate.

5. The clothing handling device (10) according to claim 3, **characterized in that**: the condenser (24) comprises a liquid outlet (26), and the liquid outlet (26) is in fluid communication with the clothing handling chamber (12).

6. The clothing handling device (10) according to claim 1, **characterized by** comprising: a drying tunnel component (28), the flushing pipe (18) comprising a branch (30) being in fluid communication with the drying tunnel component (28).

7. The clothing handling device (10) according to claim 6, **characterized in that**: the drying tunnel component (28) comprises an impeller (32) capable of driving air to flow, and an outlet of the branch (30) is close to the impeller (32).

8. The clothing handling device (10) according to claim 7, **characterized by** comprising: a control member (40), being arranged to rotate the impeller (32) during a communication of the pressure member (20) with the flushing pipe (18).

9. The clothing handling device (10) according to claim 6, **characterized by** comprising: a door seal (34), being in fluid communication with the drying tunnel component (28) and the clothing handling chamber (12) respectively.

10. The clothing handling device (10) according to claim 1, **characterized by** comprising: a door seal (34), being in fluid communication with the circulation pipe (14) and the clothing handling chamber (12).

11. The clothing handling device (10) according to any one of claims 1 to 10, **characterized in that**: the pressure member (20) comprises a pump.

12. The clothing handling device (10) according to any one of claims 1 to 10, **characterized in that**: a position of the pressure member (20) is lower than a circulation outlet (36) of the circulation pipe (14) and a flushing outlet (38) of the flushing pipe (18).

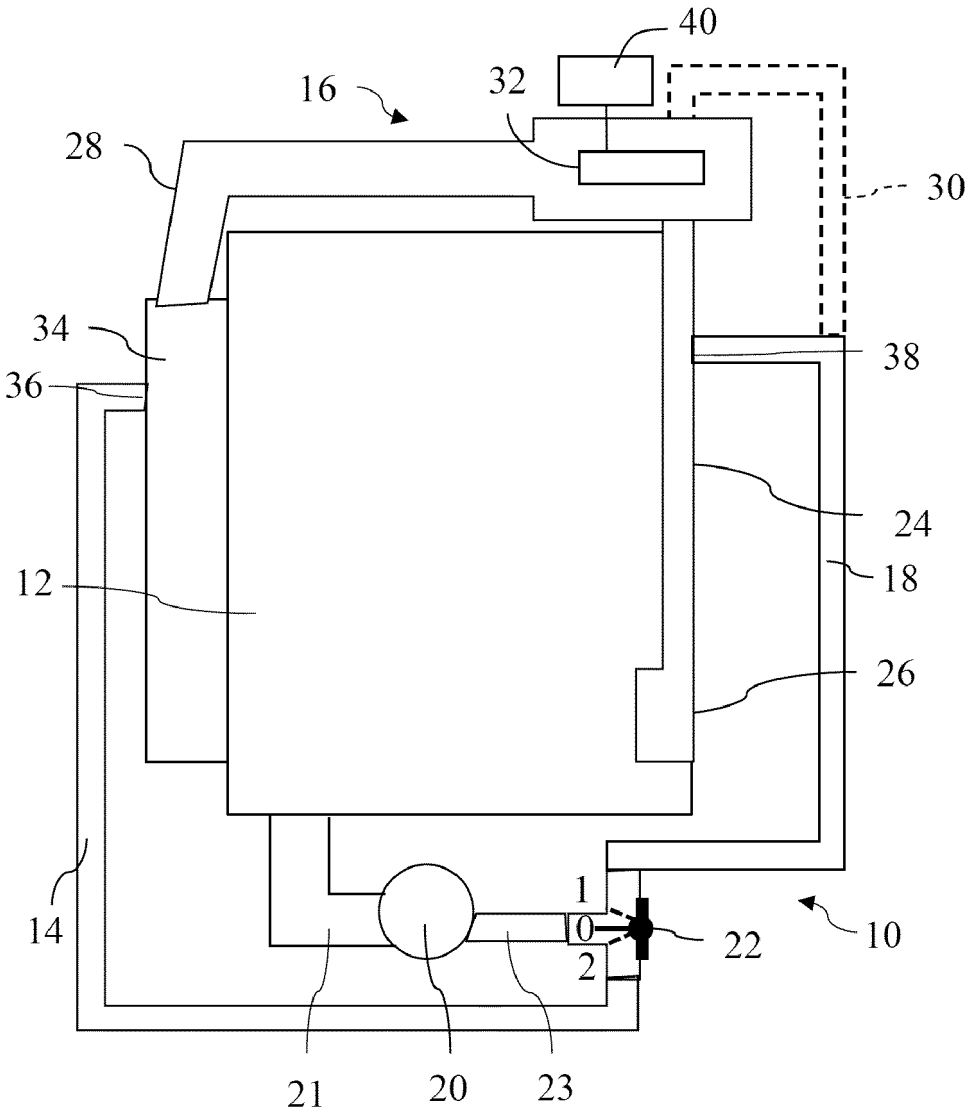

FIG. 1

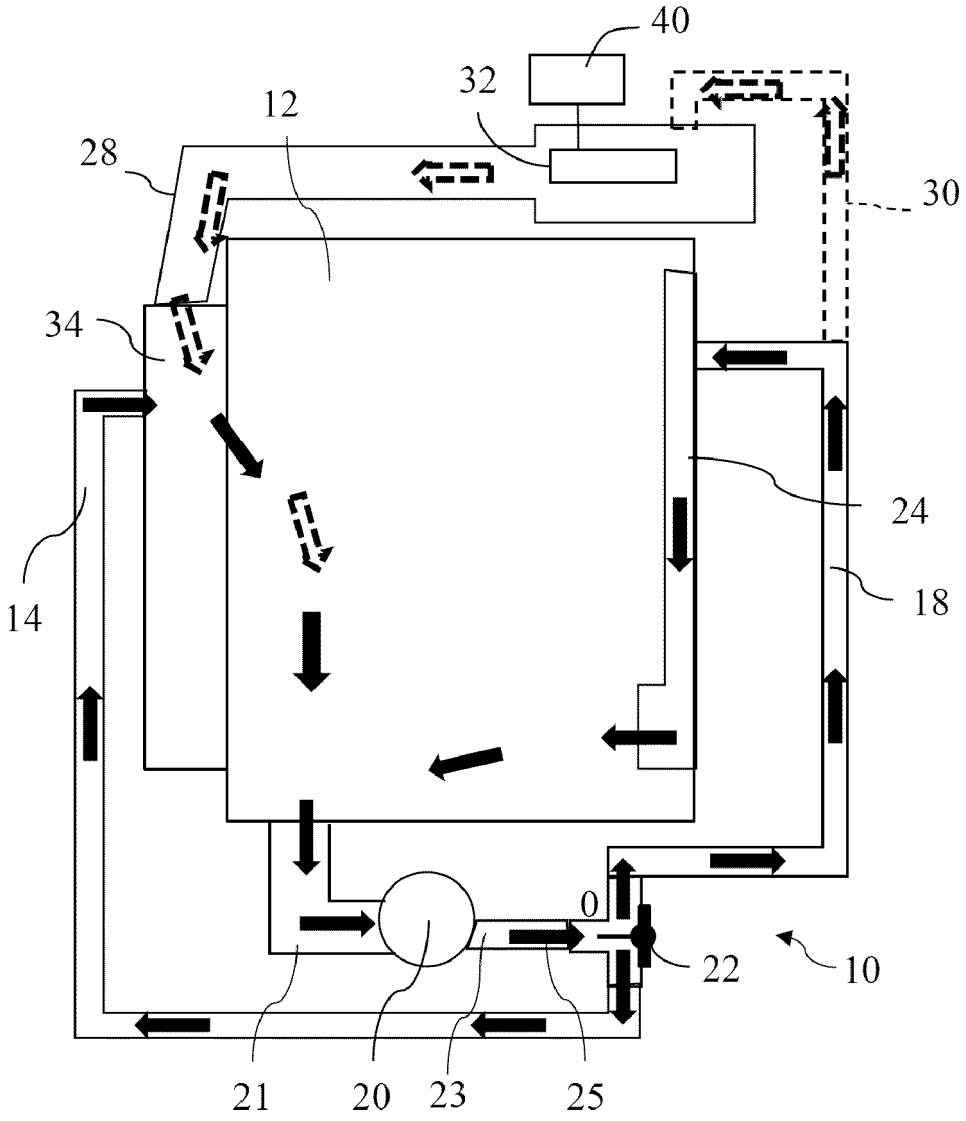

FIG. 2

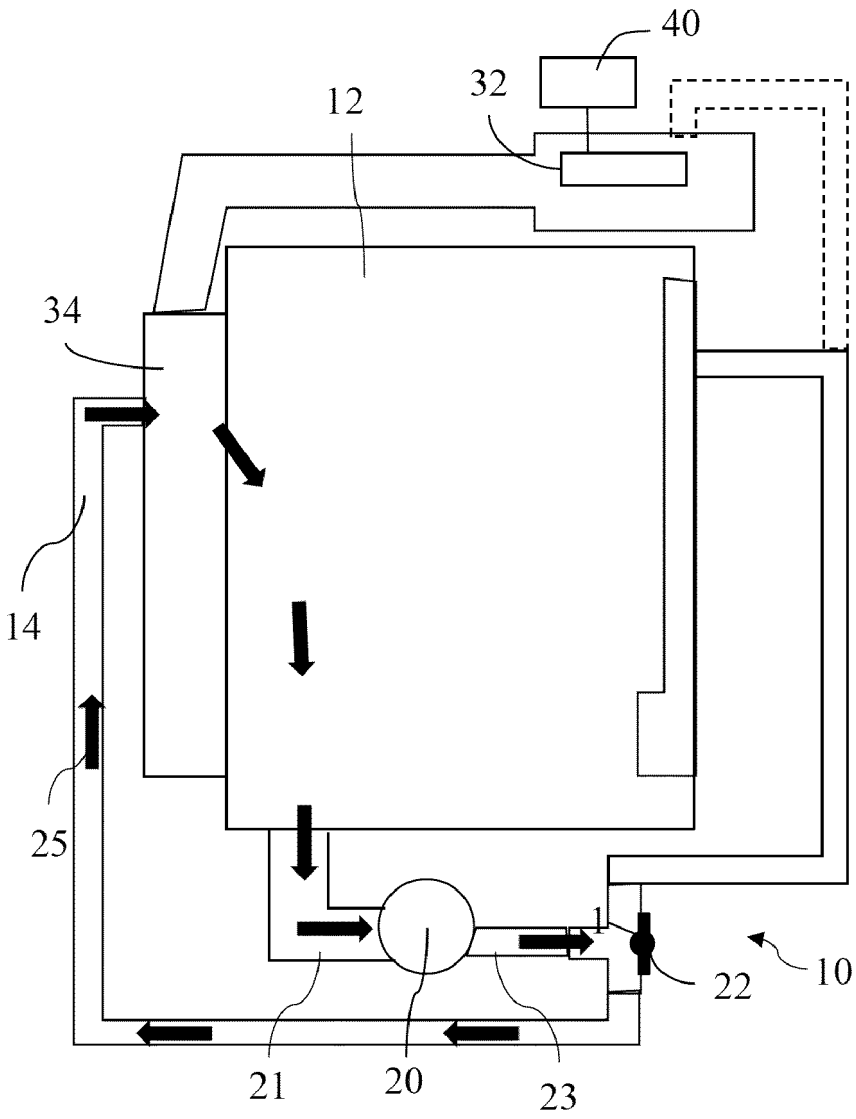

FIG. 3

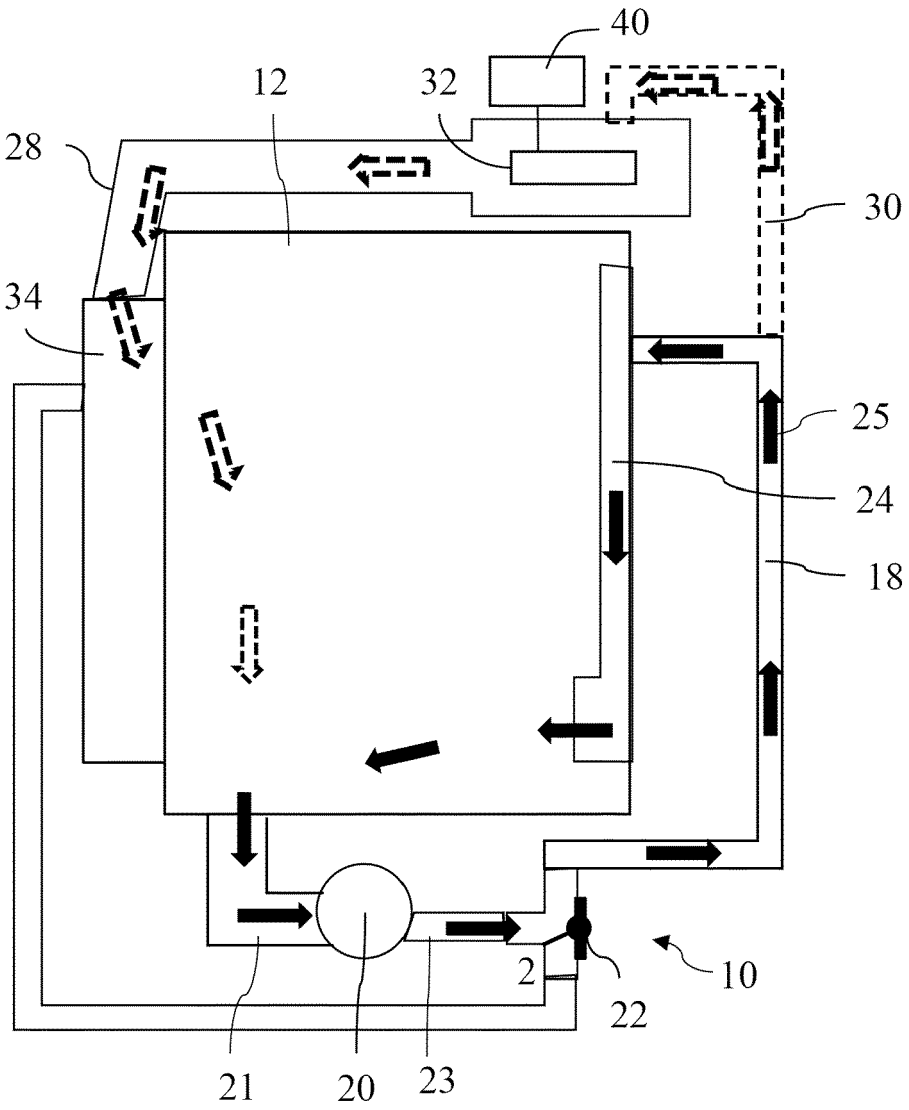

FIG. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 22 19 1711

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	EP 3 192 912 A1 (BSH HAUSGERAETE GMBH [DE]) 19 July 2017 (2017-07-19) * paragraphs [0044] - [0048]; claims; figures *	1-9,11,12 10	INV. D06F25/00 D06F39/08 ADD. D06F58/20 D06F58/24
X	FR 2 711 153 A1 (ESSWEIN SA [FR]) 21 April 1995 (1995-04-21) * the whole document *	1-9,11,12	
Y	US 2008/235880 A1 (KIM KYEONG HWAN [KR] ET AL) 2 October 2008 (2008-10-02) * paragraph [0045]; figures *	10	
A	EP 3 241 943 A1 (BSH HAUSGERAETE GMBH [DE]; BSH ELECTRODOMÉSTICOS ESPAÑA S A [ES]) 8 November 2017 (2017-11-08) * paragraphs [0049] - [0053], [0061]; figures *	1-12	
A	KR 2014 0007619 A (SAMSUNG ELECTRONICS CO LTD [KR]) 20 January 2014 (2014-01-20) * paragraph [0065]; figures *	1-12	TECHNICAL FIELDS SEARCHED (IPC) D06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	23 January 2023	Popara, Velimir

CATEGORY OF CITED DOCUMENTS

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23-01-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 3192912 A1	19-07-2017	CN 106968079 A	21-07-2017
		EP 3192912 A1	19-07-2017
		EP 3192913 A1	19-07-2017
FR 2711153 A1	21-04-1995	NONE	
US 2008235880 A1	02-10-2008	CN 101646821 A	10-02-2010
		EP 2145041 A1	20-01-2010
		KR 20080089088 A	06-10-2008
		US 2008235880 A1	02-10-2008
		WO 2008120935 A1	09-10-2008
EP 3241943 A1	08-11-2017	NONE	
KR 20140007619 A	20-01-2014	NONE	

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