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(54) **WASHING MACHINE**

WASCHMASCHINE

MACHINE À LAVER

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EP 3 476 992 B1

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Description

Technical Field

[0001] The present disclosure relates to a washing machine.

Background

[0002] Washing machines are used for washing washable items, including garments such as clothes. Typically a user can select a suitable washing cycle via an interface on a front face of the washing machine. The interface usually includes a number of control knobs and/or buttons. Some washing machines have both washing and drying functionality. Such machines may be known as washer-dryers.

[0003] KR20080010596A discloses a washing machine with a hot water inlet and a cold water inlet. An outer diameter of a hot water supply port and an outer diameter of the cold water supply port are set to be different from each other so that a person does not incorrectly attach the cold water hose to the hot water supply and vice versa.

[0004] KR20120026376A discloses a washing machine with a water supply valve assembly. The water supply valve assembly comprises a hot water inlet and a cold water inlet. The valve assembly also comprises a hot water outlet and a number of cold water outlets.

[0005] CN204715080U discloses a water inlet solenoid valve.

Summary

[0006] According to a first aspect disclosed herein, there is provided a washing machine comprising: a water inlet constructed and arranged to supply water to the washing machine; a pipe arrangement comprising two or more pipes, the pipe arrangement located between the water inlet and a component of the washing machine, each of the two or more pipes having a respective inlet valve, and each of the two or more pipes being of a different diameter; and a controller, the controller configured to control the inlet valves of the two or more pipes so as to selectively allow water to flow through one or more of the two or more pipes, to control a flow rate of water to the component, wherein the controller is configured to control the flow rate of water to the component in dependence on one or more parameters, the one or more parameters comprising one or more of: a stage of a washing cycle; a type of washing cycle; a weight of a washing load.

[0007] According to an example, each of the two or more pipes of the pipe arrangement is of the same length.

[0008] According to an example, the two or more pipes of the pipe arrangement are arranged one above the other in the washing machine.

[0009] According to an example, a first pipe of the two

or more pipes having a first diameter and a second pipe of the two or more pipes having a second diameter, the first diameter being larger than the second diameter, the second pipe being arranged above the first pipe.

[0010] According to an example, the two or more pipes of the pipe arrangement are arranged in parallel.

[0011] According to an example, the washing machine comprises a water tank located between the water inlet and the pipe arrangement.

[0012] According to an example, the water tank comprises a float switch, the float switch constructed and arranged to inform the controller of a water level in the water tank.

[0013] According to an example, the washing machine comprises a pump located between the water tank and the pipe arrangement.

[0014] According to an example, the controller is configured to control the pump so as to deliver water to an entrance of the pipe arrangement at a predetermined pressure.

[0015] According to an example, the component comprises a drum of the washing machine.

[0016] According to an example, the component comprises a dispenser of the washing machine.

[0017] According to an example, the dispenser comprises a detergent dispenser and/or a fabric softener dispenser.

Brief Description of the Drawings

[0018] To assist understanding of the present disclosure and to show how embodiments may be put into effect, reference is made by way of example to the accompanying drawings in which:

Figure 1 shows schematically a washing machine according to an example.

Figure 2 shows schematically some aspects of a washing machine according to an example.

Figure 3 is a flow-chart of a method according to an example.

Detailed Description

[0019] The present disclosure has applicability to clothes washing machines.

[0020] Before a washing cycle begins a user places a washing load comprising one or more items to be washed and/or dried in to a drum of the washing machine. The user then typically selects a washing cycle from a variety of available washing cycles via a user interface of the washing machine. The items may include garments such as clothes. The items may also include bedsheets, pillowcases, shoes etc. Before or during commencement of a washing cycle, one or more washing additives may be added to the drum of the washing machine so as to enhance the wash. The washing additive(s) may comprise, for example, washing detergent and/or fabric softener.

tener. The washing additive(s) may be added to the drum via one or more respective dispenser(s). During a washing cycle water is fed to a drum of the washing machine. Dependent on a stage of the washing cycle or another parameter (e.g. a determined size or type of the washing load), the amount or flow rate of water that needs to be delivered to the drum may vary. In some conventional washing machines, one or more devices may be used to measure the water flow rate, so that it can be controlled. Such a device may comprise an encoder. Sometimes, such encoders can become damaged in the washing machine, for example after being subjected to high water pressure and/or electronic malfunction. If the encoder is damaged then a volume and/or flow rate of water delivered to the drum may be incorrect. If too little water is delivered then the washing load may be insufficiently cleaned. On the other hand, if too much water is delivered to the drum then this may result in damage to the machine and/or flooding.

[0021] Figure 1 schematically shows a washing machine 102 according to an example. The washing machine 102 comprises a main body portion 104 and a drum 106 which is arranged to hold one or more garments or items of a washing load to be washed.

[0022] Before or during a washing cycle, a washing additive may be added for enhancement of the wash. The washing additive may comprise washing detergent. The washing additive may additionally or alternatively include any one or more (or indeed any combination of): fabric softener, soda crystals, limescale remover, water etc. The additive may be in a liquid or a powder form. In examples one or more dispensers or containers are provided for containing such an additive or additives. In the example of Figure 1, a dispenser 112 is provided for receiving washing detergent. Also, in this example a dispenser 114 is provided for receiving fabric softener

[0023] A user interface 108 is provided which enables a user to select one or more washing and/or drying parameters and/or settings. A display 110 is also provided which outputs information to a user of the washing machine. For example, information displayed on the display 110 may be information regarding options selected via user interface 108, and/or information regarding a washing cycle in progress such as time remaining etc.

[0024] The washing machine 102 also comprises a controller shown schematically at 130. The controller 130 is arranged for controlling operations of the washing machine 102.

[0025] The washing machine 102 also comprises a suitable power connection, shown schematically at 120, enabling the washing machine 102 to be connected to an electricity supply such as mains electricity. The washing machine 102 further comprises a water inlet shown schematically at 116. The water inlet 116 may receive water from a mains water supply, for example. A water outlet is shown schematically at 118. The water outlet may, for example, send waste water from the washing machine 102 to a waste water pipe, as is known.

[0026] Figure 2 schematically shows certain parts of a washing machine 202 according to an example. As will be explained in more detail below, the example enables a flow rate of water to a component (e.g. washing machine drum and/or dispenser) of the washing machine to be controlled in a reliable manner.

[0027] In this example the washing machine 202 comprises a controller 230. The controller 230 comprises a memory 232 and a processor 234. The controller is operable to control aspects of the washing machine 202. For example the controller may communicate with one or more pumps, valves, switches etc. as will be explained in more detail below.

[0028] The washing machine comprises a water tank 222. Water, schematically shown by arrow 221, can be fed to water tank 222 via inlet 216. Valve 219 may be selectively moved between open and closed positions so as to control the flow of water in to the tank 222. A switch arrangement, generally shown at 224 is provided. The switch 224 is operable to inform the controller 230 of a level of water in the tank 222. In one example the switch arrangement 224 informs the controller 230 when the level of water in the tank has reached a threshold level. In one example the threshold level is when the tank is full. When the level of water has reached the threshold level the controller 230 can cause closure of valve 219 so as to prevent more water from entering the tank 222 (or backing up in the upstream pipework). In this example the switch arrangement 224 comprises a float switch arrangement. The float switch arrangement comprises float 226 to which a switch element 228 is attached. When the level of water reaches the threshold level, the switch element 228 contacts electrical connectors 236 and 238 so as to complete an electrical circuit. An electrical signal is then sent to the controller 230 to inform the controller 230 that the level of water in the tank 222 has reached the threshold level. This arrangement may be useful for maintaining a constant and/or known water pressure.

[0029] A washing machine component is shown at 270. In one example the washing machine component comprises a drum of the washing machine. In one example the component 270 comprises a dispenser (e.g. a dispenser of detergent or fabric softener). The washing machine 202 is arranged to deliver water from the inlet 216 to the component 270, in this example via water tank 222. In one example the washing machine 202 is arranged to deliver water from the water tank 222 to the component 270 via one or more other components. For example the washing machine 202 may be arranged to deliver water from the water tank 222 to a drum of the washing machine via a dispenser.

[0030] A pipe arrangement or network is shown at 246. The pipe arrangement 246 is in fluid communication with inlet 216. In this example the pipe arrangement 246 is in fluid communication with inlet 216 via water tank 222. Pipe arrangement 246 is in fluid communication with water tank 222 via pipe 245. A valve 240 is controllable between open and closed positions to allow water to flow

from water tank 222 to pipe arrangement 246, via pipe 245. In this example a pump 242 is provided. The pump 242 pumps water, as schematically shown by arrow 244, to an entrance 247 of pipe arrangement 246. At the entrance 247, the water pressure is at a constant or known value. That is it may be considered that the controller can control the pump so as to deliver water to an entrance 247 of the pipe arrangement at a determined or predetermined pressure. The pipe arrangement is in fluid communication with component 270. That is the pipe arrangement 246 may be considered to comprise an upstream side connected to water tank 222, and a downstream side connected to component 270.

[0031] The pipe arrangement 246 comprises two or more pipes. In some examples more than two pipes may be provided. In the example of Figure 2 five pipes are provided, namely first pipe 248, second pipe 250, third pipe 252, fourth pipe 254, and fifth pipe 256. In examples, each of the two or more pipes are vertically arranged, one above the other. Each of the pipes is of a different diameter. More specifically, each of the pipes has a different inner diameter (and may have a different or the same outer diameter). Accordingly each pipe has a different cross-sectional flow area. In some examples the pipe having the smallest diameter is placed at the top of a vertically arranged stack of pipes forming the pipe arrangement 246, and the pipe having the largest diameter is placed at the bottom of the vertically arranged stack of pipes forming the pipe arrangement 246. In such examples, the water pressure at an entrance of the pipe of the smallest diameter may (e.g. at valve 258) be lower than a water pressure at an entrance of the pipe of the largest diameter (e.g. at valve 266). For example, in Figure 2 pipes 248 to 256 may be considered to have respective diameters d_1 to d_5 , where $d_1 < d_2 < d_3 < d_4 < d_5$. In some examples the inlet pipe 216 has a diameter d_6 . In some examples the diameter (i.e. inner diameter) of the inlet pipe 216 is greater than the diameters (i.e. inner diameters) of any of the pipes 248 to 256 in the pipe arrangement 246. In some examples, each pipe in the pipe arrangement 246 is of the same length. Each pipe in the pipe arrangement comprises a respective inlet valve. In Figure 2, pipe 248 comprises inlet valve 258, pipe 250 comprises inlet valve 260, pipe 252 comprises inlet valve 262, pipe 254 comprises inlet valve 264, and pipe 256 comprises inlet valve 266. Each of inlet valves 258 to 266 is individually controllable by controller 230. Thus, it may be considered that the controller 230 is configured to selectively allow water to flow through one or more of the two or more pipes by controlling the inlet valves of the two or more pipes, so as to control a flow rate of water to the component 270. Water flow through the pipes 248 to 256 is schematically shown by the block arrows in the respective pipes.

[0032] Thus the controller 230 is configured to control water flow-rate to component 270 by controlling which pipes in the pipe arrangement 246 water is able to flow through. The flow-rate may be considered a volume of

water delivered over time. For example the flow rate may be in the units m^3/s (cubic metres per second). For example, if a relatively large flow rate of water is required, then each of valves 258, 260, 262 and 264 may be closed, with valve 266 being opened. Thus water pumped from water tank 222 can pass through pipe 256 at a relatively high flow rate to component 270, since pipe 256 has the largest diameter of each of the pipes in the pipe arrangement 246. If on the other hand a relatively small flow rate of water is required, then each of valves 260, 262, 264 and 266 may be closed, with valve 258 being opened. Thus water pumped from water tank 222 can pass through pipe 248 at a relatively low flow rate to component 270, since pipe 248 has the smallest diameter of each of the pipes in the pipe arrangement 246. More than one of valves 258, 260, 262, 264 and 266 could be open at the same time, and in any combination. For example if it is determined that, with valve 266 open and water flowing through pipe 256 that slightly more water is required at component 270, then valve 258 could also be opened so as to supply an additional flow rate of water to component 270 via pipe 248 (i.e. so that water is flowing to component 270 through pipes 256 and 248). Of course any other combination of open and closed pipes in pipe arrangement 246 is envisaged alone or in combination. Where flow is permitted through two or more pipes in the pipe arrangement 246 simultaneously, then the respective valves to those pipes may be opened simultaneously or in sequence. In some situations all of the pipes in pipe arrangement 246 may be open for flow. This may occur, for example, where a maximum possible flow rate is required, for example in an initial soak stage where it may be deemed desirable to soak the washing load as quickly as possible. Of course, in some situations all of the pipes in the pipe arrangement may be closed for flow. This may occur, for example, in a spin cycle or a drying cycle where no further water is required (in such a situation main valve 218 may also be closed to prevent inlet of further water from mains water). Thus it may be considered that in some examples the controller 230 is configured to control a flow rate of water to the component 270 in dependence on one or more parameters. The one or more parameters may be, for example, a stage of a washing cycle (e.g. soak, spin etc). The one or more parameters may additionally or alternatively be a type of washing cycle. The type of washing cycle may be dependent on a type of item or items in the washing load. For example the type of washing cycle may be a cottons washing cycle, a delicates washing cycle etc. The one or more parameters may alternatively or additionally comprise a determined weight of the washing load.

[0033] The controller 230 is also operable to control valves 218 and 240, so as to control flow of water in to and out of water tank 222. This may enable the controller to prevent a build-up of excessive water pressure in the system, for example in pipe 245.

[0034] Figure 3 is a flow chart showing a method according to an example. The method may be, for example,

carried out in controller 230.

[0035] At S1, the method starts.

[0036] At S2, a determination is made as to whether the switch 224 is closed. In other words, a determination is made as to whether a level of water in tank 222 is at a threshold level.

[0037] If the determination at S2 is "no", the main valve 218 to the tank 222 is opened, so as to enable water to flow in to tank 222. The method then loops back to S2. Therefore in some examples it may be considered that a level of water in tank 222 is continuously monitored.

[0038] If the determination at S2 is "yes", then at S4 the main valve 218 is closed so as to prevent further water from flowing in to water tank 222.

[0039] At S5, the controller determines which pipes in pipe arrangement 246 to open for water flow. As discussed above, this determination may be based on one or more parameters.

[0040] At S6, the necessary pipe valve(s) are opened (e.g. one or more of valves 240, 258, 260, 262, 264, 266), and pump 242 is driven so as to pump water to pipe arrangement 246.

[0041] At S7, it is determined whether the operation is complete. The operation may be, for example, the washing cycle or stage of a washing cycle requiring water.

[0042] If the determination at S7 is "no", then the method loops back to S6.

[0043] If the determination at S7 is "yes", then the open valve(s) can be closed as required, and the pump 242 switched off or put in to an idle state.

[0044] As shown at S9, the process is then ended.

[0045] It will be understood that the processor or processing system or circuitry referred to herein may in practice be provided by a single chip or integrated circuit or plural chips or integrated circuits, optionally provided as a chipset, an application-specific integrated circuit (ASIC), field-programmable gate array (FPGA), digital signal processor (DSP), graphics processing units (GPUs), etc. The chip or chips may comprise circuitry (as well as possibly firmware) for embodying at least one or more of a data processor or processors, a digital signal processor or processors, baseband circuitry and radio frequency circuitry, which are configurable so as to operate in accordance with the exemplary embodiments. In this regard, the exemplary embodiments may be implemented at least in part by computer software stored in (non-transitory) memory and executable by the processor, or by hardware, or by a combination of tangibly stored software and hardware (and tangibly stored firmware).

[0046] Reference is made herein to data storage or memory for storing data. This may be provided by a single device or by plural devices. Suitable devices include for example a hard disk and non-volatile semiconductor memory.

[0047] Although at least some aspects of the embodiments described herein with reference to the drawings comprise computer processes performed in processing

systems or processors, the invention also extends to computer programs, particularly computer programs on or in a carrier, adapted for putting the invention into practice. The program may be in the form of non-transitory source code, object code, a code intermediate source and object code such as in partially compiled form, or in any other non-transitory form suitable for use in the implementation of processes according to the invention. The carrier may be any entity or device capable of carrying the program. For example, the carrier may comprise a storage medium, such as a solid-state drive (SSD) or other semiconductor-based RAM; a ROM, for example a CD ROM or a semiconductor ROM; a magnetic recording medium, for example a floppy disk or hard disk; optical memory devices in general; etc.

[0048] The examples described herein are to be understood as illustrative examples of embodiments of the invention. Further embodiments and examples are envisaged. Any feature described in relation to any one example or embodiment may be used alone or in combination with other features. In addition, any feature described in relation to any one example or embodiment may also be used in combination with one or more features of any other of the examples or embodiments, or any combination of any other of the examples or embodiments. Furthermore, equivalents and modifications not described herein may also be employed within the scope of the invention, which is defined in the claims.

Claims

1. A washing machine (102) comprising:

a water inlet (216) constructed and arranged to supply water to the washing machine (102);
a pipe arrangement (246) comprising two or more pipes (248, 250, 252, 254, 256), the pipe arrangement (246) located between the water inlet (216) and a component (270) of the washing machine, each of the two or more pipes (248, 250, 252, 254, 256) having a respective inlet valve (258, 260, 262, 264, 266), and each of the two or more pipes (248, 250, 252, 254, 256) being of a different diameter; and
a controller (230), the controller (230) configured to control the inlet valves (258, 260, 262, 264, 266) of the two or more pipes (248, 250, 252, 254, 256) so as to selectively allow water to flow through one or more of the two or more pipes (248, 250, 252, 254, 256), to control a flow rate of water to the component (270); and **characterised in that**
the controller (230) is configured to control the flow rate of water to the component (270) in dependence on one or more parameters, the one or more parameters comprising one or more of: a stage of a washing cycle; a type of washing

cycle; a weight of a washing load.

2. A washing machine (102) according to claim 1, wherein each of the two or more pipes (248, 250, 252, 254, 256) of the pipe arrangement (246) is of the same length. 5
3. A washing machine (102) according to claim 1 or claim 2, wherein the two or more pipes (248, 250, 252, 254, 256) of the pipe arrangement (246) are arranged one above the other in the washing machine. 10
4. A washing machine (102) according to claim 3, a first pipe of the two or more pipes having a first diameter and a second pipe of the two or more pipes having a second diameter, the first diameter being larger than the second diameter, the second pipe being arranged above the first pipe. 15
5. A washing machine (102) according to any of claims 1 to 4, the two or more pipes (248, 250, 252, 254, 256) of the pipe arrangement (246) being arranged in parallel. 20
6. A washing machine (102) according to any of claims 1 to 5, wherein the washing machine (102) comprises a water tank (222) located between the water inlet (216) and the pipe arrangement (246). 25
7. A washing machine (102) according to claim 6, the water tank (222) comprising a float switch (224), the float switch (224) constructed and arranged to inform the controller (230) of a water level in the water tank. 30
8. A washing machine (102) according to claim 6 or claim 7, comprising a pump (242) located between the water tank (222) and the pipe arrangement (246). 35
9. A washing machine (102) according to claim 8, the controller (230) configured to control the pump (242) so as to deliver water to an entrance (247) of the pipe arrangement (246) at a predetermined pressure. 40
10. A washing machine (102) according to any of claims 1 to 9, wherein the component (270) comprises a drum (106) of the washing machine (102). 45
11. A washing machine (102) according to any of claims 1 to 10, wherein the component (270) comprises a dispenser (112) of the washing machine. 50
12. A washing machine (102) according to claim 11, wherein the dispenser (112) comprises a detergent dispenser and/or a fabric softener dispenser. 55

Patentansprüche

1. Waschmaschine (102), aufweisend:
 - einen Wassereinlass (216), der konstruiert und angeordnet ist, um der Waschmaschine (102) Wasser zuzuführen;
 - eine Rohranordnung (246) mit zwei oder mehr Rohren (248, 250, 252, 254, 256), wobei die Rohranordnung (246) zwischen dem Wassereinlass (216) und einer Komponente (270) der Waschmaschine angeordnet ist, wobei jedes der zwei oder mehr Rohre (248, 250, 252, 254, 256) ein entsprechendes Einlassventil (258, 260, 262, 264, 266) hat, und wobei jedes der zwei oder mehr Rohre (248, 250, 252, 254, 256) einen anderen Durchmesser hat; und
 - eine Steuerung (230), wobei die Steuerung (230) ausgestaltet ist, um die Einlassventile (258, 260, 262, 264, 266) der zwei oder mehr Rohre (248, 250, 252, 254, 256) so zu steuern, um Wasser selektiv durch ein oder mehr der zwei oder mehr Rohre (248, 250, 252, 254, 256) fließen zu lassen, um eine Wasserflussrate zur Komponente (270) zu steuern, **dadurch gekennzeichnet, dass** die Steuerung (230) ausgestaltet ist, um die Wasserflussrate zur Komponente (270) in Abhängigkeit von ein oder mehr Parametern zu steuern, wobei die ein oder mehr Parameter ein oder mehr aufweisen von: einer Stufe eines Waschzyklus, einer Art des Waschzyklus, einem Gewicht einer Waschlading.
2. Waschmaschine (102) nach Anspruch 1, bei welcher jedes der zwei oder mehr Rohre (248, 250, 252, 254, 256) der Rohranordnung (246) die gleiche Länge hat.
3. Waschmaschine (102) nach Anspruch 1 oder Anspruch 2, bei welcher die zwei oder mehr Rohre (248, 250, 252, 254, 256) der Rohranordnung (246) übereinander in der Waschmaschine angeordnet sind.
4. Waschmaschine (102) nach Anspruch 3, wobei ein erstes Rohr der zwei oder mehr Rohre einen ersten Durchmesser hat und ein zweites Rohr der zwei oder mehr Rohre einen zweiten Durchmesser hat, wobei der erste Durchmesser größer als der zweite Durchmesser ist, wobei das zweite Rohr über dem ersten Rohr angeordnet ist.
5. Waschmaschine (102) nach einem der Ansprüche 1 bis 4, wobei die zwei oder mehr Rohre (248, 250, 252, 254, 256) der Rohranordnung (246) parallel angeordnet sind.
6. Waschmaschine (102) nach einem der Ansprüche

1 bis 5, bei welcher die Waschmaschine (102) einen Wasserbehälter (222) aufweist, der zwischen dem Wassereinlass (216) und der Rohranordnung (246) angeordnet ist.

7. Waschmaschine (102) nach Anspruch 6, wobei der Wasserbehälter (222) einen Schwimmerschalter (224) aufweist, wobei der Schwimmerschalter (224) konstruiert und angeordnet ist, um die Steuerung (230) über einen Wasserpegel im Wasserbehälter zu informieren.

8. Waschmaschine (102) nach Anspruch 6 oder Anspruch 7, aufweisend eine Pumpe (242), die zwischen dem Wasserbehälter (222) und der Rohranordnung (246) angeordnet ist.

9. Waschmaschine (102) nach Anspruch 8, wobei die Steuerung (230) ausgestaltet ist, um die Pumpe (242) so zu steuern, um Wasser mit einem vorbestimmten Druck zu einem Eingang (247) der Rohranordnung (246) zu leiten.

10. Waschmaschine (102) nach einem der Ansprüche 1 bis 9, bei welcher die Komponente (270) eine Trommel (106) der Waschmaschine (102) aufweist.

11. Waschmaschine (102) nach einem der Ansprüche 1 bis 10, bei welcher die Komponente (270) einen Spender (112) der Waschmaschine aufweist.

12. Waschmaschine (102) nach Anspruch 11, bei welcher der Spender (112) einen Waschmittelspender und/oder einen Weichspülerspender aufweist.

Revendications

1. Machine à laver (102) comprenant :

une entrée d'eau (216) construite et agencée de manière à fournir de l'eau à la machine à laver (102) ;

un agencement de tuyaux (246) comprenant deux ou plus de deux tuyaux (248, 250, 252, 254, 256), l'agencement de tuyaux (246) étant situé entre l'entrée d'eau (216) et un composant (270) de la machine à laver, chacun des deux ou plus de deux tuyaux (248, 250, 252, 254, 256) ayant une vanne d'entrée respective (258, 260, 262, 264, 266), et chacun des deux ou plus de deux tuyaux (248, 250, 252, 254, 256) étant d'un diamètre différent ; et

un contrôleur (230), le contrôleur (230) étant configuré de manière à contrôler les vannes d'entrée (258, 260, 262, 264, 266) des deux ou plus de deux tuyaux (248, 250, 252, 254, 256) quant à permettre sélectivement à l'eau de

s'écouler à travers un ou plusieurs des deux ou plus de deux tuyaux (248, 250, 252, 254, 256), pour contrôler un débit d'eau vers le composant (270) ; et

caractérisée en ce que

le contrôleur (230) est configuré de manière à contrôler le débit d'eau vers le composant (270) en fonction d'un ou plusieurs paramètres, lesdits un ou plusieurs paramètres comprenant l'un ou plusieurs parmi : une étape d'un cycle de lavage ; un type de cycle de lavage ; un poids d'une charge de lavage.

2. Machine à laver (102) selon la revendication 1, dans laquelle chacun des deux ou plus de deux tuyaux (248, 250, 252, 254, 256) de l'agencement de tuyaux (246) est de la même longueur.

3. Machine à laver (102) selon la revendication 1 ou 2, dans laquelle les deux ou plus de deux tuyaux (248, 250, 252, 254, 256) de l'agencement de tuyaux (246) sont disposés l'un au-dessus de l'autre dans la machine à laver.

4. Machine à laver (102) selon la revendication 3, dans laquelle un premier tuyau parmi les deux ou plus de deux tuyaux a un premier diamètre, et dans laquelle un deuxième tuyau parmi les deux ou plus de deux tuyaux a un deuxième diamètre, le premier diamètre étant plus grand que le deuxième diamètre, le deuxième tuyau étant disposé au-dessus du premier tuyau.

5. Machine à laver (102) selon l'une quelconque des revendications 1 à 4, dans laquelle les deux ou plus de deux tuyaux (248, 250, 252, 254, 256) de l'agencement de tuyaux (246) sont disposés en parallèle.

6. Machine à laver (102) selon l'une quelconque des revendications 1 à 5, dans laquelle la machine à laver (102) comprend un réservoir d'eau (222) situé entre l'entrée d'eau (216) et l'agencement de tuyaux (246).

7. Machine à laver (102) selon la revendication 6, dans laquelle le réservoir d'eau (222) comprend un interrupteur à flotteur (224), l'interrupteur à flotteur (224) étant construit et agencé de manière à informer le contrôleur (230) d'un niveau d'eau dans le réservoir d'eau.

8. Machine à laver (102) selon la revendication 6 ou 7, comprenant une pompe (242) située entre le réservoir d'eau (222) et l'agencement de tuyaux (246).

9. Machine à laver (102) selon la revendication 8, dans laquelle le contrôleur (230) est configuré de manière à contrôler la pompe (242) quant à fournir de l'eau à une entrée (247) de l'agencement de tuyaux (246)

à une pression prédéterminée.

10. Machine à laver (102) selon l'une quelconque des revendications 1 à 9, dans laquelle le composant (270) comprend un tambour (106) de la machine à laver (102). 5
11. Machine à laver (102) selon l'une quelconque des revendications 1 à 10, dans laquelle le composant (270) comprend un distributeur (112) de la machine à laver. 10
12. Machine à laver (102) selon la revendication 11, dans laquelle le distributeur (112) comprend un distributeur de détergent et / ou un distributeur d'assouplissant textile. 15

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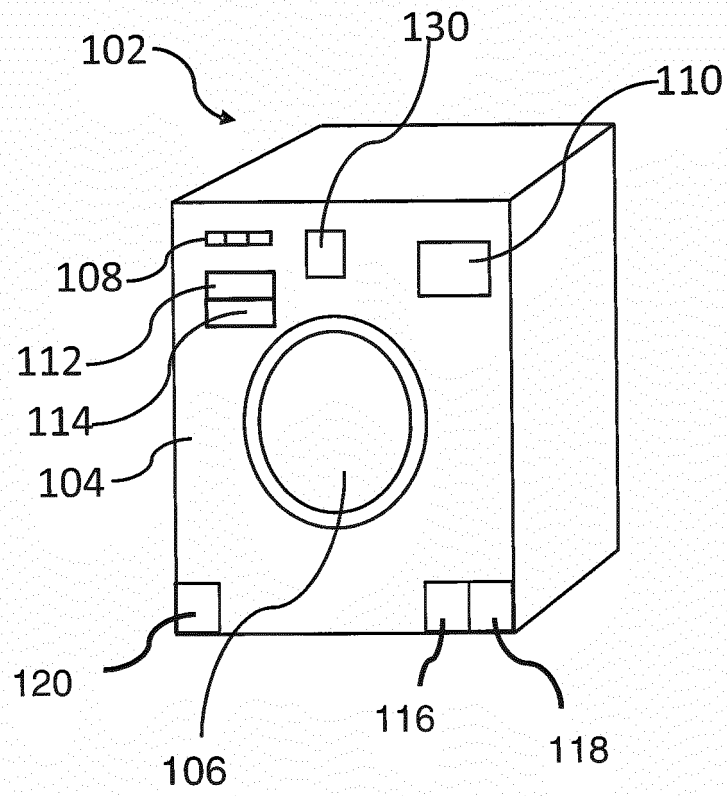


Fig. 1

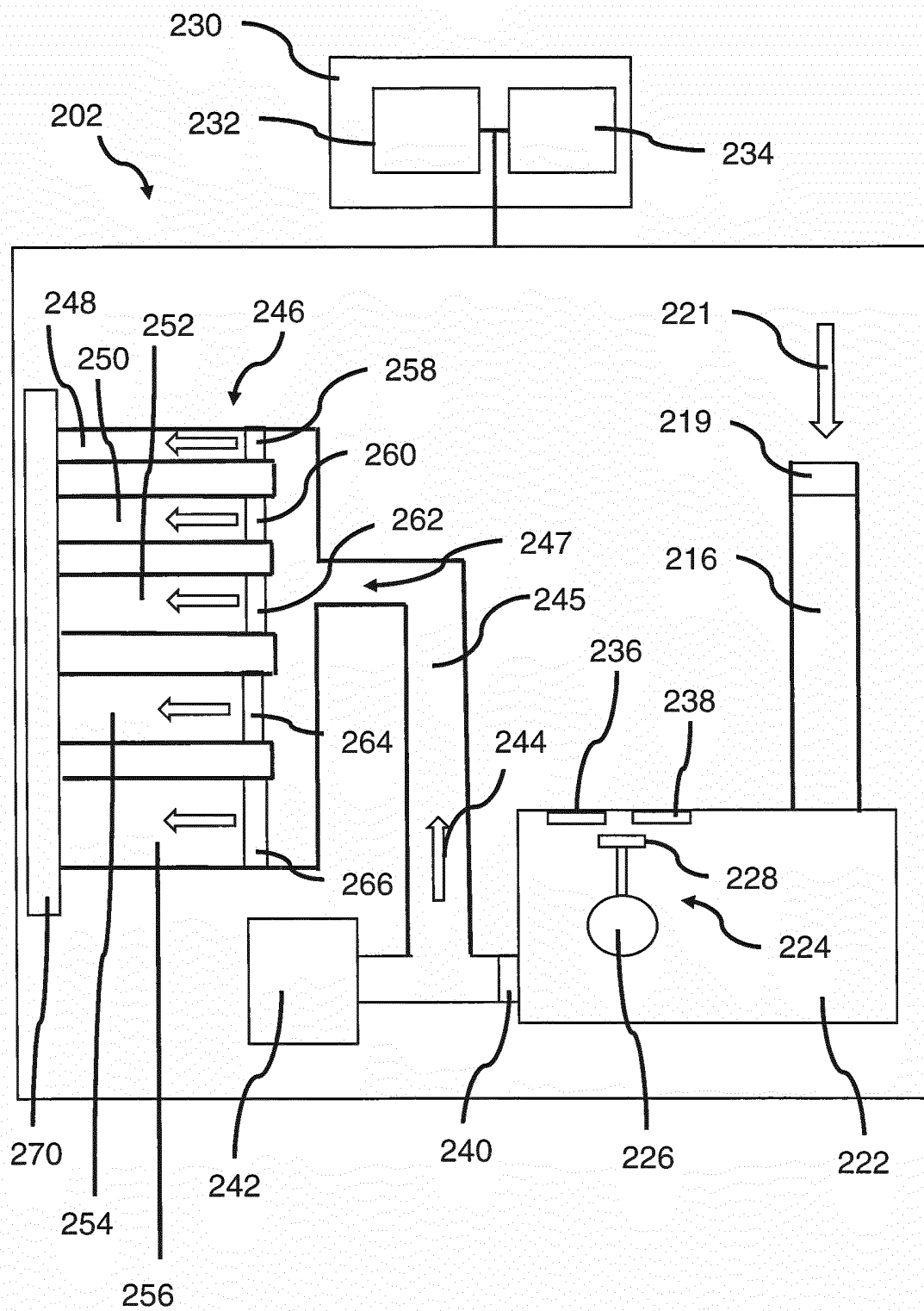


Fig. 2

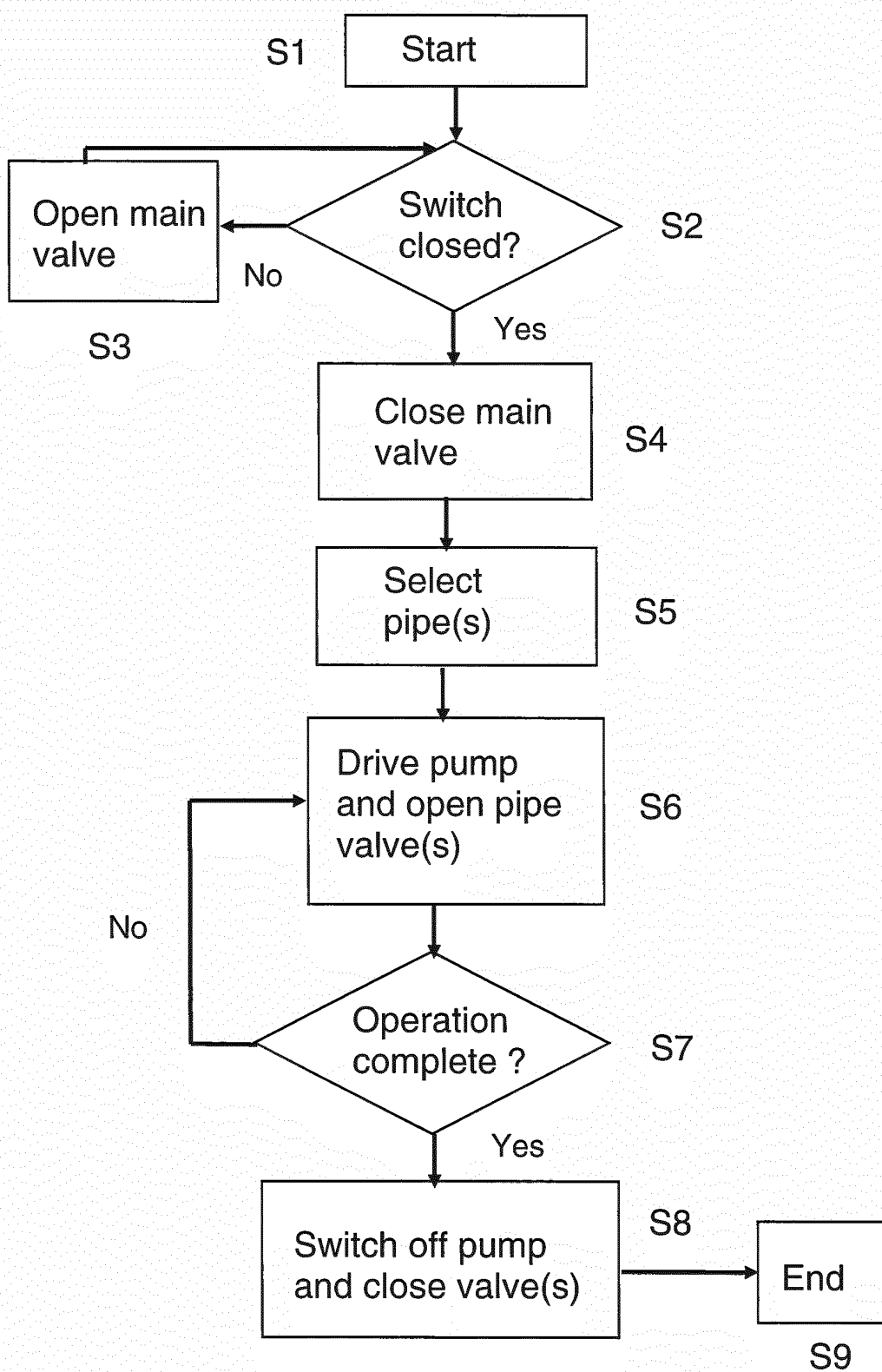


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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