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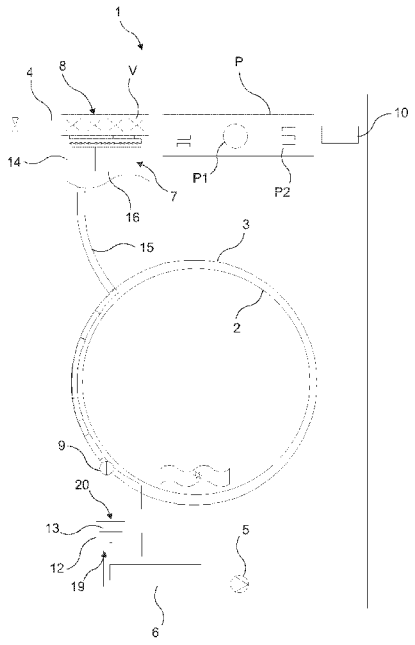
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(54) Title: A WASHING MACHINE

Figure 1



(57) Abstract: The present invention relates to a washing machine (1) comprising a control panel (P) which allows the user to select from a plurality of washing programs; a tub (3) wherein the washing process is performed; a drum (2) which is disposed in the tub (3) and wherein the laundry is loaded; a supply line (4) which delivers the water taken from the mains to the tub (3); a discharge line (6) which discharges the liquid in the tub (3) by means of a discharge pump; a receptacle (7) which is suitable for loading bleach therein and which is in fluid communication with the tub (3) so as to allow the delivery of bleach to the tub (3); and a valve system (8) which controls the delivery of water from the supply line (4) to the tub (3) and the delivery of bleach from the receptacle (7) to the tub (3).

WO 2022/146306 A1

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A WASHING MACHINE

The present invention relates to a washing machine suitable for using bleach.

In washing machines, the use of bleach is known for purposes such as providing hygiene, removing stains, etc. Bleach is offered to the users in the market in two types, that is chlorine-based bleach, which is widely used, and oxygen-based bleach, which is also known as non-chlorine bleach. The users generally add the desired bleach into one of the detergent partitions, thus enabling the laundry to be washed with bleach. However, the effect of different types of bleach on the laundry and the optimum usage conditions thereof highly vary, and unconscious use of bleach often causes textile damages such as discoloration, abrasion, etc. Especially chlorine-based bleach may cause great damage on textiles. In the state of the art, there are various embodiment for storing and dosing various chemicals. However, these embodiments are unsafe and open to unconscious use and may cause textile damage. Another disadvantage of these embodiments is that they cause low efficiency and even use in unsuitable conditions due to ignoring the optimum usage conditions of different types of bleach.

In the state of the art European Patent Application No. EP2516713, a washing machine is disclosed, wherein bleach is loaded into the detergent dispenser to be used in the washing process.

The aim of the present invention is the realization of a washing machine which allows the safe use of bleach and which decreases textile damages.

The washing machine realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a control panel which allows the user to select the washing program; a tub; a drum which is rotated in the tub; a supply line which supplies the water taken from the water mains to the tub; a discharge line which discharges the water in the tub by means of a discharge pump; a receptacle which is suitable for loading bleach therein and which opens into the tub so as to allow the delivery of bleach into the tub; a valve system which enables the water taken from the mains by means of the supply line and the bleach in the

receptacle to be selectively delivered to the tub; a sensor which determines whether the bleach filled into the receptacle is chlorine-based or oxygen-based bleach; a control unit which controls the disinfection process in order to deliver the bleach to the laundry in the drum wherein at least one of the operational parameters of the washing machine is predetermined by the manufacturer. Thus, the operation is adjusted depending on the type of bleach, preventing damage on laundry.

In an embodiment of the present invention, the control unit starts the disinfection process wherein the bleach is delivered to the laundry in the drum when the type of bleach is determined to be oxygen-based, and does not start the disinfection process when the type of bleach is determined to be chlorine-based. Thus, the disinfection process is started only when the type of bleach is determined to oxygen-based, which does not damage the laundry, and if the user loads chemicals such as chlorine-based bleach or various types of bleach mixtures, which may cause damage, into the receptacle, the laundry is prevented from contacting said chemicals and from being damaged.

In another embodiment of the present invention, the control unit first provides that the bleach in the receptacle is taken into the drum by means of the valve system so as not to contact the laundry in the drum, in other words such that the level of the bleach or bleach-water mixture in the tub remains below the drum, and operates the discharge pump so as to discharge the bleach in the tub out of the tub through the discharge line in case the type of bleach is detected to be chlorine-based. Thus, in case chemicals such as chlorine-based bleach or chlorine-based bleach mixtures, which are not preferred for the disinfection process are loaded into the receptacle, said chemicals can be easily discharged through the existing discharge line without requiring another line.

In another embodiment of the present invention, the control unit is configured to control the operation of a first heater which is disposed in a heater housing provided on the base of the tub and which heats the liquid in the tub, and operates the first heater during the disinfection process. Thus, the oxygen-based bleach or oxygen-based bleach-water mixture in the tub is heated, increasing the efficiency of the oxygen-based

bleach and accelerating the reaction with water. Thus, excellent hygiene is provided during the disinfection step.

In another embodiment of the present invention, the control unit operates the valve system such that the water and the bleach are taken into the tub in an amount which does not allow the same to reach the drum, and operates the first heater until a predetermined evaporation temperature, which is suitable for evaporating the liquid remaining under the drum during the disinfection process, is reached. Thus, the water and the oxygen-based bleach are enabled to enter reaction at high efficiency and a temperature suitable for oxygen-based during the disinfection process, This embodiment is advantageous in that the disinfection is provided by the bleach not directly contacting the laundry during the disinfection process. Thus, the damage on the laundry is minimized, and the disinfection is provided without any additional processes such as rinsing the laundry.

In another embodiment of the present invention, the bleach taken from the receptacle fills into a tank, and is heated, during the disinfection process, to a predetermined evaporation temperature, preferably a temperature between 50°C and 80°, where the peroxide efficiency is the highest, by means of a second heater which is disposed in the tank and of which the operation is controlled by the control unit. The tank has an inlet port for receiving the bleach and an outlet port for sending the bleach heated therein to the tub. This embodiment is advantageous in that in case the minimum liquid amount filling the heater housing and required for safely operating the first heater under the tub is much higher than the amount of bleach to be used in the disinfection process, the bleach can be heated separately or with a very low amount of water. Thus, by heating the oxygen-based bleach, the peroxide efficiency is quickly increased and after active oxygen is generated, the water taken from the supply line by means of the valve system is added to the bleach in the tank, thus the amount of liquid in the tub is completed to the amount to be used in the disinfection process. This embodiment is advantageous in that both water and energy are efficiently used and the disinfection process is accelerated.

In an embodiment of the present invention, the bleach heated in the tank or the tub is sprayed onto the laundry in the drum by means of a jet line. Thus, the bleach more homogeneously contact the laundry.

In an embodiment of the present invention, the sensor is a conductivity sensor, and the type of bleach is determined by measuring the conductivity of the bleach. Thus, the type of bleach can be accurately determined.

In an embodiment of the present invention, the sensor is positioned on the tub so as to be between the drum and the tub. By means of this embodiment, especially in case the receptacle is movable, ease of placement and connection is provided, and the type of bleach can be determined after being taken into the tub.

In another embodiment of the present invention, when a washing program comprising the disinfection process predetermined by the manufacturer is selected by means of the control panel, the control unit automatically starts the disinfection process at a predetermined step of said washing program depending on the type of bleach detected by means of the sensor. In a washing program comprising the steps of washing, rinsing and spin-drying, the control unit starts the disinfection process at a preferred step of the washing program such as before the washing step, after the washing step or after the spin-drying step. Thus, the user simply selects the relevant washing program to provide excellent hygiene, and the disinfection process is automatically performed during the washing program.

In another embodiment of the present invention, the control unit allows the disinfection process to be selected in addition to the washing program, and, when the disinfection process is selected together with the washing process, starts the disinfection process at a predetermined step of said washing program depending on the type of bleach detected by the sensor. Thus, the disinfection program can be optionally added to a preferred washing program or can be skipped in a washing program comprising the disinfection process.

In another embodiment of the present invention, the control unit is configured to allow the disinfection process to be selected independent of the washing process, and when

the disinfection process is selected, the control unit provides that the type of bleach is determined before starting a washing process and accordingly starts the disinfection process. This embodiment allows the disinfection process to be performed in case the laundry is desired to be quickly disinfected, for example in case the laundry without much dirt, stain is desired to be quickly disinfected.

By means of the present invention, a disinfection process is obtained, which is activated depending on the type of bleach and thus damage to laundry is decreased.

The washing machine realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the schematic view of the washing machine related to an embodiment of the present invention.

Figure 2 - is the schematic view of the washing machine related to another embodiment of the present invention.

Figure 3 - is the schematic view of the washing machine related to another embodiment of the present invention.

The elements illustrated in the figures are numbered as follows:

1. Washing machine
2. Drum
3. Tub
4. Supply line
5. Discharge pump
6. Discharge line
7. Receptacle
8. Valve system
9. Sensor
10. Control unit

11. First heater

12. Tank

13. Second heater

14. Dispenser housing

15. Intermediate line

16. Dispenser

17. Heater housing

18. Jet line

19. Inlet port

20. Outlet port

P: Control panel

P1: Program selection member

P2: Function selection member

V: Valve

The washing machine (1) comprises a control panel (P) which allows the user to select from a plurality of washing programs; a tub (3) wherein the washing process is performed; a drum (2) which is disposed in the tub (3) and wherein the laundry is loaded; a supply line (4) which delivers the water taken from the mains to the tub (3); a discharge line (6) which discharges the liquid in the tub (3) by means of a discharge pump; a receptacle (7) which is suitable for loading bleach therein and which is in fluid communication with the tub (3) so as to allow the delivery of bleach to the tub (3); and a valve system (8) which controls the delivery of water from the supply line (4) to the tub (3) and the delivery of bleach from the receptacle (7) to the tub (3). The washing machine (1) comprises a dispenser housing (14) which is disposed on the supply line (4), which is connected to the tub (3) by means of an intermediate line (15) and which receives a dispenser (16) wherein the detergent to be used in the washing process is loaded. The valve system (8) controlled by a control unit (10) is configured to

selectively supply the water in the supply line (4) and the bleach in the receptacle (7) to the tub (3), and comprises at least one valve (V). The control unit (10) activates the washing program according to the washing program selected by means of the control panel (P), and controls the valve system (8). The water taken from the water mains by means of the valve system (8) is supplied to the dispenser housing (14) by means of the supply line (4). The water taken by opening a valve (V) on the supply line (4) is supplied to the dispenser housing (14), and is passed directly through the dispenser housing (14) or through the dispenser (16) so as to sweep the detergent in the dispenser (16) so as to be delivered to the tub (3) by means of the intermediate line (15). The perforated drum (2) wherein the laundry is loaded is rotated in the tub (3) which receives water and detergent, and thus the laundry is washed with the detergent-water mixture. The delivery of the bleach in the receptacle (7) to the tub (3) is controlled by means of the valve system (8). The receptacle (7) is preferably disposed on the dispenser (16), and the control unit (10) controls the valve system (8) so as to open a valve (V) on the supply line (4) to deliver the water taken from the supply line (4) to the receptacle (7). Thus, the water-bleach mixture is supplied to the tub (3). At the end of the washing program, the control unit (10) starts the discharge pump (5) and discharges the water in the tub (3) through the discharge line (6).

The washing machine (1) of the present invention comprises at least one sensor (9) which detects the type of bleach loaded into the receptacle (7) and a control unit (10) which starts a disinfection process wherein the bleach is used depending on the type of bleach detected by means of the sensor (9). The usage conditions and methods of chlorine-based bleach such as sodium hypochlorite and oxygen-based bleach such as hydrogen peroxide on laundry are different from each other. The sensor (9) is suitable for distinguishing whether the bleach loaded into the receptacle (7) is chlorine-based or oxygen-based, and the control unit (10) activates a disinfection process of which operational parameters such as temperature, water amount, etc. are determined by the manufacturer depending on the type of bleach detected by means of the sensor (9). Thus, the disinfection process wherein the bleach is applied to the laundry is performed in line with the type of bleach, for example by adjusting the suitable temperature and

water amount. Thus, optimum efficiency is provided from the bleach use, and damages arising from unconscious use are eliminated.

In an embodiment of the present invention, the control unit (10) starts the disinfection process when the type of bleach is determined to be oxygen-based. The control unit (10) starts or does not start the disinfection process depending on the type of bleach determined. In other words, the control unit (10) does not start the disinfection process when the type of bleach is determined to be a type of bleach harmful to the laundry by means of the sensor (9) or in case another unidentified chemical is used. When the type of bleach is determined to be oxygen-based, the control unit (10) starts the disinfection process, which is adapted to parameters such as temperature or water amount wherein the peroxide efficiency is high, according to the optimum operational conditions of the oxygen-based bleach. Thus, the laundry is prevented from being damaged.

In another embodiment of the present invention, the control unit (10) controls the valve system (8) so as to take the bleach into the tub (3), and starts the discharge pump (5) depending on the type of bleach detected. The control unit (10) starts the valve system (8) so as to deliver the bleach in the receptacle (7) into the tub (3), and starts the discharge pump (5) to discharge the bleach in the tub (3) when the type of bleach is detected to be a predetermined type or an unidentifiable type which is not predetermined. In a preferred version of this embodiment, the control unit (10) starts the discharge pump (5) when the type of bleach is determined to be chlorine-based. Thus, any type of bleach which may damage the laundry and unidentifiable chemicals are discharged. Moreover, the mixing of substances which are not suitable for mixing, for example detergent and chlorine-based bleach, which may cause the generation of chlorine gas, is prevented.

In an embodiment of the present invention, a heater housing (17) is provided in the tub (3) and a first heater (11) which heats the liquid in the tub (3) is provided in the heater housing (17), and the control unit (10) controls the valve system (8) so as to deliver the bleach into the tub (3) and starts the first heater (11) during the disinfection process. The heater housing (17) is in the form of a depression which is arranged at the base of the tub (3) and which receives the first heater (11). The control unit (10) starts the

valve system (8) such that the bleach in the receptacle (7) and a certain amount of water preferably from the supply line (4) are taken into the tub (3), and starts the disinfection process when the type of bleach is detected to be oxygen-based, and, during the disinfection process, activates the first heater (11), which is provided at the base of the tub (3) and which heats the water-bleach mixture in the tub (3). Thus, the efficiency of the heated bleach is increased. In a preferred version of this embodiment, the control unit (10) operates the first heater (11), by means of the data received from a temperature sensor, until the liquid temperature in the tub (3) reaches a temperature between 50°C and 80°C, which increases the peroxide efficiency.

In another embodiment of the present invention, the control unit (10) enables the water to be taken into the tub (3) such that the liquid level in the tub (3) remains below the drum (2) level, and operates the first heater (11) until the liquid in the tub (3) reaches a predetermined evaporation temperature. The control unit (10) controls the valve system (8) so as to take water into the tub (3) in a predetermined amount or depending on the data received from a level senor such that the liquid level in the tub (3) remains below the drum (2) level. Thus, the liquid in the tub (3) fills the heater housing (17), but does not contact the laundry in the drum (2). Moreover, during the disinfection process, the control unit (10) operates the first heater (11) to heat the water-bleach mixture in the tub (3) for a predetermined period of time or until reaching an evaporation temperature where the hydrogen peroxide is in the gas state. The evaporation temperature is preferably between 50°C to 80°C, where the peroxide efficiency and hence the amount of active oxygen is optimum. The active oxygen penetrates the laundry in the drum (2) and provides hygiene. By means of this embodiment, the textiles are disinfected without getting wet, in other words without getting in direct contact with bleach and water. Thus, the disinfection process is performed much more quickly and with less damage.

In another embodiment of the present invention, the washing machine (1) comprises a tank (12) which receives the bleach taken from the receptacle (7) and which opens into the tub (3), and a second heater (13) which is provided on the tank (12) and which heats the bleach in the tank (12), and the control unit operates the second heater (13)

during the disinfection process. The bleach taken from the receptacle (7) fills into the tank (12), and the control unit (10), during the disinfection process, operates the second heater (13) on the receptacle (7) so as to heat the bleach in the receptacle (7) to predetermined temperature, preferably until the liquid temperature in the tank (12) reaches a temperature, which increases the peroxide efficiency, depending on the data received from a temperature sensor. The receptacle (7) has an inlet port (19) which preferably opens into the tub (3) so as to receive the bleach taken into the tub (3) and through which the bleach is received from the tub (3), and an outlet port (20) for delivering the heated bleach and/or active oxygen into the tub (3). After the bleach reaches the predetermined temperature, the control unit (10) controls the valve system (8) so as to receive water from the supply line (4) into the tub (3) in a predetermined amount, for example in an amount to be used in the washing program. Thus, since the need for heating the entire water for activating the peroxide is eliminated, savings in energy and time are provided. Moreover, efficiency hygiene is provided in washing programs where the washing water temperature is low, such as wool washing, delicate washing, etc.

In another embodiment of the present invention, the control unit (10) operates the second heater (13) until the liquid in the tank (12) reaches a predetermined evaporation temperature. During the disinfection process, the control unit (10) operates the second heater (13) to heat the bleach in the tank (12) for a predetermined period of time or until reaching an evaporation temperature where the hydrogen peroxide is in the gas state. The evaporation temperature is preferably between 50°C to 80°C, where the peroxide efficiency and hence the amount of active oxygen is optimum. The active oxygen generated in the tank (12) passes through the outlet port (20) and reaches the tub (3), and disperses in the tub (3) so as to penetrate the laundry in the drum (2). By means of this embodiment, the textiles are disinfected with active oxygen without getting wet, in other words without getting in direct contact with bleach and water. Thus, the disinfection process is performed much more quickly and with less damage.

In another embodiment of the present invention, the washing machine (1) comprises a jet line (18) with one end connected to the tank (12) or the heater housing (17) and the

other end opening into the drum (2). The jet line (18) opens into the drum (2), preferably to an upper section of the drum (2) so as to supply the liquid or the gas in the tank (12) or the heater housing (17) directly onto the laundry in the drum (2). Since by means of the jet line (18), the bleach or the active oxygen heated in the heater housing (17) or the tank (12) is directly delivered into the drum (2), the contact of the laundry with the bleach or the active oxygen is increased, and the hygiene performance is improved.

In another embodiment of the present invention, the sensor (9) is a conductivity sensor which measures the conductivity of liquids. By means of the sensor (9), the type of bleach is detected according to conductivity. Thus, a higher number of bleach types, for example different types of oxygen-based bleach such as washing soda and hydrogen peroxide, can be determined, and the disinfection process can be adapted so as to provide the suitable water amount and temperature.

In another embodiment of the present invention, the sensor (9) is disposed on the tub (3). The control unit (10) operates the valve system (8) so as to deliver the bleach in the receptacle (7) into the tub (3) before the disinfection process, and detects the type of the bleach taken into the tub (3) from the receptacle (7) by means of the sensor (9) disposed in the tub (3). The disinfection process is started depending on the detected type of bleach, or the bleach is discharged from the tub (3) through the discharge line (6) before starting the disinfection process. By positioning the sensor (9) in the tub (3), the conductivity of the liquid in the tub (3) can be continuously monitored, and the bleach concentration can be followed without requiring any additional sensor. Thus, the amount of water to be taken from the supply line during the disinfection process can be adjusted.

In another embodiment of the present invention, when a washing program predetermined by the manufacturer is selected via the control panel (P), the control unit (10) starts the disinfection process during the selected washing program. The user selects one among a plurality of washing programs such as wool washing, delicate washing, etc. by means of the control panel (P). A program selection member (P1) such as button, screen, etc. is preferably provided on the control panel (P), and the user can

select a washing program by means of the program selection member (P1). When a washing program predetermined by the manufacturer is selected, the control unit (10) automatically activates the disinfection process in the selected washing program. For example, when the user selects the wool washing program, the type of bleach is determined during the wool washing program, and the disinfection process is started. Thus, especially in washing programs such as delicate washing or wool washing, performed at low temperatures, or extra hygiene, which requires high hygiene, the disinfection process is automatically activated, providing excellent hygiene.

In another embodiment of the present invention, the control panel (P) allows the user to select the disinfection process, and when a washing program is selected together with a disinfection process via the control panel (P), the control unit (10) starts the disinfection process during the selected washing program. The control panel (P) preferably has a program selection member (P1) such as button, screen, etc. and a function selection member (P2) which is configured separately from the program selection member (P1) and which allows the disinfection process to be selected. The user can select a washing program by means of the program selection member (P1) together with the disinfection process by means of the function selection member (P2). The control panel (P) allows the selection of the disinfection process together with a washing program. For example, when the user selects the disinfection process together with the delicate washing program, the type of bleach is determined during the delicate washing program, and the disinfection process is started. Thus, the disinfection process is activated as per user preference, and can be deactivated when the user does not want to user bleach.

In another embodiment of the present invention, in the washing program comprising a washing step and a spin-drying step, the control unit (10) starts the disinfection process after the washing step. The control unit (10) automatically starts the disinfection process depending on the type of bleach after the washing step of the washing program where the laundry is washed with detergent. During the washing step, the dirt layer on the laundry is removed, and during the disinfection process started after the washing

step, the bleach or the active oxygen generated by heating the bleach is enabled to penetrate the laundry more efficiently.

In another embodiment of the present invention, the control panel (P) allows the user to select the disinfection process, and when the disinfection process is selected, the control unit (10) starts the disinfection process before starting any washing program. In a version of this embodiment, a disinfection program comprising the disinfection process is determined by the manufacturer, and the disinfection program can be activated by means of a program selection member (P1) provided on the control panel (P). In another version of this embodiment, a function selection member (P2) which allows the disinfection process to be selected independently of the washing program and which is configured separately from the program selection member (P1) is provided on the control panel (P), and the disinfection process can be selected without selecting any washing program. Thus, the laundry, especially laundry with less or no dirt or stain, can be quickly disinfected without being treated with a washing process. Consequently, the number of processes applied to the laundry is decreased, minimizing the damage to the laundry.

By means of the present invention, high hygiene performance is provided without damaging the textiles in the washing machine (1).

CLAIMS

1. A washing machine (1) **comprising** a control panel (P) which allows the user to select from a plurality of washing programs; a tub (3) wherein the washing process is performed; a drum (2) which is disposed in the tub (3) and wherein the laundry is loaded; a supply line (4) which delivers the water taken from the mains to the tub (3); a discharge line (6) which discharges the liquid in the tub (3) by means of a discharge pump; a receptacle (7) which is suitable for loading bleach therein and which is in fluid communication with the tub (3) so as to allow the delivery of bleach to the tub (3); and a valve system (8) which controls the delivery of water from the supply line (4) to the tub (3) and the delivery of bleach from the receptacle (7) to the tub (3), **characterized by** at least one sensor (9) which detects the type of bleach loaded into the receptacle (7) and a control unit (10) which starts a disinfection process wherein the bleach is used depending on the type of bleach detected by means of the sensor (9).

2. A washing machine (1) as in Claim 1, **characterized by** the control unit (10) which starts the disinfection process when the type of bleach is determined to be oxygen-based bleach.

3. A washing machine (1) as in Claim 1 or 2, **characterized by** the control unit (10) which controls the valve system (8) so as to take the bleach into the tub (3), and starts the discharge pump (5) depending on the type of bleach detected.

4. A washing machine (1) as in Claim 3, **characterized by** the control unit (10) which starts the discharge pump (5) when the type of bleach is determined to be chlorine-based.

5. A washing machine (1) as in any one of the above claims, **characterized by** a heater housing (17) which is provided in the tub (3), a first heater (11) which is provided in the heater housing (17) and which heats the liquid in the tub (3), and the control unit (10) which controls the valve system (8) so as to deliver the

bleach into the tub (3) and which starts the first heater (11) during the disinfection process.

6. A washing machine (1) as in Claim 5, **characterized by** the control unit (10) which enables the water to be taken into the tub (3) such that the liquid level in the tub (3) remains below the drum (2) level, and operates the first heater (11) until the liquid in the tub (3) reaches a predetermined evaporation temperature.

7. A washing machine (1) as in any one of Claim 1 to Claim 4, **characterized by** a tank (12) which receives the bleach taken from the receptacle (7) and which opens into the tub (3), a second heater (13) which is provided on the tank (12) and which heats the bleach in the tank (12), and the control unit which operates the second heater (13) during the disinfection process.

8. A washing machine (1) as in Claim 7, **characterized by** the control unit (10) which operates the second heater (13) until the liquid in the tank (12) reaches a predetermined evaporation temperature.

9. A washing machine (1) as in any one of the Claims 5 to 8, **characterized by** a jet line (18) with one end connected to the tank (12) or the heater housing (17) and the other end opening into the drum (2).

10. A washing machine (1) as in any one of the above claims, **characterized by** the sensor (9) which is a conductivity sensor for measuring the conductivity of liquids.

11. A washing machine (1) as in any one of the above claims, **characterized by** the sensor (9) which is disposed in the tub (3).

12. A washing machine (1) as in any one of the above claims, **characterized by** the control unit (10) which, when a washing program predetermined by the manufacturer is selected via the control panel (P), starts the disinfection process during the selected washing program.

13. A washing machine (1) as in any one of Claim 1 to Claim 11, **characterized by** the control panel (P) which allows the user to select the disinfection process, and the control unit (10) which, when a washing program is selected together

with a disinfection process via the control panel (P), starts the disinfection process during the selected washing program.

14. A washing machine (1) as in Claim 12 or Claim 13, **characterized by** the control unit (10) which, in the washing program comprising a washing step and a spin-drying step, starts the disinfection process after the washing step.

15. A washing machine (1) as in any one of the above claims, **characterized by** the control panel (P) which allows the user to select the disinfection process, and the control unit (10) which, when the disinfection process is selected, starts the disinfection process before starting any washing program.

Figure 1

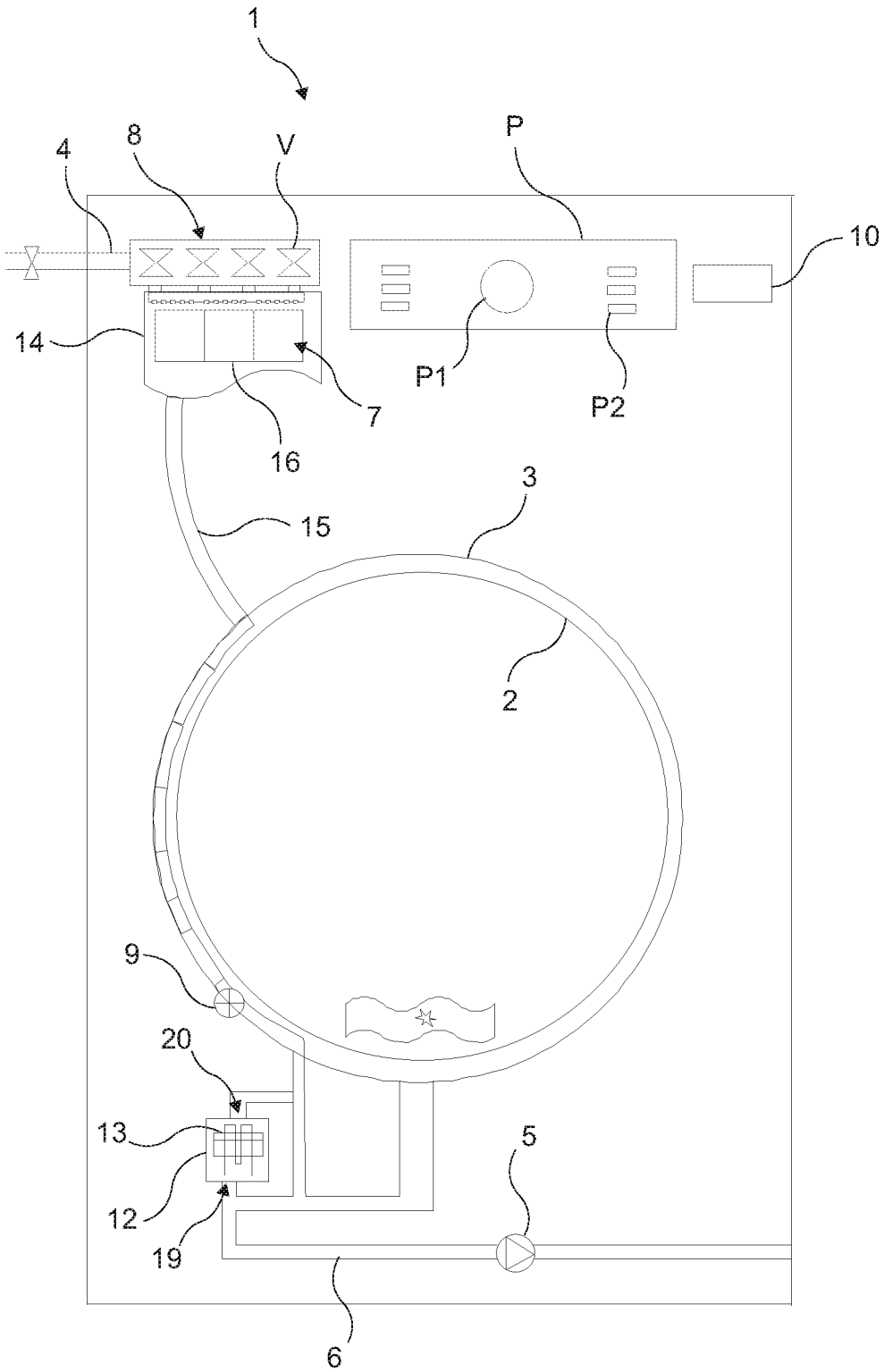


Figure 2

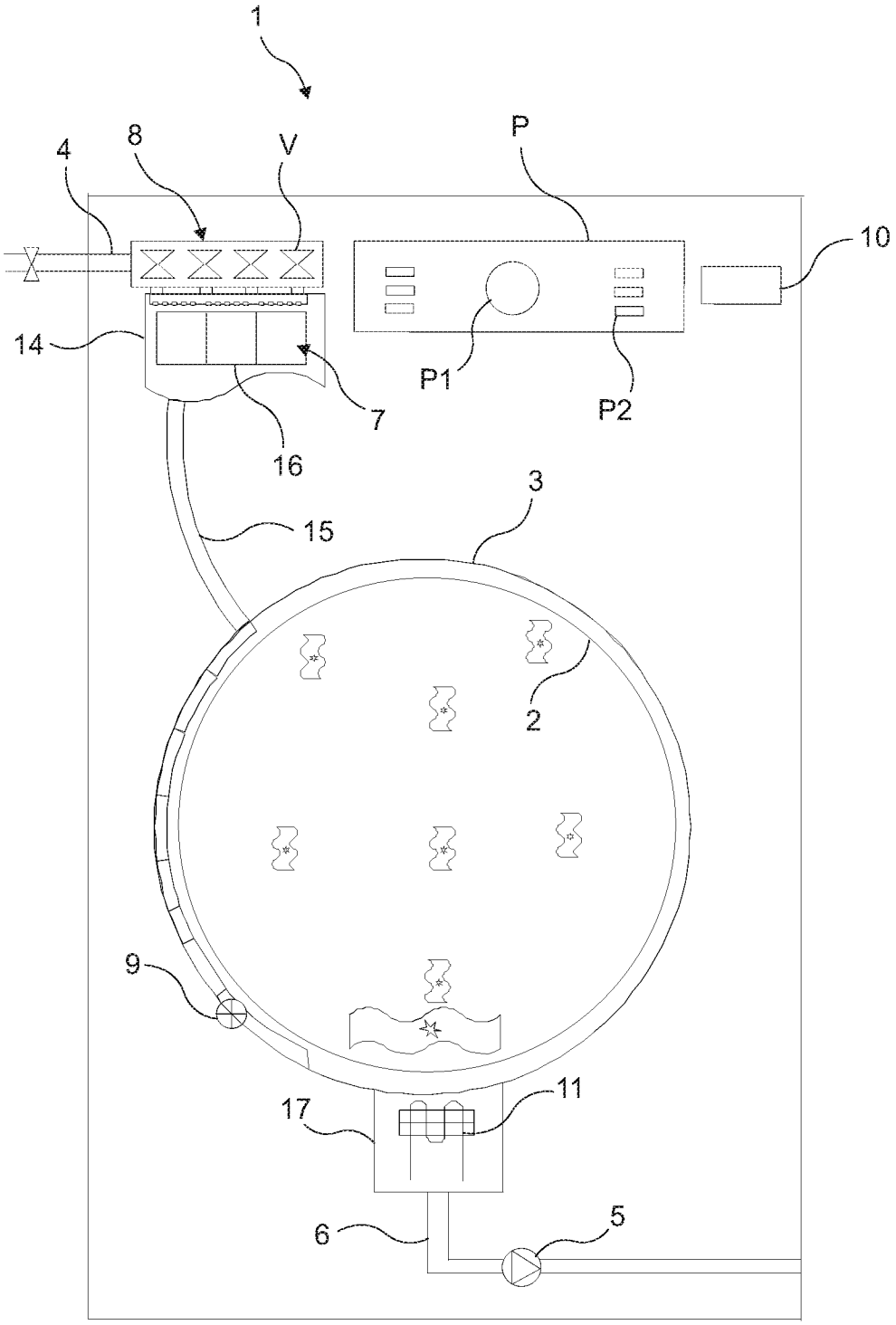
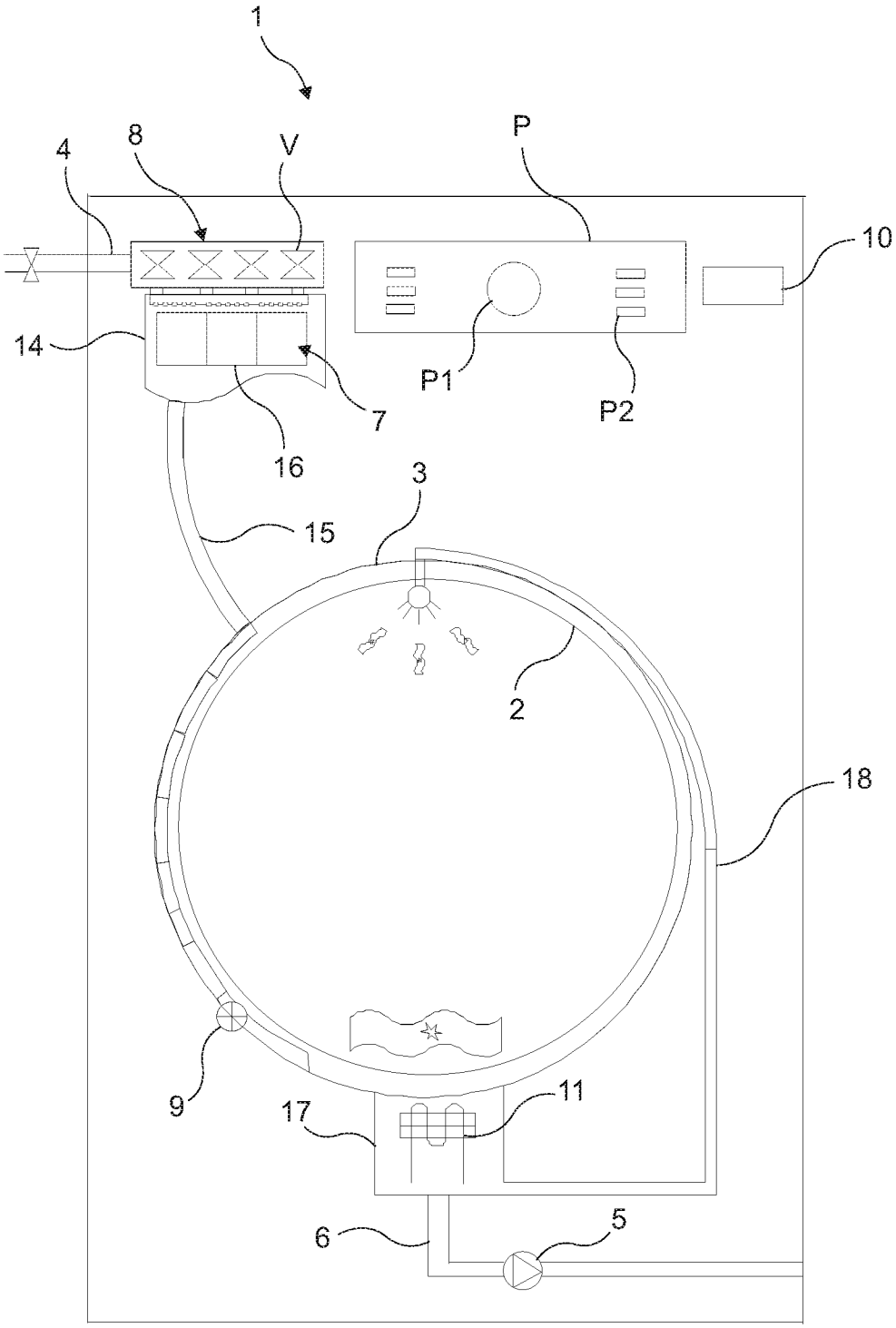


Figure 3



INTERNATIONAL SEARCH REPORT

International application No.
PCT/TR2021/050722

A. CLASSIFICATION OF SUBJECT MATTER

D06F 33/00 (2020.01)i; D06F 35/00 (2006.01)i; D06F 39/02 (2006.01)i; A47L 15/44 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

D06F; A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Turkpatent database

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO Abstract & Full text databases, WPI Database

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	EP 1978144 A2 (INDESIT CO SPA [IT]) 08 October 2008 (2008-10-08)	
X	The whole document	1,2,5-15
A		3,4
	US 2008295257 A1 (BRINGEWATT WILHELM [DE]) 04 December 2008 (2008-12-04)	
X	The whole document	1-4,11-15
A		5-10
	JP H02174898 A (SANYO ELECTRIC CO) 06 July 1990 (1990-07-06)	
A	The whole document (machine translation)	1-15

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"D" document cited by the applicant in the international application
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"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 November 2021	**22 November 2021**

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/TR2021/050722

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
EP	1978144	A2	08 October 2008	IT	RN20070022	A1	06 October 2008
				RU	2008112899	A	10 October 2009
US	2008295257	A1	04 December 2008	DE	102007036800	A1	04 December 2008
				DK	1997948T	T3	03 December 2018
				ES	2690099T	T3	09 November 2018
				EP	1997948	A1	03 December 2008
JP	H02174898	A	06 July 1990	NONE			