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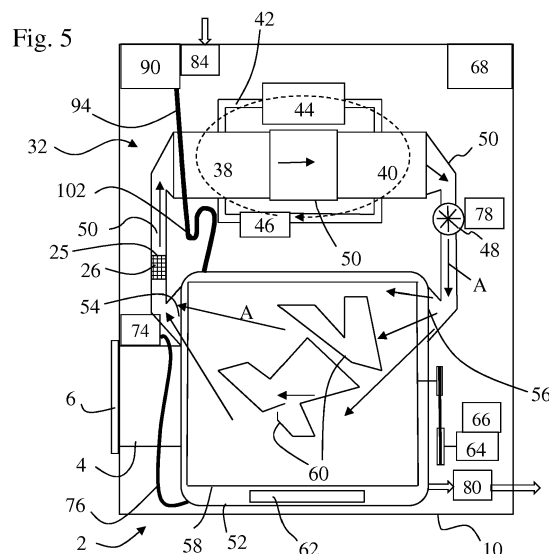
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(54) **DRYING METHOD FOR WASHER DRYER WITH SIPHON FILLING AND WASHER DRYER**

(57) The invention relates to a method for operating a washer dryer during a drying program, the washer dryer (2) comprising: a tub (52); a drum (58) arranged within the tub (52); an air channel (50) adapted to guide drying air, providing an air circulation arrangement; a drying air fan (48); a detergent dispenser (90) adapted to store at least one agent for a laundry treatment; a liquid connection line (94) connecting at least one outlet of the detergent dispenser (90) to the interior of the tub (52) or drum (58), wherein the fluid connection line comprises a siphon device (102), which, when filled with a liquid, provides a siphon function in the liquid passage of the liquid connection line (94); and a water supply arrangement (84)

adapted to supply water to the detergent dispenser (90) and the liquid connection line (94).

The method comprises: starting a drying program for drying the laundry; during the running drying program, monitoring at least one operation parameter; evaluating the at least one operation parameter; and if the evaluation of the at least one operation parameter indicates an incidence which may have affected the liquid level in the siphon device (102), supplying water to the siphon device (102), supplying water to the siphon device by the water supply arrangement (84). Preferably one or more operation parameters are monitored for detecting an incidence. Further a washer dryer is provided having a control unit for implementing the control operation.



Description

[0001] The invention relates to a method of operating a washer dryer having a siphon (air trap) in a detergent supply line, where the siphon is filled with water to a minimum level to properly provide an air trap function. The invention also relates to a washer dryer having a control unit implementing a monitoring and siphon filling function.

[0002] EP 1 715 095 B1 provides a washer dryer having a drum arranged in a tub and a detergent dispenser. A detergent line connects the outlet of the detergent dispenser to the interior of the tub. A siphon is arranged in the detergent line which is filled with water to provide an air-trap function which prevents escape of humid drying air towards the detergent drawer during the drying program. The air pressure in the tub can be measured by a pressure sensor that is provided for detecting the water level during a washing program. It is suggested to include in the drying program a subroutine which is adapted to detect whether the water level within the siphon is sufficient for providing the air-trap function or not. In this subroutine a first pressure value in the tub is detected from the pressure sensor when a fan for circulating the drying air is stopped and a second pressure value is detected when the fan is activated. By the pressure difference of these two values it is concluded whether the water level in the siphon is sufficient for providing the air-trap function. The subroutine is executed, if during a spinning prior to the drying program the drum rotation speed is above a predefined value. The subroutine requires extra time as the fan has to be stopped before re-acceleration such that during the stop phase laundry drying is inefficient.

[0003] It is an object of the invention to provide a method of operating a washer dryer and a washer dryer, which efficiently determine whether a need for filling water into a siphon may exist.

[0004] The invention is defined in claims 1, 12 and 13, respectively. Particular embodiments are set out in the dependent claims.

[0005] According to claim 1, a method for operating a washer dryer during a drying program is provided. The drying program is implemented or executed in a washer dryer which comprises: a tub; a drum arranged within the tub and being adapted to receive laundry for drying the laundry using drying air; an air channel adapted to guide the drying air from at least one air outlet at the drum or tub to at least one air inlet at the drum or tub for providing an air circulation arrangement; a drying air fan adapted to convey the drying air through the air circulation arrangement; a detergent dispenser adapted to store at least one agent for a laundry treatment; a liquid connection line connecting at least one outlet of the detergent dispenser to the interior of the tub, wherein the liquid connection line comprises a siphon device, which, when filled with a liquid, provides a siphon function in the liquid passage of the liquid connection line; and a water supply arrangement adapted to supply water to the detergent dispenser and the liquid connection line.

[0006] Preferably by the detergent dispenser one or more detergents and/or laundry treatment agents can be provided into the tub for treating the laundry received in the drum. The detergent(s) or agent(s) may be solid or liquid and are preferably stored in different compartments of the detergent dispenser. The water supply arrangement may comprise plurality of valves for supplying water selectively to each of the compartments. Preferably the detergent dispenser and/or the water supply arrangement comprises a channel or line by which water only (e.g. without flushing water through one of the compartments) is supplied to the liquid connection line. Such water only is preferably used to fill or fill-up the water in the siphon device such that it has the water-trap function. 'Supplying water to the detergent supply line' includes supplying the water to the detergent supply line via one or more of the compartments of the detergent dispenser.

[0007] In an embodiment the water supply arrangement supplies a predetermined amount of water, more preferably a predetermined and adjustable amount of water, to the liquid connection line. Preferably the liquid connection line is a detergent hose and/or is flexible to compensate movements of the tub relative to the detergent dispenser (which preferably is arranged stationary within a cabinet of the washer dryer).

[0008] The siphon device in the liquid connection line is designed such that it provides an air trap in the liquid connection line preventing the exchange of air between the detergent dispenser and the interior of the tub. In particular the siphon device prevents escape of humid and/or fluff-loaded air from the tub towards the detergent dispenser.

[0009] According to the invention the method comprises the steps of: starting a drying program for drying the laundry received in the drum; during the running drying program, monitoring at least one operation parameter; evaluating the at least one operation parameter; and, if the evaluation of the at least one operation parameter indicates an incidence which may have affected the liquid level in the siphon device, supplying water to the siphon device by the water supply arrangement.

[0010] An incidence is an event or an occurrence which is concluded from the at least one monitored operation parameter by the evaluation as a (high) likelihood that the monitored and evaluated at least one parameter gives an indication for an incidence (event) that the water level within the siphon device may have been lowered due to the incidence. Such event may be the opening of the fluff filter cover and/or removal of the fluff filter and/or the stop and/or (re-) acceleration of the fan. Such incidences result in a pressure change of the drying air in the drying air circulation path (e.g. in the tub) which in turn sucks the water stored within the siphon device towards the tub (lower pressure in tub) or pushes it towards the detergent dispenser (higher pressure in tub). Each of the incidences or both in combination may cause a back-forth swinging of the water standing in the siphon device and eventually to an overflow of the water

into the tub. Thereby the total amount of water is reduced and the water level in the siphon device may become too low to ensure the water trap function. Of course such overflow may happen with a single strong underpressure pulse in the tub such that immediately a larger portion of the water is overflowing.

[0011] An incidence occurs during the drying operation and is not an incidence that has happened before starting the drying program and/or an incidence that is to happen after the end of the drying program. Independent of the incidence-evoked supply of water to the siphon device, water may be supplied to the siphon device e.g. at the beginning (before and/or after start) of the drying program and/or after predetermined periods of time (since the last water supply to the siphon device) - i.e. on the basis of a scheduled course of the drying program.

[0012] Therefore, according to the invention, the water level is neither directly measured (e.g. by a water level sensor) nor does the (detection/evaluation/water supply) method modify the running drying operation such that an 'artificial' event is generated from which then a conclusion with respect to the correct function of the siphon device is drawn. In an embodiment the incidence is neither initiated nor caused by the control of the washer dryer. For example the user of the washer dryer interrupting or halting the running drying program or the user removing the fluff filter from the washer dryer are no incidences (events) that are routinely scheduled or controlled by a control unit of the washer dryer that executes the drying program. The parameter time, i.e. the arrival at predetermined time points or laps of predetermined time periods, is no parameter whose monitoring can indicate an incidence (at least it can not indicate the incidence alone or as such).

[0013] Most preferably the monitored operation parameter is one or more of (a single or an arbitrary combination of two or more of) the following parameters:

- A sensor signal provided by a door opening sensor (e.g. a switch operated by a door mechanism or a user actuated door-opening button) of the washer dryer, wherein the door opening sensor is adapted to detect whether a door for closing the loading opening of the drum is closed and/or opened. Opening and/or closing of the door causes a pressure fluctuation in the tub and/or results of start and/or stop of the fan which in turn causes a pressure fluctuation.
- A sensor signal provided by a filter sensor of the washer dryer, wherein the filter sensor is adapted to detect whether the fluff filter for filtering the drying air is removed from its operational position or is adapted to detect whether a compartment for receiving the fluff filter is opened. The drying operation as such may be continued if the filter is removed from a filter compartment. The signal indicating the filter insert state may indicate the complete or partial removal of the filter or the possible attempt of removing the filter (e.g. a cover of filter compartment is opened). By (partially) removing and/or inserting the filter from or in the filter receptacle or compartment the drying air circulation path is opened which is resulting in a pressure fluctuation that - as described above - may result in water overflow from the siphon device.
- A signal indicating a program pause selected by a user or indicating a program interruption during the running drying program. Such pause or interruption normally deactivates the drying air fan which results in a pressure fluctuation. Additionally in a pause the user may open/close the door for laundry control or adding/removing laundry. An interruption may be caused by a power grid supply fault or an exceptional operation state as detected e.g. by the control unit of the washer dryer.
- A signal indicating resuming drying operation by the drying program after an interruption indicating an end of a user-selected pause of the running drying program. Also by resuming the drying operation the starting and accelerating fan may cause a pressure fluctuation. An interruption is normally a non-scheduled event, e.g. caused by detection of overheating of a component.
- A signal indicating a power failure or power irregularities in the electrical supply of the washer dryer or a signal indicating the end of the power failure or power irregularities. In case of power failure or power irregularities the fan is deactivated and when power returns or returns to be supplied with the ordinary, i.e. normal, frequency and voltage values, the control unit may automatically resume the drying program including re-activation of the fan. The power failure or power irregularities may be very short (like causing flickering of a light bulb) such that drying operation is not completely stopped, where however variation in fan operation (fan speed or conveyance rate) results in pressure fluctuation.
- A signal indicating a malfunction of the washer dryer or a component thereof. In case that one or more components of the washer dryer should lose their regular functionality because of a damage or any other event preventing the washer dryer to work properly, the machine operation is deactivated by switching off all operational components, including the drying air fan which results in a pressure fluctuation.

- A signal indicating the temperature of the drying air or indicating a temporal change in the temperature of the drying air. A (sudden) change in the temperature of the drying air indicates e.g. a change in the drying air flow (flow rate/direction) which in turn indicates that a pressure change may have happened which removed water from the siphon device.
- A pressure signal detected by a pressure sensor of the washer dryer, wherein the pressure sensor is adapted to detect the air pressure of the drying air. The pressure signal is evaluated to detect a change or a strength of a change. A pressure drop and/or raise and/or occurrence of peak/spikes may e.g. happen when laundry suddenly blocks/unblocks the drying air path. A door opening and/or filter removal may also be detectable by the pressure signal as these may result in pressure fluctuations at loading door or filter compartment opening and/or closing. The drying air pressure may be measured by the pressure sensor at any position along the drying air path formed by the drying air circulation arrangement. Preferably the evaluation/detection of an incidence based on the pressure signal does not use a reference pressure measurement, e.g. by comparing pressure signals detected at different speeds of the fan.
- A signal indicating the operation of a draining pump of the washer dryer, wherein the draining pump is adapted to pump condensate water or washing liquid out of the washer dryer. The draining pump is in fluid connection with the interior of the tub. Thus the pumping activity causes a pressure drop which sucks liquid from the siphon device into the tub (may also be noticed by pressure detection). For example the pump turns on when it is not expected (scheduled by drying program) for example at the beginning of the drying program. Also the pump may be activated when the water level detector in the sump of the tub indicates rise of the water level above a threshold, e.g. due to loss of water from the siphon device. Also draining could be provided just after the end of a scheduled operation period.

[0014] Preferably, one or more of the 'signals' (-unless otherwise indicated herein-) are not supplied from a respective sensor, but are generated or provided by the control unit executing and monitoring the drying program.

[0015] Preferably, during the period of detecting the pressure signal for evaluating the at least one operation parameter the fan is activated and/or the fan speed is not reduced. 'Activation' of the fan means that the fan is not switched off. In particular the 'fan speed is not reduced' means that fan speed is not zero, i.e. fan is not switched off.

[0016] In an embodiment the pressure sensor is adapted to detect a signal that is indicative of the drying air pressure during execution of a drying program and is adapted to detect a water level of the water in the tub during a washing program. Additionally or alternatively the pressure sensor is an air pressure sensor detecting the pressure of air (gas) and preferably is in fluid connection with the tub via an air-tight fluid line. Preferably the fluid line is connected to a bottom of the tub such that liquid in the tub partially enters the fluid line and increases the pressure in the air column above the liquid level corresponding to the liquid level in the tub (sump).

[0017] In the method, when the evaluation indicates an incidence that may have affected the liquid level in the siphon device, the supply of water to the siphon device is optionally delayed, wherein the delay is dependent on one or more of the following or is one or more of: a predetermined time interval; a predetermined level of fan speed; and a predetermined level of power consumed by the washer dryer or the motor driving the drum or fan. One or more of these conditions may apply to insert a delay. A delay may be required after detection of an incidence, where the act of water overflowing from the siphon device is still in progress or is itself happening delayed with respect to the detected incidence. For example a pressure fluctuation may cause built up of back-and-forth swinging of the water column in the siphon device, where the overflow of water is still in progress portion by portion or where the main overflow is retarded as compared to the main occurrence of the incidence. In such case an immediate supply of water may result in an (additional) overflow of the currently supplied water or may even amplify swinging of the water column in the siphon device. E.g. time or duration of overflow of water may depend on the nominal speed of the fan and the higher the fan speed the later/heavier the overflow after start/activation of the fan. Generally the delay provides that the incidence or the reason for causing the incidence/removal of water from the siphon device is over - e.g. after the incidence (e.g. after pause/interruption) the drying operation is resumed again and the stopped fan is starting, however the fan causes a pressure change that may remove water from the siphon device such that the real incidence in view of water level in siphon device is not the interruption as such, but the acceleration of the fan thereafter.

[0018] Preferably the washer dryer comprises a control unit which is adapted to control execution of the drying program and adapted to monitor the status of washer dryer components. In particular the control unit is adapted to detect/monitor and to evaluate the at least one operation parameter. Specifically, the control unit is adapted to receive one or more signals representative of the one or more operation parameters; is adapted to evaluate the one or more signals for detecting the incidence; and is adapted to control the water supply arrangement for supplying water in case an incidence which is indicating that the water level in the siphon device may have been affected was detected.

[0019] In an embodiment, via the water supply arrangement an amount of water is supplied to the siphon device, wherein the amount of water or the way of supplying the water is defined by one or more of the following: a predetermined

amount of water and the amount of water is controlled by the water supply arrangement supplying the water for a predetermined time period; the water amount is supplied in two or more portions of the amount of water to be filled into the siphon device; and the water amount is supplied until a predetermined level is reached within the siphon. The amount of water may be provided in discrete amounts. For example the water supply arrangement may be operated repeatedly until the desired predetermined total amount of water is supplied. This avoids 'big' flush that may result in overflow although the maximum filling level is not reached. Preferably the supply of discrete amounts of water is such or has a repetition rate such that build-up of a swinging water column in the siphon device is prevented (e.g. no supply period corresponding to the swinging period of the water column). In one aspect of this embodiment, a predetermined level of water in the siphon may be detected by a level sensing device arranged in the siphon or through a pressure sensor adapted to detect a signal that is indicative of the drying air pressure during execution of a drying program.

[0020] The 'predetermined' amount of water prevents an over-supply or an under-supply and is preferably supplied as follows. The amount of water supplied to the siphon device in response to the incidence is depending on one or more of: the absolute value of the operation parameter monitored for detecting the incidence; a gradient of the value of the operation parameter monitored for detecting the incidence; the magnitude of the change in the value of the operation parameter monitored for detecting the incidence; the direction of change of the value of the operation parameter monitored for detecting the incidence; the duration of the running drying program since the last time of supplying water to the siphon device; and a difference between a maximum value and a minimum value within a given time period. For example a strong/short pressure change may remove a higher amount of water from the siphon device as compared to a small/gradual pressure change.

[0021] In an embodiment the evaluation and/or the result of the evaluation is not static but adapted according to settings and/or options and/or detected operation parameters of the drying program. For example the strength of pressure fluctuation caused by opening the filter compartment may depend on the amount of laundry received in the drum. If e.g. the amount of laundry is low, the pressure fluctuation may be higher as compared to a case where a high amount of laundry (large laundry volume) is in the drum, the latter causing a higher flow resistance and thus a damping of the spreading of the pressure fluctuation through the drying air circulation path. As a further example, if the air channel which guides the drying air has an (inlet or outlet) opening communicating with the drum directly (not via the tub), the amount or volume of laundry received in the drum may also have an influence on the pressure fluctuation (change) as caused by starting/stopping the fan. E.g. in case of restart of the fan, the pressure drop temporally caused may be higher, if a high amount of laundry is in the drum and blocks air flow (bigger volume occupied in the drum results in higher flow resistance and higher amplitudes in pressure change which could lead to more water spill from siphon device). In another example, with the progress of the drying process (program) the fluff clogs the fluff filter and although high pressure deviations may be detected/observed in tub, the corresponding pressure deviation is lower at the siphon device.

[0022] For taking account of such conditions, preferably in the evaluation of the at least one operation parameter the detection or non-detection of an incidence that may have affected the liquid level in the siphon device and/or the amount of water to be supplied to the siphon device by the water supply arrangement is dependent on one or more of the following:

- the laundry drying program or a laundry drying option set by a user via an input selector of the washer dryer,
- the amount or weight of laundry to be dried,
- the nominal speed at which the fan is to be operated during the drying program,
- the current speed of the fan at the time of determining the incidence,
- the current degree of humidity of the laundry,
- the temperature of the drying air,
- a laundry type as set by a user or as estimated by the washer dryer or a control unit thereof,
- the duration since the start of the drying, and
- the duration of the laundry drying program set by a user or as estimated by the washer dryer or a control unit thereof.

[0023] In an embodiment the washer dryer further comprises a heat-pump system, wherein the heat pump system comprises at least: a first heat exchanger adapted to heat the drying air; a second heat exchanger adapted to cool the drying air for humidity condensation; and a compressor adapted to circulate refrigerant through the first and second heat exchangers.

[0024] In an embodiment, one or more of the following components of the washer dryer are arranged within or at the air channel: a heater for heating the drying air (e.g. the condenser or first heat exchanger of the heat-pump system); a heat exchanger for cooling the drying air (e.g. the evaporator or second heat exchanger of the heat-pump system); a first and second heat exchanger being components of a or the heat pump system; and a or the fluff filter for filtering fluff from the drying air.

[0025] Further a washer dryer having a control unit for controlling execution of a drying program is provided. Any elements as disclosed above or below with respect of the method may be combined with the washer dryer in any combination of individual elements or any sub-combination of elements. Vice-versa, any element or function disclosed

in connection with the washer dryer can be combined individually or in any sub-combination with the method(s) herein. The 'elements' relate to the components or elements of the washer dryer as disclosed above or below in the detailed description. In case of method or procedure steps the elements of the washer dryer are adapted to implement the respective method or procedure steps or provide the respective function. Preferably the control unit of the washer dryer is adapted to implement/execute method steps as a function thereof. For the details of the elements of the washer dryer full reference is made to the above or below.

[0026] Further for the purposes of disclosure herein, full reference is made to the teaching and disclosure of EP 2 843 100 A1 (Electrolux Appliances AB). Differences and differentiating elements and method steps are described herein in detail, otherwise and for background, reference is made to EP 2 843 100 A1.

[0027] The washer dryer comprises: a tub; a drum arranged within the tub and being adapted to receive laundry for drying the laundry using drying air; a drying air fan adapted to convey the drying air through the drum; an air channel adapted to guide the drying air from at least one air outlet at the drum or tub to at least one air inlet at the drum or tub for providing an air circulation arrangement; a detergent dispenser adapted to store at least one agent for a laundry treatment; a liquid connection line connecting at least one outlet of the detergent dispenser to the interior of the tub, wherein the fluid connection line comprises a siphon device, which, when filled with a liquid, provides a siphon function in the liquid passage of the liquid connection line; a water supply arrangement adapted to supply water to the detergent dispenser and the liquid connection line; and a control unit controlling the execution of a drying program.

[0028] The control unit of the washer dryer is adapted to execute the drying program by: starting a drying program for drying the laundry received in the drum; during the running drying program, monitoring at least one operation parameter; evaluating the at least one operation parameter; and if the evaluation of the at least one operation parameter indicates an incidence which may have affected the liquid level in the siphon device, supplying water to the siphon device by the water supply arrangement.

[0029] According to a further aspect, a method for operating a washer dryer during a drying program is provided. The washer dryer comprises: a tub; a drum arranged within the tub and being adapted to receive laundry for drying the laundry using drying air; an air channel adapted to guide the drying air from at least one air outlet at the drum or tub to at least one air inlet at the drum or tub for providing an air circulation arrangement; a drying air fan adapted to convey the drying air through the air circulation arrangement; a detergent dispenser adapted to store at least one agent for a laundry treatment; a liquid connection line connecting at least one outlet of the detergent dispenser to the interior of the tub, wherein the fluid connection line comprises a siphon device, which, when filled with a liquid, provides a siphon function in the liquid passage of the liquid connection line; and a water supply arrangement adapted to supply water to the detergent dispenser and the liquid connection line.

[0030] The method comprises: starting a drying program for drying the laundry received in the drum; during the running drying program, monitoring at least one operation parameter; detecting whether the at least one monitored operation parameter indicates an incidence during the running drying program which may have affected the liquid level in the siphon device; and, if such incidence is detected, supplying water to the siphon device by the water supply arrangement.

[0031] All of the above or below statements and explanations relating to the method and washer dryer are applicable in this method. Any of the above elements and functions can be combined with this method individually or in any combination.

[0032] Reference is made in detail to a preferred embodiment of the invention, an example of which is illustrated in the accompanying figures, which show:

Fig. 1 a front perspective view of a washer dryer,

Fig. 2 an exploded front view of the washer dryer shown in Fig. 1,

Fig. 3 a perspective view to the lower side of a top unit of the washer dryer of Fig. 1, which is arranged above the tub and under the top cover and is supporting several components of the washer dryer,

Fig. 4 a detergent line with a siphon to be used in the washer dryer of Fig. 1,

Fig. 5 a block diagram showing the schematic arrangement of components of the washer dryer of Fig. 1,

Fig. 6 a block diagram of several components of the washer dryer,

Fig. 7 a time diagram showing the water loss from the siphon, the blower activity and a filling activity, and

Fig. 8 a time diagram showing the pressure development in the tub of the washer dryer for illustrating an incidence indicating the need for a refill.

[0033] Fig. 1 shows the perspective front view of an illustrative washer dryer 2 for explaining the invention. Unless otherwise described in more detail herein, reference is made to EP 2 843 100 A1 which describes further details of the washer dryer 2.

[0034] The washer dryer 2 described here comprises a heat pump system 32 for condensing humidity from the drying air and for heating the drying air. However, in other embodiments an electrical heater or radiator may be provided for heating the drying air and a heat exchanger (for example an air/air heat exchanger) for cooling the drying air may be provided instead of the heat pump system 32 and its components (see below). In the embodiment explained in detail, the washer dryer 2 has a drum 58 with a horizontal axis or an axis which is inclined relative to the vertical direction, such that the laundry is tumbling within the drum when the drum is rotated. However, the invention may also be implemented in a washer dryer having a drum rotating around a vertical axis.

[0035] As can be seen from Fig. 1, the washer dryer 2 has a loading opening 4 behind a door 6, wherein laundry 60 is loaded into the drum 58, when the door 6 is opened. The door 6 may be opened by pulling at a handle 8. The outer appearance of the washer dryer 2 is given by a cabinet 10 or housing which comprises a front wall 12, a side wall 14 (the opposing side wall not shown), a top cover 16 and a rear wall and bottom cover (latter two not shown). The upper portion of the front wall 12 comprises a display and input panel 18 having a program selector 20 and several option selectors 22 or buttons. Further, the front wall 12 comprises a fluff compartment cover 24 which covers a filter compartment 25 in which a filter unit 26 or fluff filter is received (see Fig. 2). Moreover, the front wall 12 comprises the front cover of a detergent drawer 28.

[0036] Fig. 2 shows an exploded perspective view of the washer dryer 2 where the top cover 16 is lifted to enable a view to a top unit 30 which includes a portion of the heat pump system 32. Fig. 2 shows a state, where the filter unit 26 is extracted from the filter compartment 25 by pulling out the filter unit 26 via the fluff compartment cover 24. Besides the filter unit 26 a mesh filter 26a is provided in the air guiding path towards the heat exchangers.

[0037] The top unit 30 supports several components of the washer dryer, which are mainly sandwiched between a top shell 34 or cover (which is lifted in this exploded view) and a lower shell 36 or tray. A portion of a drying air channel 50 is formed between the top shell 34 and lower shell 36. In flow direction of this portion of the air channel 50, the filter compartment 25 is provided where the drying air passes the filter unit 26 and the mesh filter 26a before it enters into the first heat exchanger 38 (which is the evaporator / air humidity condenser of the heat pump system 32) and then enters into a second heat exchanger 40. The second heat exchanger 40 is the condenser of the heat pump system 32 or is replaced by an electrical heater in case no heat pump system is provided in the washer dryer as mentioned above.

[0038] Fig. 3 shows a perspective view to the lower side of the top unit 30, specifically to the lower side of the lower shell 36. A fan 48 or blower and a fan motor 78 are arranged at the lower side of the lower shell 36 for conveying the drying air within the drying air channel 50. The channel together with the drum 58 and/or tub 52 forms a closed loop for circulating the drying air by the activity of the fan 48. The outer side of a dispenser compartment 92 can be seen in which a detergent dispenser 90 is slidably arranged. At the rear side of the dispenser compartment 92 (when seen from the front side of the washer dryer) an inlet 96 into a detergent supply line 94* is provided. In case water is supplied to a detergent compartment of the detergent dispenser 90, the water mixed with the detergent is flushed through the inlet 96 into the detergent supply line 94* from where it is passing through an outlet 98 and from there into the interior of the tub 52. Bellows 100 are provided in the detergent supply line 94* which damp the vibrations of the tub 52 and thus prevent transmission of mechanical movement from the tub 52 to the top unit 30. The detergent supply line 94* has a fluff trap 102* which is not further described here, as according to the present improved washer dryer the fluff trap 102* is replaced by a siphon 102 as shown in Fig. 4.

[0039] As shown at the lower right region of the top unit 30, a portion of the air channel 50 is provided which guides the drying air from the top unit 30 coming from the fan 48 towards a bellows (not shown) forming portion of the loading opening 4 such that the dried and heated drying air is provided from the top unit 30 directly into the interior of the drum 58. The other portion of the air channel 50 which is guiding the drying air from the tub (this portion is connected to the mantle of the tub) towards the top unit 30 and there first through the filter unit 26 is shown in the middle of the top unit 30 partially hidden by the detergent supply line 94*.

[0040] Fig. 4 shows a detergent supply line 94 which - for the purposes of the invention - is replacing the detergent supply line 94* as shown in Fig. 3. The inlet 96 from the dispenser 90 is shown and the outlet 98 which is to be connected to the mantle of the tub 52. As mentioned the fluff trap 102* shown in Fig. 3 is replaced by the siphon 102. The siphon 102 is designed such that the water level WL, which is the maximum water level that can be achieved without the water flowing through the outlet 98 into the tub 52 (overflow), prevents passage of air between the inlet 96 and the outlet 98. I.e., if the siphon 102 is filled with water up to the level WL, no air can flow between the detergent dispenser or the dispenser compartment 92 and the interior of the tub 52. More precisely, up to a lower pressure difference between the inlet 96 and the outlet 98, no air can pass. If, however, the pressure difference between the inlet and the outlet 96, 98 is increased, the water column within the siphon 102 is moved either towards the dispenser compartment 92 or towards the tub 52, depending on the direction of the pressure difference. In the latter case, i.e. if the water column is shifted towards the tub 52, the water can flow over into the tub 52 which reduces the amount of water in the siphon 102 and

may finally result in that the actual water level is below the indicated water level WL and the air trap function cannot be provided so that air may pass between the inlet 96 and outlet 98. In case the current water level within the siphon 102 is lower than a minimum level (e.g. WL), drying air carrying humidity from laundry drying and fluff may exit the tub towards the dispenser compartment and from there into an interior of the cabinet 10 and/or to the exterior of the cabinet 10 such that unwanted contamination by condensate and/or fluff may happen.

[0041] Fig. 5 schematically shows components of the washer dryer 2. The heat pump system 32 has a refrigerant loop 42 through which the refrigerant is circulated by the pumping activity of a compressor 44. The refrigerant leaving the compressor 44 is flowing through the second heat exchanger, from there through an expansion device 46, from there through the first heat exchanger 38 and then back to a suction inlet of the compressor 44. The drying air A conveyed by the fan 48 is guided in a portion of the channel 50 through an inlet 56 into the tub 52. However, as mentioned above, in the detailed embodiment of the washer dryer 2 as shown in Figs. 1 to 4, the portion of the drying channel from the fan 48 is guided through a bellows at the front side of the machine, wherein the bellows partially surround the loading opening 4. In this case the bellows or gasket provides the inlet 56 such that the drying air is passed directly into the interior of the drum 58.

[0042] The drying air having passed the drum 58 is exhausted through an outlet 54 (only schematically shown on the front side). Actually outlet 54 is provided approximately in the middle and upper portion of the mantle of the tub 52. From the outlet 54 the drying air is guided along a portion of channel 50 through the filter unit 26 and the mesh filter 26a from where it is sucked by the activity of the fan 48 through the first and second heat exchangers 38, 40. A filter sensor 27 may be assigned to the filter unit 26 and/or the compartment 25 and/or the cover 24 to detect whether the filter unit is correctly inserted into the compartment and/or whether filter unit is (partially) removed.

[0043] An electrical heater 62 is arranged in the tub 52 for heating washing liquid. The drum 58 is driven by a drum motor 64 which receives its electrical power from a drum motor inverter 66. The operation of the washer dryer is controlled by a control unit 68 which comprises a memory 70 (Fig. 6) in which different program parameters for different programs and different program options are stored. The compressor 44 is powered by a compressor inverter 72 that is controlled by the control unit 68 as shown in Fig. 6. A pressure sensor 74 is connected by a connection line 76 to the bottom or sump of the tub 52 such that either the pressure of the air within the tub 52 or the pressure caused by the liquid stored in the tub 52 can be detected. The signal of the pressure sensor 74 is provided to the control unit 68.

[0044] Liquid stored in the tub 52 can be drained by a draining pump 80 to the outside of the cabinet 10. Draining activity of the pump 80 is controlled by the control unit 68 in dependency of the water level detected by the pressure sensor 74 (e.g. activation when a predetermined water level is exceeded) and/or at specific program routines (e.g. for draining the washing liquid or for draining water expelled during a spinning cycle) and/or for draining condensate that has collected in the sump of the tub 52.

[0045] The temperature of the drying air can be detected by a drying air temperature sensor 82 which is e.g. arranged at or close to the inlet 56 and which sends the temperature signal to the control unit 68. Further, a water supply device 84 is provided which is connected to a household water tap for supplying water to the different detergent compartments within the detergent dispenser 90 under the control of the control unit 68.

[0046] In an embodiment of the washer dryer 2 a secondary air duct (see reference numeral 130 in Fig. 1 of EP 2 843 100 A1 [0039]) may be provided to draw some ambient air A_{AIR} into the drying air channel 50. However, in the present washer dryer 2 the air drawn into the channel 50 cannot escape through the detergent supply line 94, as the siphon 102 and the water level WL therein prevent air exchange therethrough (in case that the desired water level at WL is set). Note: As mentioned before, the fluff trap 102* shown in Fig. 3 corresponds to the bulged conduit portion 260 shown in Fig. 2c of EP 2 843 100 A1 and is replaced in the present invention by the air trapping siphon 102. In an embodiment for the present washer dryer 2, the air A_{AIR} drawn in by such secondary air duct may be exhausted via an intentional leak passage which for example is provided at the channel portion close to the filter unit 26. E.g. an exhaust air passage is arranged at the filter compartment 25 and is connecting the interior of the channel 50 to the outside of the cabinet 10. Preferably the flow rate of the outside air circulation (e.g. drawing in external air and exhausting it) is very low. Further preferably, only a small passage from the inside of the channel 50 towards the outside of the cabinet 10 is provided to enable pressure equilibration between the air within the closed air loop and the outer atmospheric pressure. This allows a steady but low-flow rate equilibration without the requirement to exhaust or intake outside air through the air trap in the siphon 102.

[0047] As described before, the draining pump 80 may be activated by the control unit 68 in case that a water level at the sump of the tub is detected via the pressure sensor 74 requiring draining of the water to the exterior of the cabinet 10.

[0048] Fig. 6 shows in a simplified block diagram the structure of controlling the components of the washer dryer 2 by the control unit 68 and of providing control signals (parameters) to the control unit. Reference is made to the above. In short the control unit controls:

- the water supply device 84 to selectively supply water to the individual compartments of the detergent dispenser for washing out treatment agents (e.g. detergent, softener) by water and/or for providing water directly into line 94,

- the display and/or acoustic signals of the panel 18,
- activates/deactivates fan motor 78,
- activates/deactivates electrical heater 62,
- activates/deactivates draining pump 80,
- controls drum motor inverter 66 or electronics, and
- controls compressor motor inverter 72 or electronics.

[0049] The control unit receives control or status signals (parameters) from:

- the panel 18 (program selector, option selectors),
- temperature sensor 82,
- pressure sensor 74,
- filter sensor 27,
- drum motor inverter 66 or electronics, and
- compressor motor inverter 72 or electronics.

[0050] In an embodiment it may be provided that the filter unit 26 is replaced by a water spray-operated fluff filter, or such a water-operated fluff filter is additionally provided to remove the fluff from the air transported in the channel section between the drum 58 and the first heat exchanger 38. Due to the water flow from such water-operated fluff filter, water collects in the sump of the tub and the draining pump 80 has to be repeatedly operated for removing the collected water from fluff filtering and from condensation. Also in such incidences the water volume sucked out of the sump by the draining pump 80 may result in temporary underpressure within the tub 52 which results in the water from the siphon 102 overflowing into the tub. Then the control unit 68 detects the operation of the draining pump 80 activated under its control and such detection of such an incidence, that may have caused overflow of water from the siphon 102, is effecting the control unit 68 to activate the water supply device 84 to supply water into the siphon 102. Preferably, if the draining pump is activated, a delay is introduced before starting with water supply or the water supply is started when the draining pump is deactivated.

[0051] Of course, instead or additionally of monitoring and detecting the signal via activating the draining pump 80, the pressure signal from the pressure sensor 74 can be monitored. From monitoring and evaluating this signal it can be determined therefrom, whether there was an incidence or event which required filling of water into the siphon 102. By the combination of monitoring or evaluating the signals from draining pump activation and pressure sensor 74, the control unit 68 can for example determine that the draining pump was activated and the pressure signal has to be evaluated applying specific evaluation parameters that are convenient for the incidence draining of water. For example, the threshold values of pressure and/or the duration of pressure variation and/or the direction of pressure increase or decrease may be different under the training activity as compared to opening the filter compartment. Thereby that it is differentiated in the evaluation of the pressure variation, whether it is caused by draining or fluff compartment opening to conclude that water supply via the water supply device 84 is required or not.

[0052] Generally, for providing an optimal evaluation / detection of an incidence which may have effected the liquid level in the siphon device, it is preferred to have different evaluation parameters which are applied by the control unit 68 to come to the right judgement in dependency of one or more of :

- The drying program selected by a user via the display and input panel 18,
- program options selected by the user via the option selectors 22,
- the amount of laundry stored in the drum as either input by a user or detected via the motor values of the motor 64 driving the drum 58,
- the temperature of the drying air as for example detected by the temperature sensor 82, and
- a status signal supplied to control unit 68 (for example draining pump activation, value of speed of the drum rotation and/or fan rotation, indication of power supply shortage or opening of the door 6).

[0053] The evaluation of parameters which might be different in dependency of the above dependencies may relate to one or more of:

- the threshold value for the pressure,
- the duration of a pressure variation,
- the gradient of the pressure value or the temperature value,
- the duration of draining pump activation, and
- the power consumption by the fan motor 78 and/or the drum motor 64.

[0054] Fig. 7 shows a time diagram of the behavior of the fan speed FS and the amount WO of water overflowing from the siphon 102 towards the sump as well as a water filling sequence Fill executed by the water supply device 84 under the control of the control unit 68. As can be seen from the curve FS, after a stop of the fan 48, the fan is restarted or activated and the rotation speed increases from zero to the nominal rotation speed which here is 4000 rpm as an example.

The time when the fan 48 has reached its nominal speed is indicated by the vertical line in the diagram. The start of the fan creates a pressure variation within the tub 52 such that the pressure difference between the interior of the tub 52 and the outside of the cabinet 10 cannot be equalized within short time (for example by providing the optional equilibration passage from the channel 50 to the outside or by the secondary air duct 130 known from EP 2 843 100 A1), such that the pressure difference pushes and pulls the water column in the siphon 102 and water flows over into the tub.

[0055] The pressure difference causes an overflow of water WO which is somewhat delayed as compared to the start of the fan curve and which ends about the time when the fan reaches its nominal speed. As shown in Fig. 7, after the fan has reached its nominal rotation speed, which means with a delay between the start of the fan 48 and a refill, a refill sequence Fill is executed to replenish the water in the siphon 102 up to the water level WL shown in Fig. 4. Thereby, the air trap function by the siphon 102 is re-established.

[0056] As mentioned in this example, preferably a delay is provided between detection of the incidence or event that could have caused the water column in the siphon 102 to overflow, and the time of starting supply of water into the siphon 102. The illustrated reason is that the start of the fan does not necessarily mean that water removal from the siphon 102 is over, but it may mean that the water overflow from the siphon has started or is still in progress after the initial event is already over.

[0057] In an embodiment it may be further provided that the pressure signal by the pressure sensor 74 is additionally monitored by the control unit 68 when the water supply to the siphon 102 via the water supply device 84 has been started. Then, by analyzing the temporal pressure course it can be detected (e.g. by detecting occurrence of a (further) pressure variation) whether the air trapping function of the siphon 102 is re-established. Such pressure variation indicates that a slight pressure difference between the outside pressure (which is existing in the interior of the tub 52, if the water column in the siphon 102 does not guarantee air trapping) is provided again.

[0058] During the drying program normally the fan is only started at the beginning where also the water fill is performed to guarantee that the siphon 102 provides the air trap function from the beginning. Then normally the fan 48 is not stopped, but operated continuously during the drying program. Thus normally no pressure variation is caused due to lack of stopping and/or restarting the fan. However, if there is a power failure or power irregularities from the electricity grid or if the user opens the door or selects a pause of the drying program, or if a malfunction of one or more component of the washer dryer is signaled, the fan is stopped and is restarted when the drying program is resumed. At such incidences water is overflowing out of the siphon 102 and water has to be replenished as illustrated by the examples of Figs. 7 and 8.

[0059] Fig. 8 is a time diagram indicating the air pressure within the tub 52 detected by the pressure sensor 74. There are two spikes indicated by S, wherein the first spike is the time when the filter unit 26 was removed from the filter compartment 25 and the second spike S indicates the time when the filter unit 26 was reinserted into the compartment 25. By analyzing the period between the two spikes S, the control unit 68 can detect the occurrence and end of an incidence which effected a water overflow from the siphon 102. When this period is terminated the water-refill sequence can be initiated.

[0060] Summarizing, according to the method of the invention during the running drying program at least one operation parameter is monitored and evaluated. In case that the evaluation results in an indication that there was an incidence which may have resulted in overflow of the water column from the siphon, water is supplied to the siphon to make sure that the air trap function is active or present.

[0061] Preferably, a washer dryer is provided having a control unit implementing such method for controlling a drying operation.

[0062] Alternatively the method provides starting a drying program for drying the laundry received in the drum; during the running drying program, monitoring at least one operation parameter; detecting whether the at least one monitored operation parameter indicates an incidence during the running drying program which may have effected the liquid level in the siphon device; and, if such incidence is detected supplying water to the siphon device by the water supply arrangement.

Reference Numeral List:

2	washer dryer	58	drum (laundry compartment)
4	loading opening	60	laundry
6	door	62	electrical heater
8	handle	64	drum motor
10	cabinet/ housing	66	drum motor inverter

(continued)

	12	front wall	68	control unit
	14	side wall	70	memory
5	16	top cover	72	compressor inverter
	18	display and input panel	74	pressure sensor
	20	program selector	76	connection line
	22	option selectors	78	fan motor
10	24	fluff compartment cover	80	draining pump
	25	filter compartment	82	drying air temperature sensor
	26	filter unit/fluff filter	84	water supply device
	26a	mesh filter	90	detergent dispenser
	27	filter sensor	92	dispenser compartment
15	28	detergent drawer	94, 94*	detergent supply line
	30	top unit	96	inlet from dispenser
	32	heat pump system	98	outlet to tub
	34	top shell/cover	100	bellows
	36	lower shell/tray	102*	fluff trap
20	38	first heat exchanger (evaporator) / air humidity condenser	102	siphon
	40	second heat exchanger (condenser) / electrical heater	A	drying air flow
			Fill	water supply
	42	refrigerant loop	FS	fan speed
25	44	compressor	I	incidence
	46	expansion device	WL	water level
	48	fan/blower	WO	integral amount of
	50	drying air channel		overflowing water
	52	tub	S	spike
30	54	outlet		
	56	inlet		

Claims

1. Method for operating a washer dryer during a drying program, the washer dryer (2) comprising:

a tub (52),
 a drum (58) arranged within the tub (52) and being adapted to receive laundry (60) for drying the laundry using drying air,
 an air channel (50) adapted to guide the drying air from at least one air outlet (54) at the drum (58) or tub (52) to at least one air inlet (56) at the drum or tub for providing an air circulation arrangement,
 a drying air fan (48) adapted to convey the drying air through the air circulation arrangement,
 a detergent dispenser (90) adapted to store at least one agent for a laundry treatment,
 a liquid connection line (94) connecting at least one outlet of the detergent dispenser (90) to the interior of the tub (52) or drum (58), wherein the fluid connection line comprises a siphon device (102), which, when filled with a liquid, provides a siphon function in the liquid passage of the liquid connection line (94), and
 a water supply arrangement (84) adapted to supply water to the detergent dispenser (90) and the liquid connection line (94),

wherein the method comprises:

starting a drying program for drying the laundry received in the drum (58),
 during the running drying program, monitoring at least one operation parameter,
 evaluating the at least one operation parameter, and
 if the evaluation of the at least one operation parameter indicates an incidence which may have affected the

liquid level in the siphon device (102), supplying water to the siphon device by the water supply arrangement (84),

wherein the operation parameter monitored is one or more of:

- a sensor signal provided by a door opening sensor of the washer dryer, wherein the door opening sensor is adapted to detect whether a door (6) for closing the loading opening (2) of the drum (58) is closed or opened,
- a sensor signal provided by a filter sensor (27) of the washer dryer, wherein the filter sensor is adapted to detect whether the fluff filter (26) for filtering the drying air is removed from its operational position or is adapted to detect whether a compartment (25) for receiving the fluff filter is opened,
- a signal indicating a program pause selected by a user or indicating a program interruption during the running drying program,
- a signal indicating resuming drying operation by the drying program after an interruption or a user-selected pause of the running drying program,
- a signal indicating a power failure or power irregularities in the electrical supply of the washer dryer or a signal indicating the end of the power failure or power irregularities,
- a signal indicating a malfunction of the washer dryer or a component thereof,
- a signal indicating the temperature (82) of the drying air or indicating a temporal change in the temperature of the drying air,
- a pressure signal detected by a pressure sensor (74) of the washer dryer, wherein the pressure sensor is adapted to detect the air pressure of the drying air, and
- a signal indicating the operation of a draining pump (80) of the washer dryer, wherein the draining pump is adapted to pump condensate water or washing liquid out of the washer dryer.

2. Method according to claim 1, wherein during the period of detecting the pressure signal from the pressure sensor (74) for evaluating the at least one operation parameter the fan (48) is on or active or the fan speed is not reduced.

3. Method according to claim 1 or 2, wherein the pressure sensor (74) is adapted to detect a signal that is indicative of the drying air pressure during execution of a drying program and is adapted to detect a water level of the water in the tub (52) during a washing program.

4. Method according to claim 1, 2 or 3, wherein, when the evaluation indicates an incidence that may have affected the liquid level in the siphon device (102), the supply of water to the siphon device (102) is delayed, wherein preferably the delay is one or more of or is dependent on one or more of:

- a predetermined time interval,
- a predetermined level of fan speed, and
- a predetermined level of power consumed by the washer dryer or the motor (64, 78) driving the drum (58) or fan (48).

5. Method according to any of the previous claims 1 to 4, further comprising a control unit (68), wherein the control unit is adapted to receive one or more signals representative of the one or more operation parameters, wherein the control unit is adapted to evaluate the one or more signals for detecting the incidence, and wherein the control unit is adapted to control the water supply arrangement (84) for supplying water in case an incidence indicating that the water level in the siphon device (102) may have been affected was detected.

6. Method according to any of the previous claims, wherein the amount of water supplied to the siphon device (102) is one or more of the following:

- a predetermined amount of water and the amount of water is controlled by the water supply arrangement (84) supplying the water for a predetermined time period,
- is supplied in two or more portions of the amount of water to be filled into the siphon device (102), and
- is supplied until a predetermined water level is reached within the siphon.

7. Method according to any of the previous claims, wherein the amount of water supplied to the siphon device (102) in response to the incidence is depending on one or more of:

- the absolute value of the operation parameter monitored for detecting the incidence,

a gradient of the value of the operation parameter monitored for detecting the incidence,
 the magnitude of the change in the value of the operation parameter monitored for detecting the incidence,
 the direction of change of the value of the operation parameter monitored for detecting the incidence,
 the duration of the running drying program since the last time of supplying water to the siphon device (102), and
 a difference between a maximum value and a minimum value within a given time period.

8. Method according to any of the previous claims, wherein in the evaluation of the at least one operation parameter the detection or non-detection of an incidence that may have affected the liquid level in the siphon device (102) or the amount of water to be supplied to the siphon device by the water supply arrangement (84) is dependent on one or more of the following:

- the laundry drying program or a laundry drying option set by a user via an input selector (18) of the washer dryer,
- the amount or weight of laundry (60) to be dried,
- the nominal speed at which the fan (48) is to be operated during the drying program,
- the current speed of the fan (48) at the time of determining the incidence,
- the current degree of humidity of the laundry,
- the temperature of the drying air,
- a laundry type as set by a user or as estimated by the washer dryer or a control unit (68) thereof,
- the duration since the start of the drying, and
- the duration of the laundry drying program set by a user or as estimated by the washer dryer or a control unit (68) thereof.

9. Method according to any of the previous claims, further comprising a heat-pump system (32), wherein the heat pump system comprises at least:

- a first heat exchanger (40) adapted to heat the drying air,
- a second heat exchanger (38) adapted to cool the drying air for humidity condensation,
- and
- a compressor (44) adapted to circulate refrigerant through the first and second heat exchangers (38, 40).

10. Method according to any of the previous claims, wherein one or more of the following are arranged within or at the air channel (50):

- a heater (40) for heating the drying air,
- a heat exchanger (38) for cooling the drying air,
- a first and second heat exchanger (38, 40) being components of a or the heat pump system (32), and
- a or the fluff filter (26) for filtering fluff from the drying air.

11. Method according to any of the previous claims, wherein after detection of an incidence and after the start of supplying water to the siphon device or during supplying water to the siphon device the pressure signal of the pressure sensor (74) to evaluate whether a change of the pressure signal indicates restoring the air-trap function of the siphon device.

12. Washer dryer comprising:

- a tub (52),
- a drum (58) arranged within the tub (52) and being adapted to receive laundry (60) for drying the laundry using drying air,
- a drying air fan (48) adapted to convey the drying air through the drum (58),
- an air channel (50) adapted to guide the drying air from at least one air outlet (54) at the drum (58) or tub (52) to at least one air inlet (56) at the drum or tub for providing an air circulation arrangement,
- a detergent dispenser (90) adapted to store at least one agent for a laundry treatment,
- a liquid connection line (94) connecting at least one outlet of the detergent dispenser (90) to the interior of the tub (52) or drum (58), wherein the fluid connection line comprises a siphon device (102), which, when filled with a liquid, provides a siphon function in the liquid passage of the liquid connection line (94),
- a water supply arrangement (84) adapted to supply water to the detergent dispenser (90) and the liquid connection line (94), and
- a control unit (68) controlling the execution of a drying program, wherein the control unit is adapted to execute the drying program by:

starting a drying program for drying the laundry received in the drum,
 during the running drying program, monitoring at least one operation parameter,
 evaluating the at least one operation parameter, and
 if the evaluation of the at least one operation parameter indicates an incidence which may have affected
 the liquid level in the siphon device (102), supplying water to the siphon device by the water supply ar-
 rangement (84),
 wherein the operation parameter monitored is one or more of:

- a sensor signal provided by a door opening sensor of the washer dryer, wherein the door opening sensor is adapted to detect whether a door (6) for closing the loading opening (4) of the drum (58) is closed or not,
- a sensor signal provided by a filter sensor (27) of the washer dryer, wherein the filter sensor is adapted to detect whether the fluff filter (26) for filtering the drying air is removed from its operational position or is adapted to detect whether a compartment (25) for receiving the fluff filter is opened,
- a signal indicating a program pause selected by a user or indicating a program interruption during the running drying program,
- a signal indicating resuming drying operation by the drying program after an interruption or a user-selected pause of the running drying program,
- a signal indicating a power failure or power irregularities in the electrical supply of the washer dryer or a signal indicating the end of the power failure or power irregularities,
- a signal indicating a malfunction of the washer dryer or a component thereof,
- a signal indicating the temperature of the drying air or indicating a temporal change in the temperature of the drying air,
- a pressure signal detected by a pressure sensor (74) of the washer dryer, wherein the pressure sensor is adapted to detect the air pressure of the drying air, and
- a signal indicating the operation of a draining pump (80) of the washer dryer, wherein the draining pump is adapted to pump condensate water or washing liquid out of the washer dryer.

13. Method for operating a washer dryer during a drying program,
 the washer dryer (2) comprising:

a tub (52),
 a drum (58) arranged within the tub and being adapted to receive laundry (60) for drying the laundry using drying air,
 an air channel (50) adapted to guide the drying air from at least one air outlet at the drum (58) or tub (52) to at least one air inlet at the drum or tub for providing an air circulation arrangement,
 a drying air fan (48) adapted to convey the drying air through the air circulation arrangement,
 a detergent dispenser (90) adapted to store at least one agent for a laundry treatment,
 a liquid connection line (94) connecting at least one outlet of the detergent dispenser to the interior of the tub (52) or drum (58), wherein the fluid connection line comprises a siphon device (102), which, when filled with a liquid, provides a siphon function in the liquid passage of the liquid connection line, and
 a water supply arrangement (84) adapted to supply water to the detergent dispenser (90) and the liquid connection line (94),

wherein the method comprises:

starting a drying program for drying the laundry received in the drum (58),
 during the running drying program, monitoring at least one operation parameter,
 detecting whether the at least one monitored operation parameter indicates an incidence during the running drying program which may have affected the liquid level in the siphon device (102), and
 if such incidence is detected, supplying water to the siphon device (102) by the water supply arrangement (84).

14. The method of claim 13, wherein the operation parameter monitored is one or more of:

- a sensor signal provided by a door opening sensor of the washer dryer, wherein the door opening sensor is adapted to detect whether a door (6) for closing the loading opening of the drum is closed or not,
- a sensor signal provided by a filter sensor (27) of the washer dryer, wherein the filter sensor is adapted to detect whether the fluff filter (26) for filtering the drying air is removed from its operational position or is adapted

to detect whether a compartment (25) for receiving the fluff filter is opened,

- a signal indicating a program pause selected by a user or indicating a program interruption during the running drying program,

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- a signal indicating resuming drying operation by the drying program after an interruption or a user-selected pause of the running drying program,

- a signal indicating a power failure or power irregularities in the electrical supply of the washer dryer or a signal indicating the end of the power failure or power irregularities,

- a signal indicating a malfunction of the washer dryer or a component thereof,

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- a signal provided by a temperature sensor (82) indicating the temperature of the drying air or indicating a temporal change in the temperature of the drying air,

- a pressure signal detected by a pressure sensor (74) of the washer dryer, wherein the pressure sensor is adapted to detect the air pressure of the drying air, and

- a signal indicating the operation of a draining pump (80) of the washer dryer, wherein the draining pump is adapted to pump condensate water or washing liquid out of the washer dryer.

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- 15.** The method of claim 13 or 14, further comprising one or more of the steps or elements according to any of previous claims 1 to 11, or washer dryer (2) of claim 12, wherein the control unit (68) is adapted to control the drying program by any of the previous claims 1 to 11.

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Fig. 1

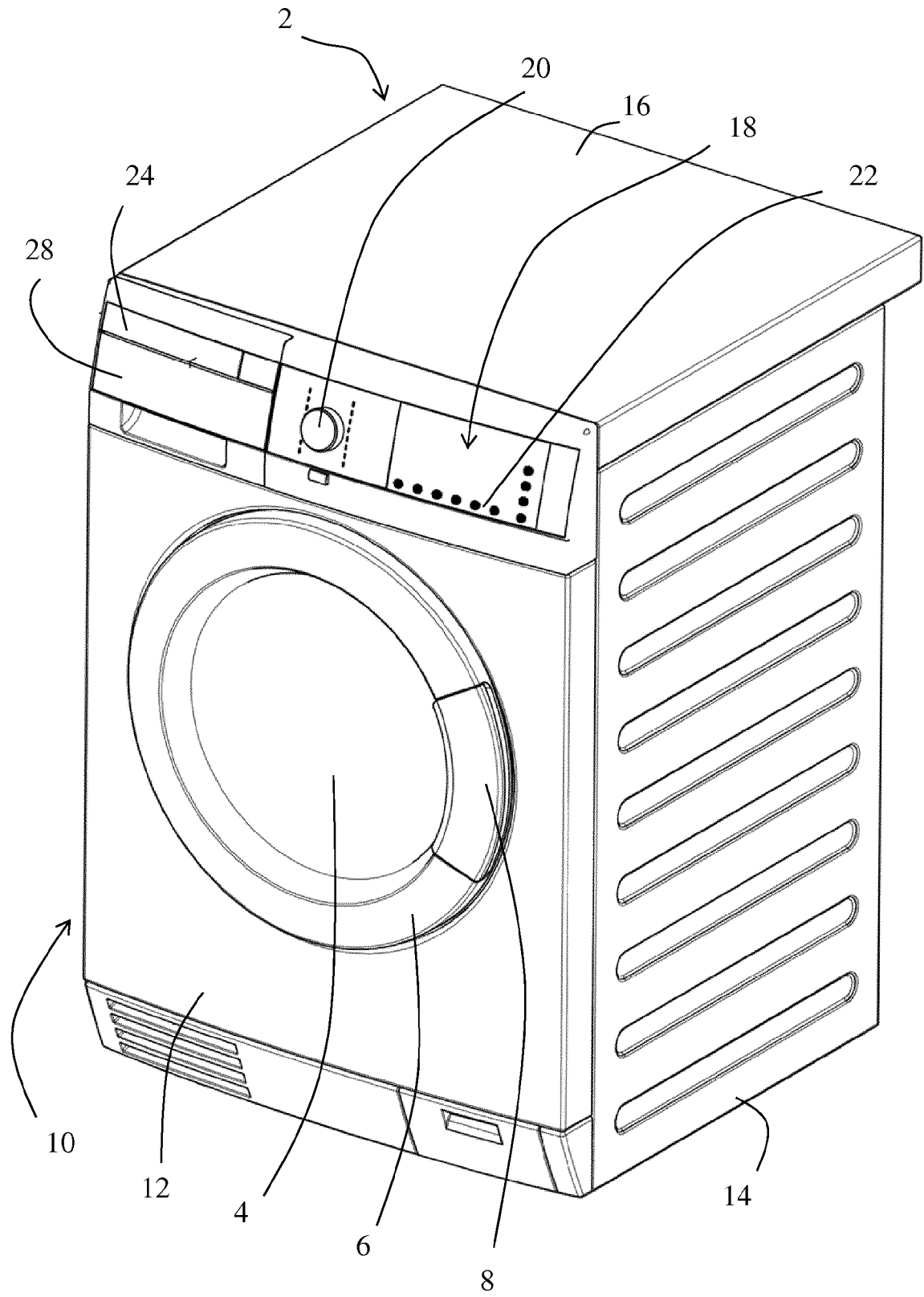
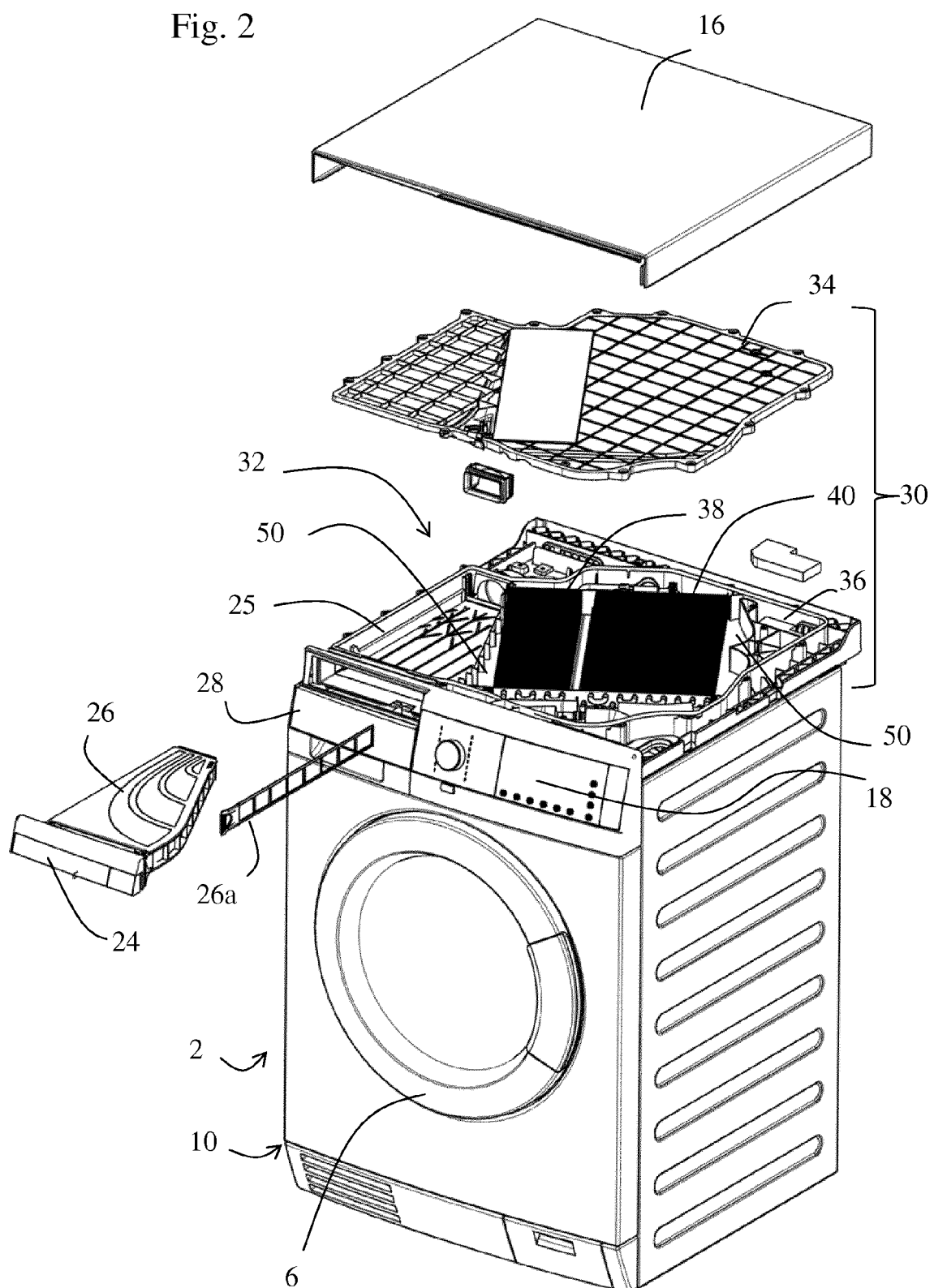


Fig. 2



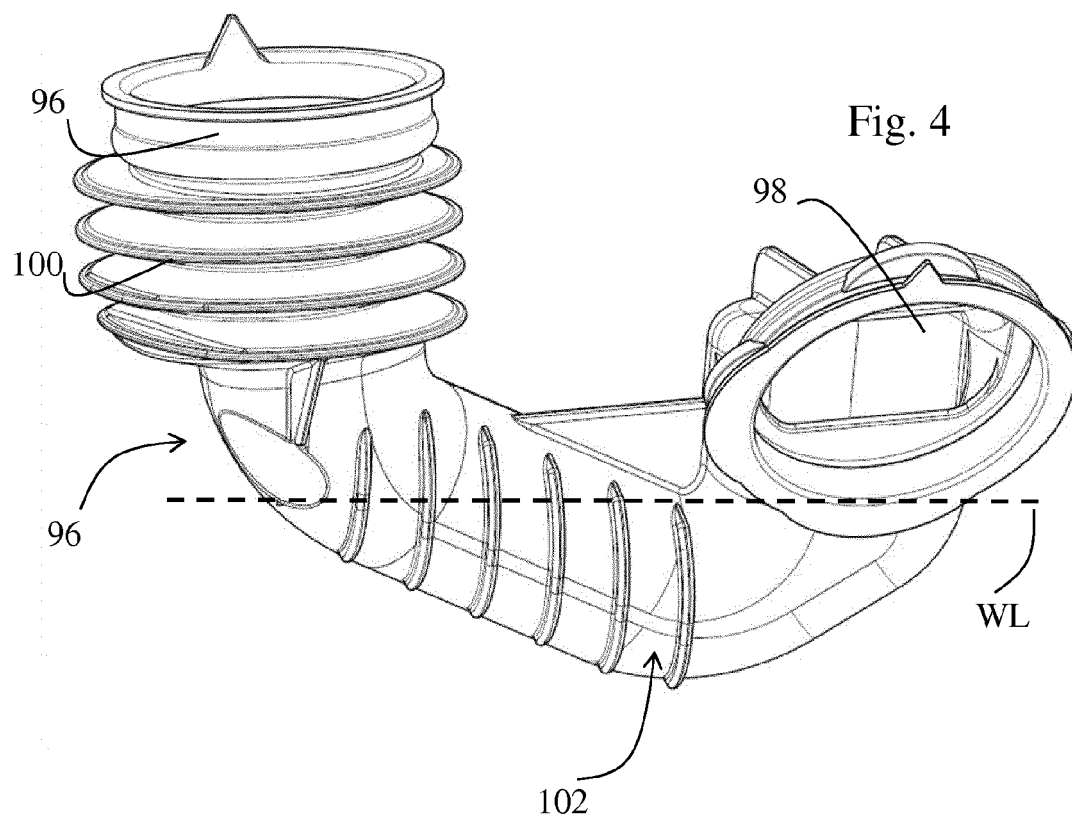
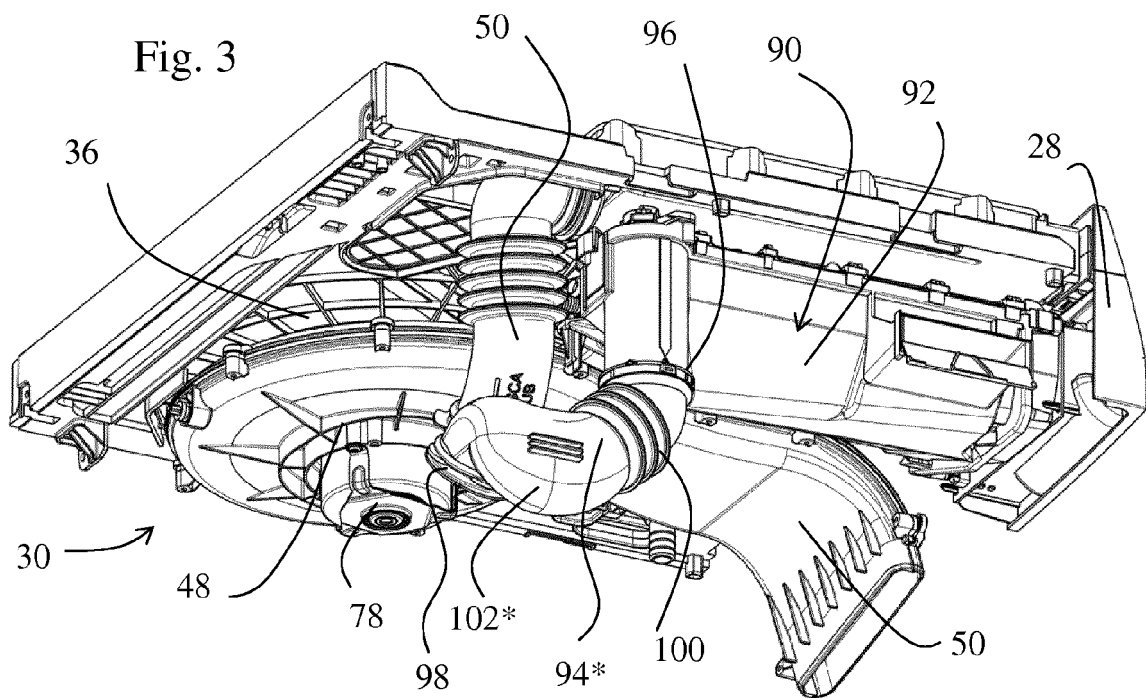


Fig. 5

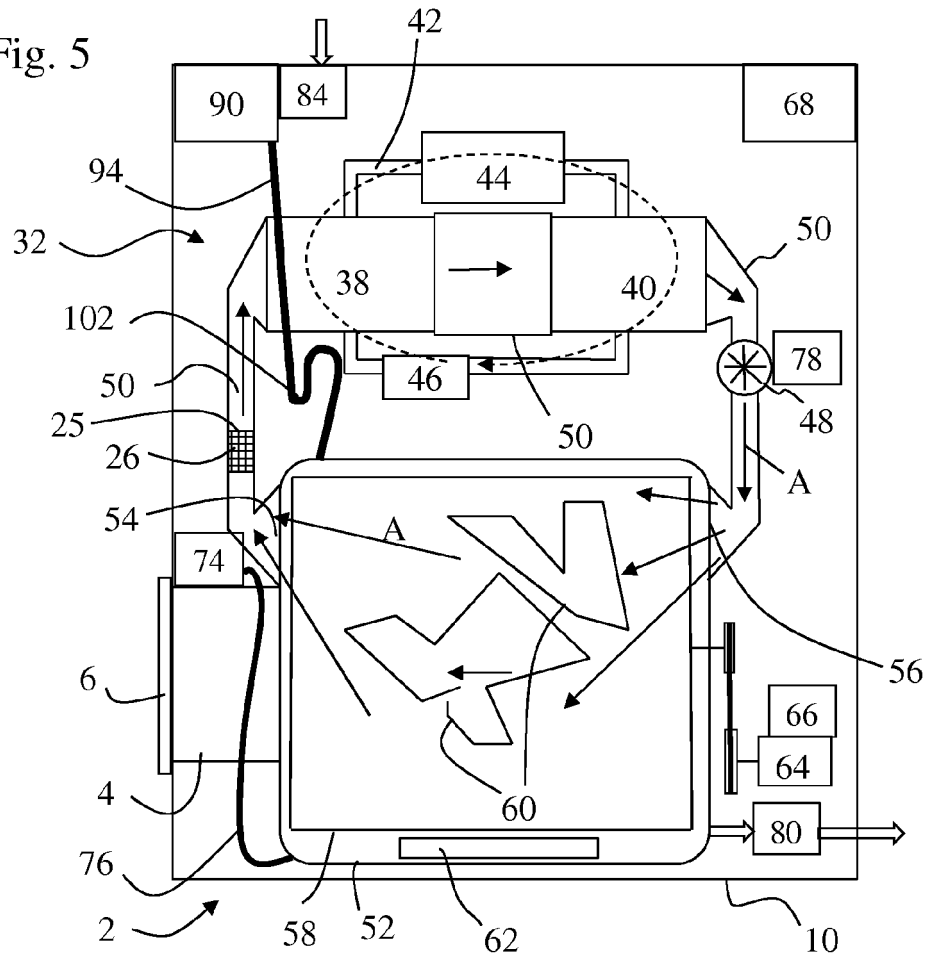


Fig. 6

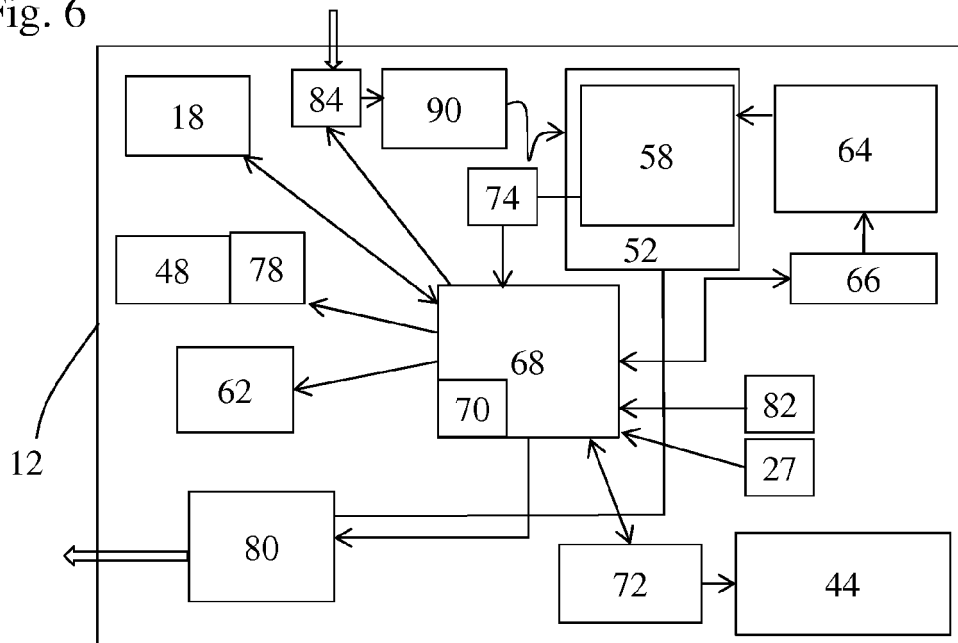


Fig. 7

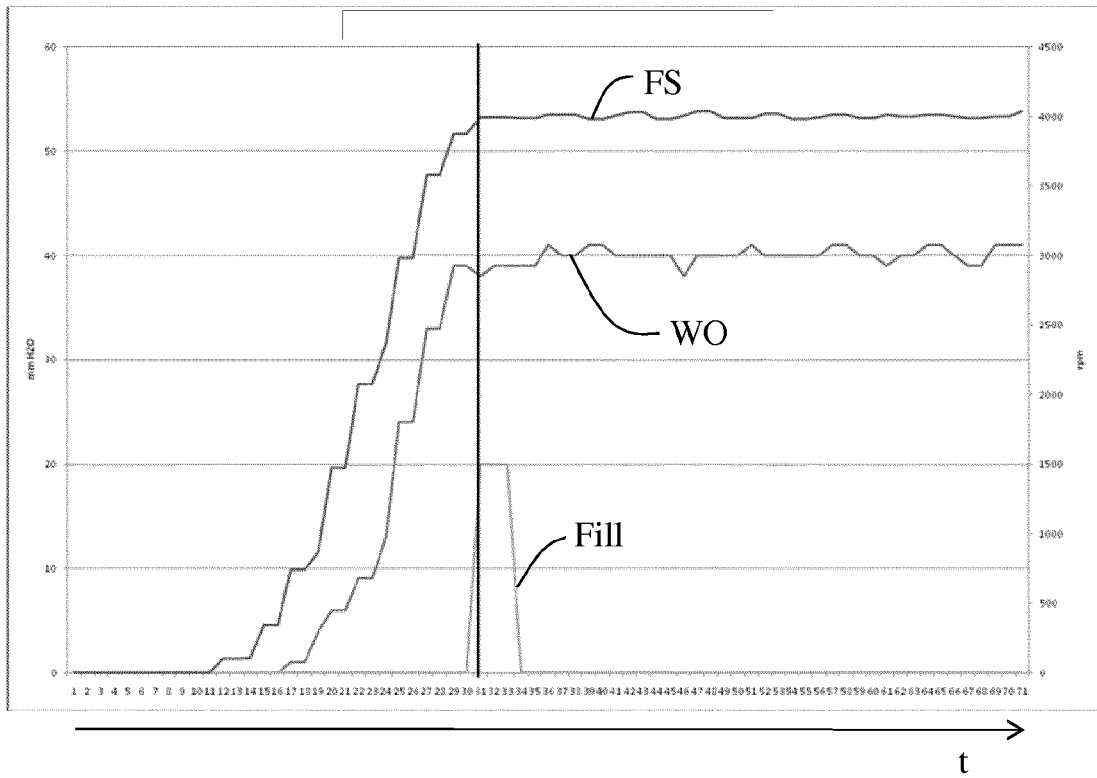
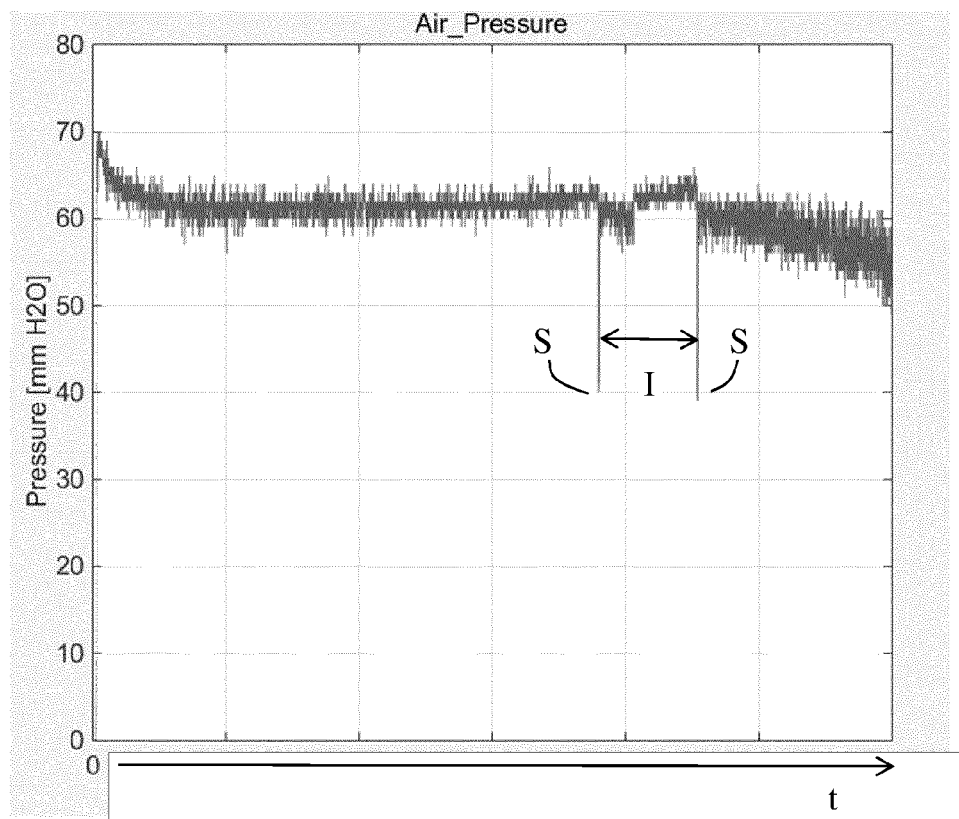


Fig. 8





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