



(11) **EP 1 862 581 B2**

(12) **NEW EUROPEAN PATENT SPECIFICATION**
After opposition procedure

(45) Date of publication and mention
of the opposition decision:
09.09.2020 Bulletin 2020/37

(51) Int Cl.:
D06F 39/04 ^(2006.01) **D06F 37/42** ^(2006.01)
D06F 35/00 ^(2006.01)

(45) Mention of the grant of the patent:
12.09.2012 Bulletin 2012/37

(21) Application number: **06011421.2**

(22) Date of filing: **01.06.2006**

(54) **Method for operating a domestic appliance, especially a home dryer or a washing machine, and domestic appliance**

Verfahren zum Betreiben eines Haushaltsgeräts, insbesondere eines Trockners oder einer Waschmaschine, und Haushaltsgerät

Procédé destiné à l'utilisation d'un appareil ménager, particulièrement un sécheur où une machine à laver, et un appareil ménager

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

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(43) Date of publication of application:
05.12.2007 Bulletin 2007/49

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EP 1 862 581 B2

Description

[0001] The invention concerns a method for operating a domestic appliance and a domestic appliance, especially a home dryer or a washing machine,

[0002] Home dryers and washing machines are well known in the state of the art. In relation to home dryers it is thereby known to dry textiles using a condensation process or using a wet exhausting air process.

[0003] It has been found out that the treatment of textiles can be improved by using steam which is applied to the textiles e.g. in a dryer during one operation mode of the dryer. One aspect of such a process is to prepare the textiles in a better way for the following ironing. Another aspect is to remove unwanted odours out of the textiles.

[0004] The dryer comprises as a rule a rotatable drum in which the textiles are contained when the textiles are treated with hot water steam. The steam generated by a steam unit is conducted by a conduit and a steam injector into the drum. The steam has during the operation in the drum normally a temperature of equal or more than 100°C. Opening the door used for loading and un-loading the drum of the dryer with textiles during the run of a program for treating textiles with steam can therefore be dangerously for an operator.

[0005] WO 03/057966 discloses a combined automated system for performing any combination of cleaning fabric, drying fabric and ironing fabric comprising at least one treatment unit configured to treat the fabric item with a treatment agent, at least one suspension system for suspending said at least one fabric item in said treatment unit and at least one activation element for activating said treatment unit.

[0006] US 5,315,727 discloses a tub cover which is mounted on an upper opening of a tub of a washing machine, and includes a case shoulder and an inner cover having a condenser with the inner cover hinged with the case shoulder. The condenser comprises a steam inflow opening for enabling the upward passing steam from the tub, a water container member having a plurality of heat-exchanger plates, for heat-exchanging with steam entering therein, and a steam outflow opening for passing outward steam heat-exchanged in the container water member. The heat-exchanger plate comprises a plurality of orifices provided in a plurality of convex portions, and a water container formed between the convex portions.

[0007] US 5,111,529 discloses an electric warm-air humidifier comprising an evaporation chamber which has a steam outlet and contains an electric heating element. The chamber and the heating element are immersed in water contained in the main compartment of an open, removable tray, having a smaller filling compartment communicating with the main compartment. The tray may be removed from the housing for cleaning. The neck of an inverted, removable jug filled with water is placed into the filling compartment. A blower is mounted above the evaporation chamber and delivers cool air through a duct which communicates with the evaporation chamber via

its steam outlet. The humidifier also contains a control element to prevent damage to the heating element and signal lamps warning an attendant to refill the jug with water.

[0008] It is therefore an object of the present invention to propose a method for operating a domestic appliance and a domestic appliance as mentioned above which at least reduce the risk of an accident with hot steam during the operation of the domestic appliance.

[0009] The invention is defined by the features of claims 1, 8 and 20, respectively. The inventors have recognized that every interruption of a program for treating textiles with steam should be supervised because independently thereof whether the interruption was caused by the operator or not there is always potentially the danger that the operator opens the door of the domestic appliance without thinking about the hot steam inside the domestic appliance. It is therefore reasonable to provide at least one preferably more actions that the operator is not hurt by the hot steam generated in the domestic appliance, when an interruption of a run of a program for treating textiles with hot steam occurs.

[0010] According to one variant of the invention the action is taken, when a door for loading and un-loading a room of the domestic appliance with textiles is opened, whereby the opening of the door interrupts the program for treating the textiles with steam. Normally the domestic appliance has a door to a rotatable drum containing the textiles during the operation of the domestic appliance. The door comprises a mechanism for opening and closing the door. It is proposed to have sensing means working together with the mechanism for opening and closing the door. Preferably the sensing means are connected with control means of the domestic appliance. The control means finally initiate the action for the protection of the operator, when the door is opened during a run of a program for treating the textiles with steam.

[0011] According to another variant of the invention the action is taken, when the program for treating textiles with steam is interrupted by activation of a switching equipment of the domestic appliance. The switching equipment comprises preferred a stop-button or a start/rest-button. These buttons are as a rule part of an operating panel of the domestic appliance. The switching equipment can also be a kind of virtual button e.g. a button displayed on a screen e.g. displayed on a touch screen.

[0012] The action is also taken, when the run of the program for treating textiles with steam is interrupted by a failure of the domestic appliance. Such a failure can be e.g. a short interruption of the supply voltage of the domestic appliance which can cause the interruption of the run of the program for treating textiles with steam.

[0013] An alternative action is to release at least one warning signal to the operator which calls the operator's attention to the hot steam inside the domestic appliance especially inside the drum. The warning signal can be an acoustic and/or an optical warning signal. When the warning signal is an optical warning signal it is preferred

displayed with an optical display, which comprises a lamp or a LED-display (light emitting diode) or the operating panel of the domestic appliance, which operating panel comprises particularly a LCD-display (liquid crystal display).

[0014] Another action for protection of an operator is to stop at least partially the supply of steam to the room, particularly to the drum of the domestic appliance containing the textiles, when an interruption of a run of a program for treating textiles with steam occurs. Thereby the control means of the domestic appliance stop as a rule the activity of the steam unit, in particular the activity of the pump of the steam unit and/or the heating of the steam generator.

[0015] According to variants of the invention the supply of steam to the room of the domestic appliance containing the textiles can be at least partially stopped by closing a conduit which is used for supplying the room with steam. The conduit can thereby be closed by a valve, preferred by a magnetic valve.

[0016] Another possibility according to the invention to protect an operator is to deplete the steam unit of the domestic appliance of steam at least partially, when an interruption of a run of a program for treating textiles with steam occurs. This can be achieved by a valve, preferred a magnetic valve. Preferably the opening and closing of the valve is controlled by the control of the domestic appliance. The steam is thereby conducted in a part or in parts of the domestic appliance to which the operator has as a rule no contact or no access.

[0017] According to embodiments of the invention the supply of steam to the room of the domestic appliance containing the textiles can be at least partially stopped by the reversion of the flux of the steam through the steam unit. By a reversion of the flux of the steam through the steam unit thus the steam do not flow through a conduit and an injector in direction to the room containing the textiles but flows in the opposite direction. Preferred the pump of the steam unit which normally pumps water out of a water tank into the steam generator of the steam unit is thereby operated in a reversed mode. In the reversed mode the pump of the steam unit is operated in an opposite direction and pumps the steam already generated in the steam generator into the water tank.

[0018] It is also possible for the protection of the operator to conduct the steam contained in the drum of the domestic appliance out of the drum, when an interruption of a run of a program for treating textiles with steam occurs. This can be achieved by a separate conduit connected with one side to the drum and with the other side e. g. to the outside of the domestic appliance. Preferably there is a controllable valve for opening the passage through the conduit. Advantageously a fan is used for conducting the steam out of the drum containing the textiles. Another possibility for conducting the steam out of the drum of the domestic appliance is to use an already existing conduit of the domestic appliance. Preferred is the use of the conduit of the supply air to the drum and/or

the use of the conduit of the exhaust air out of the drum. Both conduits are normally used for air circulation during the process of drying textiles. The last mentioned embodiment is therefore particularly adapted for home dryers.

[0019] According to an embodiment of the invention the door for loading and un-loading the domestic appliance with textiles can not be opened after an interruption of an active program for treating textiles with steam until there is no more danger for an injury of an operator. Preferred the door for loading and un-loading the domestic appliance with textiles can not be opened for a certain period of time and/or until the temperature and/or the atmospheric moisture in the room of the domestic appliance containing the textiles has/have a certain value. The opening of the door is in these cases thus either time controlled or temperature controlled or atmospheric moisture controlled.

[0020] The domestic appliance can be in case of a dryer a dryer of the condensation type or a dryer of the exhaust air type.

[0021] The domestic appliance according to the invention comprises a control and a memory storing at least one program for treating textiles with steam, wherein the control is adjusted to execute at least one of the aforementioned methods.

[0022] Embodiments of the invention are illustrated in the accompanying schematic drawings. It is shown:

FIG 1 a dryer in a front view,

FIG 2 a first embodiment of components of the dryer of FIG 1, partially shown in a schematic block diagram and

FIG 3 a second embodiment of components of the dryer of FIG 1, partially shown in a schematic block diagram.

[0023] The invention is consecutively exemplarily described for a domestic appliance in form of a home dryer. But the domestic appliance according to the invention can also be a washing machine comprising a steam unit as described later and an operating mode for treating textiles with steam.

[0024] FIG 1 shows a front view of a dryer, especially a home dryer 1. FIG 2 shows in one embodiment of the invention components of the home dryer 1 of FIG 1. The home dryer 1 of FIG 1 and FIG 2 is a condensation type dryer. The home dryer 1 comprises a housing 2 with a door 3 for loading and un-loading a drum 4 with not shown textiles. The drum 4 is rotatable around an axis A by means of a motor 5 and a belt 6. The drum 4 is in a not shown way respectively pivoted.

[0025] For drying textiles the home dryer 1 comprises a conduit 7 for the supply air to the drum 4, a heating element 8 in case of the on hand embodiment arranged in or near the conduit 7 for the supply air, a conduit 9 for

the exhausted air, a heat exchanger 10, a sump 11, a pump 12, a water tank or condensate collector 13, a first fan 14 in case of the on hand embodiment arranged in the conduit 7 for the supply air and a second fan 15 arranged near the heat exchanger 10. The first fan 14 and the second fan 15 are connected to a drive motor 16.

[0026] Further the home dryer 1 comprises an operating panel 30 with an display 31 and a turning knob 32 for choosing a program for drying textiles and/or a program for treating textiles with steam. The operating panel 30 is connected to control means in form of a control 40 of the home dryer 1. The control 40 is preferably a program driven computer and comprises a memory 41. A plurality of different programs for drying textiles and programs for treating textiles with steam is stored in the memory 41 which can be chosen with the turning knob 32. The display 31 is preferably a LCD-display. The display 31 is particularly intended for displaying program information and operating data of the home dryer 1. The knob 32 and the display 31 can also be used for setting operating parameters of the home dryer 1.

[0027] In one operation mode of the home dryer 1, when a program for drying textiles is chosen by an operator with the turning knob 32 of the operating panel 30 the home dryer 1 is operated in an air circulation mode. Thereby air heated by the heating element 8 in the conduit 7 for the supply air is applied by means of the fan 14 to wet textiles contained in the rotating drum 4. In the drum 4 the heated air is charged with moisture. The air charged with moisture arrives by means of the conduit 9 for the exhausted air at the heat exchanger 10 which is cooled with the fan 15. Water condenses in the heat exchanger 10 and is collected in the sump 11. The pump 12 pumps the water of the sump 11 into the condensate collector 13. Now the air is again heated and conducted by means of the fan 14 into the drum 4. This air circulation process continues until the textiles in the drum 4 are dried in an adequate manner. The run of the chosen program for drying textiles is controlled by the control 40 of the home dryer 1 which is particularly connected to the motor 5, the heating element 8, the motor 16 and the pump 12 what is not explicitly shown in FIG 2.

[0028] In another operation mode of the home dryer 1 textiles contained in the drum 4 can be treated with hot water steam. The home dryer 1 comprises therefore a steam unit. The steam unit comprises a water tank 20, a pump 21, a steam generator 22 and a injector 23 for the steam connected to the steam generator 22 by a conduit 24. As described above the operator can choose a program for treating textiles with steam with the turning knob 32. During the run of such a program water contained in the water tank 20 is pumped by the pump 21 into the steam generator 22 and there heated. The steam generated in the steam generator 22 arrives by means of the conduit 24 and the injector 23 at the drum 4. The hot water steam is then applied to the textiles contained in the drum 4, which thereby rotates around the axis A. The hot water steam has a temperature of 100°C and more.

This process particularly the run of the respective program is again controlled by the control 40.

[0029] Especially during the run of a program for treating textiles with hot steam the danger exists that an operator is hurt by the hot steam when an active program is interrupted. Normally an interruption of a run of program for treating textiles with steam is caused either by opening the door 3 for loading and un-loading the drum 4 with textiles or by switching of a switching equipment of the home dryer 1. But an interruption of a run of a program for treating textiles with steam can also occur in consequence of a failure of the home dryer 1. By the way this listing is not concluding.

[0030] For detecting the opening of the door 3 for loading and un-loading the drum 4 with textiles as soon as possible a mechanism 17 for opening and closing the door 3 is equipped with additional sensing means 18. The sensing means 18 are e. g. a light barrier or any other appropriate sensor for registering at once the opening of the door 3 with the mechanism 17. The sensing means 18 are connected to the control 40 (not shown in the drawings). Therefore the control 40 can at once register when the door 3 is opened.

[0031] As mentioned above the run of a program for treating textiles with steam can also be interrupted by the activation of switching means. Switching means for such an interruption are in the case of the on hand embodiment a stop-button 33 and/or a start/rest-button 34 of the operating panel 30 of the home dryer 1. The switching of any of these buttons is registered by the control 40.

[0032] In any case of interruption of a run of a program for treating textiles with steam, especially in the aforementioned cases, it is reasonable to take at least one action for protection of the operator. It is namely possible that the operator is not aware of the hot steam inside the drum 4 when the interruption occurs.

[0033] When the control 40 registers an interruption of a run of a program for treating textiles with steam it is by means of the sensing means 18 or by getting a stop signal or rest signal based on the activation of the stop-button 33 or of the start/rest-button 34 the control 40 runs in a kind of emergency mode and releases at once at least one warning signal. Preferably an acoustic and an optical warning signal are released or generated by the control 40 to direct the operator's attention to the hot steam inside the drum 4.

[0034] The acoustic warning signal is released e.g. by means of a buzzer or a speaker 35 of the operating panel 30 to the operator. The warning signal can be e.g. a beep or a spoken warning like "attention- hot steam".

[0035] The optical warning signal is released by means of an optical display preferably arranged in the front of the home dryer 1. The optical display can be e.g. a lamp, particularly a red lamp 36 or a LED-display or the LCD-display 31. The optical warning signal can thus be only a red warning light or in case of the LCD-display 31 red blinking words like "attention- hot steam".

[0036] Additionally to the release of the warning signals

the control 40 stops after registering an interruption of a run of a program for treating textiles with steam the further supply of hot steam of the steam unit to the drum 4. The control 40 especially stops the operation of the pump 21 of the steam unit and the operation of the heating of the heat generator 22 of the steam unit.

[0037] The supply of steam to the drum 4 can thereby be stopped by closing the conduit 24 by a magnetic valve 25 which is attached to the conduit 24 and controlled by the control 40.

[0038] A further possibility to stop the supply of steam to the drum 4 containing the textiles can be the reversion of the flux of the steam through the steam unit. By a reversion of the flux of the steam through the steam unit thus the steam generated by the steam generator 22 do not flow through the conduit 24 and the injector 23 in direction to the drum 4 but flows in the opposite direction. The pump 21 of the steam unit which normally pumps water out of a water tank 20 into the steam generator 22 is thereby preferably operated in a reversed mode. In the reversed mode the pump 21 is operated in an opposite direction and pumps the steam already generated and still present in the steam generator 22 into the water tank 20. The pump 21 is thereby controlled by the control 40.

[0039] Another action to protect an operator is to deplete the steam unit of the home dryer 1 of the steam, when an interruption of a run of a program for treating textiles with steam occurs. This can be achieved by a magnetic valve 26 attached to the steam unit. E.g. the magnetic valve 26 is attached to a conduit connecting the pump 21 und the steam generator 22. The opening and closing of the magnetic valve 26 is controlled by the control 40. when an interruption of a run of a program for treating textiles with steam occurs, the magnetic valve 26 is opened in direction to a conduit 27 which is attached to the magnetic valve 26 and the steam is conducted by means of the conduit 27 in a part or in parts of the home dryer 1 to which the operator has as a rule no contact or no access.

[0040] When the conduit 27 is connected to the magnetic valve 25 the steam unit can also be depleted of the steam by means of the magnetic valve 25 and the conduit 27. In this case the magnetic valve 26 is not necessary.

[0041] Another action taken by the control 40 in case of an interruption of a run of a program for treating textiles is to conduct as fast as possible the hot steam contained in the drum 4 out of the drum 4. This can be done by a separate conduit connected to the drum 4 and equipped with a controllable valve. But preferably the conduit 7 for the supply air and/or the conduit 9 for the exhausted air are used for conducting the hot steam out of the drum 4. In case of the on hand embodiment the conduit 7 for the supply air is used because of the fan 14 inside the conduit 7. So the control 40 can activate the motor 16 in such a way that the hot steam is conducted out of the drum 4 by means of the fan 14 which is operated in the reverse direction in comparison to the drying mode (see arrow in FIG 2).

[0042] In case of an interruption of a run of a program for treating textiles with steam by switching one of the buttons 33 or 34 the control 40 blocks the door 3 with a not explicitly shown closing device of the mechanism 17.

5 The door 3 can thereby not be opened until there is no more danger for an injury for the operator. Preferably the door 3 is blocked by the control 40 for a certain period of time, e.g. 1 minute, and/or until the temperature and/or the atmospheric moisture in the drum 4 has reached a
10 certain value. The value of the temperature can be registered with a separate temperature sensor 19 connected to the control 40 or in a respectively way with a not shown temperature sensor of the steam generator 22 whereby based on the temperature of the steam generator 22 and
15 a known cool down behaviour of the steam in the drum 4 the control 40 computes the temperature in the drum 4. The value of the atmospheric moisture can be registered with a separate sensor 28 connected to the control 40 or with a already existing sensor of the home dryer 1.

20 **[0043]** The invention was afore described in connection with a home dryer of the condensation type. But the invention is not limited to home dryer of the condensation type. The invention is also applicably in home dryers using a wet exhausted air process as illustrated in FIG 3. Components shown in FIG 3 which are in type and function identically or comparably with components shown in
25 FIG 2 have the same reference numerals.

[0044] In case of the embodiment of FIG 3 heated air is conducted in the drum 4 by means of the conduit 7 for supply air, the heating element 8 and the fan 14 for drying wet textiles contained in the drum 4. The air charged with moisture is conducted from the drum 4 to the outside of the home dryer.

[0045] The home dryer of FIG 3 can like the home dryer of FIG 2 be operated with at least one program for treating
35 textiles in the drum 4 with hot steam. For protection of an operator in case of an interruption of a program for treating textiles with steam the same actions can be taken as described above. Acoustic and optical warning signals can be released in the same way. The supply of steam to the drum 4 can be stopped by the control 40. The steam unit can be depleted of steam. The steam contained in the drum 4 can be conducted out of the drum
40 by means of the conduit 7 and the fan 14 whereby the fan can be operated in both turning direction. Also the door 3 can be blocked for a certain period of time and /or until the temperature in the drum 4 has reached a certain value.

[0046] As mentioned before the invention is also applicable to washing machines comprising a steam unit and an operating mode for treating textiles with hot steam.

[0047] As described above a lot of actions can be taken in case of an interruption of a run of a program for treating
55 textiles with steam for the protection of an operator. Thereby it is not necessary to take all the described actions. It can be sufficient to take only one action or any adapted combination of the described actions that the

operator is not hurt by hot steam.

Reference Numerals

[0048]

1	home dryer
2	housing
3	door
4	drum
5	motor
6	belt
7	conduit for supply air
8	heating element
9	conduit for exhausted air
10	heat exchanger
11	sump
12	pump
13	condensate collector
14	fan
15	fan
16	motor
17	mechanism
18	sensing means
19	temperature sensor
20	water tank
21	pump
22	steam generator
23	injector
24	conduit
25	magnetic valve
26	magnetic valve
27	conduit
28	sensor
30	control panel
31	display
32	turning knob
33	stop-button
34	start/rest-button
35	speaker
36	lamp
40	control
41	memory
A	axis

Claims

1. Method for operating a domestic appliance, especially a home dryer (1) or a washing machine, which domestic appliance (1) comprises a steam unit and a room (4) for treating textiles with steam generated by the steam unit, wherein at least one action for protection of an operator of the domestic appliance (1) is taken when an interruption of an active program for treating textiles with steam occurs so that the operator is not hurt by the steam generated in the domestic appliance (1), **characterized in that** the ac-

tion comprises

- conducting the steam contained in the room (4) for treating textiles out of the room (4).

2. Method according to claim 1, wherein the action is taken, when a door (3) for loading and un-loading a room (4) of the domestic appliance (1) with textiles is opened during the run of the program for treating textiles with steam.
3. Method according to claim 1 or 2, wherein the action is taken, when the program for treating textiles with steam is interrupted by activation of a switching equipment (33, 34) of the domestic appliance (1).
4. Method according to claim 3, wherein the switching equipment comprises a stop-button (33) or a start/rest-button (34).
5. Method according to claim 1, wherein the action is taken, when the program for treating textiles with steam is interrupted by a failure of the domestic appliance (1).
6. Method according to claim 1, wherein a fan (14) is used for conducting the steam out of the room (4) containing the textiles.
7. Method according to claim 1 or 6, wherein the steam contained in the room (4) for treating textiles is conducted out of the room (4) by means of a conduit (7) for supplying air to the room (4) and/or by means of a conduit (9) for exhausting air out of the room (4) which conduit/conduits is/are normally used in an operating mode for drying textiles.
8. Method for operating a domestic appliance, especially a home dryer (1) or a washing machine, which domestic appliance (1) comprises a steam unit and a room (4) for treating textiles with steam generated by the steam unit, wherein at least one action for protection of an operator of the domestic appliance (1) is taken when an interruption of an active program for treating textiles with steam occurs so that the operator is not hurt by the steam generated in the domestic appliance (1), wherein the action comprises at least partially stopping the supply of steam to the room for treating textiles, **characterized in that** stopping the supply of steam to the room for treating textiles comprises
 - closing a conduit (24) for supplying the room (4) for treating textiles or
 - at least partially depleting the steam unit of steam or
 - reversing the flux of the steam through the steam unit or

- stopping the activity of a pump (21) adapted to supply water to the steam unit.

9. Method according to claim 8, wherein the action is taken, when a door (3) for loading and un-loading a room (4) of the domestic appliance (1) with textiles is opened during the run of the program for treating textiles with steam.
10. Method according to claim 8, wherein the action is taken, when the program for treating textiles with steam is interrupted by activation of a switching equipment (33, 34) of the domestic appliance (1).
11. Method according to claim 10, wherein the switching equipment comprises a stop-button (33) or a start/rest-button (34).
12. Method according to claim 8, wherein the action is taken, when the program for treating textiles with steam is interrupted by a failure of the domestic appliance (1).
13. Method according to at least one of the claims 8 to 12, wherein the conduit (24) is closed by a valve (25).
14. Method according to at least one of the claims 8 to 12, wherein the steam unit is at least partially depleted of steam by a valve (26).
15. Method according to at least one of the claims 8 to 12, wherein the steam unit comprises a steam generator (22) and a pump (21) for pumping water into the steam generator (22), wherein the pump (21) of the steam unit is operated in a reversed mode.
16. Method according to at least one of the claims 8, 10 to 15, wherein the door (3) for loading and un-loading the domestic appliance (1) with textiles can not be opened after an interruption of an active program for treating textiles with steam until there is no more danger for an injury of an operator.
17. Method according to claim 16, wherein the door (3) for loading and un-loading the domestic appliance (1) with textiles can not be opened for a certain period of time and/or until the temperature and/or the atmospheric moisture in the room (4) of the domestic appliance (1) containing the textiles has/have a certain value.
18. Method according to at least one of the claims 1 to 17, wherein the domestic appliance is a dryer of the condensation type or a dryer of the exhaust air type.
19. Domestic appliance, especially home dryer (1) or washing machine, comprising a control (40) and a memory (41) storing at least one program for treating

textiles with steam, wherein the control (40) is adjusted to execute a method of at least one of the claims 1 to 18.

20. Method for operating a domestic appliance, especially a home dryer (1) or a washing machine, which domestic appliance (1) comprises a steam unit and a room (4) for treating textiles with steam generated by the steam unit, wherein at least one action for protection of an operator of the domestic appliance (1) is taken when an interruption of an active program for treating textiles with steam occurs so that the operator is not hurt by the steam generated in the domestic appliance (1), **characterized in that** the action comprises

- releasing at least one warning signal in order to call the operator's attention to the hot steam inside the room (4) for treating textiles,

wherein the action is taken:

when the program for treating textiles with steam is interrupted by activation of a switching equipment (33, 34) of the domestic appliance (1) and the switching equipment comprises a stop-button (33) or a start/rest-button (34), or
when the program for treating textiles with steam is interrupted by a failure of the domestic appliance (1).

Patentansprüche

1. Verfahren zum Betreiben eines Haushaltsgeräts, insbesondere eines Wäschetrockners (1) oder einer Waschmaschine, wobei das Haushaltsgerät (1) eine Dampfeinheit und einen Raum (4) zum Behandeln von Textilien mit von der Dampfeinheit erzeugtem Dampf umfasst, wobei mindestens eine Maßnahme zum Schutz einer Bedienperson des Haushaltsgeräts (1) ergriffen wird, wenn eine Unterbrechung eines aktiven Programms zum Behandeln von Textilien mit Dampf erfolgt, so dass die Bedienperson nicht durch den in dem Haushaltsgerät (1) erzeugten Dampf verletzt wird, **dadurch gekennzeichnet, dass** die Maßnahme Folgendes umfasst:
 - Herausleiten des in dem Raum (4) zum Behandeln von Textilien enthaltenen Dampfes aus dem Raum (4).
2. Verfahren nach Anspruch 1, wobei die Maßnahme ergriffen wird, wenn eine Tür (3) zum Beladen und Entladen eines Raums (4) des Haushaltsgeräts (1) mit Textilien geöffnet wird, während das Programm zum Behandeln von Textilien mit Dampf läuft.

3. Verfahren nach Anspruch 1 oder 2, wobei die Maßnahme ergriffen wird, wenn das Programm zum Behandeln von Textilien mit Dampf durch Aktivierung einer Schaltausrüstung (33, 34) des Haushaltsgeräts (1) unterbrochen wird. 5
4. Verfahren nach Anspruch 3, wobei die Schaltausrüstung eine Stopp-Taste (33) oder eine Start-/Ruhe-Taste (34) umfasst. 10
5. Verfahren nach Anspruch 1, wobei die Maßnahme ergriffen wird, wenn das Programm zum Behandeln von Textilien mit Dampf durch ein Versagen des Haushaltsgeräts (1) unterbrochen wird. 15
6. Verfahren nach Anspruch 1, wobei ein Gebläse (14) zum Herausleiten des Dampfes aus dem die Textilien enthaltenden Raum (4) verwendet wird. 20
7. Verfahren nach Anspruch 1 oder 6, wobei der in dem Raum (4) zum Behandeln von Textilien enthaltene Dampf mittels einer Leitung (7) zur Zufuhr von Luft in den Raum (4) und/oder mittels einer Leitung (9) zum Ablassen von Luft aus dem Raum (4) aus dem Raum (4) herausgeleitet wird, wobei die Leitung/Leitungen normalerweise in einem Betriebsmodus zum Trocknen von Textilien verwendet wird. 25
8. Verfahren zum Betreiben eines Haushaltsgeräts, insbesondere eines Wäschetrockners (1) oder einer Waschmaschine, wobei das Haushaltsgerät (1) eine Dampfeinheit und einen Raum (4) zum Behandeln von Textilien mit von der Dampfeinheit erzeugtem Dampf umfasst, wobei mindestens eine Maßnahme zum Schutz einer Bedienperson des Haushaltsgeräts (1) ergriffen wird, wenn eine Unterbrechung eines aktiven Programms zum Behandeln von Textilien mit Dampf erfolgt, so dass die Bedienperson nicht durch den in dem Haushaltsgerät (1) erzeugten Dampf verletzt wird, wobei die Maßnahme das mindestens partielle Stoppen der Zufuhr von Dampf in den Raum zum Behandeln von Textilien umfasst, **dadurch gekennzeichnet, dass** das Stoppen der Zufuhr von Dampf in den Raum zum Behandeln von Textilien Folgendes umfasst: 30
- Schließen einer Leitung (24) zur Versorgung des Raums (4) zum Behandeln von Textilien oder
 - mindestens partielles Entleeren von Dampf aus der Dampfeinheit oder 50
 - Umkehren der Strömung des Dampfes durch die Dampfeinheit oder
 - Stoppen der Tätigkeit einer Pumpe (21), die dazu ausgeführt ist, der Dampfeinheit Wasser zuzuführen. 55
9. Verfahren nach Anspruch 8, wobei die Maßnahme
- ergriffen wird, wenn eine Tür (3) zum Beladen und Entladen eines Raums (4) des Haushaltsgeräts (1) mit Textilien geöffnet wird, während das Programm zum Behandeln von Textilien mit Dampf läuft.
10. Verfahren nach Anspruch 8, wobei die Maßnahme ergriffen wird, wenn das Programm zum Behandeln von Textilien mit Dampf durch Aktivierung einer Schaltausrüstung (33, 34) des Haushaltsgeräts (1) unterbrochen wird.
11. Verfahren nach Anspruch 10, wobei die Schaltausrüstung eine Stopp-Taste (33) oder eine Start-/Ruhe-Taste (34) umfasst.
12. Verfahren nach Anspruch 8, wobei die Maßnahme ergriffen wird, wenn das Programm zum Behandeln von Textilien mit Dampf durch ein Versagen des Haushaltsgeräts (1) unterbrochen wird.
13. Verfahren nach mindestens einem der Ansprüche 8 bis 12, wobei die Leitung (24) durch ein Ventil (25) verschlossen wird.
14. Verfahren nach mindestens einem der Ansprüche 8 bis 12, wobei die Dampfeinheit mittels eines Ventils (26) mindestens partiell aus der Dampfeinheit entleert wird.
15. Verfahren nach mindestens einem der Ansprüche 8 bis 12, wobei die Dampfeinheit einen Dampferzeuger (22) und eine Pumpe (21) zum Pumpen von Wasser in den Dampferzeuger (22) umfasst, wobei die Pumpe (21) der Dampfeinheit in einem Rückwärtslauf betrieben wird.
16. Verfahren nach mindestens einem der Ansprüche 8, 10 bis 15, wobei die Tür (3) zum Beladen und Entladen des Haushaltsgeräts (1) mit Textilien nach einer Unterbrechung eines aktiven Programms zum Behandeln von Textilien mit Dampf erst geöffnet werden kann, wenn für eine Bedienperson keine Verletzungsgefahr mehr besteht.
17. Verfahren nach Anspruch 16, wobei die Tür (3) zum Beladen und Entladen des Haushaltsgeräts (1) mit Textilien für einen gewissen Zeitraum nicht geöffnet werden kann und/oder erst geöffnet werden kann, wenn die Temperatur und/oder die Luftfeuchtigkeit in dem die Textilien enthaltenden Raum (4) des Haushaltsgeräts (1) einen gewissen Wert hat/haben.
18. Verfahren nach mindestens einem der Ansprüche 1 bis 17, wobei das Haushaltsgerät ein Kondensatrostrockner oder ein Ablufttrockner ist.
19. Haushaltsgerät, insbesondere ein Wäschetrockner

(1) oder eine Waschmaschine, umfassend eine Steuerung (40) und einen Speicher (41), in dem mindestens ein Programm zum Behandeln von Textilien mit Dampf gespeichert ist, wobei die Steuerung (40) zur Ausführung eines Verfahrens nach mindestens einem der Ansprüche 1 bis 18 eingestellt ist.

20. Verfahren zum Betreiben eines Haushaltsgeräts, insbesondere eines Wäschetrockners (1) oder einer Waschmaschine, wobei das Haushaltsgerät (1) eine Dampfeinheit und einen Raum (4) zum Behandeln von Textilien mit von der Dampfeinheit erzeugtem Dampf umfasst, wobei mindestens eine Maßnahme zum Schutz einer Bedienperson des Haushaltsgeräts (1) ergriffen wird, wenn eine Unterbrechung eines aktiven Programms zum Behandeln von Textilien mit Dampf erfolgt, so dass die Bedienperson nicht durch den in dem Haushaltsgerät (1) erzeugten Dampf verletzt wird, **dadurch gekennzeichnet, dass** die Maßnahme Folgendes umfasst:

- Abgeben mindestens eines Warnsignals, um die Bedienperson auf den Heißdampf in dem Raum (4) zum Behandeln von Textilien aufmerksam zu machen,

wobei die Maßnahme ergriffen wird:

wenn das Programm zum Behandeln von Textilien mit Dampf durch Aktivierung einer Schaltausrüstung (33, 34) des Haushaltsgeräts (1) unterbrochen wird, und die Schaltausrüstung eine Stopp-Taste (33) oder eine Start-/Ruhe-Taste (34) umfasst, oder
wenn das Programm zum Behandeln von Textilien mit Dampf durch ein Versagen des Haushaltsgeräts (1) unterbrochen wird.

Revendications

1. Procédé pour faire fonctionner un appareil domestique, en particulier un sèche-linge domestique (1) ou une machine à laver, lequel appareil domestique (1) comprend une unité de vapeur et une chambre (4) pour traiter des textiles avec de la vapeur générée par l'unité de vapeur, au moins une mesure pour la protection d'un opérateur de l'appareil domestique (1) étant prise lorsqu'il se produit une interruption d'un programme actif pour traiter des textiles avec de la vapeur, de sorte que l'opérateur ne soit pas blessé par la vapeur générée dans l'appareil domestique (1), **caractérisé en ce que** la mesure comprend

- le fait de conduire la vapeur contenue dans la chambre (4) pour traiter les textiles hors de la chambre (4).

2. Procédé selon la revendication 1, dans lequel la mesure est prise lorsqu'une porte (3) pour charger et décharger des textiles dans/d'une chambre (4) de l'appareil domestique (1) est ouverte pendant le fonctionnement du programme pour traiter des textiles avec de la vapeur.

3. Procédé selon la revendication 1 ou 2, dans lequel la mesure est prise lorsque le programme pour traiter des textiles avec de la vapeur est interrompu par l'activation d'un équipement de commutation (33, 34) de l'appareil domestique (1).

4. Procédé selon la revendication 3, dans lequel l'équipement de commutation comprend un bouton d'arrêt (33) ou un bouton de marche/pause (34).

5. Procédé selon la revendication 1, dans lequel la mesure est prise lorsque le programme pour traiter des textiles avec de la vapeur est interrompu par une défaillance de l'appareil domestique (1).

6. Procédé selon la revendication 1, dans lequel un ventilateur (14) est utilisé pour conduire la vapeur hors de la chambre (4) contenant les textiles.

7. Procédé selon la revendication 1 ou 6, dans lequel la vapeur contenue dans la chambre (4) pour traiter des textiles est conduite hors de la chambre (4) au moyen d'un conduit (7) pour fournir de l'air dans la chambre (4) et/ou au moyen d'un conduit (9) pour évacuer l'air hors de la chambre (4), lequel conduit ou lesquels conduits est/sont normalement utilisé(s) dans un mode de fonctionnement pour sécher des textiles.

8. Procédé pour faire fonctionner un appareil domestique, en particulier un sèche-linge domestique (1) ou une machine à laver, lequel appareil domestique (1) comprend une unité de vapeur et une chambre (4) pour traiter des textiles avec de la vapeur générée par l'unité de vapeur, au moins une mesure pour la protection d'un opérateur de l'appareil domestique (1) étant prise lorsqu'il se produit une interruption d'un programme actif pour traiter des textiles avec de la vapeur de telle sorte que l'opérateur ne soit pas blessé par la vapeur générée dans l'appareil domestique (1), la mesure comprenant l'arrêt au moins partiel de l'alimentation en vapeur de la chambre pour traiter des textiles,

caractérisé en ce que l'arrêt de l'alimentation en vapeur de la chambre pour traiter des textiles comprend

- la fermeture d'un conduit (24) pour alimenter la chambre (4) pour traiter des textiles ou
- la vidange au moins partielle de la vapeur hors de l'unité de vapeur ou

- l'inversion du flux de la vapeur à travers l'unité de vapeur ou
 - l'arrêt de l'activité d'une pompe (21) prévue pour fournir de l'eau à l'unité de vapeur.
9. Procédé selon la revendication 8, dans lequel la mesure est prise lorsqu'une porte (3) pour charger et décharger des textiles dans/d'une chambre (4) de l'appareil domestique (1) est ouverte pendant le fonctionnement du programme pour traiter des textiles avec de la vapeur. 5
10. Procédé selon la revendication 8, dans lequel la mesure est prise lorsque le programme pour traiter des textiles avec de la vapeur est interrompu par l'activation d'un équipement de commutation (33, 34) de l'appareil domestique (1). 10
11. Procédé selon la revendication 10, dans lequel l'équipement de commutation comprend un bouton d'arrêt (33) ou un bouton de marche/pause (34). 15
12. Procédé selon la revendication 8, dans lequel la mesure est prise lorsque le programme pour traiter des textiles avec de la vapeur est interrompu par une défaillance de l'appareil domestique (1). 25
13. Procédé selon au moins l'une des revendications 8 à 12, dans lequel le conduit (24) est fermé par une soupape (25). 30
14. Procédé selon au moins l'une des revendications 8 à 12, dans lequel la vapeur est au moins en partie vidangée hors de l'unité de vapeur par une soupape (26). 35
15. Procédé selon au moins l'une des revendications 8 à 12, dans lequel l'unité de vapeur comprend un générateur de vapeur (22) et une pompe (21) pour pomper de l'eau dans le générateur de vapeur (22), la pompe (21) de l'unité de vapeur fonctionnant dans un mode inversé. 40
16. Procédé selon au moins l'une des revendications 8, 10 à 15, dans lequel la porte (3) pour charger et décharger des textiles dans/de l'appareil domestique (1) ne peut pas être ouverte après une interruption d'un programme actif pour traiter des textiles avec de la vapeur jusqu'à ce qu'il n'y ait plus de risque de blessure d'un opérateur. 45
17. Procédé selon la revendication 16, dans lequel la porte (3) pour charger et décharger des textiles dans/de l'appareil domestique (1) ne peut pas être ouverte pendant un certain intervalle de temps et/ou tant que la température et/ou l'humidité atmosphérique dans la chambre (4) de l'appareil domestique (1) contenant les textiles n'ont pas atteint une certaine valeur. 50
18. Procédé selon au moins l'une des revendications 1 à 17, dans lequel l'appareil domestique est un sèche-linge du type à condensation ou un sèche-linge du type à échappement d'air. 55
19. Appareil domestique, en particulier sèche-linge domestique (1) ou machine à laver, comprenant une commande (40) et une mémoire (41) mémorisant au moins un programme pour traiter des textiles avec de la vapeur, la commande (40) étant ajustée pour mettre en œuvre un procédé selon au moins l'une des revendications 1 à 18.
20. Procédé pour faire fonctionner un appareil domestique, en particulier un sèche-linge domestique (1) ou une machine à laver, lequel appareil domestique (1) comprend une unité de vapeur et une chambre (4) pour traiter des textiles avec de la vapeur générée par l'unité de vapeur, au moins une mesure pour la protection d'un opérateur de l'appareil domestique (1) étant prise lorsque qu'il se produit une interruption d'un programme actif pour traiter des textiles avec de la vapeur, de telle sorte que l'opérateur ne soit pas blessé par la vapeur générée dans l'appareil domestique (1), **caractérisé en ce que** la mesure comprend
- l'émission d'au moins un signal d'avertissement afin d'attirer l'attention de l'opérateur sur la vapeur chaude à l'intérieur de la chambre (4) pour traiter des textiles,
- la mesure étant prise :
- lorsque le programme pour traiter des textiles avec de la vapeur est interrompu par l'activation d'un équipement de commutation (33, 34) de l'appareil domestique (1) et que l'équipement de commutation comprend un bouton d'arrêt (33) ou un bouton de marche/pause (34), ou lorsque le programme pour traiter des textiles avec de la vapeur est interrompu par une défaillance de l'appareil domestique (1).

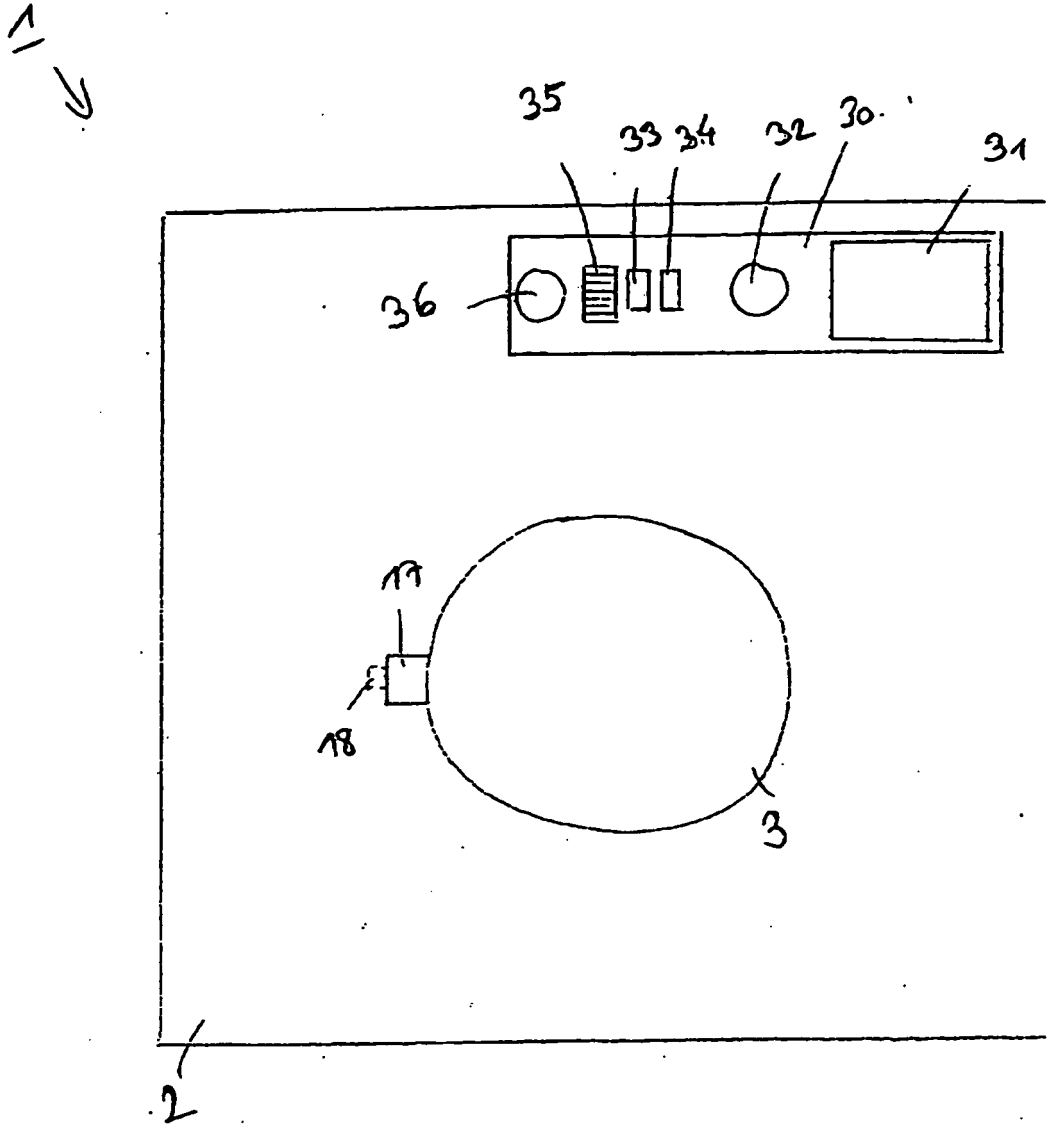


FIG 1

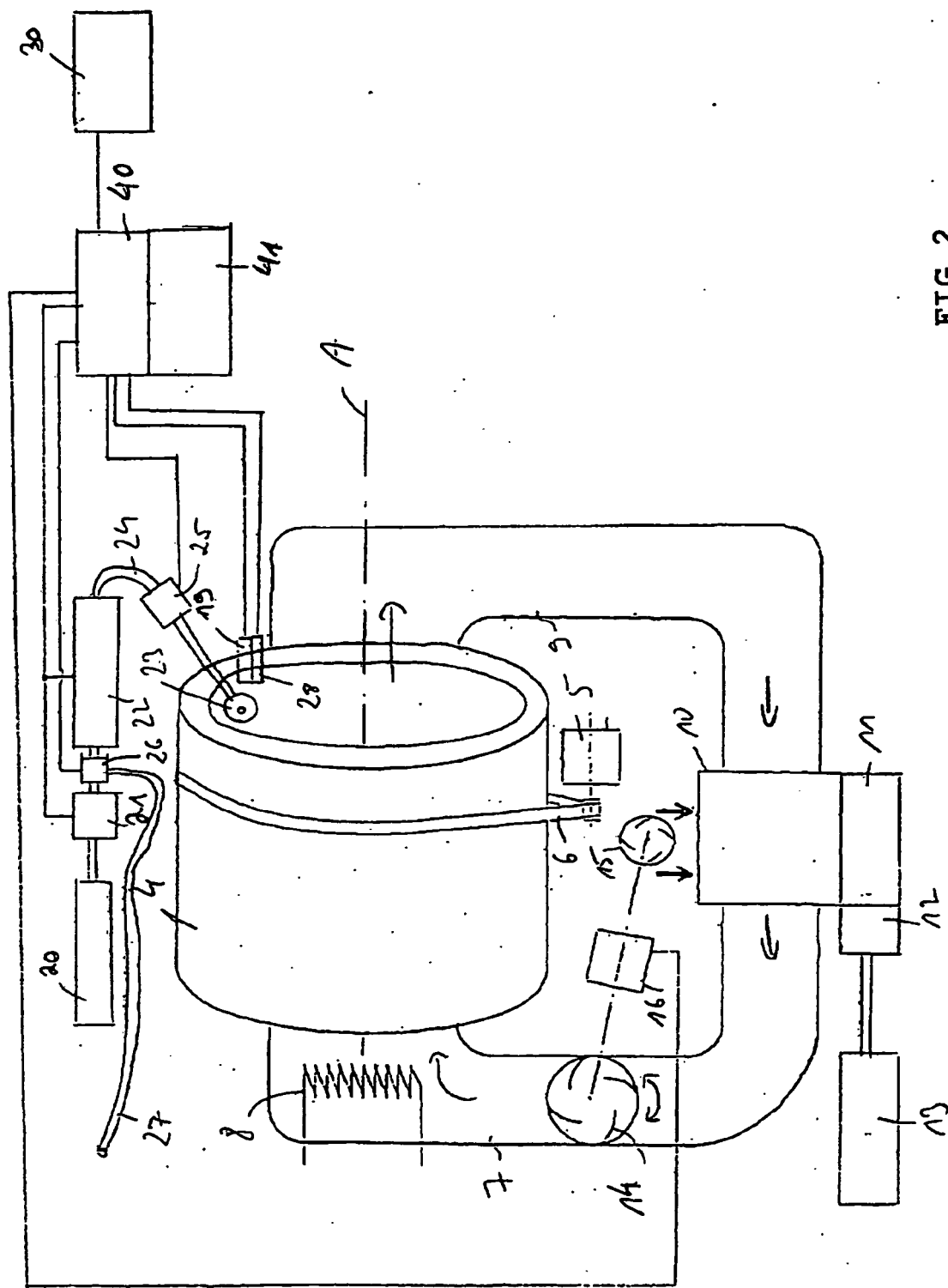


FIG 2

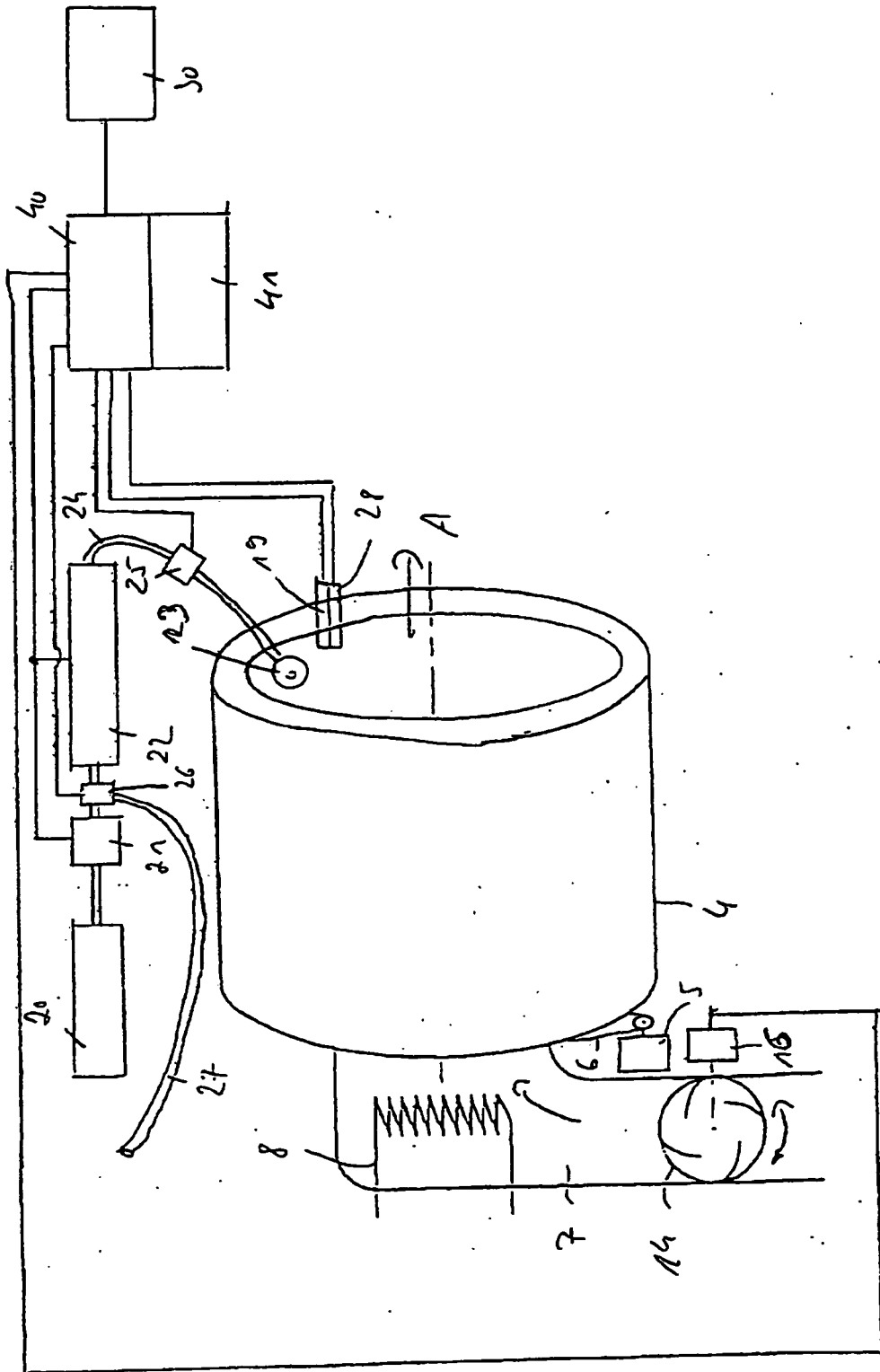


FIG 3

REFERENCES CITED IN THE DESCRIPTION

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