

(19)



(11)

EP 2 889 425 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
13.06.2018 Bulletin 2018/24

(51) Int Cl.:
D06F 39/12^(2006.01) D06F 39/08^(2006.01)

(21) Application number: **14199543.1**

(22) Date of filing: **22.12.2014**

(54) **Washing machine with bottom cover**

Waschmaschine mit unterer Abdeckung

Machine à laver avec couvercle de fond

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **28.12.2013 ES 201331926**

(43) Date of publication of application:
01.07.2015 Bulletin 2015/27

(73) Proprietor: **BSH Hausgeräte GmbH
81739 München (DE)**

(72) Inventors:
• **Gracia Bobed, Ismael
50194 Zaragoza (ES)**
• **Martinez Perez, Gerardo
50015 Zaragoza (ES)**
• **Recio Ferrer, Eduardo
50013 Zaragoza (ES)**

(56) References cited:
EP-A1- 2 447 405 WO-A1-2008/092334
US-A- 5 515 702 US-A1- 2006 081 014
US-A1- 2012 090 362

EP 2 889 425 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The present invention relates to the technical field of washing machines and, in particular, to a washing machine comprising a housing with a bottom cover, and a hydraulic flushing system, comprising a first pump motor and a second pump motor and at least one wash liquid duct.

[0002] A washing machine of this generic type is disclosed in US 2012/0090362 A1.

[0003] A modern washing machine comprises a hydraulic system with wash water ducts and at least one pump to evacuate the water from tub to the outside through flexible hoses once the laundry has been cleaned or rinsed. Many washing machines also incorporate an "Aquastop" tray or wastewater collection tray having the shape of and constituting a bottom cover that is fixed to the frame, thereby defining a lower limit of a space inside the frame wherein the tub may be contained, possibly in a swinging fashion as in a laundry washer. To the "Aquastop" tray is connected an electrical wastewater detector device with a float element that, when the wastewater exceeds a certain level, sends a signal to a shutoff valve arranged in the water supply hose that is connected to the external tap to stop the supply of water to the washing machine.

[0004] Washing machines with this type of hydraulic system are prone to a number of drawbacks when the utilizing the interior space, the access to elements such as the pump used for draining water from the wash tub, installation of the hydraulic system hoses in the factory, and access to the pump and various of these when repairs made.

[0005] Document EP 2 447 405 A1 discloses a washing machine comprising a recovery tank separate from the wash tank and suitable for containing a portion of recovered liquid, recycling means that introduce, during one of the steps of the washing program, the portion of recovered liquid from the recovery tank into the wash tank, and recovering means that, after at least one wash cycle step, convey a portion of liquid used during the wash cycle from the wash tank into the recovery tank.

[0006] It is an object of the present invention to overcome the drawbacks of the state of the art detailed above.

[0007] With this object and other objects in view there is provided, in accordance with the invention, a washing machine as defined in the independent claim attached. Developments and embodiments of the invention are defined in dependent claims attached as well as in the subsequent disclosure and the Figures of the drawing attached.

[0008] Accordingly there is provided, in accordance with the invention, a washing machine comprising a housing with a bottom cover, and a hydraulic flushing system, comprising a first pump motor and a second pump motor and at least one wash liquid duct. Further, at least a part of at least one hydraulic element selected from the at least one wash liquid duct and the first and

the second pump motor is integrated into the bottom cover.

[0009] The integration of the hydraulic elements in the bottom cover enables a reduction in assembly time for the hydraulic elements of the hydraulic washing system, such as pumps and hoses, since the positioning and interconnection of same are predetermined by the location of these hydraulics elements in the bottom cover. It is also possible to achieve a better utilization of the available space in the washing machine interior with which one can opt for a greater compactness and/or better arrangement of the hydraulic elements, compared to conventional washing machines. Moreover, the invention also provides design flexibility to be able to arrange the pump or pumps or water circulation duct connection or connections conveniently, for example, by reducing the risk of incorrect assembly or allowing easy and rapid accessibility for assembly/disassembly.

[0010] At least part of the bottom cover can be manufactured by injection molding separately from a top and a bottom, then joined later, preferably by welding, most preferably ultrasonic welding. Alternatively, the bottom cover can be manufactured by blow molding.

[0011] In accordance with an embodiment of the invention at least a portion of at least one wash liquid duct is integrated into the bottom cover.

[0012] In accordance with another embodiment of the invention at least one of the pumps arranged in the bottom cover comprises a part of the pump motor housing that is at least partially integrated into the bottom cover, which reduces the transmission of noise and vibrations generated by the pump or pumps.

[0013] In accordance with a further embodiment of the invention the bottom cover also comprises a wastewater collection tray, which is preferably integrated into the bottom cover, and which can be formed in the bottom cover during the molding process of the same.

[0014] In accordance with yet another embodiment of the invention the washing machine comprises a frame and the bottom cover closes a bottom of the frame and, preferably, is at least partially detachable.

[0015] This embodiment of the system allows access to the interior of the appliance, particularly to the pump or pumps, without dismantling the oscillating group (tub, drum, and drive motor), which is especially useful in frames formed into a U (closed in the rear), even if the appliance must be leaned back. To fix the cover to the frame, any releasable fixing method such as a clipping ("press fit") or screwing, can be used. Preferably, an airtight fixing is provided when the bottom cover incorporates an Aquastop tray.

[0016] According to a further development this embodiment, at least a portion of the bottom cover can be hinged, and the bottom cover can be a one-piece cover or a two-piece cover comprising an exterior framework that is fixed to the bottom of the frame and a closing plate that is connected hingeably to the exterior framework.

[0017] When the bottom cover is a one-piece cover, it

can comprise a hinge by means of being articulated to the bottom of the washing machine frame or to an element arranged at the bottom of the frame.

[0018] In turn, when the bottom cover is a two-piece cover, the exterior framework is firmly joined to the bottom of the frame, while the closing plate is articulated to the outer frame or to another element arranged on the bottom of the washing machine by means of a hinge, such that the closing plate is capable of swinging with respect to the exterior framework.

[0019] In either case, the hinge is preferably designed to provide freedom of downward movement once a lock is released to move the cover in the top-down direction. Blocking can be accomplished, for example, by means of a series of grooves and fins at the hinge articulation that cooperate in a tongue-in-groove manner.

[0020] According to yet another embodiment of the invention, the hydraulic system of the washing machine comprises at least one additional hydraulic element selected from among a wash water reservoir arranged in the bottom cover and a single wash tub arranged in the housing.

[0021] In accordance with a development of this embodiment the hydraulic system comprises at least one wash water reservoir having a minimum capacity of 50%, and preferably 75%, of the total volume of water used in a washing cycle.

[0022] In this regard it is noted that the capability of such a wash water reservoir depends on the internal space available within the washing machine. For example, there are washing machines having wash tubs with a capacity of approximately 50 liters of water that use approximately 15 liters of water in a wash cycle. In this case, the capacity of the wash water reservoir is at least 7.5 liters, preferably 11.25 liters.

[0023] In accordance with yet a further embodiment of the invention the wash liquid duct is hydraulically connected to the wash water reservoir and/or wash tub. Likewise, the pump can be hydraulically connected to the wash water reservoir and/or wash tub.

[0024] In still another embodiment of the invention the tub, one or more wash water reservoirs, one or more pumps, and one or more wash liquid ducts can form part of a wash liquid reuse circuit.

[0025] Aspects and embodiments of the invention are described below in detail with reference to the Figures of the drawing attached. In particular,

Figure 1 is a front perspective view of a washing machine;

Figure 2 is an exploded view of the housing of the washing machine illustrated in Figure 1;

Figure 3 is a sectional view along the line A-A shown in Figure 1, and shows a first embodiment;

Figure 4 is another sectional view along the line A-

A shown in Figure 1, and shows a second embodiment;

Figure 5 is a detailed view in rear perspective of a bottom cover provided with a wastewater collection tray that is installed in the wash water reservoir;

Figure 6 is a rear perspective view of the bottom cover shown in Figure 5, with the wastewater collection tray, but without the wash water reservoir;

Figure 7 is a rear perspective view corresponding to Figure 5, but with the wastewater collection tray in the open position

Figures 8A to 8C are side elevational views showing stages of the opening of the wastewater collection tray of the bottom cover shown in Figure 5;

Figure 9 is a front perspective view of the bottom cover shown in Figure 5

Figure 10 is a top view of the bottom cover shown in Figure 5 floor

Figure 11 is a sectional view along line A-A shown in Figure 10.

Figure 12 is a sectional view along line B-B shown in Figure 10.

Figure 13 is a block diagram showing a first embodiment of the hydraulic system of the washing machine; and

Figure 14 is a block diagram showing a second embodiment of the hydraulic system of the washing machine.

[0026] The washing machine 1 shown in Figure 1 comprises a housing formed by a frame 20 in a U with a rear wall 25 joined to two side walls 27, a bottom cover 21 installed on the bottom of frame 20, a top cover 22 installed on the top of frame 20, as well as a front panel 23 with a mouth 23a and a control panel 24 in which the controls are installed and which enables access to the detergent compartment 1 installed on the front of frame 20.

[0027] The rear wall 25 of the frame 20 has an access cut-out 25a that is closed by a removable rear closing cap 26, and through which the interior of the washing machine 1 is accessible.

[0028] The bottom cover 21 comprises a central portion in the form of a wastewater collection tray 44. The upper surface of the wastewater collection tray 44 is tilted toward the drain 44a in which is mounted an essentially conventional wastewater sensing device 45.

[0029] The washing machine is provided with a wash

water reservoir 30 comprising two opposing side parts and joined by a rear part.

[0030] In the embodiment of the washing machine 1 shown in Figure 2, in the lower side parts of the side walls 27 of the housing 20 are provided two supports 31 for the wash water reservoir that serve to support which the opposing side parts of the wash water reservoir 30, which is installed above the bottom cover 21 (see Figure 3), while in the embodiment of the washing machine 1 of Figure 4 the wash water reservoir 30 is installed on the upper surface of the bottom cover 21 which in turn is bolted to the bottom of housing 20.

[0031] As shown in Figures 3 and 4, inside the washing machine 1 is an essentially conventional oscillating unit comprising a wash tub 2 in which rotates a wash drum 3 comprising a driven pulley 6 connected to a drive motor 4 by means of a fan belt 5. The drive motor 4 is arranged between the sides and the rear of the housing 20.

[0032] The wash tub 2 is connected with the housing 20 on top by means of two retaining springs 9 anchored in internal flanges provided above on the opposing sides of the side walls of the housing 20, and below through dampers 7 articulated with respect to the damper supports 32. The supports 32 are installed on the reinforcements 32a joined to the respective side parts of the wash water reservoir 30.

[0033] The bottom cover 21 comprises an exterior framework 21a bolted to the bottom of the frame 20 and a closing plate 21b that closes the interior void of the exterior framework 21a and is removably fixed to the exterior framework 21a by means of a removable fixing means.

[0034] In the embodiment illustrated in Figure 3, the bottom cover 21 is articulated at its front to the wash water reservoir 30 by means of a hinge 33, while in the embodiment illustrated in Figure 4 it is bolted to a strip of the inner periphery the exterior framework 21a.

[0035] Figures 5, 6 and 7 show a practical embodiment of the invention in which the bottom cover 21 comprises an exterior framework 21a, for example, made of sheet metal, above which is installed a wash water reservoir 30, and a hinged closing plate 21b, for example, made of a plastic material, which incorporates a wastewater collection tray 44 with a drain 44a of the type previously described with reference to Figure 2, and in which is arranged the wastewater detection device (not shown in Figures 13, 14), also as previously described with reference to Figure 2.

[0036] The wash water reservoir 30 is installed on a support arranged at the bottom as shown schematically in Figure 3.

[0037] In the closing plate 21b is arranged a first pump 40 intended for pumping wash liquid coming from the wash water reservoir 30 into the detergent compartment 10 (see Figure 1) as well as a second pump 41 intended to evacuate water from the wash tub 2.

[0038] The closing plate 21b is articulated at its front to the wash water reservoir 30 by a hinge 33 that com-

prises each of two pins 33a that emerge horizontally from respective inner sides of the two side parts of the wash water reservoir 30, and each rotation bushing 33b at the free ends of the respective vertical projections 33c that emerge from the upper surface of the closing plate 21b. The hinge 33 provides freedom of downward movement once a lock is released when the hinged plate 21b moves in the top-down direction. The locking is realized by means of a series of complementary grooves and fins in the hinge pins 33a and the rotation bushing 33b that forming the articulation of the hinge 33, and that work together in a tongue-and-groove manner. The downward movement of the hinged closing plate 21b allows access to the interior of the washing machine, in particular to the pumps 40, 41, without needing to dismantle the tub 2 and the drum 3.

[0039] From the rear, the bottom cover 21 is joined to the bottom of the frame by means of a fixing screw 34 comprising a first lug 21c emerging horizontally from the rear edge of the closing plate 21b and a second lug 21d emerging horizontally from the rear edge of the exterior framework 21a in a position complementary to that of the first lug 21c. The first lug 21c has a vertical hole and the second lug has an internal thread 21d aligned with the vertical borehole such that a fixing screw 34a that passes through the vertical borehole of the first lug 21c can be screwed into the inner threads of the second lug 21d. For fixing the closing plate 21b to the exterior framework 21a, there is further provided an essentially conventional clipping fixing means 37 comprising, for example, vertically emerging nipples on the sides of the surface of the closing plate 21b which fit together elastically in the complementary retaining bushing of the exterior framework 21a.

[0040] For attachment to the frame, the exterior framework 21a comprises on the one hand a clipping fixing means 35 in the form of nipples that, for example, elastically fit into complementary apertures (not shown in the figures) at the bottom of the frame. On the other hand, the exterior framework 21a has through holes 36 in the opposing side strips, through which pass fixing screws (not shown in the figures) that screw into complementary holes provided in the bottom of the frame (not shown in the figures).

[0041] Figures 8A to 8C show the stages of opening the closing plate 21b with respect to the external framework 21a. Thus, when the closing plate 21b is fixed to the exterior framework 21a as shown in Figure 8A, the fixing screw 34a is unscrewed and then the closing plate 21b moves downward in a horizontal position against the resistance offered by the clipping fixing means 37 previously described with reference to Figures 5-7, to reach the position shown in Figure 8B. Then, the closing plate 21b rotates on the hinge 33 and swings relative to the exterior framework 21a, as shown in Figure 8C.

[0042] Figures 9 to 12 show in more detail some of the characteristics of the closing plate 21b described above with reference to Figures 5 to 7 and 8A to 8C.

[0043] As can be seen, the connection from fluid inlet

46 of the first pump 40 is connected to a connector 30a provided on the inner side of one of the sides of the wash water reservoir 30 through a wash water outlet hose 48 that extends above the upper surface of the closing plate 21b while the outlet from the first pump 40 is connected to a first outlet connection 47 by means of a first wash liquid duct 42 integrated into the closing plate 21b. The first connection from the output connection 47 is connected to the detergent compartment by means of a resupply hose 50 (see Figures 12 and 13).

[0044] The inlet connection 46 of the second pump 41 is connected to the wash tub 2 by means of a drain hose 49, while the outlet of the second pump 41 is connected to a second wash liquid duct 42 that has a second outlet connection 47 connected to an evacuation hose 51 (see Figures 12 and 13) that communicates with the drain from the washing machine 1.

[0045] Figure 12 shows that the first wash liquid duct 42 is formed in the same body of the closing plate 21b that can be achieved, for example, in the molding of the closing plate 21b. Each of the pumps 40, 41 comprises a housing 43 partially integrated into the closing plate 21a. The wash liquid enters the interior of the housing 43 through the inlet connection 46 and is discharged under pressure through the outlet from the pump 40, 41 to the wash liquid duct 42. This structure is equally applicable to the second wash liquid duct.

[0046] Figure 13 shows a first embodiment of the hydraulic system of the washing machine. According to this embodiment, fresh water is supplied to the system by introducing it into the detergent compartment and leading it through a water supply hose 52 in the wash tub 2, and from there through the transfer duct 53 to the wash water reservoir 30 until there is enough water in wash tub 2 and the wash water reservoir 30 is full, after which the fresh water supply to the detergent compartment 10 is closed and the three-way valve 55 arranged in the outlet of wash tub 2 is closed. When, after a wash cycle, it is necessary required to partially or completely evacuate the dirty wash liquid from tub 2, the three-way valve 55 is opened so that the dirty wash liquid can flow through the second wash water duct 42 to the drain hose 49, and the second pump 41 is operated to pump the dirty wash liquid through the discharge hose 51 to evacuate through the drain (not shown in the figures) of the washing machine 1, and the three-way valve 55 is closed.

[0047] When, after the evacuation of the wash liquid, continuing with a new wash cycle that requires the addition of wash water, the first pump 40 is operated to pump wash water from the wash water reservoir 30 through the wash water outlet hose 48, the first wash liquid duct 42 and the first hose 50 to the detergent compartment 10, from where it passes through the water supply hose 52 to the wash tub 2. After the wash tub 2 has been evacuated after a wash cycle, this can be done when all the wash water has been used, or only a portion thereof.

[0048] Likewise, instead of draining the wash water from wash tub 2 through the drain hose 49, one can

choose, when it is desired to reuse some or all of the used wash water that is evacuated from wash tub 2, for example, such as water for soaking, this used wash water can be transferred to the wash water reservoir 30 by closing the access to the drain hose 49 by means of valve 55 and opening access to the transfer hose 53, such that the used wash water is transferred into the wash water reservoir 30 and, from there, by operating the first pump 40, can be brought through the wash water outlet hose 48, the first wash liquid duct 42 and the resupply hose 50 to the detergent compartment 10, from where it is recirculated, optionally being mixed with more fresh water and/or more detergent, to wash tub 2 via water supply hose 52. In this way, the tub 2, the wash water reservoir 30, the first pump 40, and the wash liquid duct 42 are part of a wash liquid recirculation circuit.

[0049] The second embodiment of the hydraulic system of the washing machine shown in Figure 14 differs from the first embodiment illustrated in Figure 13 in that the wash tub 2 is not in hydraulic communication with the wash water reservoir 30 such that the valve 55 arranged at the outlet of the wash tub 2 is only two-way.

[0050] As in the first embodiment of the hydraulic system, after a wash cycle, when it is necessary required to partially or completely evacuate the dirty wash liquid from tub 2, the two-way valve 55 is opened so that the dirty wash liquid can flow through the second wash water duct 42 to the drain hose 49, and the second pump 41 is operated to pump the dirty wash liquid through the discharge hose 51 to evacuate through the drain (not shown in the figures) of the washing machine 1, and the two-way valve 55 is closed.

[0051] Moreover, fresh water can be supplied to the system by introducing it into the detergent compartment and leading it through the water supply hose 52 into the wash tub 2, and/or the wash water reservoir 30. When, after the evacuation of the wash liquid, continuing with a new wash cycle that requires the addition of wash water, the first pump 40 is operated to pump wash water from the wash water reservoir 30 through the wash water outlet hose 48, the first wash liquid duct 42 and the first hose 50 to the detergent compartment 10, from where it passes through the water supply hose 52 to the wash tub 2.

REFERENCE SYMBOLS

[0052]

1	Washing machine
2	Wash tub
3	Rotating drum
4	Drive motor
5	Fan belt
6	Belt pulley
7	Damper
9	Spring
10	Detergent compartment
20	Frame

21	Bottom cover	(21).
21a	External framework	
21b	Closing plate	
21c	First lug	
21d	Second lug	5
22	Top cover	
23	Front panel	
24	Control panel	
25	Rear wall	
25a	Access cut-out	10
26	Rear closure cover	
27	Side wall	
30	Wash water reservoir	
30a	Connector from the wash water reservoir	
31	Wash reservoir support	15
32	Damper support	
32a	Reinforcement	
33	Hinge for reservoir hinged cover	
33a	Hinge pin	
33b	Rotation bushing	20
34	Fastening screw from the bottom cover to the exterior framework	
34a	Fastening screw	
35	Fastening by clipping from the exterior framework to the frame	25
36	Through hole for the screw from the exterior framework to the frame	
37	Fastening by clipping from the bottom cover to the exterior framework	
40	First pump motor	30
41	Second pump motor	
42	Wash liquid duct	
43	Pump motor housing	
44	Wastewater collection tray	
44a	Drain	35
45	Wastewater detector device	
46	Inlet connection to the pump motor	
47	Outlet connection to the pump motor	
48	Wash water outlet hose	
49	Tub drain hose	40
50	Resupply hose	
51	Discharge hose	
52	Water drain hose	
53	Transfer hose	
54	Additional water drain hose	45
55	Valve	

Claims

1. Washing machine (1) comprising a housing with a bottom cover (21), and a hydraulic flushing system, comprising a first pump motor (40) and a second pump motor (41) and at least one wash liquid duct, **characterized in that** at least a part of at least one hydraulic element selected from the at least one wash liquid duct (42) and the first (40) and the second (41) pump motor is integrated into the bottom cover (21).
2. Washing machine according to claim 1, **characterized in that** at least a part of the wash liquid duct (42) is integrated into the bottom cover (21).
3. Washing machine (1) according to claim 1 or 2, **characterized in that** at least one of the first (40) and the second (41) pump motor is arranged in the bottom cover (21) and comprises a part of the pump motor housing (43) that is at least partially integrated into the bottom cover (21).
4. Washing machine (1) according to one of the foregoing claims, **characterized in that** the bottom cover (21) comprises a wastewater collection tray (44).
5. Washing machine (1) according to claim 4, **characterized in that** the wastewater collection tray (44) is integrated with the bottom cover (21).
6. Washing machine (1) according to one of the foregoing claims, **characterized in that** the housing further comprises a frame (20) and the bottom cover (21) closes the bottom of the frame (20).
7. Washing machine (1) according to one of the foregoing claims, **characterized in that** the bottom cover (21) is at least partially detachable.
8. Washing machine (1) according to one of the foregoing claims, **characterized in that** at least part of the bottom cover (21) is hinged.
9. Washing machine (1) according to one of the foregoing claims, **characterized in that** the hydraulic system comprises at least one additional hydraulic element selected from among a wash water reservoir (30) arranged in the bottom cover (21) and a single wash tub (2) arranged in the housing.
10. Washing machine (1) according to claim 9, **characterized in** comprising at least one wash water reservoir (30) having a minimum capacity of 50%, preferably 75%, of the total volume of water used in a wash cycle.
11. Washing machine (1) according to claim 9 or 10, **characterized in that** the wash liquid duct (42) is hydraulically connected to at least one hydraulic element selected from among the wash water reservoir (30) and the wash tub (2).
12. Washing machine (1) according to claim 9, 10, or 11, **characterized in that** at least one of the first (40) and the second (41) pump motor is hydraulically connected to at least one hydraulic element selected from among the wash water reservoir (30) and the

wash tub (2).

13. Washing machine (1) according to one of claims 9 through 12, **characterized in that** at least one hydraulic element selected from the tub (2), at least one wash water reservoir (30), at least one pump motor (40) and at least one wash liquid duct (42) form part of a circuit for reuse of wash liquid.

Patentansprüche

1. Waschmaschine (1), die ein Gehäuse mit einer unteren Abdeckung (21) und ein hydraulisches Spülsystem umfasst, das einen ersten Pumpenmotor (40) und einen zweiten Pumpenmotor (41) und mindestens einen Waschflüssigkeitskanal umfasst, **dadurch gekennzeichnet, dass** zumindest ein Teil mindestens eines Hydraulikelements, das unter dem mindestens einen Waschflüssigkeitskanal (42), dem ersten (40) und dem zweiten (41) Pumpenmotor ausgewählt ist, in die untere Abdeckung (21) integriert ist.
2. Waschmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** zumindest ein Teil des Waschflüssigkeitskanals (42) in die untere Abdeckung (21) integriert ist.
3. Waschmaschine (1) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der erste (40) und/oder der zweite (41) Pumpenmotor in der unteren Abdeckung (21) angeordnet ist und einen Teil des Pumpenmotorgehäuses (43) umfasst, das zumindest teilweise in die untere Abdeckung (21) integriert ist.
4. Waschmaschine (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die untere Abdeckung (21) ein Abwasserauffangbecken (44) umfasst.
5. Waschmaschine (1) nach Anspruch 4, **dadurch gekennzeichnet, dass** das Abwasserauffangbecken (44) in die untere Abdeckung (21) integriert ist.
6. Waschmaschine (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gehäuse ferner einen Rahmen (20) umfasst und die untere Abdeckung (21) den Boden des Rahmens (20) verschließt.
7. Waschmaschine (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die untere Abdeckung (21) zumindest teilweise abnehmbar ist.
8. Waschmaschine (1) nach einem der vorhergehenden

den Ansprüche, **dadurch gekennzeichnet, dass** zumindest ein Teil der unteren Abdeckung (21) anscharniert ist.

9. Waschmaschine (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Hydrauliksystem mindestens ein zusätzliches Hydraulikelement umfasst, das unter einem in der unteren Abdeckung (21) angeordneten Waschwasserbehälter (30) und einem in dem Gehäuse angeordneten einzelnen Laugenbehälter (2) ausgewählt ist.
10. Waschmaschine (1) nach Anspruch 9, **dadurch gekennzeichnet, dass** sie mindestens einen Waschwasserbehälter (30) mit einem Mindestfassungsvermögen von 50%, vorzugsweise 75%, des Gesamtvolumens des bei einem Waschgang benutzten Wassers umfasst.
11. Waschmaschine (1) nach Anspruch 9 oder 10, **dadurch gekennzeichnet, dass** der Waschflüssigkeitskanal (42) hydraulisch mit mindestens einem Hydraulikelement verbunden ist, das unter dem Waschwasserbehälter (30) und dem Laugenbehälter (2) ausgewählt ist.
12. Waschmaschine (1) nach Anspruch 9, 10 oder 11, **dadurch gekennzeichnet, dass** der erste (40) und/oder der zweite (41) Pumpenmotor hydraulisch mit mindestens einem Hydraulikelement verbunden ist, das unter dem Waschwasserbehälter (30) und dem Laugenbehälter (2) ausgewählt ist.
13. Waschmaschine (1) nach einem der Ansprüche 9 bis 12, **dadurch gekennzeichnet, dass** mindestens ein Hydraulikelement, das unter dem Laugenbehälter (2), mindestens einem Waschwasserbehälter (30), mindestens einem Pumpenmotor (40) und mindestens einem Waschflüssigkeitskanal (42) ausgewählt ist, einen Teil eines Kreislaufs zur Wiederverwendung von Waschflüssigkeit bildet.

Revendications

1. Lave-linge (1) comprenant une carcasse avec un capot inférieur (21), et un système de rinçage hydraulique, comprenant un premier moteur de pompe (40) et un deuxième moteur de pompe (41) et au moins un conduit à liquide de lavage, **caractérisé en ce qu'au moins une partie d'au moins un élément hydraulique sélectionné parmi l'au moins un conduit à liquide de lavage (42) et le premier (40) et le deuxième (41) moteur de pompe est intégré au capot inférieur (21).**
2. Lave-linge selon la revendication 1, **caractérisé en**

- ce qu'**au moins une partie du conduit à liquide de lavage (42) est intégrée au capot inférieur (21).
3. Lave-linge (1) selon la revendication 1 ou 2, **caractérisé en ce qu'**au moins un parmi le premier (40) et le deuxième (41) moteur de pompe est disposé dans le capot inférieur (21) et comprend une partie du carter du moteur de pompe (43) au moins partiellement intégré au capot inférieur (21).
4. Lave-linge (1) selon l'une des revendications précédentes, **caractérisé en ce que** le capot inférieur (21) comprend un bac collecteur d'eau usée (44).
5. Lave-linge (1) selon la revendication 4, **caractérisé en ce que** le bac collecteur d'eau usée (44) est intégré au capot inférieur (21).
6. Lave-linge (1) selon l'une des revendications précédentes, **caractérisé en ce que** la carcasse comprend en outre un bâti (20) et le capot inférieur (21) obture le fond du bâti (20).
7. Lave-linge (1) selon l'une des revendications précédentes, **caractérisé en ce que** le capot inférieur (21) est au moins partiellement amovible.
8. Lave-linge (1) selon l'une des revendications précédentes, **caractérisé en ce qu'**au moins une partie du capot inférieur (21) est articulée.
9. Lave-linge (1) selon l'une des revendications précédentes, **caractérisé en ce que** le système hydraulique comprend au moins un élément hydraulique supplémentaire sélectionné parmi un réservoir à eau de lavage (30) disposé dans le capot inférieur (21) et une cuve de lavage unique (2) disposée dans la carcasse.
10. Lave-linge (1) selon la revendication 9, **caractérisé en ce qu'il** comprend au moins un réservoir à eau de lavage (30) possédant une capacité minimale de 50%, de préférence 75% du volume total d'eau utilisé lors d'un cycle de lavage.
11. Lave-linge (1) selon la revendication 9 ou 10, **caractérisé en ce que** le conduit à liquide de lavage (42) est relié hydrauliquement à au moins un élément hydraulique sélectionné parmi le réservoir à eau de lavage (30) et la cuve de lavage (2).
12. Lave-linge (1) selon la revendication 9, 10 ou 11, **caractérisé en ce qu'**au moins un parmi le premier (40) et le deuxième moteur de pompe est relié hydrauliquement à au moins un élément hydraulique sélectionné parmi le réservoir à eau de lavage (30) et la cuve de lavage (2).
13. Lave-linge (1) selon l'une des revendications 9 à 12, **caractérisé en ce qu'**au moins un élément hydraulique sélectionné parmi la cuve (2), au moins un réservoir à eau de lavage (30), au moins un moteur de pompe (40) et au moins un conduit à liquide de lavage (42) fait partie d'un circuit de réutilisation du liquide de lavage.

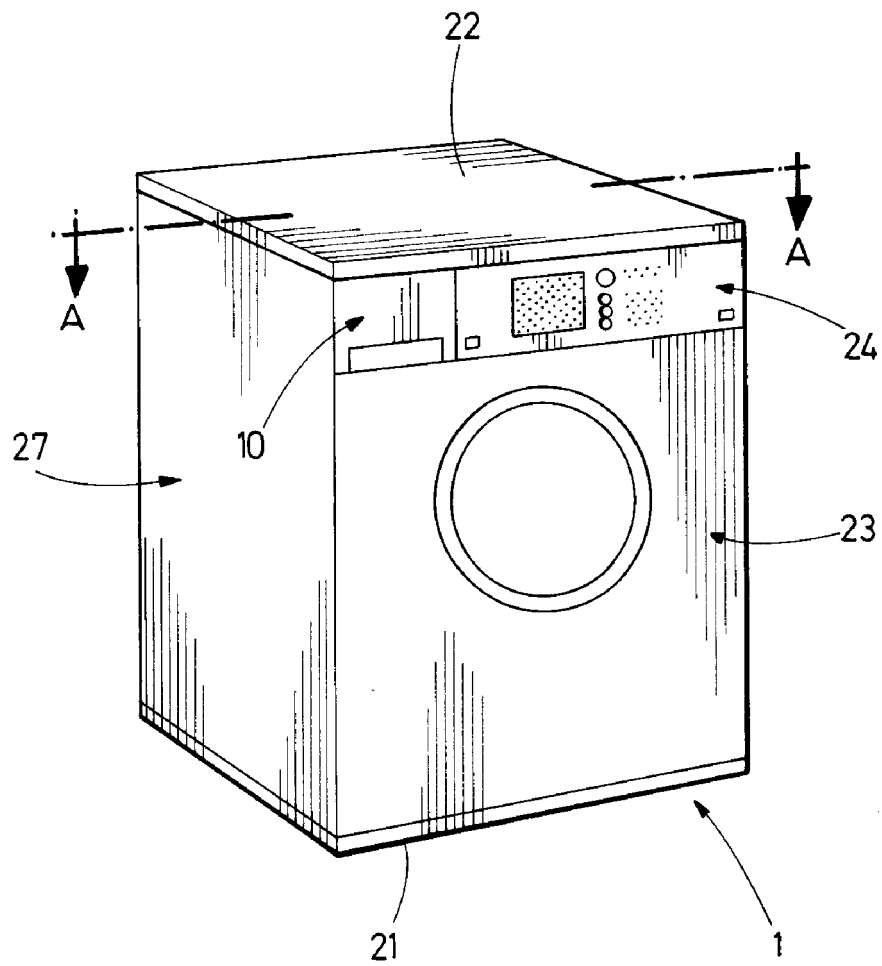


FIG.1

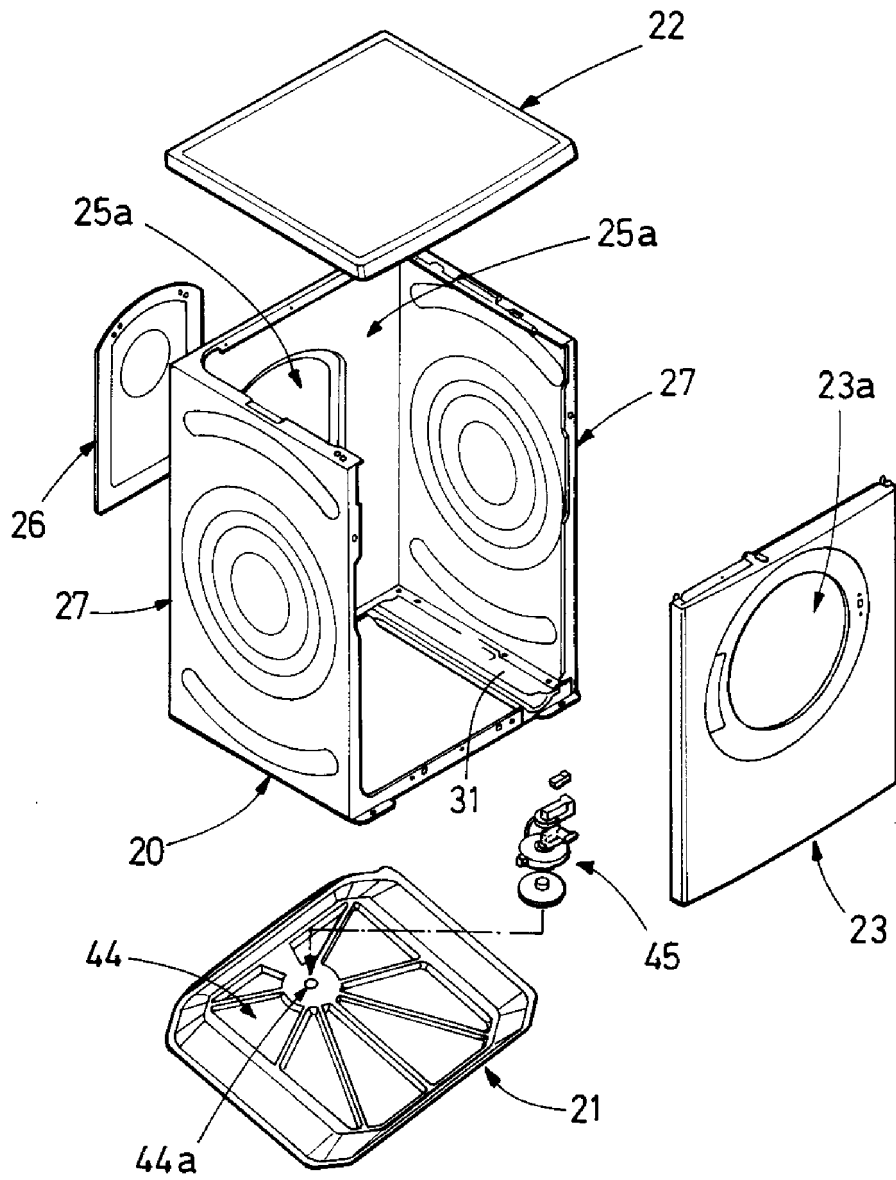


FIG. 2

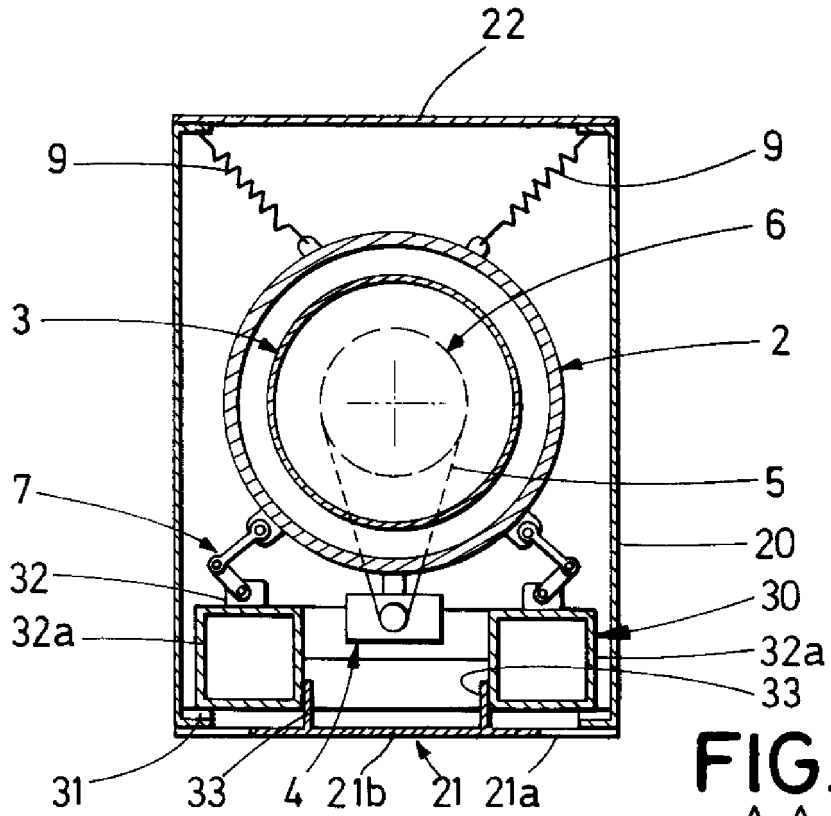


FIG. 3
A-A

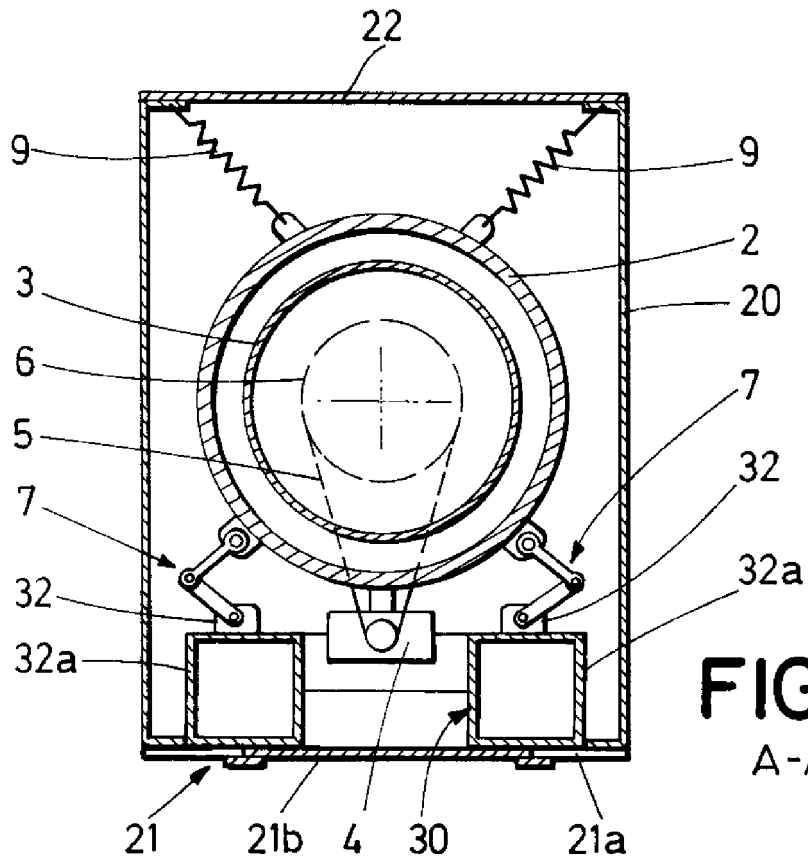


FIG. 4
A-A

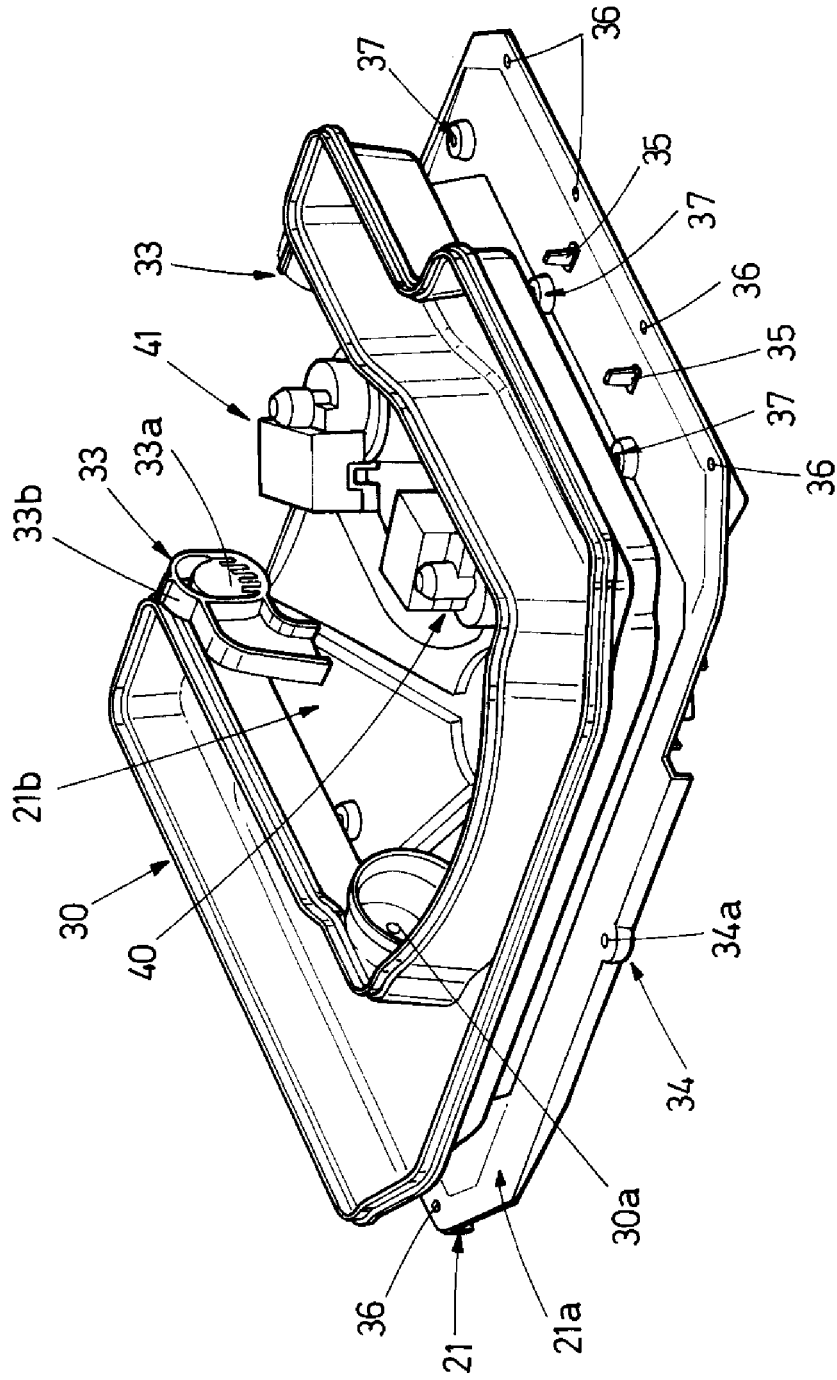


FIG.5

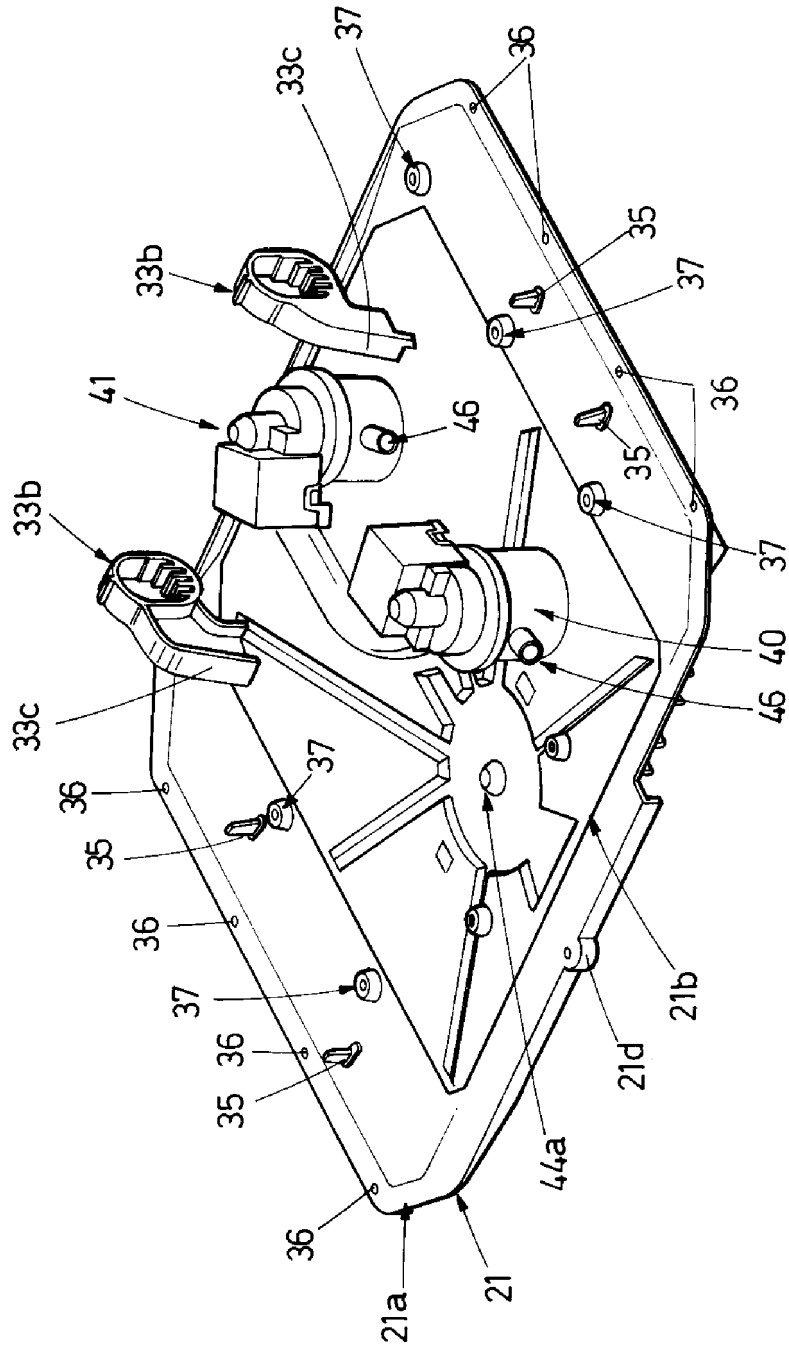


FIG.6

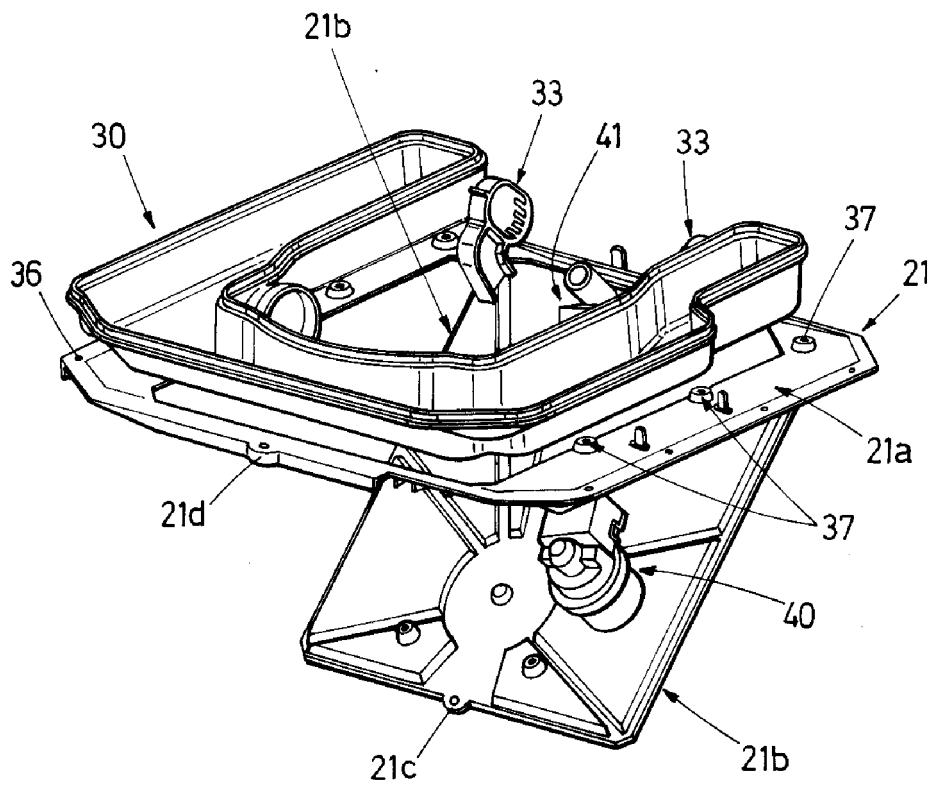
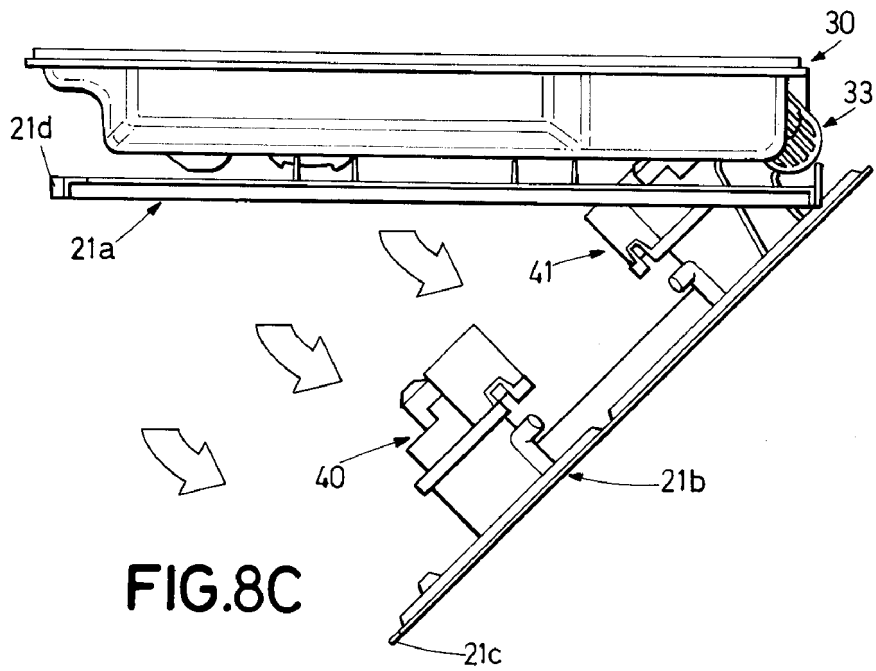
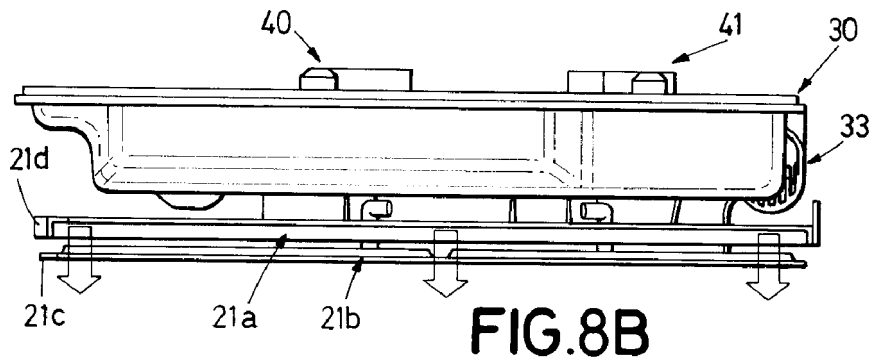
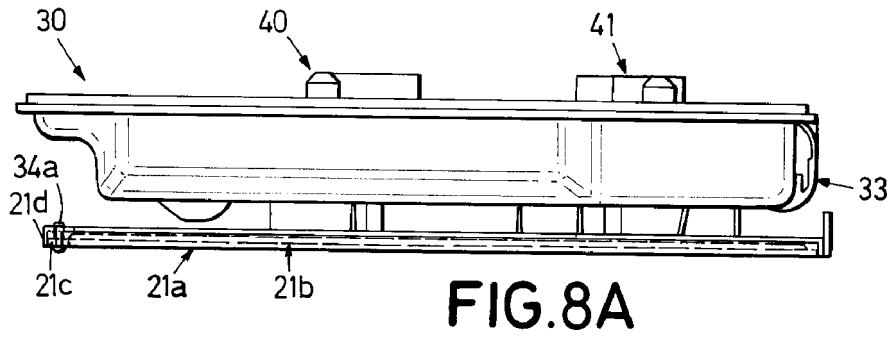


FIG. 7



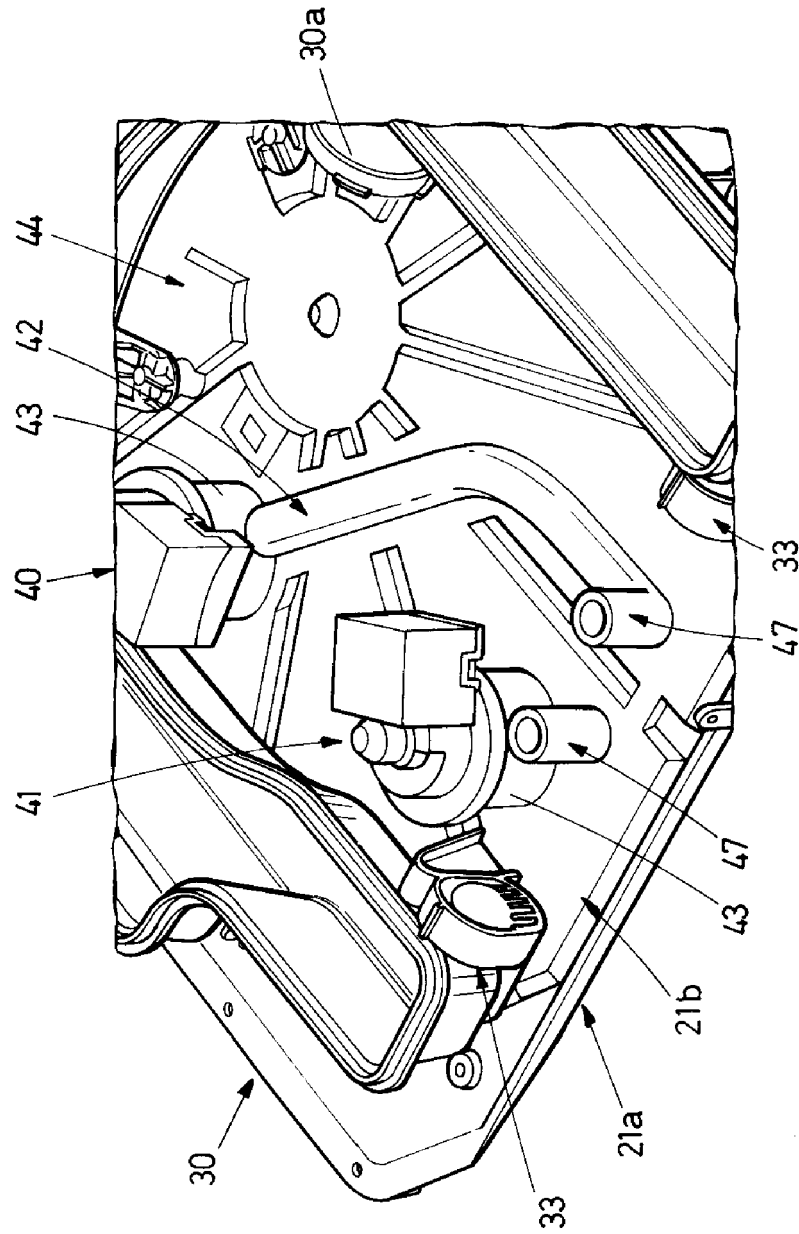


FIG.9

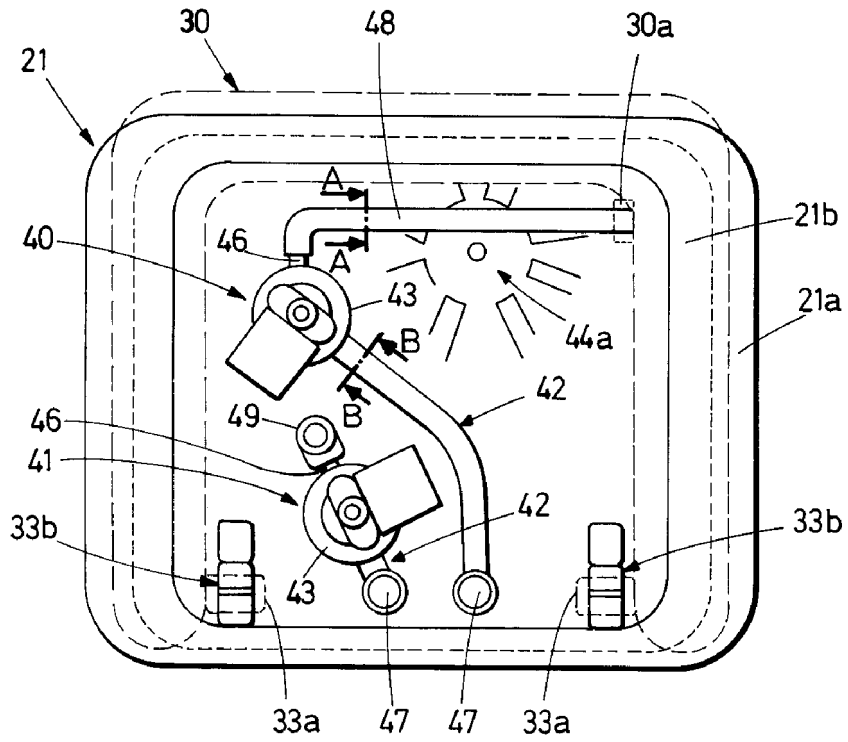


FIG. 10

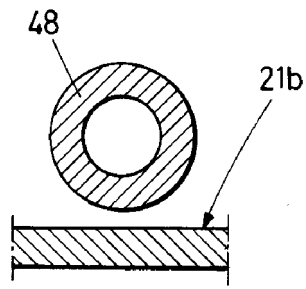


FIG. 11
A-A

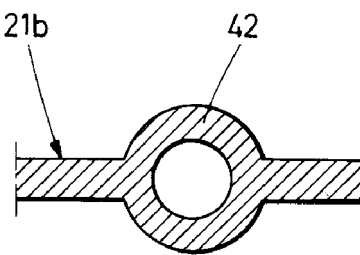


FIG. 12
B-B

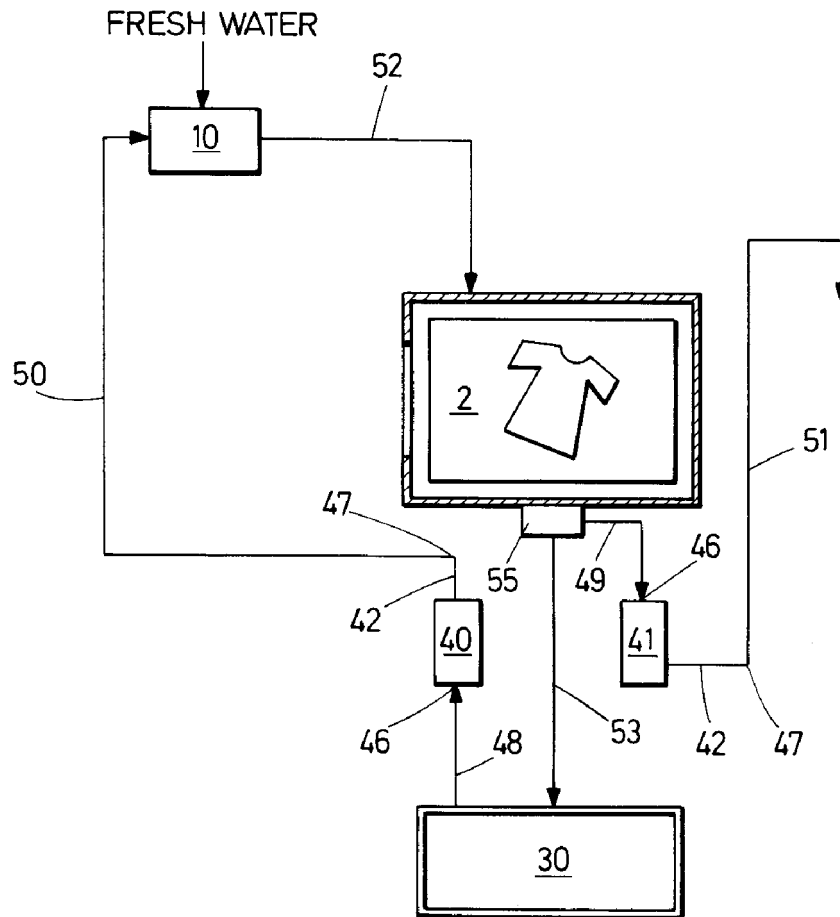


FIG.13

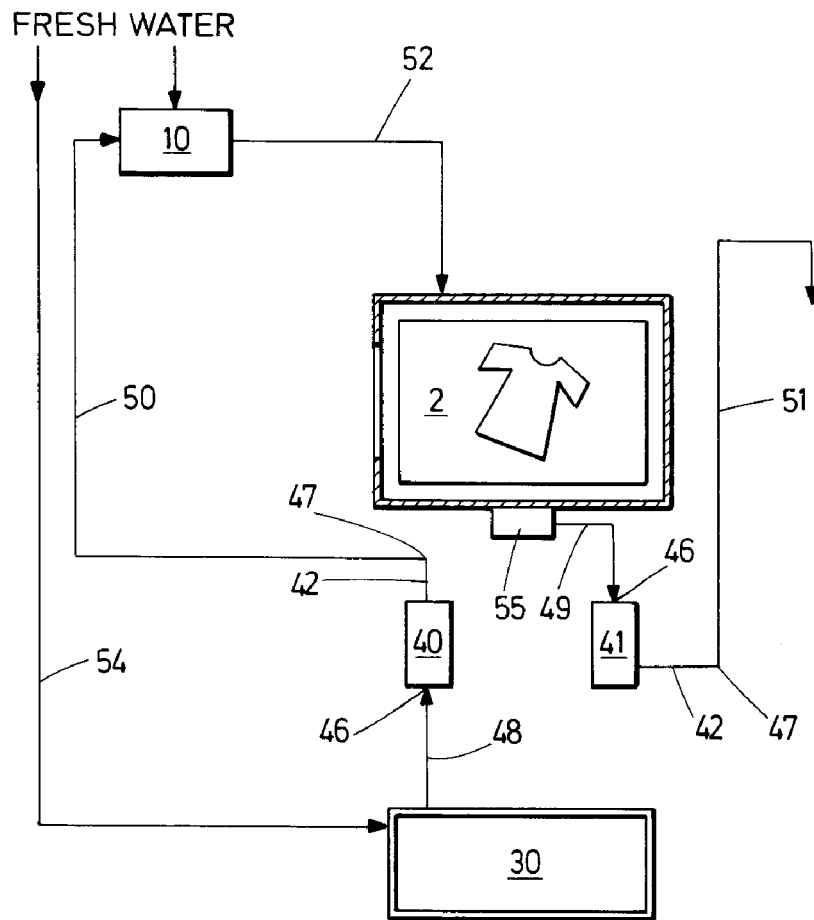


FIG.14

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 20120090362 A1 [0002]
- EP 2447405 A1 [0005]