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(54) **Compartment for drawer distributing washing agents for washing machine with improved feed of the washing agents.**

(57) Compartment (1, 1', 1'') for a drawer which distributes washing agents in a washing machine equipped with a mechanism for rotation of the compartments for

removal of the individual washing agents, characterised in that the same compartments (1, 1', 1'') are actuated by means of the weight of the water fed, irrespective of the flow rate of the feed valve of the washing machine.

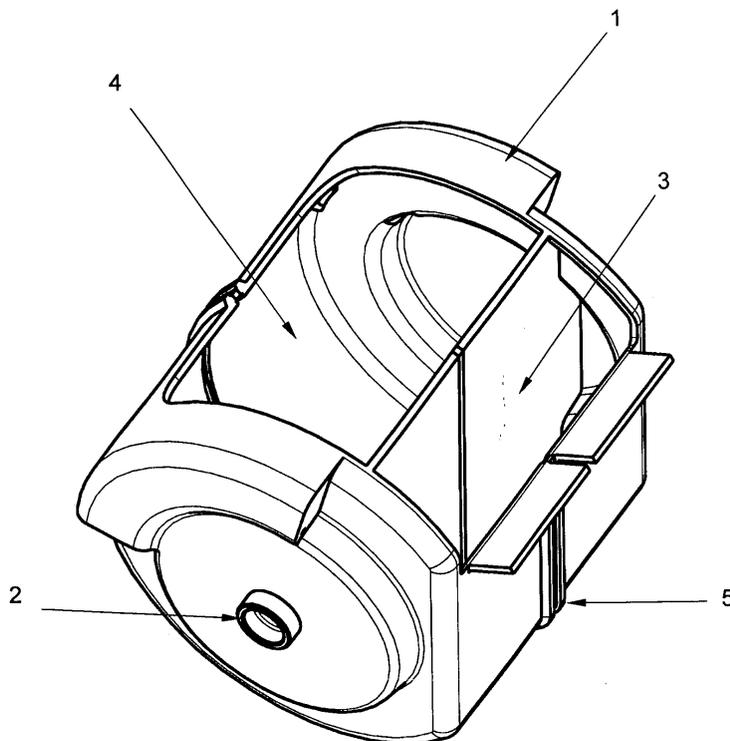


Fig. 2

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Description

[0001] The system of feeding water from the lower part of the washing tub of a washing machine, in particular the lower and front part, that is to say on the side of the window, in so-called front-loading washing machines, is known.

[0002] In this system there is a patent solution which involves the rotation of compartments for removal of detergents by means of the thrust of the water coming from the feed valve of the machine. The flow rate is however strongly dependent on the pressure, that is to say the flow rate regulators present in the valves known to the state of the art notoriously do not succeed in maintaining the flow rate at the nominal level when the pressure drops below 1 bar of pressure of the water supply system.

[0003] Moreover rotation of the compartments in this system must be allowed without impediment, at the same time guaranteeing that a mechanism for returning the compartments into the original position is inserted in the application so as to allow them to be filled with the washing agents at the next washing cycle.

[0004] Therefore a system which depends on the efficacy of the flow rate in making washing agents compartments rotate is complicated and costly, built with numerous components and therefore subject to malfunctioning in the life of the product, with reduction in the quality perceived by the user of the washing machine.

[0005] The object of the present invention consists of removal of washing agents in a washing machine, fitted with a mechanism for rotation of the compartments for removal of these washing agents, irrespective of the flow rate of the water. This solution is obtained by means of compartments which rotate due to an unbalancing of the same compartments as a result of the weight of the water which accumulates during feeding in integral pockets integrated in the compartments for the washing agents. This is made possible with a simple and reliable solution.

[0006] The main advantage consists of the fact that washing agents are fed without complicated and costly rotation mechanisms that depend on the flow rate of the feed valve of the washing machine, a flow rate which - as is known - is strongly influenced by the feed pressure of the water supply system. Moreover another advantage consists of the fact that siphons for removal of detergents in a liquid form are avoided, siphons which often demonstrate that they do not function correctly when the conditions of feeding of the water and of the washing agents change.

[0007] Other equally important advantages are derived from:

- a lower cost compared to the solutions known to the state of the art, thanks to the elimination of some components, such as the mechanism for resetting/returning the compartments or the flow deviators

(necessary for the thrust of the water in the solution already known to the state of the art);

- greater reliability, thanks to the use of fewer components, and above all without siphons and without the need for high pressure or flow rate by possible nozzles for feeding water;
- extremely simple management of restoring of the position of the compartments, obtained by automatic discharging of the pockets integral with the same compartments.

[0008] These and other aspects will be made clearer on reading a preferred embodiment of the invention, to be seen as a non-limiting example of the more general concept claimed.

Figure 1 is a perspective view of the drawer with, internally, the compartments which can be rotated.

Figure 2 is a perspective view of the individual compartment.

Figure 3 is a side view of the cross section of the compartment.

[0009] The following is a description of the preferred embodiment. The description focuses on the part for removal of the washing agents, since the drawer can have different forms according to its positioning inside the washing machine.

[0010] Each compartment 1, 1', 1" is hinged on fulcrums 2 in such a way that it is free to rotate. Each compartment has a pocket 3, 3', 3" in the part towards which it has to unbalance in order to feed the washing agents, and a compartment opposite to the first one 4, 4', 4" wherein the washing agent is placed. When the feed valve is actuated, water is fed via one of the feed channels according to the compartment which has to be emptied, and therefore according to the phase of the washing cycle, by means of a valve upstream of the compartments. The water is carried through channels to the filling nozzle wherefrom it exits, flowing directly, even at minimum flow rate and pressure, into the pocket 3, 3', 3" of the corresponding rotating compartment 1, 1', 1". The quantity of water which accumulates in the pocket 3, 3', 3" allows the compartment to rotate and to remove the washing agent contained in the part of the compartment 4, 4', 4".

[0011] The compartment 1, 1', 1" remains rotated for the time in which the water is fed to the tub of the machine, plus additional time due to the delay required by the pocket for emptying the water which has made the rotating compartment unbalance. Each pocket 3, 3', 3" is provided with small holes or slots 5 with such a section as to allow slow emptying of the same pocket, and also the accumulation of water, whose weight determines the aforementioned unbalancing, when the flow rate exceeds a minimum value. Now, given that the lower the

flow rate the longer in temporal terms the feeding of the washing machine (feeding ends when the level of water has reached a value predetermined by the pressure gauge, according to what is known to the state of the art), the fact that the flow rate is low - and therefore the removal of the washing agents and the rinsing of the compartment where these agents are contained could be more difficult - is more than adequately compensated by the lengthening of the feed times. Vice versa, the compartment remains tilted for a longer time than that set for feeding the water, thanks to the additional time of emptying of the pockets.

[0012] Once the pocket 3, 3', 3" has been emptied, thanks to the slow outflow through the holes or slots 5, the compartment, whose centre of gravity is positioned in such a way as to remain in a position for easy filling of the washing agents, when water is not fed to the pockets 3, 3', 3", returns into the original position, also emptied of the washing agents poured at the start of the same washing program. Substantially, because it is tilting, the compartment returns automatically, thanks to its weight and to the off-axis centre of gravity in relation to the side pins 2, into the starting position for the next washing program.

Claims

1. Compartment (1, 1', 1") of a drawer distributing washing agents for a washing machine, equipped with a rotation mechanism for removal of the single washing agents, **characterised in that** said rotation takes place by means of the weight of the water fed and accumulated in a counterweight receptacle connected to the compartment (1, 1', 1"), irrespective of the flow rate of the feed valve of the washing machine.
2. Compartment of a drawer distributing washing agents for a washing machine according to claim 1, **characterised in that** it comprises a pocket for the accumulation of the washing agent (4, 4', 4") and a pocket (3, 3', 3") for the accumulation of the counterweight water.
3. Compartment of a drawer distributing washing agents for a washing machine according to claim 1, **characterised in that** the counterweight pockets (3, 3', 3") for accumulation of the water for unbalancing the compartments are integral with the same compartments.
4. Compartment of a drawer distributing washing agents for a washing machine according to claim 1, **characterised in that** the counterweight pockets (3, 3', 3") for accumulation of the water for the unbalancing of the compartments are integrated in the same compartment.
5. Compartment of a drawer distributing washing agents for a washing machine according to claim 1, **characterised in that** the pockets for accumulation of the water (3, 3', 3") are provided at the base with holes (5) for emptying, dimensioned to ensure filling of the same pocket even with a minimum feed water flow rate.
6. Method of production of compartments for washing agents with a rotary movement, **characterised in** the presence of pockets for accumulation of the water for the weighted rotation of the same compartments, located in the rear part of these same compartments.
7. Drawer distributing washing agents for a washing machine **characterised in that** it comprises internally one or more compartments (1, 1', 1 ") according to the previous claims.
8. Washing machine which uses one or more of the devices or methods described in the previous claims.

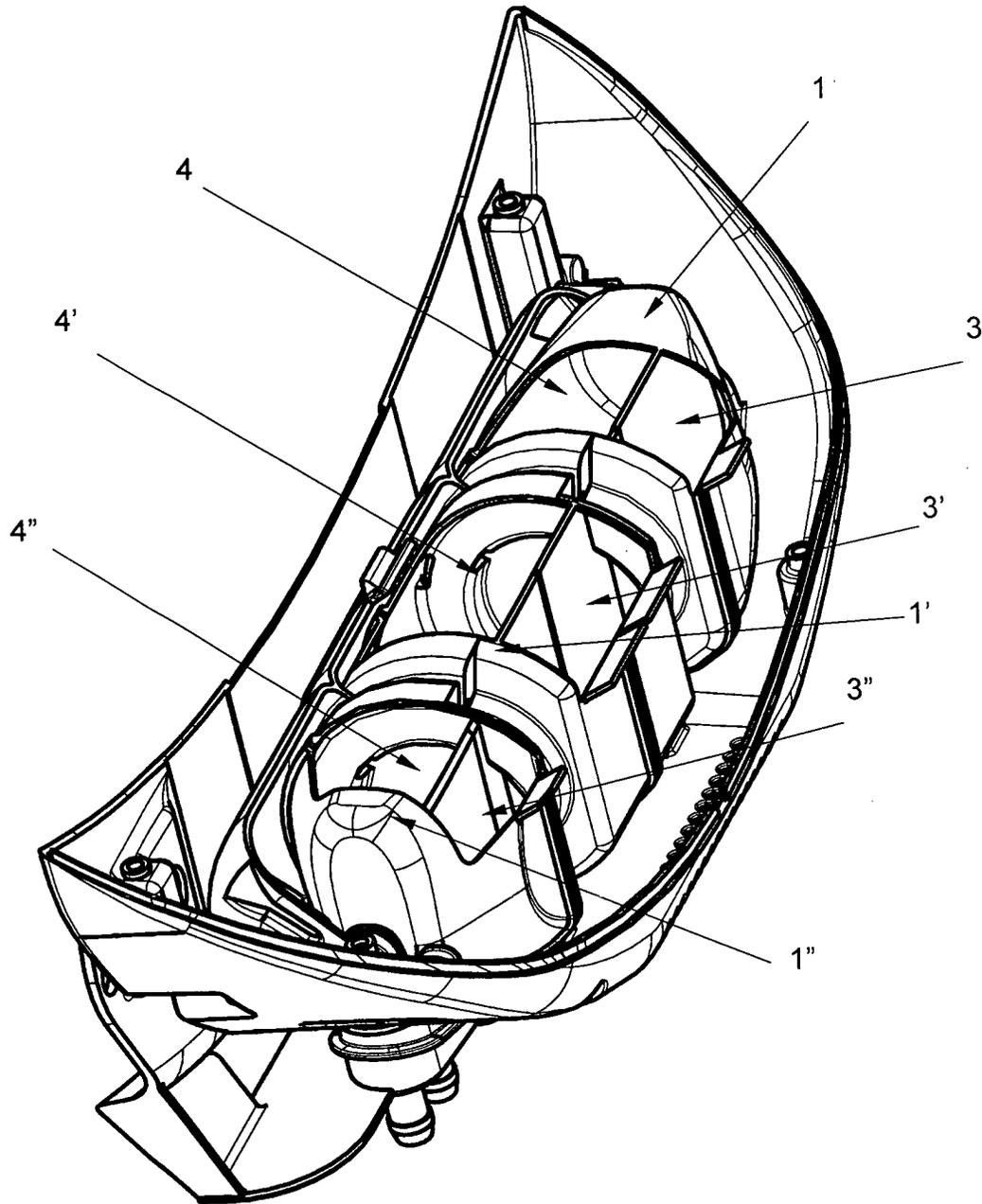


Fig. 1

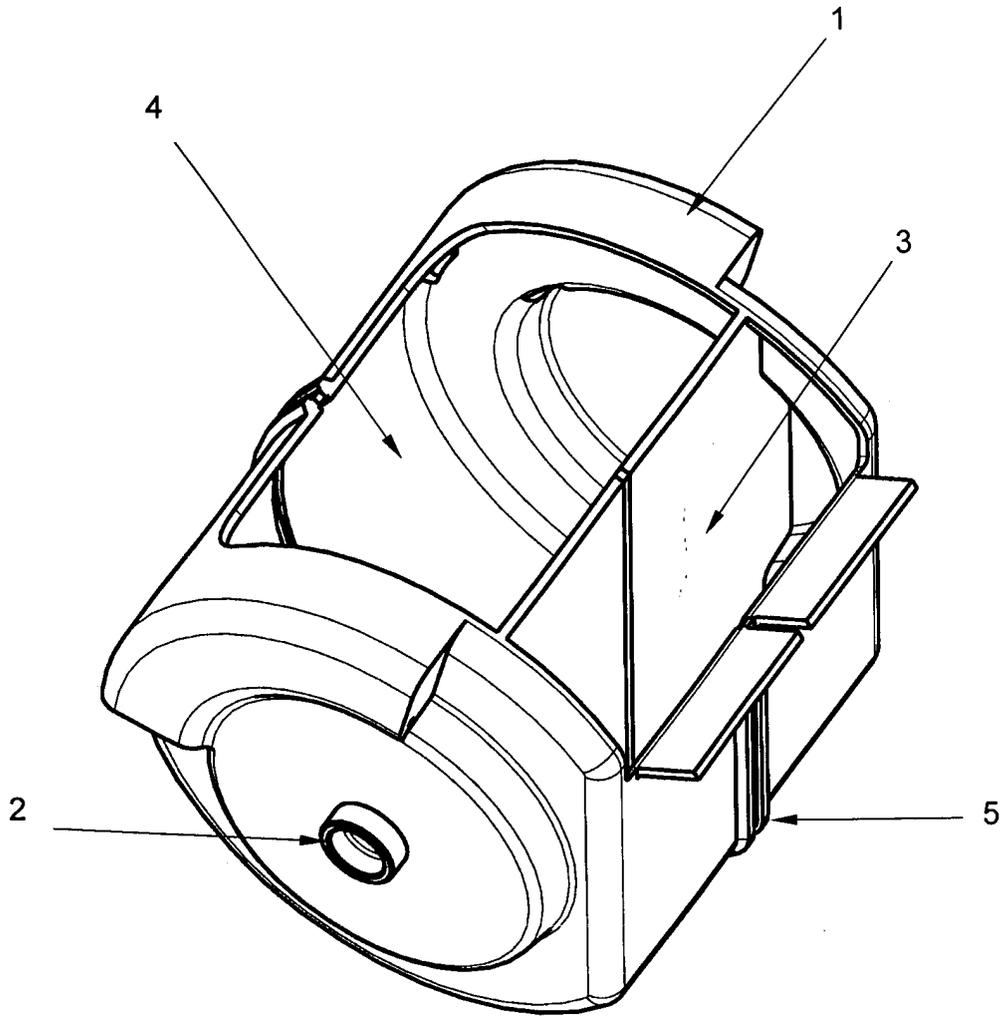


Fig. 2

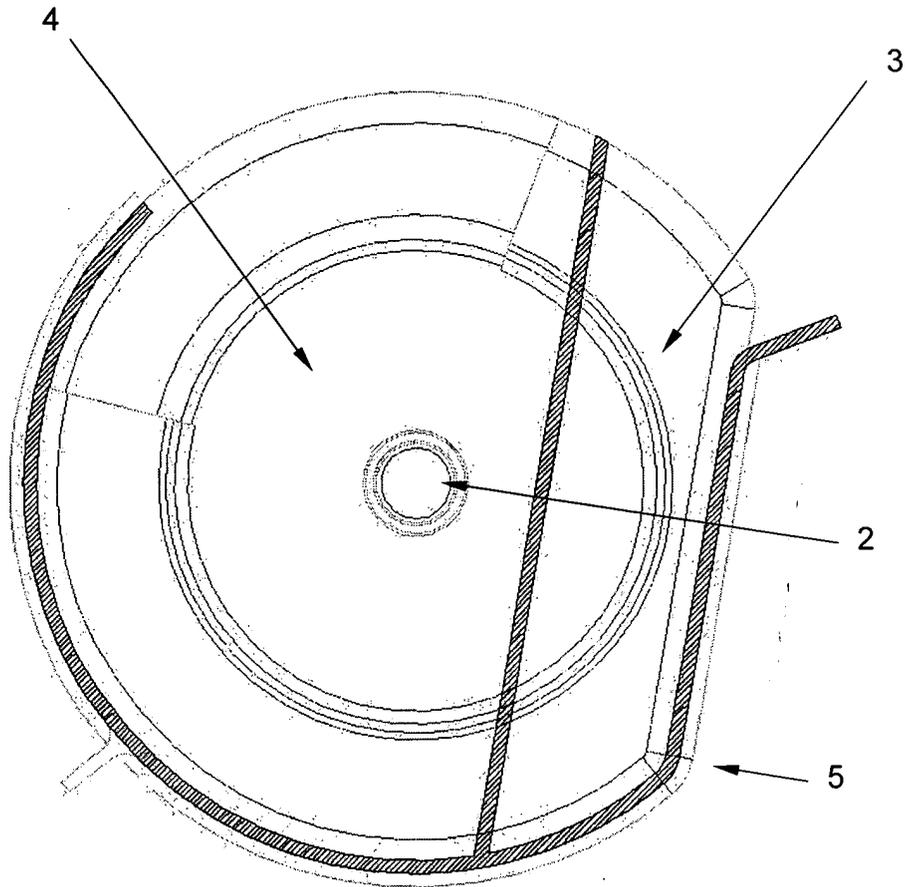


Fig. 3



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 25 July 2005	Examiner Lodato, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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EPO FORM 1503 03.82 (P04C01)

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EP 05 00 6567

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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