Abstract: The present invention refers to a cleaning supply dispenser (1) for clothes washing machines (10), which comprises a water inlet (14), a cleaning supply inlet (8), a pressurised compartment for mixing water and cleaning supplies (12) associated to the water inlet (14) and to the cleaning supply inlet (8), an outlet for the mixture of water and cleaning supplies (16) associated to the mixture compartment (12), the outlet (16) being capable of dispensing the mixture into the wash basket (23) and a water and cleaning supply mixing element (4, 4') disposed inside the mixture compartment (12). The objective of the present invention is to provide a cleaning supply dispenser (1) for clothes washing machines (10) which enables the use of detergent in any physical state without the need for a selector for intervention by the consumer. Moreover, the dispenser (1) of the present invention prevents the detergent from running to the wash basket (23) and enables the machine to be filled in less time.
Specification of Patent of Invention for "CLEANING SUPPLY DISPENSER FOR CLOTHES WASHING MACHINES".

The present invention refers to a cleaning supply dispenser for clothes washing machines which provides for the use of detergent commercialized in any physical state, without the need of a selector for intervention by the consumer.

The above dispenser also prevents the detergent from running to the wash basket, and also enables itself to be placed in the external part of the washing machine, whereby facilitating loading.

Description of the state of the art

With the growth of the clothes washing machine market, manufacturers of chemical products are taking advantage thereof to manufacture, innovate and diversify cleaning supplies for clothes washing machines, as can be seen by the various types of products available on the market, such as powder detergents, liquid detergents, pre-washing and stain removers, among others.

This new state of affairs exposes the washing machines currently on the market to a position that limits the use of these new cleaning supplies by the consumer, showing that the products are clearly mismatched with the new evolutionary reality of these cleaning supplies.

In order to adapt the washing machines to this new reality, the state of the art discloses some dispensers for clothes washing machines which seek to solve the problem mentioned above.

European document EP 1764437 describes a detergent dispenser for washing machines that has a recipient which enables the loading of liquid or powder detergent by changing a device on the recipient of the machine.

However, the main drawback of the dispenser of the European document is in the need for intervention by the user to select the type of detergent to be used, in addition to the fact that the recipient is disposed inside the clothes washing machine.

British document GB 2.165.555 describes a detergent distributor
recipient for clothes washing machines which besides providing for the use of liquid and solid detergents, prevents the liquid detergent from entering into contact with the wash basket before the start of the washing process.

However, the device of the British document has some drawbacks, such as, for example, the fact that the dispenser is not pressurized, the fact that it uses a sprinkler to promote the mixture of water with the detergent and the fact that it can only be used in front loader washing machines.

Patent US 4,759,202 describes a clothes washing machine that has two compartments disposed in the lid, where both compartments allow the use of liquid or powder detergent, without the need for a selector switch.

The drawbacks of the machine of this document lie in the fact that it requires the lid of the washing machine to be in a vertical position for loading, as well as the fact that the system is not pressurized and also the possibility that the water-detergent mixture may run if the lid needs to be opened.

In turn, British document GB 2,157,716 describes a dispenser for detergent used in washing machines, which can use liquid or powder detergent without the use of a switch or a selector, and where the water inlet in the dispenser is by the lower part thereof, forming a cyclone or a vortex that mixes the detergent and the water.

Additionally, the document describes that the mixture is dispensed into the wash basket by way of a siphon, which occurs at the moment in which the mixture reaches the bight portion of the syphon.

The drawback of the object described in this document lies in the fact that the detergent (liquid or powder) does not mix correctly with the water, due to the construction of the dispenser, besides failing to provide an efficient mixture outlet to the wash basket.

A clothes washing machine having a recipient for liquid detergent is described in Japanese document JP 2001-157795, in which the very lid of the clothes washing machine works as the lid of the recipient. It also describes that the system uses a pump and that the recipient feed is by way of the external part of the machine.
Drawbacks of the object described in the Japanese document, include the fact that the dispenser only allows the use of liquid detergent and also that the recipient needs a pump to dispense the mixture into the wash basket, significantly increasing the manufacturing costs of said machine.

Accordingly, none of the prior art documents presented reveals a clothes washing machine having a recipient that can use liquid or powder detergent without the need for a selector or separate compartment, which enables a homogenous mixture of the detergent with the water, which prevents the detergent from running to the wash basket, as well as providing for the placement thereof in the external part of the washing machine, whereby facilitating loading.

Objectives of the invention

The objective of the present invention is to provide a cleaning supply dispenser for clothes washing machines which enables the use of detergent commercialized in any physical state, without the need for a selector for intervention by the consumer, which also prevents the detergent from running to the wash basket, besides providing for the placement thereof in the external part of the washing machine, whereby facilitating loading.

A further objective of the present invention is to provide a clothes washing machine which, due to the cleaning supply dispenser, provides for the use of detergent commercialized in any physical state, without the need for a selector for intervention by the consumer and enables a reduction in filling time of the product in washing and rinsing.

Brief description of the invention

The objectives of the present invention are achieved by a cleaning supply dispenser for clothes washing machines which comprises a water inlet, a cleaning supply inlet, a pressurized compartment for mixing water and cleaning supplies associated to the water inlet and to the cleaning supply inlet, an outlet for the mixture of water and cleaning supplies associated to the mixture compartment, the outlet being suitable to dispense the mixture into the wash basket, and a water and cleaning supply mixing element disposed inside the mixture compartment.
The objectives of the present invention are also achieved by a clothes washing machine which contains a cleaning supply dispenser as described above.

The characteristics mentioned above, besides other aspects of the present invention, will be much better understood by way of the examples and the detailed description of the drawings below.

**Summary Description of the Drawings**

The present invention will now be described in further detail based on examples of execution represented in the drawings, which show:

- Figure 1A - a perspective view of a cleaning supply distributor for a washing machine of the state of the art;
- Figure 1B - a cutaway view of another cleaning supply distributor for a washing machine of the state of the art;
- Figure 2 - a cutaway view of an embodiment of the cleaning supply dispenser for a washing machine of the present invention;
- Figure 3 - a cutaway view of another embodiment of the cleaning supply dispenser for the washing machine of the present invention;
- Figure 4 - an exploded view of an embodiment of the cleaning supply dispenser for the washing machine of the present invention;
- Figure 5 - a perspective view of an alternative embodiment of the lid of the dispenser of the present invention, having a mixing element;
- Figure 6 - an exploded perspective view of the lid of a washing machine which comprises the dispenser of the present invention; and
- Figure 7 - an upper view of a washing machine, which comprises the dispenser of the present invention.

**Detailed Description of the Drawings**

As can easily be seen in figure 1A, some dispensers found in the state of the art have an open bucket through which the cleaning supplies are fed, and also comprise an orifice or opening through which the water flow and a mixture outlet is directed.

The dispenser mentioned above allows the use of cleaning supplies in solid form (powder) and in some cases in liquid form, but these dis-
pensers need the water flow that feeds the system to have controlled outflow, since they do not have a lid that is capable of pressurizing the dispenser.

With the need to control the outflow of water, it is not possible to obtain an ideal mixture, since this mixture is only achieved when there is a vortex of the mixture and the consequent overflow of the mixture into the bucket. Accordingly, the control of the outflow causes increased filling time of the basket and an increase in the wash cycle time.

As can be seen in figure 1B, for dispensers that use liquid cleaning supplies, what is normally used is an 'S' type siphon system which besides preventing the cleaning supply from running, allows that after being mixed, the cleaning supply can be discharged by way of the siphon.

Further, it is worth pointing out that when using liquid detergent in dispensers of front loading washing machines of the state of the art, there is no risk that the cleaning supplies will runoff, since the replenishing of the cleaning supplies in the wash basket is between it and the tank.

However, in dispensers used in top loading washing machines, the risk of running is imminent, because the mixture outlet of the cleaning supplies in the dispensers is made through the bottom thereof, that is, directly over the wash basket.

As already mentioned, the object of the present invention provides for the dispenser 1 for clothes washing machines 10 to receive the detergent in any physical state, liquid or powder, without any intervention by the consumer to select the detergent.

Figure 2 shows a possible embodiment of the dispenser 1, object of the present invention, which basically comprises an upper portion 2, a lower portion 3 and a mixing element 4.

The upper portion 2 comprises an upper perimetral tab 5, a first raised base 6, a second raised base 7, a projection or cleaning supply inlet 8 and a lid 9. The cleaning supply inlet 8 is disposed on the second raised base 7 and the lid 9 is associated to the cleaning supply inlet 8.

The lower portion 3 comprises a lower tab perimetral 11, a pressurized compartment for mixing water and cleaning supplies 12 and a mix-
ture dispensing chamber 13.

The mixture compartment 12 has a water inlet 14 in its lower portion 15 and a mixing element 4 on its inside and the dispensing chamber 13 has a mixture outlet 16 in its lower portion 17 of a deflecting wall 18 and also a siphon 19.

The upper portion 2 and the lower portion 3 are associated by way of upper 5 and lower 11 perimetral tabs, such that the first raised base 2 is disposed on the dispensing chamber 13 and the second raised base 7 is disposed on the mixture compartment 12. The association of the upper 2 and lower 3 parts is by plugging, thermoplastic welding, gluing or by another means, provided that it achieves the same objective.

The mixture compartment 12 and the dispensing chamber 13 are connected together by way of an upper passage 20 disposed above the deflecting wall 18 and the siphon 19.

Additionally, the deflecting wall 18 and the siphon 19 prevent, in the case of replenishing the mixture compartment 12 with liquid detergent, running inside the wash basket 23 before pressurization of the dispenser 1 at the start of the washing cycle.

Figure 3 shows an alternative embodiment of the lid 9' of the dispenser 1. As can be seen, the lid 9' is provided with a mixing element 4' fixed by plugging, thermoplastic welding, gluing or by another means.

The working of the dispenser 1 is simple. The consumer opens the lid 9 or 9' and loads the detergent (solid or liquid) up to the level 21 indicated in the mixture compartment 12, without the need of handling selectors or components. Next, the consumer closes the dispenser 1 by way of the lid 9 or 9', and presses the switch to start the washing cycle.

Below is a description of the washing cycle with the use of the dispenser 1.

According to the invention, a timer (not shown in the drawings) drives the entry valve (not shown), and through the intake 14, the water enters into the mixture compartment 12 of the dispenser 1, mixes with the detergent in solid or liquid state and passes to the dispensing chamber 13.
through the upper passage 20. Then, the mixture is led to the wash basket 23.

The dissolution of the detergent in the water in the device of the present invention is better than in the conventional system, because the dispenser 1 has a mixing element 4, 4', which increases the turbulence inside the mixture compartment 12. Another positive aspect of the dispenser 1 is that, due to its arrangement, especially with the provision of the lid 9, 9', the entry pressure of the dispenser 1 is equal to the exit pressure, providing for a shorter machine filling time and greater internal turbulence in the dispenser 1.

In this sense, it is noted that with open dispensers (without lid), it is necessary to control the entry pressure, limiting the water flow in order to avoid overflow, meaning more time is required to fill up the machine.

Furthermore, the pressurization of the dispenser 1 enables the siphon 19 to withdraw all the water from the compartment 12 after the end of the cycle, keeping the dispenser 1 ready to receive the cleaning supply (liquid or powder detergent) of the next washing cycle.

Figure 4 illustrates a possible embodiment of the dispenser 1 of the present invention, in an exploded view, where it is possible to identify some components of the upper portion 2, namely, the upper tab 5, the first raised base 6, and second raised base 7, the cleaning supply inlet 8. It is also possible to see some components of the lower portion 3, namely, the lower tab 11, the mixture compartment 12, the dispensing chamber 13, the water inlet 14, the deflecting wall 18, the siphon 19, the mixture outlet 16 and the level indicator 21.

As can be seen in figure 5, the lid 9' of the dispenser 1 may comprise a stem 91 and at least two deflectors 92. The stem 91 is vertically associated to the lid 9'. The deflectors 92 are in parallel with the lid 9' and are also vertically associated with the stem 91, that is, in the same direction as the lid 9'.

Naturally, according to the present invention, the lid 9' of the dispenser 1 may comprise any quantity of deflectors 92. Moreover, the deflectors 92 of the dispenser 1 can be circular, rectangular, squared or another
shape.

Further, from figure 6 it is possible to see the fixed lid 22 of a clothes washing machine 10 having the dispenser 1 of the present invention, where it is possible to identify some components of the dispenser, such as the lid 9', the upper portion 2 and the lower portion 3 with their respective components. As can be inferred from figure 6, the dispenser 1 is installed outside the wash basket 23.

Figure 7 illustrates an upper view of the fixed lid 22 of a clothes washing machine 10 having the dispenser 1 of the present invention, where it is possible to identify the lid 9' and the mixture outlet 16 to the wash basket 23.

Due to its construction and disposition, the dispenser 1 provides for a reduction in filling time of the product in washing and rinsing, because the system works on a pressurized basis, whereby enabling the withdrawal of the pressure reduction valve that is conventional in open construction dispensers.

Having described an example of preferred embodiment, it should be understood that the scope of the present invention encompasses other possible variations, and is limited only by the content of the accompanying claims, potential equivalents being included therein.
CLAIMS

1. Cleaning supply dispenser (1) for clothes washing machines (10), the dispenser (1) characterized by comprising:

   - a water inlet (14);
   - a cleaning supply inlet (8);
   - a pressurized compartment for mixing water and cleaning supplies (12) associated to the water inlet (14) and to the cleaning supply inlet (8);
   - an outlet for the mixture of water and cleaning supplies (16) associated to the mixture compartment (12), the outlet (16) being capable of dispensing the mixture into the wash basket (23); and
   - a water and cleaning supply mixing element (4, 4') disposed inside the mixture compartment (12).

2. Dispenser (1) according to claim 1, characterized by comprising a lid (9'), capable of pressurizing the mixture compartment (12).

3. Dispenser (1) according to claim 1, characterized by comprising a level indicator (21) disposed in the mixture compartment (12), the indicator (21) being capable of indicating the quantity of detergent needed for the wash.

4. Dispenser according to claim 1, characterized by the fact that the water inlet (14) is disposed in the lower portion (15) of the mixture compartment (12).

5. Dispenser (1) according to claim 1, characterized by comprising a mixture dispensing chamber (13) connected to the mixture compartment (12).

6. Dispenser (1) according to claim 1 or 5, characterized by comprising a siphon (19) associated to the mixture dispensing chamber (13), the siphon (19) being capable of draining the mixture of water and cleaning supply from inside the compartment (12).

7. Dispenser (1) according to claim 5 or 6, characterized by the fact that the mixture outlet (16) is disposed in the lower portion (17) of the mixture dispensing chamber (13).
8. Dispenser (1) according to claim 2, characterized by the fact that the lid (9') is associated to the mixture element (4'), the mixture element (4') being capable of creating turbulence inside the mixture compartment (12).

9. Dispenser (1) according to claim 1 or 8, characterized by the fact that the mixture element (4') has at least a stem (91) and at least two circular-shaped deflectors (92).

10. Clothes washing machine (10), characterized by comprising a cleaning supply dispenser (1) as defined in claims 1 to 10.
### INTERNATIONAL SEARCH REPORT

PCT/BR2010/000346

**A. CLASSIFICATION OF SUBJECT MATTER**

**INV. D06F39/02**

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

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

D06F

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

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

EPO-Internal

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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**Date of the actual completion of the international search**

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