



(11)

EP 4 560 064 A1

(12)

EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication:
28.05.2025 Bulletin 2025/22

(51) International Patent Classification (IPC):
D06F 39/02 ^(2006.01) **D06F 39/08** ^(2006.01)

(21) Application number: **23854155.1**

(52) Cooperative Patent Classification (CPC):
D06F 39/02; D06F 39/08

(22) Date of filing: **10.07.2023**

(86) International application number:
PCT/CN2023/106496

(87) International publication number:
WO 2024/037250 (22.02.2024 Gazette 2024/08)

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

• **Haier Smart Home Co., Ltd.**
Qingdao, Shandong 266101 (CN)

(72) Inventors:
• **NIU, Yanjuan**
Qingdao, Shandong 266101 (CN)
• **WU, Jun**
Qingdao, Shandong 266101 (CN)
• **WANG, Guangfeng**
Qingdao, Shandong 266101 (CN)

(30) Priority: **19.08.2022 CN 202210997497**
19.08.2022 CN 202210997529

(74) Representative: **Beck & Rössig**
European Patent Attorneys
Denninger Str. 169
81925 München (DE)

(71) Applicants:
• **QINGDAO HAIER LAUNDRY ELECTRIC APPLIANCES CO., LTD**
Qingdao, Shandong 266101 (CN)

(54) **DISPENSING DEVICE, LAUNDRY TREATMENT DEVICE AND CONTROL METHOD THEREFOR**

(57) A dispensing device, a laundry treatment device and a control method thereof, the dispensing device comprising a first dispensing box (1) and a second dispensing box (2), wherein the first dispensing box (1) is provided with a water inlet channel, and the dispensing device further comprises a flushing pipeline (3), wherein the water inlet of the flushing pipeline (3) is connected to the water outlet of the water inlet channel, and the water outlet is connected to the water inlet of the second dispensing box (2). By using the inlet water flowing through the first dispensing box (1) and the flushing pipeline (3) to flush the second dispensing box (2), residual detergent in the second dispensing box (2) is avoided, thereby reducing the waste of detergent. Also included is a laundry treatment device, comprising a housing (14), and an upper water drum (15) and a lower water drum (16) arranged in the housing (14), and also comprising a dispensing device, wherein a first dispensing box (1) and a second dispensing box (2) are arranged above the upper water drum, a liquid outlet of the second dispensing box (2) is connected to a liquid inlet of the first dispensing box (1), and a liquid outlet of the first dispensing box (1) is respectively connected to the upper water

drum (15) and the lower water drum (16).

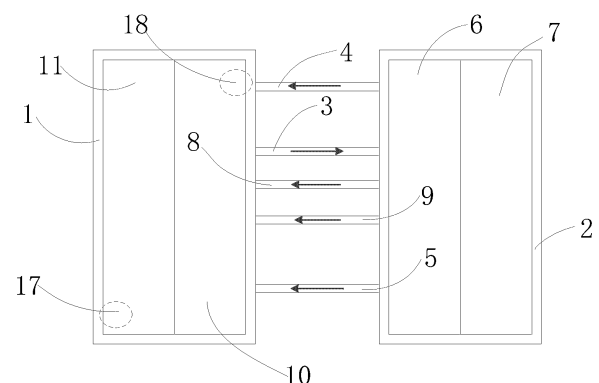


Fig. 2

Description

TECHNICAL FIELD

[0001] The present invention belongs to the technical field of household appliances, and in particular, relates to a dispensing device, a laundry treatment device and a control method thereof.

BACKGROUND

[0002] The washing machine performs washing, rinsing and spin-drying operations to remove stains attached to clothes by using the interaction of detergent and water. A dryer, as another representative laundry treatment device, is a home appliance for drying wet clothes, etc. Recently, home appliances having the combined functions of a washing machine and a dryer have been widely used.

[0003] As people's quality of life improves, their awareness of hygiene also gradually increases, especially in terms of household laundry, more and more people wash clothes separately. If the existing washing machine is used to wash clothes multiple times, it is difficult to meet the requirements in terms of washing time; if two or more washing machines are purchased to wash clothes separately at the same time, it will not only cause a great waste of energy and water resources, but also occupy a large space and is not suitable for household use. Therefore, a multi-drum washing machine can meet the above needs and solve the problem of waste of energy, water and space.

[0004] The existing drum washing machine comprises an upper water drum, a lower water drum and a dispensing component for dispensing detergent into the water drum, the dispensing component comprises a first dispensing box and a second dispensing box, and liquid storage boxes can be push-pull arranged in the first dispensing box and the second dispensing box. During dispensing, the detergent in the second dispensing box is sucked into the first dispensing box by a suction pump, and the water inlet flow in the first dispensing box flushes the detergent into the upper water drum and/or the lower water drum. Since the second dispensing box is not connected to the water inlet pipeline, the detergent remaining in the second dispensing box due to pushing and pulling the liquid storage box cannot be flushed into the washing drum and fully utilized, thereby resulting in a waste of detergent.

[0005] In view of this, the present invention is proposed.

SUMMARY

[0006] The technical problem to be solved by the present invention is to overcome the shortcomings of the prior art and provide a dispensing device and a laundry treatment device, which utilizes the inlet water flowing

through the first dispensing box and the flushing pipeline to flush the second dispensing box, thereby achieving the purpose of avoiding residual detergent in the second dispensing box and reducing detergent waste.

[0007] In order to solve the above technical problems, the basic concept of the technical solution adopted by the present invention is:

The present invention provides a dispensing device, comprising a first dispensing box and a second dispensing box. The first dispensing box is provided with a water inlet channel. The dispensing device further comprises a flushing pipeline, wherein a water inlet of the flushing pipeline is connected to a water outlet of the water inlet channel, and a water outlet of the flushing pipeline is connected to a water inlet of the second dispensing box.

[0008] Furthermore, the first dispensing box and the second dispensing box are arranged side by side on left and right. The water outlet of the water inlet channel is arranged on the first dispensing box and faces to the water inlet of the second dispensing box, and the flushing pipeline is arranged between the first dispensing box and the second dispensing box and extends horizontally between the first dispensing box and the second dispensing box.

[0009] Furthermore, a recycling pipeline for recycling a mixed liquid obtained by flushing the second dispensing box is provided between the first dispensing box and the second dispensing box, a liquid inlet of the recycling pipeline is connected to a liquid outlet of the second dispensing box, and a liquid outlet of the recycling pipeline is connected to a liquid inlet of the first dispensing box, and the first dispensing box has a liquid outlet.

[0010] Furthermore, a first dispensing cavity and a second dispensing cavity are provided in the first dispensing box; a first recycling pipeline corresponding to the first dispensing cavity and a second recycling pipeline corresponding to the second dispensing cavity are provided between the first dispensing box and the second dispensing box. The first dispensing cavity is provided with a first liquid outlet provided at a bottom of the first dispensing box, and the second dispensing cavity is provided with a second liquid outlet provided at a side of the first dispensing box.

[0011] Furthermore, the first recycling pipeline and the second recycling pipeline extend horizontally between the first dispensing box and the second dispensing box. The first recycling pipeline, the second recycling pipeline and the flushing pipeline are arranged at a same height, and the first recycling pipeline and the second recycling pipeline are respectively arranged on a front and rear sides of the flushing pipeline.

[0012] Furthermore, a liquid storage box for storing detergent is provided inside the second dispensing box, a dispensing pipeline is provided between the first dispensing box and the second dispensing box. A liquid inlet of the dispensing pipeline is connected to a liquid outlet of the liquid storage box, and a liquid outlet of the dispensing pipeline is connected to the liquid inlet of the

first dispensing box.

[0013] Furthermore, a first liquid storage box and a second liquid storage box are arranged side by side in the second dispensing box, a first dispensing pipeline corresponding to the first liquid storage box and a second dispensing pipeline corresponding to the second liquid storage box are arranged between the first dispensing box and the second dispensing box. And a liquid outlet of the first dispensing pipeline and a liquid outlet of the second dispensing pipeline are both connected to the first dispensing cavity and the second dispensing cavity.

[0014] Furthermore, the first dispensing pipeline and the second dispensing pipeline extend horizontally between the first dispensing box and the second dispensing box, the first dispensing pipeline, the second dispensing pipeline and the flushing pipeline are arranged at a same height. The first dispensing pipeline and the second dispensing pipeline are arranged front to rear and are arranged between the flushing pipeline and the second recycling pipeline.

[0015] Furthermore, a third liquid storage box and a fourth liquid storage box are arranged side by side in the first dispensing box, a third dispensing pipeline is arranged on the third liquid storage box, and a fourth dispensing pipeline is arranged on the fourth liquid storage box. And a liquid outlet of the third dispensing pipeline and a liquid outlet of the fourth dispensing pipeline are both connected to the first dispensing cavity and the second dispensing cavity.

[0016] The present invention also provides a laundry treatment device, comprising a housing, and an upper water drum and a lower water drum arranged in the housing, and also comprising a dispensing device provided by the above technical solution, wherein the dispensing device is arranged above the upper water drum, the liquid outlet of the second dispensing box is connected to the liquid inlet of the first dispensing box, and the liquid outlet of the first dispensing box is respectively connected to the upper water drum and the lower water drum.

[0017] The present invention also provides a control method for a laundry treatment device, using the laundry treatment device provided by the above technical solution, wherein the first dispensing box is connected to the second dispensing box via a flushing pipeline, the laundry treatment device has a flushing program, and when the flushing program is executed, the flushing pipeline is opened, and the second dispensing box is flushed by inlet water flowing through the first dispensing box and the flushing pipeline.

[0018] Furthermore, when a flushing time for flushing the second dispensing box by the inlet water reaches a set flushing time or a number of flushing times reaches a set flushing time, it is determined that there is no detergent residue in the second dispensing box.

[0019] Furthermore, the laundry treatment device further comprises a water drum. When inletting water through the first dispensing box into the water drum, the

inlet water rinses the second dispensing box, and if the flushing time does not reach the set flushing time when the water level in the water drum reaches the set water level, the inlet water rinses the second dispensing box again when the next time inletting water into the water drum.

[0020] Furthermore, if the water level in the water drum reaches the set water level and the flushing time does not reach the set flushing time, the inlet water continues to flush the second dispensing box, and the water level in the water storage drum is higher than the set water level, a drain port of the water drum is opened to discharge part of the water in the water drum, and the inlet water continues to flush the second dispensing box.

[0021] Furthermore, when waiting for a next inletting water into the water drum and the inlet water to flush the second dispensing box, if a liquid level in the second dispensing box exceeds a set liquid level, the liquid in the second dispensing box is sucked into the first dispensing box, and then the second dispensing box is flushed by the inlet water.

[0022] Furthermore, a liquid storage box for storing liquid detergent is pull-out provided in the second dispensing box. If it is detected that the liquid storage box in the second dispensing box has been pulled, then there is detergent residue in the second dispensing box, and the second dispensing box is rinsed before the last rinsing.

[0023] Furthermore, the laundry treatment device is provided with an upper water drum and a lower water drum, and the inlet water after flushing the second dispensing box enters the upper water drum and the lower water drum, or the inlet water after flushing the second dispensing box selectively enters either the upper water drum or the lower water drum.

[0024] Furthermore, the upper water drum prioritizes the water inlet procedure over the lower water drum, and the inlet water after flushing the second dispensing box enters the upper water drum first. If the water level in the upper water drum does not reach the set water level and the flushing time does not reach the set flushing time when the lower water drum executes the water inlet procedure, the inlet water after flushing the second dispensing box enters the lower water drum at the same time as it enters the upper water drum.

[0025] Furthermore, the upper water drum prioritizes the water inlet procedure before the lower water drum, and the inlet water after flushing the second dispensing box enters the upper water drum first. When the water level in the upper water drum reaches the set water level and the flushing time has not reached the set flushing time, it is determined whether the lower water drum executes the water inlet procedure; if it is executed, the inlet water after flushing the second dispensing box enters the lower water drum while waiting for the lower water drum to inlet water.

[0026] After adopting the above technical solution, the present invention has the following beneficial effects compared with the prior art:

By utilizing the inflow water flowing through the first dispensing box and the flushing pipeline to flush the second dispensing box, residual detergent in the second dispensing box is avoided, thereby reducing the waste of detergent.

[0027] The specific implementation modes of the present invention are further described in detail below in conjunction with the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

[0028] Drawings are part of the present invention and are used to provide a further understanding of the present invention. The exemplary embodiments of the present invention and their descriptions are used to explain the present invention, but do not constitute an improper limitation of the present invention. Obviously, the accompanying drawings described below are only some embodiments. For those skilled in the art, other accompanying drawings can be obtained based on these accompanying drawings without creative work. In the accompanying drawings:

Fig. 1 is a schematic structural diagram of a double-drum washing machine provided in Embodiment 1 of the present invention;

Fig. 2 is a schematic diagram of the structure of a dispensing device provided in Embodiment 1 of the present invention;

Fig. 3 is a schematic structural diagram of the assembly of a first dispensing box and a liquid storage box provided in Embodiment 1 of the present invention;

Fig. 4 is a schematic diagram of the structure of a first dispensing box provided in Embodiment 1 of the present invention;

Fig. 5 is a flow chart of a method for controlling a laundry treatment device according to a second embodiment of the present invention.

[0029] In drawings: 1-first dispensing box; 2-second dispensing box; 3-flushing pipeline; 4-first recycling pipeline; 5-second recycling pipeline; 6-first liquid storage box; 7-second liquid storage box; 8-first dispensing pipeline; 9-second dispensing pipeline; 10-third liquid storage box; 11-fourth liquid storage box; 12-fifth dispensing pipeline; 13-sixth dispensing pipeline; 14-housing; 15-upper water drum; 16-lower water drum; 17-first liquid outlet; 18-second liquid outlet; 19-position detection device; 20-liquid level detection device.

[0030] It should be noted that these drawings and textual descriptions are not intended to limit the scope of the present invention in any way, but are intended to explain the concept of the present invention to those skilled in the art by referring to specific embodiments.

DETAILED DESCRIPTION

[0031] In order to make the purpose, technical solutions and advantages of the embodiments of the present invention clearer, the technical solutions in the embodiments will be clearly and completely described below in conjunction with the drawings in the embodiments of the present invention. The following embodiments are used to illustrate the present invention but are not used to limit the scope of the present invention.

[0032] In the present invention, it should be noted that the terms "upper", "lower", "front", "back", "left", "right", "vertical", "inside", "outside", etc. indicate directions or positional relationships based on the directions or positional relationships shown in the accompanying drawings. They are only for the convenience of describing the present invention and simplifying the description, and do not indicate or imply that the device or element referred to must have a specific direction, be constructed and operated in a specific direction. Therefore, they cannot be understood as limitations on the present invention.

[0033] In the present invention, it should be noted that, unless otherwise clearly specified and limited, the terms "installed", "connected", and "connected" should be understood in a broad sense, for example, it can be a fixed connection, a detachable connection, or an integral connection; it can be a mechanical connection or an electrical connection; it can be a direct connection or an indirect connection through an intermediate medium. For ordinary technicians in this field, the specific meanings of the above terms in the present invention can be understood according to specific circumstances.

Embodiment 1

[0034] As shown in Figs. 1 and 2, the present invention provides a dispensing device, including a first dispensing box 1 and a second dispensing box 2. The first dispensing box 1 is provided with a water inlet channel and also includes a flushing pipeline 3. The water inlet of the flushing pipeline 3 is connected to the water outlet of the water inlet channel, and the water outlet is connected to the water inlet of the second dispensing box 2.

[0035] In the embodiment of the present invention, the second dispensing box 2 is flushed by using the water flow flowing through the first dispensing box 1 and the flushing pipeline 3, thereby avoiding residual detergent in the second dispensing box 2 and reducing the waste of detergent.

[0036] The types of the laundry treatment device include the following:

The first type of laundry treatment device:

The laundry treatment device is a drum washing machine, which includes a housing 14, an outer drum, an inner drum rotatably arranged in the outer drum, and a dispensing assembly. The dispensing assembly includes a first dispensing box 1 and a second dispensing box 2; the inner drum is a hole-free inner drum, and the inner

drum is used as a water storage drum when washing clothes independently. and the first dispensing box 1 and the second dispensing box 2 dispense detergent into the inner drum. Or, the outer drum is a water storage drum, and the first dispensing box 1 and the second dispensing box 2 dispense detergent into the outer drum.

[0037] As shown in Fig. 1, the second type of laundry treatment device:

The second type of laundry treatment device is a double-drum washing machine, which includes a housing 14, a first outer drum and a second outer drum arranged in the housing 14, a first inner drum arranged in the first outer drum, a second inner drum arranged in the second outer drum, and a dispensing component. The dispensing component includes a first dispensing box 1 and a second dispensing box 2; the first inner drum and the second inner drum are inner drums without holes, and the inner drums are used as water containing drums when washing clothes independently, and the first dispensing box 1 and the second dispensing box 2 dispense detergent into the first inner drum and the second inner drum. Or, the first outer drum and the second outer drum are water containing drums, and the first dispensing box 1 and the second dispensing box 2 dispense detergent into the first outer drum and the second outer drum. The housing 14 can be a first housing 14 and a second housing 14 independent of each other, the first outer drum and the first inner drum are arranged in the first housing 14, and the second outer drum and the second inner drum are arranged in the second housing 14.

[0038] In the second type of laundry treatment device, preferably, the first dispensing box 1 and the second dispensing box 2 are arranged on the top portion of the housing 14 and above all the drums, the liquid outlet of the second dispensing box 2 is connected with the liquid inlet of the first dispensing box 1, and the liquid outlet of the first dispensing box 1 is respectively connected with the upper water drum 15 and the lower water drum 16; the first dispensing box 1 is connected with the external water inlet pipeline. It should be noted that the first dispensing box 1 is provided with a water inlet channel connected with the flushing pipeline 3, a water inlet channel for flushing the detergent in the first dispensing box 1 and for feeding water into the water drum, and each water inlet channel is connected with the external water inlet pipeline. The dispensing device includes not only the first dispensing box 1 and the second dispensing box 2, but also other dispensing boxes, and the type of detergent delivered by each dispensing box may be the same or different.

[0039] The first dispensing box 1 comprises a box body and a box cover, wherein the box cover comprises an upper cover and a lower cover which are buckled with each other. And the upper cover and the lower cover are buckled with each other, so that a plurality of independent water inlet channels are formed inside the box cover.

[0040] A liquid storage box for storing detergent is provided in the second dispensing box 2. The liquid

storage box can be pushed and pulled in the second dispensing box 2. When the liquid storage box is pushed and pulled, liquid will leak. If the leaked liquid is not treated for a long time, it will become dry, hard, moldy, etc. Therefore, the flushing pipeline 3 is used to flush the residual detergent in the second dispensing box 2.

[0041] When dispensing, the detergent in the second dispensing box 2 is sucked into the first dispensing box 1 and mixed with the detergent in the first dispensing box 1. The mixed liquid is flushed into the upper water drum 15 and/or the lower water drum 16 by the water flow entering from the first dispensing box 1.

[0042] During flushing, the water flowing out from the water inlet channel of the first dispensing box 1 enters the second dispensing box 2 through the flushing pipeline 3 to flush the detergent remaining in the second dispensing box 2. The mixed liquid obtained after flushing the second dispensing box 2 enters the upper water drum 15 and/or the lower water drum 16 through the first dispensing box 1.

[0043] As shown in Fig. 2, in an embodiment of the present invention, the first dispensing box 1 and the second dispensing box 2 are arranged side by side on the left and right, a water outlet of the water inlet channel is arranged on the first dispensing box 1 and faces to a water inlet of the second dispensing box 2. The flushing pipeline 3 is arranged between the first dispensing box 1 and the second dispensing box 2 and extends horizontally between the first dispensing box 1 and the second dispensing box 2.

[0044] In the embodiment of the present invention, specifically, the first dispensing box 1 and the second dispensing box 2 are arranged at the top of the housing 14 and above all the drums. The first dispensing box 1 is arranged on the left side of the housing 14, and the second dispensing box 2 is arranged on the right side of the housing 14, the first dispensing box 1 and the second dispensing box 2 have the same shape and specification, and the first dispensing box 1 and the second dispensing box 2 are arranged side by side. The first dispensing box 1 and the second dispensing box 2 are arranged in this way to facilitate manual delivery of detergent and make full use of the space of the housing 14.

[0045] A water inlet channel is provided on the top of the first dispensing box 1. Since the water outlet of the water inlet channel is arranged face to face with the water inlet of the second dispensing box 2, the flushing pipeline 3 is provided between the first dispensing box 1 and the second dispensing box 2, which can shorten the length of the flushing pipeline 3, which reduces the space occupied, and reduces the flushing time, thereby improving the flushing efficiency. In order to speed up the flushing water flow from the first dispensing box 1 to the second dispensing box 2 through the flushing pipeline 3 and flush the second dispensing box 2, a suction pump can be provided on the flushing pipeline 3; and the flushing pipeline 3 extends horizontally between the first dispen-

sing box 1 and the second dispensing box 2 to avoid bending of the flushing pipeline 3, reduce obstruction to the water flow, and speed up the flow of water.

[0046] As shown in Fig. 2, in an embodiment of the present invention, a recycling pipeline for recovering the mixed liquid obtained by flushing the second dispensing box 2 is provided between the first dispensing box 1 and the second dispensing box 2. The liquid inlet of the recycling pipeline is connected to the liquid outlet of the second dispensing box 2, and the liquid outlet is connected to the liquid inlet of the first dispensing box 1, and the first dispensing box 1 has a liquid outlet.

[0047] In the embodiment of the present invention, the water flow enters the second dispensing box 2 from the flushing pipeline 3 to flush the second dispensing box 2, and a mixed liquid of water and detergent is obtained after flushing. In order to fully utilize the mixed liquid into the water drum, a recycling pipeline is provided between the first dispensing box 1 and the second dispensing box 2. The recycling pipeline delivers the mixed liquid from the second dispensing box 2 to the first dispensing box 1, and the mixed liquid then enters the water drum from the liquid outlet of the first dispensing box 1.

[0048] Specifically, the first dispensing box 1 is provided with a first dispensing cavity and a second dispensing cavity, a first recycling pipeline 4 corresponding to the first dispensing cavity and a second recycling pipeline 5 corresponding to the second dispensing cavity are provided between the first dispensing box 1 and the second dispensing box 2. The first dispensing cavity has a first liquid outlet 17 provided at the bottom of the first dispensing box 1, and the second dispensing cavity has a second liquid outlet 18 provided at the side of the first dispensing box 1. The first liquid outlet 17 of the first dispensing cavity is communicated with the upper water drum 15, and the second liquid outlet 18 of the second dispensing cavity is communicated with the lower water drum 16.

[0049] During recycling, the first recycling pipeline 4 delivers the mixed liquid into the first dispensing cavity in the first dispensing box 1, and the mixed liquid then enters the upper water drum 15 from the first liquid outlet 17 of the first dispensing cavity, and the second recycling pipeline 5 delivers the mixed liquid into the second dispensing cavity in the first dispensing box 1, and the mixed liquid then enters the lower water drum 16 from the second liquid outlet 18 of the second dispensing cavity.

[0050] For example, when the water level in the upper water drum 15 reaches the set water level, if the first recycling pipeline 4 continues to send the mixed liquid into the first dispensing cavity and the upper water drum 15, the water level in the upper water drum 15 will exceed the set water level, resulting in the upper water drum 15 being unable to wash normally. At this time, the flushing time of the second dispensing box 2 has not reached the set time, and the second dispensing box 2 is not flushed sufficiently. Therefore, before the water level in the lower water drum 16 reaches the set water level, the second

recycling pipeline 5 can deliver the mixed liquid in the second dispensing box 2 into the second dispensing cavity and the lower water drum 16, so that the flushing time of the second dispensing box 2 can reach the set time, so that the residual detergent in the second dispensing box 2 can be fully cleaned.

[0051] As shown in Fig. 2, further, the first recycling pipeline 4 and the second recycling pipeline 5 extend horizontally between the first dispensing box 1 and the second dispensing box 2, the first recycling pipeline 4, the second recycling pipeline 5 and the flushing pipeline 3 are arranged at the same height, and the first recycling pipeline 4 and the second recycling pipeline 5 are respectively arranged on the front and rear sides of the flushing pipeline 3.

[0052] The first recycling pipeline 4 and the second recycling pipeline 5 extend horizontally, which can shorten the length of the pipeline, reduce the space occupied, avoid bending of the recycling pipeline, reduce obstruction to the water flow, speed up the flow of water, and improve the recovery efficiency. In order to speed up the mixed liquid from the second dispensing box 2 into the first dispensing box 1, a suction pump can be set on the first recycling pipeline 4 and the second recycling pipeline 5.

[0053] In an embodiment of the present invention, a liquid storage box for storing detergent is provided in the second dispensing box 2, a dispensing pipeline is provided between the first dispensing box 1 and the second dispensing box 2, the liquid inlet of the dispensing pipeline is connected to the liquid outlet of the liquid storage box, and the liquid outlet is connected to the liquid inlet of the first dispensing box 1.

[0054] In the embodiment of the present invention, a liquid storage box for storing detergent is provided in the second dispensing box 2. When delivering detergent, the dispensing pipeline delivers the detergent in the liquid storage box into the first dispensing box 1, and the detergent is flushed into the water drum by the water flow in the first dispensing box 1.

[0055] As shown in Fig. 2, specifically, the second dispensing box 2 is provided with a first liquid storage box 6 and a second liquid storage box 7 arranged side by side on the left and right, and a first dispensing pipeline 8 corresponding to the first liquid storage box 6 and a second dispensing pipeline 9 corresponding to the second liquid storage box 7 are provided between the first dispensing box 1 and the second dispensing box 2. The liquid outlet of the first dispensing pipeline 8 and the liquid outlet of the second dispensing pipeline 9 are both connected to the first dispensing cavity and the second dispensing cavity.

[0056] Two liquid storage boxes are provided in the second dispensing box 2. Different detergents or the same detergents can be stored in the two liquid storage boxes. The two liquid storage boxes are arranged side by side in the second dispensing box 2, so that the space in the second dispensing box 2 can be fully utilized.

[0057] The first dispensing cavity is connected to a first water inlet channel, and the second dispensing cavity is connected to a second water inlet channel. When water is delivered, the first water inlet channel introduces water into the first dispensing cavity to enter the upper water drum 15, and the second water inlet channel introduces water into the second dispensing cavity to enter the lower water drum 16.

[0058] During delivery, the first dispensing pipeline 8 delivers the detergent in the first liquid storage box 6 into the first dispensing cavity and the second dispensing cavity respectively, and the second dispensing pipeline 9 delivers the detergent in the second liquid storage box 7 into the first dispensing cavity and the second dispensing cavity respectively. The detergent in the first liquid storage box 6 and the detergent in the second liquid storage box 7 are mixed in the first dispensing cavity and in the second dispensing cavity. The water flow provided by the first water inlet flow channel flushes the mixed detergent in the first dispensing cavity into the upper water drum 15 through the first liquid outlet 17 of the first dispensing cavity, and the water flow provided by the second water inlet flow channel flushes the mixed detergent in the second dispensing cavity into the lower water drum 16 through the second liquid outlet 18 of the second dispensing cavity.

[0059] As shown in Fig. 2, further, the first dispensing pipeline 8 and the second dispensing pipeline 9 extend horizontally between the first dispensing box 1 and the second dispensing box 2, the first dispensing pipeline 8. The second dispensing pipeline 9 and the flushing pipeline 3 are arranged at the same height. The first dispensing pipeline 8 and the second dispensing pipeline 9 are arranged front to back and are arranged between the flushing pipeline 3 and the second recycling pipeline 5.

[0060] The first dispensing pipeline 8 and the second dispensing pipeline 9 extend horizontally, which can shorten the length of the pipeline, reduce the space occupied, avoid bending of the dispensing pipeline, reduce obstruction to the detergent, speed up the flow of the detergent, and improve the recovery efficiency. In order to speed up the entry of the detergent from the liquid storage box into the dispensing cavity, a suction pump can be set on the first dispensing pipeline 8 and the second dispensing pipeline 9.

[0061] As shown in Fig. 3 and Fig. 4, further, a detection component is provided in the second dispensing box 2, and the detection component includes a position detection device 19 for detecting whether the liquid storage box is pushed into the second dispensing box 2 and a liquid level detection device 20 for detecting whether the liquid level in the second dispensing box 2 reaches a set liquid level.

[0062] The position detection device 19 detects whether the user has pushed or pulled the liquid storage box. If the liquid storage box has been pushed or pulled, the position detection device 19 will memorize it and rinse the second dispensing box 2 when it is not the last rinse.

[0063] The probe of the position detection device 19 is embedded in the second dispensing box 2 from the top of the second dispensing box 2 and suspended in the second dispensing box 2. When the liquid storage box is pushed into the second dispensing box 2, the probe can detect the second dispensing box 2; the position detection device 19 can be in various forms such as a micro switch and a reed switch.

[0064] The probe of the liquid level detection device 20 is embedded in the second dispensing box 2 from the top of the second dispensing box 2 and is suspended in the second dispensing box 2. The liquid level detection device 20 can be in various forms such as a float switch.

[0065] If the liquid in the second dispensing box 2 exceeds the set water level when flushing the second dispensing box 2, the liquid level will submerge the steel probe. If the second dispensing box 2 continues to be flushed, the flushing water will overflow, which will damage the electrical components near the second dispensing box 2 and cause safety hazards.

[0066] In an embodiment of the present invention, a third liquid storage box 10 and a fourth liquid storage box 11 are arranged side by side on the left and right inside the first dispensing box 1. A third dispensing pipeline is arranged on the third liquid storage box 10, and a fourth dispensing pipeline is arranged on the fourth liquid storage box 11. The liquid outlet of the third dispensing pipeline and the liquid outlet of the fourth dispensing pipeline are both connected to the first dispensing cavity and the second dispensing cavity.

[0067] In the embodiment of the present invention, two liquid storage boxes are arranged in the first dispensing box 1, and different detergents or the same detergents can be stored in the two liquid storage boxes. The two liquid storage boxes are arranged side by side in the first dispensing box 1, so that the space in the first dispensing box 1 can be fully utilized.

[0068] During delivery, the third dispensing pipeline delivers the detergent in the third liquid storage box 10 into the first dispensing cavity and the second dispensing cavity respectively, and the fourth dispensing pipeline delivers the detergent in the fourth liquid storage box 11 into the first dispensing cavity and the second dispensing cavity respectively. The detergent in the third liquid storage box 10 and the detergent in the fourth liquid storage box 11 are mixed in the first dispensing cavity and in the second dispensing cavity. The water flow provided by the first water inlet flow channel flushes the mixed detergent in the first dispensing cavity into the upper water drum 15 through the first liquid outlet 17 of the first dispensing cavity, and the water flow provided by the second water inlet flow channel flushes the mixed detergent in the second dispensing cavity into the lower water drum 16 through the second liquid outlet 18 of the second dispensing cavity. Suction pumps are provided on both the third dispensing pipeline and the fourth dispensing pipeline.

[0069] As shown in Fig. 1, the first liquid outlet 17 of the

first dispensing cavity is connected to the upper water drum 15 via the fifth dispensing pipeline 12, and the second liquid outlet 18 of the second dispensing cavity is connected to the lower water drum 16 via the sixth dispensing pipeline 13.

[0070] When the first dispensing box 1 and the second dispensing box 2 are delivered at the same time, the detergents in all the liquid storage boxes are sucked into the first dispensing cavity and the second dispensing cavity, all the detergents are mixed in the first dispensing cavity and mixed in the second dispensing cavity, and the water flow flushes the mixed detergents in the first dispensing cavity into the upper water drum 15 and the mixed detergents in the second dispensing cavity into the lower water drum 16.

[0071] In the embodiment of the present invention, when the time for the incoming water flow to flush the second dispensing box 2 reaches the set flushing time or the number of flushing times reaches the set flushing times, it is determined that there is no detergent residue in the second dispensing box 2.

[0072] In the embodiment of the present invention, whether there is detergent residue in the second dispensing box 2 is determined by whether the flushing time reaches the set flushing time or whether the flushing times reach the set flushing times.

[0073] When the flushing time reaches the set flushing time or the number of flushing times reaches the set number of times, it is considered that there is no detergent residue in the second dispensing box 2. When the flushing time does not reach the set flushing time or the number of flushing times does not reach the set number of flushing times, it is considered that there is detergent residue in the second dispensing box 2, and water needs to continue to flow into the second dispensing box 2.

[0074] After each flushing of the second dispensing box 2, there will be residual flushing water in the second dispensing box 2 due to negative pressure. At this time, a liquid pump is used to extract the residual water into the first dispensing box 1, and then the water flow can be flushed into the water drum.

[0075] If it is detected that the liquid storage box in the second dispensing box 2 has been pulled out, there is detergent residue in the second dispensing box 2. The second dispensing box 2 is rinsed before the last rinse, and the rinse water and the residual detergent are flushed into the water drum at the same time. The reason for not rinsing in the last rinse is that the detergent will be flushed into the water drum, resulting in an unclean final rinse.

[0076] Furthermore, the clothing treatment device further comprises a water drum, and when the first dispensing box 1 is supplied with water into the water drum, the inflowing water flow rinses the second dispensing box 2, and if the water level in the water drum reaches the set water level and the rinsing time does not reach the set rinsing time, the inflowing water flow rinses the second dispensing box 2 again when waiting for the next time water is supplied into the water drum.

[0077] When the first dispensing box 1 is feeding water into the water drum, the water flow can enter the second dispensing box 2 from the first dispensing box 1 through the flushing pipeline 3 to flush the second dispensing box 2, so that the water flow can be fed into the water drum and flush the second dispensing box 2 when the water inlet waterway is fed with water.

[0078] If the flushing time cannot reach the set flushing time when the water drum is filled with water for the first time, resulting in detergent residue in the second washing box, the second dispensing box 2 can be flushed until the water drum is filled with water for the second time, so that the sum of the flushing times before and after can reach the set flushing time.

[0079] For example, when water is introduced into the water drum during the washing stage, since a large amount of washing water is already stored in the water drum, it only takes a short time to supply water into the water drum, and the water level in the water drum can reach the set water level if the water level in the water drum has not reached the set water level. At this time, the flushing time for the second dispensing box 2 has not reached the set flushing time. Therefore, it can wait until water is introduced into the water drum during the rinsing stage to continue flushing the second dispensing box 2.

[0080] Furthermore, if the water level in the water drum reaches the set water level, but the flushing time has not reached the set flushing time. In this scenario, the incoming water flow continues to flush the second dispensing box 2, and the water level in the water drum is higher than the set water level, the drain port of the water drum is opened, part of the water in the water drum is discharged, and the incoming water flow continues to flush the second dispensing box 2. When the water level in the water drum is higher than the set water level, the washing machine cannot operate normally. Therefore, at this time, it is necessary to stop flushing the second dispensing box 2, and the washing machine alarm prompts that the clothes cannot be washed, and prompts the user to remove part of the water in the water drum, so that the water level in the water drum is lower than the set water level. Then, the incoming water flow continues to flush the second dispensing box 2. After the flushing time reaches the set flushing time, the washing machine is restarted to execute the washing program.

[0081] The washing machine is provided with a timer, which is used to record the flushing time of the second dispensing box 2. The washing machine is provided with a controller, and the timer, the liquid level detection device 20 and the position detection device 19 are connected to the controller. The timer transmits the recorded flushing time to the controller.

[0082] Furthermore, when waiting for the next time water to flow into the water drum and the incoming water flow to flush the second dispensing box 2, if the liquid level in the second dispensing box 2 exceeds the set liquid level, the liquid in the second dispensing box 2 is sucked into the first dispensing box 1, and then the second

dispensing box 2 is flushed by the incoming water flow.

[0083] When flushing the second dispensing box 2, if the liquid level detection device 20 detects that the liquid level in the second dispensing box 2 exceeds the set liquid level, the liquid in the second dispensing box 2 is sucked into the first dispensing box 1 to prevent the liquid in the second dispensing box 2 from overflowing due to excessive liquid, thereby damaging the electrical components near the second dispensing box 2 and causing safety hazards.

[0084] In an embodiment of the present invention, the laundry treatment device has an upper water drum 15 and a lower water drum 16, and the incoming water flow after flushing the second dispensing box 2 enters the upper water drum 15 and the lower water drum 16, or the incoming water flow after flushing the second dispensing box 2 selectively enters the upper water drum 15 and the lower water drum 16.

[0085] Furthermore, the upper water drum 15 prioritizes the water inlet procedure over the lower water drum 16, and the water flow after flushing the second dispensing box 2 first enters the upper water drum 15. If, when the lower water drum 16 executes the water inlet procedure, the water level in the upper water drum 15 does not reach the set water level, and the flushing time does not reach the set flushing time, then the water flow after flushing the second dispensing box 2 enters the upper water drum 15 and enters the lower water drum 16 at the same time.

[0086] Furthermore, the upper water drum 15 prioritizes the water inlet procedure over the lower water drum 16. The water flow after flushing the second dispensing box 2 first enters the upper water drum 15. When the water level in the upper water drum 15 reaches the set water level, the flushing time has not reached the set flushing time, and it is determined whether the lower water drum 16 executes the water inlet procedure. If it is executed, the water flow after flushing the second dispensing box 2 enters the lower water drum 16 while waiting for the lower water drum 16 to inlet water.

Embodiment 2

[0087] As shown in Fig. 5, the present invention provides a control method for a laundry treatment device, wherein the laundry treatment device has a first dispensing box 1 and a second dispensing box 2, the first dispensing box 1 is connected to the second dispensing box 2 via a flushing pipeline 3. The laundry treatment device has a flushing program, and when the flushing program is executed, the flushing pipeline 3 is opened, and the second dispensing box 2 is flushed by the water flow flowing through the first dispensing box 1 and the flushing pipeline 3.

[0088] In the embodiment of the present invention, the second dispensing box 2 is flushed by using the water flow flowing through the first dispensing box 1 and the flushing pipeline 3, thereby avoiding residual detergent in

the second dispensing box 2 and reducing the waste of detergent.

[0089] The laundry treatment device includes the following:

5 The first type of laundry treatment device:

The laundry treatment device is a drum washing machine, which includes a housing 14, an outer drum, an inner drum rotatably arranged in the outer drum, and a dispensing assembly. The dispensing assembly includes a first dispensing box 1 and a second dispensing box 2; the inner drum is a hole-free inner drum, and the inner drum is used as a water storage drum when washing clothes independently, and the first dispensing box 1 and the second dispensing box 2 dispense detergent into the inner drum. Or, the outer drum is a water storage drum, and the first dispensing box 1 and the second dispensing box 2 dispense detergent into the outer drum.

[0090] The second type of laundry treatment device: The laundry treatment device is a double-drum washing machine, which includes a housing 14, a first outer drum and a second outer drum arranged in the housing 14, a first inner drum arranged in the first outer drum, a second inner drum arranged in the second outer drum, and a dispensing assembly. The dispensing assembly includes a first dispensing box 1 and a second dispensing box 2; the first inner drum and the second inner drum are inner drums without holes, and the inner drums are used as water drums when washing clothes independently, and the first dispensing box 1 and the second dispensing box 2 dispense detergent into the first inner drum and the second inner drum. Or, the first outer drum and the second outer drum are water drums, and the first dispensing box 1 and the second dispensing box 2 dispense detergent into the first outer drum and the second outer drum. Wherein the housing 14 can be a first housing 14 and a second housing 14 independent of each other, the first outer drum and the first inner drum are arranged in the first housing 14, and the second outer drum and the second inner drum are arranged in the second housing 14.

[0091] As shown in Fig. 1, in the second type of laundry treatment device, preferably, the first dispensing box 1 and the second dispensing box 2 are arranged on the top portion of the housing 14 and are located above all the drums. A liquid outlet of the second dispensing box 2 is connected with the liquid inlet of the first dispensing box 1, and the liquid outlet of the first dispensing box 1 is respectively connected with the upper water drum 15 and the lower water drum 16; the first dispensing box 1 is connected with the external water inlet pipeline. It should be noted that the first dispensing box 1 is provided with a water inlet channel connected with the flushing pipeline 3, a water inlet channel for flushing the detergent in the first dispensing box 1 and for feeding water into the water drum, and each water inlet channel is connected with the external water inlet pipeline; the dispensing device includes not only the first dispensing box 1 and the second dispensing box 2, but also other dispensing boxes, and

the type of detergent delivered by each dispensing box may be the same or different.

[0092] A liquid storage box for storing detergent is provided in the second dispensing box 2. The liquid storage box can be pushed and pulled in the second dispensing box 2. Liquid leakage may occur when the liquid storage box is pushed and pulled. If the leakage is not handled for a long time, the liquid may become dry, hard, moldy, etc. Therefore, the flushing pipeline 3 is used to flush the residual detergent in the second dispensing box 2.

[0093] When dispensing, the detergent in the second dispensing box 2 is sucked into the first dispensing box 1 and mixed with the detergent in the first dispensing box 1. The mixed liquid is flushed into the upper water drum 15 and/or the lower water drum 16 by the water flow entering from the first dispensing box 1.

[0094] During flushing, the water flowing out from the water inlet channel of the first dispensing box 1 enters the second dispensing box 2 through the flushing pipeline 3 to flush the detergent remaining in the second dispensing box 2. The mixed liquid obtained after flushing the second dispensing box 2 enters the upper water drum 15 and/or the lower water drum 16 through the first dispensing box 1.

[0095] As shown in Fig. 2, the arrows in the pipeline in Fig. 2 indicate the direction of fluid flow. In the embodiment of the present invention, the first dispensing box 1 and the second dispensing box 2 are arranged side by side on the left and right, the water outlet of the water inlet channel is arranged on the first dispensing box 1 and faces the water inlet of the second dispensing box 2, and the flushing pipeline 3 is arranged between the first dispensing box 1 and the second dispensing box 2 and extends horizontally between the first dispensing box 1 and the second dispensing box 2.

[0096] In the embodiment of the present invention, specifically, the first dispensing box 1 and the second dispensing box 2 are arranged at the top portion of the housing 14 and above all the drums. The first dispensing box 1 is arranged on the left side of the housing 14, and the second dispensing box 2 is arranged on the right side of the housing 14. The first dispensing box 1 and the second dispensing box 2 have the same shape and specification, and the first dispensing box 1 and the second dispensing box 2 are arranged side by side. The first dispensing box 1 and the second dispensing box 2 are arranged in this way to facilitate manual delivery of detergent and make full use of the space of the housing 14.

[0097] The first dispensing box 1 includes a box body and a box cover, and the box cover includes an upper cover and a lower cover that are buckled together. The upper cover and the lower cover are buckled together, so that a number of independent water inlet channels are formed inside the box cover; a water inlet channel is arranged on the top of the first dispensing box 1. Since the water outlet of the water inlet channel is arranged face

to face with the water inlet of the second dispensing box 2, a flushing pipeline 3 is arranged between the first dispensing box 1 and the second dispensing box 2, which can shorten the length of the flushing pipeline 3, reduce the space occupied, and reduce the flushing time, thereby improving the flushing efficiency. In order to speed up the flushing water flow from the first dispensing box 1 to the second dispensing box 2 through the flushing pipeline 3 and flush the second dispensing box 2, a suction pump can be arranged on the flushing pipeline 3; and the flushing pipeline 3 extends horizontally between the first dispensing box 1 and the second dispensing box 2 to avoid bending of the flushing pipeline 3, reduce obstruction to the water flow, and speed up the flow of water.

[0098] As shown in Fig. 2, in an embodiment of the present invention, a recycling pipeline for recycling the mixed liquid obtained by flushing the second dispensing box 2 is provided between the first dispensing box 1 and the second dispensing box 2. The liquid inlet of the recycling pipeline is connected to the liquid outlet of the second dispensing box 2, and the liquid outlet is connected to the liquid inlet of the first dispensing box 1, and the first dispensing box 1 has a liquid outlet.

[0099] In the embodiment of the present invention, the water flow enters the second dispensing box 2 from the flushing pipeline 3 to flush the second dispensing box 2, and a mixed liquid of water and detergent is obtained after flushing. In order to fully utilize the mixed liquid into the water drum, a recycling pipeline is provided between the first dispensing box 1 and the second dispensing box 2. The recycling pipeline delivers the mixed liquid from the second dispensing box 2 to the first dispensing box 1, and the mixed liquid then enters the water drum from the liquid outlet of the first dispensing box 1.

[0100] As shown in Fig. 2, specifically, a first dispensing box 1 is provided with a first dispensing cavity and a second dispensing cavity, a first recycling pipeline 4 corresponding to the first dispensing cavity and a second recycling pipeline 5 corresponding to the second dispensing cavity are provided between the first dispensing box 1 and the second dispensing box 2. The first dispensing cavity has a first liquid outlet 17 provided at the bottom of the first dispensing box 1, and the second dispensing cavity has a second liquid outlet 18 provided at the side of the first dispensing box 1. The first liquid outlet 17 of the first dispensing cavity is communicated with the upper water drum 15, and the second liquid outlet 18 of the second dispensing cavity is communicated with the lower water drum 16.

[0101] During recycling, the first recycling pipeline 4 delivers the mixed liquid into the first dispensing cavity in the first dispensing box 1, and the mixed liquid then enters the upper water drum 15 from the first liquid outlet 17 of the first dispensing cavity, and the second recycling pipeline 5 delivers the mixed liquid into the second dispensing cavity in the first dispensing box 1, and the mixed liquid then enters the lower water drum 16 from the second liquid outlet 18 of the second dispensing cavity.

[0102] For example, when the water level in the upper water drum 15 reaches the set water level, if the first recycling pipeline 4 continues to deliver the mixed liquid into the first dispensing cavity and the upper water drum 15, the water level in the upper water drum 15 will exceed the set water level, resulting in the upper water drum 15 being unable to wash normally. At this time, the flushing time of the second dispensing box 2 has not reached the set flushing time, and the second dispensing box 2 is not flushed sufficiently. Therefore, before the water level in the lower water drum 16 reaches the set water level, the second recycling pipeline 5 can send the mixed liquid in the second dispensing box 2 into the second dispensing cavity and the lower water drum 16, so that the flushing time of the second dispensing box 2 can reach the set flushing time, so that the residual detergent in the second dispensing box 2 can be fully cleaned.

[0103] Furthermore, the first recycling pipeline 4 and the second recycling pipeline 5 extend horizontally between the first dispensing box 1 and the second dispensing box 2, the first recycling pipeline 4, the second recycling pipeline 5 and the flushing pipeline 3 are arranged at the same height, and the first recycling pipeline 4 and the second recycling pipeline 5 are respectively arranged on the front and rear sides of the flushing pipeline 3.

[0104] The first recycling pipeline 4 and the second recycling pipeline 5 extend horizontally, which can shorten the length of the pipeline, reduce the space occupied, avoid bending of the recycling pipeline, reduce obstruction to the water flow, speed up the flow of water, and improve the recovery efficiency. In order to speed up the mixed liquid from the second dispensing box 2 into the first dispensing box 1, a suction pump can be set on the first recycling pipeline 4 and the second recycling pipeline 5.

[0105] As shown in Fig. 2, in an embodiment of the present invention, a liquid storage box for storing detergent is provided in the second dispensing box 2, a dispensing pipeline is provided between the first dispensing box 1 and the second dispensing box 2, and the liquid inlet of the dispensing pipeline is connected to the liquid outlet of the liquid storage box, and the liquid outlet is connected to the liquid inlet of the first dispensing box 1.

[0106] In the embodiment of the present invention, a liquid storage box for storing detergent is provided in the second dispensing box 2. When delivering detergent, the dispensing pipeline delivers the detergent in the liquid storage box into the first dispensing box 1, and the detergent is flushed into the water drum by the water flow in the first dispensing box 1.

[0107] As shown in Figs. 1 and 2, specifically, a first liquid storage box 6 and a second liquid storage box 7 are arranged side by side on the left and right in the second dispensing box 2, and a first dispensing pipeline 8 corresponding to the first liquid storage box 6 and a second dispensing pipeline 9 corresponding to the second liquid storage box 7 are provided between the first dispensing

box 1 and the second dispensing box 2. The liquid outlet of the first dispensing pipeline 8 and the liquid outlet of the second dispensing pipeline 9 are both connected to the first dispensing cavity and the second dispensing cavity.

[0108] Two liquid storage boxes are provided in the second dispensing box 2. Different detergents or the same detergents can be stored in the two liquid storage boxes. The two liquid storage boxes are arranged side by side in the second dispensing box 2, so that the space in the second dispensing box 2 can be fully utilized.

[0109] The first dispensing cavity is connected to a first water inlet channel, and the second dispensing cavity is connected to a second water inlet channel. When water is delivered, the first water inlet channel introduces water into the first dispensing cavity to enter the upper water drum 15, and the second water inlet channel introduces water into the second dispensing cavity to enter the lower water drum 16.

[0110] During dispensing, the first dispensing pipeline 8 delivers the detergent in the first liquid storage box 6 into the first dispensing cavity and the second dispensing pipeline 9 delivers the detergent in the second liquid storage box 7 into the first dispensing cavity and the second dispensing cavity respectively. The detergent in the first liquid storage box 6 and the detergent in the second liquid storage box 7 are mixed in the first dispensing cavity and in the second dispensing cavity. The water flow provided by the first water inlet flow channel flushes the mixed detergent in the first dispensing cavity into the upper water drum 15 through the first liquid outlet 17 of the first dispensing cavity, and the water flow provided by the second water inlet flow channel flushes the mixed detergent in the second dispensing cavity into the lower water drum 16 through the second liquid outlet 18 of the second dispensing cavity.

[0111] Furthermore, the first dispensing pipeline 8 and the second dispensing pipeline 9 extend horizontally between the first dispensing box 1 and the second dispensing box 2. The first dispensing pipeline 8, the second dispensing pipeline 9 and the flushing pipeline 3 are arranged at the same height. The first dispensing pipeline 8 and the second dispensing pipeline 9 are arranged front to back and are arranged between the flushing pipeline 3 and the second recycling pipeline 5.

[0112] The first dispensing pipeline 8 and the second dispensing pipeline 9 extend horizontally, which can shorten the length of the pipeline, reduce the space occupied, avoid bending of the dispensing pipeline, reduce obstruction to the detergent, speed up the flow of the detergent, and improve the recovery efficiency. In order to speed up the entry of the detergent from the liquid storage box into the dispensing cavity, a suction pump can be set on the first dispensing pipeline 8 and the second dispensing pipeline 9.

[0113] As shown in Figs. 3 and 4, a detection component is provided in the second dispensing box 2, and the detection component includes a position detection de-

vice 19 for detecting whether the liquid storage box is pushed into the second dispensing box 2 and a liquid level detection device 20 for detecting whether the liquid level in the second dispensing box 2 reaches a set liquid level.

[0114] The position detection device 19 detects whether the user has pushed or pulled the liquid storage box. If the liquid storage box has been pushed or pulled, the position detection device 19 will memorize it and rinse the second dispensing box 2 when it is not the last rinse.

[0115] The probe of the position detection device 19 is embedded in the second dispensing box 2 from the top of the second dispensing box 2 and suspended in the second dispensing box 2. When the liquid storage box is pushed into the second dispensing box 2, the probe can detect the second dispensing box 2; the position detection device 19 can be in various forms such as a micro switch and a reed switch.

[0116] The probe of the liquid level detection device 20 is embedded in the second dispensing box 2 from the top of the second dispensing box 2 and is suspended in the second dispensing box 2. The liquid level detection device 20 can be in various forms such as a float switch.

[0117] If the liquid in the second dispensing box 2 exceeds the set water level when flushing the second dispensing box 2, the liquid level will submerge the steel probe. If the second dispensing box 2 continues to be flushed, the flushing water will overflow, which will damage the electrical components near the second dispensing box 2 and cause safety hazards.

[0118] In an embodiment of the present invention, a third liquid storage box 10 and a fourth liquid storage box 11 are arranged side by side on the left and right inside the first dispensing box 1. A third dispensing pipeline is arranged on the third liquid storage box 10, and a fourth dispensing pipeline is arranged on the fourth liquid storage box 11. The liquid outlet of the third dispensing pipeline and the liquid outlet of the fourth dispensing pipeline are both connected to the first dispensing cavity and the second dispensing cavity.

[0119] In the embodiment of the present invention, two liquid storage boxes are arranged in the first dispensing box 1, and different detergents or the same detergents can be stored in the two liquid storage boxes. The two liquid storage boxes are arranged side by side in the first dispensing box 1, so that the space in the first dispensing box 1 can be fully utilized.

[0120] During dispensing, the third dispensing pipeline delivers the detergent in the third liquid storage box 10 into the first dispensing cavity and the second dispensing cavity respectively, and the fourth dispensing pipeline delivers the detergent in the fourth liquid storage box 11 into the first dispensing cavity and the second dispensing cavity respectively. The detergent in the third liquid storage box 10 and the detergent in the fourth liquid storage box 11 are mixed in the first dispensing cavity and in the second dispensing cavity. The water flow provided by the first water inlet flow channel flushes

the mixed detergent in the first dispensing cavity into the upper water drum 15 through the first liquid outlet 17 of the first dispensing cavity, and the water flow provided by the second water inlet flow channel flushes the mixed detergent in the second dispensing cavity into the lower water drum 16 through the second liquid outlet 18 of the second dispensing cavity. Suction pumps are provided on both the third dispensing pipeline and the fourth dispensing pipeline.

[0121] As shown in Fig. 1, the first liquid outlet 17 of the first dispensing cavity is connected to the upper water drum 15 via the fifth dispensing pipeline 12, and the second liquid outlet 18 of the second dispensing cavity is connected to the lower water drum 16 via the sixth dispensing pipeline 13.

[0122] When the first dispensing box 1 and the second dispensing box 2 dispense at the same time, the detergents in all the liquid storage boxes are sucked into the first dispensing cavity and the second dispensing cavity, all the detergents are mixed in the first dispensing cavity and mixed in the second dispensing cavity. The water flow flushes the mixed detergents in the first dispensing cavity into the upper water drum 15 and the mixed detergents in the second dispensing cavity into the lower water drum 16.

[0123] In the embodiment of the present invention, when the time for the incoming water flow to flush the second dispensing box 2 reaches the set flushing time or the number of flushing times reaches the set flushing times, it is determined that there is no detergent residue in the second dispensing box 2.

[0124] In the embodiment of the present invention, whether there is detergent residue in the second dispensing box 2 is determined by whether the flushing time reaches the set flushing time or whether the flushing times reach the set flushing times.

[0125] When the flushing time reaches the set flushing time or the number of flushing times reaches the set number of times, it is considered that there is no detergent residue in the second dispensing box 2; when the flushing time does not reach the set flushing time or the number of flushing times does not reach the set number of flushing times, it is considered that there is detergent residue in the second dispensing box 2, and water needs to continue to flow into the second dispensing box 2.

[0126] If it is detected that the liquid storage box in the second dispensing box 2 has been pulled out, there is detergent residue in the second dispensing box 2. The second dispensing box 2 is flushed before the water inlet for the last rinse, and the rinse water and the residual detergent are flushed into the water drum at the same time. The reason for not rinsing in the last rinse is that the detergent will be flushed into the water drum, resulting in an unclean final rinse.

[0127] As shown in Fig. 5, the clothes treatment device further comprises a water drum, and when the first dispensing box 1 is supplied with water into the water drum, the inflowing water flows to rinse the second dispensing

box 2, and if the water level in the water drum reaches the set water level and the rinsing time does not reach the set rinsing time, the inflowing water flows to rinse the second dispensing box 2 again when waiting for the next time water flows into the water drum.

[0128] When the first dispensing box 1 is feeding water into the water drum, the water flow can enter the second dispensing box 2 from the first dispensing box 1 through the flushing pipeline 3 to flush the second dispensing box 2, so that the water flow can be fed into the water drum and flush the second dispensing box 2 when the water inlet waterway is fed with water.

[0129] If the flushing time cannot reach the set flushing time when the water drum is feeding water for the first time, resulting in detergent residue in the second washing box, the second dispensing box 2 can be flushed again when the water drum is feeding water for the second time, so that the sum of the flushing time before and after can reach the set flushing time.

[0130] After each flushing of the second dispensing box 2, there will be residual flushing water in the second dispensing box 2 due to negative pressure. At this time, a liquid pump is used to extract the residual water into the first dispensing box 1, and then the water flow can be flushed into the water drum.

[0131] For example, when water is introduced into the water drum during the washing stage, since a large amount of washing water is already stored in the water drum, it only takes a short time to supply water into the water drum, and the water level in the water drum can reach the set water level if the water level in the water drum has not reached the set water level. At this time, the flushing time for the second dispensing box 2 has not reached the set flushing time. Therefore, it can wait until water is introduced into the water drum during the rinsing stage to continue flushing the second dispensing box 2.

[0132] Furthermore, if the water level in the water drum reaches the set water level, but the flushing time has not reached the set flushing time, the incoming water flow continues to flush the second dispensing box 2. When the water level in the water drum is higher than the set water level, the drain port of the water drum is opened, part of the water in the water drum is discharged, and the incoming water flow continues to flush the second dispensing box 2. The water level in the water drum is higher than the set water level, and the washing machine cannot operate normally. Therefore, at this time, it is necessary to stop flushing the second dispensing box 2, and the washing machine alarm prompts that the clothes cannot be washed, and prompts the user to remove part of the water in the water drum, so that the water level in the water drum is lower than the set water level, and the incoming water flow continues to flush the second dispensing box 2. After the flushing time reaches the set flushing time, the washing machine is restarted to execute the washing program.

[0133] The washing machine is provided with a timer, which is used to record the flushing time of the second

dispensing box 2. The washing machine is provided with a controller, and the timer, the liquid level detection device 20 and the position detection device 19 are connected to the controller. The timer transmits the detected flushing time to the controller.

[0134] Furthermore, when waiting for the next time water to flow into the water drum and the incoming water flow to flush the second dispensing box 2, if the liquid level in the second dispensing box 2 exceeds the set liquid level, the liquid in the second dispensing box 2 is sucked into the first dispensing box 1, and then the second dispensing box 2 is flushed by the incoming water flow.

[0135] When flushing the second dispensing box 2, if the liquid level detection device 20 detects that the liquid level in the second dispensing box 2 exceeds the set liquid level, the liquid in the second dispensing box 2 is sucked into the first dispensing box 1 to prevent the liquid in the second dispensing box 2 from overflowing due to excessive liquid, thereby damaging the electrical components near the second dispensing box 2 and causing safety hazards.

[0136] In an embodiment of the present invention, the laundry treatment device has an upper water drum 15 and a lower water drum 16, and the incoming water flow after flushing the second dispensing box 2 enters the upper water drum 15 and the lower water drum 16, or the incoming water flow after flushing the second dispensing box 2 selectively enters the upper water drum 15 and the lower water drum 16.

[0137] Furthermore, the upper water drum 15 prioritizes the water inlet procedure over the lower water drum 16, and the water flow after flushing the second dispensing box 2 enters the upper water drum 15. When the lower water drum 16 executes the water inlet procedure, the water level in the upper water drum 15 does not reach the set water level, and the flushing time does not reach the set flushing time, then the water flow after flushing the second dispensing box 2 enters the upper water drum 15 and enters the lower water drum 16 at the same time.

[0138] Furthermore, the upper water drum 15 prioritizes the water inlet procedure over the lower water drum 16. The water flow after flushing the second dispensing box 2 enters the upper water drum 15. When the water level in the upper water drum 15 reaches the set water level, the flushing time has not reached the set flushing time, and it is determined whether the lower water drum 16 executes the water inlet procedure. If it is executed, the water flow after flushing the second dispensing box 2 enters the lower water drum 16 while waiting for the lower water drum 16 to inlet water.

[0139] The above is only a preferred embodiment of the present invention, and does not limit the present invention in any form. Although the present invention has been disclosed as a preferred embodiment as above, it is not used to limit the present invention. Any technician familiar with this patent can make some changes or modifications to equivalent embodiments of equivalent changes by using the technical content suggested above

without departing from the scope of the technical solution of the present invention. The implementation scheme in the above embodiment can also be further combined or replaced. However, any simple modification, equivalent change and modification made to the above embodiment based on the technical essence of the present invention without departing from the content of the technical solution of the present invention still falls within the scope of the solution of the present invention.

Claims

1. A dispensing device, comprising a first dispensing box and a second dispensing box, and a water inlet channel being provided in the first dispensing box, **characterized in that** the dispensing device further comprises a flushing pipeline, wherein a water inlet of the flushing pipeline is connected to a water outlet of the water inlet channel, and a water outlet of the flushing pipeline is connected to a water inlet of the second dispensing box.
2. The dispensing device according to claim 1, **characterized in that** the first dispensing box and the second dispensing box are arranged side by side on left and right, the water outlet of the water inlet channel is arranged on the first dispensing box and faces to the water inlet of the second dispensing box, and the flushing pipeline is arranged between the first dispensing box and the second dispensing box and extends horizontally between the first dispensing box and the second dispensing box.
3. The dispensing device according to claim 2, **characterized in that** a recycling pipeline for recycling a mixed liquid obtained by flushing the second dispensing box is provided between the first dispensing box and the second dispensing box, a liquid inlet of the recycling pipeline is connected to a liquid outlet of the second dispensing box, and a liquid outlet of the recycling pipeline is connected to a liquid inlet of the first dispensing box, and the first dispensing box has a liquid outlet.
4. The dispensing device according to claim 3, **characterized in that** a first dispensing cavity and a second dispensing cavity are provided in the first dispensing box; a first recycling pipeline corresponding to the first dispensing cavity and a second recycling pipeline corresponding to the second dispensing cavity are provided between the first dispensing box and the second dispensing box, the first dispensing cavity is provided with a first liquid outlet provided at a bottom of the first dispensing box, and the second dispensing cavity is provided with a second liquid outlet provided at a side of the first dispensing box.
5. The dispensing device according to claim 4, **characterized in that** the first recycling pipeline and the second recycling pipeline extend horizontally between the first dispensing box and the second dispensing box, the first recycling pipeline, the second recycling pipeline and the flushing pipeline are arranged at a same height, and the first recycling pipeline and the second recycling pipeline are respectively arranged on a front and rear sides of the flushing pipeline.
6. The dispensing device according to any one of claims 1 to 5, **characterized in that** a liquid storage box for storing detergent is provided inside the second dispensing box, a dispensing pipeline is provided between the first dispensing box and the second dispensing box, a liquid inlet of the dispensing pipeline is connected to a liquid outlet of the liquid storage box, and a liquid outlet of the dispensing pipeline is connected to the liquid inlet of the first dispensing box.
7. The dispensing device according to claim 6, **characterized in that** a first liquid storage box and a second liquid storage box are arranged side by side in the second dispensing box, a first dispensing pipeline corresponding to the first liquid storage box and a second dispensing pipeline corresponding to the second liquid storage box are arranged between the first dispensing box and the second dispensing box, and a liquid outlet of the first dispensing pipeline and a liquid outlet of the second dispensing pipeline are both connected to the first dispensing cavity and the second dispensing cavity.
8. The dispensing device according to claim 7, **characterized in that** the first dispensing pipeline and the second dispensing pipeline extend horizontally between the first dispensing box and the second dispensing box, the first dispensing pipeline, the second dispensing pipeline and the flushing pipeline are arranged at a same height, the first dispensing pipeline and the second dispensing pipeline are arranged front to rear and are arranged between the flushing pipeline and the second recycling pipeline.
9. The dispensing device according to claim 6, **characterized in that** a third liquid storage box and a fourth liquid storage box are arranged side by side in the first dispensing box, a third dispensing pipeline is arranged on the third liquid storage box, and a fourth dispensing pipeline is arranged on the fourth liquid storage box, and a liquid outlet of the third dispensing pipeline and a liquid outlet of the fourth dispensing pipeline are both connected to the first dispensing cavity and the second dispensing cavity.
10. A laundry treatment device, comprising a housing,

and an upper water drum and a lower water drum arranged in the housing, **characterized in that** the laundry treatment device comprises the dispensing device according to any one of claims 1 to 9, the first dispensing box and the second dispensing box are arranged above the upper water drum, the liquid outlet of the second dispensing box is connected to the liquid inlet of the first dispensing box, and the liquid outlet of the first dispensing box is connected to the upper water drum and the lower water drum respectively.

11. A control method for the laundry treatment device according to claim 10, **characterized in that** the first dispensing box is connected to the second dispensing box through the flushing pipeline, the laundry treatment device has a flushing program, and when the flushing program is executed, the flushing pipeline is opened, and the second dispensing box is flushed by inlet water flowing through the first dispensing box and the flushing pipeline.
12. The control method according to claim 11, **characterized in that** when a flushing time for flushing the second dispensing box by the inlet water reaches a set flushing time or a number of flushing times reaches a set flushing time, it is determined that there is no detergent residue in the second dispensing box.
13. The control method according to claim 12, **characterized in that** the laundry treatment device further comprises a water drum, and when inletting water through the first dispensing box into the water drum, the inlet water rinses the second dispensing box, and if the flushing time does not reach the set flushing time when the water level in the water drum reaches the set water level, the inlet water rinses the second dispensing box again when the next time inletting water into the water drum.
14. The control method according to claim 12, **characterized in that** if the water level in the water drum reaches the set water level and the flushing time does not reach the set flushing time, the inlet water continues to flush the second dispensing box, and the water level in the water storage drum is higher than the set water level, a drain port of the water drum is opened to discharge part of the water in the water drum, and the inlet water continues to flush the second dispensing box.
15. The control method according to claim 13, **characterized in that** when waiting for a next inletting water into the water drum and the inlet water to flush the second dispensing box, if a liquid level in the second dispensing box exceeds a set liquid level, the liquid in the second dispensing box is sucked into the first

dispensing box, and then the second dispensing box is flushed by the inlet water.

16. The control method according to claim 11, **characterized in that** a liquid storage box for storing liquid detergent is pull-out provided in the second dispensing box, and if it is detected that the liquid storage box in the second dispensing box has been pulled, then there is detergent residue in the second dispensing box, and the second dispensing box is rinsed before the last rinsing.
17. The control method according to any one of claims 11 to 16, **characterized in that** the laundry treatment device is provided with an upper water drum and a lower water drum, and the inlet water after flushing the second dispensing box enters the upper water drum and the lower water drum, or the inlet water after flushing the second dispensing box selectively enters either the upper water drum or the lower water drum.
18. The control method according to claim 17, **characterized in that** the upper water drum prioritizes the water inlet procedure over the lower water drum, and the inlet water after flushing the second dispensing box enters the upper water drum first; if the water level in the upper water drum does not reach the set water level and the flushing time does not reach the set flushing time when the lower water drum executes the water inlet procedure, the inlet water after flushing the second dispensing box enters the lower water drum at the same time as it enters the upper water drum.
19. The control method according to claim 17, **characterized in that** the upper water drum prioritizes the water inlet procedure before the lower water drum, and the inlet water after flushing the second dispensing box enters the upper water drum first; when the water level in the upper water drum reaches the set water level and the flushing time has not reached the set flushing time, it is determined whether the lower water drum executes the water inlet procedure; if it is executed, the inlet water after flushing the second dispensing box enters the lower water drum while waiting for the lower water drum to inlet water.

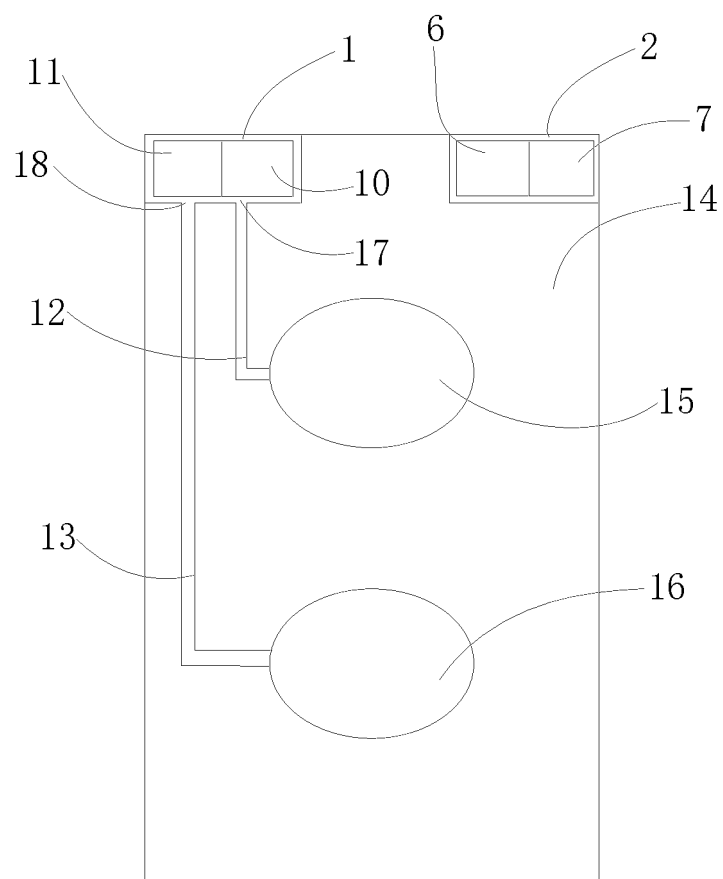


Fig. 1

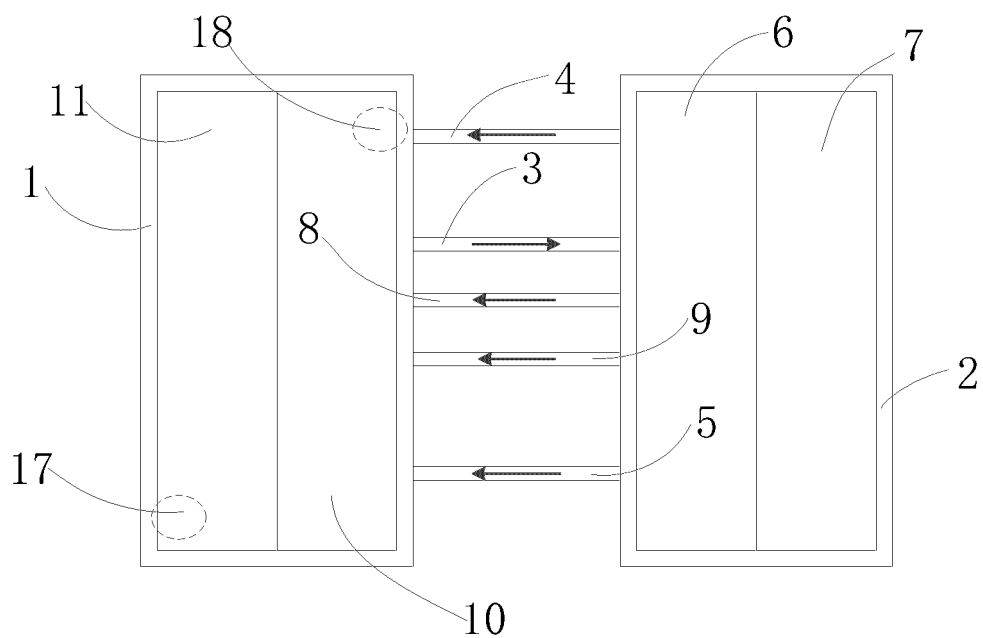


Fig. 2

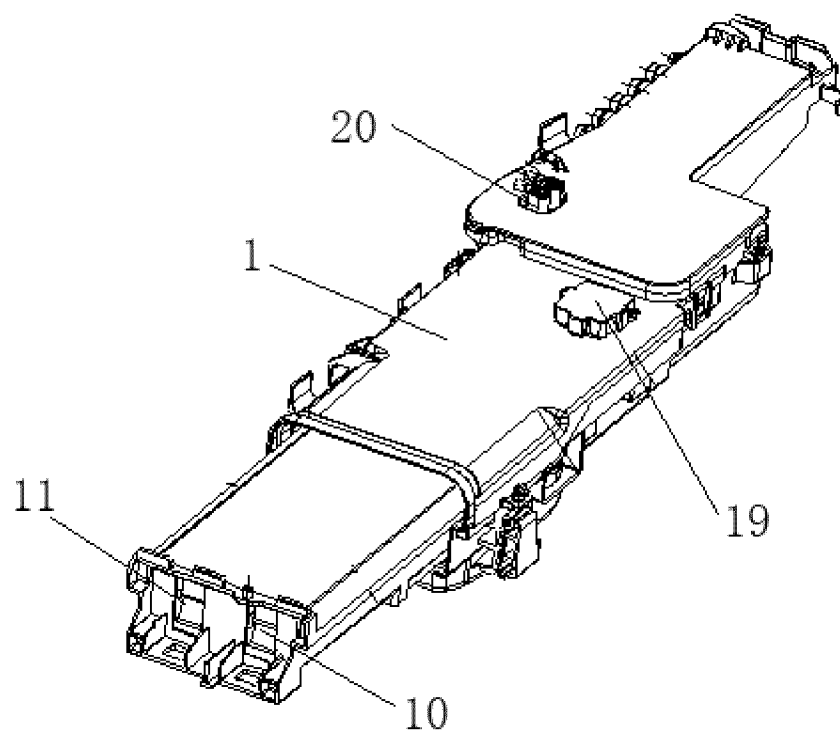


Fig. 3

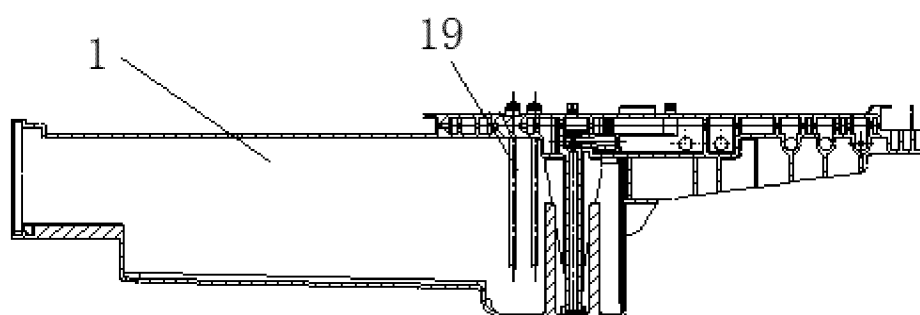


Fig. 4

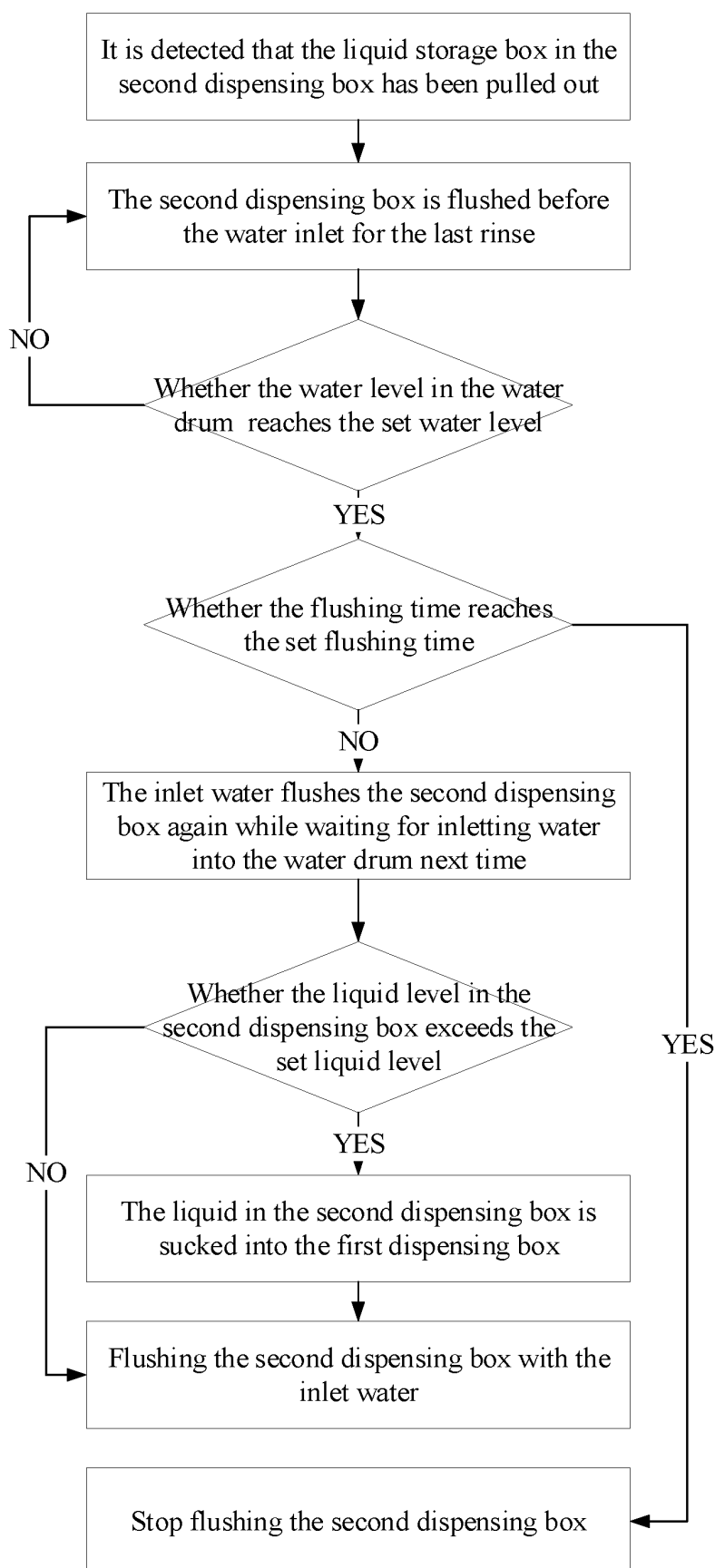


Fig. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/106496

A. CLASSIFICATION OF SUBJECT MATTER

D06F 39/02(2006.01)i; D06F 39/08(2006.01)i

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)

IPC: D06F

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

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

CNXTX, CNABS, CNKI, VEN, ENTXTC: 洗涤剂, 洗涤液, 洗衣液, 洗衣剂, 清洁剂, 清洗剂, 洗衣粉, 加注, 添加, 投放, 供应, 供给, 提供, 投入, 添入, 冲洗, 清洗, 清洁, 水, 管路, 管道, 通道, 通路, 路径, 水路, 水管, 管, detergent, aid, agent, powder, wash+, suppl+, provid+, add+, fill+, furnish+, dispenser, serv+, put+, pipeline, wash+, clean+, flush+, water, pipe, duct, path

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 110699927 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 17 January 2020 (2020-01-17) description, paragraphs [0050]-[0088], and figures 1-6	1, 2, 10-12, 16-19
PX	CN 115404647 A (QINGDAO HAIER WASHING ELECTRIC APPLIANCE CO., LTD. et al.) 29 November 2022 (2022-11-29) description, paragraphs [0032]-[0084], and figures 1-5	1-19
PX	CN 115404669 A (QINGDAO HAIER WASHING ELECTRIC APPLIANCE CO., LTD. et al.) 29 November 2022 (2022-11-29) description, paragraphs [0031]-[0084], and figures 1-4	1-19
A	CN 113073448 A (QINGDAO HAIER WASHING MACHINE CO., LTD. et al.) 06 July 2021 (2021-07-06) entire document	1-19
A	CN 114197170 A (TCL HOME APPLIANCES (HEFEI) CO., LTD.) 18 March 2022 (2022-03-18) entire document	1-19

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

18 October 2023

Date of mailing of the international search report

24 October 2023

Name and mailing address of the ISA/CN

China National Intellectual Property Administration (ISA/
CN)
China No. 6, Xitucheng Road, Jimenqiao, Haidian District,
Beijing 100088

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/106496

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	WO 2022071176 A1 (PANASONIC INTELLECTUAL PROPERTY MANAGEMENT CO., LTD.) 07 April 2022 (2022-04-07) entire document	1-19

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2023/106496

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CN	114197170	A	18 March 2022	None			
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				BR	112023004642	A2	11 April 2023