(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 971 337 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
17.04.2024 Bulletin 2024/16

(21) Application number: **20809562.0**

(22) Date of filing: **12.05.2020**

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

(52) Cooperative Patent Classification (CPC):
D06F 23/025; D06F 39/083; D06F 37/04

(86) International application number:
PCT/CN2020/089760

(87) International publication number:
WO 2020/233449 (26.11.2020 Gazette 2020/48)

(54) WASHING MACHINE

WASCHMASCHINE

MACHINE À LAVER

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

(30) Priority: **17.05.2019 CN 201910413614**

(43) Date of publication of application:
23.03.2022 Bulletin 2022/12

(73) Proprietors:
- **Qingdao Haier Drum Washing Machine Co., Ltd.**
  Qingdao, Shandong 266101 (CN)
- **Haier Smart Home Co., Ltd.**
  Qingdao, Shandong 266101 (CN)

(72) Inventors:
- **XU, Sheng**
  Qingdao, Shandong 266101 (CN)
- **ZHAO, Zhiqiang**
  Qingdao, Shandong 266101 (CN)
- **LV, Peishi**
  Qingdao, Shandong 266101 (CN)
- **ZHAO, Xinyu**
  Qingdao, Shandong 266101 (CN)

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

(56) References cited:
WO-A1-02/04734 **WO-A1-2018/205933**
JP-A- H08 155 190

EP 3 971 337 B1

Description

[0001] The invention relates to the technical field of washing machines, and particularly herein relates to a washing machine comprising an inner drum being a closed container during washing after an opening is fastened by a lid, wherein the inner drum is provided with at least a hole, and a centrifugal valve.

[0002] Washing machines of this type are equally known from WO 2018/205933 A1, WO 02/04734 A1, and JP H08 155190 A

[0003] In the prior art, the drum washing machine generally includes an inner drum and an outer drum nested together, the outer drum is used to hold water, the inner drum is used to hold clothes, and the inner drum is rotated to beat and wash the clothes. Also, the inner drum is provided with dehydration holes so that the water in the outer drum flows into the inner drum through the dehydration holes to soak the clothes in the inner drum, and the water in the inner drum flows out to the outer drum through the dehydration holes, the moisture on the clothes in the inner drum is discharged to the outer drum through the dehydration holes when the inner drum rotates at a high speed to achieve the purpose of washing the clothes.

[0004] However, since the inner drum and the outer drum are nested together, dirt is likely to accumulate between the inner and outer drums during the use of the washing machine. Because the inner drum and the outer drum are nested together, users cannot clean the outer wall of the inner drum and the inner wall of the outer drum, which increases the bacteria inside the washing machine and reduces the washing efficiency of the washing machine and the cleanliness of the laundry after washing.

[0005] In the above-mentioned existing washing machines, since the inner drum is sheathed with an outer drum, the washing process of the washing machine is to beat and wash the clothes through the rotation of the inner drum, so that the washing capacity of the washing machine is depended on the inner drum, and the internal space usage rate of the washing machine is low, unable to expand the washing capacity of the washing machine on the existing basis.

[0006] In view of this, how to set up a washing machine to combine the inner and outer drums so that the inner drum is set as a sealed container, which can not only hold water and clothes, but also rotate and beat the clothes for washing. And, since the washing machine does not have an outer drum, or the outer drum is integrated with the shell of the washing machine, the inner drum of the washing machine can be expanded to expand the washing capacity of the washing machine, which has become a research and development hotspot.

[0007] However, since the inner drum is not only used to hold the washing water, but also rotates to wash the clothes of the drum, how to install a dehydration structure and a drainage structure suitable for the above-mentioned washing machine has become a problem that needs to be solved urgently.

[0008] The technical problem to be solved by the invention is to overcome the shortcomings of the prior art and provide a washing machine. When the washing machine is in a drain or dehydration process, the inner drum is rotating at a high speed, so that the centrifugal valve in the inner drum water guide channel is opened by centrifugal force to solve the problem of the washing water in the inner drum being drained out.

[0009] In order to solve the technical problems and achieve the technical effects, the present invention provides a washing machine comprising the features of claim 1.

[0010] Advantageous embodiments are indicated in further claims. By setting a water collection disk on the washing machine, all the drain water flowing from the hole from the inner drum can be collected into the water collection disk, and the purpose of smoothly draining the drain water when the hole is opened by centrifugal force.

[0011] By setting a water guide channel on the inner drum, the purpose of smoothly flowing the drainage water flowing out of the inner drum into the water collection disk along the water guide channel is realized, thereby avoiding the overflow effect of washing drainage.

[0012] The centrifugal valve is provided in the water guide channel to control the centrifugal valve to open the water guide channel after the rotational speed of the inner drum reaches a set value so as to achieve the purpose of draining the washing machine. At the same time, when the washing machine normally executes washing and rinsing procedures, due to the low rotational speed of the inner drum and the small centrifugal force on the centrifugal valve, the centrifugal valve is enabled to accordingly close the water guide channel, and the inner drum is enabled to contain water and normally execute washing and rinsing procedures, so that the clothes are only in contact with the washing water in the sealing inner drum during washing, which prevents the washing water between inner and outer drums from flowing into the inner drum and contaminating the clothes, and significantly improves the cleanliness of washing of the washing machine.

[0013] The centrifugal valve is arranged in the inclined portion of the water guide channel to ensure that the valve core of the centrifugal valve is driven by centrifugal force to move along the inclined portion of the water guide channel and the water outlet end of the water guide channel to correspondingly open the water guide channel.

[0014] At the same time, the disclosure has a simple structure, significant effects, and is suitable for popularization and use.

[0015] In order to make the design concept of the technical solution of the disclosure clearer and facilitate further understanding of the beneficial effects it brings, some specific implementations of the disclosure will be described in detail with reference to the attached figures.

[0016] As a part of the disclosure, the attached drawings are used to provide a further understanding of the

invention.

[0017] The embodiments and descriptions of the disclosure are used to explain the disclosure and is not to be considered as improper limitation of the disclosure. Obviously, the following drawings are only some embodiments.

[0018] In the attached figures:

FIG 1 to 2 are schematic diagrams of the structure of the washing machine in different embodiments of the disclosure;

FIG 3 is an enlarged schematic diagram of the structure at A of FIG 2 in the embodiment of the disclosure.

[0019] In the drawings: 1, inner drum; 2, shell; 3, inner drum support; 4, lid; 5, drive motor; 6, hole;7, water collection disk; 9, centrifugal valve; 10, water guide channel; 11, drain pipe; 12, drainage device; 13, disc-shaped structure; 14, annular flange; 15, inner flange; 17, dynamic seal; 91, valve core; 92, elastic member; 21, inner drum shaft; 91, valve core; 92, elastic member; 101, inner drum opening; 102, inner drum bottom; 103, side wall of the inner drum.

[0020] It should be noted that these drawings and descriptions are not to limit the conception of the invention in any way, but to illustrate the concept of the disclosure for the person skilled in the art by referring to specific embodiments.

[0021] The technical scheme in the following embodiments will then be described clearly and completely with combination with the attached figures in order to make the purpose, technical scheme and advantages of the disclosure clearer. The following embodiments are used to illustrate the disclosure but are not used to limit the scope of the invention.

[0022] In the following description, it should be noted that the terms "up", "down", "front", "back", "left", "right", "vertical", "inside", "outside" and etc. are based on the directions or positions shown in the attached figures. They are used to simplify the description, rather than to indicate that the device or element referred must have a specific direction or to be constructed or operated in a specific direction.

[0023] And in the following description, it should be understood that the terms "installment" and "connection" should be treated according to generalized understanding. For example, they can be understood as fixed connection, detachable connection or integrated connection. Also, they can mean mechanical connection or electrical connection. They can also represent direct connection or indirect connection. The person skilled in the art are able to understand the specific meaning of the above terms in the disclosure according to the specific situation.

[0024] As shown in FIG 1 to 3, an embodiment of the disclosure introduces a washing machine, the washing machine includes a shell 2 with an inner drum 1 inside the shell 2, and the axis of rotation of the inner drum 1, in the following referred to as "axis", extends horizontally or gradually inclines downward from front to rear, the front end of the inner drum 1 is an inner drum opening 101 with an opening, and the rear end is an inner drum bottom 102 with a seal. The side wall of the inner drum 103 connects the inner drum opening 101 and the inner drum bottom 102 to form the inner drum 1; there is no through holes on the wall of the inner drum 1, so that the inside of the inner drum 1 constitutes a sealed container with only the front opening. A lid 4 that can be opened outwards is installed at the front end of the washing machine shell 2 to close the inner drum opening 101 after the lid 4 is closed, and to put clothes into the inner drum 1 from the inner drum opening 101 after the lid 4 is opened. The rear end of the inner drum 1 is installed in the washing machine shell 2 via the inner drum support 3, the inner drum support 3 is coaxially arranged with the rear end of the inner drum 1. The upper and lower ends of the inner drum support 3 are respectively bent to the direction of the front end of the inner drum 1, the bending portion extends to at least the middle of the inner drum 1, and the upper and lower bending portions are respectively connected to the washing machine shell 2 via a shock-absorbing suspension spring and a shock-absorbing support rod, to achieve the purpose that the inner drum support 3 can be vibrated and installed in the washing machine shell 2. The center of the inner drum bottom 102 is coaxially arranged with the motor shaft of the washing machine drive motor 5 to drive the inner drum 1 to rotate, the inner drum 1 and the drive motor 5 are both fixedly mounted on the inner drum support 3. Preferably, the inner drum bottom 102 and the drive motor 5 are respectively arranged on both sides of the inner drum support 3, and the drive motor 5 is fixedly connected to the inner drum support 3, the motor shaft of the drive motor 5 passes through the inner drum support 3 through a bearing and is coaxially fixedly connected with the inner drum bottom 102, and the motor shaft of the drive motor 5 can rotate relative to the inner drum support 3, in order to achieve the purpose of installing the inner drum 1 and the drive motor 5 on the inner drum support 3, and allowing the inner drum 1 to rotate independently under the action of the drive motor 5 to wash the inner clothes. Preferably, the motor shaft of the drive motor 5 directly constitutes the inner drum shaft 21, and the inner drum shaft 21 is coaxially fixedly connected with the inner drum bottom 102 of the inner drum 1.

[0025] In addition, the washing machine in the embodiment of the disclosure may be any washing machine in the prior art that has a lid that closes the opening of the inner drum and the inner drum forms a sealed container. When the washing machine executes the dehydration process, the inner drum is controlled to rotate at a high speed to smoothly discharge the water flow from the clothes in the inner drum out of the inner drum, so as to achieve the normal execution of the dehydration program for the non-porous inner drum washing machine. Therefore, the washing machine in the embodiment of the disclosure is not limited to the structure in the drawings,

such as: with the existing ordinary washing machine, only the inner drum 1 of the washing machine needs to be set as a washing machine without a dehydration hole and the lid 4 closes the inner drum opening 101 to form a sealed container.

[0026] At the same time, by setting the inner drum as the lid buckled, and the washing machine forms a sealed container during washing, which prevents the washing water between inner and outer drums from flowing into the inner drum 1 and contaminating the clothes, and significantly improves the cleanliness of washing of the washing machine. It avoids the incomplete washing of clothes caused by the washing water pollution between the inner and outer drums.

[0027] In the embodiment of the disclosure, in order to discharge the water flow from clothes in the inner drum 1 of the washing machine, and seal the inner drum 1 filled with water for normal washing during the working process of the washing machine, the following settings are made: The hole 6 is set on the inner drum, so that when the inner drum speed is lower than the set value during the normal washing and rinsing process of the inner drum, the hole 6 is closed, so that the inner drum directly constitutes the contain water tank for containing washing and rinsing water to use the washing and rinsing water stored in the inner drum to wash or rinse clothes. In the process of dehydration and drainage of the inner drum, when the rotation speed of the inner drum is higher than the set value, the hole 6 is opened, so that the water in the inner drum directly flows out through the hole 6.

[0028] In the embodiment of the disclosure, a water collection disk 7 is provided outside the inner drum 1 of the washing machine. The water collection disk 7 may be directly constituted by the inner drum support 3, or may be an independent piece installed on the inner drum support 3, and it may also be an independent piece provided independently of the inner drum support 3. The water collection disk 7 constitutes a chamber for the drain water flowing out of the inner drum, and the water collection disk 7 is connected with the drain pipe 11 of the washing machine, so that the drain water flows out from the hole 6 is collected by the water collection disk 7 into the drain pipe 11, and then out of the washing machine.

[0029] In the embodiment of the disclosure, a water guide channel 10 is provided on the inner drum 1 of the washing machine, the water inlet end of the water guide channel 10 is connected to the hole 6, and the water outlet end is connected to the water collection disk 7, and the drained water from the inner drum of the washing machine flows into the water collection disk 7 through the water guide channel 10.

[0030] In the embodiment of the disclosure, a centrifugal valve 9 that controls the on-off of the channel is provided on the water guide channel 10, after the rotation speed of the inner drum reaches a set value, the valve core 91 of the centrifugal valve 9 opens the water guide channel 10 under the action of centrifugal force.

[0031] The centrifugal valve is provided in the water guide channel to control the centrifugal valve to open the water guide channel after the rotational speed of the inner drum reaches a set value so as to achieve the purpose of draining the washing machine. At the same time, when the washing machine regularly executes washing and rinsing procedures, due to the low rotational speed of the inner drum and the small centrifugal force on the centrifugal valve, the centrifugal valve is enabled to accordingly close the water guide channel, and the inner drum is enabled to contain water and regularly execute washing and rinsing procedures, so that the clothes are only in contact with the washing water in the sealing inner drum during washing, which prevents the washing water between inner and outer drums from flowing into the inner drum and contaminating the clothes, and significantly improves the cleanliness of washing of the washing machine.

[0032] In the embodiment of the disclosure, the centrifugal valve 9 comprises a valve core 91, and the valve core 91 can be movably installed in the water guide channel 10, and in the initial position, the valve core 91 blocks corresponding cross-section of the water guide channel; an elastic member 92 which is clamped between the valve core 91 and the water guide channel 10 to limit the movement of the valve core 91 and provide a force to the valve core 91 to reset to the initial position. After the valve core 91 is reset to the initial position, at least one cross section of the valve core 91 corresponds to block the inner wall of the water guide channel 10 to close and block the water guide channel 10.

[0033] In the embodiment of the disclosure, the water guide channel 10 extends at least partially in the direction deviating from the axis of the inner drum 1, and the centrifugal valve 9 is installed at the inclined part of the water guide channel 10. After the inner drum 1 reaches the set speed, the centrifugal valve 9 is driven by the centrifugal force and move to open the water guide channel 10 correspondingly. Preferably, the inclined part extends along the direction of the water flow in the water guide channel 10 and gradually extends to the side away from the axis of the inner drum, to ensure that the water flow in the water guide channel is driven by centrifugal force to flow at the outlet end of the water guide channel. It also can ensure that the valve core of the centrifugal valve is driven by centrifugal force to move along the inclined portion of the water guide channel and the water outlet end of the water guide channel to correspondingly open the water guide channel.

[0034] In the embodiment of the disclosure, the hole 6 is arranged on the side wall of the inner drum 103; preferably, the hole 6 is located on the side wall of the inner drum 103 near the side of the inner drum opening 101. The water guide channel 10 extends in the direction parallel to the axis of the inner drum 1, the end of the water guide channel 10 close to the inner drum opening 101 side is sealed, and the water guide channel 10 is set close to the end opening of the inner drum bottom 102 side. And the end of the water guide channel 10 close to

the inner drum bottom 102 coincides with at least part of the annular flange 14 of the water collection disk 7 in the vertical direction, so that the water outlet end of the water guide channel 10 extends into the water collection disk 7, so that the drainage flowing out of the water guide channel 10 can all flow into the water collection disk 7.

[0035] In the embodiment of the disclosure, the axis of the water outlet end of the water guide channel 10 is arranged parallel to the axis of the inner drum 1, so that the water flowing out of the water guide channel 10 can be sprayed in the horizontal direction, so that the water jet flowing into the water collection disk 7 is guided by the disc-shaped structure 14 flow down until it flows into the drain pipe 11 at the bottom end of the water collection disk 7.

[0036] As shown in FIG 2, in the embodiment of the disclosure, the water guide channel 10 may be provided on the outer wall of the side wall of the inner drum 103, and the water guide channel 10 is arranged protruding from the outer wall of the side wall of the inner drum 103, so that the water guide channel 10 is outside the inner drum. The water guide channel 10 extends along the structure line of the side wall of the inner drum 103, the side close to the inner drum opening 101 of the water guide channel 10 is sealed, and the side close to the inner drum bottom 102 is open. The side wall of the inner drum 103 is provided with a hole 6 communicating with the water guide channel 10, and the hole 6 is located at the middle of the inner drum 1 or close to the inner drum opening 101. There is a certain gap between the side of the water guide channel 10 away from the inner drum 1 and the annular flange 14 of the water collection disk 7, so as to ensure that the water guide channel 10 will not interfere with the water collection disk 7 during the rotation of the inner drum 1.

[0037] As shown in FIG 2, in the embodiment of the disclosure, the water guide channel 10 may be provided on the inner wall of the side wall of the inner drum 103, and the water guide channel 10 is arranged protruding from the inner wall of the side wall of the inner drum 103, so that the water guide channel 10 is inside the inner drum. The water guide channel 10 extends along the structure line of the side wall of the inner drum 103, and the side close to the inner drum opening 101 of the water guide channel 10 is sealed, and the side close to the inner drum bottom 102 is provided with a water outlet passing through the inner drum bottom 102. The side wall of the inner drum 103 is provided with the hole 6 communicating with the water guide channel 10, and the hole 6 is located at the middle of the inner drum 1 or close to the inner drum opening 101. The water outlet of the water guide channel 10 is located at the outer periphery of the inner drum bottom 102 and is arranged opposite to the disc-shaped structure of the water collection disk 7 to ensure that the washing drainage water jetted from the water outlet is blocked by the disc-shaped structure and flows downward.

[0038] In the embodiment of the disclosure, it is also possible to use the wall thickness of the side wall of the inner drum 103 to provide the water guide channel 10 inside the side wall of the inner drum 103, and it can also achieve the purpose of draining water from the hole 6 of the inner drum to flow into the water collection disk 7 along the water guide channel 10.

[0039] In the embodiment of the disclosure, the water guide channel 10 extends along the structural line of the side wall of the inner drum, the inner wall of the water guide channel 10 away from the axis of the inner drum 1 is inclined, and the inclined surface is arranged obliquely away from the inner drum 1 side along the water flow direction of the water guide channel 10, so that the valve core 91 is acted on by the centrifugal force of the rotating inner drum 1 to move along the inclined surface in the direction of the water outlet of the water guide channel 10.

[0040] In the embodiment of the disclosure, the radial width of the water guide channel 10 is gradually increased along the water flow direction, so that after the valve core 91 is moved toward the water outlet by the centrifugal force, a gap is constituted between the outer periphery of the valve core 91 and the inner wall of the water guide channel 10 which the water flow passes, so that the water guide channel 10 is opened for draining. Preferably, when the valve core 91 is held in the initial position by the action of the elastic member 92, at least one cross section of the valve core 91 is correspondingly in contact with the inner wall of the water guide channel 10 to block the water guide channel 10.

[0041] In the embodiment of the disclosure, the side of the water guide channel 10 away from the axis of the inner drum 1 is an inclined surface that gradually inclines away from the axis of the inner drum from the hole 6 toward the water collection disk 7, and to ensure that the drainage water flows into the water collection disk 7 along the inclined surface of the water guide channel 10.

[0042] In the embodiment of the disclosure, the water guide channel 10 is arranged at the outer wall of the side wall of the inner drum 103. The outer wall of the side wall of the inner drum 103 has extension ribs extending outward, and the extension ribs extend parallel to the axis of the inner drum 1, and the left and right sides of the extension ribs are respectively sealed and connected with the side wall of the inner drum 103, the end of the extension ribs close to the inner drum opening 101 is in sealed connection with the side wall of the inner drum 103, and the end close to the inner drum bottom 102 is spaced apart from the side wall of the inner drum 103, so that the extension ribs and the side wall of the inner drum 103 jointly enclose the water guide channel 10.

[0043] In the embodiment of the disclosure, the inner wall surface of the water guide channel 10 on the side away from the axis of the inner drum 1 is an inclined surface that gradually inclines downward from the inner drum opening 101 to the inner drum bottom 102, and to guide the washing water flowing into the water guide channel 10 to flow along the inclined surface of the water outlet end of the water guide channel 10 under the action

of centrifugal force.

[0044] Similarly, when the water guide channel 10 is at the inner wall surface of the side wall of the inner drum 103, the inner wall of the side wall of the inner drum 103 has extension ribs extending inwardly, and the extension ribs extend parallel to the axis of the inner drum 1, the left and right sides of the extension ribs are respectively sealed and connected with the side wall of the inner drum 103, the end of the extension ribs close to the inner drum opening 101 is in sealed connection with the side wall of the inner drum 103, and the end close to the inner drum bottom 102 is spaced apart from the side wall of the inner drum 103, so that the extension ribs and the side wall of the inner drum 103 jointly enclose the water guide channel 10. And the inner drum bottom 102 is provided with through holes arranged opposite to the above interval, to ensure that the washing water in the water guide channel 10 can be discharged smoothly.

[0045] In the embodiment of the disclosure, the valve core 91 is installed in the water guide channel 10, the downstream side of the valve core 91 is connected with an elastic member 92 extending in the direction of water flow, and the other end of the elastic member 92 is fixedly connected with the water guide channel 10 and/or the inner drum 1. Preferably, the elastic member 92 is a spring, and the spring extends along the axis of the water guide channel 10; one end of the spring is directly or indirectly fixedly connected to the inner wall of the water guide channel 10 through the bracket, and the other end is fixedly connected to the valve core 91, in order to open the water guide channel 10 after the valve core 91 is subjected to centrifugal force.

[0046] In the embodiment of the disclosure, there is a gap between the elastic member 92 and the inner wall of the water guide channel 10 to ensure the flowing of water, in order to ensure that the valve core is moved by centrifugal force to open the water guide channel 10, the water flows along the water guide channel, passes through the gap of the elastic member, and flows out from the water outlet end.

[0047] In the embodiment of the disclosure, the first side of the valve core 91 corresponds to the outer wall surface of the side wall of the inner drum 101, and the second side of the valve core 91 is in close contact with the side of the water guide channel 10 away from the inner drum. Thereby, the side of the valve core facing the axis of the inner drum is flush with the side wall of the inner drum. After the valve core correspondingly blocks the water guide channel, the first side is in close contact with the outer wall of the side wall of the inner drum to form a surface contact with better sealing performance, thereby improving the sealing performance of the centrifugal valve when blocking the water guide channel.

[0048] In the embodiment of the disclosure, in order to improve the smoothness of the movement of the valve core 91, the following settings can be made: the first side of the valve core 91 and the side wall of the inner drum 101 are parallel planes; and the second side of the valve core 91 and the side of the water guide channel 10 away from the inner drum have the same slope and parallel slopes. Therefore, when the valve core of the centrifugal valve is acted on by the centrifugal force of the inner drum rotation, the valve core slides smoothly along the second side where it meets the inner wall of the water guide channel. Since the second side of the valve core is parallel to the inner wall surface of the water guide channel, friction is reduced during the sliding process of the valve core and provides a guiding effect for the movement of the valve core.

[0049] In the embodiment of the disclosure, the side far away from the axis of the inner drum 1 can be set as a part, or a plurality of parts, or all of which are inclined planes that gradually incline away from the axis of the inner drum from the hole 6 to the water collection disk 7, and it can also achieve the purpose of smoothly draining the water flowing into the water guide channel.

[0050] In the embodiment of the disclosure, the above-mentioned centrifugal valve 9 is installed in each water guide channel 10 of the inner drum 1 in one-to-one correspondence, after the rotational speed of the inner drum 1 reaches the set value, the valve core 91 that controls each centrifugal valve 9 is acted by the rotating centrifugal force of the inner drum 1 to open the water guide channel 10.

[0051] In the embodiment of the disclosure, a water collection disk 7 is provided outside the inner drum 1 of the washing machine, and the water collection disk 7 is provided at one end of the inner drum 1. Preferably, the water collection disk 7 is arranged at the inner drum bottom 102.

[0052] In the embodiment of the disclosure, the water collection disk 7 includes a disc-shaped structure 13 covering the end of the inner drum, and the outer circumference of the disc-shaped structure 13 exceeds the outer circumference of the inner drum bottom 102; the outer circumference of the disc-shaped structure 13 is provided with an annular flange 14 extending to the other end of the inner drum, the annular flange 14 is at least partially overlapped with the side wall of the inner drum 103, and the gap between the inner circumference of the annular flange 14 and the outer wall of the side wall of the inner drum 103. As a result, the disc-shaped structure 13 and the annular flange 14 of the water collection disk 7 form a cavity that is opened toward the inner drum 1 and is used for the inner drum 1 to flow from the hole 6 to contain the water.

[0053] In the embodiment of the disclosure, the water collection disk 7 directly constitutes the inner drum support 3, the upper part of the water collection disk 7 is respectively connected to the washing machine shell 2 via the shock-absorbing suspension spring and the lower part through the shock-absorbing support rod, in order to install the water collection disk 7 in the washing machine shell 2 capable of generating vibration displacement. In this embodiment, the water collection disk 7 is

coaxially installed on the inner drum bottom 102, and a drive motor 5 is installed on the side of the water collection disk 7 away from the inner drum, the inner drum shaft 21 passes through the water collection disk 7, and one end is respectively coaxially connected with the inner drum bottom 102, and the other end is directly connected to the drive motor 5, or is connected to the drive motor 5 through a reduction clutch.

[0054] Preferably, in order to improve the washing efficiency of the washing machine, an auxiliary stirring device, such as a wave wheel, a stirring column, etc., can also be installed in the inner drum 1; the drive shaft of the auxiliary stirring device passes through the inner drum bottom 102, and then passes through the water collection disk 7 and is directly connected to the motor, or is connected to the drive motor 5 through the deceleration clutch.

[0055] In the embodiment of the disclosure, the water collection disk 7 is connected to the drain pipe 11, and the drain pipe 11 is provided with a control device 12 for controlling the water flow in the pipeline. The control device 12 may be a drain pump for draining the upper drain washing machine or a drain valve for draining the lower drain washing machine. Preferably, the lowest part of the annular flange 14 of the water collection disk 7 is connected with the drain pipe 11, in order to ensure that all the water flowing into the water collection disk 7 can flow out from the drain pipe 11.

[0056] At the same time, there is a certain gap between the inner drum bottom 102 and the disc-shaped structure 13 of the water collection disk 7, so that the drainage water flowing from the inner drum 1 into the water collection disk 7 can flow down along the gap, thereby ensuring smooth drainage.

[0057] In the embodiment of the disclosure, the end of the annular flange 14 of the water collection disk 7 is provided with a circle of inner flange 15 extending in the axial direction of the inner drum 1, and the inner flange 15 is in contact with or close to the outer wall surface of the side wall of the inner drum 103 to ensure the sealing of the chamber enclosed by the water collection disk 7, thereby avoiding the problem of water flowing into the water collection disk 7 from flowing out of the open opening.

[0058] In the embodiment of the disclosure, the water guide channel 10 can be provided at the outer wall surface of the side wall of the inner drum 103, the water guide channel 10 is at least partially arranged to coincide with the annular flange 14 of the water collection disk 7 in the vertical direction, so that the water outlet of the water guide channel 10 extends into the water collection disk 7. The annular flange 14 of the water collection disk 7 is provided with an inner flange extending in the radial direction of the inner drum 1 and in the axial direction of the inner drum 1 on the side close to the inner drum opening 101, the extension end of the inner flange 15 and the side of the water guide channel 10 away from the inner drum 1 are close to, or arranged in close contact with each other, to ensure that the water flowing into the water collection disk 7 will not flow out from the side of the water collection disk 7 near the inner drum opening 101.

[0059] In the embodiment of the disclosure, the water guide channel 10 can also be arranged at the inner side of the side wall of the inner drum 103 or inside the side wall of the inner drum 103, the annular flange 14 of the water collection disk 7 is provided with an inner flange 15 near the end of the inner drum opening 101 side, and the extension end of the inner flange 15 is close to or in close contact with the outer wall of the side wall of the inner drum 103, and it can also ensure that the water flowing into the water collection disk 7 will not flow out from the water collection disk 7 near the opening side of the inner drum.

[0060] In order to further improve the tightness of the water collection disk 7, a ring of dynamic seal 17 is provided between the inner flange 15 and the side wall of the inner drum 103 of the inner drum, to seal the junction between the inner flange 15 and the side wall of the inner drum 103, and in order to realize the sealing treatment of the chamber enclosed by the water collection disk 7, it is further ensured that the water flowing into the water collection disk 7 and will not leak.

[0061] In the embodiment of the disclosure, the inner drum shaft 21 passes through the water collection disk 7, and the penetrating end of the inner drum shaft 21 is directly connected to the drive motor or via a transmission device. The inner drum shaft 2 is composed of a sleeve with a hollow inside, and the inner hollow part forms a channel communicating with the inside of the inner drum 1; one end of the inner drum shaft 21 passing through the water collection disk 7 communicates with the water intake structure of the washing machine, and make the washing machine water enter the inner drum 1 through the flow channel formed by the hollow part of the inner drum shaft 21.

[0062] In the embodiment of the disclosure, a drive motor 5 composed of a direct drive motor is installed on the water collection disk 7; the direct drive motor is coaxially arranged with the inner drum 1. The direct drive motor includes a rotor and a stator that are coaxially arranged, and both the rotor and the stator are arranged coaxially with the inner drum 1, to ensure that the center of gravity of the direct drive motor is on the axis of rotation of the inner drum 1, thereby ensuring the stability of the washing machine during operation. Or, a motor connected to the transmission device is installed on the water collection disk 7, and the transmission device can be any existing transmission structure such as pulleys, gear sets, etc.

[0063] The above description is intended to illustrate some practical embodiments of the present invention but is not intended to limit the invention in any way.

Claims

1. A washing machine, comprising:

an inner drum (1) being
a closed container during washing after an opening is fastened by a lid (4);
the inner drum (1) is provided with at least a hole (6), and
a centrifugal valve (9);
wherein
the inner drum (1) is provided with a water guide channel (10) where water drained from the hole (6) can be led to a water collection disk (7);
the water guide channel (10) extends at least partially in a direction deviating from an axis of rotation of the inner drum (1) and has an inclined part inclined relative to the axis of rotation of the inner drum (1);
the water guide channel (10) is provided with the centrifugal valve (9) for controlling on and off of the water guide channel (10);
the centrifugal valve (9) is installed at the inclined part of the water guide channel (10);
the centrifugal valve (9) comprises

a valve core (91) being movably installed in the water guide channel (10), and blocking a cross-section of the water guide channel (10) correspondingly in an initial position; and
an elastic member (92) being clamped between the valve core (91) and the water guide channel (10) to limit movement of the valve core (91) and providing a force for the valve core (91) to reset to the initial position;

after the inner drum (1) rotating at a set speed, the valve core (91) of the centrifugal valve (9) is driven by centrifugal force and moves along an inner wall of the inclined part of the water guide channel (10) to open the water guide channel (10) correspondingly.

2. The washing machine according to claim 1, **characterized in that**,

the water guide channel (10) extends along a side wall of the inner drum (103);
an inner wall of the water guide channel (10) away from the axis of the inner drum (1) is an inclined surface;
and the inclined surface is arranged obliquely away from the inner drum (1) along a water flow direction of the water guide channel (10), so that the valve core (91) is acted by the centrifugal force of the inner drum (1) rotating to move along the inclined surface in the direction of a water outlet of the water guide channel (10).

3. The washing machine according to claim 2, **characterized in that**,

a radial width of the water guide channel (10) is gradually increased along the water flow direction, so that after the valve core (91) is moved toward the water outlet under the centrifugal force, a gap for the water flow passing through is formed between an outer periphery of the valve core (91) and the inner wall of the water guide channel (10), and the water guide channel (10) is opened;

4. The washing machine according to claim 3, **characterized in that** when the valve core (91) is at the initial position by the elastic member (92), at least one cross section of the valve core (91) is correspondingly in contact with the inner wall of the water guide channel (10) to block the water guide channel (10).

5. The washing machine according to claim 3 or 4, **characterized in that**,

the valve core (91) is installed in the water guide channel (10);
a downstream side of the valve core (91) is connected with the elastic member (92) extending in the water flow direction;
another end of the elastic member (92) is fixedly connected with the water guide channel (10) and/or the inner drum (1).

6. The washing machine according to claim 5, **characterized in that** the elastic member (92) is a spring.

7. The washing machine according to claim 5 or 6, **characterized in that** a gap for water flowing through is formed between the elastic member (92) and the inner wall of the water guide channel (10).

8. The washing machine according to one of claims 1 to 7, **characterized in that**, a first side of the valve core (91) is in contact with an outer wall surface of the side wall of the inner drum (103), and a second side of the valve core (91) is in contact with a side of the water guide channel (10) away from the inner drum (1).

9. The washing machine according to claim 8, **characterized in that** the first side of the valve core (91) and the side wall of the inner drum (103) are parallel planes; and the second side of the valve core (91) and the side of the water guide channel (10) away from the inner drum (1) are parallel slopes having a same slope.

10. The washing machine according to any one of claims 1 to 9, **characterized in that**,

the water collection disk (7) is arranged outside an end of the inner drum (1);

the water collection disk (7) includes a disc-shaped structure (13) covering the end of the inner drum (1), and an outer circumference of the disc-shaped structure (13) is provided with an annular flange (15) extending to another end of the inner drum (1), and a gap is formed between an inner circumference of the annular flange (15) and an outer wall of the inner drum (1);
a water outlet end of the water guide channel (10) extends into the gap between the inner circumference of the annular flange (15) and the outer wall of the inner drum (1).

11. The washing machine according to claim 10, **characterized in that** the water outlet end of the water guide channel (10) extends to the disc-shaped structure (13) of the water collection disk (7), and a gap for water flowing through is formed between the water outlet end and the disc-shaped structure (13).

12. The washing machine according to claim 10 or 11, **characterized in that**,
the annular flange (15) of the water collection disk (7) is provided with an inner flange (15) that bends and extends to the axis of rotation of the inner drum (1), and an end of the inner flange (15) is close to or in contact with the outer wall of the inner drum (1).

13. The washing machine according to claim 12, **characterized in that** a ring of dynamic seal (17) is arranged between the inner flange (15) and the outer wall of the inner drum (1) to seal a junction of the water collection disk (7) and the inner drum (1).

14. The washing machine according to claim 12 or 13, **characterized in that**,
a lowest part of the water collection disk (7) is connected to a drain pipe (11) of the washing machine;

15. The washing machine according to claim 14, **characterized in that** a lowest part of the annular flange (15) of the water collection disk (7) is connected with the drain pipe (11), and the inner flange (15) of the annular flange (15) is arranged close to the opening of the inner drum (1) relative to a connecting part of the drain pipe (11).

Patentansprüche

1. Waschmaschine, umfassend:

eine innere Trommel (1), bei der es sich um einen beim Waschen geschlossenen Behälter handelt, nachdem eine Öffnung durch einen Deckel (4) verschlossen wurde;
wobei die innere Trommel (1) mit mindestens einem Loch (6) und einem Zentrifugalventil (9) versehen ist;
wobei
die innere Trommel (1) mit einem Wasserführungskanal (10) versehen ist, durch den aus dem Loch (6) abfließendes Wasser zu einer Wassersammelscheibe (7) geleitet werden kann;
der Wasserführungskanal (10) sich zumindest teilweise in einer von einer Drehachse der inneren Trommel (1) abweichenden Richtung erstreckt und einen relativ zur Drehachse der inneren Trommel (1) geneigten Teil aufweist;
der Wasserführungskanal (10) mit dem Zentrifugalventil (9) versehen ist, um das Ein- und Ausschalten des Wasserführungskanals (10) zu steuern;
das Zentrifugalventil (9) an dem geneigten Teil des Wasserführungskanals (10) installiert ist;
das Zentrifugalventil (9) umfasst

einen Ventileinsatz (91), der beweglich in den Wasserführungskanal (10) eingebaut ist und in einer Ausgangsposition einen Querschnitt des Wasserführungskanals (10) entsprechend sperrt; und
ein elastisches Element (92), das zwischen dem Ventileinsatz (91) und dem Wasserführungskanal (10) eingeklemmt ist, um die Bewegung des Ventileinsatzes (91) zu begrenzen und eine Kraft bereitzustellen, damit der Ventileinsatz (91) in die Ausgangsposition zurückgesetzt wird;

wobei, nachdem sich die innere Trommel (1) mit einer eingestellten Geschwindigkeit dreht, der Ventileinsatz (91) des Zentrifugalventils (9) durch die Zentrifugalkraft angetrieben wird und sich entlang einer Innenwand des geneigten Teils des Wasserführungskanals (10) bewegt, um den Wasserführungskanal (10) entsprechend zu öffnen.

2. Waschmaschine nach Anspruch 1, **dadurch gekennzeichnet, dass**

sich der Wasserführungskanal (10) entlang einer Seitenwand der inneren Trommel (103) erstreckt;
eine von der Achse der inneren Trommel (1) abgewandte Innenwand des Wasserführungskanals (10) eine geneigte Fläche ist;
und die geneigte Fläche schräg weg von der inneren Trommel (1) entlang einer Wasserströmungsrichtung des Wasserführungskanals (10) angeordnet ist, so dass der Ventileinsatz (91) durch die Zentrifugalkraft der sich drehenden inneren Trommel (1) dazu gebracht wird, sich ent-

lang der geneigten Fläche in Richtung eines Wasserauslasses des Wasserführungskanals (10) zu bewegen.

3. Waschmaschine nach Anspruch 2, **dadurch gekennzeichnet, dass**
eine radiale Breite des Wasserführungskanals (10) sich entlang der Wasserströmungsrichtung allmählich vergrößert, so dass, nachdem der Ventileinsatz (91) unter der Zentrifugalkraft zum Wasserauslass hin bewegt wird, zwischen einem Außenumfang des Ventileinsatzes (91) und der Innenwand des Wasserführungskanals (10) ein Spalt für den durchfließenden Wasserstrom gebildet wird und der Wasserführungskanal (10) geöffnet wird.

4. Waschmaschine nach Anspruch 3, **dadurch gekennzeichnet, dass**, wenn sich der Ventileinsatz (91) durch das elastische Element (92) in der Ausgangsposition befindet, mindestens ein Querschnitt des Ventileinsatzes (91) entsprechend in Kontakt mit der Innenwand des Wasserführungskanals (10) steht, um den Wasserführungskanal (10) zu blockieren.

5. Waschmaschine nach Anspruch 3 oder 4, **dadurch gekennzeichnet, dass**

der Ventileinsatz (91) in den Wasserführungskanal (10) eingebaut ist;
eine stromabwärts gelegene Seite des Ventileinsatzes (91) mit dem elastischen Element (92) verbunden ist, das sich in der Wasserströmungsrichtung erstreckt;
ein anderes Ende des elastischen Elements (92) fest mit dem Wasserführungskanal (10) und/oder der inneren Trommel (1) verbunden ist.

6. Waschmaschine nach Anspruch 5, **dadurch gekennzeichnet, dass** das elastische Element (92) eine Feder ist.

7. Waschmaschine nach Anspruch 5 oder 6, **dadurch gekennzeichnet, dass** zwischen dem elastischen Element (92) und der Innenwand des Wasserführungskanals (10) ein Spalt für durchfließendes Wasser gebildet ist.

8. Waschmaschine nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet, dass**
eine erste Seite des Ventileinsatzes (91) in Kontakt mit einer Außenwandfläche der Seitenwand der inneren Trommel (103) steht, und eine zweite Seite des Ventileinsatzes (91) in Kontakt mit einer von der inneren Trommel (1) abgewandten Seite des Wasserführungskanals (10) steht.

9. Waschmaschine nach Anspruch 8, **dadurch gekennzeichnet, dass** die erste Seite des Ventileinsatzes (91) und die Seitenwand der inneren Trommel (103) parallele Ebenen sind; und die zweite Seite des Ventileinsatzes (91) und die von der inneren Trommel (1) abgewandte Seite des Wasserführungskanals (10) parallele Schrägen mit gleicher Neigung sind.

10. Waschmaschine nach einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass**

die Wassersammelscheibe (7) außerhalb eines Endes der inneren Trommel (1) angeordnet ist;
die Wassersammelscheibe (7) eine scheibenförmige Struktur (13) beinhaltet, die das Ende der inneren Trommel (1) abdeckt, und ein Außenumfang der scheibenförmigen Struktur (13) mit einem ringförmigen Flansch (15) versehen ist, der sich zu einem anderen Ende der inneren Trommel (1) erstreckt, und ein Spalt zwischen einem Innenumfang des ringförmigen Flansches (15) und einer Außenwand der inneren Trommel (1) gebildet ist;
sich ein Wasserauslassende des Wasserführungskanals (10) in den Spalt zwischen dem Innenumfang des ringförmigen Flansches (15) und der Außenwand der inneren Trommel (1) erstreckt.

11. Waschmaschine nach Anspruch 10, **dadurch gekennzeichnet, dass** sich das Wasserauslassende des Wasserführungskanals (10) bis zu der scheibenförmigen Struktur (13) der Wassersammelscheibe (7) erstreckt und zwischen dem Wasserauslassende und der scheibenförmigen Struktur (13) ein Spalt für durchfließendes Wasser gebildet ist.

12. Waschmaschine nach Anspruch 10 oder 11, **dadurch gekennzeichnet, dass** der ringförmige Flansch (15) der Wassersammelscheibe (7) mit einem inneren Flansch (15) versehen ist, der gebogen ist und sich zur Drehachse der inneren Trommel (1) erstreckt, und ein Ende des inneren Flansches (15) nahe an der Außenwand der inneren Trommel (1) oder in Kontakt mit dieser ist.

13. Waschmaschine nach Anspruch 12, **dadurch gekennzeichnet, dass** ein Ring einer dynamischen Dichtung (17) zwischen dem inneren Flansch (15) und der Außenwand der inneren Trommel (1) angeordnet ist, um eine Verbindung der Wassersammelscheibe (7) und der inneren Trommel (1) abzudichten.

14. Waschmaschine nach Anspruch 12 oder 13, **dadurch gekennzeichnet, dass** ein unterster Teil der Wassersammelscheibe (7) mit einem Ablaufrohr

(11) der Waschmaschine verbunden ist.

15. Waschmaschine nach Anspruch 14, **dadurch gekennzeichnet, dass** ein unterster Teil des ringförmigen Flansches (15) der Wassersammelscheibe (7) mit dem Ablaufrohr (11) verbunden ist und der innere Flansch (15) des ringförmigen Flansches (15) nahe der Öffnung der inneren Trommel (1) relativ zu einem Verbindungsteil des Ablaufrohrs (11) angeordnet ist.

Revendications

1. Une machine à laver, comprenant:

un tambour interne (1) étant un contenant fermé pendant le lavage après qu'une ouverture est fermée par un couvercle (4);
le tambour interne (1) est pourvu d'au moins un trou (6), et une soupape centrifuge (9);
dans laquelle
le tambour interne (1) est pourvu d'un canal de guidage d'eau (10) dans lequel l'eau évacuée du trou (6) peut être guidée vers un disque de collecte d'eau (7);
le canal de guidage d'eau (10) s'étend au moins partiellement dans une direction s'écartant d'un axe de rotation du tambour interne (1) et comporte une partie inclinée étant inclinée par rapport à l'axe de rotation du tambour interne (1);
le canal de guidage de l'eau (10) est pourvu de la soupape centrifuge (9) destinée à commander la marche et l'arrêt du canal de guidage d'eau (10);
la soupape centrifuge (9) est installée au niveau de la partie inclinée du canal de guidage d'eau (10);
la soupape centrifuge (9) comprend

un noyau de soupape (91) étant installé de manière mobile dans le canal de guidage d'eau (10), et bloquant en conséquence une section transversale du canal de guidage d'eau (10) dans une position initiale; et
un élément élastique (92) étant serré entre le noyau de soupape (91) et le canal de guidage d'eau (10) pour limiter le mouvement du noyau de soupape (91) et exerçant une force sur le noyau de soupape (91) pour revenir à la position initiale;

après rotation du tambour interne (1) à une vitesse définie, le noyau de soupape (91) de la soupape centrifugeuse (9) est entraîné par la force centrifuge et se déplace le long d'une paroi interne de la partie inclinée du canal de guidage d'eau (10) pour ouvrir le canal de guidage d'eau (10) en conséquence.

2. La machine à laver selon la revendication 1, **caractérisée en ce que**,

le canal de guidage d'eau (10) s'étend le long d'une paroi latérale du tambour interne (103);
une paroi interne du canal de guidage d'eau (10) à l'écart de l'axe du tambour interne (1) est une surface inclinée;
et la surface inclinée est disposée obliquement à l'écart du tambour interne (1) le long d'une direction d'écoulement d'eau du canal de guidage d'eau (10), de telle sorte que le noyau de soupape (91) est actionné par la force centrifuge du tambour interne (1) tournant pour se déplacer le long de la surface inclinée en direction d'une sortie d'eau du canal de guidage d'eau (10).

3. La machine à laver selon la revendication 2, **caractérisée en ce que**,
une largeur radiale du canal de guidage d'eau (10) est progressivement augmentée le long de la direction d'écoulement d'eau, de sorte qu'après que le noyau de soupape (91) est déplacé vers la sortie d'eau sous l'action de la force centrifuge, un espace permettant le passage du flux d'eau est formé entre une périphérie externe du noyau de soupape (91) et la paroi interne du canal de guidage d'eau (10), et le canal de guidage d'eau (10) est ouvert.

4. La machine à laver selon la revendication 3, **caractérisée en ce que** lorsque le noyau de soupape (91) est à la position initiale au moyen de l'élément élastique (92), au moins une section transversale du noyau de soupape (91) est en conséquence en contact avec la paroi interne du canal de guidage d'eau (10) pour bloquer le canal de guidage d'eau (10).

5. La machine à laver selon la revendication 3 ou 4, **caractérisée en ce que**,

le noyau de soupape (91) est installé dans le canal de guidage d'eau (10);
un côté en aval du noyau de soupape (91) est relié à l'élément élastique (92) s'étendant dans la direction d'écoulement d'eau;
une autre extrémité de l'élément élastique (92) est reliée de manière fixe au canal de guidage d'eau (10) et/ou au tambour interne (1).

6. La machine à laver selon la revendication 5, **caractérisée en ce que** l'élément élastique (92) est un ressort.

7. La machine à laver selon la revendication 5 ou 6, **caractérisée en ce qu'**un espace permettant le passage de l'eau est formé entre l'élément élastique (92)

et la paroi interne du canal de guidage d'eau (10).

8. La machine à laver selon l'une des revendications 1 à 7, **caractérisée en ce que**,
un premier côté du noyau de soupape (91) est en contact avec une surface de paroi externe de la paroi latérale du tambour interne (103), et un deuxième côté du noyau de soupape (91) est en contact avec un côté du canal de guidage d'eau (10) à l'écart du tambour interne (1).

9. La machine à laver selon la revendication 8, **caractérisée en ce que** le premier côté du noyau de soupape (91) et la paroi latérale du tambour interne (103) sont des plans parallèles; et le deuxième côté du noyau de soupape (91) et le côté du canal de guidage d'eau (10) à l'écart du tambour interne (1) sont des pentes parallèles ayant une même pente.

10. La machine à laver selon l'une quelconque des revendications 1 à 9, **caractérisée en ce que**, le disque de collecte d'eau (7) est disposé à l'extérieur d'une extrémité du tambour interne (1);

le disque de collecte d'eau (7) comprend une structure en forme de disque (13) couvrant l'extrémité du tambour interne (1), et une circonférence externe de la structure en forme de disque (13) est pourvue d'une bride annulaire (15) s'étendant jusqu'à une autre extrémité du tambour interne (1), et un espace est formé entre une circonférence interne de la bride annulaire (15) et une paroi externe du tambour interne (1); une extrémité de sortie d'eau du canal de guidage d'eau (10) s'étend dans l'espace entre la circonférence interne de la bride annulaire (15) et la paroi externe du tambour interne (1).

11. La machine à laver selon la revendication 10, **caractérisée en ce que** l'extrémité de sortie d'eau du canal de guidage d'eau (10) s'étend jusqu'à la structure en forme de disque (13) du disque de collecte d'eau (7), et un espace permettant le passage de l'eau est formé entre l'extrémité de sortie d'eau et la structure en forme de disque (13).

12. La machine à laver selon la revendication 10 ou 11, **caractérisée en ce que**, la bride annulaire (15) du disque de collecte d'eau (7) est pourvue d'une bride interne (15) qui se plie et s'étend jusqu'à l'axe de rotation du tambour interne (1), et une extrémité de la bride interne (15) est proche ou en contact avec la paroi externe du tambour interne (1).

13. La machine à laver selon la revendication 12, **caractérisée en ce qu'**un anneau de joint dynamique (17) est disposé entre la bride interne (15) et la paroi externe du tambour interne (1) pour sceller une jonction entre le disque de collecte d'eau (7) et le tambour interne (1).

14. La machine à laver selon la revendication 12 ou 13, **caractérisée en ce que**, une partie inférieure du disque de collecte d'eau (7) est raccordée à un tuyau d'évacuation (11) de la machine à laver.

15. La machine à laver selon la revendication 14, **caractérisée en ce qu'**une partie inférieure de la bride annulaire (15) du disque de collecte d'eau (7) est reliée au tuyau d'évacuation (11), et la bride interne (15) de la bride annulaire (15) est disposée proche de l'ouverture du tambour interne (1) par rapport à une partie de raccordement du tuyau d'évacuation (11).

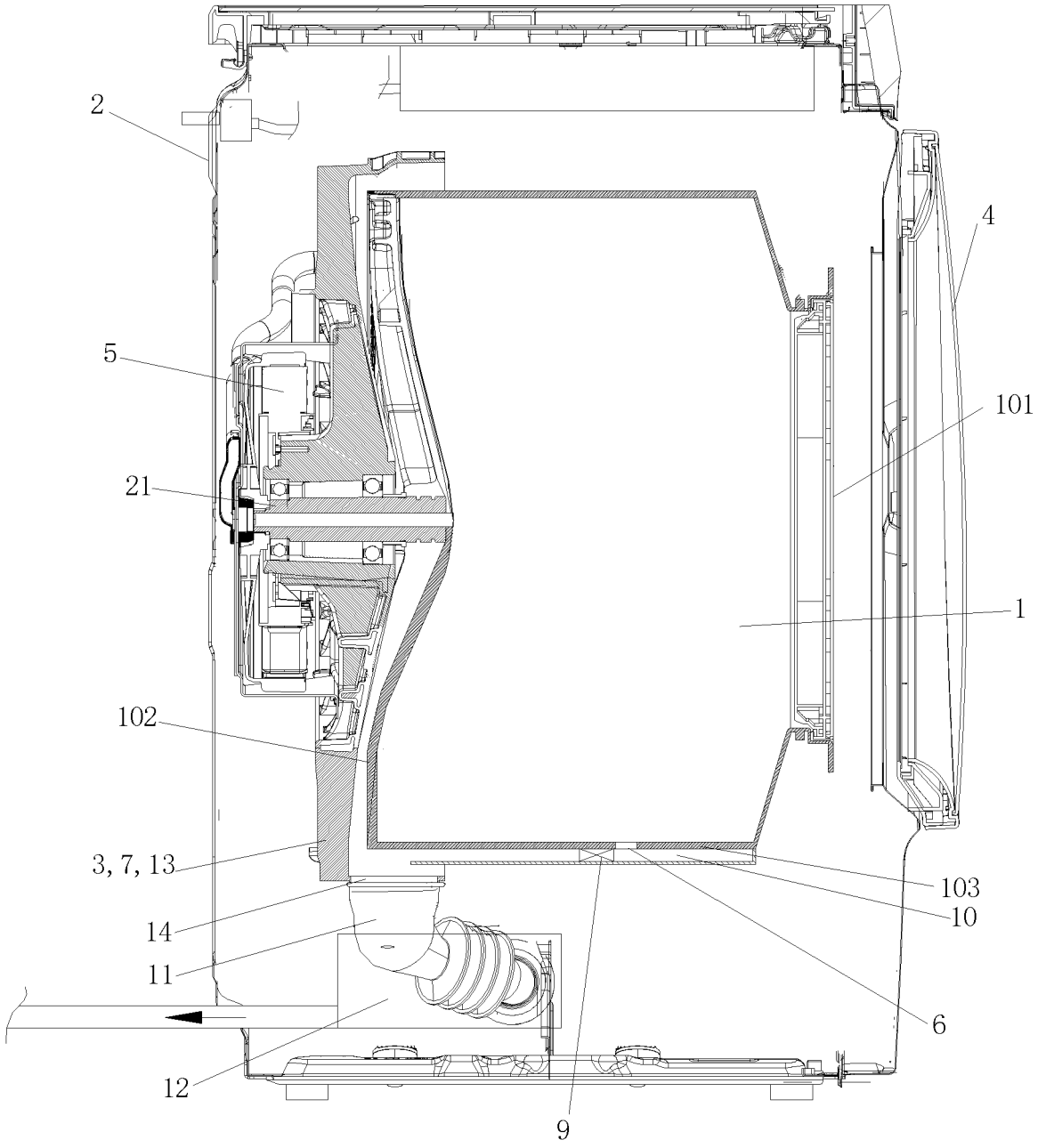

FIG. 1

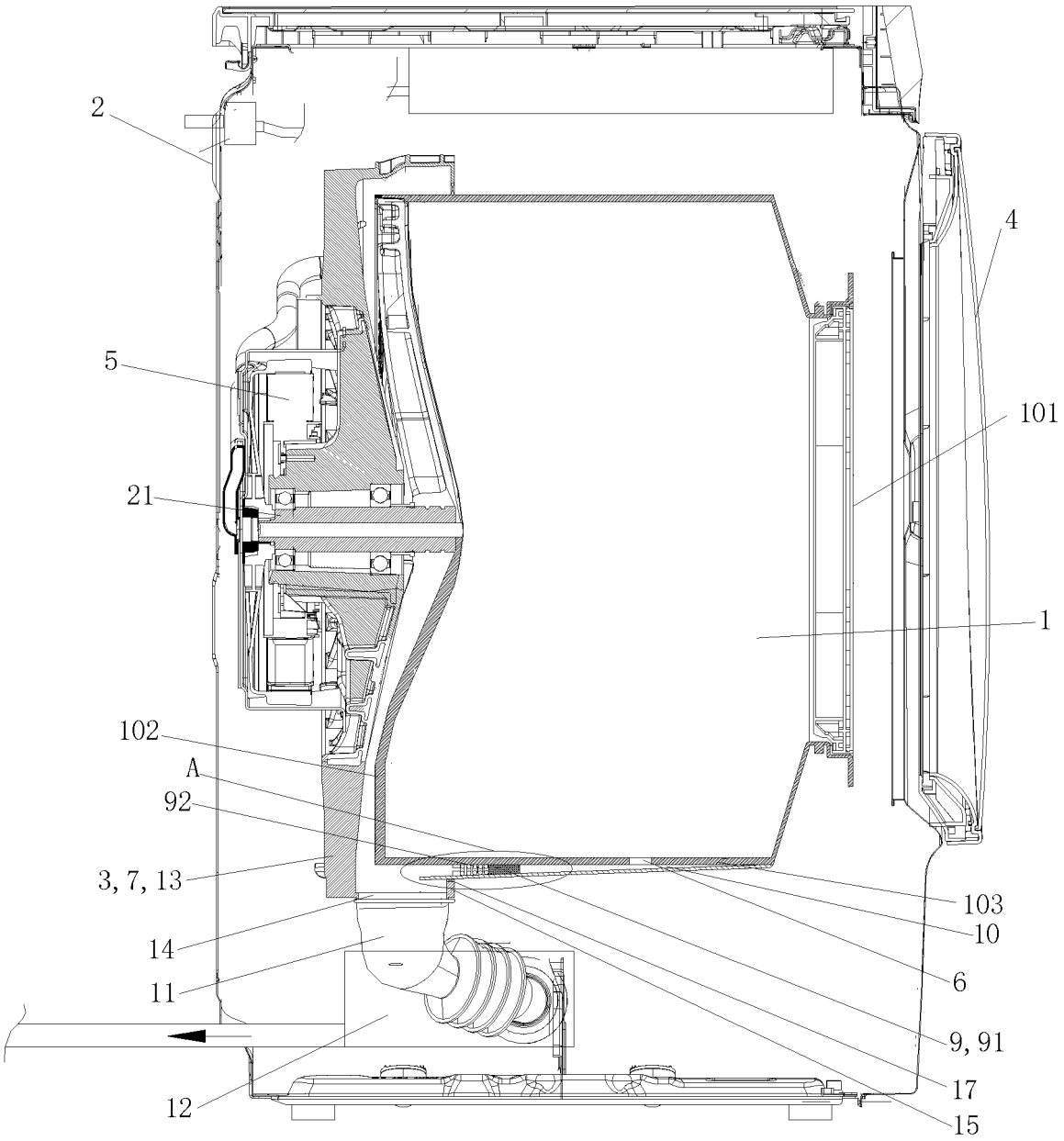

FIG. 2

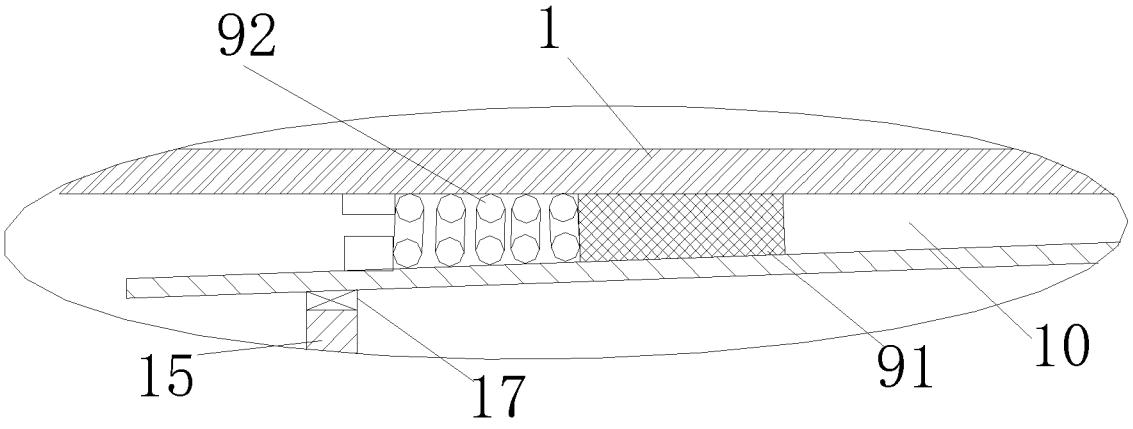

FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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

Patent documents cited in the description

- WO 2018205933 A1 **[0002]**
- WO 0204734 A1 **[0002]**
- JP H08155190 A **[0002]**