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(54) COMPREHENSIVE LINT FILTERING DEVICE AND WASHING MACHINE

(57) The present disclosure discloses a comprehensive lint filtering device and a washing machine. The filtering unit comprises a filtering cover (100) and a filter (200), wherein the filter (200) is installed on the filtering cover (100), the filter (200) is provided with a first filtering cavity, a water inlet of the first filtering cavity is arranged at the rear part of the filter (200), and a water intake channel of the first filtering cavity is arranged between the rear part of the filter (200) and the filtering cover (100); a second filtering cavity is also formed between the upper part of the filter (200) and the filtering cover, and water inlets of the second filtering cavity are arranged on two sides of the filtering cover; and a filtering part is arranged at the front part of the filter (200), and the first filtering cavity and the second filtering cavity share the filtering part. The second filtering cavity achieves lint filtering in a way of inputting water from two sides of the front part and draining water via the front part, and the first filtering cavity achieves lint filtering in a way of inputting water from the rear part of the bottom and draining water via the front part, so that the lint filtering device combines the two lint filtering ways, and a lint filtering effect is greatly enhanced.

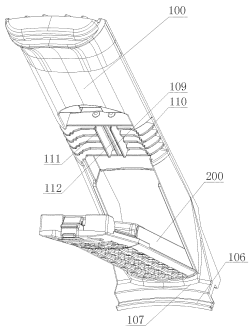

Fig. 2

EP 3 315 652 A1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of lint filtering of washing machines, and in particular relates to a comprehensive lint filtering device and a washing machine.

BACKGROUND

[0002] At present, there are usually three types of lint filters commonly used by impeller washing machines in the market: a fixed box type, a swinging mesh bag type and a fixed mesh bag type. Wherein the fixed box type is relatively poor in lint collection effect, and a washing procedure has a lint collection rate of about 60% according to measurement based on the condition that one washing machine has two lint filters; the washing procedure of the swinging mesh bag type lint filter has a lint collection rate of about 50%. However, the swinging mesh bag type lint filter is easy to catch clothes and easy to fall off. The fixed mesh bag type lint filter has substantially the same filtering effect with the fixed box type lint filter, which both have a relatively low lint collection rate. In addition, the mesh bag is prone to wear and tear and cause poor filtering effect during use, and need to be replaced in time.

[0003] According to an existing Chinese patent with an application number of 201010524447.0, entitled *Comprehensive Filtering Unit for Washing Machine.* In the comprehensive filtering unit, water inlets are formed in left and right side walls of an upper filtering cavity. Wherein, a front cover of the upper filtering cavity is a bag type filtering screen, and check valve plates are arranged on left and right sides of the front cover of the upper filtering cavity, and a vertical bar for dividing the upper filtering cavity into two parts is arranged at the middle part of the upper filtering cavity. When water flows into the filtering cavity from the water inlet on one side of the upper filtering cavity, the water bursts through the check valve plate of the water inlet and thus enters the filtering cavity, and impacts the check valve plate of the other water inlet from inside to side so as to close the water inlet. After the washing water enters the upper filtering cavity from the water inlet on one side, the vertical bar changes a direction of water, and thus the washing water flows through the filtering unit of the upper filtering cavity. However, as the impeller drives the water flow to rotate while rotating, when entering the cavity, the water flow may flow back sharply due to the fact that the water flow directly hits the vertical bar. Therefore, a part of water flows out after being filtered by the filtering unit of the filtering cavity, and a part of water flow may form a vortex in the cavity and flows out from the water inlet on the side, or directly rebound to flow out from the water inlet on the side due to that the check valve plate of the water inlet on this side has no time to close. Meanwhile a part of lint is rushed out, and thus a lint collection rate is not high.

[0004] Therefore, the existing washing machine lint filtering devices are single in lint filtering way, and cannot achieve good lint filtering and collection effect.

[0005] In view of this, the present disclosure is provided.

SUMMARY

[0006] In order to solve the above problem, the present disclosure provides a comprehensive lint filtering device which adopts a technical scheme of combining two filtering ways to achieve a good filtering effect. Specifically, the following technical scheme is adopted:

A comprehensive lint filtering device comprises a filter, wherein the filter comprises a second filtering cavity and a first filtering cavity which are independently arranged at upper and lower position. The first filtering cavity is provided with a first water inlet, and the second filtering cavity is provided with a second water inlet; and the first water inlet and the second water inlet are arranged on one same side of the filter, a filtering part is arranged on the other side of the filter, and the first filtering cavity and the second filtering cavity share the filtering part.

[0007] Further, the filter comprises a front cover of filter and a rear cover of filter connected therewith, the first filtering cavity and the second filtering cavity are respectively formed between the front cover of filter and the rear cover of filter. The first water inlet and the second water inlet are formed in the rear cover of filter; and the first water inlet is arranged at the upper part of the first filtering cavity, and the second water inlet is arranged at a centre position of the second filtering cavity.

[0008] Preferably, a flange structure (210) is arranged on the rear cover of filter (206) corresponding to the second filtering cavity, and a gap for inputting water is formed between the flange structure (210) and the front cover of filter (203).

[0009] Further, the filtering part of the filter comprises a first filtering part at the lower part and a second filtering part at the upper part; the rear cover of filter comprises a first rear cover and a second rear cover.

[0010] The first filtering cavity is formed between the first filtering part and the first rear cover, and the second filtering cavity is formed between the second filtering part and the second rear cover; and a distance between the first rear cover and the first filtering part is larger than that between the second rear cover and the second filtering part.

[0011] Further, a lint collection bin used for colleting filtered lint of the second filtering cavity is also formed between the front cover of filter and the rear cover of filter, and communicates with the second filtering cavity. The lint collection bin is arranged between the second filtering cavity and the first filtering cavity.

[0012] Further, the rear cover of filter also comprises a third rear cover which is positioned between the first rear cover and the second rear cover, and the lint collec-

tion bin is formed between the third rear cover and the second filtering part. Preferably, a distance between the third rear cover and the second filtering part is larger than that between the first rear cover and the first filtering part.

[0013] Further, the comprehensive lint filtering device also comprises a filtering cover, wherein the filter is installed on the filtering cover; a water intake channel of the first filtering cavity is arranged between the first water inlet side of the first filtering cavity and the filtering cover, and a water inlet of the water intake channel is positioned at the lower part of the first filtering cavity.

[0014] A flow guiding part for guiding a water flow into the second filtering cavity is arranged on the filtering cover corresponding to the second filtering cavity, and water inlets of flow guiding part are arranged on two sides of the filtering cover.

[0015] Further, a water guiding baffle which swings along water intake directions of the second filtering cavity is arranged on the flow guiding part, and the water guiding baffle is used for guiding water flow from the water inlet of flow guiding part on two sides into the second filtering cavity.

[0016] Preferably, the water guiding baffle comprises a first water guiding baffle and a second water guiding baffle which are arranged to be parallel to the water inlets on two sides of the second filtering cavity, and a limiting stop bar used for limiting swing limiting positions of the first water guiding baffle and the second water guiding baffle is arranged between the first water guiding baffle and the second water guiding baffle.

[0017] Further, the water guiding baffle is installed on the filtering cover via a rotation shaft structure, a series of guiding bars are arranged on two sides of the water guiding baffle along a direction that the water flows flow into the second filtering cavity. The maximum swinging angle of the water guiding baffle is limited to 90 degrees by the end parts of the inner sides of the guiding bars, and notches for providing space for free rotation of the rotation shaft structures are formed on the inner sides of the guiding bars.

[0018] The disclosure also provides a washing machine with the abovementioned lint filtering device. The washing machine comprises an inner tub and an impeller arranged at the bottom of the inner tub, wherein the lint filtering device is installed on the side wall of the inner part of the inner tub, and the lower end of the filtering cover of the lint filter device is installed on the side wall of the bottom of the inner tub.

[0019] Further, the filtering cover is provided with a first fixing end and a second fixing end at the lower end, the second fixing end is the lower end part of the filtering cover, and the second fixing end is installed on the side wall of the bottom of the inner tub and is in contact with the impeller.

[0020] The filtering cover stretches towards the inner side of the inner tub to form the first fixing end, the first fixing end is arranged at the upper part of the second fixing end and forms a gap, and the gap serves as the water inlet of the water intake channel of the first filtering cavity; and the lower end of the filter is installed on the first fixing end.

[0021] The lint filtering device provided by the present disclosure is provided with two independently arranged lint filter cavities, i.e. the first filtering cavity and the second filtering cavity. The second filtering cavity achieves lint filtering in a way of inputting water from two sides of the front part and draining water via the front part, and the first filtering cavity achieves lint filtering in a way of inputting water from the rear part and draining water via the front part. The lint filtering device provided by the present disclosure combines the two lint filtering ways, and a lint filtering effect is greatly enhanced.

[0022] Therefore, the lint filtering device provided by the present disclosure has technical effects as follows:

1. Water enters the second filtering cavity from two sides of the front part, washing water in the washing machine rotates with forward and reverse rotation of the impeller during a washing process, the washing water enters the first filtering cavity from two sides during the forward and reverse rotation, and flows out from the front part of the filter, and thus lint is filtered and collected while passing through the filter. Therefore, the second filtering cavity is simple in water intake way and high in filtering efficiency.
2. Water enters the first filtering cavity from the rear part of the bottom, mainly under the action of the impeller of the washing machine, the washing water is pressed into the water intake channel of the lint filtering device from the lower part, enters the first filtering cavity from the water inlet at the rear part, and is drained out via the front part of the filter, and thus the lint is filtered and collected while passing through the filter. As the first filtering cavity is relatively closed, the lint filtering effect is better; and the water inlet is arranged on the upper side of the back, so that the lint can be prevented from flowing back.
3. The two lint filtering cavities of the lint filtering device provided by the present disclosure have different water intake ways, and can work independently, so that filtering efficiency is enhanced.
4. The lint filtering device provided by the present disclosure adopts different water intake ways for different states of the water flow in the tub of the washing machine when in washing, so that water inflow is increased, and the lint filtering effect is enhanced.

[0023] According to the washing machine provided by the present disclosure, the lower end of the lint filtering device is installed at the bottom of the inner tub, so that the lint filtering cavity covers at least 2/3 height of the inner tub of the washing machine, and thus the water inflow of the lint filter device is greatly increased, and the lint filtering effect is significantly enhanced.

BRIEF DESCRIPTION OF DRAWINGS

[0024]

Fig. 1 is a three-dimensional schematic diagram of a lint filtering device in a closed state provided by the present disclosure;
Fig. 2 is a three-dimensional schematic diagram of a lint filtering device in an open state provided by the present disclosure;
Fig. 3 is a three-dimensional schematic diagram of a filter in an open state from back provided by the present disclosure;
Fig. 4 is a schematic diagram of a vertical section of a filter provided by the present disclosure;
Fig. 5 is a front schematic diagram of a filter provided by the present disclosure;
Fig. 6 is a schematic diagram of a transverse section of a filter provided by the present disclosure;
Fig. 7 is a schematic diagram of a transverse section of a filter provided by Embodiment II of the present disclosure;
Fig. 8 is a three-dimensional schematic diagram of a washing machine provided by the present disclosure; and
Fig. 9 is a section view of a washing machine provided by the present disclosure.

[0025] Reference signs in the drawings: 100- filtering cover; 101-fixing part, 102-installation part; 103-water inlet of flow guiding part ; 106-second fixing end; 107-first fixing end; 109-limiting stop bar; 110-guiding bar; 111-first water guiding baffle; 112-second water guiding baffle; 113-first rotation shaft structure; 114-second rotation shaft structure; 115-first notch; 116-second notch; 200-filter; 201-second filtering part; 202-first filtering part; 203-front cover of filter; 204-first water inlet; 205-backflow prevention structure; 206-rear cover of filter; 207-snap-in connector; 208-water outlet; 209-second water inlet; 210-flange structure; 211-second rear cover; 212-third rear cover; 213-first rear cover; 300-impeller; 400-inner tub; 401-inner tub bottom; and 500-balancing ring.

DETAILED DESCRIPTION

[0026] A comprehensive lint filtering device and a washing machine provided by the present disclosure are described in detail below in conjunction with the drawings:

As shown in Fig. 1, Fig. 2, Fig. 3, Fig. 4 and Fig. 5, the present disclosure provides a comprehensive lint filtering device comprising a filter 200, wherein the filter 200 comprises a second filtering cavity and a first filtering cavity which are independently arranged at upper and lower positions. The first filtering cavity is provided with a first water inlet 204, and a second filtering cavity is provided with a second water inlet 209; and the first water inlet 204 and the second water inlet 209 are arranged on one same side of the filter 200. A filtering part is arranged on the other side of the filter 200, and the first filtering cavity and the second filtering cavity share the filtering part.

[0027] The filter 200 of the lint filtering device provided by the present disclosure is provided with two independently arranged lint filtering cavities, i.e. the first filtering cavity and the second filtering cavity. The second filtering cavity achieves lint filtering in a way of inputting water from two sides of the front part and draining water via the front part, and the first filtering cavity achieves lint filtering in a way of inputting water from the rear part and draining water via the front part. And the lint filtering device provided by the present disclosure combines the two lint filtering ways, and a lint filtering effect is greatly enhanced.

[0028] Specifically, the filter 200 in the present disclosure comprises a front cover 203 of filter and a rear cover 206 of filter connected with the front cover 203 of filter. The first filtering cavity and the second filtering cavity are formed between the front cover 203 of filter and the rear cover 206 of filter respectively. The first water inlet 204 and the second water inlet 209 are formed in the rear cover 206 of filter respectively; and the first water inlet 204 is arranged at the upper part of the first filtering cavity, and the second water inlet 209 is arranged at a centre position of the second filtering cavity.

[0029] The front cover 203 of filter and the rear cover 206 of filter are combined to form a box structure, and the first filtering cavity is of the box structure. As the box structure is relatively closed, washing water entering the first filtering cavity can only be drained out via the front cover 203 of filter, and thus the filtering effect is good. In addition, the first filtering cavity of the box structure is more convenient to collect lint and prevent the lint from flowing back.

[0030] The first water inlet 204, which is a water inlet of the first filtering cavity, is arranged at the upper part of the rear cover 206 of filter of the lint filtering device; the first water inlet 204 is arranged at the upper part of the rear cover 206 of filter, so that the washing water enters the first filtering cavity from the upper part, so as to be more beneficial to filtering lint. In addition, a water flow enters from the first water inlet 204 at the upper part, so as to be also more beneficial to collecting lint and preventing lint from flowing back.

[0031] The first filtering cavity and the second filtering cavity of the lint filtering device share the filtering part 200, so that the filtering part of the filter 200 comprises a first filtering part 202 at the lower part and the second filtering part 201 at the upper part. The rear cover 206 of filter comprises a first rear cover 213 and a second rear cover 211; a first filtering cavity is formed between the first filtering part 202 and the first rear cover 213, and a second filtering cavity is formed between the second filtering part 201 and the second rear cover 211.

[0032] The first filtering cavity and the second filtering cavity of the lint filtering device in the present disclosure

are different in water intake way, and also different in lint collection way. The first filtering cavity is of the box structure, and mainly intakes water from the rear part, so that the volume of the first filtering cavity is set to be larger, to achieve the main function of filtering and collecting the lint. However, water mainly enters the second filtering cavity from the two sides, so that water intake of the second filtering cavity or installation of the second filtering cavity on the inner tub of the washing machine may be hindered if the second filtering cavity is too thick. Therefore, in the present disclosure, a distance between the first rear cover 213 and the first filtering part 202 is larger than that between the second rear cover 211 and the second filtering part 201.

[0033] The function of the filtering part is to let the water flow entering the inner filtering cavity of the filter flow out while filtering the liner debris in the water flow to stay inside the lint filter. Therefore, the filtering part of the present disclosure comprises a filter frame and a filtering screen, wherein the filter frame is set to be a frame structure with a plurality of water openings, and the filtering screen is attached to the frame structure. In addition, a water outlet 208 used for draining the water flow is formed in the front cover 203 of filter.

[0034] As another preferred embodiment, the filtering part is formed as small through hole in the front cover 203 of filter.

[0035] As a preferred embodiment of the present disclosure, a lint collection bin used for colleting the filtered lint of the second filtering cavity is also formed between the front cover 203 of filter and the rear cover 206 of filter, and the lint collection bin communicates with the second filtering cavity. The lint collection bin is arranged between the second filtering cavity and the first filtering cavity. This is mainly due to the fact that the second filtering cavity has a relatively small volume and can collect less lint, and thus the lint collection effect of the second filtering cavity is affected when too much lint is collected. The lint collection ability of the first filtering cavity is relatively strong, and the first filtering cavity cannot be fully utilized as the filter 200 is frequently disassembled for clearing the lint. So that the lint collection effect of the second filtering cavity can be enhanced via the arrangement of the lint collection bin of the second filtering cavity.

[0036] Specifically, the rear cover 206 of filter also comprises a third rear cover 212 positioned between the first rear cover 213 and the second rear cover 211, and the lint collection bin is formed between the third rear cover 212 and the second filtering part 201. Preferably, a distance between the third rear cover 212 and the second filtering part 201 is larger than that between the first rear cover 213 and the first filtering part 202.

[0037] The comprehensive lint filtering device provided by the present disclosure also comprises a filtering cover 100, wherein the filter 200 is installed on the filtering cover 100. A water intake channel of the first filtering cavity is arranged between the first water inlet side of the first filtering cavity and the filtering cover 100, and a water inlet of the water intake channel is positioned at the lower part of the first filtering cavity. A flow guiding part for guiding a water flow into the second filtering cavity is arranged on the filtering cover 100 corresponding to the second filtering cavity, and water inlet s of flow guiding part 103 are arranged on two sides of the filtering cover 100.

[0038] After the filter 200 of the present disclosure is installed on the filtering cover 100, the lint filtering effect of the filter 200 is improved through different water intake ways of the first filtering cavity and the second filtering cavity of the filter 200.

[0039] A water guiding baffle which swings along water intake directions of the second filtering cavity are arranged on the flow guiding part of the lint filtering device, and the water guiding baffle is used for guiding the water flows at the water inlets on two sides of the second filtering cavity into the filtering part of the filter 200, so as to achieve lint filtering of the second filtering cavity. The water guiding baffle of the present disclosure achieves guidance on washing water entering the filtering cavity, so that the water flow entering the second filtering cavity can pass through the filter better, and thus the lint filtering effect can be significantly improved.

[0040] As a preferred embodiment of the present disclosure, the water guiding baffle comprises a first water guiding baffle 111 and a second water guiding baffle 112 which are arranged to be parallel to the water inlets on two sides of the second filtering cavity, and the first water guiding baffle 111 and the second water guiding baffle 112 are installed on the filtering cover 100 via rotation shaft structures. A limiting stop bar 109 used for limiting swing limiting positions of the first water guiding baffle 111 and the second water guiding baffle 112 is arranged between the first water guiding baffle 111 and the second water guiding baffle 112.

[0041] Specifically, the limiting stop bar 109 is arranged on the bottom wall of the flow guiding part of the filtering cover 100, and the first water guiding baffle 111 and the second water guiding baffle 112 are arranged on two sides of the limiting stop bar 109. When the washing water enters from the water inlet of flow guiding part 103 which is on the first water guiding baffle 111 side, the first water guiding baffle 111 accordingly swings to the limiting stop bar 109, and the washing water enters the second filtering cavity under the flow guiding action of the first water guiding baffle 111 and then is drained out from the second filtering part 201 of the second filtering cavity. When the washing water enters from the water inlet of flow guiding part 103 which is on the second water guiding baffle 111 side, the working mode is the same.

[0042] Due to the first water guiding baffle 111 and the second water guiding baffle 112 arranged in the second filtering cavity of the present disclosure, the entered washing water can be better guided, so that the washing water can be drained out from the second filtering part 201 as much as possible, and the filtering effect of the second filtering cavity is enhanced. Preferably, swing angles of the first water guiding baffle 111 and the second

water guiding baffle 112 are less than 150 degrees.

[0043] As a preferred embodiment of the present disclosure, the limiting stop bar 109 is of a triangular prism structure, and provided with two slopes corresponding to the first water guiding baffle 111 and the second water guiding baffle 112, respectively. When the first water guiding baffle 111 swings to the limiting stop bar 109, the first water guiding baffle 111 is fit with the slope on one side of the limiting stop bar 109 so as to be limited, and the washing water is guided to the second filtering part 201 via the slope for draining out. When the second water guiding baffle 112 swings to the limiting stop bar 109, the working mode is the same. Therefore, the limiting stop bar 109 of the present disclosure not only can perform effective limiting support on the first water guiding baffle 111 and the second water guiding baffle 112, but also can allow the first water guiding baffle 111 and the second water guiding baffle 112 to keep a relative stable and effective guiding state, and thus a flow guiding effect is enhanced.

[0044] As a preferred embodiment of the present disclosure, a series of guiding bars 110 are also arranged in the second filer cavity along the water flow direction, and the guiding bars 110 are arranged on two sides of the water guiding baffles. Preferably, the guiding bars 110 are arranged to be perpendicular to the water guiding baffles, water intake channels are formed between the guiding bars 110 on the same side of the water guiding baffle plates, water flows are guided into the second filtering cavity along the water intake channels, and a certain gap is reserved between the guiding bars 110 and the water guiding baffles.

[0045] The water inlets on two sides are made into small windows due to the arrangement of the guiding bars 110, so that clothes are better prevented from being damaged by being hooked by the lint filter during a washing process, and the certain gap is reserved between the guiding bars 100 and the water guiding baffles for ensuring normal operation of the water guiding baffles, without influencing swinging of the same.

[0046] As a preferred embodiment, a distance between the inner sides of the guiding bars 110 and the water guiding baffles is less than the height of the water guiding baffles, so that when swinging to limiting positions on two sides, the water guiding baffles are supported by the guiding bars 110 due to such arrangement, and thus the inner sides of the guiding bars 110 serve as swing limiting ends of the water guiding baffles. The guiding bars 110 simultaneously function as limiting and supporting the water guiding baffles, so that arrangement of limiting structures for the water guiding baffles is no longer needed; and the series of guiding bars 110 are symmetrically arranged on two sides of the water guiding baffles, so that more uniform support force is applied to the water guiding baffles, and the water guiding baffles are prevented from being deformed or broken due to too large local stress.

[0047] As a preferred embodiment, the guiding bars 110 are of a plate structure; the lower ends of the guiding bars 110 are fixedly connected with the bottom of the groove of the filtering cover 100, the upper ends are of a ladder-like structure, and the ladder-like structures clamp support frames on two sides of the filter 200.

[0048] As the guiding bars 110 are distributed in the waters inlet of flow guiding part 103 on two sides, and each ladder-like structure of the guiding bars 110 at least comprises one ladder having the same width with the width of water inlet of flow guiding part 103, and at least one ladder of the ladder-like structure of the guiding bars 110 is arranged on each of two sides of the water guiding baffles for clamping the filter 200.

[0049] The guiding bars 110 having the ladder-like structure of the present disclosure achieves the function of supporting the filter 200, and also achieves the function of limiting the filter 200, so that stability of the filter 200 assembled on the filtering cover is increased.

[0050] As shown in Fig.6, as one preferred embodiment of the present disclosure, a flange structure 210 is arranged on the rear cover 206 of filter corresponding to the second filtering cavity, a gap is formed between the flange structure 210 and the front cover 203 of filter, and the height D of the gap is less than or equal to 5mm. The flange structure 210 of the lint filtering device is beneficial to lint collection of the second filtering cavity, and furthest prevents the situation that the lint flows back due to too large water flow.

Embodiment I

[0051] As shown in Fig. 3, the difference between this embodiment and the abovementioned embodiments is that backflow prevention structures 205 are arranged on the inner wall of the rear cover 206 of filter, and the backflow prevention structures 205 are arranged below the first water inlet 204.

[0052] In order to achieve the lint backflow prevention function of the backflow prevention structures, and meanwhile do not influence filtering of the washing water entering the inner cavity of the lint filter, a certain gap is reserved between the backflow prevention structures 205 and the front cover 203 of filter when the front cover 203 of filter and the rear cover 206 of filter are closed. The height of the backflow prevention structures 205 is 1/10-1/2, preferably 1/4, of the distance between the front cover 203 of filter and the rear cover 206 of filter after the front cover 203 of filter and the rear cover 206 of filter are closed.

[0053] In the embodiment, the lower part of the front cover 203 of filter and the lower part of the rear cover 206 of filter are connected via a hinge shaft. There are multiple backflow prevention structures 205 in the embodiment, each backflow prevention structure 205 is independently arranged and is relatively small in size; the backflow prevention structures 205 are arranged to be close to the first water inlet 204 and distributed downwards along the first water inlet 204. Therefore, the water

flow entering from the first water inlet 204 is not influenced, and lint collection is not influenced either due to such arrangement; and the arrangement area of the backflow prevention structures 205 is less than or equal to 1/2 of the inner wall area of the rear cover 206 of filter, and the lint filter has enough space for collecting the lint can be ensured.

[0054] The backflow prevention structures 205 of the embodiment are formed by a series of bump structures arranged on the inner wall of the rear filer cover 206, and the bumps structures are arranged in a staggered manner. The bump structures are arranged in the staggered manner, so that the whole rear cover 206 of filter is limited by the bump structures in a transverse direction.

[0055] Specifically, the backflow prevention structures 205 of the embodiment are preferably fish scale bump structures, and the cross-sections of the fish scale bump are straight tooth-shaped. Each fish scale bump structure has two equivalent slope surfaces, the top of one slope surface abut that of the other one, one slope surface faces the first water inlet 204 while the other slope surface faces the bottom of the rear cover 206 of filter, and the gradient of the slope surface facing the bottom of the rear cover 206 of filter is less than that of the slope surface facing the first water inlet 204. Due to such arrangement, on one hand, the water flow entering from the first water inlet 204 steadily flows into the inner filtering cavity along the gentle slope surface, and meanwhile the lint in the water flow can also smoothly drop in; on the other hand, lint collected in the lint filter flows back to the backflow prevention structures 205 under the impact of the water flow, the slope surfaces with small gradients can serve as covers for effectively preventing the lint from continuously raising, and the lint can be effectively prevented from flowing back.

Embodiment II

[0056] In the lint filtering device provided by the abovementioned specific embodiment, in order to provide space for rotation of the rotation shaft structures, a gap of about 0.5mm is reserved between the guiding bars 110 and the rotation shaft structures, and the guiding bars 110 can only be set closest to the rotation shaft structures. Therefore, after the filter 200 is installed on the filtering cover 100, the water guiding baffles may be rotated to the parts exceeding the guiding bars 110 under the drive of rotation shaft structures, so as to be pressed by the filter 200. The phenomenon that the water guiding baffles cannot be smoothly reset occurs usually, so that the lint collection efficiency is greatly influenced, and thus user experience is influenced.

[0057] As shown in Fig. 7, in order to solve the abovementioned problem, the embodiment adopts the technical scheme as follows: the water guiding baffles are installed on the filtering cover 100 via rotation shaft structures, a series of guiding bars 110 are arranged on two sides of the water guiding baffles along directions that the water flows into the second filtering cavity; the maximum swinging angle of the water guiding baffles is limited to 90 degrees by the end parts of the inner sides of the guiding bars 110, and notches for providing space for free rotation of the rotation shaft structures are formed on the inner sides of the guiding bars 110.

[0058] Specifically, the inner sides of the guiding bars 110 on the first water guiding baffle 111 side extend inwards, so that the inner sides of the guiding bars 110 touch the first water guiding baffle when the first water guiding baffle swings to 90 degrees, and thus the first water guiding baffle 111 is prevented from continuously swinging beyond the guiding bars 110. Therefore, end parts of the guiding bars 110 interfere normal rotation of the rotation shaft structures, and thus a first notch 115 is arranged at the end parts of the inner sides of the guiding bars 110, and the first notch 115 is arranged to be corresponding to the first rotation shaft structure 113 of the first water guiding baffle 111. Similarly, the inner sides of the guiding bars 110 on the second water guiding baffle 112 side also extend inwards, a second notch 116 is arranged at the end parts of the inner sides of the guiding bars 110 on this side, and the second notch 116 is arranged to be corresponding to the second rotation shaft structure 114 of the second water guiding baffle 112.

[0059] The guiding bars 110 of the filtering cover 100 of the washing machine in the embodiment is innovatively designed to be a collision penetrating structure, and the guiding bars 110 can avoid the rotation shaft structures of the water guiding baffles, so that the water guiding baffles can only maximally rotate to 90 degrees, thus the filter 200 is prevented from pressing the water guiding baffles. Therefore, the flowing direction of the water flow in the filtering cover 100 and the filter 200 is straightened out, and the lint collection efficiency is improved.

Embodiment III

[0060] As shown in Fig. 8 and Fig. 9, the embodiment provides a washing machine with the lint filtering device provided by the abovementioned embodiments. The washing machine comprises an inner tub 400 and an impeller 300 arranged at the bottom of the inner tub 400, the lint filtering device is installed on the side wall of the inner part of the inner tub 400, and the lower end of the filtering cover 100 of the lint filtering device is installed on the side wall of the bottom of the inner tub 400.

[0061] Specifically, the filtering cover 100 is provided with a first fixing end 107 and a second fixing end 106 at the lower end, the second fixing end 106 is the lower end part of the filtering cover 100, and the second fixing end 106 is installed on the side wall of the bottom of the inner tub 400 and is in contact with the impeller 300. The filtering cover 100 stretches towards the inner side of the inner tub 400 to form the first fixing end 107, the first fixing end 107 is arranged at the upper part of the second fixing end 106 and forms a gap, and the gap serves as the water inlet of the water intake channel of the first filtering

cavity; and the lower end of the filter 200 is installed on the first fixing end 107.

[0062] According to the embodiment, the impeller 300 is arranged on the inner tub bottom 401 of the inner tub 400, and a balancing ring 500 is arranged at the upper end part of the inner tub 400. According to the embodiment, the filtering cover 100 comprises a fixing part 101 and an installation part 102, wherein the fixing part 101 of the filtering cover 100 is fixedly connected with the inner tub 400, and the upper end of the fixing part 101 is in contact with the balancing ring 500. According to the embodiment, the filter 200 is installed on the installation part 102 of the filtering cover 100 via a snap-in connector 207.

[0063] According to the washing machine provided by the present disclosure, the lower end of the lint filtering device is installed at the bottom of the inner tub, so that a lint filtering cavity covers at least 2/3 height of the inner tub of the washing machine, and thus the water inflow of the lint filter device is greatly increased, and the lint filtering effect is significantly enhanced.

[0064] The above-mentioned embodiments are only preferred embodiments of the present disclosure, but not intended to limit the present disclosure in any form. Although the present disclosure has been described in terms of preferred embodiments, it is not intended to be limited to these disclosed embodiments. Equivalent embodiments, of which some changes or modifications are equivalent changes, may be made by any skilled in the art by using the above-mentioned technical contents without departing from the technical scheme scope of the present disclosure. However, all simple amendments, equivalent changes and modifications made to the above embodiments according to the technical essence of the present disclosure without departing from the technical scheme scope of the present disclosure all still fall within the protection scope of the present disclosure.

Claims

1. A comprehensive lint filtering device, comprising a filter (200), wherein
   the filter (200) comprises a second filtering cavity and a first filtering cavity which are independently arranged at upper and lower positions,
   the first filtering cavity is provided with a first water inlet (204), and the second filtering cavity is provided with a second water inlet (209);
   the first water inlet (204) and the second water inlet (209) are arranged on one same side of the filter (200),
   a filtering part is arranged on another side of the filter (200), and the first filtering cavity and the second filtering cavity share the filtering part.

2. The comprehensive lint filtering device according to claim 1, wherein the filter (200) comprises a front cover (203) of the filter and a rear cover (206) of the filter connected with the front cover (203),
   the first filtering cavity and the second filtering cavity are formed between the front cover (203) of the filter and the rear cover (206) of the filter,
   the first water inlet (204) and the second water inlet (209) are formed in the rear cover (206) of filter,
   the first water inlet (204) is arranged at an upper part of the first filtering cavity, and the second water inlet (209) is arranged at a centre position of the second filtering cavity; and
   preferably, a flange structure (210) is arranged on the rear cover (206) of the filter corresponding to the second filtering cavity, and a gap for inputting water is formed between the flange structure (210) and the front cover of filter (203).

3. The comprehensive lint filtering device according to claim 2, wherein the filtering part of the filter (200) comprises a first filtering part (202) at a lower part and a second filtering part (201) at an upper part;
   the rear cover (206) of the filter comprises a first rear cover (213) and a second rear cover (211);
   the first filtering cavity is formed between the first filtering part (202) and the first rear cover (213), and the second filtering cavity is formed between the second filtering part (201) and the second rear cover (211); and
   a distance between the first rear cover (213) and the first filtering part (202) is larger than that between the second rear cover (211) and the second filtering part (201).

4. The comprehensive lint filtering device according to claim 2 or 3, wherein a lint collection bin used for collecting filtered lint of the second filtering cavity is formed between the front cover (203) of the filter and the rear cover (206) of the filter,
   the lint collection bin communicates with the second filtering cavity; and
   the lint collection bin is arranged between the second filtering cavity and the first filtering cavity.

5. The comprehensive lint filtering device according to claim 4, wherein the rear cover (206) of the filter also comprises a third rear cover (212) which is positioned between the first rear cover (213) and the second rear cover (211), and the lint collection bin is formed between the third rear cover (212) and the second filtering part (201);
   and preferably, a distance between the third rear cover (212) and the second filtering part (201) is larger than that between the first rear cover (213) and the first filtering part (202).

6. The comprehensive lint filtering device according to claim 1, further comprising a filtering cover (100),

wherein the filter (200) is installed on the filtering cover (100); a water intake channel of the first filtering cavity is arranged between the a first water inlet side of the first filtering cavity and the filtering cover (100), a water inlet of the water intake channel is positioned at a lower part of the first filtering cavity, and
a flow guiding part for guiding a water flow into the second filtering cavity is arranged on the filtering cover (100) corresponding to the second filtering cavity, and water inlets of flow guiding part (103) are arranged on two sides of the filtering cover (100).

7. The comprehensive lint filtering device according to claim 6, wherein a water guiding baffle which swings along a water intake direction of the second filtering cavity is arranged on the flow guiding part,
the water guiding baffle is used for guiding water flow, at the water inlets of flow guiding parts (103) on two sides, into the second filtering cavity; and
preferably, the water guiding baffle comprises a first water guiding baffle (111) and a second water guiding baffle (112) which are arranged to be parallel to the water inlets on two sides of the second filtering cavity, and
a limiting stop bar (109) used for limiting a swing limiting position of the first water guiding baffle (111) and the second water guiding baffle (112) is arranged between the first water guiding baffle (111) and the second water guiding baffle (112).

8. The comprehensive lint filtering device according to claim 7, wherein the water guiding baffle is installed on the filtering cover (100) via a rotation shaft structure,
guiding bars (110) are arranged on two sides of the water guiding baffle along a direction that the water flows into the second filtering cavity,
a maximum swinging angle of the water guiding baffles is limited to 90 degrees by an end part of an inner side of the guiding bar (110), and
a notch for providing space for free rotation of the rotation shaft structure is formed on the inner side of the guiding bar (110).

9. A washing machine with the comprehensive lint filtering device according to any one of claims 1-8, comprising an inner tub (400) and an impeller (300) arranged at a bottom of the inner tub (400), wherein the lint filtering device is installed on a side wall of an inner part of the inner tub (400), and a lower end of the filtering cover (100) of the lint filtering device is installed on a side wall of the bottom of the inner tub (400).

10. The washing machine according to claim 9, wherein the filtering cover (100) is provided with a first fixing end (107) and a second fixing end (106) at a lower end,
the second fixing end (106) is a lower end part of the filtering cover (100),
the second fixing end (106) is installed on the side wall of the bottom of the inner tub (400) and is in contact with the impeller (300),
the filtering cover (100) stretches towards an inner side of the inner tub (400) to form the first fixing end (107),
the first fixing end (107) is arranged above the second fixing end (106) and forms a gap, and the gap serves as a water inlet of the water intake channel of the first filtering cavity, and
a lower end of the filter (200) is installed on the first fixing end (107).

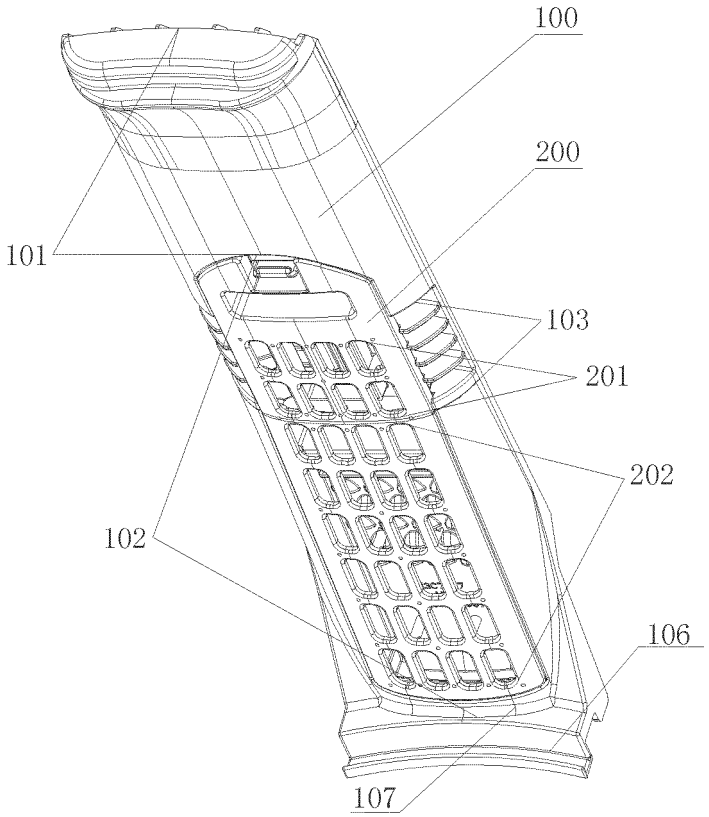

Fig. 1

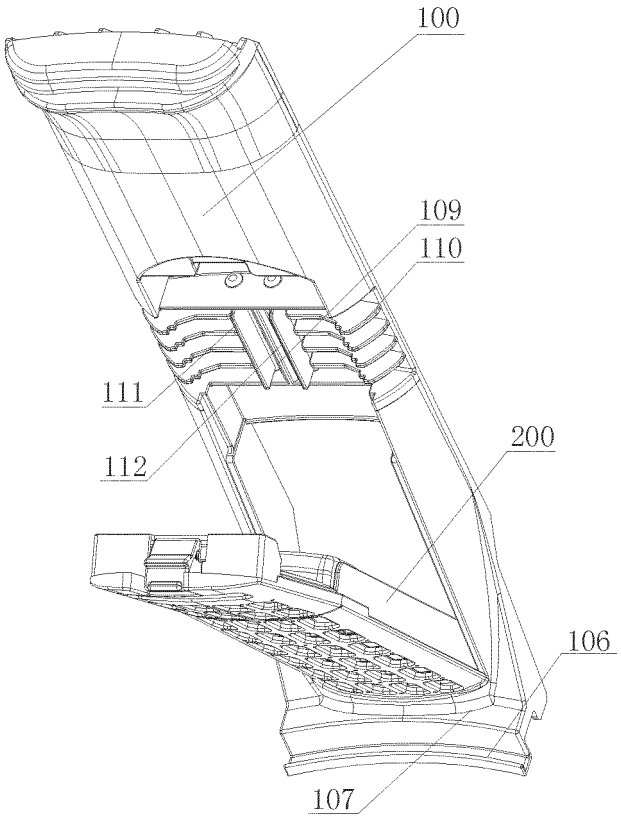

Fig. 2

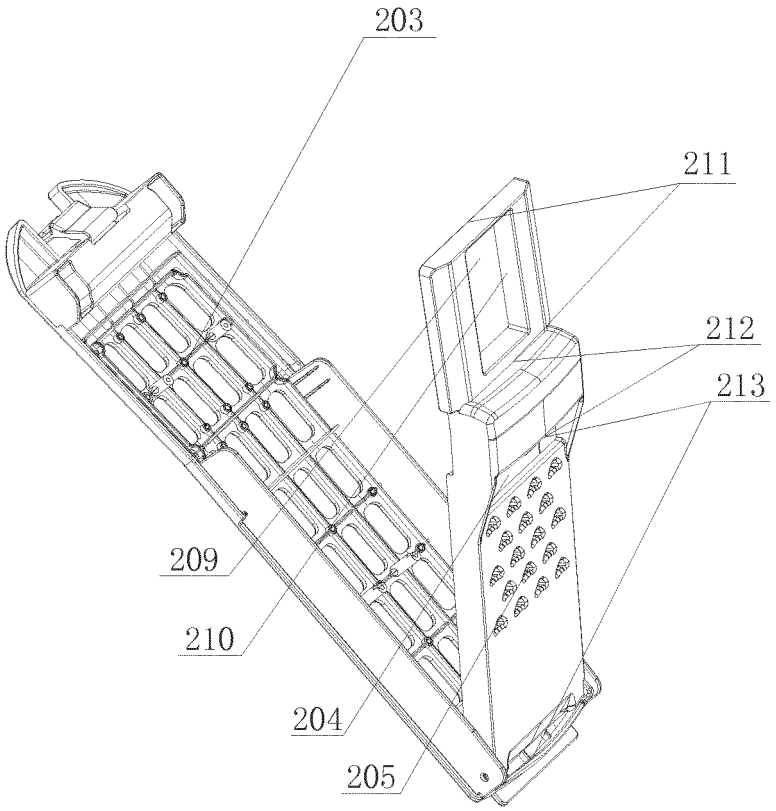

Fig. 3

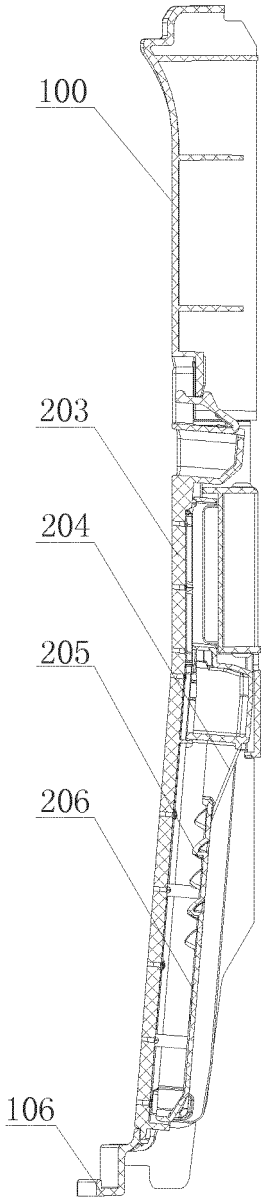

Fig. 4

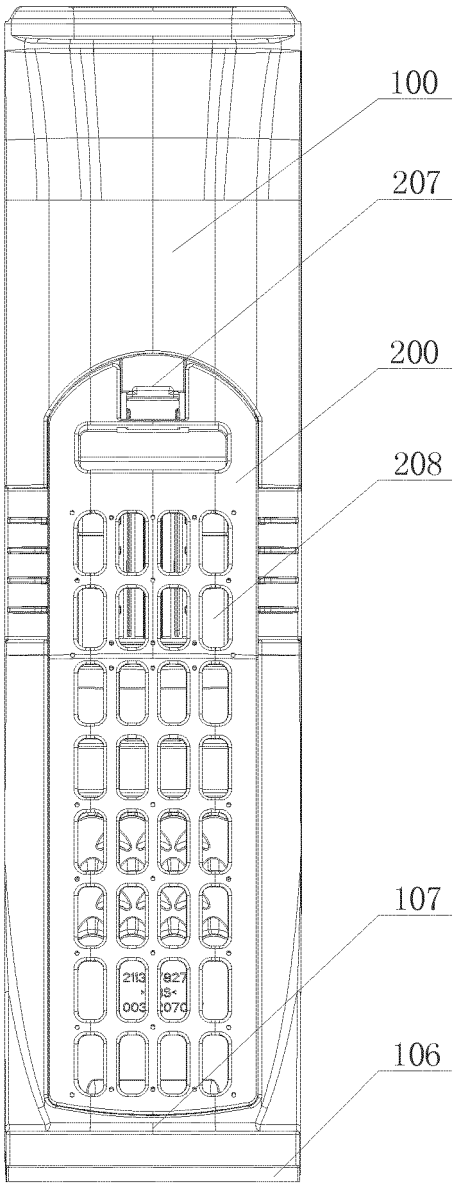

Fig. 5

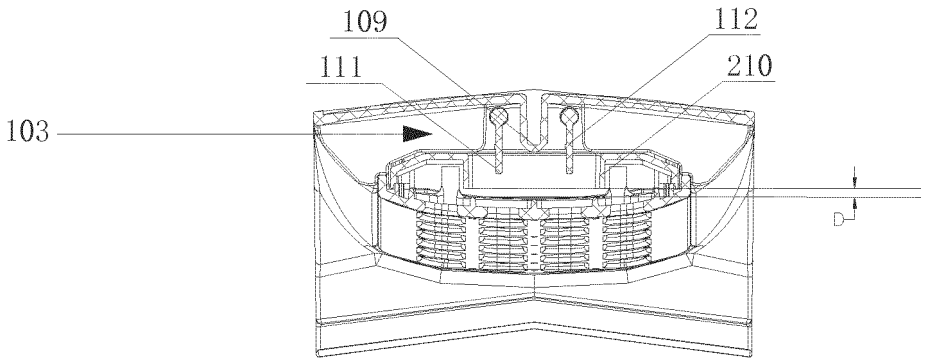

Fig. 6

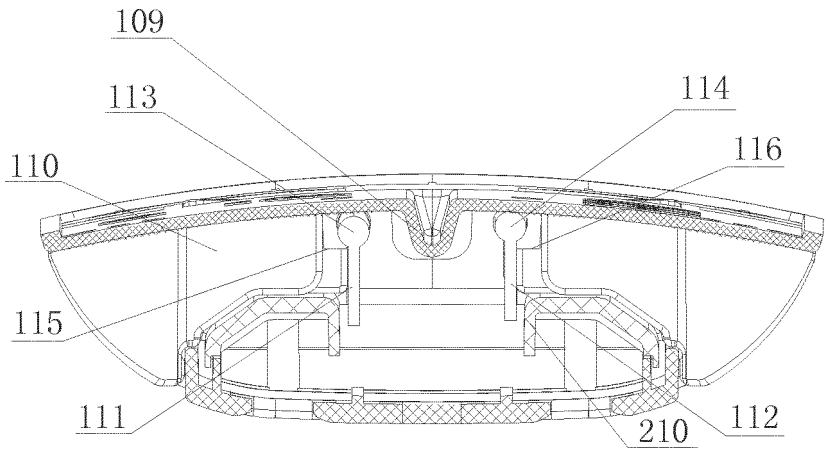

Fig. 7

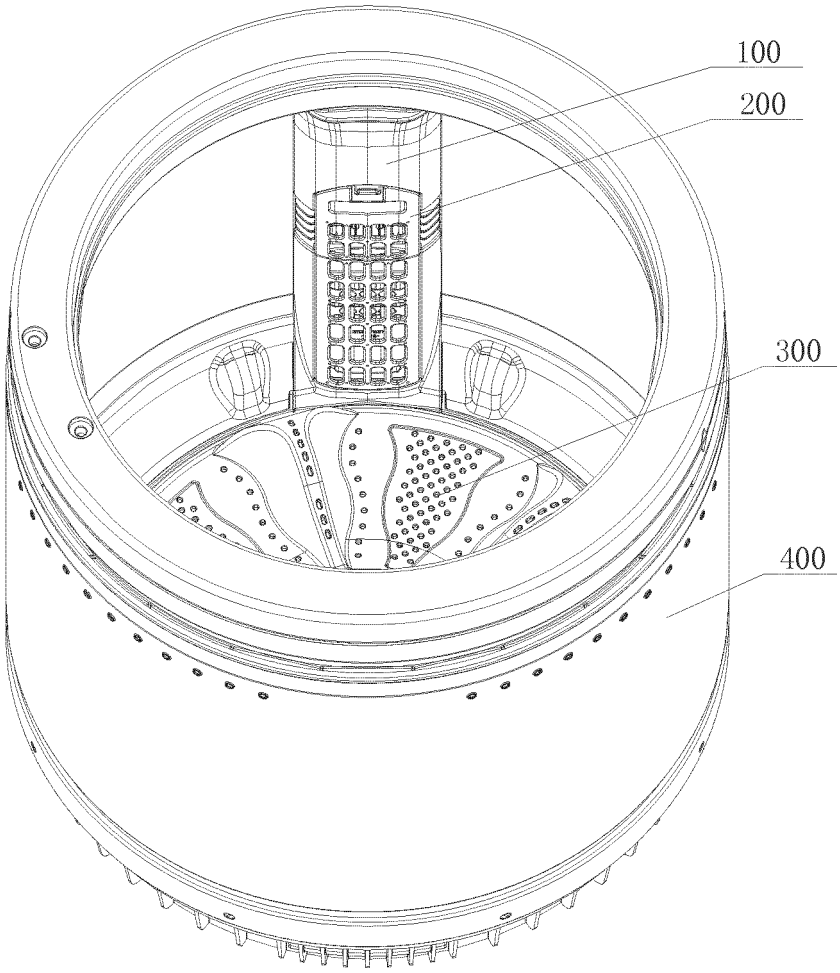

Fig. 8

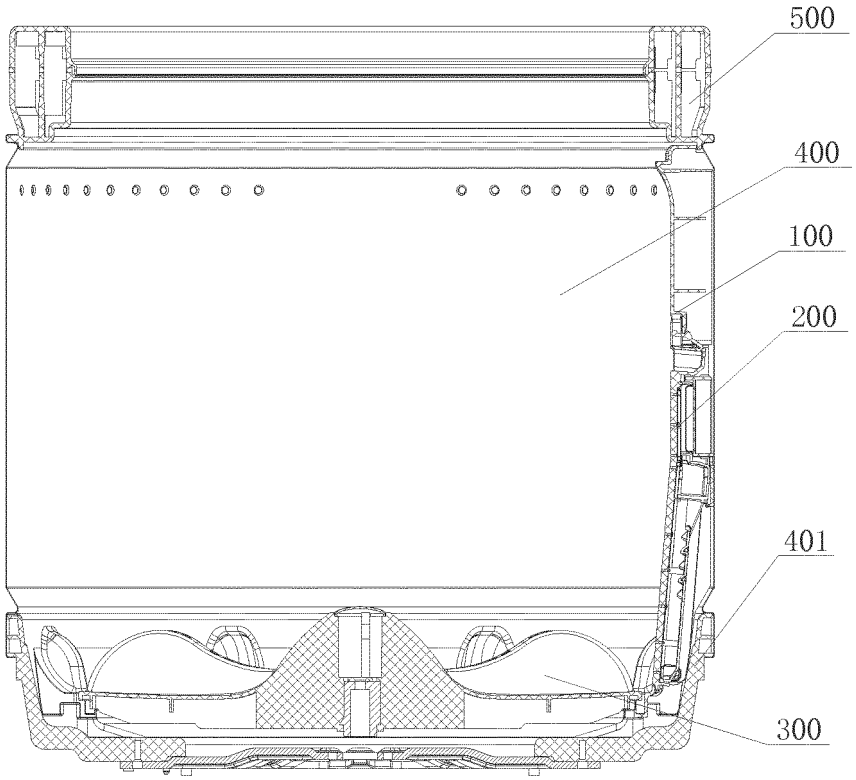

Fig. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2015/095923

A. CLASSIFICATION OF SUBJECT MATTER

D06F 39/10 (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)

D06F; A47L

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)

CNABS; VEN; CNKI: capture, collect, chamber, part, unit, inflow, water entry, multiple, assistant, inlet?, hole?, open+, aperture?, water, filter+, upper, top, second, two, double, cavity, space, passageway

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 101985799 A (HAIER ELECTRONICS GROUP CO., LTD. et al.), 16 March 2011 (16.03.2011), description, paragraphs [0039]-[0040], and figure 3	1, 6, 9, 10
A	CN 2732799 Y (WUXI LITTLE SWAN COMPANY LIMITED), 12 October 2005 (12.10.2005), the whole document	1-10
A	CN 202450304 U (BEI, Guoyin), 26 September 2012 (26.09.2012), the whole document	1-10
A	WO 2013165203 A1 (DONGBU DAEWOO ELECTRONICS CORP.), 07 November 2013 (07.11.2013), the whole document	1-10
A	CN 203947336 U (CHINA HUACAI ELECTRIC APPLIANCE CO.,LTD.), 19 November 2014 (19.11.2014), the whole document	1-10
A	JP 3296789 B2 (SANYO ELECTRIC CO., LTD.), 02 July 2002 (02.07.2002), the whole document	1-10

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 March 2016 (17.03.2016)	**30 March 2016 (30.03.2016)**
Name and mailing address of the ISA/CN: State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No.: (86-10) 62019451	Authorized officer **LIU, Jing** Telephone No.: (86-10) **62084545**

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2015/095923

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 101985799 A	16 March 2011	CN 101985799 B	23 September 2015
CN 2732799 Y	12 October 2005	None	
CN 202450304 U	26 September 2012	None	
WO 2013165203 A1	07 November 2013	CN 103547727 A	29 January 2014
		US 2014102154 A1	17 April 2014
		EP 2728058 A1	07 May 2014
		KR 20130123538 A	13 November 2013
		KR 20130123537 A	13 November 2013
CN 203947336 U	19 November 2014	None	
JP 3296789 B2	02 July 2002	JP 2000014987 A	18 January 2000

Form PCT/ISA/210 (patent family annex) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 201010524447 **[0003]**