

SPECIFICATION

TITLE

CIRCULATING DRAINAGE ASSEMBLY OF LAUNDRY PROCESSING APPARATUS
AND LAUNDRY PROCESSING APPARATUS

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of laundry machine, in particular to a circulating drainage assembly of laundry processing apparatus and a laundry processing apparatus.

BACKGROUND

[0002] Existing laundry processing apparatus comprises a machine body, a barrel for cleaning or drying laundry, and a circulating drainage assembly. The washing of laundry is performed by circulation spraying and drainage of laundry water in the barrel by the circulating drainage assembly. During the washing or drying of the laundry in the barrel, foreign matters such as coin and button and thread debris on the laundry may drop off and enter the circulating drainage assembly along with the laundry water in subsequent washing process. In a circulation working mode, the laundry water in the circulating drainage assembly will be re-sprayed into the barrel to clean the laundry. But the circulation spraying of the laundry water will be affected by the clogging of the thread debris. In particular, in a case where the circulation spray tube is relatively narrow, the spray nozzle is very likely to be clogged by the thread debris, causing insufficient spraying. Therefore, existing laundry processing apparatus has deficiency of reduced circulation spraying effect, i.e., reduced laundry cleaning effect.

SUMMARY

[0003] The technical problem to be solved by the present disclosure is to provide a circulating drainage assembly for a laundry processing apparatus which prevents thread debris from affecting laundry cleaning.

[0004] In order to solve the above technical problem, the present disclosure employs the technical solution: a circulating drainage assembly of a laundry processing apparatus, comprising: a housing having an cavity and provided with an inlet, a drainage outlet and a circulation outlet; and a filter assembled in the cavity and having a first filter portion that

divides the cavity into a circulation cavity and a drainage cavity along its axial direction; wherein the inlet and the drainage outlet are respectively communicated with the drainage cavity, the circulation outlet is communicated with the circulation cavity; in a drainage working mode of the circulating drainage assembly, laundry water entering the drainage cavity from the inlet is discharged from the drainage outlet; and in a circulation working mode of the circulating drainage assembly, laundry water entering the drainage cavity from the inlet is filtered by the first filter portion and then enters the circulation cavity to be discharged from the circulation outlet.

[0005] In the above circulating drainage assembly of the laundry processing apparatus, the first filter portion is a filter plate with filter pores, the filter plate has a periphery matching with the cavity.

[0006] In the above circulating drainage assembly of the laundry processing apparatus, an annular boss for stopping the periphery of the filter plate is arranged in the cavity.

[0007] In the above circulating drainage assembly of the laundry processing apparatus, the filter further comprises a second filter portion located in the circulation cavity, laundry water entering the circulation cavity is filtered by the second filter portion and then discharged from the circulation outlet.

[0008] In the above circulating drainage assembly of the laundry processing apparatus, the second filter portion is a baffle extending in an axial direction of the circulation cavity.

[0009] In the above circulating drainage assembly of the laundry processing apparatus, the filter further comprises a third filter portion located in the drainage cavity, laundry water entering the drainage cavity is filtered by the third filter portion and then discharged from the drainage outlet.

[0010] In the above circulating drainage assembly of the laundry processing apparatus, the drainage outlet is provided on an end wall in an axial direction of the housing, the third filter portion shields the drainage outlet in an axial direction of the drainage cavity, a radial filtration gap is provided between the third filter portion and a circumferential wall of the housing, and an axial filtration gap is provided between the third filter portion and the end wall of the housing where the drainage outlet is provided.

[0011] In the above circulating drainage assembly of the laundry processing apparatus, the third filter portion has a conical flow guiding surface expanding in a direction to the drainage outlet on a side facing away from the drainage outlet.

[0012] In the above circulating drainage assembly of the laundry processing apparatus, an end in an axial direction of the housing is an opening communicated with the cavity, and the filter is attachable or detachable from the cavity through the opening.

[0013] As compared with the prior art, the present disclosure has the following advantageous effect.

[0014] The technical solution of the circulating drainage assembly of the laundry processing apparatus comprises a circulating drainage assembly of a laundry processing apparatus, comprising: a housing having an cavity and provided with an inlet, a drainage outlet and a circulation outlet; and a filter assembled in the cavity and having a first filter portion that divides the cavity into a circulation cavity and a drainage cavity along its axial direction; wherein the inlet and the drainage outlet are respectively communicated with the drainage cavity, the circulation outlet is communicated with the circulation cavity; in a drainage working mode of the circulating drainage assembly, laundry water entering the drainage cavity from the inlet is discharged from the drainage outlet; and in a circulation working mode of the circulating drainage assembly, laundry water entering the drainage cavity from the inlet is filtered by the first filter portion and then enters the circulation cavity to be discharged from the circulation outlet, which has the following technical effect.

[0015] A laundry processing apparatus comprises a machine body, a barrel for cleaning or drying laundry, and a circulating drainage assembly. The washing of laundry is performed by circulation spraying and drainage of laundry water in the barrel by the circulating drainage assembly. During the washing or drying of the laundry in the barrel, foreign matters such as coin and button and thread debris on the laundry may drop off and enter the circulating drainage assembly along with the laundry water in subsequent washing process. In a circulation working mode, the laundry water in the circulating drainage assembly will be re-sprayed into the barrel to clean the laundry. But the circulation spraying of the laundry water will be affected by the clogging of the thread debris. In particular, in a case where the circulation spray tube is relatively narrow, the spray nozzle has a tendency to be clogged by the thread debris, causing insufficient spraying. Therefore, existing laundry processing apparatus has deficiency of reduced circulation spraying effect, i.e., reduced laundry cleaning effect. To the contrary, according to the present disclosure, the cavity is divided into a circulation cavity and a drainage cavity in its axial direction by the first filter portion of the filter assembled in the cavity. In the circulation working mode, the laundry water enters the drainage cavity from the inlet and is then filtered by the first filter portion and enters the circulation cavity, and is at last discharged from the circulating drainage assembly through the circulation outlet. When the laundry water passes through the first filter portion, the first filter portion filters foreign matters and laundry thread debris in the laundry water and remains the foreign matters and the laundry thread debris on the side of the first filter portion towards the drainage cavity, thereby preventing the laundry water entering the circulation cavity from having foreign matters and

laundry thread debris that may block the spray of laundry, and guaranteeing the spraying effect. In the drainage working mode, the laundry water enters the drainage cavity from the inlet and is discharged from the drainage outlet together with the laundry thread debris left in the drainage cavity.

5 [0016] It should be noted that in the circulating drainage assembly according to the present disclosure, the housing is typically of a cylindrical structure, and the axial direction of the cavity is the direction along a center axis of the housing. Considering the installation space for other components such as motor in the circulating drainage assembly, the cavity has a length in the axial direction larger than a maximum width of the cross-sectional surface of the cavity
10 (diameter of the cross-sectional surface for a circular cavity).

[0017] In the present disclosure, the first filter portion divides the cavity along the axial direction. The drainage cavity formed thereby has an axial length smaller than the axial length of the cavity. In the drainage working mode, the laundry water generates larger water pressure and flow kinetic energy as passing through the drainage cavity, thereby more effectively
15 washing away thread debris and other foreign matters collected therein, so as to prevent impeded drainage due to excessive thread debris accumulating in the drainage cavity. Because of the division along the axial direction, the first filter portion needs only to match with the cross-sectional surface of the cavity. Therefore, the first filter portion may have a smaller outer surface area, which enables the laundry water to fully flush the first filter portion to prevent
20 thread debris from accumulating on the outer surface of the first filter portion.

[0018] The first filter portion is a filter plate with filter pores so that the first filter portion achieves good filtration with a simple structure, enabling the laundry water to wash away the thread debris on the first filter portion in the drainage working mode and preventing thread debris that accumulate on the first filter portion from affecting the filtration effect of the first
25 filter portion. The filter plate has a periphery matching with the cavity. That is, the filter plate has the same shape as the cross-sectional surface of the cavity, which facilitates attachment of the filter plate into the cavity and prevents the thread debris in the laundry water from passing through between the edge of the filter plate and the wall of the cavity.

[0019] An annular boss for stopping the periphery of the filter plate is arranged in the cavity.
30 During attachment, the filter is pushed into the cavity until the filter plate abuts against the annular boss. The attachment of the filter is facilitated such that the annular boss enables no gap between the filter plate and the housing as well as attaching and positioning the filter plate.

[0020] The filter further comprises a second filter portion located in the circulation cavity. The laundry water entering the circulation cavity is filtered by the second filter portion and
35 then discharged from the circulation outlet. The laundry water filtered by the first filter portion

enters the circulation cavity to be subjected to secondary filtration by the second filter portion, so as to further reduce thread debris in the laundry water, thereby preventing thread debris in the laundry water from clogging the spray nozzle in subsequent spraying.

[0021] The second filter portion is a baffle extending in an axial direction of the circulation cavity. When the laundry water filtered by the first filter portion enters the circulation cavity and flows from the circulation cavity towards the circulation outlet, the baffle performs secondary filtration on the laundry water and blocks laundry thread debris that are not fully filtered by the first filter portion. The filtered laundry water enters the circulation outlet. As such, good filtration effect is achieved by using a simple structure.

[0022] The filter further comprises a third filter portion located in the drainage cavity. The laundry water entering the drainage cavity is filtered by the third filter portion and then discharged from the drainage outlet. The third filter portion filters the foreign matters in the laundry water in the drainage cavity to be discharged from the drainage outlet, thereby preventing massive foreign matters in the laundry water from being stuck in the drainage motor and consequently affecting normal operation of the drainage motor.

[0023] The drainage outlet is provided on an end wall of the housing in the axial direction. The third filter portion shields the drainage outlet in the axial direction of the drainage cavity. A radial filtration gap is provided between the third filter portion and the circumferential wall of the housing. An axial filtration gap is provided between the third filter portion and the end wall of the housing where the drainage outlet is arranged. Laundry thread debris have a relatively small volume and may first pass through the radial filtration gap and then turn to pass through the axial filtration gap to be discharged from the drainage outlet. But foreign matters with relatively large volume such as coins will be blocked. As such, the foreign matters are blocked.

[0024] Preferably, the third filter portion has a conical flow guiding surface expanding in a direction to the drainage outlet on a side facing away from the drainage outlet so that the third filter portion filters the laundry water while reducing a water flow resistance of the shielding member against the laundry water flowing into the drainage outlet from the drainage cavity, thereby preventing laundry thread debris from accumulating at the shielding member.

[0025] One end of the housing in the axial direction is an opening communicated with the cavity. The filter is attachable to or detachable from the cavity through the opening. The detachable connection structure facilitates cleaning or replacing the filter, making it easier for use. Furthermore, the first filter portion divides the cavity along its axial direction so that no matter at what angle the filter is attached or how the filter rotates in the cavity, the first filter portion always firmly separates the drainage outlet and the circulation outlet from each other, eliminating the possibility that the drainage outlet and the circulation outlet are not separated

by the first filter portion, and facilitating attachment and use of the filter.

[0026] The present disclosure further provides a laundry processing apparatus which comprises the previously described circulating drainage assembly.

[0027] Features and advantages of the present disclosure will be disclosed in detail in the subsequent description of embodiments and attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] The present disclosure will be further explained with reference to the following attached drawings and embodiments.

FIG. 1 is a sectional schematic diagram of a first embodiment.

FIG. 2 is a schematic diagram of a filter of a first embodiment.

FIG. 3 is a first sectional view of a first embodiment.

FIG. 4 is a second sectional view of a first embodiment.

FIG. 5 is a perspective view of a first embodiment.

FIG. 6 is a schematic diagram of a second embodiment.

[0029] Reference signs:

100: housing; 110: inlet; 120: drainage outlet; 121: drainage motor; 130: circulation outlet; 131: circulation motor; 140: cavity; 141: circulation cavity; 142: drainage cavity; 150: annular boss; 160: opening; 170: limit rib;

200: filter; 210: first filter portion; 211: filter pore; 220: second filter portion; 230: third filter portion; 231: conical flow guiding surface; 232: connection member; 233: shielding member; 240: attachment cover; 241: positioning protrusion; 242: handle;

300: barrel; 310: outer barrel; 320: inner barrel; 330: spray nozzle; 340: circulation spray tube;

400: circulating drainage assembly;

500: bellow

DETAILED DESCRIPTION

[0030] The present disclosure provides a circulating drainage assembly of a laundry processing apparatus, comprising: a housing having an cavity provided with an inlet, a drainage outlet and a circulation outlet; and a filter assembled in the cavity and having a first filter portion that divides the cavity into a circulation cavity and a drainage cavity along its axial direction; wherein the inlet and the drainage outlet are respectively communicated with the drainage cavity, the circulation outlet is communicated with the circulation cavity; in a drainage working mode of the circulating drainage assembly, laundry water entering the

drainage cavity from the inlet is discharged from the drainage outlet; in a circulation working mode of the circulating drainage assembly, laundry water entering the drainage cavity from the inlet is filtered by the first filter portion and then enters the circulation cavity to be discharged from the circulation outlet. According to the present disclosure, the cavity is divided into a circulation cavity and a drainage cavity in its axial direction by the first filter portion of the filter assembled in the cavity. In the circulation working mode, the laundry water enters the drainage cavity from the inlet and is then filtered by the first filter portion and enters the circulation cavity, and is at last discharged from the circulating drainage assembly through the circulation outlet. When the laundry water passes through the first filter portion, the first filter portion filters foreign matters and laundry thread debris in the laundry water and remains them on the side of the first filter portion towards the drainage cavity, thereby preventing the laundry water entering the circulation cavity from having foreign matters and laundry thread debris that may block the spray, and thus guaranteeing the spraying effect. In the drainage working mode, the laundry water enters the drainage cavity from the inlet and is discharged from the drainage outlet with the laundry thread debris left therein. It should be noted, that in the circulating drainage assembly according to the present disclosure, the housing is typically of a cylindrical structure, and the axial direction of the cavity is the direction along a center axis of the housing. Considering the installation space for other components such as motor in the circulating drainage assembly, the cavity has a length in the axial direction larger than a maximum width of the cross-sectional surface of the cavity (diameter of the cross-sectional surface for a circular cavity). In the present disclosure, the first filter portion divides the cavity along the axial direction. The drainage cavity formed thereby has an axial length smaller than the axial length of the cavity. In the drainage working mode, the laundry water generates larger water pressure and flow kinetic energy as passing through the drainage cavity, thereby more effectively washing away thread debris and other foreign matters collected therein, so as to prevent impeded drainage due to excessive thread debris accumulating in the drainage cavity. Because of the division along the axial direction, the first filter portion needs only to match with the cross-sectional surface of the cavity. Therefore, the first filter portion may have a smaller outer surface area, which enables the laundry water to fully flush the first filter portion to prevent thread debris from accumulating on the outer surface of the first filter portion.

[0031] The technical solutions of the embodiments of the present disclosure, which are merely preferable embodiments of the present disclosure but not exhaustive, are described with reference to the drawings of the embodiments of the present disclosure. Based on the described embodiments, all other embodiments obtained by a person skilled in the art without making creative efforts are within the scope of protection of the present disclosure.

[0032] It should be appreciated that hereinafter terminologies indicating an orientation or positional relationship, such as “center”, “longitudinal”, “transversal”, “length”, “width”, “thickness”, “up”, “down”, “front”, “rear”, “left”, “right”, “vertical”, “horizontal”, “top”, “bottom”, “inner”, “clockwise”, “counterclockwise” are based only on the orientation or positional relationship shown in the drawings; they merely serve the purpose of facilitating and simplifying the description of the present disclosure, and do not indicate or imply that an indicated device or component must be specifically orientated, or must be configured and operated in a specific orientation. Thus, they should not be interpreted as a limitation on the present disclosure.

[0033] Furthermore, the terminologies of “first” and “second” are merely used for the purpose of description and should not be interpreted as indicating or suggesting relative importance or implying the quantity of the related technical feature. Therefore, the feature limited by the terminologies of “first” or “second” may indicate or imply that there is included one or more of the respective feature. In the description of the present disclosure, unless otherwise specified, the terminology of “a plurality of” means two or more.

[0034] In the description of the present disclosure, unless otherwise specified, the terminologies of “attach”, “connect”, “couple” and “fix” should be interpreted in a broad sense. For example, a connection may be a fixed connection or a detachable connection or an integral connection; may be a mechanical connection or an electrical connection; may be a direct connection or a connection by means of a medium; may be a communication inside two elements. A skilled in the art can understand the specific meaning of the terminologies in the present disclosure according to the specific context.

[0035] In the description of the present disclosure, unless otherwise specified, a first feature being “above” or “below” a second feature may include a case where the first feature and the second feature directly contact with each other, or a case where the first feature and the second feature do not directly contact with each other and but contact via an additional feature therebetween. Furthermore, a first feature being “above”, “over”, or “on” a second feature includes a case where the first feature is right above the second feature or is obliquely above the second feature, or merely indicates that the first feature is at a horizontal level higher than the second feature. A first feature “below”, “underneath”, or “under” a second feature includes a case where the first feature is right below the second feature or is obliquely below the second feature, or merely indicates that the first feature is at a horizontal level lower than the second feature.

[0036] First embodiment

[0037] Referring to FIGs. 1-5, a circulating drainage assembly of a laundry processing

apparatus comprises a housing 100 and a filter 200. A cavity 140 is formed within the housing. The housing 100 is provided with an inlet 110, a drainage outlet 120, and a circulation outlet 130 which are respectively communicated with the cavity 140 thereon. A drainage motor 121 is arranged in the drainage outlet 120. A circulation motor 131 is arranged in the circulation outlet 130.

[0038] In the present embodiment, an end of the housing 100 in the axial direction is an opening 160 communicated with the cavity 140. The filter 200 is attachable to or detachable from the cavity 140 through the opening 160. The filter 200 closes the opening 160 when arranged in the cavity 140. The detachable connection structure facilitates cleaning or replacing the filter 200, making it easier for use. The filter 200 comprises a first filter portion 210, a second filter portion 220, a third filter portion 230, and an attachment cover 240 that attaches the filter 200 to the housing 100. The second filter portion 220 and the third filter portion 230 are respectively coupled to both sides of the first filter portion 210. The attachment cover 240 is connected with an end of the second filter portion 220 away from the first filter portion 210.

[0039] The first filter portion 210 divides the cavity 140 into a circulation cavity 141 and a drainage cavity 142 along its axial direction. The drainage cavity 142 is communicated with the drainage outlet 120 and the inlet 110. The circulation cavity 141 is communicated with the circulation outlet 130. In the circulation working mode of the circulating drainage assembly, the circulation motor 131 operates; the laundry water enters the drainage cavity 142 from the inlet 110 and is then filtered by the first filter portion 210 to enter the circulation cavity 141, and is at last discharged from the circulating drainage assembly through the circulation outlet 130. When the laundry water passes through the first filter portion 210, the first filter portion 210 filters foreign matters and laundry thread debris in the laundry water to remain them on a side of the first filter portion 210 towards the drainage cavity 142, thereby preventing the laundry water that enters the circulation cavity 141 from containing foreign matters and laundry thread debris which will block the circulation motor 131 and the spray, and guaranteeing the spraying effect. In the drainage working mode of the circulating drainage assembly, the drainage motor 121 operates, and the laundry water enters the drainage cavity 142 from the inlet 110 and is discharged from the drainage outlet 120 with the laundry thread debris left in the drainage cavity 142.

[0040] It should be noted, that in the circulating drainage assembly according to the present disclosure, the housing 100 is typically of a cylindrical structure; the axial direction of the cavity 140 is the direction along a center axis of the housing 100. Considering the installation space for other components such as motor in the circulating drainage assembly, the cavity 140 has a length in the axial direction larger than a maximum width of the cross-sectional surface

of the cavity (diameter of the cross-sectional surface for a circular cavity).

[0041] In the present disclosure, the first filter portion 210 divides the cavity 140 in its axial direction. The drainage cavity 142 formed thereby has an axial length smaller than the axial length of the cavity 140. In the drainage working mode, the laundry water generates larger water pressure and flow kinetic energy as passing through the drainage cavity 142, thereby more effectively washing away thread debris and other foreign matters collected in the drainage cavity 142, so as to prevent impeded drainage due to excessive thread debris accumulating in the drainage cavity 142. Because of the division along the axial direction, the first filter portion 210 needs only to match with the cross-sectional surface of the cavity 140. Therefore, the first filter portion 210 may have a smaller outer surface area, which enables the laundry water to fully flush the first filter portion 210 to prevent thread debris from accumulating on the outer surface of the first filter portion 210. Furthermore, the first filter portion 210 divides the cavity 140 in its axial direction so that no matter at what angle the filter 200 is attached or how the filter 200 rotates in the cavity 140, the first filter portion 210 always firmly separates the drainage outlet 120 and the circulation outlet 130 from each other, eliminating the possibility that the drainage outlet 120 and the circulation outlet 130 are not separated by the first filter portion 210, and facilitating attachment and use of the filter 200. Preferably, the first filter portion 210 is a filter plate with filter pores 211. The filter plate has a periphery matching with the cavity 140. That is, the filter plate has a shape that is the same as the cross-sectional surface of the cavity 140, which facilitates attachment of the filter plate into the cavity 140 and prevents the thread debris in the laundry water from passing through between the edge of the filter plate and the wall of the cavity 140. The filter plate is perpendicular to the central axis of the cavity 140 so that the first filter portion 210 achieves good filtration effect while being simply structured, thereby making it easier for the laundry water to take away thread debris on the first filter portion 210 in the drainage working mode and preventing thread debris from accumulating on the first filter portion 210 and thus affecting the filtration effect of the first filter portion 210. The filter pore 211 may have a circular, square, elliptical or irregular shape.

[0042] The second filter portion 220 is arranged in the circulation cavity 141. The second filter portion 220 is connected between the first filter portion 210 and the attachment cover 240. The second filter portion 220 filters the laundry water in the circulation cavity 141 while supporting the first filter portion 210 so that the first filter portion 210 is fixed to the attachment cover 240 by the second filter portion 220. In the present embodiment, the second filter portion 220 is a baffle extending in an axial direction of the circulation cavity 141. The edge of the baffle does not contact the wall of the circulation cavity 141. Instead, a gap is left

between the edge of the baffle and the wall of the circulation cavity 141. When the laundry water filtered by the first filter portion 210 enters the circulation cavity 141 and flows therefrom towards the circulation outlet 130, the baffle performs secondary filtration on the laundry water and blocks the laundry thread debris that are not fully filtered by the first filter portion 210. The laundry water passes through the gap, and the filtered laundry water enters the circulation outlet 130. As such, the thread debris in the laundry water is further reduced, preventing clogging the spray nozzle by thread debris in subsequent spraying. Preferably, a plurality of the baffle is provided. The plurality of the baffle is distributed in a direction surrounding the central axis of the housing. The angles formed by adjacent baffles are the same. The plurality of the baffle reinforces the strength of the second filter portion 220 while blocking the laundry thread debris in the laundry water for multiple times, achieving a better filtration effect.

[0043] It is appreciated that the second filter portion 220 may also be a filter web arranged in the circulation cavity 141. The filter web may be disposed parallel to the filter plate so that the laundry water passes through the filter plate and the filter web in turn to be filtered twice and then enters the circulation outlet 130. The filter web may also be distributed in a direction of the central axis of the housing. That is, the baffle is replaced with the filter web, so as to further filter the laundry water.

[0044] The third filter portion 230 is located in the drainage cavity 142 and filters the laundry water in the drainage cavity 142 to be discharged from the drainage outlet 120, thereby preventing a massive foreign matter in the laundry water from being stuck in the drainage motor 121 and consequently affecting normal operation of the drainage motor 121. The drainage outlet 120 is provided on an end wall of the housing 100 in the axial direction. The third filter portion 230 includes a connection member 232 connected with the first filter portion 210 and a shielding member 233 fixed to an end of the connection member 232. The shielding member 233 shields the drainage outlet 120 in the axial direction of the drainage cavity 142 such that a radial filtration gap T_2 is provided between the shielding member 233 and the circumferential wall of the housing 100. An axial filtration gap T_1 is provided between the shielding member 233 and the end wall of the housing 100 on which the drainage outlet 120 is provided. As shown in FIG. 3, the radial filtration gap T_2 and the axial filtration gap T_1 preferably satisfy $3\text{mm} \leq T_1 \leq 8\text{mm}$ and $3\text{mm} \leq T_2 \leq 8\text{mm}$. That is, the laundry water with laundry thread debris in the drainage cavity 142 first passes through the axial filtration gap and then passes through the radial filtration gap to enter the drainage outlet 120. During this process, foreign matters such as coin in the laundry water are blocked by the shielding member 233 so that they cannot pass through the axial filtration gap and the radial filtration gap and thus are

remained in the drainage cavity 142 to be taken out of the circulating drainage assembly by the user after the washing. As such, it is prevented that foreign matters are stuck in the drainage motor 121 and thus affect normal operation of the drainage motor 121. Preferably, the shielding member 233 is trumpet-shaped, with a side of the shielding member 233 facing away from the drainage outlet 120 formed with a conical flow guiding surface 231 expanding in a direction to the drainage outlet 120 so that the shielding member 233 filters the laundry water while reducing a water flow resistance of the shielding member 233 against the laundry water flowing into the drainage outlet 120 from the drainage cavity 142, thereby preventing laundry thread debris from accumulating at the shielding member 233.

[0045] Preferably, in the present embodiment, an annular boss 150 for stopping the periphery of the filter plate is arranged inside the housing 100. During attachment, the third filter portion 230 enters the cavity 140 through the opening 160. Then, the first filter portion 210 enters the cavity 140. The filter 200 is pushed in a direction towards the drainage outlet 120 until the filter plate abuts against the annular boss 150. Then, the attachment of the filter 200 to the housing 100 is realized merely by fastening the attachment cover 240 at the opening 160 to the housing 100.

[0046] As shown in FIG. 4, the annular boss 150 has a width T_3 ; a distance between the periphery of the filter plate and the inner wall of the housing 100 is T_4 , satisfying $T_3 \geq 2T_4$, so that even if the filter plate vibrates in the housing 100, the periphery of the filter plate always fits to the annular boss, preventing a gap from occurring between the filter plate and the annular boss 150, i.e., preventing thread debris in the laundry water from entering the circulation cavity 141 through the gap.

[0047] To facilitate the attachment and use of the filter 200, the attachment cover 240, the first filter portion 210, the second filter portion 220, and the third filter portion 230 are provided in one piece. In a case where the housing 100 has a cylindrical shape, the attachment cover 240 is preferably in threaded connection with the housing 100. As shown in FIG. 5, in order to facilitate the rotation of the attachment cover 240, a handle 242 for facilitating operation may be provided on the attachment cover 240. The attachment cover is provided with a positioning protrusion 241 thereon. A limit rib 170 is provided on the inner wall of the housing 100. During attachment, the user may merely rotate the attachment cover 240 using the handle 242 to fasten the attachment cover 240 to the housing 100. During the rotation of the attachment cover 240, the positioning protrusion 241 abutting against an end of the limit rib 170 indicates that the attachment cover 240 is fastened to the housing 100 and is attached in place. The positioning protrusion 241 functions for positioning in the attachment.

[0048] Second embodiment

[0049] A laundry processing apparatus as shown in FIG. 6 includes a machine body, a barrel 300 arranged therein, and the circulating drainage assembly 400 as described in first embodiment. The barrel 300 comprises an outer barrel 310 and an inner barrel 320 provided rotatably in the outer barrel 310. The cavity of the inner barrel 320 is used to contain laundry and laundry water. The barrel 300 is provided with a spray nozzle 330 communicated with the cavity of the inner barrel. The barrel 300 is communicated with the inlet 110 of the circulating drainage assembly 400 through the bellow 500. The spray nozzle 330 is communicated with the circulation outlet 130 of the circulating drainage assembly 400 through the circulation spray tube 340.

[0050] The process of the circulation working mode of the laundry processing apparatus is described below.

[0051] The laundry water in the inner barrel 320 flows through the bellow 500 to enter the cavity 140 of the circulating drainage assembly 400 through the inlet 110. At this time, the circulation motor 131 operates (while the drainage motor 121 does not operate). The laundry water in the cavity 140 enters the circulation spray tube 340 through the circulation outlet 130, and is then sprayed into the inner barrel by the spray nozzle 330 to spray the laundry in real time. The laundry water containing laundry cleansing components is recycled in the process, improving the cleaning and rinsing rate.

[0052] The process of the drainage working mode of the laundry processing apparatus is described below.

[0053] The laundry water in the inner barrel 320 flows through the bellow 500 to enter the cavity 140 of the circulating drainage assembly 400 through the inlet 110. In this process, the drainage motor 121 operates (while the circulation motor 131 does not operate). The laundry water and thread debris in the cavity 140 are discharged from the machine body through the drainage outlet 120.

[0054] It is appreciated that the laundry processing apparatus of the present embodiment may be a washing machine or an integrated washing and drying machine. In a case where the laundry processing apparatus is an integrated washing and drying machine, the laundry processing apparatus further comprises a drying assembly. The drying assembly is coupled to the barrel 300 and is configured to heat an air and introduce the heated air into the inner barrel 320 to dry the laundry that has been washed.

[0055] Described in the foregoing are merely preferable embodiments of the present disclosure. The protection scope of the present disclosure is not limited to the afore-described embodiments. All technical solutions pertaining to the concept of the present disclosure should be included within the scope of protection of the present disclosure. It should be noted that

various improvements and refinements made by a person skilled in the art without departing from the spirit of the present disclosure should be deemed within the scope of protection of the present disclosure.

CLAIMS

What is claimed is:

1. A circulating drainage assembly of a laundry processing apparatus, comprising:

5 a housing having an cavity and provided with an inlet, a drainage outlet and a circulation outlet; and

a filter assembled in the cavity and having a first filter portion that divides the cavity into a circulation cavity and a drainage cavity along its axial direction;

10 wherein the inlet and the drainage outlet are respectively communicated with the drainage cavity, the circulation outlet is communicated with the circulation cavity;

in a drainage working mode of the circulating drainage assembly, laundry water entering the drainage cavity from the inlet is discharged from the drainage outlet; and

15 in a circulation working mode of the circulating drainage assembly, laundry water entering the drainage cavity from the inlet is filtered by the first filter portion and then enters the circulation cavity to be discharged from the circulation outlet.

2. The circulating drainage assembly according to claim 1, wherein the first filter portion is a filter plate with filter pores, the filter plate has a periphery matching with the cavity.

20 3. The circulating drainage assembly according to claim 2, wherein an annular boss for stopping the periphery of the filter plate is arranged in the cavity.

4. The circulating drainage assembly according to any one of claims 1 to 3, wherein the filter further comprises a second filter portion located in the circulation cavity, laundry water
25 entering the circulation cavity is filtered by the second filter portion and then discharged from the circulation outlet.

5. The circulating drainage assembly according to claim 4, wherein the second filter portion is a baffle extending in an axial direction of the circulation cavity.

30 6. The circulating drainage assembly according to any one of claims 1 to 3, wherein the filter further comprises a third filter portion located in the drainage cavity, laundry water entering the drainage cavity is filtered by the third filter portion and then discharged from the drainage outlet.

7. The circulating drainage assembly according to claim 6, wherein the drainage outlet is provided on an end wall in an axial direction of the housing, the third filter portion shields the drainage outlet in an axial direction of the drainage cavity, a radial filtration gap is provided between the third filter portion and a circumferential wall of the housing, and an axial filtration gap is provided between the third filter portion and the end wall of the housing where the drainage outlet is provided.

8. The circulating drainage assembly according to claim 7, wherein the third filter portion has a conical flow guiding surface expanding in a direction to the drainage outlet on a side facing away from the drainage outlet.

9. The circulating drainage assembly according to any one of claims 1 to 3, wherein an end in an axial direction of the housing is an opening communicated with the cavity, and the filter is attachable or detachable from the cavity through the opening.

10. A laundry processing apparatus, comprising the circulating drainage assembly according to any one of claims 1 to 9.