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(54) **SUCTION ASSEMBLY FOR WHIRLPOOL BATHTUB**

(57) This application discloses a water backflow device for preventing water accumulation. The water backflow device is configured for being fixed on a bathtub wall of a bathtub and includes a main body provided with an inner cavity and with a water backflow port for communicating the inside of the inner cavity with the outside of the inner cavity, characterized in that, the side wall of the inner cavity includes a water intake section extending from the water backflow port to the bottom of the inner cavity, and the water intake section has the shape of a horn facing toward the water backflow port and is configured for preventing water from being accumulated at the bottom of the inner cavity. This application further provides a bathtub which includes a bathtub body having an inclined bathtub wall and further includes the above mentioned water backflow device fixed on the bathtub wall. The application relates to the field of sanitary ware, provides a water backflow device for preventing water accumulation and a bathtub, which can overcome the problem of water accumulation in the water backflow device by a horn-shaped water intake section, thereby preventing the water from accumulating and greatly improving the user experience.

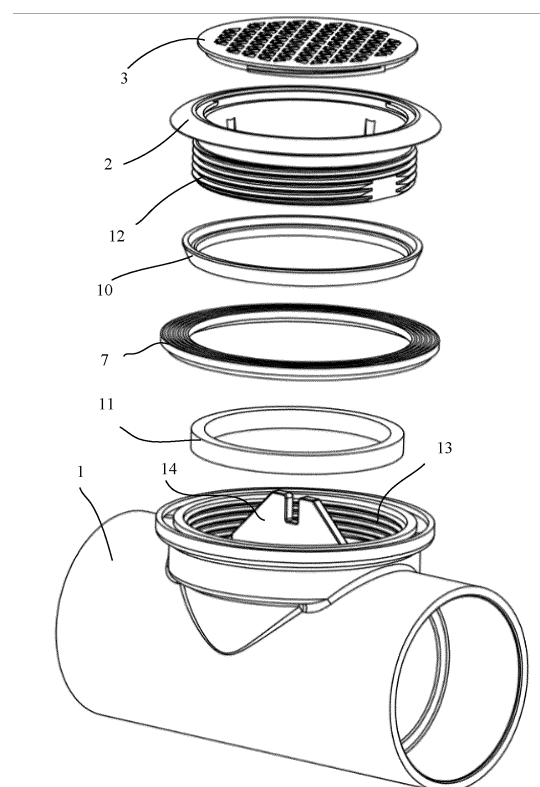


FIG. 3

Description

Technical Field

[0001] The application relates to the field of sanitary ware, in particular to a water backflow device for preventing water accumulation and a bathtub.

Background

[0002] The water backflow device is a filtering water backflow device used in a massage bathtub, and is capable of preventing large solid particles in the bathtub from entering the water pump along with water.

[0003] At present, the inner cavity 4 of the water backflow device available on the market as shown in FIG. 1 generally has a straight cylindrical shape. The bathtub wall 6 of the bathtub is inclined, which causes the water backflow device is inclined as a whole, and thus water 5 may accumulate at the bottom of the inner cavity 4. The accumulated water may stink and breed bacteria, which greatly affects the comfort of the massage experience of users.

Summary

[0004] The application provides a water backflow device for preventing water accumulation and a bathtub, which can overcome the problem of water accumulation in the water backflow device by a horn-shaped water intake section, thereby preventing the water from accumulating and greatly improving the user experience.

[0005] In order to solve the above technical problem, this application adopts the following technical schemes.

[0006] A water backflow device for preventing water accumulation, which is configured for being fixed on a bathtub wall of a bathtub, comprises: a main body provided with an inner cavity and with a water backflow port for communicating the inside of the inner cavity with the outside of the inner cavity. A side wall of the inner cavity comprises a water intake section extending from the water backflow port to a bottom of the inner cavity, and the water intake section has the shape of a horn facing toward the water backflow port and is configured for preventing water from being accumulated at the bottom of the inner cavity.

[0007] In a possible design, an angle formed between the water intake section and an axis of the inner cavity is greater than or equal to an inclination angle of the bathtub wall.

[0008] In a possible design, the angle formed between the water intake section and the axis of the inner cavity is 6-12 degrees.

[0009] In a possible design, the water backflow device comprises a grid cover provided with holes, wherein the grid cover is arranged at the water backflow port, and the surface area of a perforated area of the grid cover is greater than or equal to the maximum cross-sectional

area of the water intake section.

[0010] In a possible design, the main body is provided with first and second connecting channels for connecting pipelines, and the first and second connecting channels are communicated with the inner cavity, respectively.

[0011] In a possible design, the water backflow device comprises a locking cover, the locking cover is screwed with the water backflow port of the main body and there is a void formed therebetween for clamping the bathtub wall of the bathtub, and the grid cover is arranged on the side of the locking cover facing away from the main body.

[0012] In a possible design, the main body is provided with a support rib which spans the water backflow port, and a top portion of the support rib is in clearance fit with the grid cover.

[0013] In a possible design, the main body is provided with a baffle between the inner cavity and the second connecting channel to prevent backflow water from entering the second connecting channel.

[0014] In a possible design, a sealing gasket is provided at the end of the main body facing the locking cover. The locking cover extends through the bathtub wall and a sealing ring is provided between the locking cover and the bathtub wall.

[0015] This application also provides a bathtub which comprises a bathtub body having an inclined bathtub wall. The bathtub further comprises the above mentioned water backflow device fixed on the bathtub wall.

[0016] The application has the following beneficial effects: in this application, the angle formed between the water intake section and the axis of the inner cavity is greater than or equal to the inclination angle of the bathtub wall, which compensates the inclination angle of the bathtub wall, so that after being installed, the water intake section in a lower position is positioned horizontally or is inclined downward toward the water outlet port, therefore preventing water from being accumulated at the bottom of the inner cavity.

[0017] Other features and advantages of the application will be set forth in the following description, and will become apparent in part from the description, or be understood through the implementation of the application. The purposes and other advantages of the application can be realized and obtained by means of the structures specially described in the specification, claims and drawings.

Brief Description of Drawings

[0018] The application will be further explained below with reference to the attached drawings:

FIG. 1 is a schematic view of a conventional water backflow device;

FIG. 2 is a schematic view of a water backflow device according to Example 1;

FIG. 3 is a schematic exploded view of the water backflow device according to Example 1;

FIG. 4 is a schematic cross-sectional view of a main body according to Example 1;

FIG. 5 is a schematic cross-sectional view of the water backflow device according to Example 1;

FIG. 6 is a schematic view of a grid cover according to Example 1;

FIG. 7 is a schematic view of the installation of the water backflow device according to Example 1; and

FIG. 8 is a schematic cross-sectional view of a main body according to Example 2.

[0019] Reference numbers: 1- main body, 2- locking cover, 3- grid cover, 4- inner cavity, 5-accumulated water, 6- bathtub wall, 7- sealing gasket, 8- second connecting channel, 9- first connecting channel, 10- sealing ring, 11- water accumulation preventing rubber pad, 12-external thread, 13- internal thread, 14- support rib, 15- water intake section, 16- void, 17-perforated area, 18- triangular through hole, 19- water backflow port, 20- baffle, 21- pressing rib, 22- stepped surface.

Detailed Description

[0020] In order to make the objects, technical schemes and beneficial effects of the present application more clear, the examples of the present application will be described below with reference to the accompanying drawings. It should be noted that the examples and features of the examples in the present application can be combined with each other in any way unless there is a confliction.

Example 1

[0021] Reference is made to the water backflow device and the bathtub of this application shown in FIGs. 2 to 7. The bathtub includes an inclined bathtub wall 6 on which a water backflow device for water returning is provided. As shown in FIGs. 2 to 7, the water backflow device includes a main body 1 provided with an inner cavity 4. The main body 1 is provided with a water backflow port 19 for communicating the inside of the inner cavity 4 with the outside of the inner cavity 4. The side wall of the inner cavity 4 includes a water intake section 15 extending from the water backflow port 19 to the bottom of the inner cavity 4 and having an inclined configuration. When being fixed on the bathtub wall 6, the water intake section 15 may discharge the water accumulated at the bottom of the inner cavity 4 out of the inner cavity 4. Therefore, the water backflow device discharges the water accumulated at the bottom of the inner cavity 4 by the inclined water

intake section 15, thereby preventing the water from accumulating, preventing the generation of stink and bacteria breeding, and greatly improving the user experience.

[0022] Specifically, as shown in FIGs. 3, 4, 5 and 7, the inner side wall of the inner cavity 4 constitutes the above-mentioned water intake section 15 which has the shape of a horn facing the water backflow port 19. In addition, an internal thread 13 and a support rib 14 are provided at the water backflow port 19 of the main body 1, the support rib 14 extends upward and spans the water backflow port 19. The main body 1 is also provided with a first connecting channel 9 and a second connecting channel 8 for connecting to a water pump or other pipelines. The first connecting channel 9 and the second connecting channel 8 are communicated with the inner cavity 4, respectively, so that the main body 1 forms a three-way structure which can direct the backflow water in two directions.

[0023] As shown in FIGs. 2, 3, 5 and 7, in order to be connected with the bathtub wall 6, the water backflow device further includes a locking cover 2 arranged on the main body 1. The locking cover 2 is of annular shape, the lower end thereof is provided with an external thread 12 which can be matched with an internal thread 13 on the main body 1, and the upper end of the locking cover 2 is provided with a pressing rib 21. When the locking cover 2 is installed on the main body 1, a void 16 is formed between the pressing rib 21 and an upper end face of the main body 1, which is slightly larger than the thickness of the bathtub wall 6, so that the pressing rib 21 and the main body 1 are clamped on the bathtub wall 6. In order to ensure the sealing and prevent the water in the bathtub from flowing out through a gap formed between the bathtub wall 6 and the water backflow device, a sealing gasket 7 and a sealing ring 10 are arranged between the main body 1 and the locking cover 2. The sealing gasket 7 is arranged at the upper end of the main body 1, and the sealing ring 10 is arranged around the locking cover 2. When the water backflow device is installed on the bathtub wall 6, the bathtub wall 6 is sandwiched between the main body 1 and the pressing rib 21, and the sealing gasket 7 is pressed between the main body 1 and the bathtub wall 6 to prevent the water entering the water backflow device from leaking out through the lateral side. The locking cover 2 extends through the bathtub wall 6, and the sealing ring 10 is sandwiched between the locking cover 2 and the bathtub wall 6, so that water in the bathtub can be prevented from leaking through a gap between the water backflow device and the bathtub wall 6. Additionally, the main body 1 is provided with a stepped surface 22 between the water intake section 15 and the internal thread 13. In order to prevent water from being accumulated at the stepped surface 22, a water accumulation preventing rubber pad 11 is provided at the stepped surface 22, and the lower end of the locking cover 2 presses the water accumulation preventing rubber pad 11 tightly against the stepped surface 22.

[0024] In order to prevent particulate matter from entering the water pump, as shown in FIGs. 5 and 6, the water backflow device further includes a grid cover 3 which is arranged on the side of the locking cover 2 facing away from the main body 1 and protrudes from the bathtub wall 6. The grid cover 3 is fitted to the locking cover 2, and can be rotatably detached therefrom. The perforated area 17 of the grid cover 3 is located at the center of the grid cover 3. A plurality of triangular through holes 18 are uniformly formed in the perforated area 17, and no hole is formed at the edge of the grid cover 3. The surface area of the perforated area 17 is larger than or equal to the maximum cross-sectional area of the water intake section 15, so that water will not be accumulated at the region of the edge of the grid cover 3 where no hole is formed. Additionally, the top portion of the support rib 14 is in clearance fit with a lower end face of the grid cover 3, so that the grid cover 3 is supported and prevented from being excessively deformed.

[0025] Therefore, as shown in FIG. 7, the bathtub wall 6 of the bathtub is obliquely arranged. The inclination angle of the bathtub wall 6 is b , i.e., the angle formed between the bathtub wall and the vertical plane is b , which is 8 degrees. The water backflow device is perpendicularly installed on the bathtub wall 6 and an angle c is formed between the axis of the inner cavity 4 and the horizontal plane. It can be seen that c is equal to b , both are 8 degrees. In this Example, the angle formed between the water intake section 15 and the axis of the inner cavity 4 is a , which is 8 degrees. Therefore, when the water backflow device is installed on the bathtub wall 6, the water intake section 15 in the lowermost position is horizontal, i.e., the portion between point A and point B is horizontal, so that water cannot be accumulated at the bottom of the inner cavity 4 or can be discharged in real time, thus achieving the purpose of preventing water accumulation.

Example 2

[0026] Reference is made to Example 2 of the water backflow device and bathtub of this application as shown in FIG. 8. The main difference between this Example and Example 1 is that the baffle blocks the second connecting channel.

[0027] Specifically, as shown in FIG. 8, the main body 1 is provided with a baffle 20 between the inner cavity 4 and the second connecting channel 8. The baffle 20 is connected with the support rib 14 perpendicularly, and can block backflow water from entering the second connecting channel 8, so that the water backflow device can only direct water flow in a single direction.

Example 3

[0028] With respect to Example 3 of the water backflow device and bathtub of the application, the main difference between this Example and Example 1 is that the angle

formed between the water intake section and the axis of the inner cavity is larger than the inclination angle of the bathtub wall.

[0029] Specifically, the inclination angle of the bathtub wall of the bathtub is 8 degrees, and the angle formed between the water intake section and the axis of the inner cavity is 10 degrees, so that the angle formed between the water intake section and the axis of the inner cavity is larger than the inclination angle of the bathtub wall. When the water backflow device is installed on the bathtub wall, the water intake section is arranged downwardly from point A to point B, so that water cannot be accumulated at the bottom of the inner cavity or can be discharged in real time through the water backflow port, thus achieving the purpose of preventing water accumulation.

[0030] According to the above Examples, the water backflow device of the application discharges the water at the bottom of the inner cavity by the inclined water intake section, thereby preventing water accumulation and greatly improving the user experience. The angle formed between the water intake section and the axis of the inner cavity of the application is greater than or equal to the inclination angle of the bathtub wall, which compensates the inclination angle of the bathtub wall, so that after being installed, the water intake section in a lower position is positioned horizontally or is inclined downward toward the water outlet port. In this application, the surface area of the perforated area of the grid cover is larger than or equal to the maximum cross-sectional area of the water intake section, so that water will not be accumulated at the region of the edge of the grid cover where no hole is formed. In this application, the distance of the grid cover protruding from the bathtub wall is relatively small, which is beneficial to the overall aesthetics.

[0031] In the description of this application, the terms "install", "connect", "couple" and "fix" and the like should be understood in a broad sense. For example, "connect" can refer to a fixed connection, a detachable connection or an integral connection, or it can refer to being directly connected or being indirectly connected through intermediate media. For those of ordinary skill in the art, the specific meanings of the above terms in this application can be understood according to specific context.

[0032] In the description of this specification, the description of the terms "one example", "some examples", "a specific example" and the like means that a specific feature, structure, material, or characteristic described in connection with the embodiment or example is included in at least one embodiment or example of this application. In this specification, the schematic representation on the above-mentioned terms does not necessarily refer to the same embodiment or example. Moreover, the specific features, structures, materials, or characteristics described may be combined in any one or more embodiments or examples in a suitable manner.

[0033] Although the embodiments of the application are disclosed as above, the disclosure is only embodiments provided for ease of understanding the application

and is not intended to limit the application. Any skilled in the art may make any modification and change in the forms and details of the embodiments without departing from the spirit and scope of this application. The patent protection scope of this application shall be defined by the appended claims.

Claims

1. A water backflow device for preventing water accumulation, which is configured for being fixed on a bathtub wall (6) of a bathtub, comprising: a main body (1) provided with an inner cavity (4) and with a water backflow port (19) for communicating the inside of the inner cavity (4) with the outside of the inner cavity (4), **characterized in that**, a side wall of the inner cavity (4) comprises a water intake section (15) extending from the water backflow port (19) to a bottom of the inner cavity (4), the water intake section (15) has the shape of a horn facing toward the water backflow port (19) and is configured for preventing water from being accumulated at the bottom of the inner cavity (4).
2. The water backflow device for preventing water accumulation according to claim 1, **characterized in that**, an angle formed between the water intake section (15) and an axis of the inner cavity (4) is greater than or equal to an inclination angle of the bathtub wall (6).
3. The water backflow device for preventing water accumulation according to claim 2, **characterized in that**, the angle formed between the water intake section (15) and the axis of the inner cavity (4) is 6-12 degrees.
4. The water backflow device for preventing water accumulation according to claim 3, **characterized in that**, the water backflow device comprises a grid cover (3) provided with holes (18), the grid cover (3) is arranged at the water backflow port (19), and the surface area of a perforated area (17) of the grid cover (3) is greater than or equal to the maximum cross-sectional area of the water intake section (15).
5. The water backflow device for preventing water accumulation according to claim 4, **characterized in that**, the main body (1) is provided with first and second connecting channels (9, 8) for connecting pipelines, and the first and second connecting channels (9, 8) are communicated with the inner cavity (4), respectively.
6. The water backflow device for preventing water accumulation according to claim 4, **characterized in that**, the water backflow device comprises a locking

cover (2), the locking cover (2) is screwed with the water backflow port (19) of the main body (1) and there is a void (16) formed therebetween for clamping the bathtub wall (6) of the bathtub, and the grid cover (3) is arranged on the side of the locking cover (2) facing away from the main body (1).

7. The water backflow device for preventing water accumulation according to claim 4, **characterized in that**, the main body (1) is provided with a support rib (14) which spans the water backflow port (19), and a top portion of the support rib (14) is in clearance fit with the grid cover (3).
8. The water backflow device for preventing water accumulation according to claim 7, **characterized in that**, the main body (1) is provided with a baffle (20) between the inner cavity (4) and the second connecting channel (8) to prevent backflow water from entering the second connecting channel (8).
9. The water backflow device for preventing water accumulation according to claim 6, **characterized in that**, a sealing gasket (7) is provided at an end of the main body (1) facing the locking cover (2), the locking cover (2) extends through the bathtub wall (6) and a sealing ring (10) is provided between the locking cover (2) and the bathtub wall (6).
10. A bathtub, comprising a bathtub body having an inclined bathtub wall (6), **characterized in that**, the bathtub further comprises a water backflow device according to any one of claims 1-9, wherein the water backflow device is fixed on the bathtub wall (6).

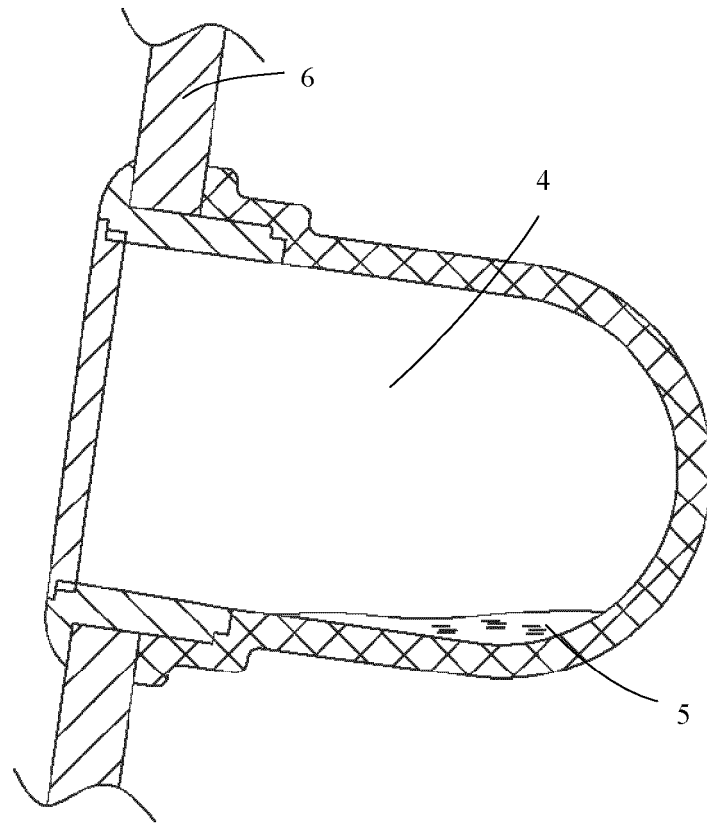


FIG. 1

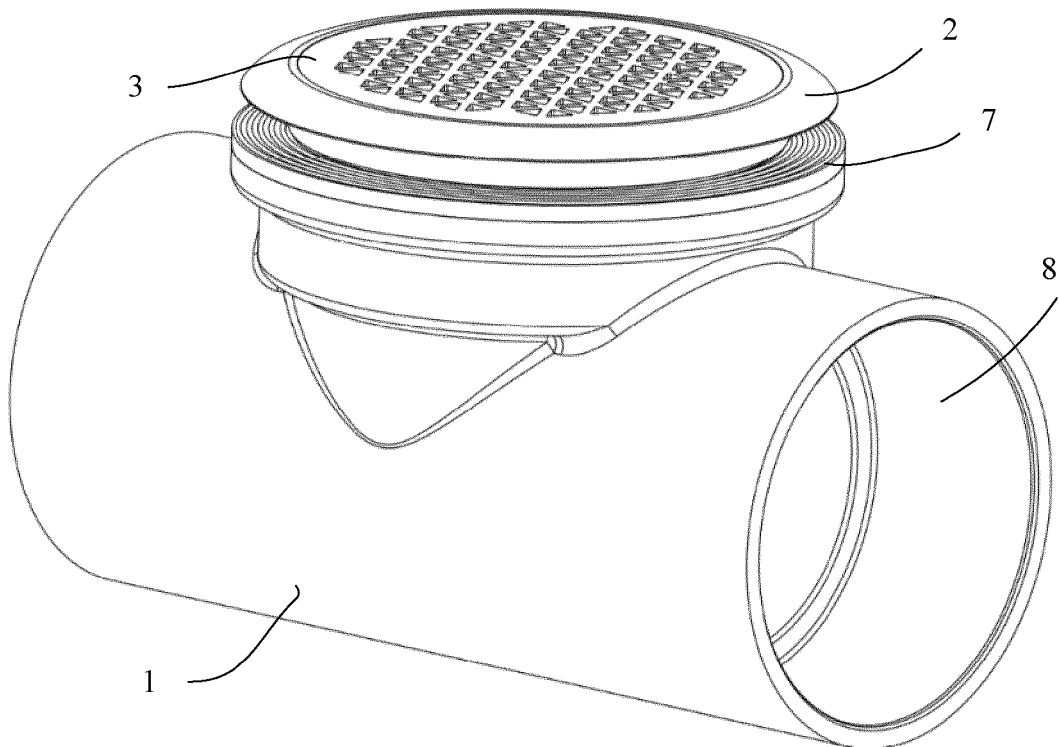


FIG. 2

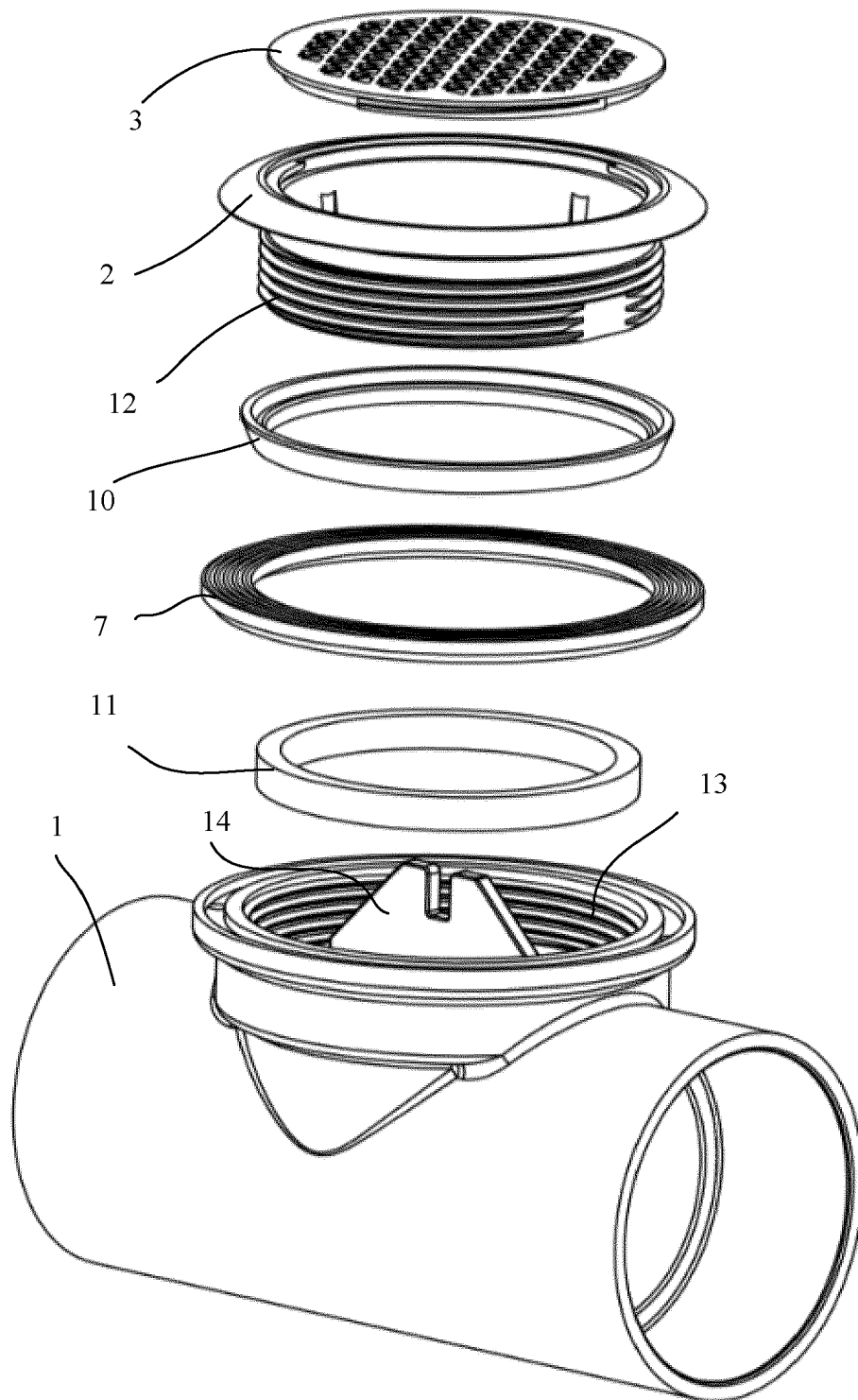


FIG. 3

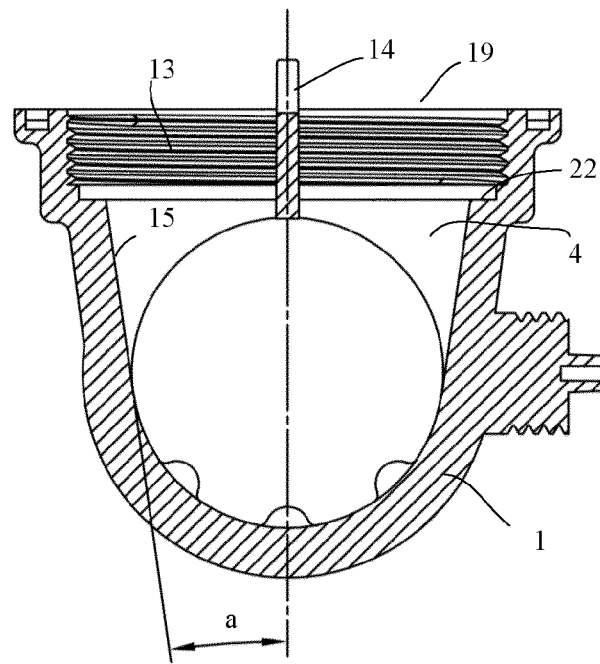


FIG. 4

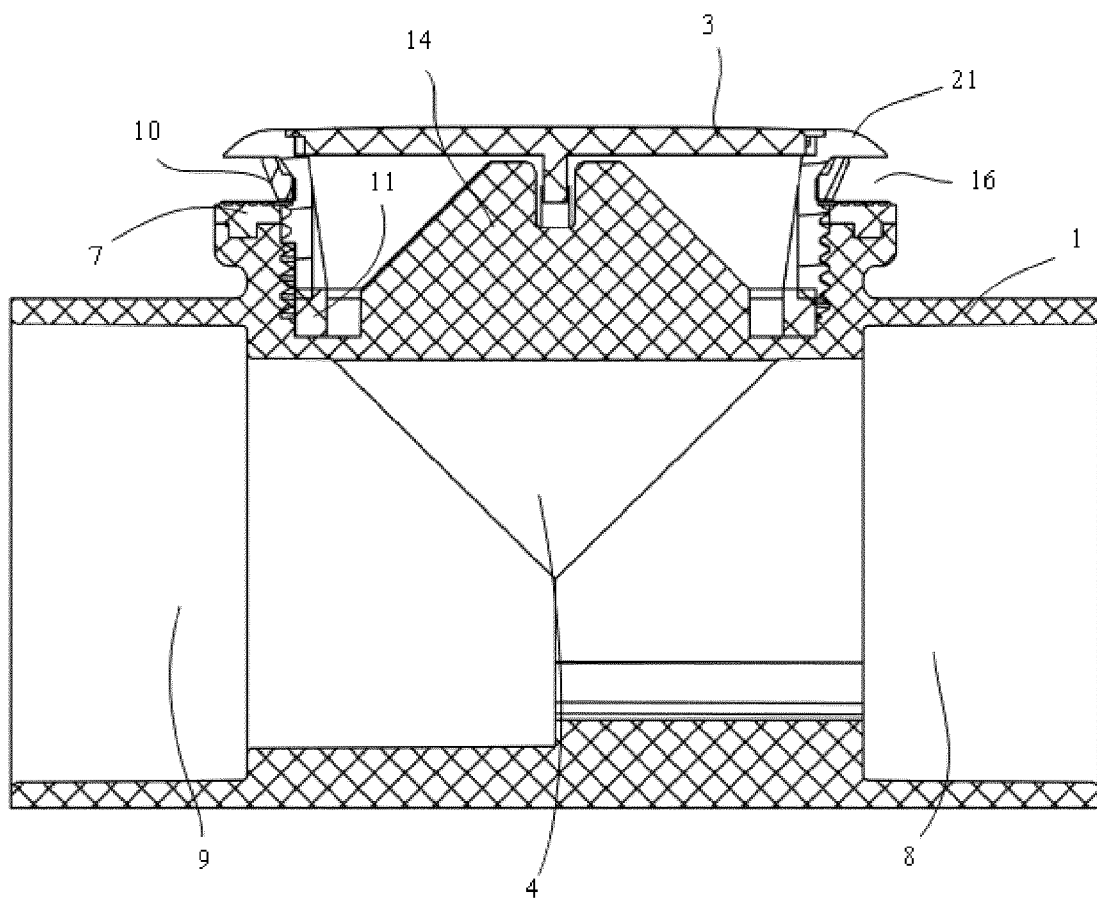


FIG. 5

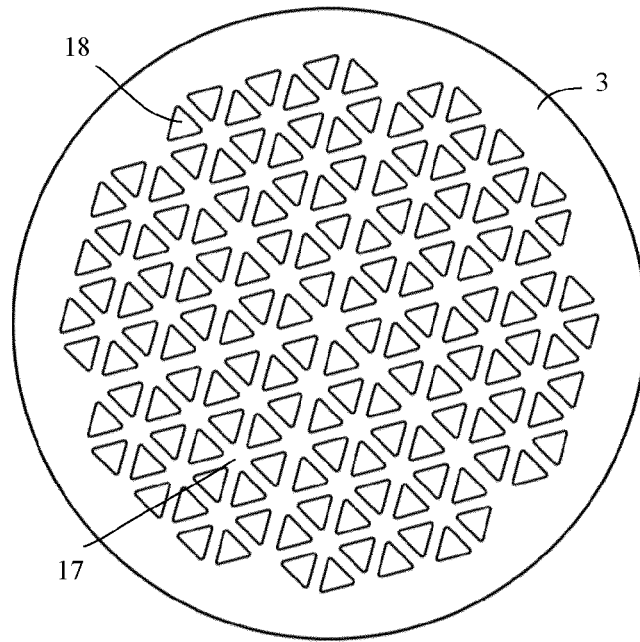


FIG. 6

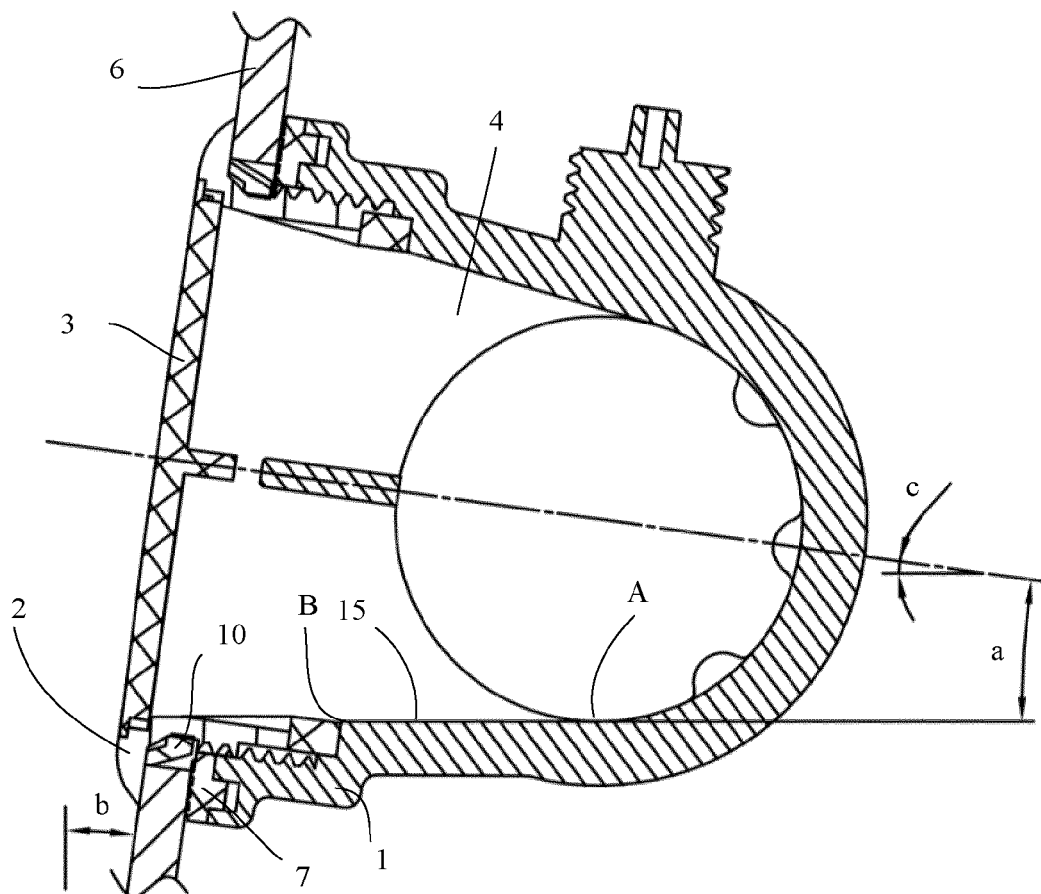


FIG. 7

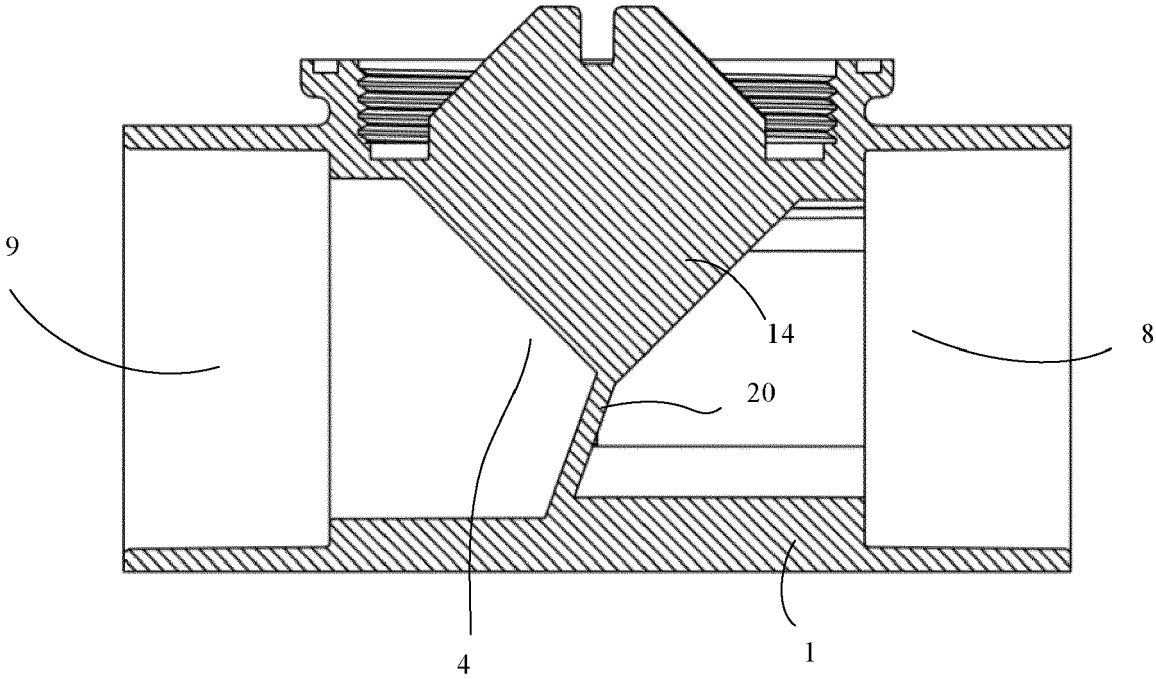


FIG. 8



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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
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Place of search		Date of completion of the search	Examiner
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