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

(11) **EP 3 702 544 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.09.2020 Bulletin 2020/36

(51) Int Cl.:
E03D 1/14 *(2006.01)* ***E03D 1/34*** *(2006.01)*
E03D 1/35 *(2006.01)*

(21) Application number: **20159878.6**

(22) Date of filing: **27.02.2020**

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

(30) Priority: **27.02.2019 CN 201910146213**

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(54) **FLUSH VALVE FOR TOILET CISTERN WITH ADJUSTABLE DRAINAGE SPEED**

(57) Drain valve with adjustable drainage speed of the present invention uses a reversible flap (10) to control the outlet size of the water outlet (72) of the drain valve, that is, to adjust the water passing area of the water outlet (72) of the drain valve, and then control the drainage speed of the drain valve and finally adjust the drainage speed of the toilet.

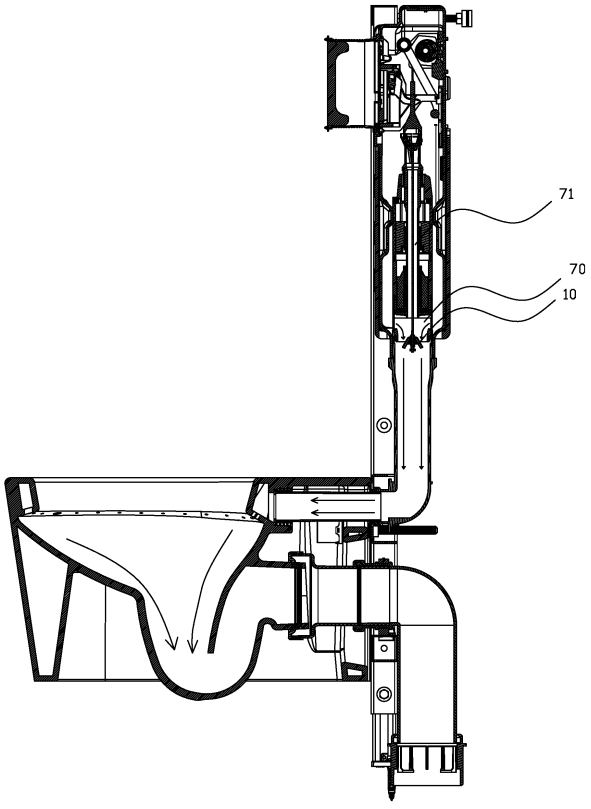

Fig. 1

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Description

FIELD OF THE DISCLOSURE

[0001] The present disclosure relates to a drain valve, and in particular relates to a drain valve with an adjustable drainage speed.

BACKGROUND OF THE DISCLOSURE

[0002] When a toilet is flushed and drained, a flushing performance is mainly determined by a drainage volume and a drainage speed. Among them, an amount of the drainage volume can be adjusted by adjusting a preset position of a float to achieve a predetermined amount of the drainage volume to meet a water demand of different toilets. The drainage speed is mainly determined by a size of a spray hole, when the spray hole becomes smaller, the drainage speed becomes greater, and the flushing performance becomes better.

[0003] The spray hole is disposed on a ceramic body of the toilet, and a size of the spray hole cannot be adjusted, that is, the drainage speed cannot be adjusted according to requirements of the users. In addition, if the drainage speed increases through an adjustment of the spray hole, it will cause problems such as greater noise and water splashing.

BRIEF SUMMARY OF THE DISCLOSURE

[0004] The present disclosure solves deficiencies related to gargling of the existing techniques. The present disclosure provides a drain valve with an adjustable drainage speed and is configured to adjust a drainage speed, control noise, and prevent from water splashing to meet various needs.

[0005] In order to solve the aforementioned technical problems, a technical solution of the present disclosure is as follows.

[0006] A drain valve with an adjustable drainage speed, an adjusting mechanism is configured to control an angle of at least one reversible board at a water outlet of the drain valve to adjust an opening width of the water outlet, and an adjustment of the drainage speed is achieved.

[0007] In a preferred embodiment, the adjusting mechanism operates along a height direction of the drain valve to control a rotation angle of the at least one reversible board in a vertical direction, a water passing area of the water outlet is adjusted, and the adjustment of the drainage speed is achieved.

[0008] In a preferred embodiment, the adjusting mechanism comprises a pushing component configured to move upward and move downward. When the pushing component moves upward to push the at least one reversible board to turn upward, the water passing area of the water outlet decreases, and the drainage speed decreases. When the pushing component moves downward to enable the at least one reversible board turn downward, the water passing area of the water outlet increases, and the drainage speed increases.

[0009] In a preferred embodiment, inside the drain valve, a horizontal support rod is disposed adjacent to the water outlet. The at least one reversible board comprises two reversible boards, and the two reversible boards are respectively disposed on both sides of the pushing component and are rotatably connected to the horizontal support rod.

[0010] In a preferred embodiment, the adjusting mechanism comprises a threaded rod and the pushing component, the pushing component is a pushing block disposed on a first end of the threaded rod. Inside the drain valvean adjusting base is disposed adjacent to the water outlet. The adjusting base is disposed with an internal thread, the treaded rod is screwed on the adjusting base, the treaded rod is rotated to control the pushing block to move upward and move downward, and the rotation angle of the at least one reversible board in the vertical direction is controlled.

[0011] In a preferred embodiment, at a position of an edge of the at least one reversible board being relative to the pushing block, at least one guide slop is disposed on a side of the at least one reversible board opposite to the pushing block, and the pushing block abuts the at least one guide slope to control the at least one reversible board to achieve an initial upward turning.

[0012] In a preferred embodiment, a side of the pushing block opposite to the at least one guide slope is an inclined tapered surface.

[0013] In a preferred embodiment, the adjusting mechanism comprises a rotatable rod and the pushing component, the pushing component is a sleeve disposed with an external thread. The sleeve surrounds on a first end of the rotatable rod facing the at least one reversible board, the sleeve rotates following a rotation of the rotatable rod. Inside the drain valve an adjusting base is disposed adjacent to the water outlet, the adjusting base is disposed with an internal thread, the sleeve is screwed on the adjusting base. A second end of the rotatable rod extends to a top end of the drain valve. The rotatable rod rotates to control the sleeve to move upward and move downward so that the rotating angle of the at least one reversible board in the vertical direction is controlled.

[0014] In a preferred embodiment, the adjusting base comprises a threaded base and a positioning base, the positioning base is disposed below the threaded base. The first end of the rotatable rod is inserted to a through hole of the positioning base, and the sleeve is positioned at a side of the positioning base facing the threaded base.

[0015] In a preferred embodiment, the first end of the rotatable rod facing the at least one reversible board is a rectangular rod, a cylindrical portion is disposed adjacent to an end of the rectangular rod. A through hole of the sleeve and a insertion hole of the positioning base are corresponding round waist holes, and the cylindrical portion is disposed at a round waist position of the inser-

tion hole of the positioning base.

[0016] In a preferred embodiment, a pushing ring with an enlarged diameter is disposed at a top end of the sleeve, the at least one reversible board is disposed with at least one groove corresponding to the threaded base and the positioning base, a first end of the at least groove is disposed with at least one abutting inclined surface corresponding to the pushing ring, and the pushing ring abuts the at least one abutting inclined surface so that an upward turning of the at least one reversible board is achieved.

[0017] In a preferred embodiment, the top end of the drain valve is disposed with a positioning member, the rotatable rod is penetrated through a positioning hole of the positioning member, and the positioning hole prevents the rotatable rod from swinging.

[0018] In a preferred embodiment, the positioning member extends from a top end of the rotatable rod, and a knob is disposed on the top end of the rotatable rod.

[0019] The technical solution has the following advantages:

[0020] The drain valve with an adjustable drainage speed of the present disclosure uses a reversible board to control the opening width of the water outlet of the drain valve, that is, to adjust the water passing area of the water outlet of the drain valve, and then control the drainage speed of the drain valve and finally adjust the drainage speed of the toilet. An application of the present disclosure does not increase the drainage speed by changing a width of a spray hole of the toilet, thereby prevent from corresponding problems of large noise, water splashing and the like.

[0021] The present disclosure adjusts the drainage speed at a position of the water outlet of the drain valve, which effectively avoid a generation of noise, and an optimal size of the spray hole is adaptable to avoid water splashing problem during a flushing process.

[0022] The drainage speed of the drain valve of the present disclosure is adjustable, and can cooperate with different toilets and different water tanks to adjust according to a drainage volume, the width of the spray hole, and a drainage speed of the drain valve to obtain a flushing effect required by the user.

BRIEF DESCRIPTION OF THE DRAWING

[0023]

Fig. 1 illustrates a schematic view of an implementation of the present disclosure;
Fig. 2 illustrates a schematic view of Embodiment 1;
Fig. 3 illustrates an exploded view of a portion of Embodiment 1 (a drain valve body is not shown);
Fig. 4 illustrates a top view of Embodiment 1 when a reversible board is disposed at a vertical angle (the drain valve body is not shown);
Fig. 5 illustrates a sectional view of Fig. 4 in a direction of A-A;
Fig. 6 illustrates a sectional view of Fig. 4 in a direction of B-B;
Fig. 7 illustrates a top view of Embodiment 1 when the reversible board turns to an upward position (the drain valve body is not shown);
Fig. 8 illustrates a sectional view of Fig. 7 in a direction of C-C;
Fig. 9 illustrates a schematic view of Embodiment 2;
Fig. 10 illustrates an exploded view of Embodiment 2 (the drain valve body is not shown);
Fig. 11 illustrates a top view in Embodiment 2 when a reversible board is disposed at a vertical angle (a drain valve body is not shown);
Fig. 12 illustrates a sectional view of Fig. 11 in a direction of D-D;
Fig. 13 illustrates a sectional view of Fig. 11 in a direction of E-E;
Fig. 14 illustrates a top view of Embodiment 2 located when the reversible board turns to an upward position (the drain valve body is not shown);
Fig. 15 illustrates a sectional view of Fig. 14 in a direction of F-F; and
Fig. 16 illustrates a graph showing the relationship between the angle of the adjusting component and the drainage speed.

[0024] Reference: 10 is a reversible board (also named as an adjustable reversible board), 11 is a guide slope, 12 is a groove, 13 is an abutting inclined surface, 14 is a hook, 20 is a threaded rod, 21 is a pushing block, 22 is a tapered surface, 30 is a rotatable rod, 301 is a rectangular rod, 302 is a cylindrical portion, 31 is a sleeve, 311 is a push ring, 312 is a through hole, 32 is a knob, 40 is an adjusting base, 41 is a threaded base, 42 is a positioning base, 421 is an insertion hole, 43 is a connecting rod, 50 is a horizontal support rod, 60 is a positioning member, 61 is a positioning hole, 70 is a connecting base, and 71 is a drain valve body.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0025] The present disclosure will be further described below with the combination with the accompanying drawings and the embodiments.

[0026] In order to solve the problems of the existing technology (such as large noise and water splashing) during a process of adjusting drainage speed. The present disclosure provides a drain valve with an adjustable drainage speed (also named as a drain valve), which is configured to adjust a drainage speed of the drain valve to control a flushing speed of a water flow of a toilet. The drain valve with the adjustable drainage speed is configured to improve a flushing effect, avoid noise, and effectively prevent from a problem of water splashing.

Embodiment 1

[0027] A drain valve with an adjustable drainage speed

of the present disclosure comprises an adjusting mechanism 100, the adjusting mechanism 100 is configured to control an angle of at least one adjustable reversible board 10 (also named as at least one reversible board) to adjust an opening width of the water outlet 72 at a position of a water outlet 72 of the drain valve, and an adjustment of a drainage speed is achieved. Further, as shown in Fig. 1, the present disclosure makes it possible to adjust a flow rate of a water spray ejected from a spray hole of a toilet at a position of the drain valve so that the spray hole of the toilet retains a normal size to control noise and prevent from water splashing.

[0028] In the present disclosure, a water passing area of the water outlet 72 of the drain valve is changed by adjusting the angle of the at least one reversible board 10, so that different drainage speeds can be achieved by different water passing areas under the same drainage volume and the same water pressure. In the present disclosure, as shown in Figs. 2-8, the at least one reversible board 10 comprises a plate-like structure. When the at least one reversible board 10 is disposed at a vertical angle with respect to a height direction of the drain valve, the water passing area of the water outlet 72 is largest. When the at least one reversible board 10 is disposed at a horizontal angle with respect to the height direction of the drain valve, the water passing area of the water outlet 72 is smallest. Correspondingly, the adjusting mechanism 100 is operated along the height direction of the drain valve to control a rotating angle of the at least one reversible board 10 in a vertical direction to adjust the water passing area of the water outlet 72, so that an adjustment of the drainage speed is achieved.

[0029] The adjusting mechanism 100 is operated along the height direction of the drain valve to push and release the at least one reversible board 10, the adjusting mechanism 100 comprises a pushing component 200 configured to move upward and to move downward. When the drainage volume and water pressure remains unchanged, the pushing component 200 moves upward, and the at least one reversible board 10 is pushed upward, the water passing area of the water outlet 72 decreases, and the drainage speed decreases. When the pushing component 200 moves downward, the reversible 10 is turned downward due to a weight of the at least one reversible board 10, the water passing area of the water outlet 72 increases, and the drainage speed increases.

[0030] In order to realize an vertical turning of the at least one reversible board 10, a horizontal support rod 50 is disposed in the drain valve adjacent to the water outlet 72, and the at least one reversible board 10 is rotatably connected to the horizontal support rod 50. Theoretically, merely one of the at least one reversible board 10 can affect the water passing area, and one more of the at least one reversible board 10 can also control the water passing area. In this embodiment, the at least one reversible board comprises two reversible boards 10, the two reversible boards 10 are respectively dispoed on two sides of the pushing component 200, and the two reversible board 10 are rotated synchronously under an action of the pushing component 200. When the two reversible boards 10 are at a vertical angle with respect to a height direction of the drain valve, the two reversible boards 10 are configured to be as close as possible, that is, a space between the two reversible boards 10 is small. Especially compared with a solution of three or more reversible boards 10, when there are a plurality of reversible boards 10, a space surrounded by the plurality of reversible boards is larger, When the plurality of reversible boards 10 are at a horizontal angle, there is still a large water passing area. When the plurality of reversible boards 10 are at a vertical angle, they occupy a large space. Therefore, when there are the two reversible boards 10, an adjustment range for the water passing area is the widest, that is, an adjustment range of the drainage speed is the widest to enable a slowest drainage speed and a fastest drainage speed, and an efficiency of the adjustment is guaranteed. That is, the two reversible boards 10 is configured to be rotated at the same time to quickly adjust the drainage speed.

[0031] An upper edge of each of the two reversible boards 10 comprises two hooks 14, each of the two reversible boards 10 is rotatably connected to the horizontal support rod 50 through the two hooks 14. The two reversible boards 10 are opposite to each other and have same structures. A first hook of the two hooks 14 is disposed on a first end of an upper edge of a corresponding one of the two reversible boards. A second hook of the two hooks 14 is disposed on a position of the upper edge of a corresponding one of the two reversible boards adjacent to a second end of the upper edge, the second hook retracts inward in a certain distance, the certain distance which the second hook 14 retracted is greater than a length defined from the first hook 14 to an outer end of the upper edge of the corresponding one of the two reversible boards. Therefore, only one kind of reversible board 10 is needed to be produced during a production process. When the two reversible boards 10 are assembled, the two reversible boards 10 of both sides are rotationally symmetrically disposed, and two corresponding hooks 14 of the two reversible boards 10 on the same side are staggered and locked on the horizontal support rod 50 at the same time to define a rotational connection. Moreover, a distance defined between the upper edges of the two reversible boards 10 and the horizontal support rod 50 is extended due to the two hooks 14, the distance provide sufficient space for the two hooks 14 so as to prevent the two hooks 14 of the first second reversible board 10 from being contacted with the second reversible board 10 to restrict the rotating angle during the rotation of the two reversible boards 10.

[0032] In this embodiment, the adjusting mechanism 100 comprises a threaded rod 20 and a pushing component 200. The pushing component 200 is a pushing block 21 disposed at an end of the threaded rod 20, and the threaded rod 20 and the pushing block 21 define an in-

tegrated structure being similar to a bolt. Inside of the drain valve an adjusting base 40 is disposed adjacent to a water outlet 72 of the drain valve. The adjusting base 40 is disposed with an internal thread. The threaded rod 20 is screwed on the adjusting base 40. The threaded rod 20 is rotated to control an upward movement and a downward movement of the pushing block 21, and the pushing block 21 is configured to push the two reversible boards 10 and release the two reversible boards 10 to control a rotating angle of the two reversible boards 10 in the vertical direction. The adjusting mechanism 100 is screwed up from a bottom of the drain valve during an assembly process, and the adjusting mechanism 100 is operated from the bottom of the drain valve during an adjustment process. In order to facilitate to be rotated, an outline of the pushing block 21 is circular, and several protrusions are evenly disposed on an outer wall of the pushing block 21 to increase a friction force and facilitate to be rotated by hand. It is also adaptable to open slots on a surface of the pushing block 21 and rotate the pushing block 21 with a corresponding tool. For example, a cross slot is disposed, and the pushing block 21 can be rotated by a cross screwdriver.

[0033] In order to simplify a structure of the drain valve, the horizontal support rod 50 and the adjusting base 40 can be an integrated structure, that is, the adjusting base 40 is disposed on a center position of the horizontal support rod 50, and the adjusting base 40 is positioned by the horizontal support rod 50, the two hooks 14 of each of the two reversible boards 10 are respectively disposed both sides of the adjusting base 40 and are disposed on the horizontal support rod 50.

[0034] In order to obtain a maximum adjustable range, when the pushing block 21 moves to a lowest position, it should be disposed on a position being out of a range of the two reversible boards 10 so that the two reversible boards 10 can be disposed at a vertical angle. When the pushing block 21 moves upward, in order to ensure the pushing block 21 to smoothly enter into the range of the two reversible boards 10 to smoothly achieve an angle adjustment without jamming with the two reversible boards 10. In this embodiment, at a position where the two reversible boards 10 opposite to the pushing block 21, a first side of each of the two reversible boards 10 comprises a guide slope 11. The guide slopes 11 provides space to an upward movement of the pushing block 21. The pushing block 21 gradually moves upward from a position being not contacted with the two reversible boards 10, the pushing block 21 can avoid interference from edges of the two reversible boards 10, the pushing block 21 firstly moves to contact with the guide slopes 11 and push up the two reversible boards 10, and an initial upward turning of the two reversible boards 10 is achieved. The pushing block 21 continues to move upward from the guide slopes 11 to a flat plate portion of each of the two reversible boards 10, and a later upward turning of the two reversible boards 10 is achieved.

[0035] In this embodiment, when the guide slopes 11 of the two reversible boards 10 are disposed at a vertical angle to define a certain width, the pushing block 21 is disposed within a range of the certain width. The guide slopes 11 can be flat surfaces or curved surfaces, which can be obtained by thinning the two reversible boards 10, or can be obtained by bending outward.

[0036] Corresponding to the guide slopes 11, sides of the pushing block 21 opposite to the guide slopes 11 are tapered surface 22 correspondingly inclined. Through a cooperation of the tapered surface 22 and the guide slopes 11, the pushing block 21 can push the two reversible boards 10 to achieve the initial upward turning more easily.

[0037] In order to facilitate assembly, in this embodiment, a connecting base 70 is disposed on a first end of the water outlet 72 of the drain valve, the adjusting base 40, the horizontal support rod 50, and the connecting base 70 are integrally formed. The adjusting mechanism 100 and the reversible board 10 are firstly disposed on the adjusting base 40 and the horizontal support rod 50, then disposed on a drain valve body 71 via the connecting base 70.

Embodiment 2

[0038] As shown in Figs. 9-15, in this embodiment, the adjusting mechanism 100 comprises a rotatable rod 30 and a pushing component 200. The pushing component 200 comprises a sleeve 31 disposed with an external thread. The sleeve 31 slidably surrounds at a first end of the rotatable rod 30 facing toward the two reversible boards 10. The sleeve 31 rotates following a rotation of the rotatable rod 30. Inner side of the drain valve an adjusting base 40 is disposed adjacent to a water outlet 72 of the drain valve. The adjusting base 40 is disposed with an internal thread. The sleeve 31 is rotatably disposed on the adjusting base 40. The rotatable rod 30 is rotated to control an upward movement and a downward movement of the sleeve 31, and a rotating angle of the two reversible boards 10 in the vertical direction is controlled. When need to adjust a height of the sleeve 31, the rotatable rod 30 is rotated, and the sleeve 31 rotates following the rotation of the rotatable rod 30. Since the sleeve 31 rotates synchronously with the rotatable rod 30 and can slide on the rotatable rod 30, when the sleeve 31 rotates, the rotatable rod 30 can move upward and downward to push or release the two reversible boards 10.

[0039] A second edge of the rotatable rod 30 extends to a top end of the drain valve. In this embodiment, when a drainage speed of the drain valve is adjusted, it can be operated from a top end of the drain valve, and the operation is more convenient. A height of the drain valve is high, the adjusting base 40 and the sleeve 31 are disposed adjacent to a first end of the drain valve disposed with the water outlet 72, therefore, the rotatable rod 30 needs a long length. The rotatable rod 30 is merely supported by the adjusting base 40, therefore, the rotatable rod 30 easily swings in a large width and is not convenient

to turn resulting into being broken. In order to enhance a stability of the rotatable rod 30, a positioning member 60 is disposed at the top end of the drain valve. The rotatable rod 30 enters into the positioning hole 61 of the positioning member 60, and the positioning hole 61 prevents the rotatable rod 30 from swinging. Furthermore, the adjusting base 40 and the positioning member 60 are configured to restrict two ends of the rotatable rod 30 in a horizontal direction, so that the rotation of the rotatable rod 30 can be effectively prevented.

[0040] In order to further facilitate an operation of the adjustment, in this embodiment, a positioning member 60 extends from a top end of the rotatable rod 30, and a knob 32 is disposed on the top end of the rotatable rod 30.

[0041] The adjusting base 40 comprises a threaded base 41 and a positioning base 42. The positioning base 42 is disposed below the threaded base 41. The positioning base 42 is configured to be connected to the threaded base 41 as a whole through a connecting rod 43. The first end of the rotatable rod 30 is inserted into an insertion hole 421 of the positioning base 42 and the sleeve 31 are positioned at a first side of the positioning base 42 facing the threaded base 41. In this embodiment, an outer diameter of the sleeve 31 is larger than a diameter of the insertion hole 421, the insertion hole 31 cannot pass through the insertion hole 421 to prevent the sleeve 31 from passing through the insertion hole 421 due to an over rotation of the rotatable rod 30, and the sleeve 31 separates from the rotatable rod 30.

[0042] In this embodiment, a second end of the rotatable rod 30 facing the two reversible boards 10 is a rectangular rod 301. The rectangular rod 301 comprises a cylindrical portion 302 adjacent to an end of the rectangular rod 301. A through hole 312 of the sleeve 31 and the insertion hole 421 of the positioning base 42 are corresponding round waist holes, the sleeve 31 is configured to pass through the rectangular rod 301 without obstacle, slide on the rotatable rod 30, and rotate following the rotation of the rotatable rod 30. The cylindrical portion 302 is disposed at a round waist position of the insertion hole 421 of the positioning base 42, and the first end of the rotatable rod 30 penetrates the positioning base 42 from the insertion hole 421. The rotatable rod 30 is configured to be pulled out from the positioning base 42 only at a specific angle due to a cooperation of the rectangular rod 301 of the rotatable rod 30, the cylindrical portion 302, and the insertion hole 421 of the positioning base 42, which ensures a stability of an installation of the rotatable rod 30, and simplifies a disassembly operation without causing excessive difficulty and complexity.

[0043] In order to make a space between the two reversible boards 10 as small as possible, each of the two reversible boards 10 is disposed with a groove 12 corresponding to the threaded base 41 and the positioning base 42. When each of the two reversible boards 10 is at a vertical angle, the grooves 12 is oppositely disposed to cover the threaded base 41 and the positioning base 42, and the plate-like structures of the two reversible boards 10 disposed on the two sides of the groove 12 are close to each other. In order to push the two reversible boards 10 more effectively, a pushing ring 311 with an enlarged diameter is disposed on a top end of the sleeve 31, and the two reversible boards 10 are respectively disposed with an abutting inclined surface 13 corresponding to the pushing ring 311. With a cooperation of the pushing ring 311 and the abutting inclined surfaces 13, the two reversible boards 10 are configured to move upward or move downward, and a principle is similar to that of Embodiment 1. In this embodiment, a first end of each of the grooves 12 is disposed with an abutting inclined surface 13 corresponding to the pushing ring 311, the pushing ring 311 abuts against the inclined surfaces 13 so that an upward turning of the two reversible boards 10 is achieved.

[0044] When being assembled, the sleeve 31 is firstly screwed to the threaded base 41 in a downward direction, and the pushing ring 311 is configured to prevent the sleeve 31 from being screwed out of the threaded base 41 due to excessive adjustment. Then, the rotatable rod 30 is inserted from the top of the drain valve to pass through the positioning hole 61 of the positioning member 60, the through hole 312 disposed on the threaded base 41 of the sleeve 31, and the insertion hole 421 of the positioning base 42, and then extends out of the positioning base 42. Further, in order to facilitate an assembly of the sleeve 31, the adjusting base 40 and the horizontal support rod 50 is an integrated structure, the horizontal support rod 50 is a short rod laterally extending inward from each of both ends of the adjusting base 40. Firstly, the two reversible boards 10 and the sleeve 31 are disposed on the adjusting base 40 and the horizontal support rod 50, and then the integrated structure of the adjusting base 40 and horizontal support rod 50 are disposed on the drain valve. Further, the integrated structure of the adjusting base 40 and horizontal support rod 50 is configured to disposed on the drain valve body 71 through the connecting base 70.

[0045] Rest structures of embodiment 2 are the same as those of embodiment 1.

[0046] A standard of embodiment 1 and embodiment 2 of the present disclosure are basically the same. As shown in Fig. 16, when the adjustment component moves upward, an angle α of each of the two reversible boards in the vertical direction becomes larger, the water passing area becomes smaller, the drainage speed becomes slower, and a rate of the drainage speed decreases faster firstly, and then becomes slower.

[0047] It will be apparent to those skilled in the art that various modifications and variations can be made in the present disclosure without departing from the spirit or scope of the invention. Thus, it is intended that the present disclosure cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

Claims

1. A drain valve with an adjustable drainage speed, **characterized in that**:

   an adjusting mechanism (100) is configured to control an angle of at least one reversible board (10) at a water outlet (72) of the drain valve to adjust an opening width of the water outlet (72), and
   an adjustment of the drainage speed is achieved.

2. The drain valve with the adjustable drainage speed according to claim 1, **characterized in that**:

   the adjusting mechanism (100) operates along a height direction of the drain valve to control a rotation angle of the at least one reversible board (10) in a vertical direction,
   a water passing area of the water outlet (72) is adjusted, and
   the adjustment of the drainage speed is achieved.

3. The drain valve with the adjustable drainage speed according to claim 2, **characterized in that**:

   the adjusting mechanism (100) comprises a pushing component (200) configured to move upward and move downward,
   when the pushing component (200) moves upward to push the at least one reversible board (10) to turn upward:

      the water passing area of the water outlet (72) decreases, and
      the drainage speed decreases,

   when the pushing component (200) moves downward to enable the at least one reversible board (10) turn downward:

      the water passing area of the water outlet (72) increases, and
      the drainage speed increases.

4. The drain valve with the adjustable drainage speed according to claim 3, **characterized in that**:

   inside the drain valve a horizontal support rod (50) is disposed adjacent to the water outlet (72),
   the at least one reversible board (10) comprises two reversible boards (10), and
   the two reversible boards (10) are respectively disposed on both sides of the pushing component (200) and are rotatably connected to the horizontal support rod (50).

5. The drain valve with the adjustable drainage speed according to claim 3 or 4, **characterized in that**:

   the adjusting mechanism (100) comprises a threaded rod (20) and the pushing component (200),
   the pushing component (200) is a pushing block (21) disposed on a first end of the threaded rod (20),
   inside the drain valve an adjusting base (40) is disposed adjacent to the water outlet (72),
   the adjusting base (40) is disposed with an internal thread,
   the treaded rod (20) is screwed on the adjusting base (40),
   the treaded rod (20) is rotated to control the pushing block (21) to move upward and move downward, and
   the rotation angle of the at least one reversible board (10) in the vertical direction is controlled.

6. The drain valve with the adjustable drainage speed according to claim 5, **characterized in that**:

   at a position of an edge of the at least one reversible board (10) being relative to the pushing block (21),
   at least one guide slop (11) is disposed on a side of the at least one reversible board (10) opposite to the pushing block (21), and
   the pushing block (21) abuts the at least one guide slope (11) to control the at least one reversible board (10) to achieve an initial upward turning.

7. The drain valve with the adjustable drainage speed according to claim 6, **characterized in that**:
   a side of the pushing block (21) opposite to the at least one guide slope (11) is a tapered surface (22).

8. The drain valve with the adjustable drainage speed according to claim 3 or 4, **characterized in that**:

   the adjusting mechanism (100) comprises a rotatable rod (30) and the pushing component (200),
   the pushing component (200) is a sleeve (31) disposed with an external thread,
   the sleeve (31) surrounds on a first end of the rotatable rod (30) facing the at least one reversible board (10),
   the sleeve (31) rotates following a rotation of the rotatable rod (10),
   inside the drain valve an adjusting base (40) is disposed adjacent to the water outlet (72),
   the adjusting base (40) is disposed with an internal thread,
   the sleeve (31) is screwed on the adjusting base

(40),
a second end of the rotatable rod (30) extends to a top end of the drain valve, and
the rotatable rod (30) rotates to control the sleeve (31) to move upward and move downward so that the rotating angle of the at least one reversible board (10) in the vertical direction is controlled.

9. The drain valve with the adjustable drainage speed according to claim 8, **characterized in that**:

the adjusting base (40) comprises a threaded base (41) and a positioning base (42),
the positioning base (42) is disposed below the threaded base (41),
the first end of the rotatable rod (30) is inserted to an insertion hole (421) of the positioning base (42), and
the sleeve (31) is positioned at a side of the positioning base (42) facing the threaded base (41).

10. The drain valve with the adjustable drainage speed according to claim 9, **characterized in that**:

the first end of the rotatable rod (30) facing the at least one reversible board (10) is a rectangular rod (301),
a cylindrical portion (302) is disposed adjacent to an end of the rectangular rod (301),
a through hole (312) of the sleeve (31) and the insertion hole (421) of the positioning base (42) are corresponding round waist holes, and
the cylindrical portion (302) is disposed at a round waist position of the insertion hole (421) of the positioning base (42).

11. The drain valve with the adjustable drainage speed according to claim 9, **characterized in that**:

a pushing ring (311) with an enlarged diameter is disposed at a top end of the sleeve (31),
the at least one reversible board (10) is disposed with at least one groove (12) corresponding to the threaded base (41) and the positioning base (42),
a first end of the at least groove (12) is disposed with at least one abutting inclined surface (13) corresponding to the pushing ring (311), and
the pushing ring (311) abuts the at least one abutting inclined surface (13) so that an upward turning of the at least one reversible board (10) is achieved.

12. The drain valve with the adjustable drainage speed according to claim 8, **characterized in that**:

the top end of the drain valve is disposed with a positioning member (60),
the rotatable rod (30) is penetrated through a positioning hole (61) of the positioning member (60), and
the positioning hole (61) prevents the rotatable rod (30) from swinging.

13. The drain valve with the adjustable drainage speed according to claim 12, **characterized in that**:

the positioning member (60) extends from a top end of the rotatable rod (30), and
a knob (32) is disposed on the top end of the rotatable rod (30).

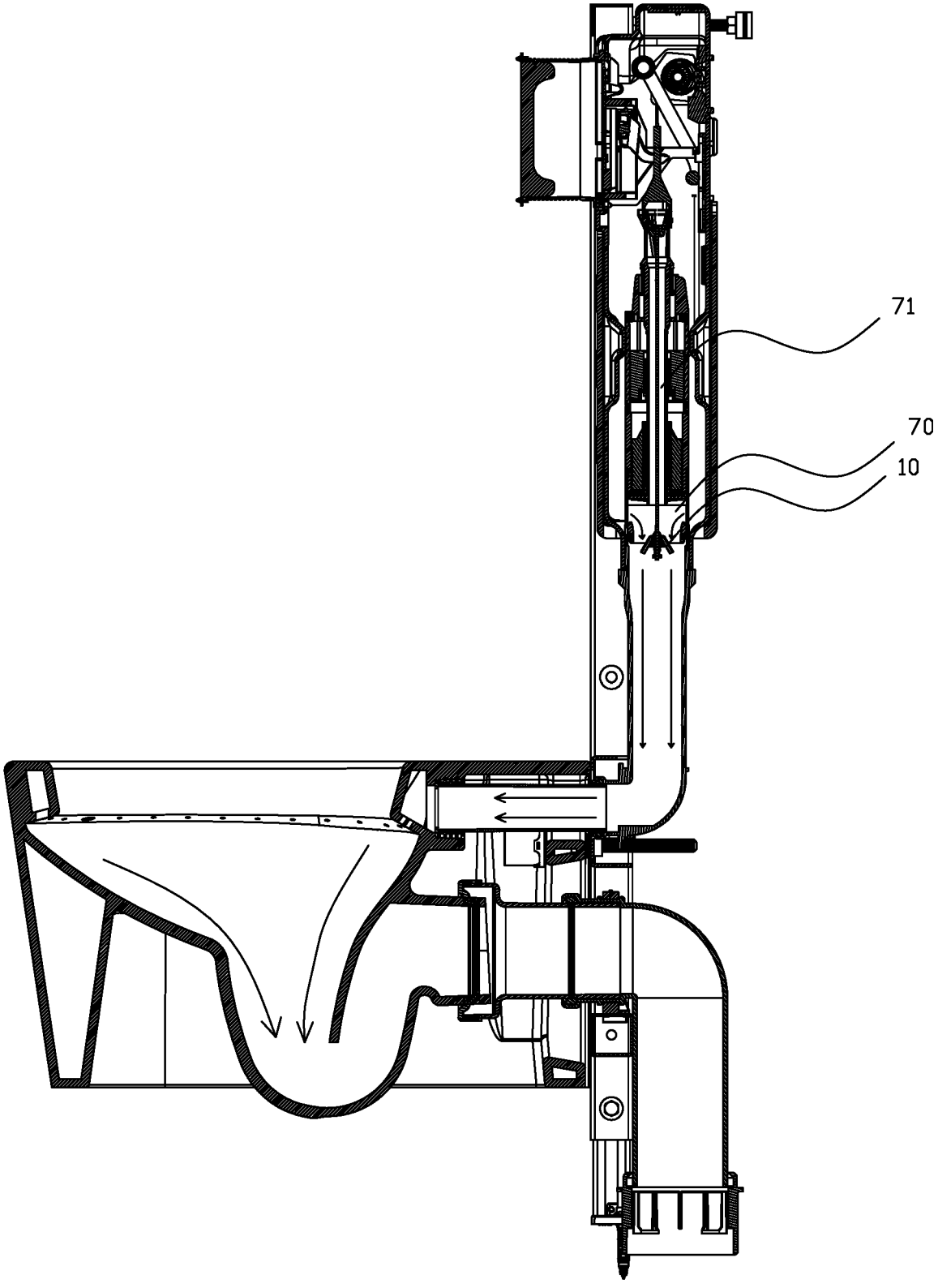

Fig. 1

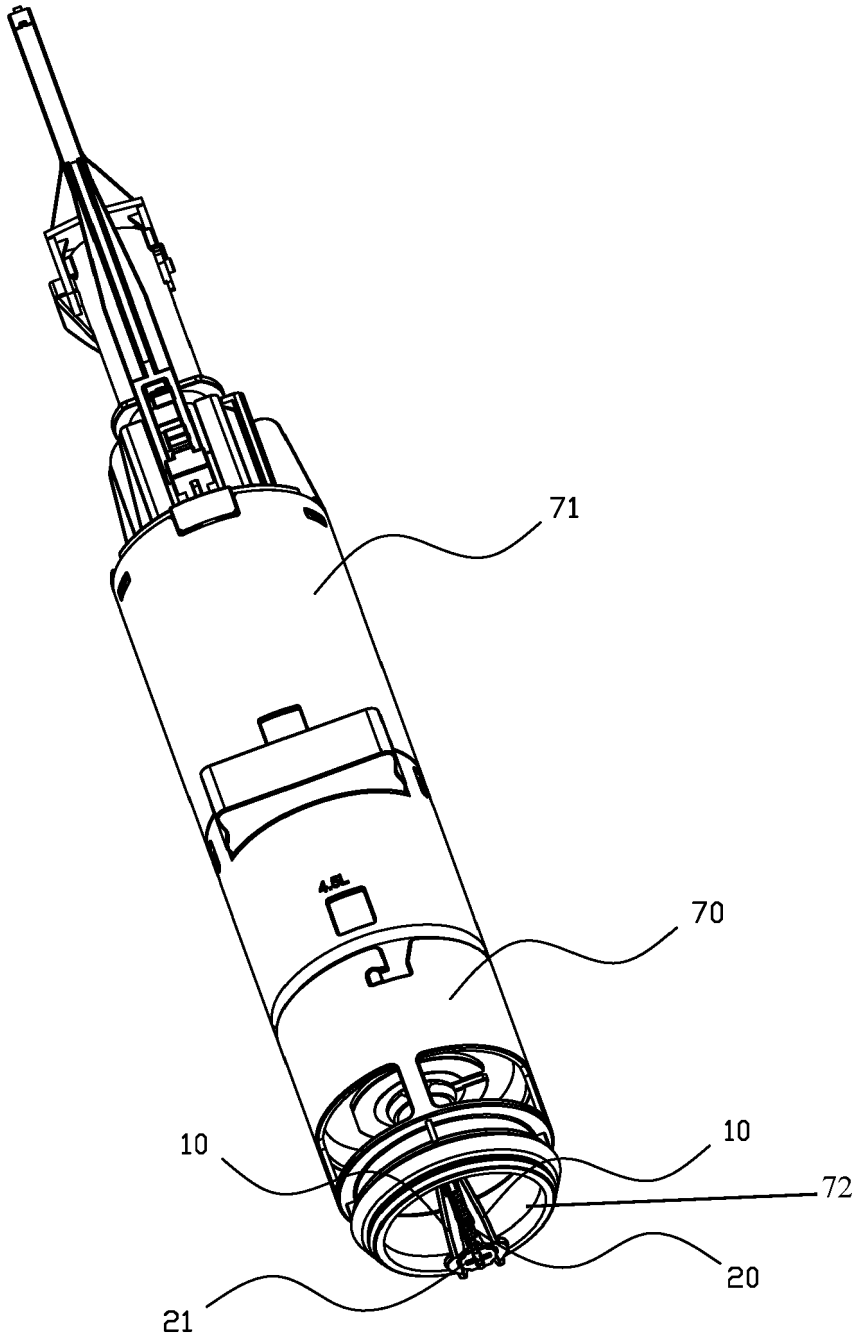

Fig. 2

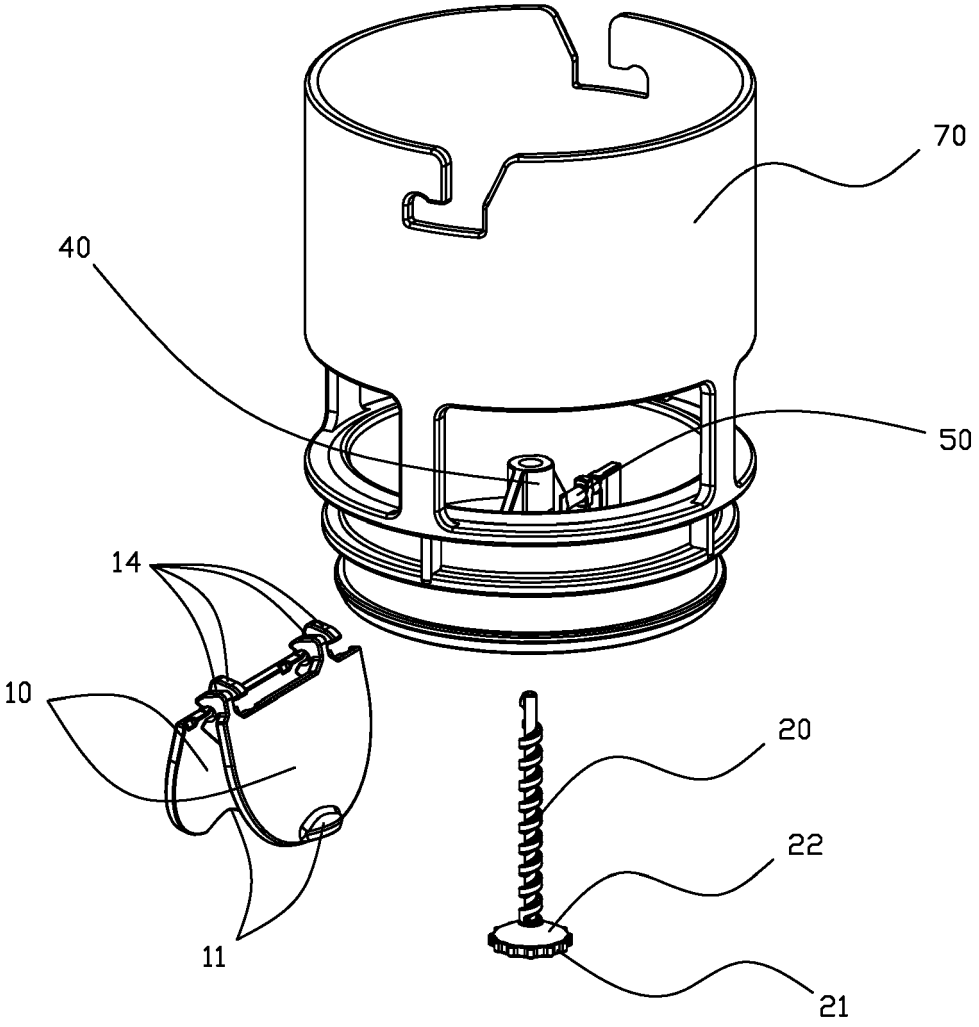

Fig. 3

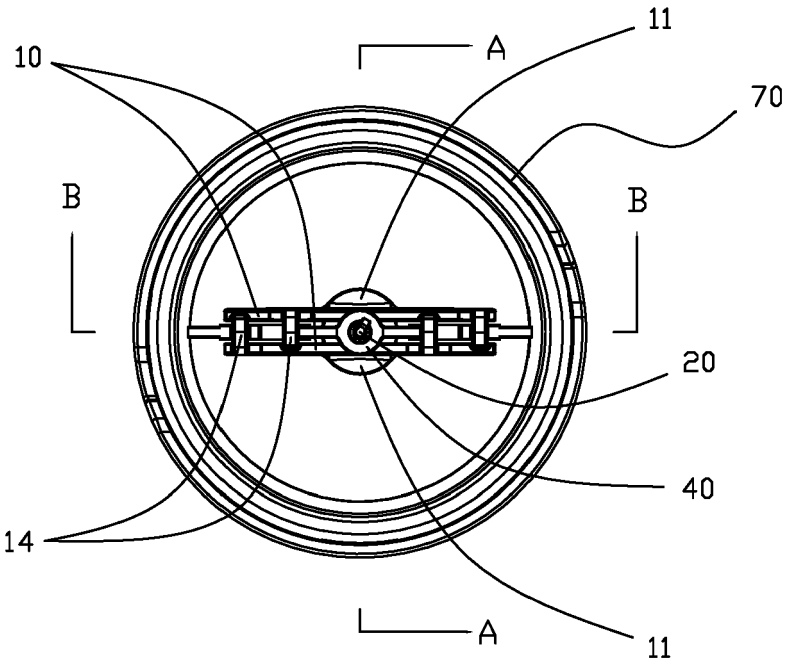

Fig. 4

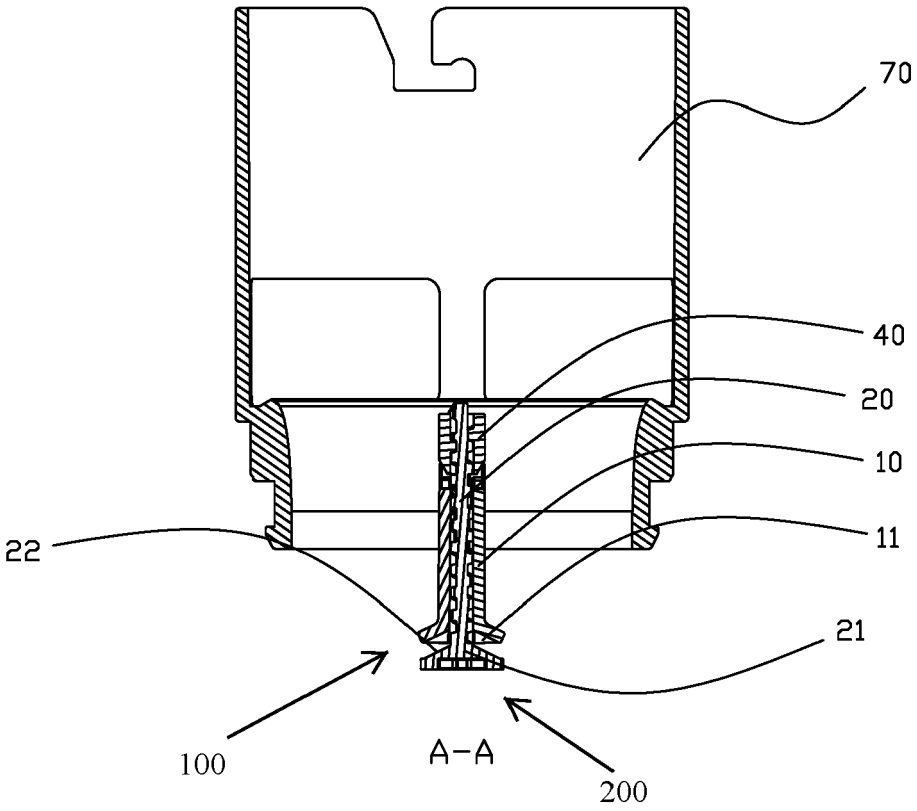

Fig. 5

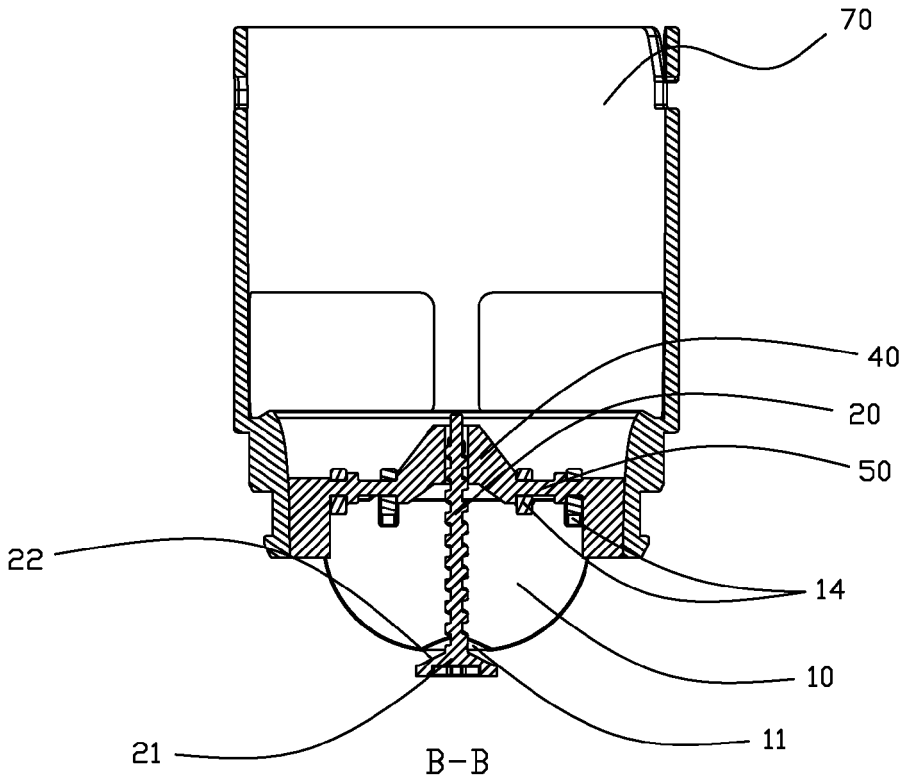

Fig. 6

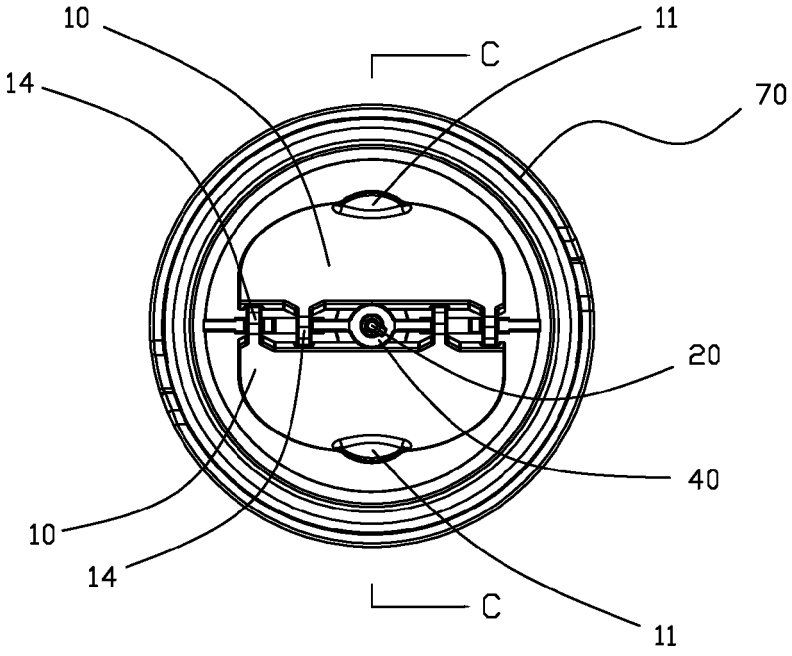

Fig. 7

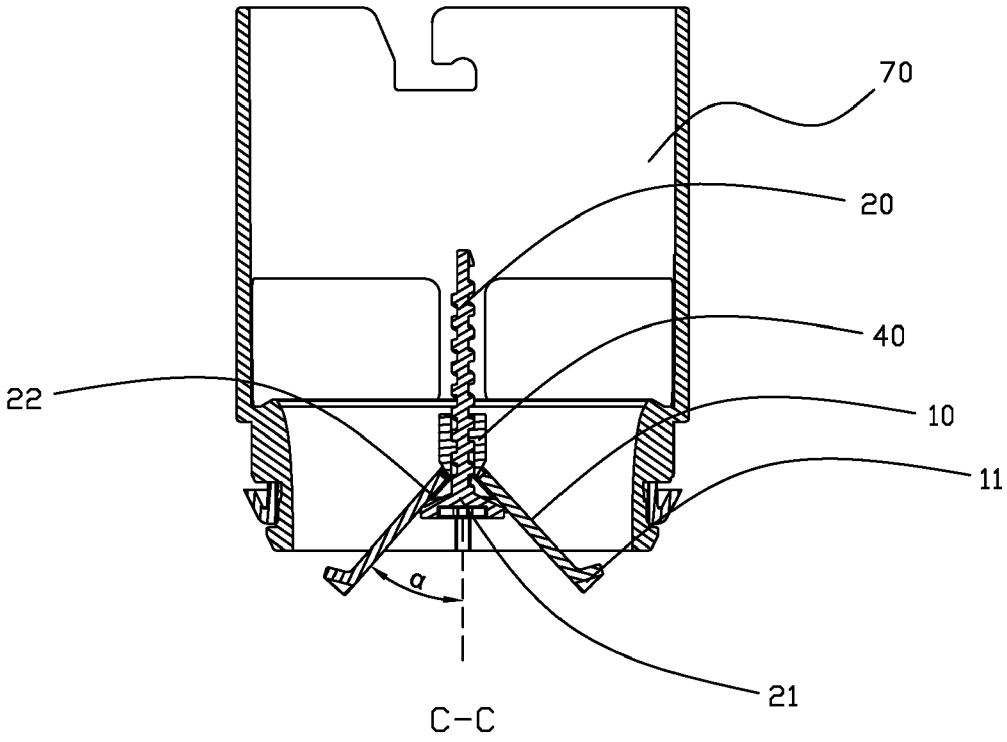

Fig. 8

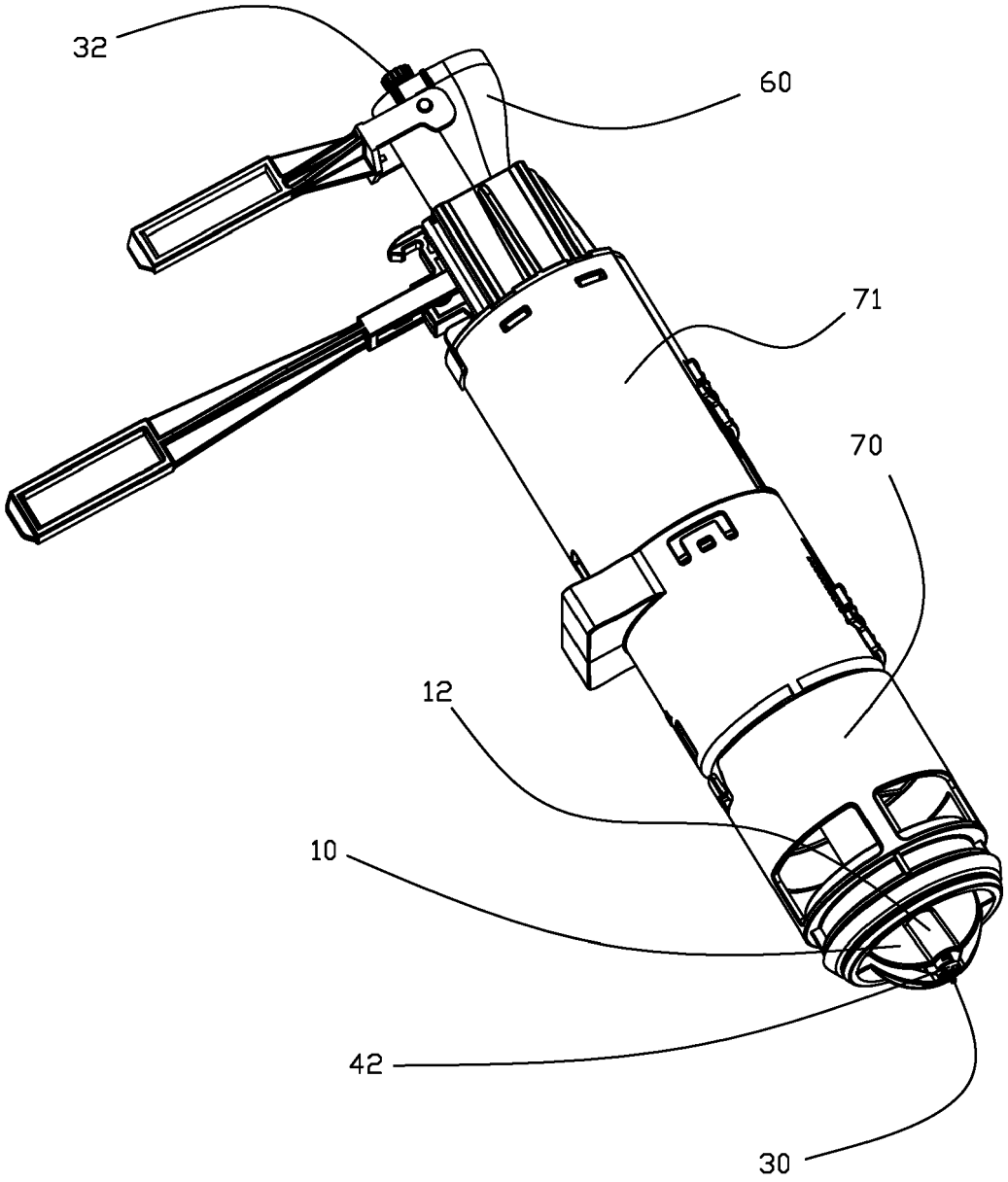

Fig. 9

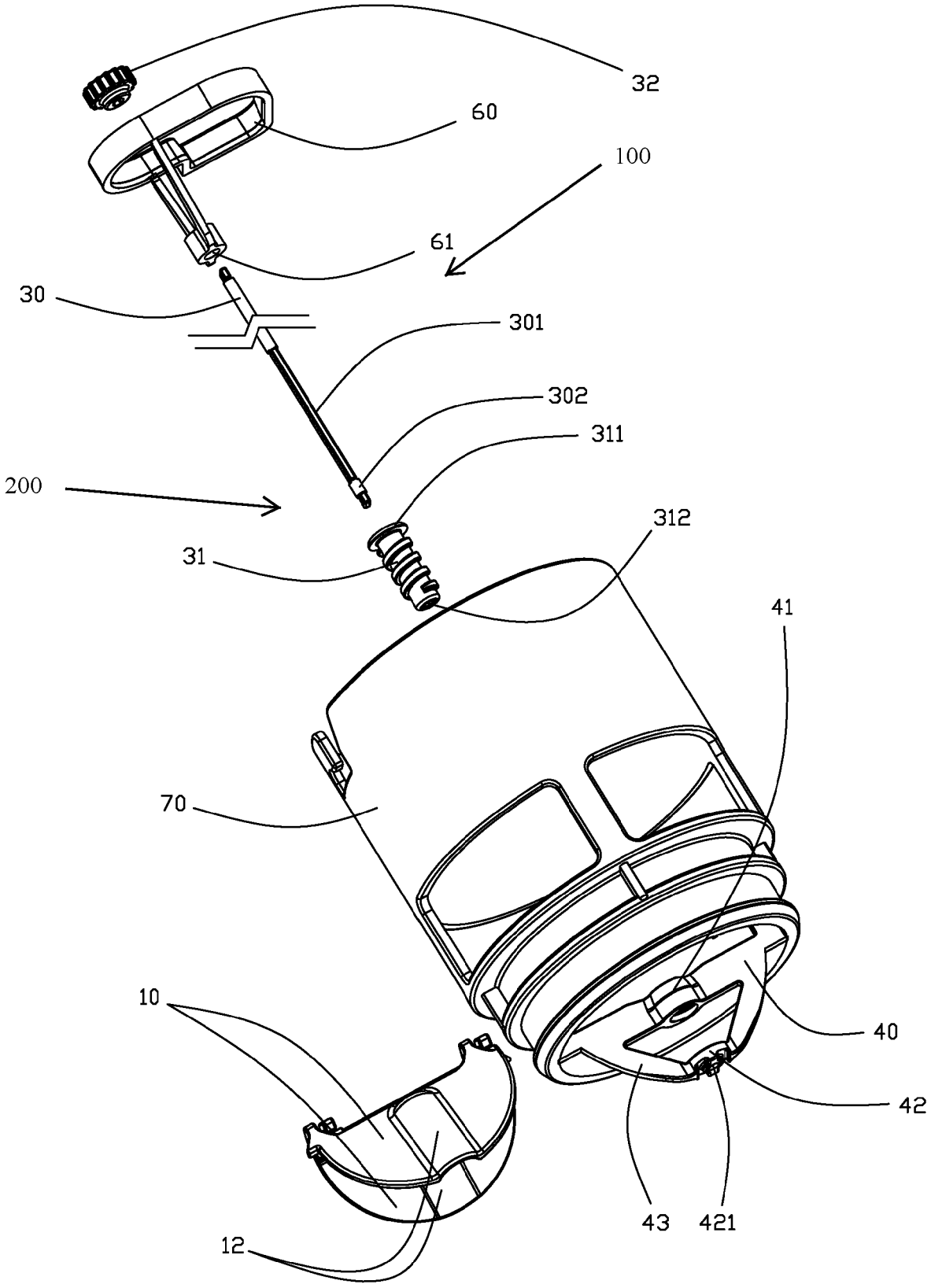

Fig. 10

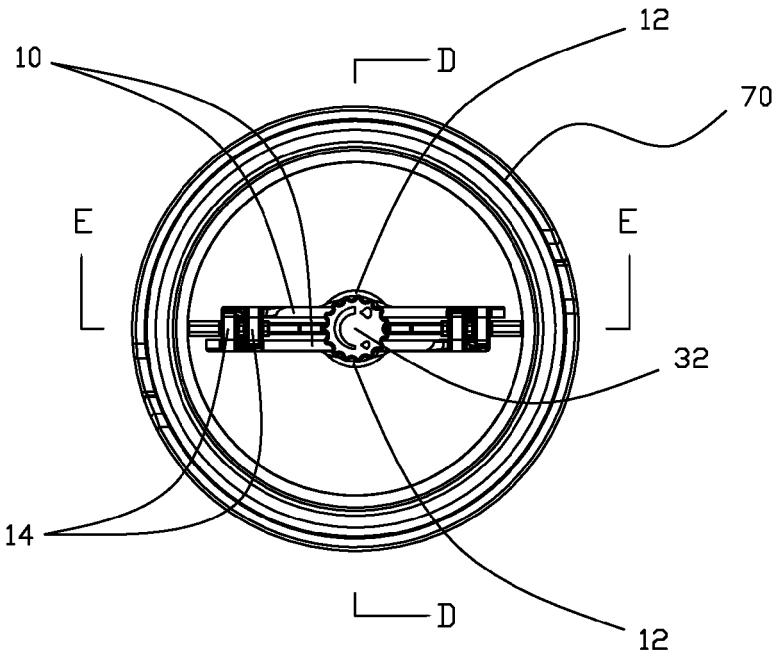

Fig. 11

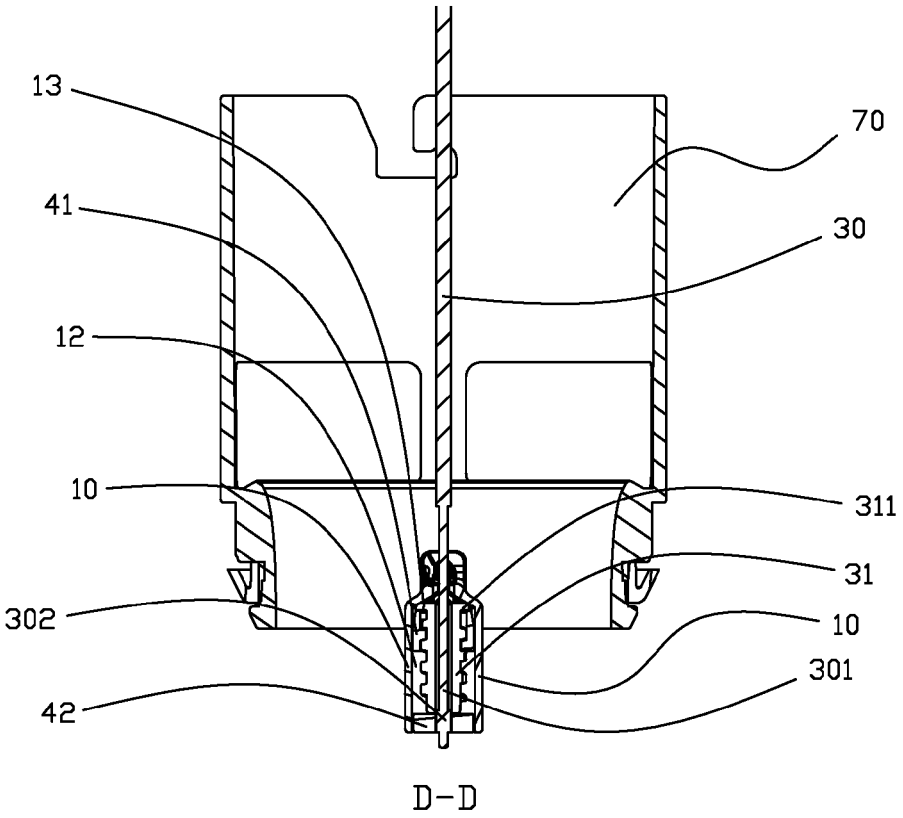

Fig. 12

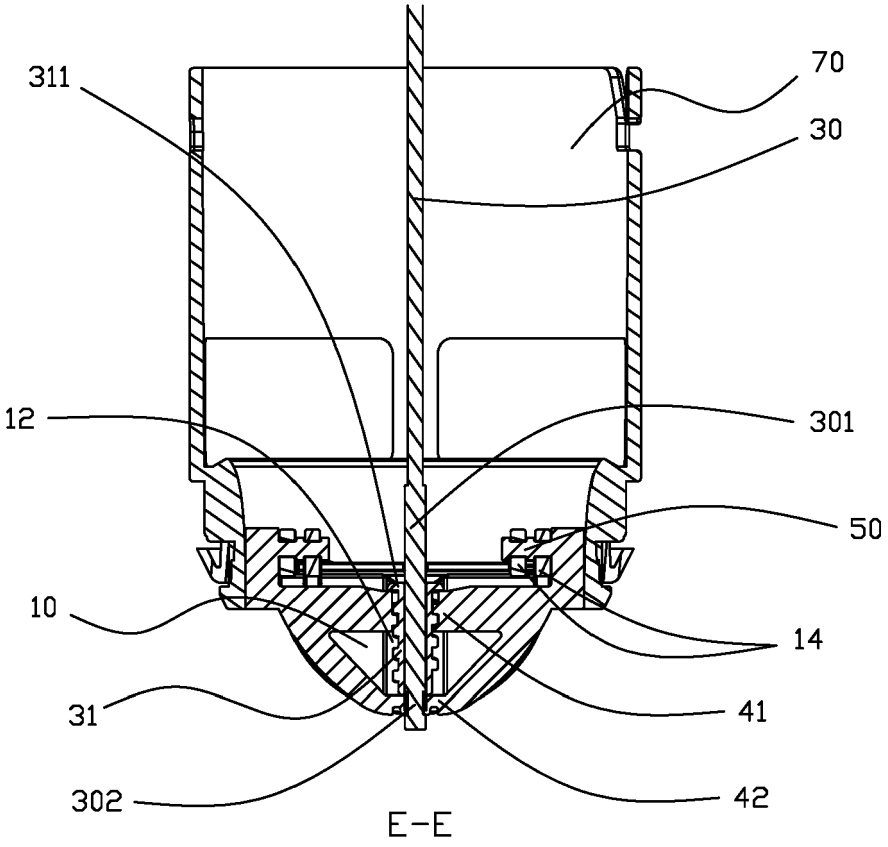

Fig. 13

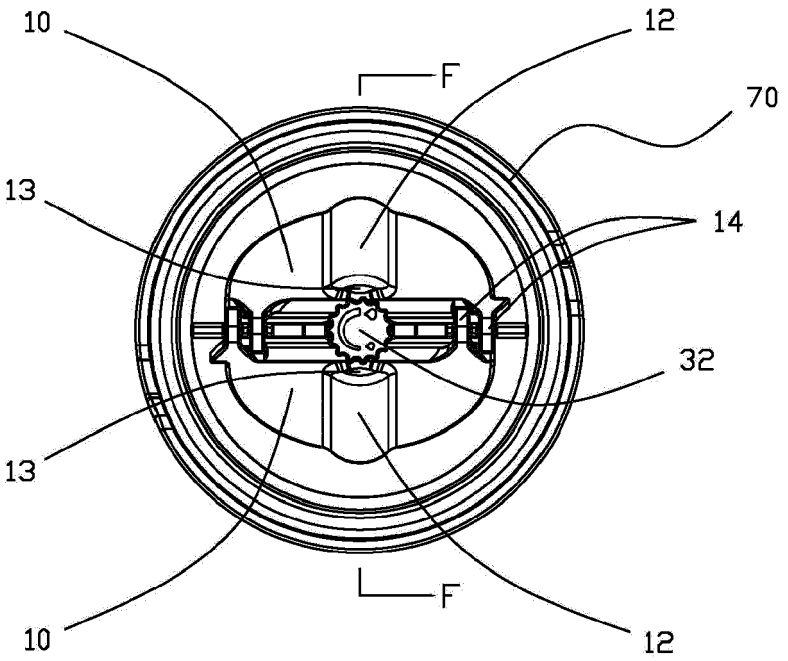

Fig. 14

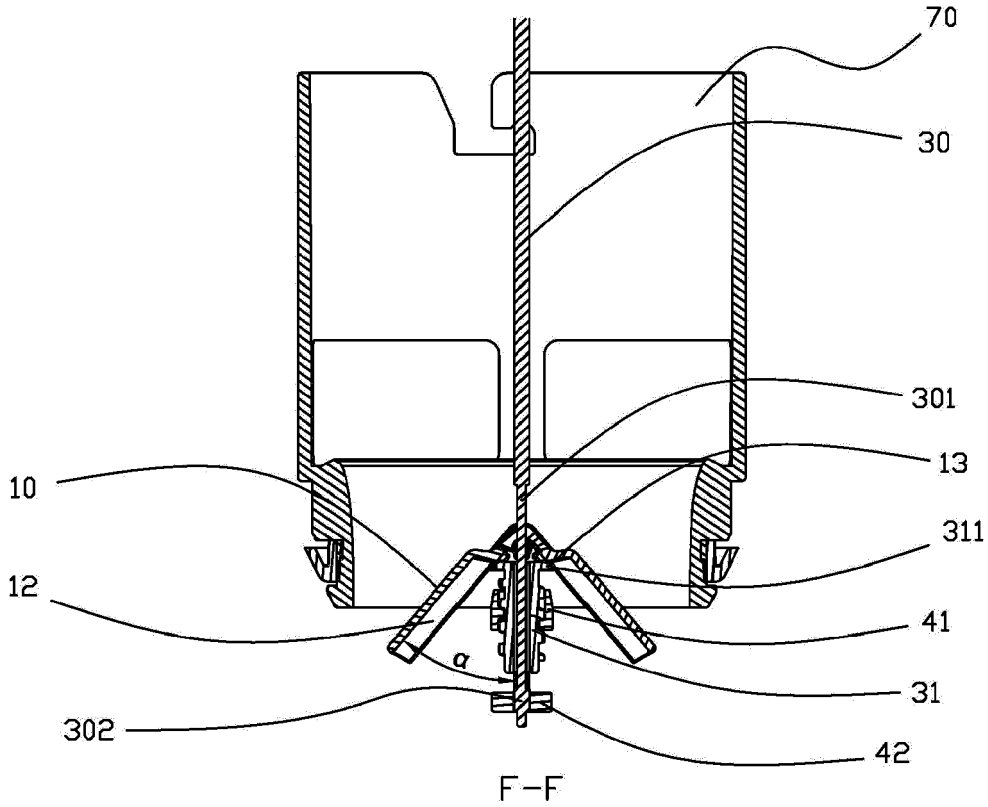

Fig. 15

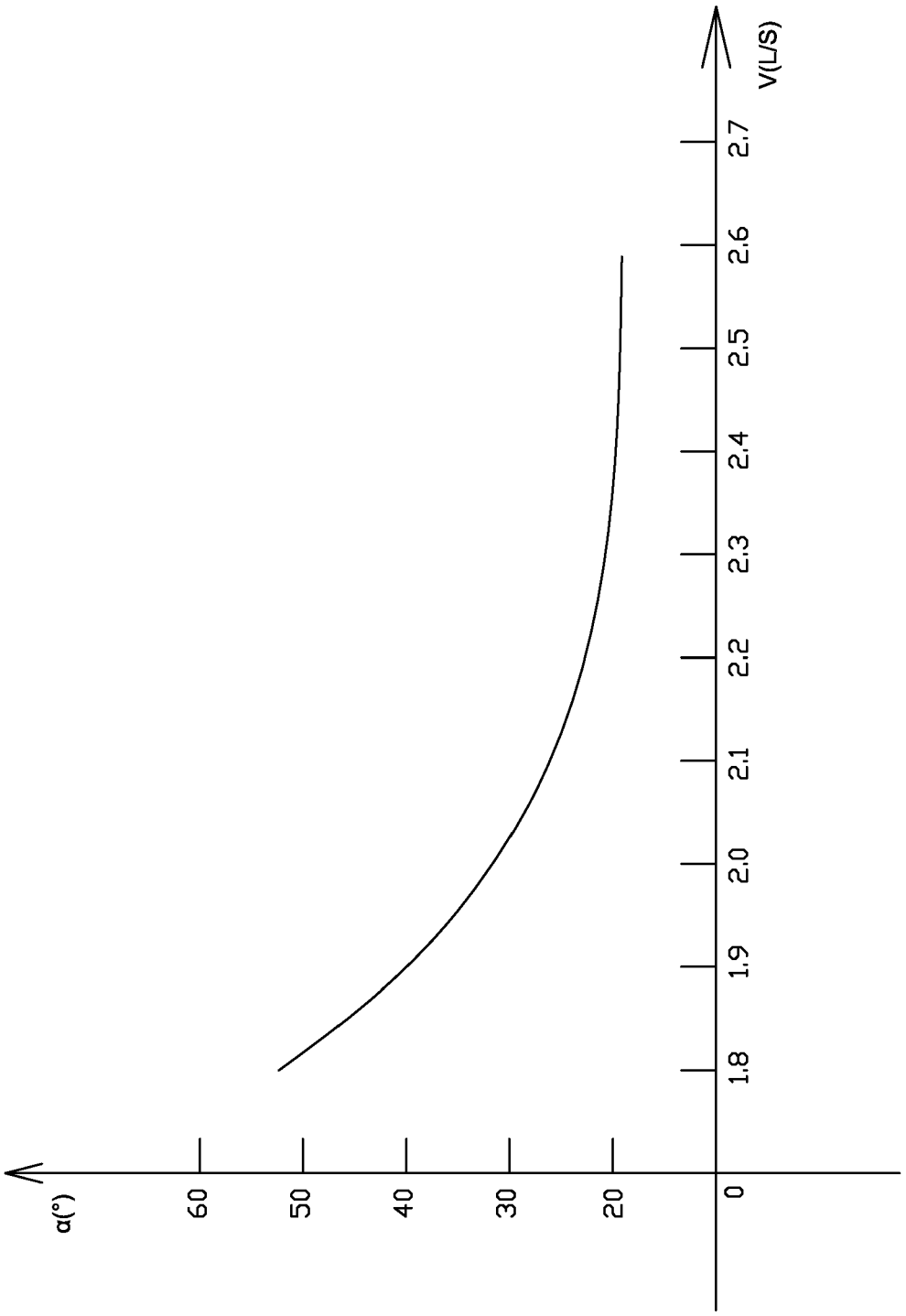

Fig. 16

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EUROPEAN SEARCH REPORT

Application Number
EP 20 15 9878

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	25 June 2020	Flygare, Esa

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