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(54) **Automatic-switch nozzle head having two valve mouths and single-mouth nozzle head**

Düsenkopf mit automatischer Umschaltung mit zwei Ventilmündstücken und Düsenkopf mit einzelnem Mundstück

Tête de buse à commutation automatique ayant deux nez de valve et tête de buse de nez simple

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a nozzle head, and more particularly to an automatic-switch nozzle head having two valve mouths and a single-mouth nozzle head to receive a valve for inflation. The nozzle head can be operated smoothly with one hand to enhance its convenience greatly

2. Description of the Prior Art

[0002] Conventional dual nozzle heads are as disclosed in Taiwan application No. 095107665 and 097203517. However, the conventional dual nozzle heads have the following drawbacks.

1. When the conventional nozzle head is used to pump air, the user needs to hold the main body for controlling the valve to be inserted to a connection mouth with one hand and to push the wrench with the other hand, such that the interior press cylinder is moved downward to clamp the valve for pumping. This way with both hands to operate is inconvenient and wastes time and energy.

2. The connecting mouth of the conventional nozzle head is deformed axially through the press cylinder to be moved downward. The connecting mouth is indirectly deformed to clamp the valve. The radial deformation of the connecting mouth is quite limited, so the force for the connecting mouth to clamp the valve is also limited. When pumping, it is easy to have a leakage problem.

3. The entire structure of the conventional nozzle head is too complicated, so the manufacture cost and the assembly cost cannot be lowered.

[0003] EP 0 690231 A1 discloses a hermetic quick coupling for safety valves of tires. At the end of the pump body a tubular chamber is positioned that is connected to the compression cylinder of the pump through a central radial hole, a bush is hermetically and slidingly fitted inside the tubular chamber and is frontally provided with a rigidly coupled end of a bell-shaped element that forms a seat for a sealing rubber fitting together with the bush, the other end of the bell-shaped element is flexible.

[0004] DE 299 23 064 U1 discloses a pump head for the connection of a hand operated air pump with a valve of a tire of a two-wheeled vehicle comprising two connection units.

[0005] The pump head comprises a slidable cylinder which can be moved between the two connection units for supplying pressure air to the first or second connection unit.

[0006] Accordingly, the inventor of the present invention has devoted himself based on his many years of practical experiences to solve this problem.

SUMMARY OF THE INVENTION

[0007] The primary object of the present invention is to provide a nozzle head which can be operated smoothly with one hand for inflation and can be used for different types of valves to be inflated.

[0008] According to one aspect of the present invention, an automatic-switch nozzle head having two valve mouths is provided. The nozzle head comprises a main body, an annular first connecting mouth, an annular second connecting mouth, and a valve plug.

[0009] The main body has a through valve hole and an air supply hole disposed between two ends of the valve hole.

[0010] The annular first connecting mouth has a first mouth hole for receiving a first valve to be inflated.

[0011] The annular second connecting mouth has a second mouth hole for receiving a second valve to be inflated.

[0012] The valve plug is axially movable between a first position and a second position of the valve hole. The valve plug is provided with a plurality of first clamping claws and a plurality of second clamping claws. The first clamping claws are spaced and arranged in a circle to define a first restraint hole. The first restraint hole and the valve hole are coaxial. The first restraint hole is able to contract radially. The first restraint hole is adapted for the first connecting mouth to be coaxially inserted. The second clamping claws are spaced and arranged in a circle to define a second restraint hole. The second restraint hole and the valve hole are coaxial. The second restraint hole is able to contract radially. The second restraint hole is adapted for the second connecting mouth to be inserted coaxially. When the first valve is inserted to the first connecting mouth, the valve plug is moved to the first position, the second clamping claws are released from the valve hole and the first clamping claws are compressed, such that the first restraint hole radially tighten the first connecting mouth for the air supply hole to communicate with the first mouth hole so as to pump the first valve. When the second valve is inserted to the second connecting mouth, the valve plug is moved to the second position, the first clamping claws are released from the valve hole and the second clamping claws are compressed, such that the second restraint hole radially tighten the second connecting mouth for the air supply hole to communicate with the second mouth hole so as to pump the second valve.

[0013] According to another aspect of the present invention, a single-mouth nozzle head is provided. The nozzle head comprises a main body, an annular first connecting mouth, and a valve plug.

[0014] The main body has a through valve hole and an

air supply hole disposed between two ends of the valve hole.

[0015] The annular first connecting mouth has a first mouth hole for receiving a valve to be inflated.

[0016] The valve plug is disposed in the main body. The first connecting mouth is located in the valve plug. The valve plug is axially movable between a first position and a second position of the valve hole. One end of the valve plug is provided with a plurality of clamping claws. The other end of the valve plug is formed with a closed press portion. The interior of the valve plug is formed with a flow passage to communicate with an outer annular wall of the valve plug. A plurality of restraint grooves are formed in between the clamping claws and arranged in a circle to define a restraint hole. The restraint hole and the valve hole are coaxial. The restraint hole is able to contract radially. The outer wall of each clamping claw is formed with a curved portion which is enlarged radially. The restraint hole is for the first connecting mouth to be inserted axially. When the first valve is inserted into the first connecting mouth, the valve plug is moved to the first position and the press portion extends out of the valve hole. The valve hole compresses the clamping claws. Through the guide of the curved portions of the clamping claws, the restraint hole is to clamp the first connecting mouth radially. The air supply hole is in communication with the interior of the valve plug, the flow passage, and the first mouth hole, so that the first valve can be pumped.

[0017] Accordingly, the present invention has the following inventiveness.

1. When the present invention is used to pump air, the user can operate the main body with one hand easily. Compared to the prior art operated with both hands, the present invention can be operated more conveniently to save time and labor.

2. The clamping claws of the present invention directly compress the connecting mouth to deform radially so as to tighten the valve. During inflation, the circumstances of air leakage can be minimized.

3. The present invention is only composed of four parts, namely, the main body, the first connecting mouth, the second mouth, and the valve plug. The entire structure of the present invention is more simple that the prior art.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018]

Fig. 1 and Fig. 2 are perspective views showing a first valve to be inserted to a first embodiment of the present invention;

Fig. 3 is a sectional view of Fig. 2;

Fig. 4 is a sectional showing a second valve to be inserted to the first embodiment of the present invention;

Fig. 5 is an exploded view according to a second embodiment of the present invention;

Fig. 6 is a perspective view of Fig. 5;

Fig. 7 and Fig. 8 are schematic views of the second embodiment of the present invention when in use;

Fig. 9 and Fig. 10 are schematic views of the second embodiment of the present invention in another use state.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0019] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings.

[0020] Referring to Fig. 1 to Fig. 4, a first embodiment of the present invention discloses an automatic-switch nozzle head having two valve mouths. The nozzle head comprises a main body 10, an annular first connecting mouth 20, an annular second connecting mouth 30, and a valve plug 40.

[0021] The main body 10 has a valve hole 11 penetrating upper and lowers of the main body 10 and an air supply hole 12 disposed between two ends of the valve hole 11. The air supply hole 12 is adapted to supply an air pressure source to the valve hole 11. The wall of the lower end edge of the valve hole 11 is concaved and formed with a first engaging portion 13. The wall of the lower end edge of the valve hole 11 is concaved and formed with a second engaging portion 14.

[0022] The annular first connecting mouth 20 has a first mouth hole 21 for receiving a first valve 91 to be inflated.

[0023] The annular second connecting mouth 30 has a second mouth hole 31 for receiving a second valve 92 to be inflated.

[0024] The valve plug 40 is coaxially moved in the valve hole 11 and has a length larger than that of the valve hole 11, such that two ends of the valve plug 40 protrude out of the valve hole 11. The valve plug 40 is formed with a first guide groove 411 and a second guide groove 412 which are not in communication with each other and located within the valve hole 11. The second guide groove 412 is disposed above the first guide groove 411. The outer wall of the valve plug 40 is provided with a first washer 421 under the first guide groove 411, a second washer 422 above the second guide groove 412, and a third washer 423 between the first guide groove 411 and the second guide groove 412. The first washer 421, the second washer 422 and the third washer 423 are against the valve hole 11, providing an airtight effect to the first

guide groove 411 and the second guide groove 412. The outer wall of the valve plug 40 is further provided with a first buckle portion 431 to mate with the first engaging portion 13 and a second buckle portion 432 to mate with the second engaging portion 14. When the valve plug 40 is axially moved along the valve hole 11 to a first position, the first buckle portion 431 engages with the first engaging portion 13 and the second buckle portion 432 disengages from the second engaging portion 14. At this time, the first guide groove 411 communicates with the air supply hole 12, and the top end of the valve plug 40 protrudes out of the valve hole 11 for the user to press downward to disengage the first buckle portion 431 from the first engaging portion 13. When the valve plug 40 is axially moved along the valve hole 11 to a second position, the second buckle portion 432 engages with the second engaging portion 14 and the first buckle portion 431 disengages from the first engaging portion 13. At this time, the second guide groove 412 communicates with the air supply hole 12, and the bottom end of the valve plug 40 protrudes out of the valve hole 11 for the user to press upward to disengage the second buckle portion 432 from the second engaging portion 14. Thus, the valve plug 40 is able to move between the first position and the second position. The bottom of the valve plug 40 is provided with a plurality of first clamping claws 44 which are disposed axially. The top of the valve plug 40 is provided with a plurality of second clamping claws 45 which are disposed axially. A plurality of first restraint grooves 46 are formed in between the first clamping claws 44 and arranged in a circle to define a first restraint hole 47 at the inner sides of the first clamping claws 44. The first restraint hole 47 and the valve hole 11 are coaxial, and the first restraint hole 47 is able to contract radially. The outer side of each first clamping claw 44 is formed with a first curved portion for pressing the valve hole 11 radially. The first buckle portion 431 is disposed on the first curved portion. The first restraint hole 47 is adapted for the first connecting mouth 20 to be inserted coaxially, so that the first mouth hole 21 communicates with the first guide groove 411. A plurality of second restraint grooves 48 are formed in between the second clamping claws 45 and arranged in a circle to define a second restraint hole 49 at the inner sides of the second clamping claws 45. The second restraint hole 49 and the valve hole 11 are coaxial, and the second restraint hole 49 is able to contract radially. The outer side of each second clamping claw 45 is formed with a second curved portion for pressing the valve hole 11 radially. The second buckle portion 432 is disposed on the second curved portion. The second restraint hole 49 is adapted for the second connecting mouth 30 to be inserted coaxially, so that the second mouth hole 31 communicates with the second guide groove 412.

[0025] Referring to Fig. 2 and Fig. 3, when the user operates the main body 10 with one hand to insert the first valve 91 into the first mouth hole 21 of the first connecting mouth 20, the valve plug 40 will be moved to the first position. The first buckle portion 431 engages with the first engaging portion 13 to position the valve plug 40 in the valve hole 11. This moment, the outer walls of the second clamping claws 45 are released from the valve hole 11 to compress the first curved portion formed on the outer wall of each first clamping claw 44, such that the first restraint hole 47 radially tighten the outer wall of the first connecting mouth 20 with the first mouth hole 21 to restrain and fix the first valve 91 directly and radially. After that, through the air supply hole 12 to provide the air pressure source, the first valve 91 is pumped for inflation. After inflation, the top end of the valve plug 40 is pressed downward for the first buckle portion 431 to disengage from the first engaging portion 13, such that the first curved portions formed on the outer walls of the first clamping claws 44 are released from the valve hole 11 to release connection of the first connecting mouth 20 and the first valve 91.

[0026] Referring to Fig. 4, when the user operates the main body 10 with one hand to insert the second valve 92 into the second mouth hole 31 of the second connecting mouth 30, the valve plug 40 will be moved to the second position. The second buckle portion 432 engages with the second engaging portion 14 to position the valve plug 40 in the valve hole 11. This moment, the outer walls of the first clamping claws 44 are released from the valve hole 11 to compress the second curved portion formed on the outer wall of each second clamping claw 45, such that the second restraint hole 49 radially tighten the outer wall of the second connecting mouth 30 with the second mouth hole 31 to restrain and fix the second valve 92 directly and radially. After that, through the air supply hole 12 to provide the air pressure source, the second valve 92 is pumped for inflation. After inflation, the bottom end of the valve plug 40 is pressed upward for the second buckle portion 432 to disengage from the second engaging portion 14, such that the second curved portions formed on the outer walls of the second clamping claws 45 are released from the valve hole 11 to release connection of the second connecting mouth 30 and the second valve 92.

[0027] For a stable structure of the present invention, the bottom end of each first clamping claw 44 has a first stop portion 441. The outer edge of the first stop portion 441 is located out of the valve hole 11 to form a diameter larger than that of the valve hole 11. The inner edge of the first stop portion 441 leans against the bottom end of the first connecting mouth 20. The top end of each second clamping claw 45 has a second stop portion 451. The outer edge of the second stop portion 451 is located out of the valve hole 11 to form a diameter larger than that of the valve hole 11. The inner edge of the second stop portion 451 leans against the top end of the second connecting mouth 30. Thus, the valve plug 40 won't disengage from the valve hole 11, the first connecting mouth 20 won't disengage from the first clamping claws 44, and the second connecting mouth 30 won't disengage from the second clamping claws 45. The first stop portion 441 and the second stop portion 451 are adapted to clamp

the first valve 91 and the second valve 92, respectively, to prevent the first and second valves 91, 92 from disconnection during inflation.

[0028] According to the aforesaid illustration, the present invention has the following inventiveness.

1. The main body of present invention can be operated with one hand to insert the valve into one of the connecting mouths, and the plug valve is moved to a certain position for the valve hole to move the corresponding clamping claws and the connecting mouth to restrain the valve automatically. Compared to the prior art operated with both hands, the present invention can be operated conveniently.

2. Through the coaxial moment of the valve hole and the clamping claws, the connecting mouth of the present invention can be directly and radially deformed to restrain the valve, so that the force for the connecting mouth to clamp and restrain the valve is increased. During inflation, the circumstances of air leakage can be minimized. Besides, the clamping claws can clamp the valve to prevent the valve from disengaging from the main body during inflation.

[0029] Referring to Fig. 5 to Fig. 8, a second embodiment of the present invention discloses a single-mouth nozzle head 50. The single-mouth nozzle head 50 comprises a main body 51, a valve plug 52, and a first connecting mouth 55.

[0030] The main body 51 has a valve hole 511 which is an axial through hole, a pipe head 515 formed on an outer wall thereof, an air supply hole 514 for the pipe head 515 to communicate with the valve hole 511, and an annular flange 512 formed at a top end thereof. The annular flange 512 is reduced radially. The outer wall of the bottom end of the main body 51 is formed with outer threads 513 for a holding ring 57 to be locked thereon. The holding ring 57 has an axial through hole 571. The inner wall of the through hole 571 is formed with inner threads 572. The bottom end of the holding ring 57 is formed with an annular holding edge 573 which is reduced radially.

[0031] The valve plug 52 has a closed top end. The valve plug 52 has an annular shoulder portion 522 close to the top end and a press portion 521 above the annular shoulder portion 522. The diameter of the press portion 521 is smaller than that of the annular shoulder portion 522. The bottom of the valve plug 52 is coupled with a press ring 56. The outer wall of the valve plug 52 is formed with two spaced annular grooves 523, 526. A first washer 53 and a second washer 54 are respectively fitted in the annular grooves 523, 526. A concave guide groove 524 is formed between the annular grooves 523, 526. A portion of the guide groove 524 is formed with a vent 525 which extends to the interior of the valve plug 52. The valve plug 52 has a connecting portion 528 extending from the interior to the bottom end of the valve plug 52. The connecting portion 528 is a flow passage extending to the bottom end and communicating with the vent 525. The outer wall is formed with outer threads 527 for the press ring 56 to be locked thereon. The press ring 56 has a restraint hole 561 which is an axial through hole. The inner wall of the restraint hole 561 is formed with inner threads 562. The bottom end of the press ring 56 is formed with a plurality of clamping claws 563. A plurality of restraint grooves 564 are formed in between the clamping claws 563 and arranged in a circle to define a restraint hole 561. The restraint hole 561 and the valve hole 511 are coaxial, and the restraint hole 561 can contract radially. The bottom end of each clamping claw 563 is formed with a hook portion 5631 extending radially. The outer wall of each clamping claw 563 is formed with a curved portion 565 which is enlarged radially. The clamping claws 563 can be retracted radially by applying a force. When the force is released, the clamping claws 563 will slightly expand and restore to the original state.

[0032] The first connecting mouth 55 has a first mouth hole 551 which is an axial through hole. The inner wall of the first mouth hole 551 is formed with an annular wedge edge 552 which is reduced radially. The first connecting mouth 55 is coaxially inserted into the restraint hole 561. The first connecting mouth 55 is held by the hook portion 5631 at the bottom end of each clamping claw 563.

[0033] Referring to Fig. 7 and Fig. 8, when the single-mouth nozzle head 50 of this embodiment is to pump, the pipe head 515 is connected with an air pressure source (not shown in the drawings) in advance. When the first valve 91 is inserted into the first mouth hole 551 of the first connecting mouth 55, the valve plug 52 is moved upward for the press portion 521 to extend out of the valve hole 511 until the annular shoulder portion 522 is against the annular flange 512 (the first position) to stop moving. When moved upward, the curved portions 565 of the clamping claws 563 are pushed by the annular holding edge 573 at the bottom edge of the valve hole 511. Through the guide of the curved portions 565 of the clamping claws 563, the restraint hole 561 is to clamp the first connecting mouth 55 radially, so that the first connecting mouth 55 is compressed to clamp the first valve 91 tightly. The air supply hole 514 is in communication with the guide groove 524, the connecting portion 528, and the first mouth hole 551 so that the first valve 92 can be pumped. The first valve 91 is an American valve.

[0034] Referring to Fig. 9 and Fig. 10, a single-mouth nozzle head is applied to the second valve 92. The second valve 92 is a French valve 92. The shape of the connecting portion 528A of the valve plug 52A is slightly different from the second connecting mouth 55A, and the other parts are identical to the aforesaid embodiment. The connecting portion 528A of the valve plug 52A is formed with a larger flow passage for insertion of the French valve. The inner annular surface of the second connecting mouth 55A is formed with an annular flange

552A for clamping the French valve tightly. The use and working principle are same as the aforesaid.

Claims

1. An automatic-switch nozzle head having two valve mouths, comprising:

   a main body (10) having a through valve hole (11), a valve plug (40), an air supply hole (12) disposed between two ends of the valve hole (11);
   a first connecting mouth (20) having a first mouth hole (21);
   a second connecting mouth (30) having a second mouth hole (31); and
   the valve plug (40) being axially movable between a first position and a second position of the valve hole (11), **characterized in that** the valve plug (40) being provided with a plurality of first clamping claws (44) and a plurality of second clamping claws (45), a plurality of first restraint grooves (46) being formed in between the first clamping claws (44) to define a first restraint hole (47), the first restraint hole (47) and the valve hole (11) being coaxial, the first restraint hole (47) being able to contract radially, the first restraint hole (47) being adapted for the first connecting mouth (20) to be coaxially inserted; a plurality of second restraint grooves (48) being formed in between the second clamping claws (45) to define a second restraint hole (49), the second restraint hole (49) and the valve hole (11) being coaxial, the second restraint hole (49) being able to contract radially, the second restraint hole (49) being adapted for the second connecting mouth (30) to be inserted coaxially; wherein, when the valve plug (40) is moved to the first position, the second clamping claws (45) are released from the valve hole (11) and the first clamping claws (44) are compressed, such that the first restraint hole (47) radially tighten the first connecting mouth (20) for the air supply hole (12) to communicate with the first mouth hole (21); when the valve plug (40) is moved to the second position, the first clamping claws (44) are released from the valve hole (11) and the second clamping claws (45) are compressed, such that the second restraint hole (49) radially tighten the second connecting mouth (30) for the air supply hole (12) to communicate with the second mouth hole (31).

2. The automatic-switch nozzle head having two valve mouths as claimed in claim 1, wherein the main body (10) has a concave first engaging portion (13) formed on the wall of an end edge of the valve hole (11) and a concave second engaging portion (14) formed on the wall of another end edge of the valve hole (11); an outer wall of the valve plug (40) is provided with a first buckle portion (431) to mate with the first engaging portion (13) and a second buckle portion (432) to mate with the second engaging portion (14); when the valve plug (40) is moved to the first position, the first buckle portion (431) engages with the first engaging portion (13) and the second buckle portion (432) disengages from the second engaging portion (14); when the valve plug (40) is moved to the second position, the second buckle portion (432) engages with the second engaging portion (14) and the first buckle portion (431) disengages from the first engaging portion (13).

3. The automatic-switch nozzle head having two valve mouths as claimed in claim 2, wherein the valve plug (40) has a length larger than that of the valve hole (11) so that two ends of the valve plug (40) extends out of the valve hole (11); when the valve plug (40) is moved to the first position, one end of the valve plug (40) extends out of the valve hole (11) to release the first buckle portion (431) and the first engaging portion (13); when the valve plug (40) is moved to the second position, the other end of the valve plug (40) extends out of the valve hole (11) to release the second buckle portion (432) and the second engaging portion (14).

4. The automatic-switch nozzle head having two valve mouths as claimed in claim 2, wherein the first clamping claws (44) and the first restraint grooves (46) are interlaced and arranged in a circle to define the first restraint hole (47) at inner sides of the first clamping claws (44), an outer side of each first clamping claw (44) is formed with a first curved portion for pressing the valve hole (11) radially, the first buckle portion (431) is disposed on the first curved portion; the second clamping claws (45) and the second restraint grooves (48) are interlaced and arranged in a circle to define the second restraint hole (49) at inner sides of the second clamping claws (45), an outer side of each second clamping claw (45) is formed with a second curved portion for pressing the valve hole (11) radially, the second buckle portion (432) is disposed on the second curved portion.

5. The automatic-switch nozzle head having two valve mouths as claimed in claim 1, 2, 3 or 4, wherein an outer end of each first clamping claw (44) has a first stop portion (441), an outer edge of the first stop portion (441) is located out of the valve hole (11) to form a diameter larger than that of the valve hole (11), an inner edge of the first stop portion (441) leans against a bottom end of the first connecting mouth (20); an outer end of each second clamping claw (45) has a second stop portion (451), an outer edge

of the second stop portion (451) is located out of the valve hole (11) to form a diameter larger than that of the valve hole (11), an inner edge of the second stop portion (451) leans against a top end of the second connecting mouth (30).

Patentansprüche

1. Automatikschaltdüsenkopf mit zwei Ventilmündungen, umfassend:

einen Hauptkörper (10) mit einer Ventilöffnung (11), einem Ventilstopfen (40),
einer Luftzufuhröffnung (12), die zwischen zwei Enden der Ventilöffnung (11) angeordnet ist;
eine erste Verbindungsmündung (20) mit einer ersten Mündungsöffnung (21);
eine zweite Verbindungsmündung (30) mit einer zweiten Mündungsöffnung (31); und dem Ventilstopfen (40), der axial zwischen einer ersten und einer zweiten Position der Ventilöffnung (11) bewegbar ist, **dadurch gekennzeichnet, dass**
der Ventilstopfen (40) eine Mehrzahl von ersten Spannklauen (44) und eine Mehrzahl von zweiten Spannklauen (45) aufweist, eine Mehrzahl von ersten Rückhaltenuten (46), die zwischen den ersten Spannklauen (44) angeordnet sind, um eine ersten Rückhalteöffnung (47) definieren, wobei die erste Rückhalteöffnung (47) und die Ventilöffnung (11) koaxial sind, wobei die erste Rückhalteöffnung (47) geeignet ist radial kontrahiert zu werden, die erste Rückhalteöffnung (47) derart ausgebildet ist, dass die erste Verbindungsmündung (20) koaxial in diese eingesetzt werden kann; eine Mehrzahl zweiter Rückhaltenuten (48), die zwischen den zweiten Spannklauen (45) angeordnet sind, um eine zweite Rückhalteöffnung (49) zu definieren, wobei die zweite Rückhalteöffnung (49) und die Ventilöffnung (11) koaxial sind, die zweite Rückhalteöffnung (49) geeignet ist radial kontrahiert zu werden, die zweite Rückhalteöffnung (49) derart ausgebildet ist, dass die zweite Verbindungsmündung (30) koaxial in diese eingesetzt werden kann; wobei, wenn der Ventilstopfen (40) in eine erste Position bewegt wird, die zweiten Spannklauen (45) von der Ventilöffnung (11) gelöst werden und die ersten Spannklauen (44) zusammengepresst werden, sodass die erste Rückhalteöffnung (47) die erste Verbindungsmündung (20) radial derart verengt, sodass die Luftzufuhröffnung (12) mit der ersten Mündungsöffnung (21) kommuniziert; wenn der Ventilstopfen (40) in die zweite Position bewegt wird, die ersten Spannklauen (44) von der Ventilöffnung (11) gelöst werden und die zweiten Spannklauen (45) zusammengepresst werden, sodass die zweite Rückhalteöffnung (49) die zweite Verbindungsmündung (30) radial derart verengt, sodass die Luftzufuhröffnung (12) mit der zweiten Mündungsöffnung (31) kommuniziert.

2. Automatikschaltdüsenkopf mit zwei Ventilmündungen nach Anspruch 1, wobei der Hauptkörper (10) einen ersten konkave Kontaktbereich (13) aufweist, der an der Wandung einer Endkante der Ventilöffnung (11) ausgebildet ist und einen zweiten konkaven Kontaktbereich (14), der an der Wandung einer anderen Endkante der Ventilöffnung (11) ausgebildet ist; eine Außenwandung des Ventilstopfens (40) mit einem ersten gewölbten Bereich (431) ausgebildet ist, um mit dem ersten Kontaktbereich (13) gepaart zu werden und einen zweiten gewölbten Bereich (432), um mit dem zweiten Kontaktbereich (14) gepaart zu werden; wenn der Ventilstopfen (40) in die erste Position bewegt wird, wird der erste gewölbte Bereich (431) mit dem ersten Kontaktbereich (13) verbunden und der zweite gewölbte Bereich (432) von dem zweiten Kontaktbereich (14) getrennt; wenn der Ventilstopfen (40) in die zweite Position bewegt wird, wird der zweite gewölbte Bereich (432) mit dem zweite Kontaktbereich (14) verbunden und der ersten gewölbte Bereich (431) von dem ersten Kontaktbereich (13) getrennt.

3. Automatikschaltdüsenkopf mit zwei Ventilmündungen nach Anspruch 2, wobei der Ventilstopfen (40) eine Länge aufweist, die größer ist als die der Ventilöffnung (11), sodass zwei Enden des Ventilstopfens (40) aus der Ventilöffnung (11) hervorstehen; wenn der Ventilstopfen (40) in die erste Position bewegt wird, erstreckt sich ein Ende des Ventilstopfens (40) aus der Ventilöffnung (11) heraus, um den ersten gewölbten Bereich (431) und den ersten Kontaktbereich (13) zu lösen; wenn der Ventilstopfen (40) in die zweite Position bewegt wird, erstreckt sich das andere Ende des Ventilstopfens (40) aus der Ventilöffnung (11) heraus, um den zweiten gewölbten Bereich (432) und den zweiten Kontaktbereich (14) zu lösen.

4. Automatikschaltdüsenkopf mit zwei Ventilmündungen nach Anspruch 2, wobei die ersten Spannklauen (44) und die ersten Rückhaltenuten (46) ineinander geschachtelt sind und in einem Kreis angeordnet sind, um die erste Rückhalteöffnung (47) an den Innenseiten der ersten Spannklauen (44) zu definieren, eine Außenseite der ersten Spannklauen (44) mit einem ersten gekrümmten Bereich ausgebildet ist, um radial gegen die Ventilöffnung (11) zu drücken, wobei der erste gewölbte Bereich (431) an dem ersten gekrümmten Bereich angeordnet ist; wobei die zweiten Spannklauen (45) und die zweiten

Rückhaltenuten (48) ineinander geschachtelt und in einem Kreis angeordnet sind, um die zweite Rückhalteöffnung (49) an den Innenseiten der zweiten Spannklauen (45) zu definieren, eine Außenseite der zweiten Spannklauen (45) mit einem zweiten gekrümmten Bereich ausgebildet ist, um radial gegen die Ventilöffnung (11) zu drücken, wobei der zweite gewölbte Bereich (432) an dem zweiten gekrümmten Bereich angeordnet ist.

5. Automatikschaltdüsenkopf mit zwei Ventilmündungen nach Anspruch 1, 2, 3 oder 4, wobei eine äußeres Ende jeder ersten Spannklaue (44) einen ersten Anschlagbereich (441) aufweist, eine Außenkante des ersten Anschlagbereichs (441) außerhalb der Ventilöffnung (11) angeordnet ist, um einen Durchmesser auszubilden, der größer ist, als der der Ventilöffnung (11), wobei eine Innenkante des ersten Anschlagsbereichs (441) sich gegen ein unteres Ende der ersten Verbindungsmündung (20) neigt; ein äußeres Ende jeder zweiten Spannklaue (45) einen zweiten Anschlagbereich (451) aufweist, wobei eine Außenkante des zweiten Anschlagbereichs (451) ist außerhalb der Ventilöffnung (11) angeordnet, um einen Durchmesser auszubilden, das größer ist, als der der Ventilöffnung (11), eine Innenkante des zweiten Anschlagsbereichs (451) sich gegen ein oberes Ende der zweiten Verbindungsmündung (30) neigt.

Revendications

1. Tête de buse à commutation automatique ayant deux nez de valve comprenant :

un corps principal (10) ayant un trou de valve débouchant (11), un bouchon de valve (40), un trou d'alimentation d'air (12) disposé entre les deux extrémités du trou de valve (11) ;
un premier nez de raccordement (20) ayant un premier trou de nez (21) ;
un second nez de raccordement (30) ayant un second trou de nez (31) ; et
le bouchon de valve (40) étant axialement mobile entre une première position et une seconde position du trou de valve (11), **caractérisée en ce que** le bouchon de valve (40) est prévu avec une pluralité de premières griffes de serrage (44) et une pluralité de secondes griffes de serrage (45), une pluralité de premières rainures de retenue (46) étant formées entre les premières griffes de serrage (44) pour définir un premier trou de retenue (47), le premier trou de retenue (47) et le trou de valve (11) étant coaxiaux, le premier trou de retenue (47) pouvant se contracter radialement, le premier trou de retenue (47) étant adapté pour que le premier nez de raccordement (20) soit inséré de manière coaxiale ; une pluralité de secondes rainures de retenue (48) étant formées entre les secondes griffes de serrage (45) pour définir un second trou de retenue (49), le second trou de retenue (49) et le trou de valve (11) étant coaxiaux, le second trou de retenue (49) pouvant se contracter radialement, le second trou de retenue (49) étant adapté pour que le second nez de raccordement (30) soit inséré de manière coaxiale ; dans laquelle, lorsque le bouchon de valve (40) passe dans la première position, les secondes griffes de serrage (45) sont libérées du trou de valve (11) et les premières griffes de serrage (44) sont comprimées, de sorte que le premier trou de retenue (47) serre de manière radiale le premier nez de raccordement (20) pour que le trou d'alimentation d'air (12) communique avec le premier trou de nez (21) ; lorsque le bouchon de valve (40) passe dans la seconde position, les premières griffes de serrage (44) sont libérées du trou de valve (11) et les secondes griffes de serrage (45) sont comprimées, de sorte que le second trou de retenue (49) serre radialement le second nez de raccordement (30) pour que le trou d'alimentation d'air (12) communique avec le second trou de nez (31).

2. Tête de buse à commutation automatique ayant deux nez de valve selon la revendication 1, dans laquelle le corps principal (10) a une première partie de mise en prise concave (13) formée sur la paroi d'un bord d'extrémité du trou de valve (11) et une seconde partie de mise en prise concave (14) formée sur la paroi d'un autre bord d'extrémité du trou de valve (11) ; une paroi externe du bouchon de valve (40) est prévue avec une première partie de boucle (431) pour se coupler avec la première partie de mise en prise (13) et une seconde partie de boucle (432) pour se coupler avec la seconde partie de mise en prise (14) ; lorsque le bouchon de valve (40) passe dans la première position, la première partie de boucle (431) se met en prise avec la première partie de mise en prise (13) et la seconde partie de boucle (432) se dégage de la seconde partie de mise en prise (14) ; lorsque le bouchon de valve (40) passe dans la seconde position, la seconde partie de boucle (432) se met en prise avec la seconde partie de mise en prise (14) et la première partie de boucle (431) se dégage de la première partie de mise en prise (13).

3. Tête de buse à commutation automatique ayant deux nez de valve selon la revendication 2, dans laquelle le bouchon de valve (40) a une longueur plus grande que celle du trou de valve (11) de sorte que deux extrémités du bouchon de valve (40) s'étendent hors du trou de valve (11) ; lorsque le bouchon de valve (40) passe dans la première po-

sition, une extrémité du bouchon de valve (40) s'étend hors du trou de valve (11) pour libérer la première partie de boucle (431) et la première partie de mise en prise (13) ; lorsque le bouchon de valve (40) passe dans la seconde position, l'autre extrémité du bouchon de valve (40) s'étend hors du trou de valve (11) pour libérer la seconde partie de boucle (432) et la seconde partie de mise en prise (14).

4. Tête de buse à commutation automatique ayant deux nez de valve selon la revendication 2, dans laquelle les premières griffes de serrage (44) et les premières rainures de retenue (46) sont entrelacées et agencées en cercle afin de définir le premier trou de retenue (47) au niveau des côtés internes des premières griffes de serrage (44), un côté externe de chaque première griffe de serrage (44) est formé avec une première partie incurvée pour comprimer radialement le trou de valve (11), la première partie de boucle (431) est disposée sur la première partie incurvée ; les secondes griffes de serrage (45) et les secondes rainures de retenue (48) sont entrelacées et agencées en cercle afin de définir le second trou de retenue (49) au niveau des côtés internes des secondes griffes de serrage (45), un côté externe de chaque seconde griffe de serrage (45) est formé avec une seconde partie incurvée pour comprimer radialement le trou de valve (11), la seconde partie de boucle (432) est disposée sur la seconde partie incurvée.

5. Tête de buse à commutation automatique ayant deux nez de valve selon la revendication 1, 2, 3 ou 4, dans laquelle une extrémité externe de chaque première griffe de serrage (44) a une première partie de butée (441), un bord externe de la première partie de butée (441) est positionné hors du trou de valve (11) pour former un diamètre plus grand que celui du trou de valve (11), un bord interne de la première butée (441) s'appuie contre une extrémité inférieure du premier nez de raccordement (20) ; une extrémité externe de chaque seconde griffe de serrage (45) a une seconde partie de butée (451), un bord externe de la seconde partie de butée (451) est positionné hors du trou de valve (11) afin de former un diamètre plus grand que celui du trou de valve (11), un bord interne de la seconde partie de butée (451) s'appuie contre une extrémité supérieure du second nez de raccordement (30).

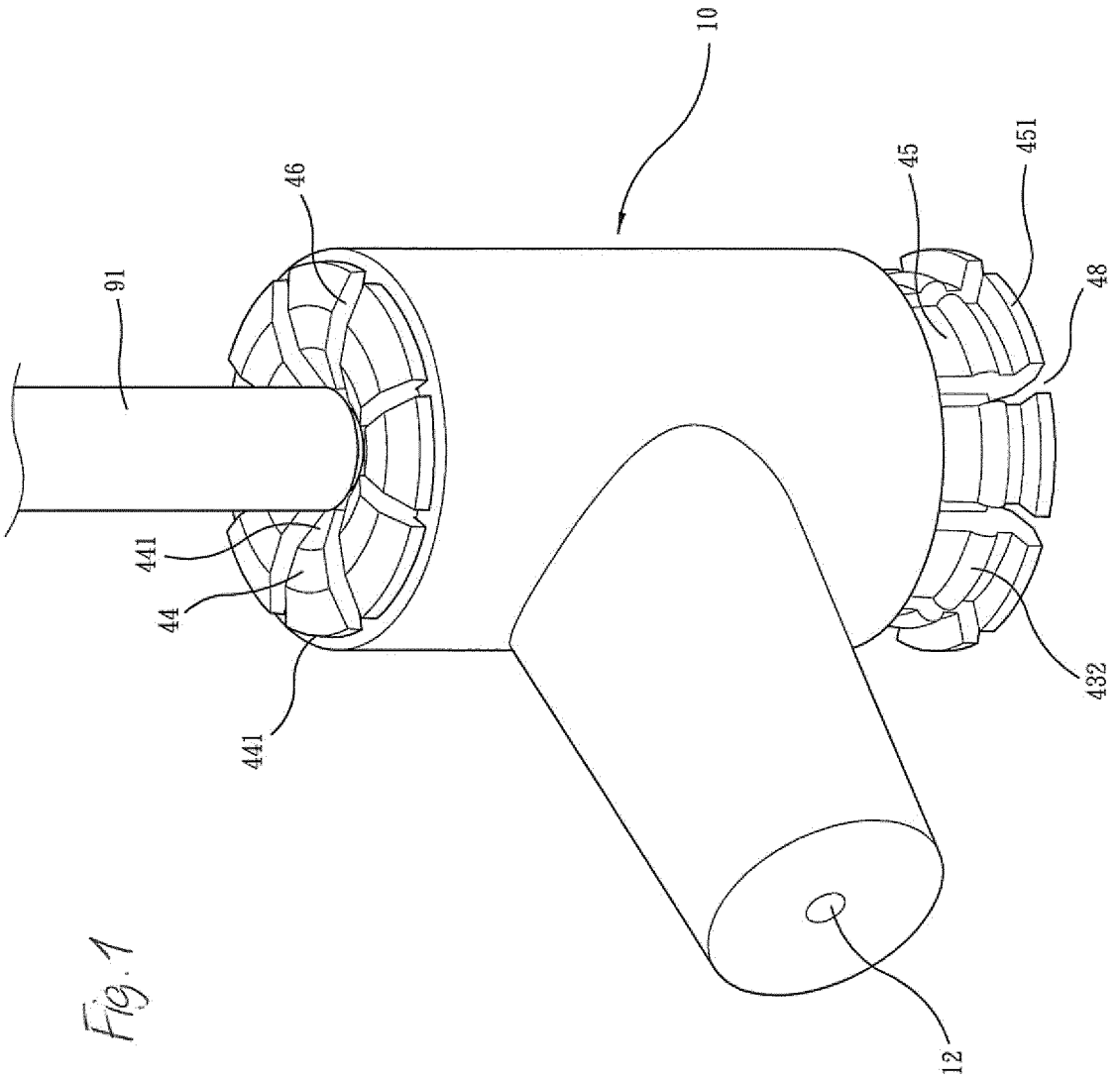

Fig. 1

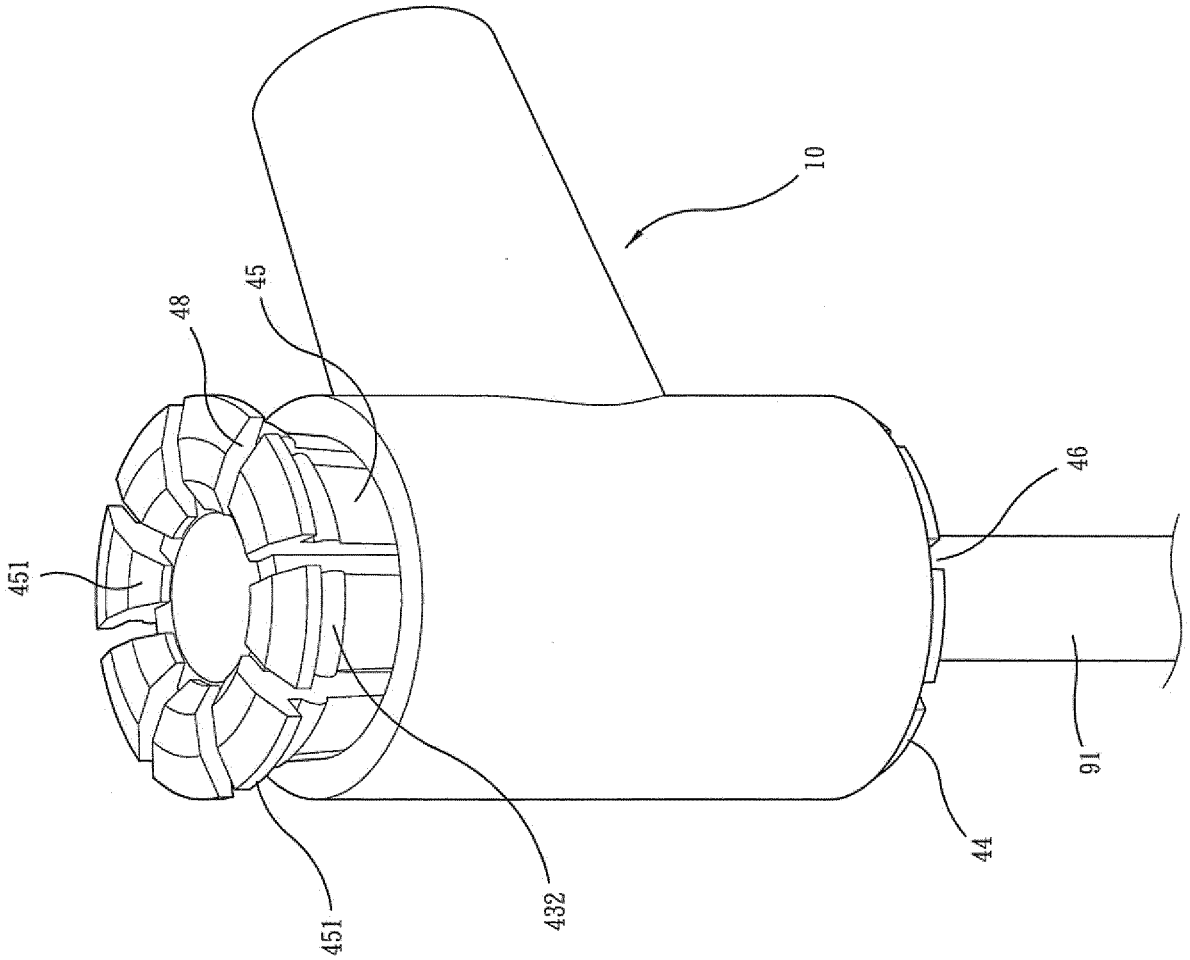

Fig. 2

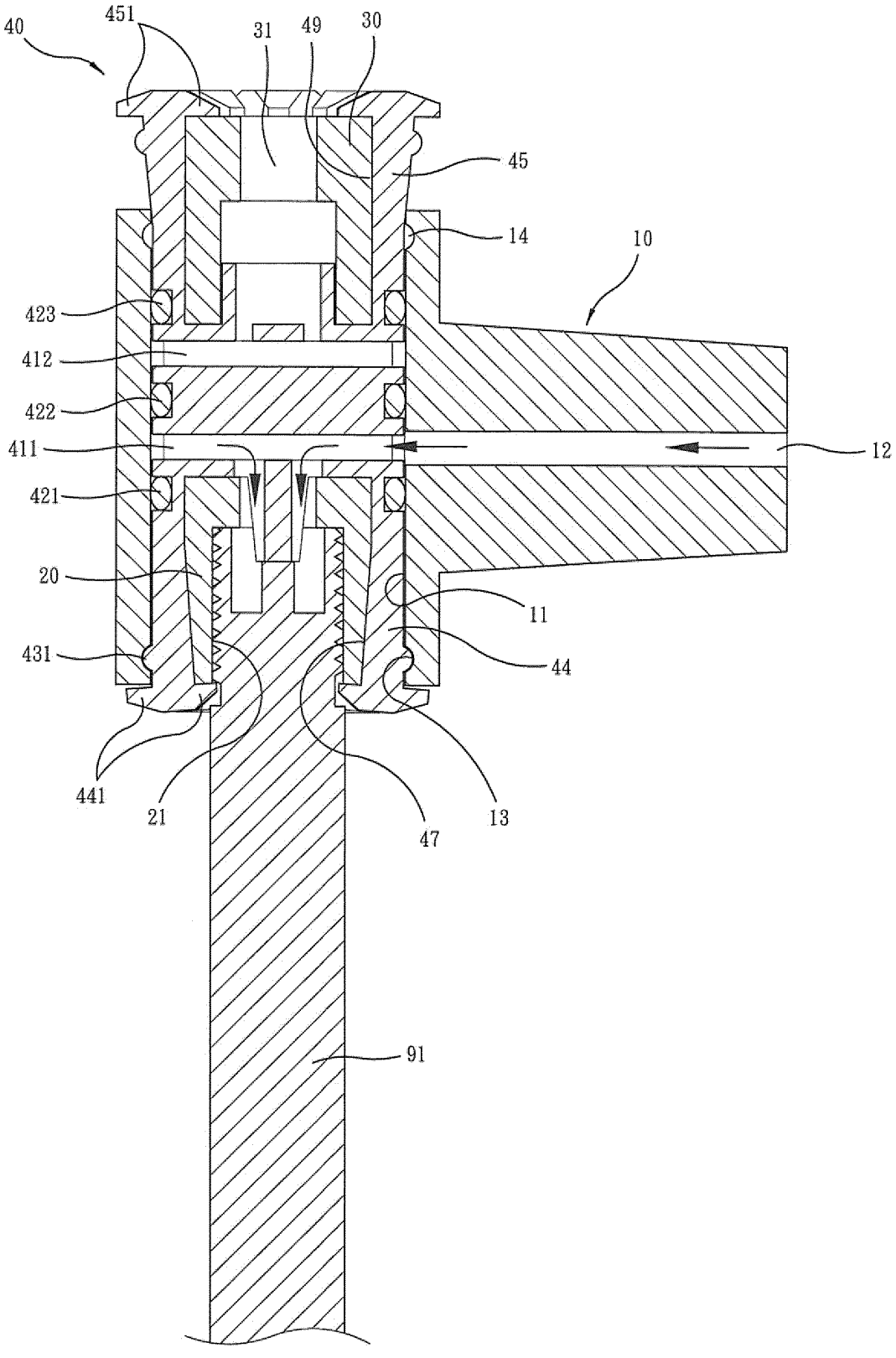
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Fig. 3

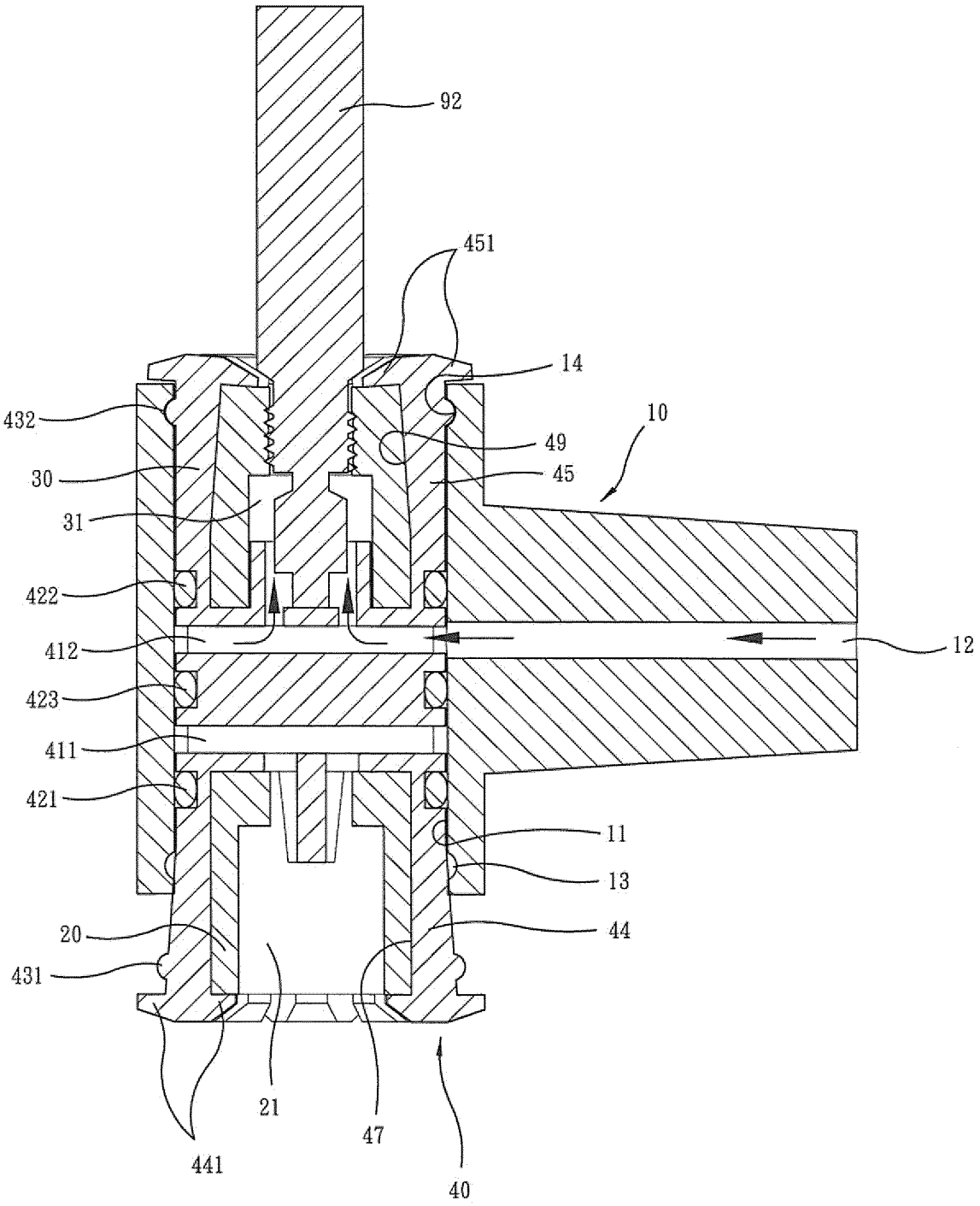
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Fig. 4

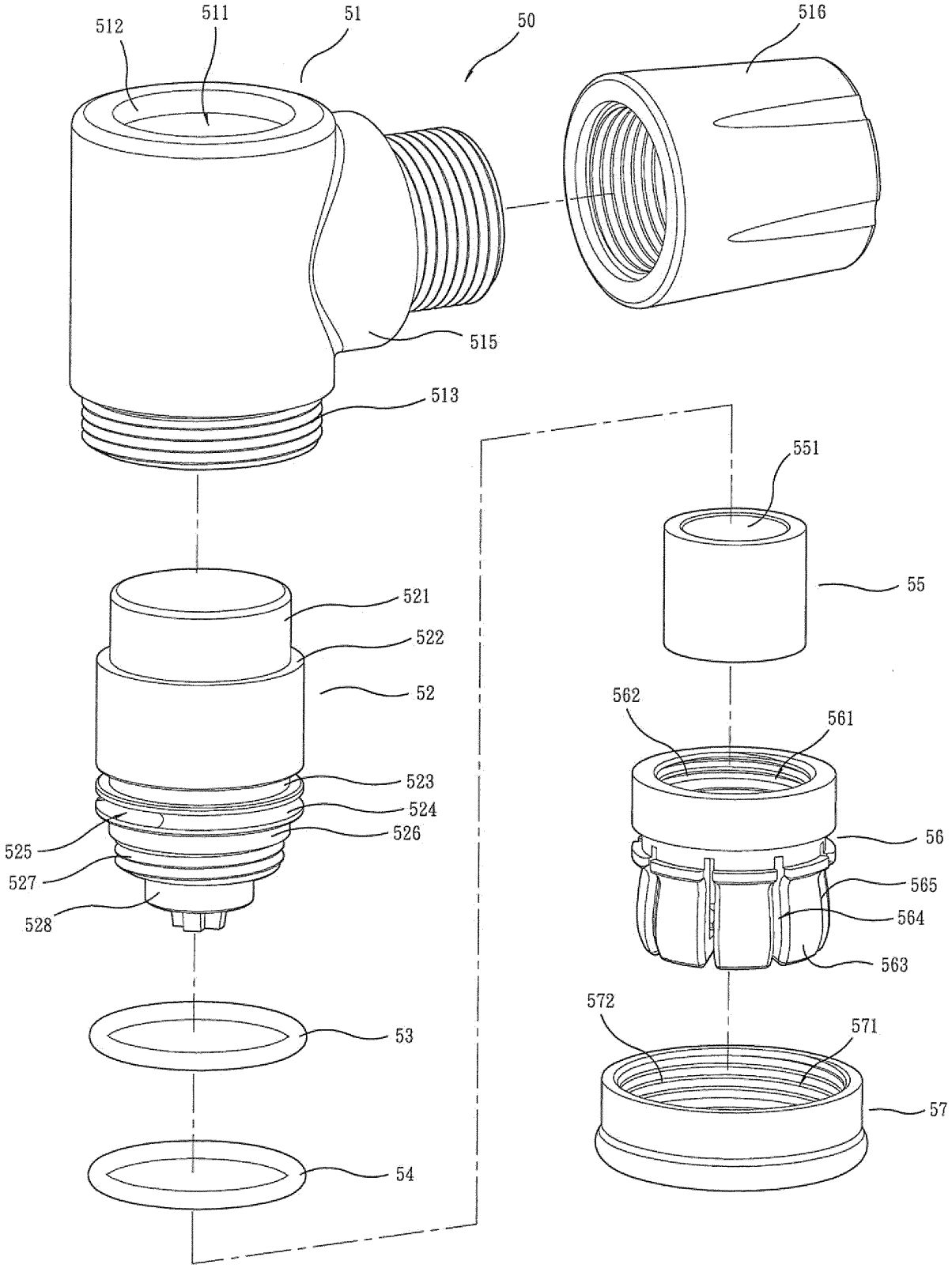
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Fig. 5

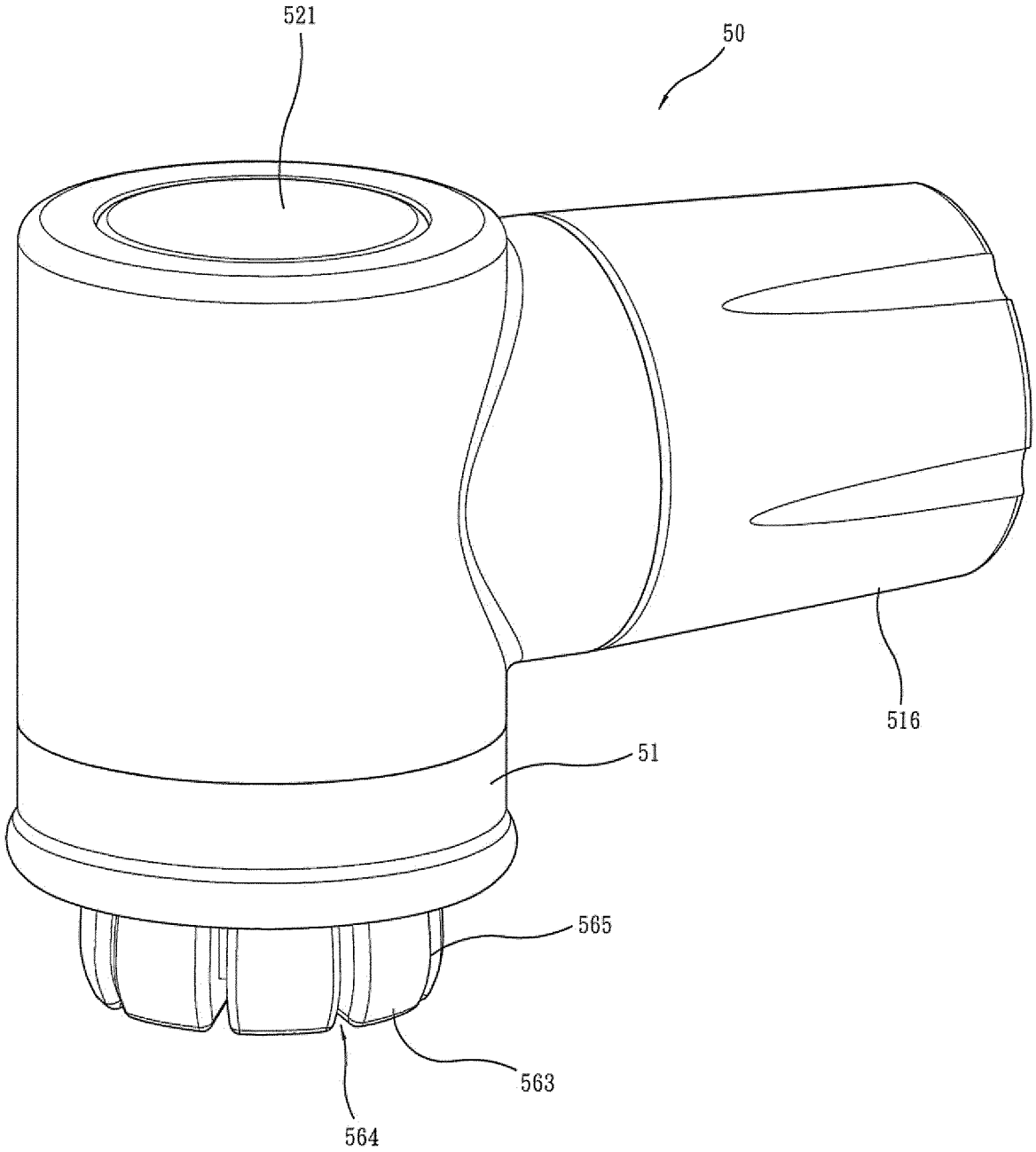

Fig. 6

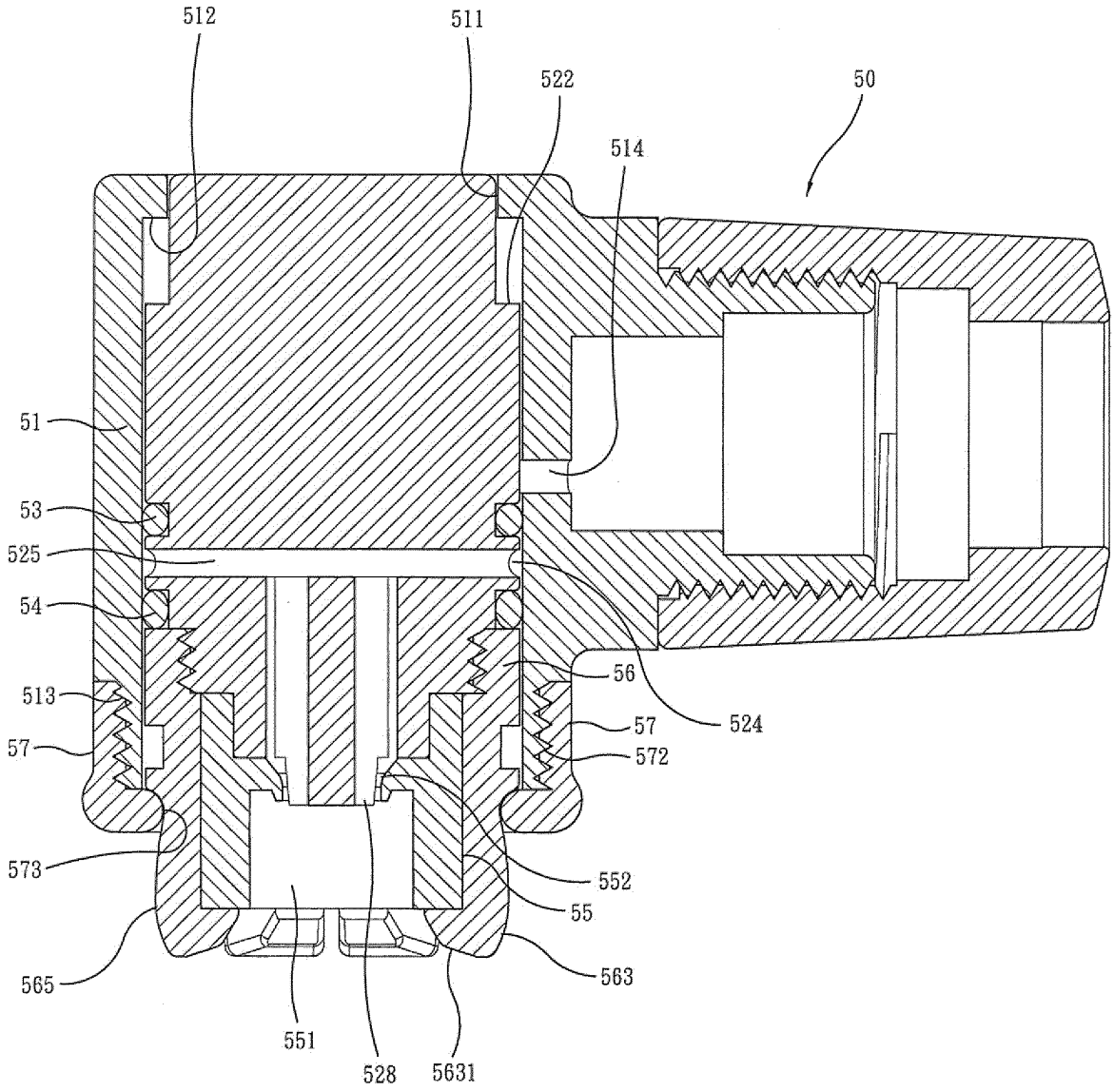
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Fig. 7

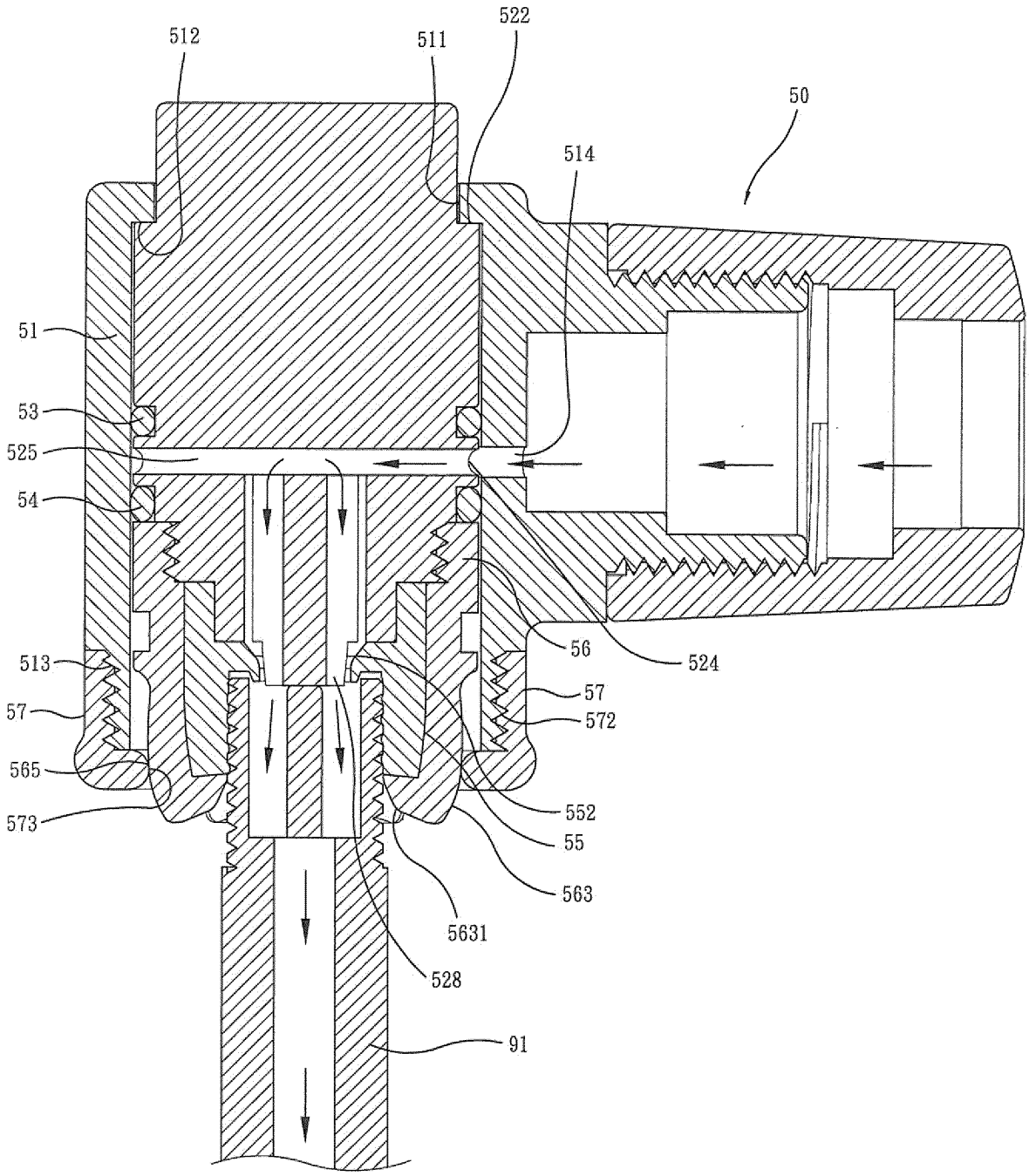
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Fig. 8

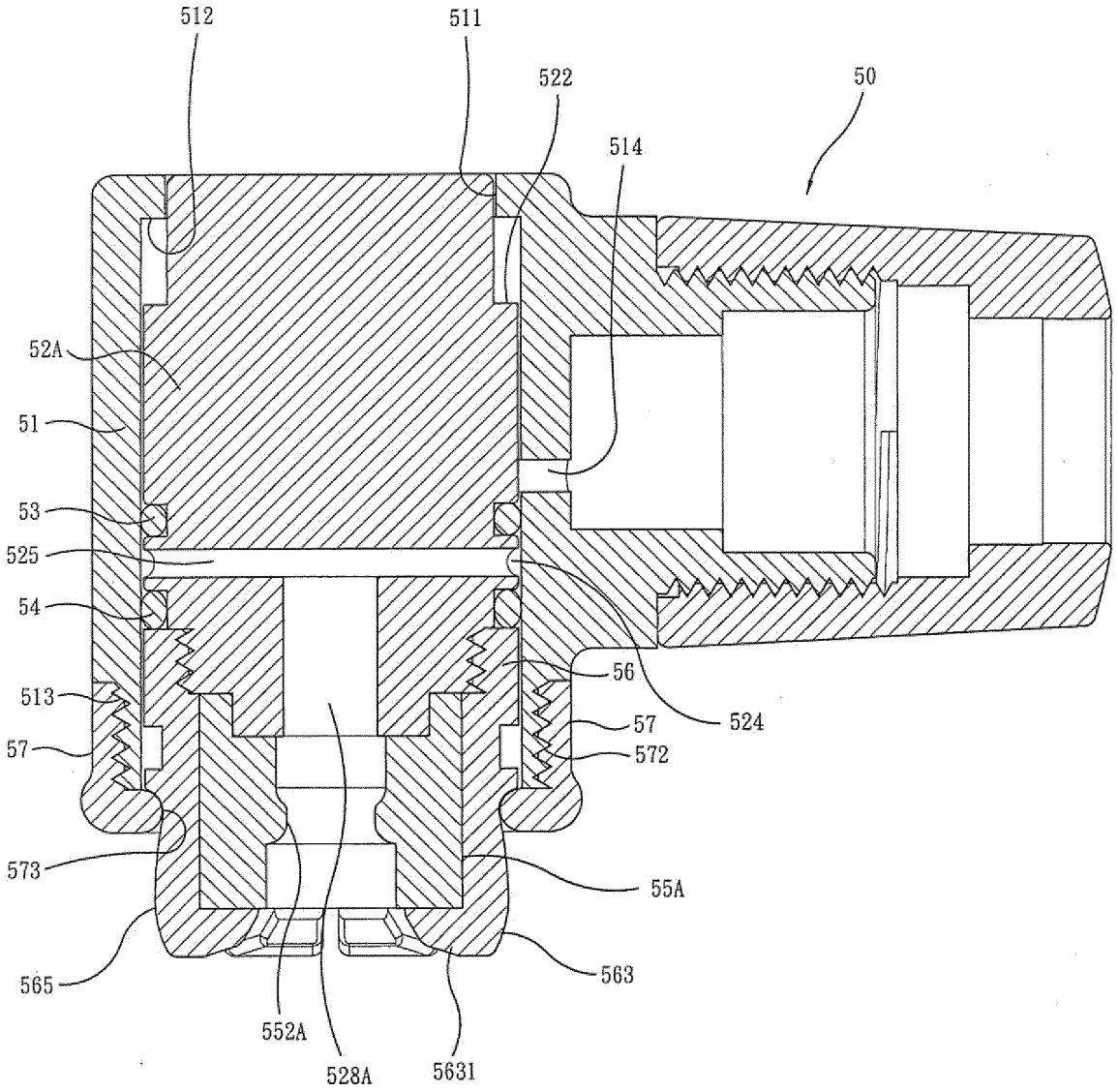
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Fig. 9

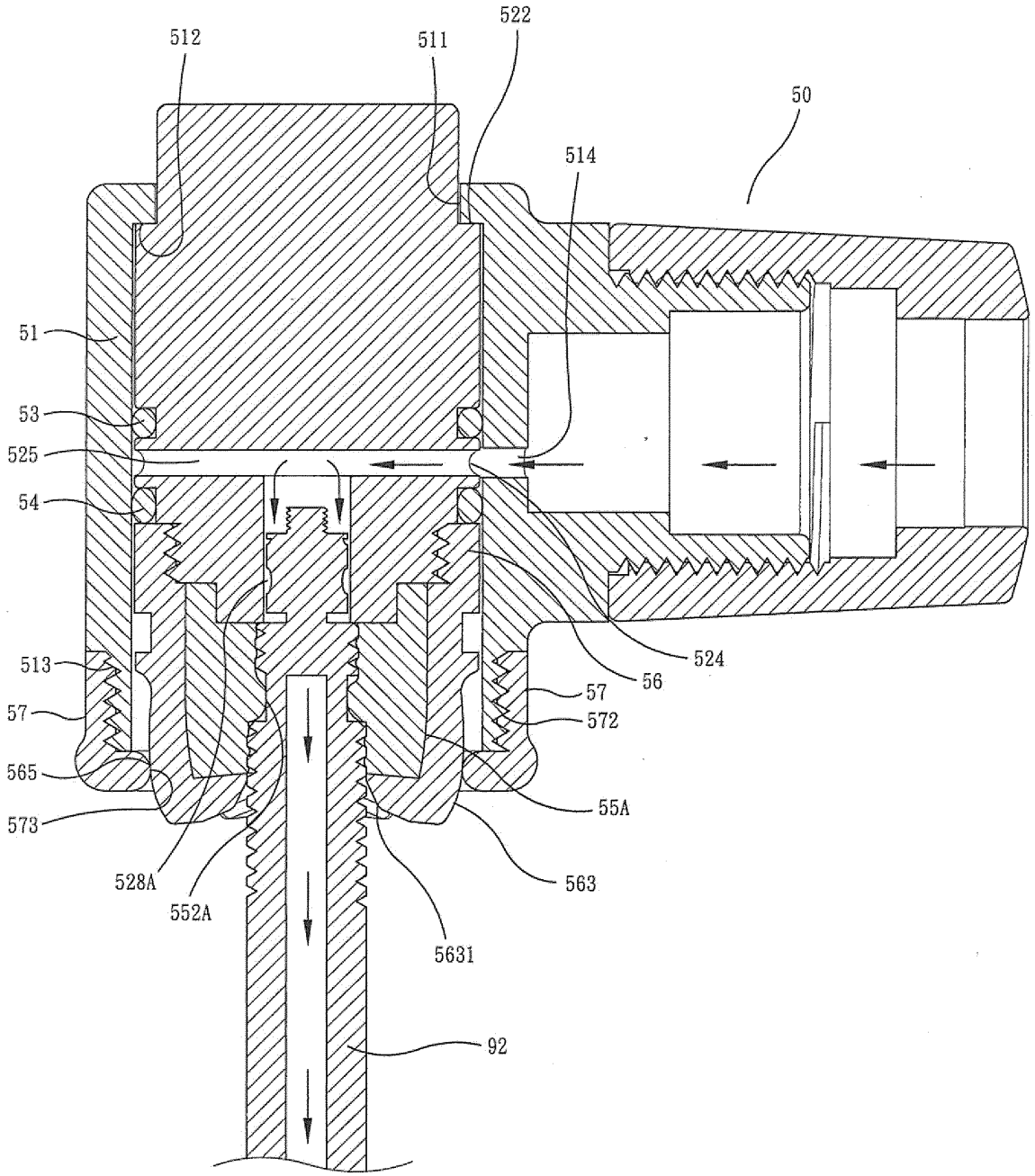
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Fig. 10

REFERENCES CITED IN THE DESCRIPTION

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