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

(11) **EP 3 610 081 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
08.06.2022 Bulletin 2022/23

(21) Application number: **18723904.1**

(22) Date of filing: **05.04.2018**

(51) International Patent Classification (IPC):
E03C 1/298 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
E03C 1/298

(86) International application number:
PCT/GB2018/050916

(87) International publication number:
WO 2018/189510 (18.10.2018 Gazette 2018/42)

(54) **AN L-SHAPED PLUMBING DRAINAGE FITTING**

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RACCORD D'ÉVACUATION DE PLOMBERIE EN L

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

(30) Priority: **10.04.2017 GB 201705718**

(43) Date of publication of application:
19.02.2020 Bulletin 2020/08

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(56) References cited:
EP-A1- 2 868 816
EP-A2- 2 439 349
WO-A1-2005/014942
WO-A2-2010/147322
DE-B- 1 084 655

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Description

Field of Invention

[0001] A plumbing drainage fitting configured to provide a mechanical trap, which can be fitted to an outlet of a sanitary ware product, for example a sink, a wash basin, a bath or a shower. In particular, the plumbing drainage fitting is configured to fit to a sanitary ware product in an area where there is lack of space under the sanitary ware product or as a replacement for a conventional trap, for example a P-trap.

Background to the Invention

[0002] Plumbing traps under wash basins, baths or showers are liable to blockage due to build-up of lime scale, soap scum and often hair shed from the user. Typically, people use a plunger or chemical dissolving solutions to clear the trap. A trap is typically in the form of a P-trap, which is an addition of a 90-degree fitting in an outlet side of a U-bend. The U-bend provides a water seal in which a quantity of water resides at all times, unless there is a long period of non-use, when the fluid can evaporate.

[0003] When a conventional plumbing trap becomes blocked, it prevents or slows down drainage of water from the sanitary ware to which it is attached and can allow noxious odours to enter the room in which the sanitary ware, for example a wash basin, sink, bath or shower etc. is located. If the plumbing trap dries out, the problem of noxious odours from the waste pipe to which the trap is attached can occur and the odours can enter the room in which the sanitary ware is located. It will be appreciated that blockages, smells and the use of hazardous chemicals to clear such blockages is not desirable and would preferably be avoided.

[0004] Additionally, space beneath sinks and washbasins, in particularly those fitted with vanity units can be limited using conventional traps.

[0005] Examples of backflow preventing drainage devices are described and illustrated in EP 2 868 816, WO 2005/014942, DE 10 84 655, WO2010/147322A2 and EP2439349A2.

[0006] EP 2 868 816 discloses a plumbing drainage fitting according to the preamble of claim 1 and describes an overflow siphon with essentially parallel and vertical inlet and outlet pipes of predetermined nominal width, which are connected by a U-bend, with an essentially horizontal outlet from the outlet pipe branches off, a flap that automatically locks in the direction of flow from the drain pipe to the inlet pipe thereby preventing backflow of fluid from outlet to inlet.

[0007] WO 2005/014942 describes a backflow preventing device comprising an outer housing, in which is positioned an inlet and an outlet, the outlet connecting with the outlet pipe of a drainage and the sewage pipe. The inlet and the outlet in question are interconnected by a duct, in which a lip is positioned near the inlet. In the duct, between the inlet and the outlet, there is a locking device which is hinged to a pivot and the locking device prevents backflow.

[0008] DE 10 84 655 describes a device for preventing mutual communication between inmates in prisons and detention centres via the drain lines of toilets, wash basins or similar systems. The device includes a flap which prevents backflow and prevents the means of communication.

Summary of the Invention

[0009] The present invention provides a plumbing drainage fitting according to claim 1 configured to be installed to an outlet of a sanitary ware product such as a wash basin, a sink, a shower or a bath, wherein the plumbing drainage fitting comprises:

a hollow elongate body comprising a first open end and a second open end and an inlet port proximate the first open end; and

a removable one-way valve, which is insertable and removable via the first open end, wherein the one-way valve comprises a hollow elongate body section and a valve member, wherein the hollow elongate body section comprises a lateral opening through the hollow elongate body section, wherein the lateral opening is configured to align with the inlet port when the one-way valve is inserted into the hollow elongate body via the open end;

wherein the first open end provides a maintenance access port;

wherein the second open end provides an outlet port, which is connectable to a downstream waste system; and

wherein the inlet port is provided as a lateral opening through a wall of the hollow elongate body and opens into an upstream end of the one-way valve such that a substantially L-shaped flow path is defined from the inlet port to the outlet port, wherein the one-way valve is operable to permit flow in a direction from the inlet port to the outlet port and is operable to prevent backflow from the outlet port to the inlet port.

[0010] The plumbing drainage fitting does not include a water seal as required by conventional plumbing traps and therefore a quantity of water does not remain within the drainage fitting. Advantageously, by providing the plumbing drainage fitting with a removable one-way valve it is possible to clear blockages via the first open end of a removable one-way valve, which is insertable and removable via the first open end;

wherein the first open end provides a cleaning access;

wherein the second open end provides an outlet port, which is connectable to a downstream waste system; and

wherein the inlet port is provided as a lateral opening through a wall of the hollow elongate body and opens into an upstream end of the one-way valve such that a substantially L-shaped flow path is defined from the inlet port to the outlet port, wherein the one-way valve is operable to permit flow in a direction from the inlet port to the outlet port and is operable to prevent backflow from the outlet port to the inlet port.

[0011] The plumbing drainage fitting does not include a water seal as required by conventional plumbing traps and therefore a quantity of water does not remain within the drainage fitting. Advantageously, by providing the plumbing drainage fitting with a removable one-way valve it is possible to clear blockages via the first open end of hollow elongate body. By doing so this omits the need to use harmful chemicals to clear blockages.

[0012] The inclusion of the one-way valve within the elongate body ensures that fluid flow is limited to one direction, from the sanitary ware to waste i.e. from inlet to outlet. The inclusion of the one-way valve also prevents backflow of fluid from the waste system to which the plumbing drainage fitting is attached and also prevents the backflow and omission of noxious odours from the inlet port, which is attached to the outlet end of the sanitary ware.

[0013] The flow path, defined between the inlet and outlet of the plumbing drainage fitting may emulate a 90-degree bend.

[0014] By aligning the lateral opening with the inlet port a flow path from the sanitary ware into the plumbing drainage fitting is defined, such that fluid flow from the sanitary ware is directed through the valve member towards the outlet port. The valve member may be located downstream of the inlet port and upstream of the outlet port.

[0015] The plumbing drainage fitting may further comprise a cap configured to close the open end of the plumbing drainage fitting and to allow access to inside the hollow elongate body upon removal of the cap from the open end.

[0016] The first open end may comprise a removable cap, wherein the cap is operable to close the first open end for normal operation wherein fluid can drain from the sanitary ware to waste and wherein the cap is removable to allow access inside the hollow elongate body for cleaning and/or maintenance.

[0017] To facilitate removal of the cap, the cap may comprise an external flange configured to abut an external edge of the hollow elongate body adjacent to the first open end, wherein the external flange comprises at least one edge of a larger external dimension than the first open end, such that the at least one edge facilitates gripping and pulling the cap to remove it from the open end of the hollow elongate body.

[0018] The cap may further comprise a first locking element which is configured to cooperate with a second locking element provided on the hollow elongate body and adjacent to the first open end to retain the cap on the first open end whilst the plumbing drainage fitting is in use.

[0019] The second locking element may comprise a tubular member attached to an external surface of the hollow elongate body adjacent to the first open end; and an elongate slot through the hollow elongate body in the location of the tubular member, such that the elongate slot exposes an internal bore of the tubular member to inside the hollow elongate member and wherein the first locking element may be provided by a groove provided on a surface of the hollow body section of the one-way valve wherein the groove is configured to align with the elongate slot and to receive a portion of a locking pin insertable through the tubular member.

[0020] The locking pin may comprise an elongate shank, wherein the shank is insertable through the tubular member, wherein an upper portion of the shank engages with the groove and a lower portion of the shank engages with the slot such that the one-way valve is secured within the hollow elongate body until the pin is removed.

[0021] The pin may further comprise a head on an end of the shank, wherein the head is operable as a stop to prevent the pin passing too far into the tubular member and to provide a grip to assist in removing the pin from the tubular member to enable release and removal of the one-way valve from the hollow elongate body.

[0022] The valve member may be attachable to a downstream end of the hollow body section and the cap may be attachable to an upstream end of the hollow elongate body section.

[0023] The hollow elongate body section may comprise one or more external seal members around the perimeter of the elongate body section, wherein the external seal members are operable to provide an interference fit between the one or more seal members and an internal surface of the hollow elongate body, such that fluid flow outside the flow path may be prevented.

[0024] The valve member may comprise a duck bill valve.

[0025] The hollow elongate body may comprise an oval cross section.

[0026] The plumbing drainage fitting may be compact compared with conventional P-trap, because the one-way valve replaces a conventional water seal (U-bend) used with the conventional P-trap. The plumbing drainage fitting may be made more compact by manufacturing an elliptical or oval shaped hollow elongate body, where the minimum dimension is arranged vertical and the maximum dimension is arranged horizontal in a horizontally oriented installation.

Brief Description of the Drawings

[0027] Embodiments of the present invention are described below, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 illustrates a partially exploded view of a plumbing drainage fitting according to an embodiment of the present invention;

Figure 2 illustrates an assembled view of the plumbing drainage fitting as illustrated in figure 1;

Figure 3 illustrates a first open end of the plumbing drainage fitting as illustrated in figures 1 and 2, and shows a locking arrangement operable to retain a one-way valve within the plumbing drainage fitting;

Figure 4 illustrates a perspective view of the one-way valve used within the plumbing drainage fitting as illustrated in Figures 1, 2 and 3; and

Figure 5 illustrates an underside of the one-way valve of Figure 4 and shows a slot configured to receive a locking pin which is operable to retain the one-way valve within the plumbing drainage fitting.

Description

[0028] Figures 1 and 2 show a plumbing drainage fitting 10 according to an embodiment of the present invention. The plumbing drainage fitting 10 comprises a hollow elongate body 12 which includes a cleaning and maintenance access port 14 at one end, an outlet port 16 at the opposite end and an inlet port 18 near the end comprising the cleaning and maintenance access port 14. The inlet port 18 extends laterally through the upper wall 19 of the hollow elongate body 12 into the bore 20 of the hollow elongate body 12.

[0029] The cleaning and maintenance access port 14 facilitates insertion and extraction of a one-way valve 22 (see figures 1, 4 and 5) to allow access to the inside of the hollow elongate body 12 for cleaning, maintenance and/or replacement of the one-way valve 22.

[0030] It will be appreciated that, due to the location of the cleaning and maintenance access port 14 being proximate the inlet port 18, it is possible to maintain the plumbing drainage fitting 10 without removing the plumbing drainage fitting 10 from pipework (not illustrated) to which it is attached.

[0031] In the illustrated example, the inlet port 18 includes a connector 23, which facilitates connection of the inlet port 18 to an outlet port of sanitary ware such as a sink, a washbasin, a bath, and a shower (not illustrated). The outlet port 16 includes a compression fit connector 21, which facilitates connection of the plumbing drainage fitting 10 to downstream pipework (not illustrated) which is connected to waste.

[0032] In the illustrated example, the one-way valve 22 (see figures 1, 4 and 5) is provided by an assembly of a tubular section 24 and a duck bill valve 26.

[0033] The tubular section 24 is open at one end 28 and closed at the opposite end by a cap 30. When the one-way valve 22 is inserted into the hollow elongate body 12 the cap 30 serves to cover and seal the cleaning and maintenance access port 14.

[0034] The cap 30 includes a flange 32, which acts as a stop when the one-way valve 22 is inserted into the hollow elongate body 12 as illustrated in figure 2. The flange 32 is larger than the external dimension of the hollow elongate body 12 such that edges 33 of the flange 32 protrude from beyond the perimeter of the hollow elongate body 12. The edges 33 of the flange 32 provide a grip to extract the one-way valve 22 from the cleaning and maintenance access port 14.

[0035] The tubular section 24 includes a hole 31 (see figures 1 and 4) through an upper face 34 of the tubular section 24. The hole 31 aligns with the inlet port 18 when the one-way valve 22 is inserted into the bore 20 of the hollow elongate body 12 via the cleaning and maintenance access port 14.

[0036] The tubular section 24 includes two grooves 51 around the perimeter and an O-ring type seal 50 in each groove 51 such that when the one-way valve 22 is inserted into the cleaning and maintenance access port 14 fluid flow is prevented from leaking between the interface of the one-way valve 22 and the internal surface of the hollow elongate body 12.

[0037] The duck bill valve 25 comprises an elastomeric hollow body 36, which is formed with an open end 38 and a closed end in the form of lips 39 that open when fluid flows from the inlet port 18 towards the outlet port 20.

[0038] The open end 38 of the duck bill valve 24 is received on the open end 28 of the tubular section 24, such that fluid draining from the sanitary ware (not illustrated) enters the duck bill valve 25 via the inlet port 18 and the hole 31.

[0039] The lips 39 are in a normally closed position as illustrated in figures 1 and 4 and open only when fluid passes through the valve from the inlet port 18 to the outlet port 20. The normally closed arrangement of the lips 39 means that the duck bill valve 25 acts as a backflow preventer i.e. it acts to prevent fluid and odours flowing from the outlet port 20 to the inlet port 18. The tapered shape, from the open end 38 of the duck bill valve 25 to the closed end 39 of the duck bill valve 25 resembles the shape of a duck's beak/bill and this is how the name of this particular valve is derived.

[0040] The duck bill valve 25 provides a simple and effective one-way valve, which means it can be easily incorporated into a drainage system of the type described. It will be appreciated other types of valves could be incorporated for ease of removal from the hollow elongate body 12 via the cleaning and maintenance access port.

[0041] Referring to figures 1, 2, and 3, a pin 52 is illus-

trated as part of the assembly of the plumbing drainage fitting 10 and the hollow elongate body 12.

[0042] Figure 1 shows a disassembled plumbing drainage fitting, figure 2 shows an assembled plumbing drainage fitting 10 and figure 3 illustrates insertion of the pin 52 and the relationship between the pin 52, the hollow elongate body 12 and the tubular section 24 of the one-way valve 22.

[0043] Referring to figures 2 and 3, the hollow elongate body includes a tubular member 54 moulded onto the lower face 56 of the hollow elongate body 12. The pin 52 is inserted into the bore 53 defined by the tubular member 54 and is operable to secure the one-way valve inside the hollow elongate body 12.

[0044] Referring to figure 3, a slot 58 is provided through the internal surface of the lower face of the hollow elongate body 12. The slot 58 extends into the bore 53 through the tubular member 54. As can be seen in Figure 3, when the pin 52 is inserted into the tubular member 54, a lower portion of the shank 60 of the pin 52 is received in the bore 53 and an upper portion of the shank 60 extends into bore 20 through the hollow elongate body 12.

[0045] Figure 5 shows the underside surface of the one-way valve 22. A groove 62 is provided on the lower surface of the one-way valve 22 between the flange 32 and the seal member 50 nearest the capped end of the tubular section 24. With reference to figure 3 and figure 5, it will be appreciated that the groove 62 aligns with the slot 58 when the one-way valve 22 is inserted into the hollow elongate body 12 via the cleaning and maintenance access port 14. Once inserted, the pin 52 can be inserted into the tubular member 54 such that the shank 60 of the pin 52 engages with both the slot 58 and the groove 62 to secure the one-way valve 22 inside the hollow elongate body 12.

[0046] For ease of cleaning and maintenance, the pin 52 can be removed from the tubular member by gripping and pulling on the head 64 of the pin 52. Once the pin 52 is extracted the edges of flange 33 can be gripped and pulled such that the one-way valve 22 can be removed from the hollow elongate body 12.

[0047] From the above description of an embodiment of the present invention, it will be appreciated that the plumbing drainage fitting 10 provides a useful and compact replacement for conventional P-traps and the like. The compact arrangement of the plumbing drainage fitting 10 is further enhanced by an oval cross-sectional shaped hollow elongate body 12.

[0048] Advantageously, the cleaning and maintenance access port 14 is provided proximate the inlet port 18, which means, typically, the plumbing and maintenance access port 14 will be exposed and easily accessible when the plumbing drainage fitting 10 is installed.

[0049] It should be appreciated that, whilst the illustrated embodiment is shown in a horizontal orientation, the plumbing drainage fitting is versatile and can be fitted horizontally, where the inlet port is vertically orientated, or vertically, where the inlet port 18 is substantially horizontally orientated.

[0050] Connection of the inlet port 18 to an outlet from a drain of sanitary ware, such as a sink, washbasin, bath or shower allows connection of the outlet port 16 to downstream pipework and does not affect removal of the one-way valve 22 because the cleaning and maintenance port 14 is not connected to any pipework.

[0051] The description above associates the plumbing drainage fitting 10 with sanitary ware, such as sinks, wash basins, baths and showers. However, it should be appreciated that the plumbing drainage fitting 10 may be used with other systems, for example heating/central heating systems.

[0052] A duckbill valve 25 is described as an example of a one-way valve for illustrative purposes. It will be appreciated that other examples of mechanical valves may be utilised, for example a spring-loaded valve, a flapper valve etc.

[0053] It will be appreciated that, the plumbing drainage fitting 10 can be used in areas below sinks, washbasins, baths or showers, where space is limited and calls for a compact design and/or to replace conventional traps. In this regard, it is submitted that fluid flow through the plumbing drainage fitting 10, as illustrated in figures 1 to 5, shall meet required minimum standards laid down for such applications.

Claims

1. A plumbing drainage fitting (10) configured to be installed to an outlet of a sanitary ware product such as a wash basin, a sink, a shower or a bath, wherein the plumbing drainage fitting (10) comprises:

   a hollow elongate body (12) comprising a first open end and a second open end and an inlet port (18) proximate the first open end ; and
   a removable one-way valve (22), which is insertable and removable via the first open end , wherein the one-way valve (22) comprises a hollow elongate body section (24) and a valve member (25),;
   wherein the first open end is a cleaning and maintenance access port (14);
   wherein the second open end is an outlet port (16), which is connectable to a downstream waste system; and
   wherein the inlet port (18) extends laterally through an upper wall (19) of the hollow elongate body (12) and opens into an upstream end of the one-way valve (22) such that a substantially L-shaped flow path is defined from the inlet port (18) to the outlet port (16), wherein the one-way valve (22) is operable to permit flow in a direction from inlet port (18) to outlet port (16) and is operable to prevent backflow from the outlet port (16) to the inlet port (18), **characterised in that**

the hollow elongate body section (24) comprises a lateral opening (31) through the hollow elongate body section (24), wherein the lateral opening (31) is configured to align with the inlet port (18) when the one-way valve (22) is inserted into the hollow elongate body (12) via the cleaning and maintenance access port (14).

2. A plumbing drainage fitting as claimed in claim 1, wherein the flow path, defined between the inlet port (18) and the outlet port (16) emulates a 90-degree bend.

3. A plumbing drainage fitting as claimed in claim 1 or 2, wherein the valve member (25) is located downstream of the inlet port (18) and upstream of the outlet port (16).

4. A plumbing drainage fitting as claimed in any preceding claim, wherein the cleaning and maintenance access port (14) comprises a removable cap (30), wherein the cap (30) is operable to close the cleaning and maintenance access port (14) for normal operation wherein fluid can drain from the sanitary ware to waste and wherein the cap (30) is removable to allow access inside the hollow elongate body (12) for cleaning and/or maintenance.

5. A plumbing drainage fitting as claimed in claim 4, wherein the one-way valve (22) extends from an interior face of the cap (30), wherein upon removing the cap (30) the one-way valve (22) is also removed.

6. A plumbing drainage fitting as claimed in claim 4 or 5, wherein the cap (30) comprises an external flange (32) configured to abut an external edge of the hollow elongate body (12) adjacent to the cleaning and maintenance access port (14), wherein the external flange (32) comprises at least one edge (33) of a larger external dimension than the cleaning and maintenance access port (14), such that the at least one edge (33) facilitates gripping and pulling the cap (32) to remove it from the open end of the hollow elongate body (12).

7. A plumbing drainage fitting as claimed in claim 4, 5 or 6, wherein the cap (30) further comprises a first locking element (60) which is configured to cooperate with a second locking element (54, 58) provided on the hollow elongate body (12) and adjacent to the first open end to retain the cap (30) on the cleaning and maintenance access port (14) whilst the plumbing drainage fitting (10) is in use.

8. A plumbing drainage fitting as claimed in claim 7, wherein the second locking element (54, 58) comprises a tubular member (54) attached to an external surface of the hollow elongate body (12) adjacent to the cleaning and maintenance access port (14); and an elongate slot (58) through the hollow elongate body (12) in the location of the tubular member (54), such that the elongate slot (58) exposes an internal bore (53) of the tubular member (54) to inside the hollow elongate member (12) and wherein the first locking element (52) is provided by a groove (62) provided on a surface of the hollow elongate body section (24) of the one-way valve (22) wherein the groove (62) is configured to align with the elongate slot (58) and to receive a portion of a locking pin (52) insertable through the tubular member (54).

9. A plumbing drainage fitting as claimed in claim 8, further comprising a locking pin (52), wherein the locking pin (52) comprises an elongate shank (60), wherein the shank (60) is insertable through the tubular member (54), wherein an upper portion of the shank (60) engages with the groove (62) and a lower portion of the shank (60) engages with the slot (58) such that the one-way valve (22) is secured within the hollow elongate body (12) by engagement with the pin (52) and until the pin (52) is removed.

10. A plumbing drainage fitting as claimed in claim 9, wherein the pin (52) further comprises a head (64) on an end of the shank (60), wherein the head (64) is operable as a stop to prevent the pin (52) passing too far into the tubular member (54) and to provide a grip to assist in removing the pin (52) from the tubular member (54) to enable release and removal of the one-way valve (22) from the hollow elongate body (12).

11. A plumbing drainage fitting as claimed in any of claims 4 to 10, wherein the valve member (25) is attachable to a downstream end of the hollow elongate body section (24) and the cap (30) is attachable to an upstream end of the hollow elongate body section (24).

12. A plumbing drainage fitting as claimed in any of claims 1 to 10, wherein the hollow elongate body section (24) comprises one or more external seal members (50) around the perimeter of the hollow elongate body section (24), wherein the external seal members (50) are operable to provide an interference fit between the one or more seal members (50) and an internal surface of the hollow elongate body (12), such that fluid flow outside the flow path may be prevented.

13. A plumbing drainage fitting as claimed in any of claims 1 to 10, wherein the valve member (25) comprises a duck bill valve.

14. A plumbing drainage fitting as claimed in any preceding claim, wherein the hollow elongate body (12)

comprises an oval cross section.

Patentansprüche

1. Auslaufarmatur (10), die so konfiguriert ist, dass sie an einem Auslass einer Sanitärkeramik, wie z.B. eines Waschbeckens, eines Spülbeckens, einer Dusche oder einer Badewanne, installiert werden kann, wobei die Auslaufarmatur (10) umfasst:

   einen hohlen, länglichen Körper (12), der ein erstes offenes Ende und ein zweites offenes Ende und eine Einlassöffnung (18) in der Nähe des ersten offenen Endes umfasst; und
   ein abnehmbares Einwegventil (22), das über das erste offene Ende (14) eingeführt und abgenommen werden kann, wobei das Einwegventil (22) einen hohlen, länglichen Körperabschnitt (24) und ein Ventilelement (25) umfasst, wobei das erste offene Ende eine Reinigungs- und Wartungszugangsöffnung (14) ist;
   wobei das zweite offene Ende eine Auslassöffnung (16) ist, die mit einem stromabwärts gelegenen Abwassersystem verbunden werden kann; und
   wobei sich die Einlassöffnung (18) seitlich durch eine obere Wand (19) des hohlen länglichen Körpers (12) erstreckt und sich in ein stromaufwärts gelegenes Ende des Einwegventils (22) hinein öffnet, so dass ein im Wesentlichen L-förmiger Strömungsweg von der Einlassöffnung (18) zu der Auslassöffnung (16) definiert wird, wobei das Einwegventil (22) betätigbar ist, um eine Strömung in einer Richtung von der Einlassöffnung (18) zu der Auslassöffnung (16) zu ermöglichen, und betätigbar ist, um einen Rückfluss von der Auslassöffnung (16) zu der Einlassöffnung (18) zu verhindern, **dadurch gekennzeichnet, dass** der hohle, längliche Körperabschnitt (24) eine seitliche Öffnung (31) durch den hohlen, länglichen Körperabschnitt (24) umfasst, wobei die seitliche Öffnung (31) so konfiguriert ist, dass sie mit der Einlassöffnung (18) ausgerichtet ist, wenn das Einwegventil (22) über die Reinigungs- und Wartungszugangsöffnung (14) in den hohlen, länglichen Körper (12) eingeführt wird.

2. Auslaufarmatur nach Anspruch 1, wobei der zwischen der Einlassöffnung (18) und der Auslassöffnung (16) definierte Strömungsweg eine 90-Grad-Krümmung nachbildet.

3. Auslaufarmatur nach Anspruch 1 oder 2, wobei das Ventilelement (25) stromabwärts der Einlassöffnung (18) und stromaufwärts der Auslassöffnung (16) befindlich ist.

4. Auslaufarmatur nach einem der vorstehenden Ansprüche, wobei die Reinigungs- und Wartungszugangsöffnung (14) eine abnehmbare Kappe (30) umfasst, wobei die Kappe (30) betätigbar ist, um die Reinigungs- und Wartungszugangsöffnung (14) für den normalen Betrieb zu schließen, wobei Flüssigkeit von der Sanitärkeramik in das Abwasser abfließen kann, und wobei die Kappe (30) abnehmbar ist, um den Zugang in das Innere des hohlen, länglichen Körpers (12) für die Reinigung und/oder Wartung zu ermöglichen.

5. Auslaufarmatur nach Anspruch 4, wobei sich das Einwegventil (22) von einer Innenfläche der Kappe (30) aus erstreckt, wobei beim Abnehmen der Kappe (30) auch das Einwegventil (22) entfernt wird.

6. Auslaufarmatur nach Anspruch 4 oder 5, wobei die Kappe (30) einen äußeren Flansch (32) umfasst, der so konfiguriert ist, dass er an einer Außenkante des hohlen länglichen Körpers (12) angrenzend an die Reinigungs- und Wartungszugangsöffnung (14) anliegt, wobei der äußere Flansch (32) mindestens eine Kante (33) mit einer größeren Außenabmessung als die Reinigungs- und Wartungszugangsöffnung (14) umfasst, so dass die mindestens eine Kante (33) das Greifen und Ziehen der Kappe (32) erleichtert, um sie von dem offenen Ende des hohlen, länglichen Körpers (12) zu entfernen.

7. Auslaufarmatur nach Anspruch 4, 5 oder 6, wobei die Kappe (30) weiter ein erstes Verriegelungselement (60) umfasst, das so konfiguriert ist, dass es mit einem zweiten Verriegelungselement (54, 58) zusammenwirkt, das an dem hohlen, länglichen Körper (12) und angrenzend an das erste offene Ende bereitgestellt ist, um die Kappe (30) auf der Reinigungs- und Wartungszugangsöffnung (14) zu halten, während die Auslaufarmatur (10) in Gebrauch ist.

8. Auslaufarmatur nach Anspruch 7, wobei das zweite Verriegelungselement (54, 58) ein rohrförmiges Element (54) umfasst, das an einer Außenfläche des hohlen länglichen Körpers (12) angrenzend an die Reinigungs- und Wartungszugangsöffnung (14) befestigt ist; und einen länglichen Schlitz (58) durch den hohlen länglichen Körper (12) an der Stelle des rohrförmigen Elements (54), so dass der längliche Schlitz (58) eine Innenbohrung (53) des rohrförmigen Elements (54) in das Innere des hohlen länglichen Elements (12) freilegt, und wobei das erste Verriegelungselement (52) durch eine Nut (62) bereitgestellt wird, die auf einer Oberfläche des hohlen länglichen Körperabschnitts (24) des Einwegventils (22) bereitgestellt wird, wobei die Nut (62) so konfiguriert ist, dass sie mit dem länglichen Schlitz (58) ausgerichtet ist und einen Abschnitt eines Verriege-

lungsstifts (52) aufnimmt, der durch das rohrförmige Element (54) eingeführt werden kann.

9. Auslaufarmatur nach Anspruch 8, weiter umfassend einen Verriegelungsstift (52), wobei der Verriegelungsstift (52) einen länglichen Schaft (60) umfasst, wobei der Schaft (60) durch das rohrförmige Element (54) einführbar ist, wobei ein oberer Abschnitt des Schafts (60) in die Nut (62) eingreift und ein unterer Abschnitt des Schafts (60) in den Schlitz (58) eingreift, so dass das Einwegventil (22) innerhalb des hohlen, länglichen Körpers (12) durch Eingriff mit dem Stift (52) gesichert ist, bis der Stift (52) entfernt wird.

10. Auslaufarmatur nach Anspruch 9, wobei der Stift (52) weiter einen Kopf (64) an einem Ende des Schafts (60) umfasst, wobei der Kopf (64) als ein Anschlag betreibbar ist, um zu verhindern, dass der Stift (52) zu weit in das rohrförmige Element (54) eindringt, und um einen Griff bereitzustellen, der das Entfernen des Stifts (52) aus dem rohrförmigen Element (54) unterstützt, um das Lösen und Entfernen des Einwegventils (22) aus dem hohlen, länglichen Körper (12) zu ermöglichen.

11. Auslaufarmatur nach einem der Ansprüche 4 bis 10, wobei das Ventilelement (25) an einem stromabwärtigen Ende des hohlen, länglichen Körperabschnitts (24) und die Kappe (30) an einem stromaufwärtigen Ende des hohlen, länglichen Körperabschnitts (24) befestigbar ist.

12. Auslaufarmatur nach einem der Ansprüche 1 bis 10, wobei der hohle, längliche Körperabschnitt (24) eines oder mehrere äußere Dichtungselemente (50) um den Umfang des hohlen, länglichen Körperabschnitts (24) herum umfasst, wobei die äußeren Dichtungselemente (50) betätigbar sind, um eine Presspassung zwischen dem einen oder den mehreren Dichtungselementen (50) und einer Innenfläche des hohlen, länglichen Körpers (12) bereitzustellen, so dass ein Flüssigkeitsstrom außerhalb des Strömungswegs verhindert werden kann.

13. Auslaufarmatur nach einem der Ansprüche 1 bis 10, wobei das Ventilelement (25) ein Entenschnabelventil umfasst.

14. Auslaufarmatur nach einem der vorstehenden Ansprüche, wobei der hohle, längliche Körper (12) einen ovalen Querschnitt umfasst.

Revendications

1. Raccord d'évacuation de plomberie (10) configuré pour être installé sur une sortie d'un produit de type équipement sanitaire tel qu'une vasque, un lavabo, une douche ou une baignoire, dans lequel le raccord d'évacuation de plomberie (10) comprend :

un corps allongé creux (12) comprenant une première extrémité ouverte et une seconde extrémité ouverte et un orifice d'entrée (18) à proximité de la première extrémité ouverte ; et
une soupape de retenue amovible (22), qui peut être insérée et est amovible par l'intermédiaire de la première extrémité ouverte (14), dans lequel la soupape de retenue (22) comprend une section de corps allongé creux (24) et un organe de soupape(25) ;
dans lequel la première extrémité ouverte est un orifice d'accès de nettoyage et d'entretien (14) ;
dans lequel la seconde extrémité ouverte est un orifice de sortie (16), qui peut être raccordé à un système d'évacuation aval ; et
dans lequel l'orifice d'entrée (18) s'étend latéralement à travers une paroi supérieure (19) du corps allongé creux (12) et donne sur une extrémité amont de la soupape de retenue (22) de sorte qu'un trajet d'écoulement sensiblement en L soit défini de l'orifice d'entrée (18) à l'orifice de sortie (16), dans lequel la soupape de retenue (22) peut fonctionner pour permettre l'écoulement dans une direction de l'orifice d'entrée (18) à l'orifice de sortie (16) et peut fonctionner pour empêcher un refoulement de l'orifice de sortie (16) à l'orifice d'entrée (18), **caractérisé en ce que** la section de corps allongé creux (24) comprend une ouverture latérale (31) à travers la section de corps allongé creux (24), dans lequel l'ouverture latérale (31) est configurée pour être alignée sur l'orifice d'entrée (18) lorsque la soupape de retenue (22) est insérée dans le corps allongé creux (12) par l'intermédiaire de l'orifice d'accès de nettoyage et d'entretien (14).

2. Raccord d'évacuation de plomberie selon la revendication 1, dans lequel le trajet d'écoulement, défini entre l'orifice d'entrée (18) et l'orifice de sortie (16) suit un coude de 90 degrés.

3. Raccord d'évacuation de plomberie selon la revendication 1 ou 2, dans lequel l'organe de soupape (25) est situé en aval de l'orifice d'entrée (18) et en amont de l'orifice de sortie (16).

4. Raccord d'évacuation de plomberie selon une quelconque revendication précédente, dans lequel l'orifice d'accès de nettoyage et d'entretien (14) comprend un capuchon amovible (30), dans lequel le capuchon (30) peut fonctionner pour fermer l'orifice d'accès de nettoyage et d'entretien (14) pour un fonctionnement normal dans lequel un fluide peut

s'évacuer de l'équipement sanitaire aux eaux usées et dans lequel le capuchon (30) est amovible pour permettre l'accès à l'intérieur du corps allongé creux (12) en vue du nettoyage et/ou de l'entretien.

5. Raccord d'évacuation de plomberie selon la revendication 4, dans lequel la soupape de retenue (22) s'étend depuis une face intérieure du capuchon (30), dans lequel lors du retrait du capuchon (30) la soupape de retenue (22) est également retirée.

6. Raccord d'évacuation de plomberie selon la revendication 4 ou 5, dans lequel le capuchon (30) comprend une bride externe (32) configurée pour venir en butée contre un bord externe du corps allongé creux (12) adjacent à l'orifice d'accès de nettoyage et d'entretien (14), dans lequel la bride externe (32) comprend au moins un bord (33) d'une dimension externe plus importante que l'orifice d'accès de nettoyage et d'entretien (14), de sorte que le au moins un bord (33) facilite la préhension et la traction du capuchon (32) pour le retirer de l'extrémité ouverte du corps allongé creux (12).

7. Raccord d'évacuation de plomberie selon la revendication 4, 5 ou 6, dans lequel le capuchon (30) comprend en outre un premier élément de verrouillage (60) qui est configuré pour coopérer avec un second élément de verrouillage (54, 58) fourni sur le corps allongé creux (12) et adjacent à la première extrémité ouverte pour retenir le capuchon (30) sur l'orifice d'accès de nettoyage et d'entretien (14) pendant que le raccord d'évacuation de plomberie (10) est en service.

8. Raccord d'évacuation de plomberie selon la revendication 7, dans lequel le second élément de verrouillage (54, 58) comprend un organe tubulaire (54) fixé à une surface externe du corps allongé creux (12) adjacent à l'orifice d'accès de nettoyage et d'entretien (14); et une fente allongée (58) à travers le corps allongé creux (12) à l'emplacement de l'organe tubulaire (54), de sorte que la fente allongée (58) laisse apparaître un alésage interne (53) de l'organe tubulaire (54) à l'intérieur de l'organe allongé creux (12) et dans lequel le premier élément de verrouillage (52) est fourni par une rainure (62) fournie sur une surface de la section de corps allongé creux (24) de la soupape de retenue (22) dans lequel la rainure (62) est configurée pour être alignée sur la fente allongée (58) et pour recevoir une portion d'une goupille de verrouillage (52) pouvant être insérée à travers l'organe tubulaire (54).

9. Raccord d'évacuation de plomberie selon la revendication 8, comprenant en outre une goupille de verrouillage (52), dans lequel la goupille de verrouillage (52) comprend une tige allongée (60), dans lequel la tige (60) peut être insérée à travers l'organe tubulaire (54), dans lequel une portion supérieure de la tige (60) vient en prise avec la rainure (62) et une portion inférieure de la tige (60) vient en prise avec la fente (58) de sorte que la soupape de retenue (22) soit fixée à l'intérieur du corps allongé creux (12) par mise en prise de la goupille (52) et jusqu'à ce que la goupille (52) soit retirée.

10. Raccord d'évacuation de plomberie selon la revendication 9, dans lequel la goupille (52) comprend en outre une tête (64) sur une extrémité de la tige (60), dans lequel la tête (64) peut fonctionner en tant que butée pour empêcher la goupille (52) d'aller trop loin dans l'organe tubulaire (54) et pour fournir une prise pour aider au retrait de la goupille (52) de l'organe tubulaire (54) pour permettre la libération et le retrait de la soupape de retenue (22) du corps allongé creux (12).

11. Raccord d'évacuation de plomberie selon l'une quelconque des revendications 4 à 10, dans lequel l'organe de soupape (25) peut être fixé à une extrémité aval de la section de corps allongé creux (24) et le capuchon (30) peut être fixé à une extrémité amont de la section de corps allongé creux (24).

12. Raccord d'évacuation de plomberie selon l'une quelconque des revendications 1 à 10, dans lequel la section de corps allongé creux (24) comprend un ou plusieurs organes d'étanchéité externes (50) tout autour de la section de corps allongé creux (24), dans lequel les organes d'étanchéité externes (50) peuvent fonctionner pour fournir un ajustement serré entre les un ou plusieurs organes d'étanchéité (50) et une surface interne du corps allongé creux (12), de sorte qu'un écoulement de fluide à l'extérieur du trajet d'écoulement puisse être empêché.

13. Raccord d'évacuation de plomberie selon l'une quelconque des revendications 1 à 10, dans lequel l'organe de soupape (25) comprend une soupape à bec de canard.

14. Raccord d'évacuation de plomberie selon une quelconque revendication précédente, dans lequel le corps allongé creux (12) comprend une section transversale ovale.

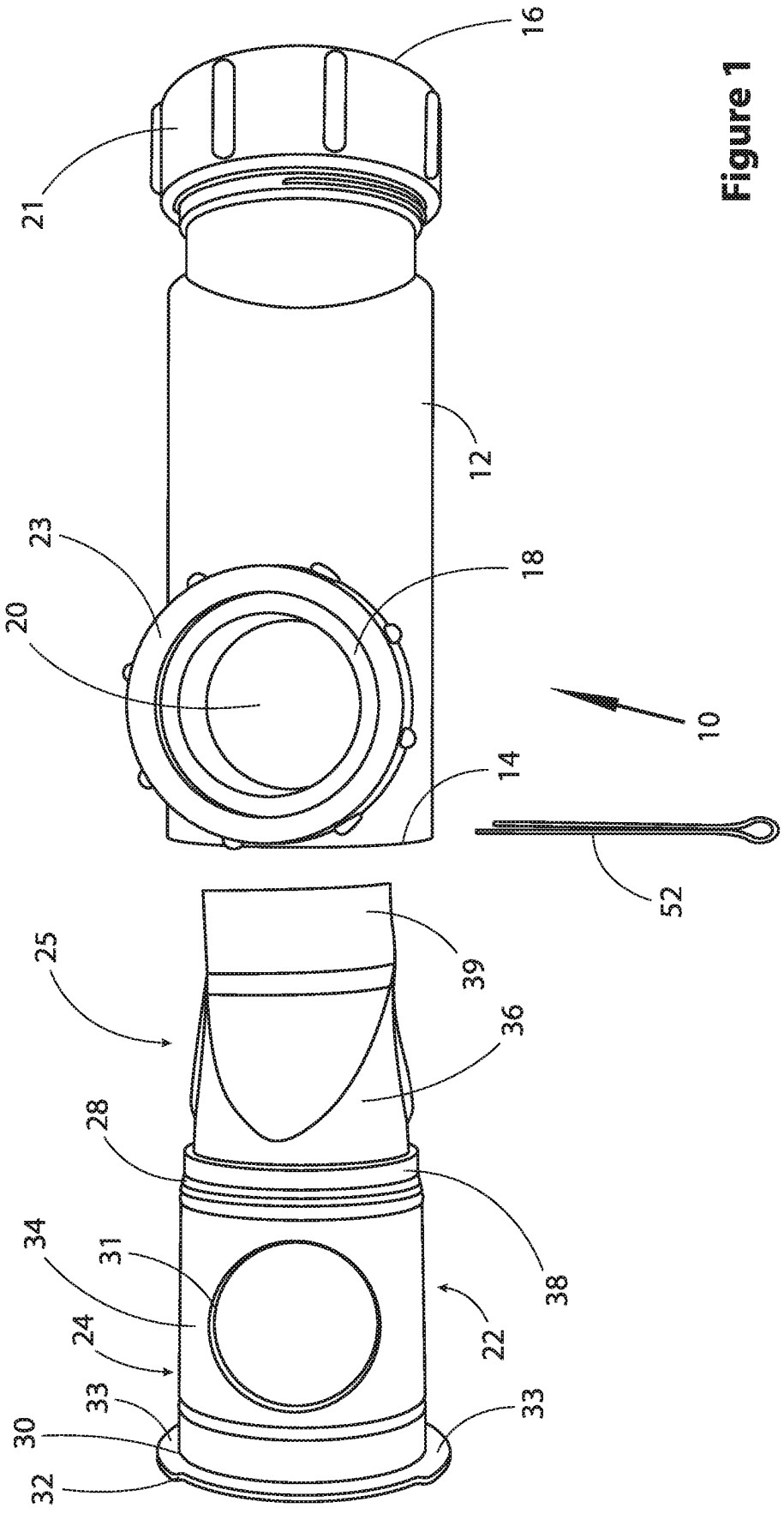


Figure 1

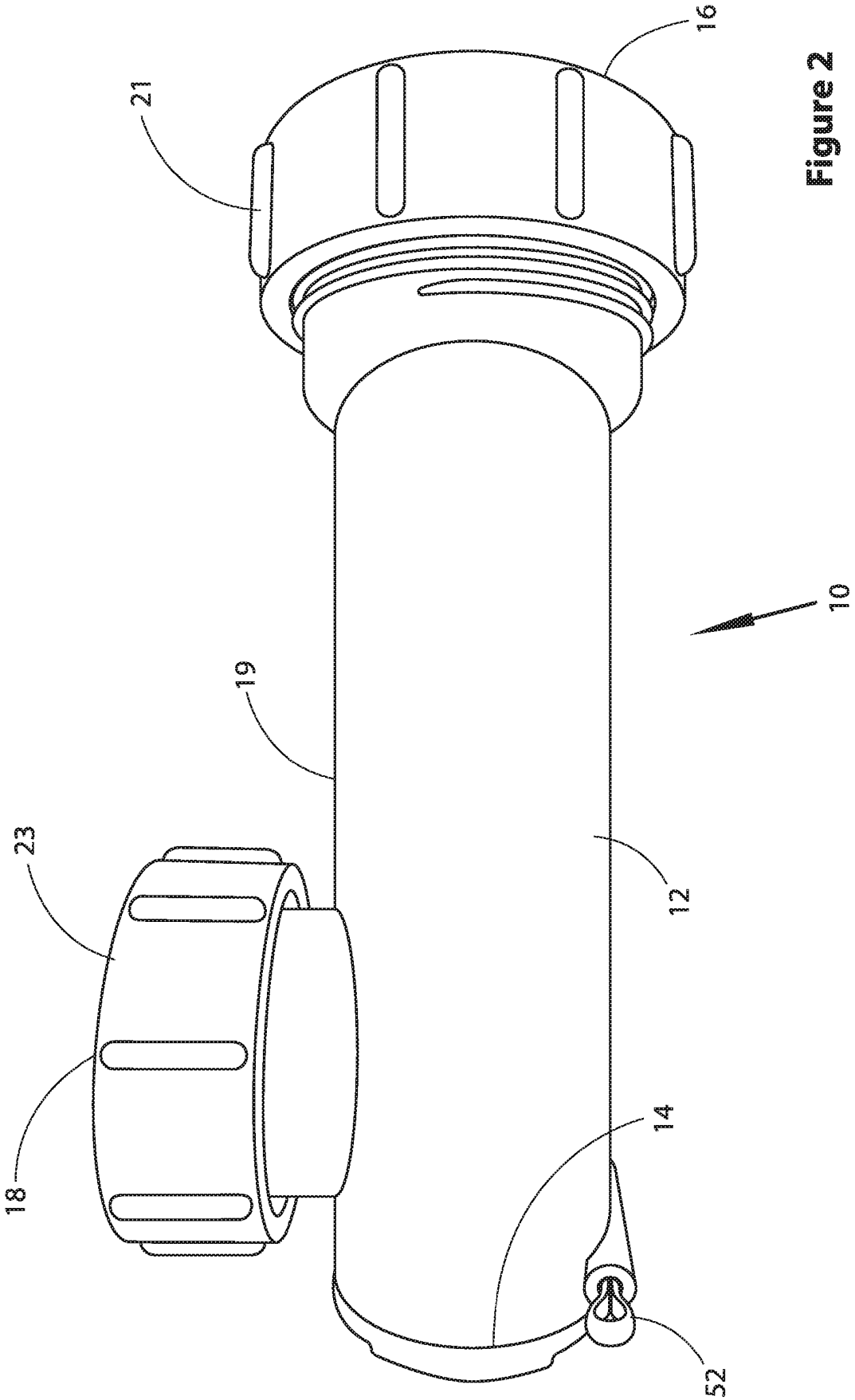
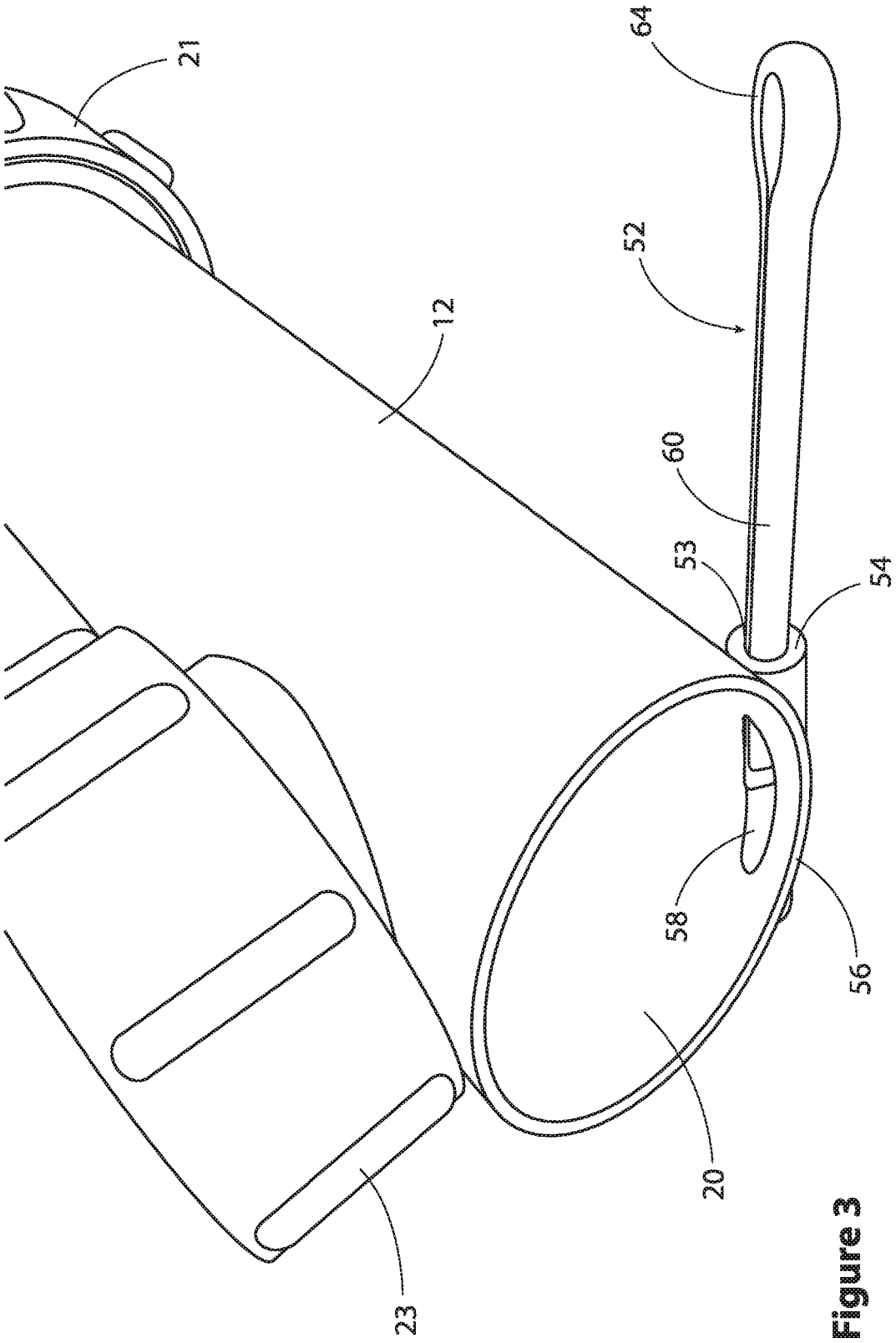


Figure 2



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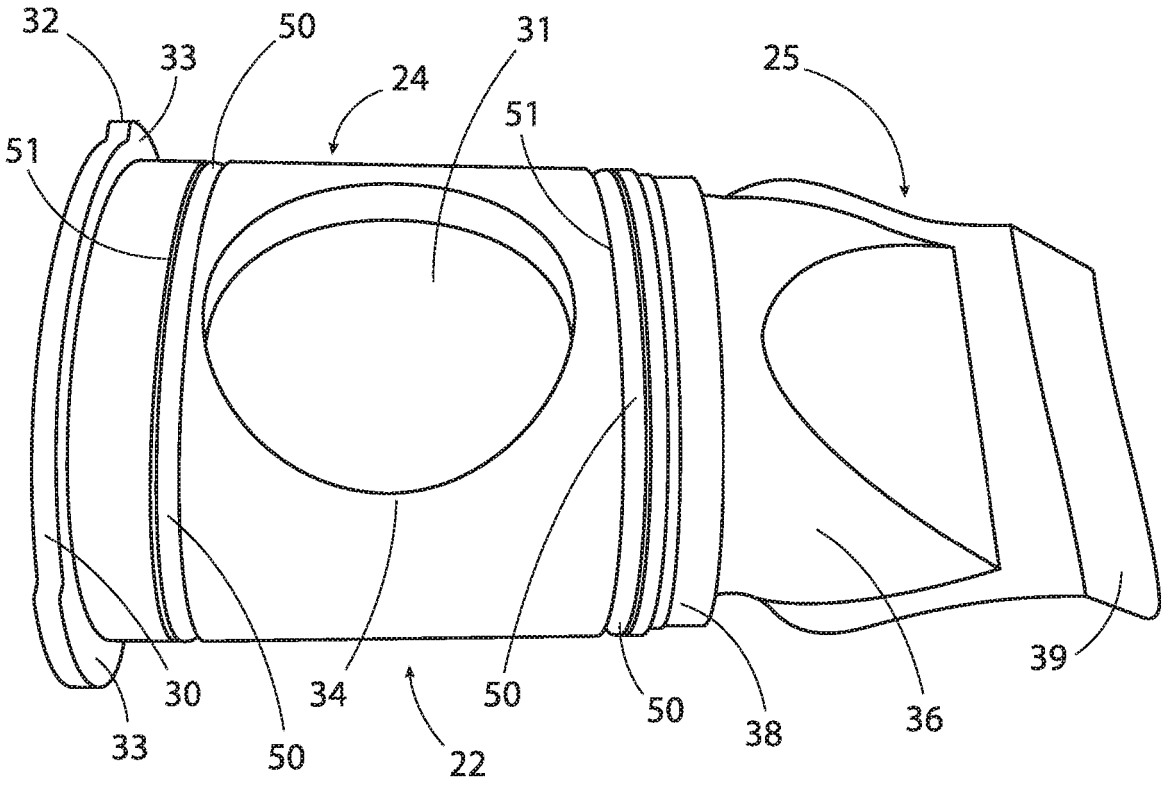

Figure 4

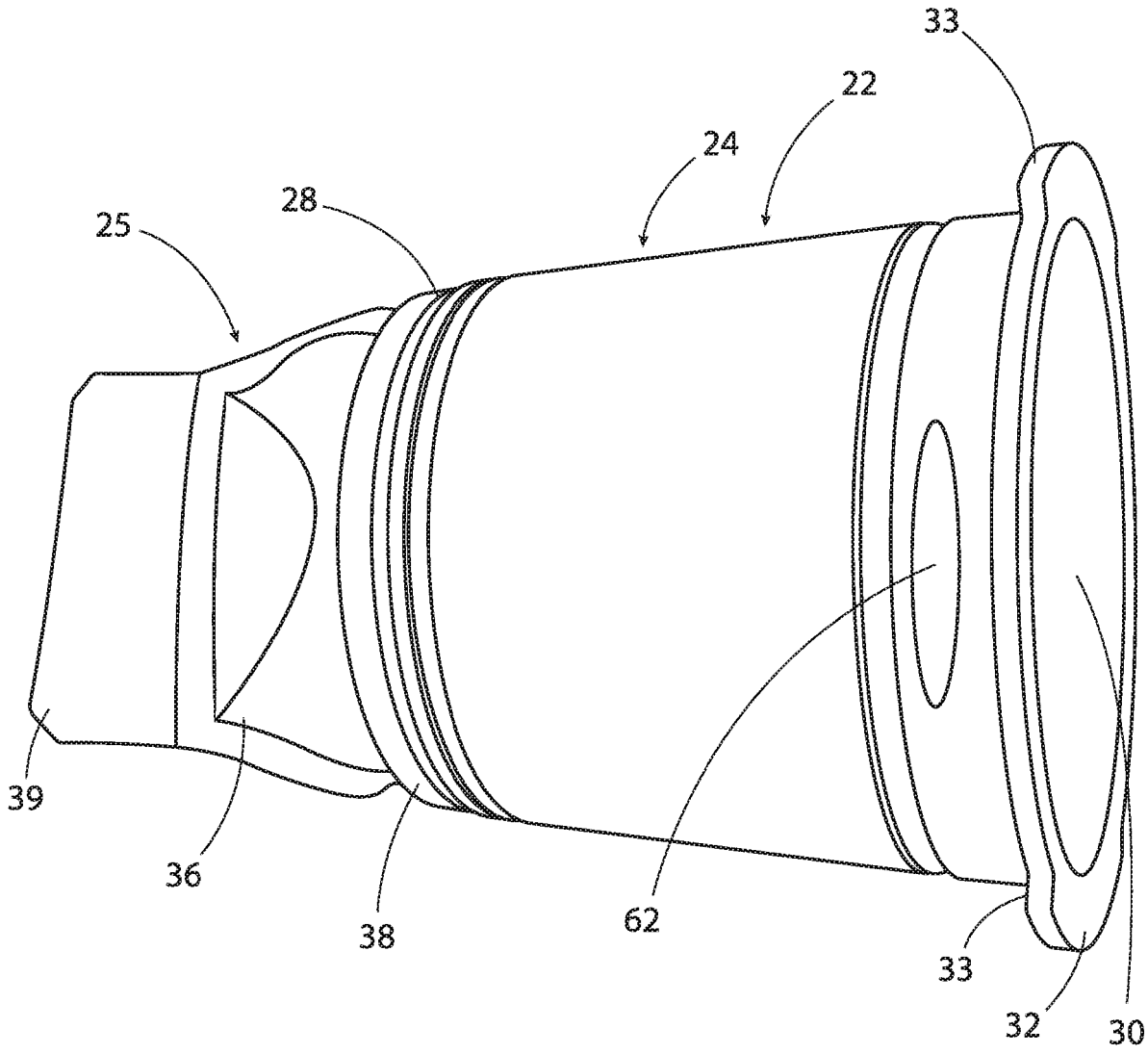

Figure 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 2868816 A **[0005] [0006]**
- WO 2005014942 A **[0005] [0007]**
- DE 1084655 **[0005] [0008]**
- WO 2010147322 A2 **[0005]**
- EP 2439349 A2 **[0005]**