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(54) Title: DISCHARGE SIPHON FOR SANITARY EQUIPMENT AND CORRESPONDING INSTALLATION PROCEDURE

(57) Abstract: A discharge siphon (1) for sanitary equipment comprises a principal body (2) incorporating first connection means (4) which can be connected to a connection member (6) to the sanitary equipment and second connection means (7) connected to an outlet pipe (3), the second connection means (7) providing a watertight push-fit for the outlet pipe in a position which can be continuously adjusted through rotary and/or lateral displacement of the outlet pipe with respect to the principal body.

DISCHARGE SIPHON FOR SANITARY EQUIPMENT AND CORRESPONDING INSTALLATION PROCEDURE

DESCRIPTION

Technical field

This invention relates to a discharge siphon for sanitary equipment and corresponding installation procedure.

State of the art

As is known, a siphon designed for the discharge of sanitary equipment comprises a plurality of parts. In particular it comprises a first hollow body which can be connected to the connection member to the sanitary equipment and a second hollow member which can be connected to the first hollow body on the one hand and to pipes connecting it to a connection component to the drainage system on the other.

To these components must be added many other connection and sealing components, for example a section of pipe and a lock nut which provide the connection between the first hollow body and the connection member to the sanitary equipment.

The siphon therefore comprises a plurality of components which for reasons of bulk and in order to reduce packaging and transport costs must be supplied disassembled, to be assembled only subsequently during the stage of installing the siphon.

Consequently there is an increased risk that a variable number of components may be lost before the assembly stage, or damaged during assembly.

Also in this situation installation of the siphon requires long working times and extreme care, because among other things it is necessary to ensure a perfect connection and watertight seal between the various components.

Furthermore the siphon, which must provide access to all its parts for inspection and cleaning, very often has structural components which are functionally suitable for the purpose but which have a poor aesthetic impact, with the result that siphons now tend to be installed in positions such that they are as far as possible hidden from view.

Description of the invention

The technical task for which this invention proposed is therefore that of providing a discharge siphon for sanitary equipment which makes it possible to overcome the technical disadvantages complained of in the known art.

In the context of this technical task one object of the invention is to provide a discharge siphon for sanitary equipment which results in the minimum number of components having to be assembled at the time when the siphon is installed so as to reduce times and costs and to simplify both assembly and installation, reducing the risk of losing components before installation and/or damaging some of them during installation.

Another object of the invention is to provide a discharge siphon for sanitary equipment which is not only solid, reliable and efficient but also has an extremely pleasing aesthetic impact.

Yet a further object of the invention is to provide a discharge siphon for sanitary equipment which permits easy installation independent of the offset between the connection member to the sanitary equipment and the connection member to the drainage system.

The technical task and this and other objects according to this invention will be accomplished using a discharge siphon for sanitary equipment characterised in that it comprises a principal body incorporating first connection means which can be connected to connection member to the said sanitary equipment and second connection means connected to an

outlet pipe, the said second connection means providing a push-fit joint for the said outlet pipe with a watertight seal in a position which can be continuously adjusted through rotational and/or lateral movement of the said outlet pipe with respect to the said principal body.

This invention also discloses a process for installing a discharge siphon for sanitary equipment, characterised in that it comprises at least connecting a principal body of the siphon to the connection member to the said sanitary equipment by screwing, in connecting the proximal extremity of the outlet pipe of the said principal body to the said principal body through a push fit and adjusting the position of the said outlet pipe by rotary and/or lateral displacement with respect to the said principal body in such a way as to align the said outlet pipe with the connection member to the drainage system, and in connecting an extension of the said outlet pipe to the said connection member to the drainage system through a push fit, causing it to move in relation to the said outlet pipe.

Other features of this invention are also defined in the claims below.

Brief description of the drawings

Other advantages and characteristics of the present invention will become clear from the following detailed description which is given with reference to the appended drawings which are provided purely by way of non-limiting example and in which:

- Figure 1 shows a view of a siphon for wall installation in accordance with the first preferred embodiment, in lateral elevation and in cross-section,
- Figure 2 shows a view of a siphon for wall installation according to a second preferred embodiment, in lateral elevation and in partial cross-section,
- Figure 3 shows a view of a siphon for floor installation according to a

third preferred embodiment, in lateral elevation and in partial cross-section,

- Figure 4 is an exploded view of the principal body of the siphon in Figures 1-3 in lateral elevation and in cross-section,
- Figures 5 and 6 are perspective views of the first and second hollow parts comprising the assembly of the principal body in Figures 1-3.

Preferred embodiments

With reference to the cited figures, a discharge siphon for sanitary equipment indicated as a whole by reference number 1 is illustrated.

Siphon 1 comprises a principal body 2 incorporating first connection means 4 which can be connected along a connection axis 5 to a connection member 6 to the sanitary equipment and second connection means 7 connected along a connection axis 8 to the proximal extremity 9 of an outlet pipe 3.

Second connection means 7 provide a watertight push-fit connection for outlet pipe 3 in a position which is continuously adjustable through rotational and/or lateral movement of outlet pipe 3 with respect to principal body 2.

In particular first and second connection means 4 and 7 comprise a first and second tubular connection seat 14 and 15.

Advantageously outlet pipe 3 is therefore connected by simply loosely inserting it into tubular seat 15 while adjusting its position by grasping it manually in such a way as to move it to the desired position overcoming the friction which this creates in its connection seat 15.

First connection means 4 provide a mechanical connection of the screw type and in particular first tubular connection seat 14 is threaded internally to engage with connection member 6.

At the distal extremity 10 of outlet pipe 3 there is an extension 11 which can be connected along a connection axis 12 to a connection member 13 to the drainage system in a connection position which can be continuously adjusted through at least one lateral movement with respect to that connection axis 12.

The extension of connection 11 comprises a tubular body 16 having a distal extremity 18 which can be removably and leaktightly push-fitted into connection member 13 to the drainage system.

Tubular body 16 of extension 11 may be leaktightly fitted to the distal extremity 10 of outlet pipe 3 (arrangements in Figures 2 and 3) or may be leaktightly inserted into the distal extremity 10 of outlet pipe 3 (arrangement in Figure 1).

Tubular body 16 of extension 11 may have externally a manual grip member 19 which can be operated to adjust the length to which extension 11 extends from the distal extremity 10 of outlet pipe 3.

In order to provide the seal tubular body 16 and/or manual grasping member 16 of extension 11 have seals 20 which act on the outer and/or inner lateral surface of outlet pipe 3.

Outlet pipe 3 may have an end stop (arrangement in Figure 1) for extension 11 which defines an initial reference position for extension 11.

This stop is formed for example by a length 20 of outlet pipe 3 of progressively variable diameter.

Outlet pipe 3 may have a sharp or rounded 90° elbow 21 for connection to a wall 22 (arrangements in Figures 1 and 2), or a first and a second sharp 23 (arrangement in Figure 3) or rounded 24 (arrangement not shown) 90° elbow for connection to floor 25.

In addition to this outlet pipe 3 may be constructed as a single piece

(arrangements in figures 1 and 2) or as several watertight joined lengths in a manner which can be telescopically adjusted (arrangement in Figure 3).

Principal body 2 of siphon 1 comprises a tubular containment member 26 within which there is housed an assembly 27.

Assembly 27 is positioned with its axis in line with that of containment member 26 and has a first and a second hollow part 28 and 29 which are in turn located with their axes in alignment as a result of mutual centering means 30.

First hollow part 28 of assembly 27 has a first inner tubular lateral wall 31, a second outer tubular lateral wall 32 having an apical extremity 33 positioned at a height which is greater than that 34 of first lateral wall 31 and defining an intermediate space 35 with first lateral wall 31, and an end wall 36 which joins the basal extremities 37 and 38 of first and second lateral walls 31 and 32.

Second hollow part 29 has a third tubular lateral wall 39 placed between first and second lateral walls 31 and 32 of first hollow portion 28 and having basal extremity 40 at a distance from end wall 36 of first part 28 and apical extremity 41 positioned at a height which is greater than that 34 of first wall 31 of first hollow part 28.

Second hollow part 29 also has a cover 42 closing off the apical extremity of third lateral wall 39, preferably of tapering shape, to drain off the water originating from connection member 6 to the sanitary equipment towards chamber 44 defined between second and third lateral walls 32 and 39.

Also, advantageously, first connection seat 14 is made of one piece with containment member 26 and in particular extends from its summit towards the interior.

Centering means 30 comprise at least one annular space 43 between first

and second parts 28 and 29 which projects from the perimetral edge of cover 42 over chamber 44 and has through openings for the passage of water thereinto.

Assembly 27 also has rotation-preventing means 45 between first and second parts 28 and 29.

These rotation-preventing means 45, provided between the opposing surfaces of second and third lateral walls 32 and 39, comprise teeth 46 which can be inserted into corresponding notches 47.

Main body 2 of siphon 1 has a locking ring 49 for tightening the assembly watertightly fitted to the basal extremity of containment member 26.

Advantageously part of second connection means 7 is formed by first lateral wall 31 of the assembly while the remaining part is formed by locking ring 49 which in particular has a hole 51 for the passage of outlet pipe 3 having seals 52 to provide a watertight seal with the outer surface of outlet pipe 3.

Locking ring 49 also has an outer bevel 54 which can be grasped manually or with a tool to assist the locking action.

Principal body 2 of siphon 1 has means for holding assembly 27 on containment member 26, comprising a first stop 48 intersecting the apical extremity of assembly 27 defined by a projection on the inner surface of containment member 26, and a second stop 50 acting against the basal extremity of assembly 27 to tighten assembly 27 against first stop 48 provided by locking ring 49.

The procedure for installing siphon 1 according to the invention is obvious from what has been described and illustrated and in particular is substantially as follows.

Principal body 2 of siphon 1 is screwed to connection member 6.

The proximal extremity of outlet pipe 3 is inserted into principal body 2,

with a push fit, adjusting the connection position of outlet pipe 3 through rotational and/or lateral displacement thereof with respect to connection axis 8 in such a way as to align outlet pipe 3 to connection member 13 to the drainage system.

If outlet pipe 3 is in sections (especially in the case of installations with a connection to the mains drainage system) telescopic adjustment of these is also performed if necessary.

Finally extension 11 is inserted into the connection member to the drainage system through a push fit, causing it to move with respect to outlet pipe 3.

In practice it has been found that the siphon according to the invention is particularly advantageous in that it provides for the assembly of only two parts (the principal body and the outlet pipe) in the course of installation, and facilitates installation, which is effected by making use of the degrees of freedom (due to relative movement between the principal body and the outlet pipe, relative rotation between the principal body and the outlet pipe, relative lateral movement between the outlet pipe and the extension and if appropriate relative lateral movement between the sections of the outlet pipe) involved in defining the final configuration of the siphon.

In this way it is possible to achieve a final conformation of the siphon which is appropriate for the connection member to the device and the connection member to the drainage system regardless of the offset between them.

The siphon designed in this way is susceptible of many modifications and variants, all of which fall within the scope of the invention; also all details may be replaced by technically equivalent units.

In practice the materials used, and dimensions, may be of any nature according to requirements and the state of the art.

CLAIMS

1. A discharge siphon for sanitary equipment characterised in that it comprises a principal body (2) incorporating connection means (4) which can be connected to a connection member (6) to the said sanitary equipment and second connection means (7) connected to an outlet pipe (3), the said second connection means providing a push fit and watertight seal for the said outlet pipe continuously adjustable in position through rotary and/or lateral displacement of the said outlet pipe with respect to the said main body (2).

2. A discharge siphon according to claim 1, characterised in that it has an extension (11) of the said outlet pipe (3) which can be connected to a connection member (13) to the drainage system, the said extension being leaktightly connected to the said outlet pipe and continuously adjustable in position through lateral displacement thereof with respect to the said outlet pipe.

3. A discharge siphon according to one or more of the preceding claims, characterised in that the said first (4) and second (7) connection means respectively comprise a first (14) and a second (15) tubular connection seat respectively.

4. A discharge siphon according to one or more of the preceding claims, characterised in that the said first connection means (4) make a screw type connection.

5. A discharge siphon according to one or more of the preceding claims, characterised in that the said connection extension (11) comprises a tubular body (16) having a distal extremity (18) which can be removably and leaktightly push-fitted into the said connection member (13) to the drainage system.

6. A discharge siphon according to one or more of the preceding claims, characterised in that the said outlet pipe (3) has a sharp or rounded 90° elbow for a wall connection.

7. A discharge siphon according to one or more of the preceding claims, characterised in that the said outlet pipe (3) has a first and a second sharp or rounded 90° elbow for the earth connection.

8. A discharge siphon according to one or more of the preceding claims characterised in that the said outlet pipe (3) is manufactured in one piece.

9. An outlet siphon according to one or more of the preceding claims, characterised in that the said outlet pipe (3) is made in several leaktightly connected lengths which can move with respect to each other telescopically.

10. A discharge siphon according to one or more of the preceding claims, characterised in that the proximal extremity of the said tubular body (16) of the said extension is fitted onto the distal extremity (10) of the said outlet pipe (3).

11. A discharge siphon according to one or more of the preceding claims, characterised in that the proximal extremity (16) of the said tubular body of the said extension is inserted into the distal extremity (10) of the said outlet pipe.

12. A discharge siphon according to one or more of the preceding claims, characterised in that the said tubular body (16) of the said extension has externally a manual grasping member (19) which can be used to adjust the extension length of the said extension from the distal extremity of the said outlet pipe.

13. A discharge siphon according to one or more of the preceding claims,

characterised in that the said outlet pipe (3) has an end stop (20) which defines an initial reference position for the said extension (11).

14. A discharge siphon according to one or more of the preceding claims, characterised in that the said stop (20) is formed of a length of the said outlet pipe of progressively variable diameter.

15. A discharge siphon according to one or more of the preceding claims, characterised in that the said principal body (2) comprises a tubular containment member (26) within which there is housed an assembly (27) which in turn has a first (28) and a second (29) hollow part and centering means (30) between the said first and second parts.

16. A discharge siphon according to one or more of the preceding claims, characterised in that the said first part (28) has a first inner tubular lateral wall (31), a second outer tubular lateral wall (32) having an apical extremity (33) positioned at a height which is greater than that of the said first lateral wall and defining an intermediate space (35) with the said first lateral wall, and an end wall (36) which joins the basal extremities of the said first and second lateral walls, and in that the said second part (29) has a third tubular lateral wall (39) placed between the said first and second lateral walls having a basal extremity (40) at a distance from the said end wall (36) of the said first part and an apical extremity (41) located at a height greater than that of the said first wall (31) of the said first part, and a cover (42) covering the apical extremity of the said third lateral wall.

17. A discharge siphon according to one or more of the preceding claims, characterised in that part of the said second connection means (7) is formed by the said first tubular lateral wall (31) and part of the said second connection means is formed by a locking ring (49) leaktightly

applied to the basal extremity of the said containment member (26).

18. A discharge siphon according to one or more of the preceding claims, characterised in that the said cover (42) tapers.

19. A discharge siphon according to one or more of the preceding claims, characterised in that the said centering means (30) comprise at least one annular spacer (43) between the said first and second parts (28, 29) projecting from the perimetral edge of the said cover (42) and having through openings for water.

20. A discharge siphon according to one or more of the preceding claims, characterised in that the said assembly (27) has means (45) to prevent rotation between the said first and second parts (28, 29).

21. A discharge siphon according to one or more of the preceding claims, characterised in that the said rotation-preventing means (45) are provided between the opposing surfaces of the said second and third lateral walls (32, 39).

22. A discharge siphon according to one or more of the preceding claims, characterised in that the said rotation-preventing means (45) comprise teeth (46) which can be inserted into corresponding notches (47).

23. A discharge siphon according to one or more of the preceding claims, characterised in that the said principal body (2) has means for retaining the said assembly (27) in the said containment member (26).

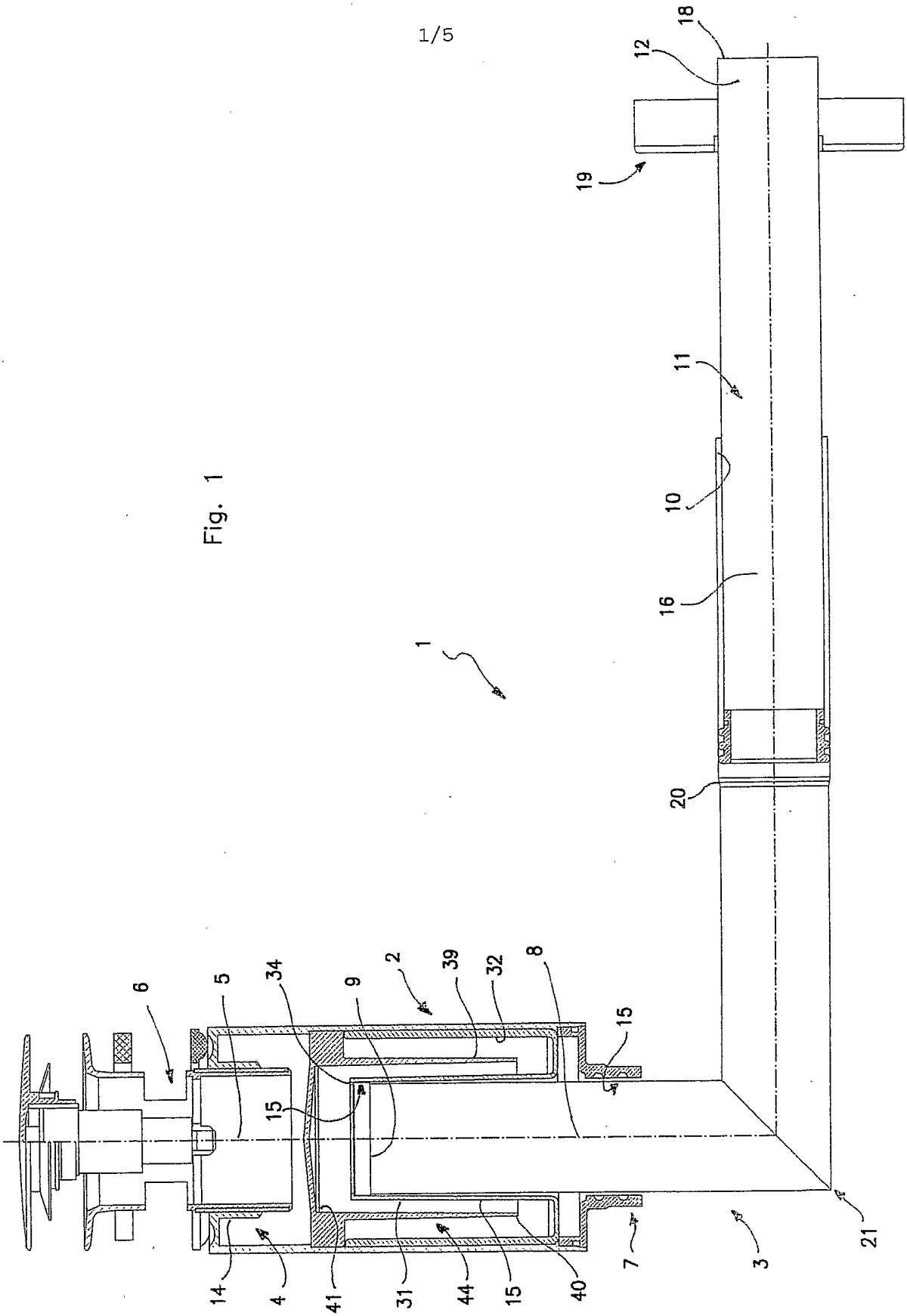
24. A discharge siphon according to one or more of the preceding claims, characterised in that the said retaining means comprise a first stop (48) intercepting the apical extremity of the said assembly, formed by a projection in the inner surface of the said containment member,

and a second stop (50) formed by the said locking ring (49) acting against the basal extremity of the said assembly (27) to tighten the said assembly against the said first stop (48).

25. A discharge siphon according to one or more of the preceding claims, characterised in that the said first tubular connection seat (14) is made of one piece with the said containment member (26) and extends internally therein.

26 A process for the installation of a discharge siphon (1) for sanitary equipment, characterised in that it comprises at least connecting by screwing a principal body (2) of the siphon to a connection member (6) to the said sanitary equipment, in connecting the proximal extremity of an outlet pipe (3) of the said principal body to the said principal body through a leaktight push fit adjusting the position of the said outlet pipe through rotary and/or lateral movement thereof with respect to the said principal body (2) in such a way as to align the said outlet pipe (3) with a connection member (13) to the drainage system, and in connecting an extension (11) of the said outlet pipe to the said connection member to the drainage system through a push fit, causing it to move with respect to the said outlet pipe.

Fig. 1



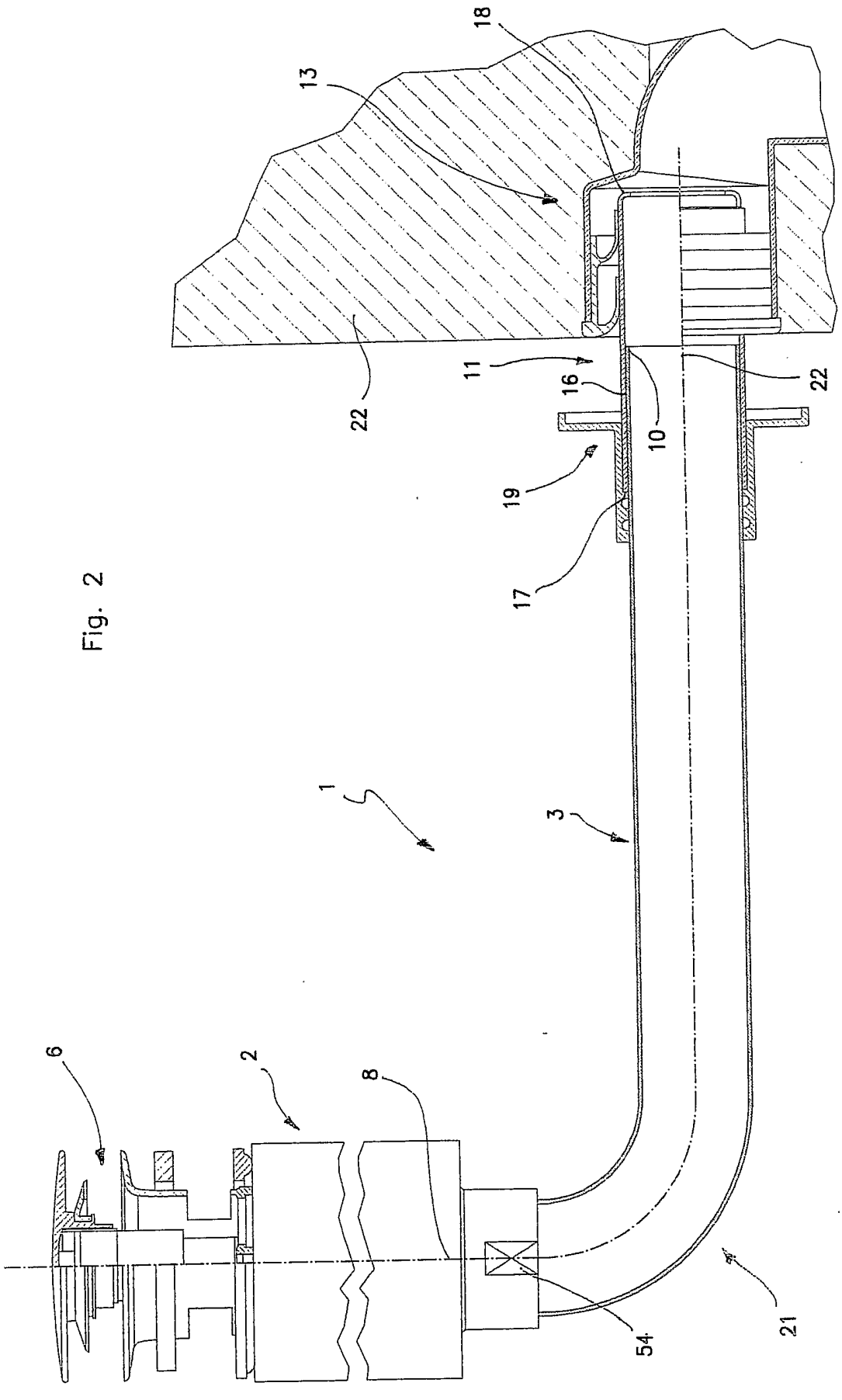


Fig. 2

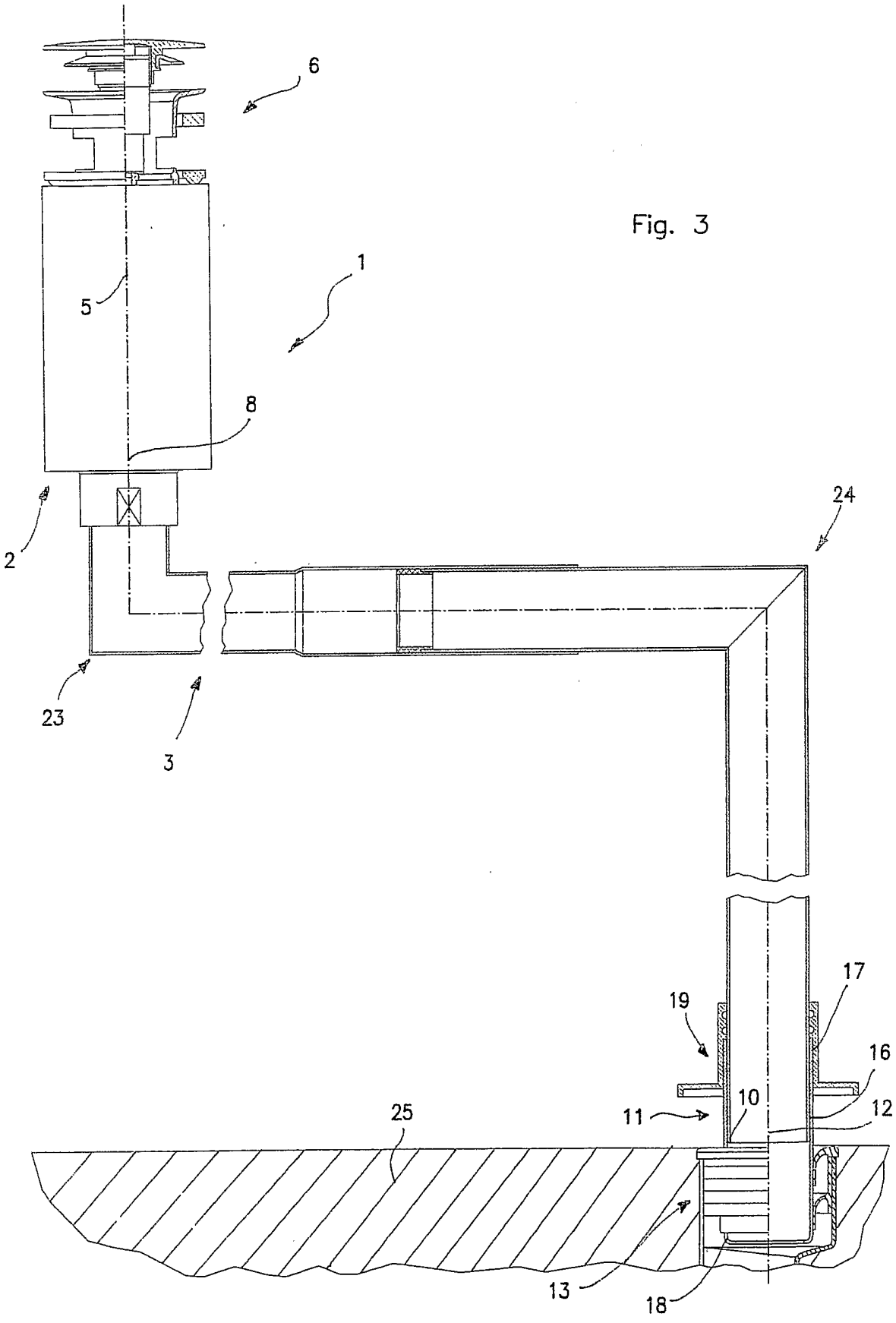


Fig. 3

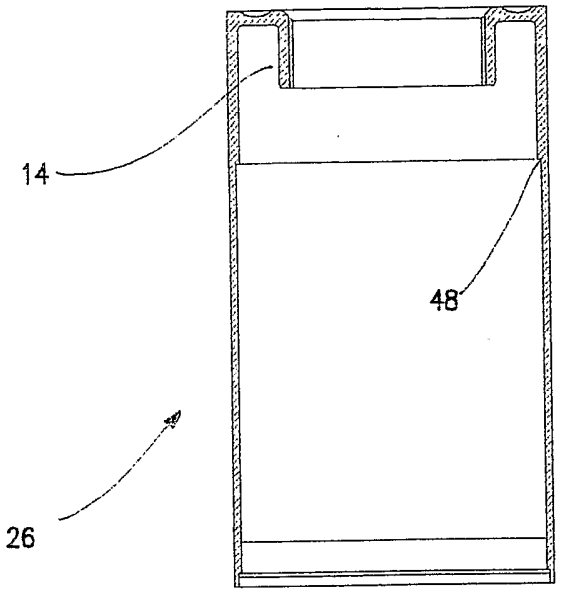
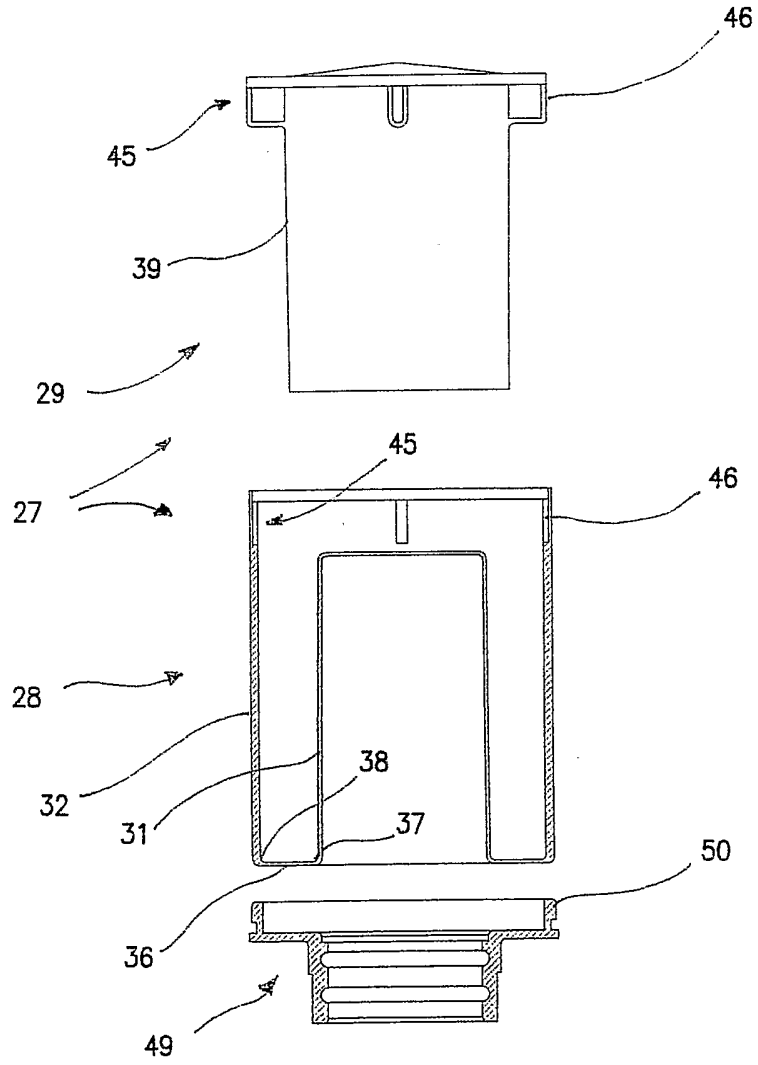


Fig. 4



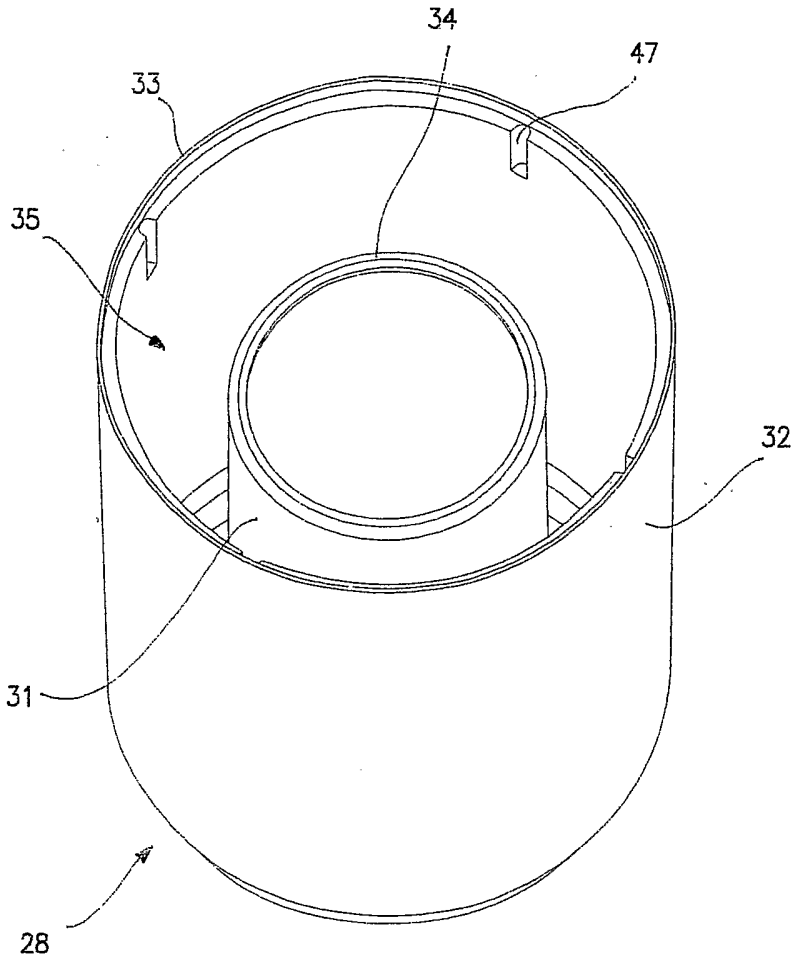


Fig. 5

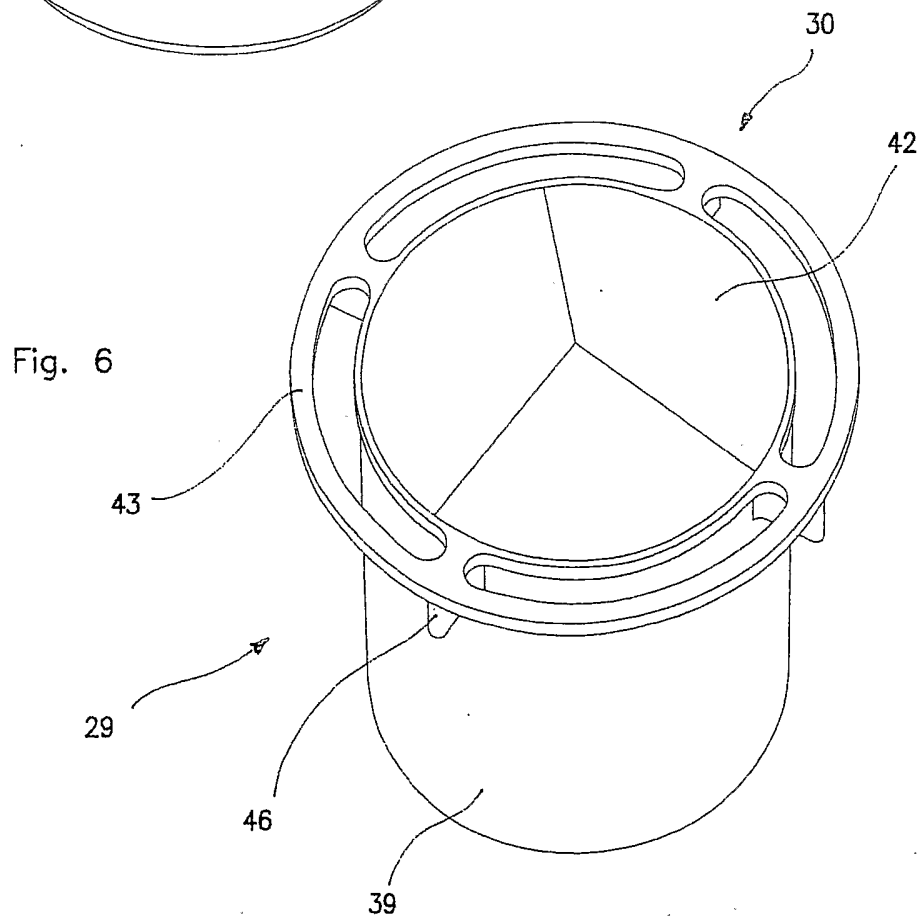


Fig. 6