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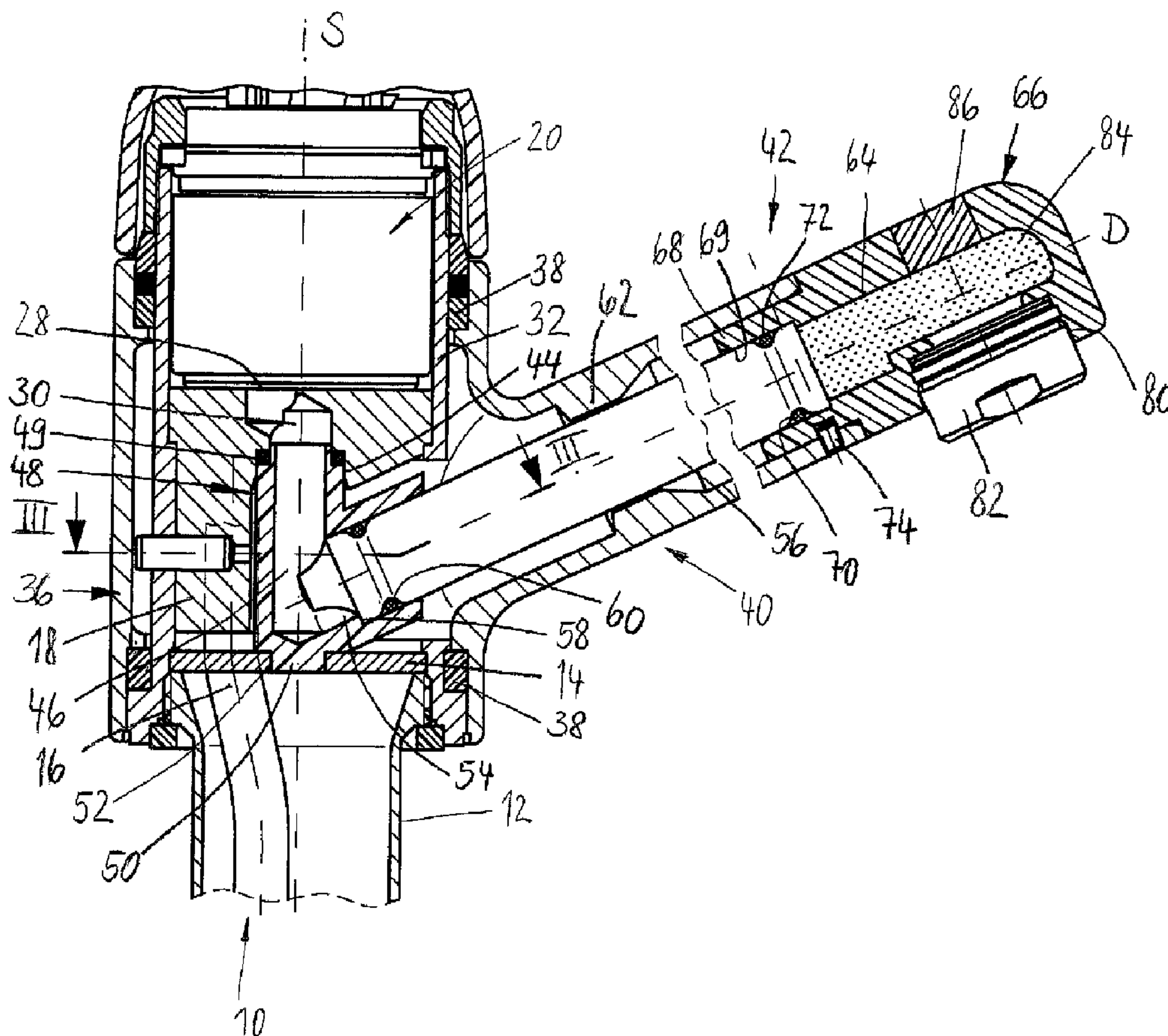
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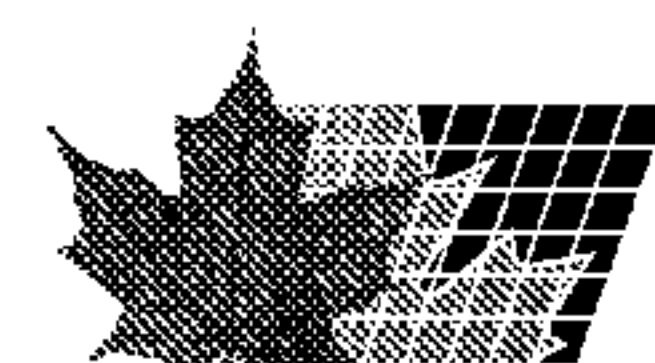
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(54) Title: SANITARY FITTING WITH A PIVOTABLE WATER OUTLET



(57) Abrégé/Abstract:

The sanitary fitting according to the invention has a unipartite angled pipe element (48) which forms a flow connection with a control cartridge (20) and can be pivoted about a pivot axis (S). A water-bearing pipe limb (46) is formed at the inflow end of the



(57) **Abrégé(suite)/Abstract(continued):**

angled pipe element (48), is oriented parallel to the pivot axis (S), and its inflow-end end region engages in a bearing recess (44) in a base body (18) of the fitting such that it can rotate. A water outlet (42) is arranged together with the angled pipe element (48) such that it can pivot about the pivot axis (S).

Abstract

The sanitary fitting according to the invention has a unipartite angled pipe element (48) which forms a flow connection with a control cartridge (20) and can be pivoted about a pivot axis (S). A water-bearing pipe limb (46) is formed at the inflow end of the angled pipe element (48), is oriented parallel to the pivot axis (S), and its inflow-end end region engages in a bearing recess (44) in a base body (18) of the fitting such that it can rotate. A water outlet (42) is arranged together with the angled pipe element (48) such that it can pivot about the pivot axis (S).

(Fig. 1)

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Sanitary fitting with a pivotable water outlet

The present invention relates to a sanitary fitting according to the precharacterizing clauses of claim 1
5 and claim 10.

Sanitary fittings for discharging water, in particular a mixture of cold water and hot water, are generally known. Sanitary fittings are usually equipped with a
10 pivotable water outlet for the purpose of directing the mixed water, which flows out of the sanitary fitting, to various regions of the surroundings.

A sanitary fitting with a pivotable water outlet of
15 this type is disclosed in DE-A-4138938, for example. The sanitary fitting described in that document has an attachment base into which water supply lines are routed, a control cartridge, and an outlet pipe which can be pivoted about the central axis of a base body of
20 the fitting. The outlet pipe is attached to a fitting sleeve which is mounted on the base body of the fitting such that it can rotate. The mixed water passes from the control cartridge to the base body of the fitting through a through-passage, continues through a driver
25 bushing, which is formed in a bearing recess in the base body of the fitting, via an angled pipe element which is attached to the inside of the sleeve together with the outlet pipe, and leaves the sanitary fitting via the outlet pipe.

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The object of the present invention is to provide a sanitary fitting of simple design which prevents the undesirable discharge of water over a long period of time, even when its water outlet is pivoted frequently,
35 and which is cost-effective to produce.

This object is achieved by a sanitary fitting as claimed in claim 1. Particularly preferred embodiments are provided with the features cited in the dependent

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claims.

The sanitary fitting according to the invention is equipped with a control cartridge which is seated on a
5 base body of the fitting and is used to control an outflow of water, in particular of mixed water, from the sanitary fitting. At the output end of the control cartridge, the mixed water is passed through an outflow-end through-passage in the base body of the
10 fitting into an inflow-end pipe limb of a unipartite angled pipe element. The angled pipe element forms a flow connection with a water outlet through which the mixed water flows out to the surroundings. On account of the unipartite design of the angled pipe element, it
15 is particularly straightforward, for example using injection molding technology, and thus very cost-effective to produce.

In the direction toward the angled pipe element, the
20 outflow-end through-passage is equipped with a bearing recess in which the inflow-end pipe limb is mounted such that it can rotate about a pivot axis. In this case, the longitudinal axis of the inflow-end pipe limb runs coaxially to the pivot axis. The water outlet
25 which is connected to the angled pipe element can also be pivoted about the pivot axis together with the inflow-end pipe limb. The fact that the inflow-end pipe limb is mounted in the bearing recess such that it can rotate prevents the need for further connecting
30 elements to be installed between the base body of the fitting and the angled pipe element, and this in turn reduces production costs. At the same time, this makes it possible to insert a single dynamic sealing element into the bearing recess between the inflow-end pipe
35 limb and the base body of the fitting. The dynamic sealing element is protected against environmental influences in the bearing recess and has relatively small dimensions in relation to the sanitary fitting. On account of its small dimensions, the dynamic sealing

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element can be produced in a cost-effective manner with lower tolerances and seals more reliably with a longer service life than comparatively large sealing elements.

5 Particularly preferred embodiments of the sanitary fitting according to the invention are described below with reference to the drawing. In the figures of the drawing, in purely schematic form:

10 fig. 1 shows a longitudinal section through a sanitary fitting according to the invention with a pivotable angled pipe element and a water outlet connected to said angled pipe element;

15 fig. 2 shows a cross section through the pivotable water outlet of the sanitary fitting shown in fig. 1 with a rotatable outlet end piece;

20 fig. 3 shows a cross section along plane III-III of the sanitary fitting shown in fig. 1; and

fig. 4 shows a cross section through a further embodiment of an inventive sanitary fitting which is intended to be fitted to a wall.

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The inventive sanitary fitting which is shown in longitudinal section in fig. 1 is designed for platform installation. In this respect, the sanitary fitting has an installation sleeve 12, which has an external thread (not shown in fig. 1), in its lower end region which faces a water inflow 10 of the sanitary fitting. In order to install the sanitary fitting, the installation sleeve 12 is passed through a corresponding passage in a base, for example in a washstand, and is secured using a union nut which can be screwed onto the external thread of the installation sleeve 12 at the base end.

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The water inflow 10 for cold water KW and/or hot water

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WW, which water inflow is realized by feed pipes and is passed through the installation sleeve 12, is connected to a corresponding pipeline system for supplying water at the upstream end. At the downstream end, the water inflow 10 passes through a bearing plate 14 arranged above the installation sleeve 12 and is inserted in a sealed manner into an inflow-end through-passage 16 of a base body 18 of the fitting which is arranged above the bearing plate 14. To this end, the feed pipes of the water inflow 10 are soldered, welded, screwed or adhesively bonded into the inflow-end through-passage or through-passages 16.

The inflow-end through-passage 16 routes the cold water KW and/or the hot water WW to the input of a control cartridge 20. A control cartridge 20 of this type is described in CH-A-691134, for example. Said control cartridge makes it possible for manual intervention by a user and/or technical actuating means firstly to control a mixing ratio of cold water KW and hot water WW which is supplied via the water inflow 10 in order to provide mixed water MW, and secondly to adjust the throughflow rate of the mixed water MW which flows out through the sanitary fitting. The temperature of the mixed water MW which flows out is determined by controlling the mixing ratio of cold water KW to hot water WW.

The control cartridge 20 is fitted in a sealed manner on a seat 28 of the base body 18 of the fitting, which seat is arranged opposite the water inflow 10. At the output end of the control cartridge 20, the mixed water MW is discharged through an outflow-end through-passage 30 in the base body 18 of the fitting. Therefore, at the input end, inflow-end through-passages 16 in the base body 18 of the fitting for cold water KW and hot water WW, and, at the output end, the outflow-end through-passage 30 in the base body 18 of the fitting for mixed water MW communicate in terms of flow with

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associated inputs and an output of the control cartridge 20.

5 The control cartridge 20, the base body 18 of the fitting, the bearing plate 14 and the installation sleeve 12 are arranged in a hollow-cylindrical inner sleeve 32 and here are supported against one another and fixed in their position relative to one another. A similarly cylindrical outer sleeve 36 of the fitting
10 surrounds the inner sleeve 32 concentrically with respect to said inner sleeve 32.

In each of its free end regions, the outer sleeve 36 of the fitting is mounted on the outside of the inner
15 sleeve 32 such that it can pivot about the coaxial cylinder axes of the outer sleeve 36 of the fitting and the inner sleeve 32 by means of sliding rings 38. An outlet connection piece 40 of a water outlet 42 which will be described in detail below and which points away
20 from the pivot axis S is integrally formed on the outer sleeve 36 of the fitting.

A cylindrical bearing recess 44 is formed in a downstream end region in the outflow-end through-
25 passage 30 in the base body 18 of the fitting. An inflow-end end region of an inflow-end pipe limb 46, which is formed on a unipartite angled pipe element 48, engages in the bearing recess 44 such that it can rotate or pivot about a pivot axis S. The pivot axis S
30 is defined by the cylinder axes of the inflow-end pipe limb 46 and the outer sleeve 36 of the fitting. Said pivot axis S coincides with the cylinder axes of the inner sleeve 32 and bearing recess 44.

35 A dynamic sealing element in the form of a sealing ring 49 is arranged in the bearing recess 44 between the inflow-end end region of the inflow-end pipe limb 46 and the base body 18 of the fitting. The sealing ring 49 prevents mixed water MW from escaping from the

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inflow-end pipe limb 46 to the bearing recess 44 and is the only sealing element which is dynamically loaded when the inflow-end pipe limb 46 or the water outlet 42 connected to said pipe limb is pivoted.

5

On account of this single dynamic sealing element, the internal construction of the sanitary fitting can be simplified and it is possible to produce the sanitary fitting in a cost-effective manner. Furthermore, the single dynamic sealing element is arranged within the inner sleeve 32 in the case of the sanitary fitting according to the invention, as a result of which it is possible for the dynamic sealing element to have a smaller diameter in comparison to known sanitary fittings with an annular channel. Since sealing elements with smaller dimensions can be produced within smaller tolerances and with lower production costs, the service life is increased and the cost of producing the sanitary fitting according to the invention is also reduced.

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A bearing journal 50 is integrally formed on that end region of the inflow-end pipe limb 46 which is opposite the bearing recess 44. This cylindrical bearing journal 50 engages in a bearing-like recess 52 in the bearing plate 14, which recess is arranged centrally with respect to the pivot axis S, such that it can rotate. At the same time, the inflow-end pipe limb 46 is axially supported by the bearing plate 14. As a result, one end of the inflow-end pipe limb 46, and furthermore of the entire angled pipe element 48, is mounted in the bearing recess 44 in the base body 18 of the fitting and the other end is mounted in the bearing-like recess 52 in the bearing plate 14 such that they can rotate.

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The mixed water MW flows from the inflow-end pipe limb 46 into an outflow-end pipe limb 54 of the angled pipe element 48 which projects away from the pivot axis S. In this case, the cylinder axis of the inflow-end pipe

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limb 46, which cylinder axis runs coaxially with respect to the pivot axis S, forms a fixed angle of between 80° and 90° , preferably of 80° , with the cylinder axis of the outflow-end pipe limb 54. The two
5 pipe limbs 46, 54, and furthermore the entire angled pipe element 48, are produced from a plastic, preferably from polyacetal (POM).

10 In the outflow-end pipe limb 54, a connection pipe 56 of the water outlet 42 is joined in a sealed manner to said outflow-end pipe limb 54 up to a shoulder 58. In order to prevent undesirable discharge of mixed water MW in a corresponding join region, in which, axially with respect to their longitudinal axes, the free end
15 region of the outflow-end pipe limb 54 accommodates the pipe limb-end end region of the connection pipe 56 in the manner of a sleeve, an O-ring 60 in the form of a static sealing element is arranged in a groove in the pipe limb-end end region of the connection pipe 56.

20

The connection pipe 56 is routed coaxially in the outlet connection piece 40 through a guide ring 62 which is formed inside the outlet connection piece 40. Said connection pipe issues at the downstream end into
25 an outlet channel 64 in an outlet end piece 66 which is mounted in the free end region of the outlet connection piece 40. The outlet end piece 66 is produced from a plastic, preferably from acrylonitrile-butadiene-styrene (ABS).

30

The outlet end piece 66 is mounted in the outlet connection piece 40 such that it can rotate about an axis of rotation D. In this case, the axis of rotation D is defined by the coaxial cylinder axes of the
35 connection pipe 56 and of the outlet connection piece 40.

The outlet end piece 66 is rotatably mounted by inserting a connection pipe-end pipe extension 68,

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which is formed on the outlet end piece 66, into the free end region of the outlet connection piece 40 with an accurate fit at the longitudinal end. In addition to the ability of the water outlet 42 to pivot with respect to the pivot axis S, the ability of the outlet end piece 66 to rotate with respect to the axis of rotation D provides an additional degree of freedom for spatially orienting the mixed water MW which flows out.

10 The connection pipe 56 is sealed off in the outlet end piece 66 by a radially inner wall 69 of the pipe extension 68 bearing against the connection pipe 56 with an accurate fit and simultaneously in a sealed manner, assisted by a static sealing element which is
15 in the form of a further O-ring 72 and is arranged radially on the outside of the connection pipe 56 in a groove 70.

As shown in fig. 2, a rotation angle about the axis of rotation D may be restricted to a range of
20 approximately -60° to $+60^\circ$ and therefore to a total of approximately 120° . To this end, a stop screw 74 is screwed into the free end region of the outlet connection piece 40. A further groove 76 which is
25 accommodated radially on the outside of the pipe extension 68 and covers virtually half of the circumference allows the outlet end piece 66 to rotate about the axis of rotation D until the stop screw 74 extending into the groove 76 limits the rotation angle
30 by striking stop faces 78 which are formed at each end of the groove 76.

In the outlet end piece 66, the outlet channel 64 for the mixed water MW opens through a water outlet opening
35 80 which is oriented perpendicularly to the axis of rotation D. The water outlet opening 80 is provided with an internal thread which interacts with an external thread of a nozzle 82 which can be screwed into the water outlet opening 80. Various types of jet-

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forming elements or filter elements may be inserted into the nozzle 82 (not shown in section in fig. 1) before the mixed water MW is discharged to the surroundings.

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A filter element in the form of a legionella filter 84 is inserted directly in or close to the water outlet opening 80 in the outlet channel 64 in the outlet end piece 66 such that it can be replaced. Legionellae (rod-shaped bacteria which cause Legionnaire's disease) which may possibly be entrained with the mixed water MW from the connection pipe 56 are killed by the legionella filter 84 which is in the form of a metal grating coated with a layer of silver. The arrangement of the legionella filter 84 in the immediate vicinity of the water outlet opening 80 also prevents recontamination of water-bearing elements which are arranged upstream of the water outlet opening 80.

20 In the outlet end piece 66, a transparent window 86 is arranged diametrically opposite the water outlet opening 80 with respect to the axis of rotation D. The transparent window 86, which is produced from a plastic, preferably from Plexiglas (polymethyl acrylate), provides a view of the legionella filter 84 which is arranged in the outlet channel 64, and thus allows the state of the legionella filter 84 to be visually monitored. When the silver layer of the legionella filter 84 is suitably discolored, the outlet end piece 66 may be withdrawn from the outlet connection piece 40 after the stop screw 74 is removed by being unscrewed, and the used legionella filter 84 which is inserted in the outlet channel 64 may be replaced.

35

Like the rotation angle of the outlet end piece 66 about the axis of rotation D, a pivoting angle of the water outlet 42 about the pivot axis S is also limited. To this end, as shown in the sectional illustration in

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- fig. 3, a stop pin 88 is inserted into the base body 18 of the fitting such that it passes through the inner sleeve 32 radially. Stops 90 which are formed radially on the inside of the outer sleeve 36 of the fitting interact with the stop pin 88 projecting into a space between the outer sleeve 36 of the fitting and the inner sleeve 32, and limit the pivoting angle in a range of approximately -40° to approximately $+40^{\circ}$.
- As shown in fig. 3 in particular, neither the outer sleeve 36 of the fitting nor the outlet connection piece 40 bears water. For this reason, dynamic sealing elements which have a large diameter and are associated with the outer sleeve 36 of the fitting can be dispensed with completely, construction can be simplified, and the sanitary fitting according to the invention can therefore be produced in a cost-effective manner.
- In the sectional diagram of fig. 3, the cut-away, hollow-cylindrical inner sleeve 32 has a semicircular half-ring which is open toward the pivot axis S and is interrupted only by the stop pin 88. At the connection-pipe end, opposite the cut-away half-ring, there is a recess in the inner sleeve 32, which recess is needed to enable the outflow-end pipe limb 54 of the angled pipe element 48 and the connection pipe 56 to pivot.

The base body 18 of the fitting, in which base body circular through-passages of the water inflow 10 for cold water KW and hot water WW are shown, is also open toward the pivot axis S on account of a wedge-shaped recess which is needed to allow the angled pipe element 48 and the connection pipe 56 to pivot. The inflow-end pipe limb 46, which is rounded on the outside in the sectional diagram, of the cut-away angled pipe element 48, which is also wedge-shaped, points into said recess in the direction of the stop pin 88. The pivot axis S runs through the center of a circular inner cross

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section of the pipe limb 46.

The pivoting angle which is limited by the interaction of the stops 90 with the stop pin 88 is chosen such that there is no contact between side faces of the angled pipe element 48 which face the base body 18 of the fitting and the base body 18 of the fitting, even at a maximum pivoting angle. As a result, forces which act on the base body 18 of the fitting and the angled pipe element 48 tangentially with respect to the pivot axis S are prevented and deformations or leakage points which correspondingly may be produced are avoided.

Fig. 4 shows a further embodiment of an inventive sanitary fitting which is designed to be fitted to a wall. In this case, a wall connection 92 for passing the water inflow 10 through a wall, a securing nut 94 for securing the base body 18 of the fitting to the water inflow 10, and the nozzle 82 are not shown in section.

In contrast to the inventive sanitary fitting for platform installation which is shown in fig. 1 to fig. 3, the water inflow 10 here is oriented virtually perpendicularly to the pivot axis S. For this reason, the base body 18 of the fitting is correspondingly angled and both the inflow-end through-passage 16 as well as the seat 28 and the longitudinal axis of the control cartridge 20 are arranged virtually perpendicularly with respect to the pivot axis S.

Like the inflow-end through-passage 46 of the base body 18 of the fitting, which at the same time forms a housing for the sanitary fitting, the outflow-end through-passage 30 is also spatially widened and conducts mixed water MW from a flow direction at the output end of the control cartridge 20, which is correspondingly also oriented virtually perpendicularly to the pivot axis S, to a flow direction parallel to

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the pivot axis S.

The bearing recess 44 is formed at the angled pipe element-end of the outflow-end through-passage 30 of the base body 18 of the fitting. The inflow-end end region of the inflow-end pipe limb 46 engages into the bearing recess 44 such that it can rotate. In turn, only one single dynamic sealing element in the form of the sealing ring 49 acts in the bearing recess 44 between the inflow-end end region of the inflow-end pipe limb 46 and the base body 18 of the fitting.

In contrast to the embodiment shown in fig. 1 to fig. 3, the bearing recess 44 in the embodiment in fig. 4 is extended at the angled pipe element-end in the direction of the pivot axis S in such a way that the base body 18 of the fitting surrounds the angled pipe element 48 in the manner of sleeve as far as the end region opposite the bearing recess 44. A corresponding recess is formed in the sleeve-like end region of the base body 18 of the fitting only to enable the connection pipe 56 associated with the water outlet 42 to pivot freely. Here, the outflow-end pipe limb 54 of the angled pipe element 48 is oriented inward toward the pivot axis S and perpendicularly to the inflow-end pipe limb 46.

In this embodiment, the outer sleeve 36 of the fitting is of cup-like design and has a base 96 on which a side face 98 of the outflow-end pipe limb 54 comes to rest, said side face being oriented perpendicularly to the pivot axis S. The outer sleeve 36 of the fitting is mounted by means of sliding rings 38 between the outer sleeve 36 of the fitting and the sleeve-like end region of the base body 18 of the fitting such that it can pivot.

In this embodiment, a stop screw 99 is screwed into the outer sleeve 36 of the fitting and extends into a

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sleeve groove 100 which is formed on the sleeve-like end region of the base body 18 of the fitting. When the stop screw 99 strikes the stop faces of the sleeve groove 100, circumferentially opposite stop faces (not shown in fig. 4) of the sleeve groove 100 limit the pivoting angle.

In this design too, the outlet connection piece 40 which points perpendicularly away from the pivot axis S is integrally formed on the outer sleeve 36 of the fitting. The connection pipe 56 is guided in the outlet connection piece 40 again by means of a guide ring 62 (not shown in fig. 4), inserted in a sealed manner into the outflow-end pipe limb 54 at the upstream end, and held in a sealed manner by the pipe extension 68 of the outlet end piece 66 in its downstream end region.

The outlet end piece 66 is identical to the design shown in fig. 1 and, in this case too, is mounted in the outlet connection piece 40 such that it can rotate about the axis of rotation D, predefined by the longitudinal axis of the outlet connection piece 40.

In the described embodiments, it is of course alternatively possible to also mount the outlet end piece 66 on the outlet connection piece 40 such that it is fixed in terms of rotation. It is likewise of course also possible for the longitudinal axes of the outlet end piece 66 and the outlet connection piece 40 to be oriented at a predetermined angle with respect to one another.

Similarly, the window 86 may be formed in a different manner as an alternative, and the legionella filter 84 may be replaced by another type of filter. Furthermore, it is also feasible to equip the outlet end piece 66 with projecting handle elements which make it easier for the user to rotate the outlet end piece 66.

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Patent claims

1. A sanitary fitting having a control cartridge (20) whose input end is connected to a water inflow (10) and
5 whose output end is connected to an outflow-end through-passage (30) which is formed in a base body (18) of the fitting and has a bearing recess (44), a unipartite angled pipe element (48) which forms a flow connection with the outflow-end through-passage
10 (30), can be pivoted about a pivot axis (S), and is equipped with at least one water-bearing pipe limb (46, 54), and
a water outlet (42) which forms a flow connection with the angled pipe element (48) and can be pivoted about
15 the pivot axis (S) together with the angled pipe element (48),
wherein the pipe limb (46) is formed on the angled pipe element (48) at the inflow end, is oriented at least virtually parallel to the pivot axis (S), and its
20 inflow-end end region engages in the bearing recess (44) such that it can rotate.

2. The sanitary fitting as claimed in claim 1, wherein a dynamic sealing element (49) acts in the
25 bearing recess (44) between the inflow-end end region of the inflow-end pipe limb (46) and the base body (18) of the fitting.

3. The sanitary fitting as claimed in claim 1 or 2,
30 wherein the angled pipe element (48) has a second outflow-end pipe limb (54) which points away from the pivot axis (S), a connection pipe (56) of the water outlet (42) is axially joined in a sealed manner to the outflow-end pipe limb (54), and the connection pipe
35 (56) is routed radially outside in an outlet connection piece (40) which points away from the pivot axis (S).

4. The sanitary fitting as claimed in claim 3, wherein the free end region of the water outlet (42)

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has an outlet end piece (66) which is arranged on the outlet connection piece (40) and has a water outlet opening (80) which forms a flow connection with the connection pipe (56).

5

5. The sanitary fitting as claimed in claim 4, wherein the outlet connection piece (40) is integrally formed on an outer sleeve (36) of the fitting, which outer sleeve (36) can be rotated with respect to the
10 pivot axis (S), and wherein the outlet connection piece (40) and the outer sleeve (36) of the fitting do not bear water.

6. The sanitary fitting as claimed in claim 4 or 5,
15 wherein the outlet connection piece (40) defines an axis of rotation (D) about which the outlet end piece (66) can be rotated.

7. The sanitary fitting as claimed in one of claims 4
20 to 6, wherein a replaceable filter element, preferably a legionella filter (84), is arranged in the outlet end piece (66) close to the water outlet opening (80) in order to prevent recontamination.

25 8. The sanitary fitting as claimed in claim 7, wherein a, preferably plastic, transparent window (86) is integrated in the outlet end piece (66) for the purpose of visually monitoring the filter element.

30 9. The sanitary fitting as claimed in one of claims 1 to 8, wherein the base body (18) of the fitting and a bearing plate (14) are arranged in an inner sleeve (32), and one end of the angled pipe element (48) is mounted in the bearing recess (44) in the base body
35 (18) of the fitting and the other end is mounted in the bearing plate (14).

10. The sanitary fitting as claimed in claim 9, wherein the bearing plate (14) has a bearing-like

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recess (52) which is arranged centrally with respect to the pivot axis (S) and in which a bearing journal (50) of the angled pipe element (48) is mounted such that it can rotate.

5

11. A sanitary fitting having a water outlet (42) and a water outlet opening (80) at its free end region, wherein a filter element, preferably a legionella filter (84), for preventing recontamination is
10 arranged, such that it can be replaced, in the water outlet (42) close to the water outlet opening (80).

12. The sanitary fitting as claimed in claim 11, wherein the water outlet (42) comprises an outlet
15 connection piece (40) which has mounted in its free end region an outlet end piece (66) which is equipped with the water outlet opening (80), in which a transparent window (86) for the purpose of visually monitoring the filter element is preferably integrated, and which can
20 be rotated about an axis of rotation (D) which is defined by the outlet connection piece (40), and wherein the filter element is arranged in the outlet end piece (66) such that it can be replaced.

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Fig. 1

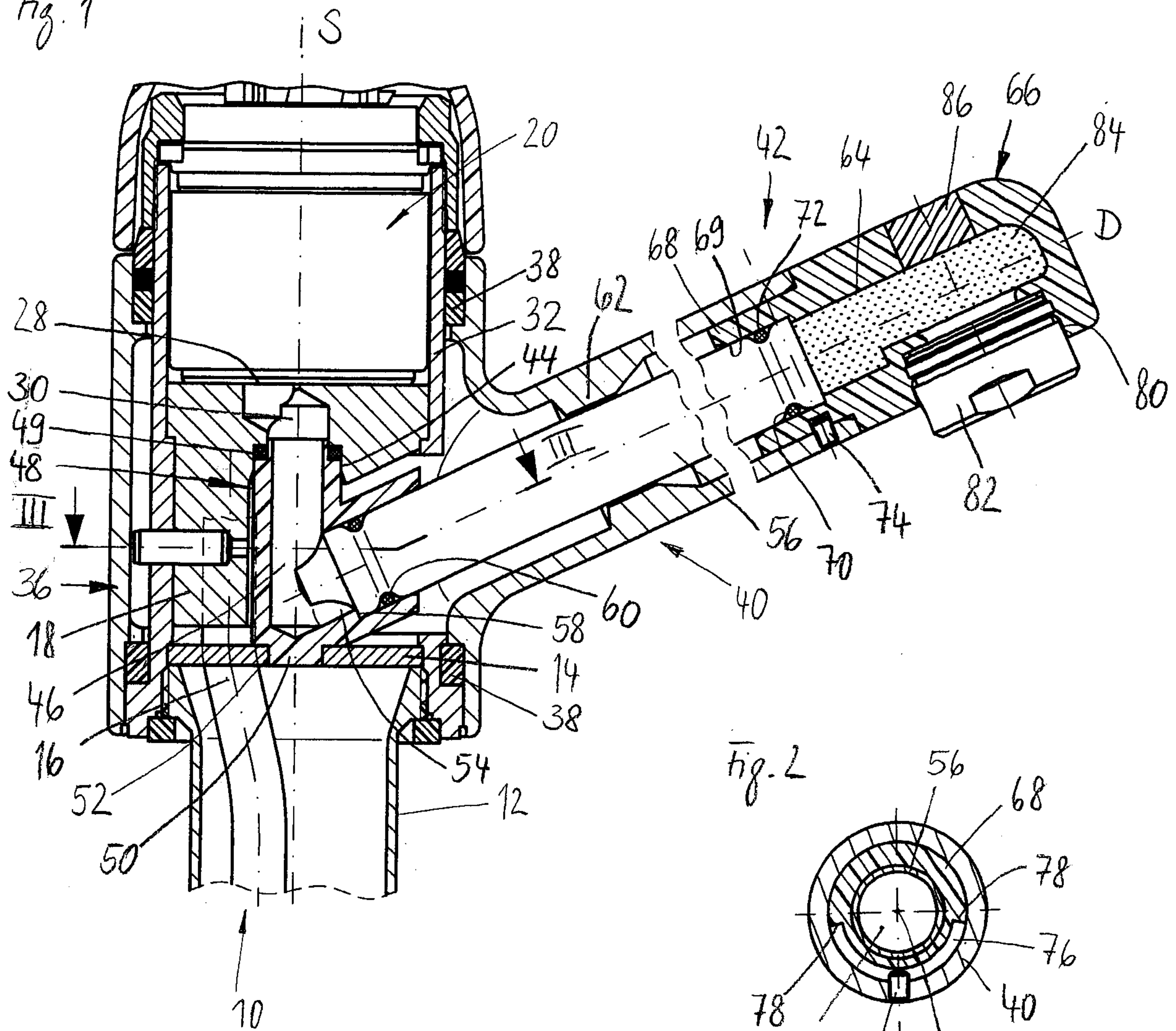


Fig. 2

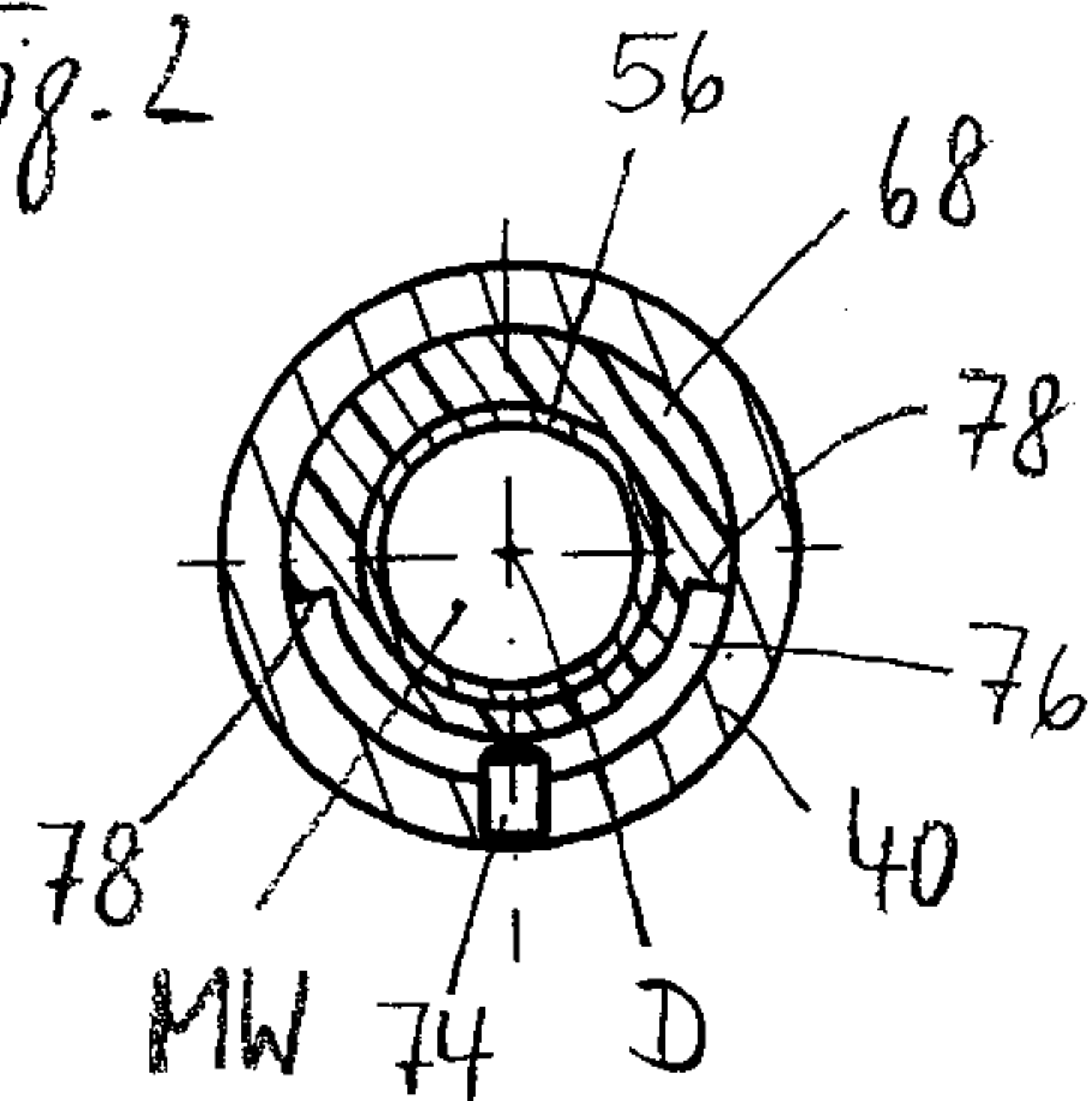
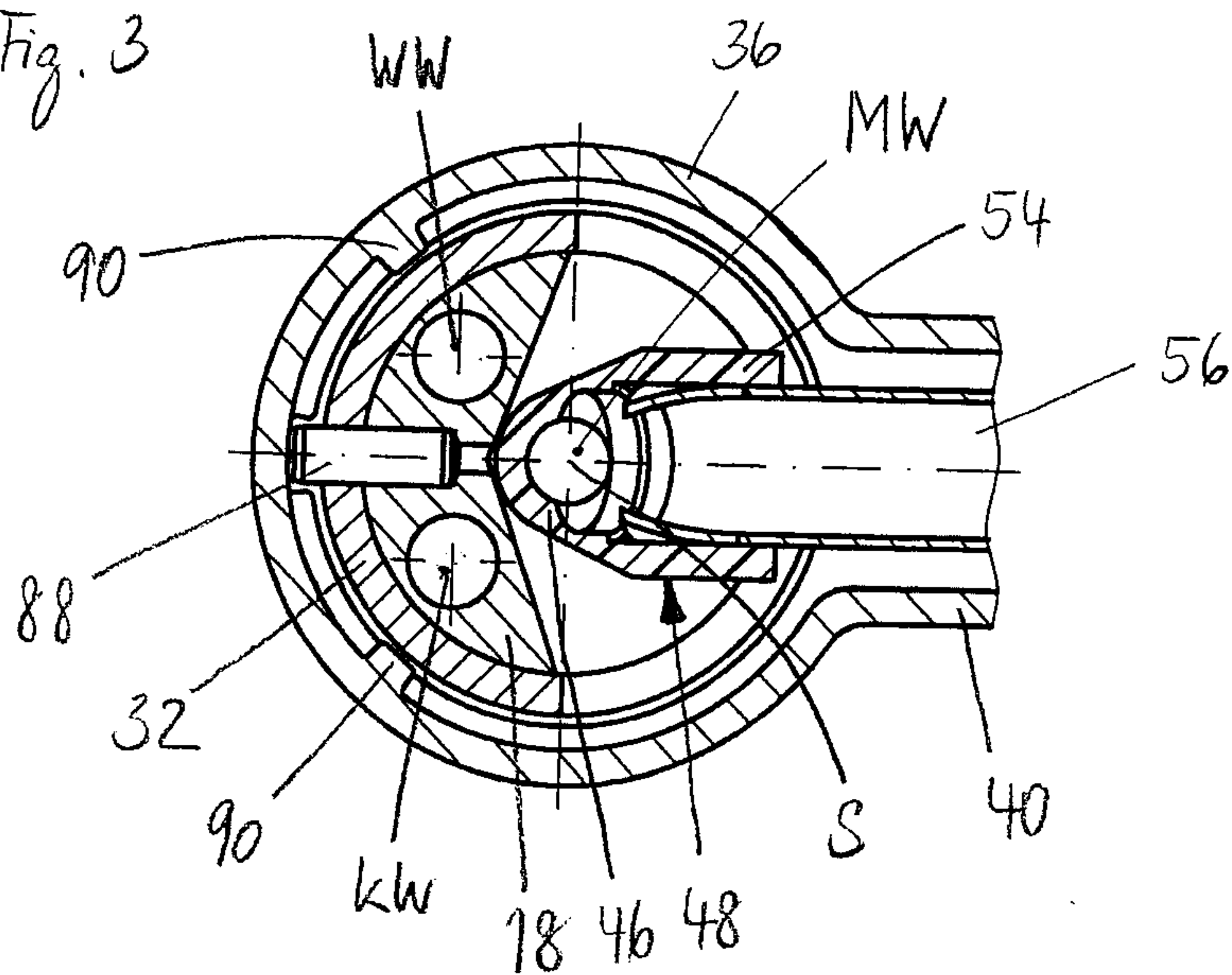


Fig. 3



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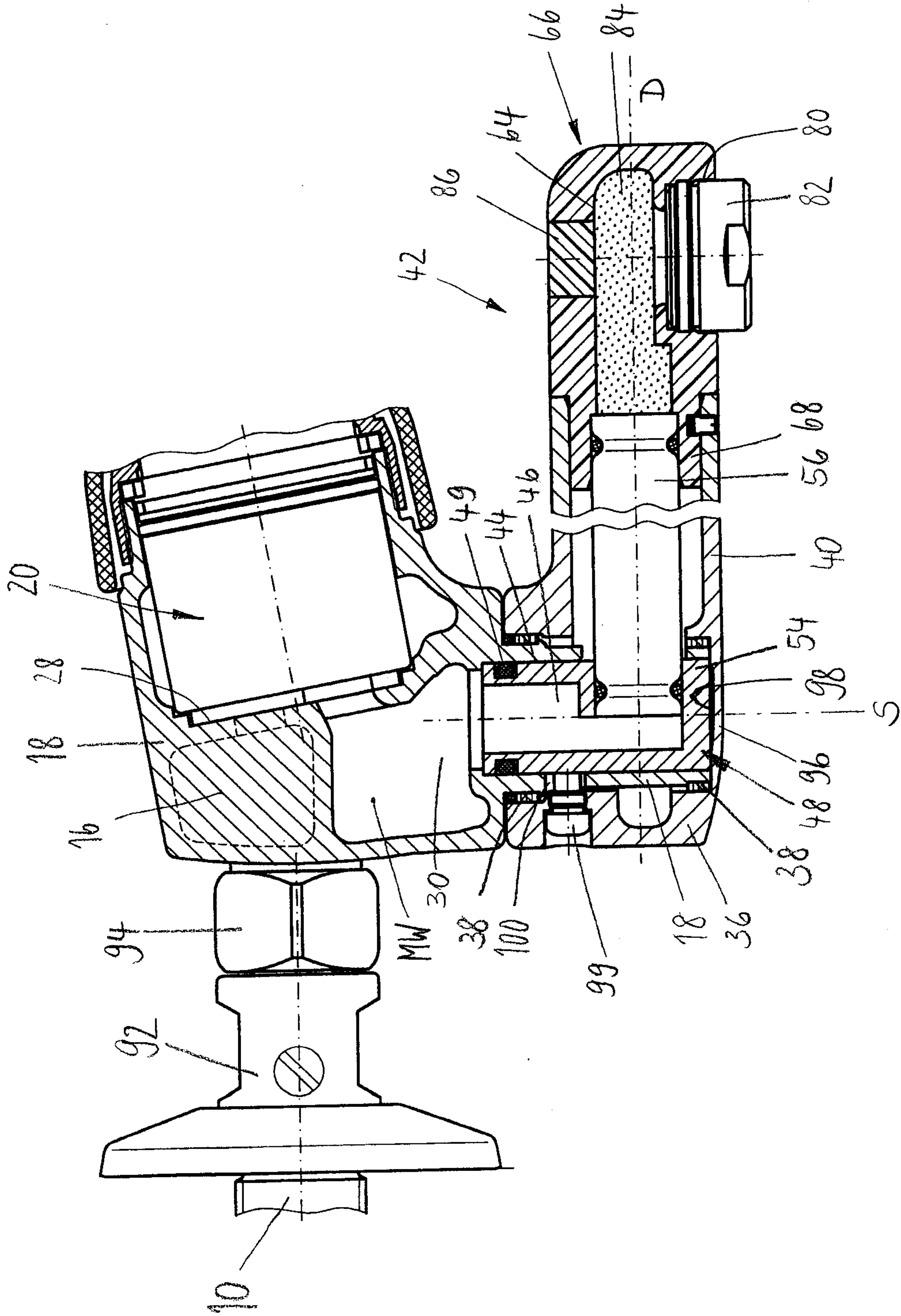


Fig. 4

