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(54) **DISPENSE HEAD FOR A DRAFT BEVERAGE DISPENSING SYSTEM**

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Description

Technical field of the invention

[0001] The present invention relates to a dispense head adapted to be coupled to a beverage container above a spear arranged in the beverage container in a dispensing system, the dispense head comprising a piston arranged axially displaceable within a housing, the piston being connected to a handle so that upon activation of the handle, the piston will be displaced axially towards the spear, whereby a top part of the spear will be forced downwards, causing it to open the beverage container, a gas inlet arranged in the housing, which is in fluid communication with a space extending along the piston, the space being sealed at least at a top end with a first sealing and at a bottom end with a second sealing.

[0002] The present invention also relates to a dispensing system.

Background art

[0003] A large number of systems and devices are known within the field of beverage dispensing. Typically, the beverage is stored in a container, such as a keg, which is connected to a dispensing system during use. The beverage flows from the container through a dispensing line which is typically connected to a dispensing tap where the beverage is dispensed. The flow of beverage may for instance be achieved by a higher than atmospheric pressure inside the container, forcing the beverage into the dispensing line. During use of the dispensing system, pressure is usually continuously applied to the inside of the container by means of a pressure medium. It is common to use CO₂ as the pressure medium.

[0004] The pressure medium is usually supplied to the beverage container from a gas cylinder via a dispense head. Also, it is common that the dispense head connects to the beverage outlet of the container, whereby it serves to supply pressure medium, such as CO₂, to the beverage container and beverage to the dispensing system.

[0005] When a beverage container is connected to a dispensing system by means of a dispense head, it is preferable if this can be carried out without leakage of pressure medium (i.e. CO₂) to the surroundings. In the current art, this is done by integrating sophisticated connection means in the dispense head. These connection means tend to be rather complex and expensive, and in most cases, the pressure medium leakage during connection of the beverage container is merely limited, but not eliminated.

[0006] In some examples of prior art, the pressure medium flow is connected to the dispense head first, and subsequently the beverage flow is connected. One drawback of this is that it entails a risk of foaming once the beverage flow is connected, which is at best messy and at worst dangerous for the user if the pressure is high

enough to cause equipment failure. Hence, there is a need for a dispense head which is inexpensive to manufacture and simple yet provides a satisfactory prevention of pressure medium leakage and foaming.

[0007] Furthermore, during a replacement of a keg, in which circumstance the dispense head is dismantled from the keg, most dispense heads today have the risk of CO₂ leaking out through the dispense head if this is activated by accident.

[0008] CO₂ is a hazardous gas if the total content of gas in a room becomes too high. Normal concentration of CO₂ in the atmosphere is 0.03 Vol.-%. If the amount of CO₂ reaches a level of 2 to 3 Vol.-%, the people in the room will experience higher respiration and higher pulse frequency. This will increase with the increasing level of CO₂ and end up in unconsciousness. If the level exceeds 10 Vol.-%, it is deadly, even if the people in the room are exposed for only a short period of time.

[0009] Additionally, CO₂ is an expensive gas, and thus, leakage of the gas may also be a costly affair.

[0010] A dispense head according to the preamble of claim 1 is known from US-A-4 450 853.

Summary of the invention

[0011] It is an object of the present invention to wholly or partly overcome the above disadvantages and drawbacks of the prior art and to provide a dispense head which does not unintentionally leak CO₂ to the environment in a dismantled state.

[0012] The above objects, together with numerous other objects, advantages and features, which will become evident from the below description, are accomplished by a solution in accordance with the present invention by the dispense head comprising a piston arranged axially displaceable within a housing, the piston being connected to a handle so that upon activation of the handle, the piston will be displaced axially towards the spear, whereby a top part of the spear will be forced downwards, causing it to open the beverage container, a gas inlet arranged in the housing, which is in fluid communication with a space, which space is extending along the piston, the space being sealed at least at a top end with a first sealing and at a bottom end with a second sealing, wherein positioning means is arranged in connection with the piston, enabling the first sealing and the second sealing to be placed in sealing positions during unintended activation of the handle when the dispense head is disconnected from the beverage container.

[0013] When the handle is activated, the piston is displaced downwards inside the housing. During this displacement, the sealings follow the piston by means of the positioning means so that the space being in fluid connection with the gas inlet is sealed off, whereby gas, i.e. CO₂, is unable to escape and leak unintentionally. Thus, the positioning means secures that the dispense head is not able to leak CO₂ even when it is activated and in a dismantled state.

[0014] When the dispense head is coupled to the beverage container above the spear and the handle is activated, the piston is displaced downwards inside the housing. During this displacement, the sealings follow the piston by means of the positioning means so that the space being in fluid connection with the gas inlet is sealed off until the piston displaces the top of the spear and thereby opens the beverage container.

[0015] The internal spring of the spear has more power, i.e. spring force, than the inherent force of the positioning means, meaning that when the dispense head is in the mounted and activated state, the piston will be pressed slightly upwards by the internal spring, or the internal spring of the spear stops the piston in displacing it further downwards during activation so that the gas inlet is in fluid communication with the beverage container.

[0016] In this way, a simple and reliable dispense head is provided, which limits the risk of gas leakage in case of unintended activation of the dispense head when being dismounted from the beverage container. At the same time, it is avoided that the concentration of gasses, i.e. CO₂, increases unintendedly.

[0017] Furthermore, the positioning means may be a resilient element, such as a spring, or may be made of an elastic material.

[0018] In addition, the positioning means may have a predetermined spring force.

[0019] Moreover, the positioning means may be arranged above the first sealing.

[0020] Also, the space may be an annulus extending along the piston.

[0021] Furthermore, the space may be arranged between an exterior of the piston and the housing, or is arranged within the piston.

[0022] In addition, the sealings may be arranged so that they seal radially against a projection either on the housing or within the piston.

[0023] Moreover, the sealings may be O-rings or other sealing elements.

[0024] Furthermore, the piston may have an axial bore adapted for a beverage to be led through the dispense head during dispensing.

[0025] The present invention also relates to a dispense head adapted to be coupled to a beverage container above a spear arranged in the beverage container in a dispensing system, the dispense head comprising:

a piston arranged axially displaceable within a housing, the piston being connected to a handle so that upon activation of the handle, the piston will be displaced axially towards the spear, whereby a top part of the spear will be forced downwards, causing it to open the beverage container, a gas inlet arranged in the housing, which is in fluid communication with a channel, the channel being arranged in a wall of the piston and extends axially within the wall of the piston between two radially arranged bores, a spring-

loaded sleeve arranged around the piston, the sleeve is axially displaceable in relation to the piston and is arranged so that it may slide opposite an opening of one of the bores, thereby enabling that the sleeve can either close off the opening or open into the opening.

[0026] Additionally, a helically spring may be arranged above the sleeve and adapted to force the sleeve downwards against a main gasket, which may be adapted to force the sleeve upwards when the dispense head is mounted and activated on the beverage container.

[0027] Furthermore, a sealing, e.g. an o-ring, may be arranged between the sleeve and the piston for avoiding unintended gas leak.

[0028] Moreover, an additional sealing may be arranged below the opening of the bore for sealing between the sleeve and the bore, when the sleeve is in its lowest position.

[0029] The present invention further relates to a dispense head adapted to be coupled to a beverage container above a spear arranged in the beverage container in a dispensing system, the dispense head comprising:

a piston arranged axially displaceable within a housing, the piston being connected to a handle so that upon activation of the handle, the piston will be displaced axially towards the spear, whereby a top part of the spear will be forced downwards, causing it to open the beverage container, a gas inlet arranged in the housing, which is in fluid communication with a channel arranged in an axially displaceable spring-loaded sleeve, the channel having an opening, the sleeve is arranged in an exterior recess in the piston and extends axially along the piston and is arranged so that it can slide opposite the opening, thereby enabling either to open or close the gas flow in the opening.

[0030] Moreover, a helically spring may be arranged above the sleeve for forcing the sleeve downwards.

[0031] Furthermore, the channel may be arranged within the wall of the sleeve or it may be an axial groove arranged at the inside of the sleeve.

[0032] The sleeve may comprise a radial flange, which is adapted to abut a main gasket, which may force the sleeve upwards when the dispense head is mounted and activated on the beverage container.

[0033] Furthermore, a sealing, e.g. an O-ring, may be arranged below the opening for sealing between the sleeve and the opening, when the sleeve is in its lowest position.

[0034] In addition, the housing may comprise an upper sealing and a lower sealing arranged with a mutual distance between them. The sealings may be arranged in their own recesses in an interior wall of the housing and may preferably be O-rings. The sealings may be arranged so that they are positioned on each side of the

gas inlet.

[0035] The sleeve may be made of metal or plastic material, or a combination thereof.

[0036] The present invention also relates to a dispensing system for dispensing beverage, the system comprising a beverage container, which comprises a spear arranged in an opening of the beverage container adapted to function as a valve, the spear having an internal spring having a spring force so that the opening to the beverage container can be kept closed, a gas supply, a dispensing tap, and a dispense head according to any of the above-mentioned technical features.

[0037] In addition, the spring force of the spring element may be smaller than the spring force of the internal spring.

Brief description of the drawings

[0038] The invention and its many advantages will be described in more detail below with reference to the accompanying schematic drawings which, for the purpose of illustration, show some non-limiting embodiments, and in which

Fig. 1 shows a dispensing system according to the invention,

Fig. 2 shows a dispense head,

Fig. 3 shows a cross-sectional view of the dispense head of Fig. 2, the dispense head being activated in a dismantled stage,

Fig. 4 shows an enlarged cross-sectional view of the dispense head of Fig. 3, wherein the second sealing is in a sealing position,

Fig. 5 shows a cross-sectional view of the dispense head being mounted on a beverage container,

Fig. 6 shows a cross-sectional view of the dispense head mounted above a spear arranged in a beverage container, the dispense head not being activated,

Fig. 7 shows a cross-sectional view of the dispense head of Fig. 6, wherein the handle is being moved downwards,

Fig. 8 shows a cross-sectional view of the dispense head of Fig. 6, wherein the handle is in a lower position, whereby the dispense head is activated,

Fig. 9 shows an enlarged cross-sectional view of the dispense head of Fig. 8, wherein the second sealing is in a non-sealing position, and the gas inlet is in fluid communication with the beverage container,

Fig. 10 shows a cross-sectional view of another dis-

pense head, wherein the handle is in a lower position, whereby the dispense head is activated,

Fig. 11 shows an enlarged cross-sectional view of the dispense head of Fig. 10,

Fig. 12 shows a cross-sectional view of the dispense head of Fig. 10, wherein the dispense head is activated in a dismantled stage,

Fig. 13 shows an enlarged cross-sectional view of the dispense head of Fig. 12,

Fig. 14 shows a cross-sectional view of the dispense head of Fig. 10 in an inactive and dismantled stage,

Fig. 15 shows an enlarged cross-sectional view of the dispense head of Fig. 14,

Fig. 16 shows a cross-sectional view of an additional dispense head, wherein the handle is in a lower position, whereby the dispense head is activated,

Fig. 17 shows an enlarged cross-sectional view of the dispense head of Fig. 16,

Fig. 18 shows a cross-sectional view of the dispense head of Fig. 16, wherein the dispense head being activated in a dismantled stage,

Fig. 19 shows an enlarged cross-sectional view of the dispense head of Fig. 18,

Fig. 20 shows a cross-sectional view of the dispense head of Fig. 16 in an inactive and dismantled stage, and

Fig. 21 shows an enlarged cross-sectional view of the dispense head of Fig. 20.

[0039] All the drawings are schematic and not necessarily to scale, and they show only those parts which are necessary in order to elucidate the invention, other parts being omitted or merely suggested.

Description of preferred embodiments

[0040] Fig. 1 shows a dispensing system 1 according to the invention. The dispensing system 1 comprises a beverage container 2, such as a keg. The beverage container 2 comprises a spear 3 arranged in an opening (not shown) of the beverage container 2 adapted to function as a valve, the spear 3 having an internal spring (not shown) having a spring force enabling the opening to the beverage container 2 to be kept closed.

[0041] The dispensing system 1 also comprises a gas supply 4. The gas supply 4 may be a CO₂ container and may be connected to a dispense head 5 according to the

invention. The dispense head 5 will be described in more detail below.

[0042] A dispensing tap 6 is connected to the dispense head 5 via a dispensing line 7. In this embodiment, a cooling device 8 is arranged between the dispensing tap 6 and the dispense head 5 to cool the beverage before dispensing.

[0043] During operation of the dispensing system 1, the gas supply 4 supplies pressurised gas, such as CO₂ or other suitable gasses, via the dispense head 5 to the top of the beverage container 2 in order to displace the beverage. When the dispensing tap 6 is being opened, the CO₂ will start displacing the beverage from the top of the beverage container 2, causing the beverage at the bottom of the beverage container 2 via the spear 3 to flow into a flow channel in the dispense head 5 and further into the dispensing line 7.

[0044] In Fig. 2, the dispense head 5 according to the invention is shown in an outside view. The dispense head 5 comprises a housing 13 and a handle 9 which is adapted to activate the dispense head 5 while being mounted on the beverage container (not shown). The dispense head 5 also comprises a gas inlet 10 and a beverage outlet 11. Furthermore, the dispense head 5 comprises a mechanical connection means 12 which is adapted to engage with a flange on the spear 3 arranged in the beverage container 2.

[0045] In Fig. 3, a dispense head 5 is shown in a cross-sectional view. In this figure, the dispense head 5 is not mounted on the beverage container 2, however, the dispense head 5 is activated since the handle 9 is in its lowest position. The dispense head 5 also comprises a piston 14 which is arranged axially displaceable within the housing 13.

[0046] The piston 14 is connected to the handle 9 so that, upon activation of the handle 9, the piston 14 will be displaced axially towards the spear (not shown), whereby a top part of the spear (not shown) will be forced downwards, causing it to open the beverage container (not shown). From Fig. 3, it is easily deduced that the lower part 15 of the piston 14 is displaced downwards in relation to the housing 13.

[0047] The gas inlet 10 is arranged in the housing 13 and is in fluid communication with a space 16. The space 16 extends along the piston 14 and is in this embodiment positioned within the piston 14. The gas inlet 10 is in fluid communication with the space 16 via one or more openings 17 in the piston wall. The space 16 is sealed at least at a top end with a first sealing 18 and at a bottom end with a second sealing 19.

[0048] According to the invention, a positioning means 20 is arranged in connection with the piston 14, enabling the first sealing 18 and second sealing 19 to be placed in sealing positions when the handle 9 is activated unintentionally during axial displacement of the piston when the dispense head 5 is dismounted from the beverage container 2.

[0049] Fig. 4 is an enlarged cross-sectional view of the

dispense head of Fig. 3, wherein the second sealing 19 is in a sealing position even though the dispense head 5 has been activated unintentionally. In this enlarged view, it is shown how the second sealing 19 seals the space 16 downwards. In this embodiment, the sealings 18, 19 are O-rings made of an elastic material. These O-rings extend around an inner piston part 21 and are securely placed in recesses of the inner piston part 21 so that they not are displaceable in an axial direction of the inner piston part 21. Opposite the sealings 18, 19, projections 22 are arranged on the inner side of piston wall 23 so that the sealings 18, 19 are slightly deformed when being placed opposite the projections 22. In this way, the space 16 is sealed off radially, meaning that no CO₂ will leak into the surroundings even though the dispense head 5 has been activated unintentionally.

[0050] In Fig. 5, the dispense head 5 is mounted onto the spear 3 in the beverage container 2. The dispense head 5 is not activated in Fig. 5. The spear 3 comprises an extractor part 24 extending from the opening downwards to the bottom of the beverage container 2. At the top of the spear 3, an internal spring 25 is arranged which with a predetermined upward spring force closes off the beverage container via a closure 26 and related sealing elements.

[0051] When the dispense head 5 is being activated in a mounted state, the handle 9 is moved downwards, whereby the piston 14 is also displaced axially downwards within the housing 13 towards the closure 26 of the spear 3. This means that when the handle is in its lowest position, the beverage container 2 is opened. This will be described further in relation to the forthcoming figures.

[0052] As the spear 3 is opened, the beverage 27 in the beverage container 2 may be forced out of the container at the bottom via the extractor part 24 of the spear 3 when the pressurised gas, i.e. CO₂, is supplied to the area 28 above the beverage 27.

[0053] Fig. 6, shows the dispense head 5 of Fig. 5, mounted on the spear 3, however, the beverage container 2 is not shown in this figure. In this embodiment, the piston 14 comprises a turnable upper piston part 29, an upper piston part 30, an internal lower piston part 31, and a lower piston 32. The space 16 is in this embodiment arranged between the upper piston part 30 and the internal lower piston part 31, and openings 17 provide access and thereby fluid communication to the space 16. The space 16 is in this embodiment an annulus. The positioning means 20 is arranged between the turnable upper piston part 29 and the upper piston part 30, and above the first sealing 18.

[0054] The positioning means 20 is in this embodiment an internal spring having a predetermined spring force, however, in other embodiments, the positioning means may also be a resilient element made of some kind of elastic material.

[0055] Furthermore, a sealing device 33, for instance an elastic O-ring, may be arranged between the turnable

upper piston part 29 and the upper piston part 30 to avoid leakage out of the dispense head 5 and to ensure that no dirt etc. enters the dispense head 5 unintendedly. Several other sealing devices may be arranged within the dispense head 5 to ensure that no unintended leakage occurs.

[0056] In addition, the piston 14 may have an axially extending bore adapted for a beverage to be led through the dispense head 5 during dispensing.

[0057] In Fig. 7, the handle 9 has been moved downwards, thereby performing an axial displacement of the piston 14, which is also indicated by the lower piston 32 being displaced downwards and displacing the gasket around the closure 26 of the spear 3. The positioning means 20 secures that the space 16 is sealed off at this stage. In other embodiments it may be the closure which is displaced.

[0058] In Fig. 8, the handle 9 is in its lower position, whereby the dispense head 5 is activated and the gas inlet 10 is in fluid communication with the interior of the beverage container (not shown).

[0059] In Fig. 9, an enlarged cross-sectional view shows how the piston 14 has been forced slightly upwards so that the second sealing 19 is no longer placed opposite the projection 22. This creates a passage 35 through which the pressurised gas, i.e. CO₂, may flow, continuing further down into the beverage container 2 via a gas channel.

[0060] Accordingly, the internal spring 25 of the spear 3 has more power, i.e. spring force, than the inherent spring force of the positioning means 20, meaning that when the dispense head 5 is in a mounted and activated state, the piston will be pressed slightly upwards by the internal spring 25, or the internal spring of the spear 3 will stop the piston from displacing it further downwards during activation ensuring that the gas inlet 10 is in fluid communication with the beverage container 2.

[0061] In Fig. 10 another dispense head 51 is shown in a cross-sectional view. The handle 9 is in a lower position in Fig. 10, whereby the dispense head 51 is activated. The dispense head 51 comprises a housing 13 and a piston 14, which is arranged axially displaceable within the housing 13.

[0062] The piston 14 is connected to the handle 9 so that, upon activation of the handle 9, the piston 14 will be displaced axially towards the spear (not shown), whereby a top part of the spear (not shown) will be forced downwards, causing it to open the beverage container (not shown). From Fig. 10, it is easily deduced that the lower part 15 of the piston 14 is displaced downwards in relation to the housing 13.

[0063] The gas inlet 10 is arranged in the housing 13 and is in fluid communication with a channel 52. The channel 52 is arranged in the wall of the piston 14 and extends axially within the wall of the piston 14 between two radially arranged bores 53, 54.

[0064] In Fig. 11 an enlarged cross-sectional view of the dispense head 51 of Fig. 10 is shown. As mentioned

above, the dispense head 51 is in this figure activated and gas may flow from the gas inlet 10 via the bore 53, the channel 52, the bore 54 and the opening 55 into the beverage container (not shown).

[0065] The dispense head 51 also comprises a spring-loaded sleeve 56, which is arranged around the piston 14. The sleeve 56 is axially moveable in relation to the piston 14 and is arranged so that it may slide opposite the opening of the bore 54. The sleeve 56 may thereby open or close for the gas flow in the bore 54, and thereby avoiding unintended gas leakage.

[0066] Above the sleeve 56 a helically spring 57 forces the sleeve 56 downwards. The sleeve abuts the main gasket 58, which forces the sleeve 56 upwards when the dispense head 51 is mounted and activated on the beverage container (not shown) in the same manner as described above.

[0067] Fig. 12 shows a cross-sectional view of the dispense head 51 of Fig. 10, wherein the dispense head 51 has been activated, i.e. the handle 9 is in its lowest position in a dismantled stage. According to the inventive concept, the unintended gas leakage, which may occur during activation of the handle 9 in circumstances where the dispense head is not mounted on a beverage container, is avoided.

[0068] In Fig. 13 an enlarged cross-sectional view of the dispense head 51 of Fig. 12 is shown. In this figure the sleeve 56 is forced downwards by means of the spring 57 into its lowest position, wherein it closes off the opening of the bore 54 so that no gas may leak unintentionally. This is due to the fact that since the dispense head 51 is not mounted on a beverage container, the main gasket 58 is also forced downwards by the activation of the handle (in Fig. 13 it is projecting below the housing 13 of the dispense head 51), and thereby it does not force the sleeve 56 upwards. The spring force of the spring 57 is then sufficient for forcing the sleeve 56 down in the position wherein it closes off the bore 54.

[0069] Furthermore, a sealing 59, e.g. an o-ring, may be arranged between the sleeve 56 and the piston 14 for avoiding unintended gas leak. An additional sealing 60 may as well be arranged just below the opening of the bore 54 for sealing between the sleeve 56 and the bore 54, when the sleeve 56 is in its lowest position.

[0070] In Fig. 14 a cross-sectional view of the dispense head 51 of Fig. 10 is shown in an inactive and dismantled stage, where the handle 9 is not activated. Fig. 15 shows an enlarged cross-sectional view of the dispense head 51 of Fig. 14, wherein the piston 14 is in its uppermost position. The piston 14 comprises an upper sealing and a lower sealing 62 arranged with a mutual distance between them. The sealings 61, 62 are arranged in their own recesses in the exterior wall of the piston 14 and may preferably be O-rings. The sealings 61, 62 are arranged so that they are positioned on each side of the gas inlet 10 when the piston are in the uppermost position, as shown in Figs. 14 and 15. Hereby unintended gas leak from the gas inlet 10 is avoided. Furthermore,

the sleeve 56 also closes off the bore 54 in this position, thereby providing an additional security of unintended gas leakage.

[0071] In Fig. 16 yet another dispense head 71 is shown in a cross-sectional view. The handle 9 is in Fig. 16 in a lower position, whereby the dispense head 71 is activated. The dispense head 71 comprises a housing 13 and a piston 14, which is arranged axially displaceable within the housing 13.

[0072] The piston 14 is connected to the handle 9 so that, upon activation of the handle 9, the piston 14 will be displaced axially towards the spear (not shown), whereby a top part of the spear (not shown) will be forced downwards, causing it to open the beverage container (not shown). From Fig. 16, it is easily deduced that the lower part 15 of the piston 14 is displaced downwards in relation to the housing 13.

[0073] The gas inlet 10 is arranged in the housing 13 and is in fluid communication with a channel 72 arranged in a sleeve 73. The sleeve 73 is arranged in an exterior recess in the piston 14 and extends axially along the piston 14. The gas channel 72 may be arranged within the wall of the sleeve or it may be an axial groove arranged at the inside of the sleeve 73. Furthermore, a helically spring 74 is arranged above sleeve 73 for forcing the sleeve 73 downwards.

[0074] In Fig. 17 an enlarged cross-sectional view of the dispense head 71 of Fig. 16 is shown. As mentioned above, the dispense head 71 is in this figure activated and gas may flow from the gas inlet 10 via the channel 72, the opening 76, passing the main gasket 75 into the beverage container (not shown).

[0075] As mentioned above, the dispense head 71 comprises a spring-loaded sleeve 73, which is arranged around the piston 14. The sleeve 73 is axially moveable in relation to the piston 14 and is arranged so that it may slide opposite the opening 76. The sleeve 73 may thereby open or close for the gas flow in the opening 76, and thereby avoiding unintended gas leakage.

[0076] Above the sleeve 73, a helically spring 74 forces the sleeve 73 downwards. The sleeve 73 abuts the main gasket 75 via the radial flange 77, and in the same manner as described in connection with Figs. 10 to 15, the main gasket forces the sleeve 73 upwards when the dispense head 71 is mounted and activated on the beverage container (not shown) in the same manner as described above.

[0077] Fig. 18 shows a cross-sectional view of the dispense head 71 of Fig. 16, wherein the dispense head 71 has been activated, i.e. the handle 9 is in its lowest position in a dismantled stage. According to the inventive concept, the unintended gas leakage, which may occur during activation of the handle 9 in circumstances where the dispense head is not mounted on a beverage container, is avoided.

[0078] In Fig. 19, an enlarged cross-sectional view of the dispense head 71 of Fig. 18 is shown. In this figure the sleeve 73 is forced downwards by means of the spring

74 into its lowest position, wherein it closes off the opening 76 so that no gas may leak unintentionally. This is due to the fact that since the dispense head 71 is not mounted on a beverage container, the main gasket 75 is also forced downwards by the activation of the handle (in Fig. 19 it is projecting below the housing 13 of the dispense head 71), and thereby it does not force the sleeve 73 upwards. The spring force of the spring 74 is then sufficient for forcing the sleeve 73 down in the position wherein it closes off the opening 76.

[0079] Furthermore, a sealing 78, e.g. an O-ring, may be arranged just below the opening 76 for sealing between the sleeve 73 and the opening 76, when the sleeve 73 is in its lowest position (as shown in Fig. 19).

[0080] In Fig. 20 a cross-sectional view of the dispense head 71 of Fig. 16 in an inactive and dismantled stage, where the handle 9 is not activated, is shown. Fig. 21 shows an enlarged cross-sectional view of the dispense head 71 of Fig. 20, wherein the piston 14 is in its uppermost position. The housing 13 comprises an upper sealing 79 and a lower sealing 80 arranged with a mutual distance between them. The sealings 79, 80 are arranged in their own recesses in the interior wall of the housing 13 and may preferably be o-rings. The sealings 79, 80 are arranged so that they are positioned on each side of the gas inlet 10. When the piston 14 is in position shown in Fig. 21, the sleeve 73 is moved upwards so that it is placed opposite the gas inlet 10. Thereby, the sleeve 73 and the two sealings 79, 80 avoid unintended gas leak from the gas inlet 10. Furthermore, the sleeve 73 also closes off the opening 76 in this position, thereby providing an additional security of unintended gas leakage.

[0081] The sleeve 73 may be made of metal or plastic material, or a combination thereof.

[0082] Although the invention has been described in the above in connection with preferred embodiments of the invention, it will be evident for a person skilled in the art that several modifications are conceivable without departing from the invention as defined by the following claims.

Claims

1. A dispense head (5) adapted to be coupled to a beverage container (2) above a spear (3) arranged in the beverage container (2) in a dispensing system (1), the dispense head (5) comprising:

a housing (13), a handle (9), a piston (14) arranged axially displaceable within said housing (13), the piston (14) being connected to said handle (9) so that upon activation of the handle (9), the piston (14) will be displaced axially towards the spear (3), whereby a top part of the spear will be forced downwards, causing it to open the beverage container (2), a gas inlet (10) arranged in the housing (13), which is adapted

to be in fluid communication with a space (16) extending along the piston (14), the space (16) being sealed at least at a top end with a first sealing (18) and at a bottom end with a second sealing (19), **characterised in that** said dispense head (5) further comprises:

a projection (22) either on the housing (13) or within the piston (14), positioning means (20) arranged in connection with the piston (14), enabling the first sealing (18) and the second sealing (19) to be placed in sealing positions so that they seal radially against said projection (22)" whereby no CO₂ will leak into the surroundings during unintended activation of the handle (9) when the dispense head (5) is disconnected from the beverage container (2).

2. A dispense head (5) according to claim 1, wherein the positioning means (20) is a resilient element, such as a spring, or is made of an elastic material. 20
3. A dispense head (5) according to claim 2, wherein the positioning means (20) has a spring force. 25
4. A dispense head (5) according to claim 1, wherein the positioning means (20) is arranged above the first sealing (18). 30
5. A dispense head (5) according to claim 1, wherein the space (16) is an annulus extending along the piston (14).
6. A dispense head (5) according to claim 1, wherein the space (16) is arranged between an exterior of the piston (14) and the housing (13), or is arranged within the piston (14). 35
7. A dispense head (5) according to claim 1, wherein the sealings (18, 19) are O-rings. 40
8. A dispense head (5) according to claim 1, wherein the piston (14) has an axial bore adapted for a beverage to be led through the dispense head during dispensing. 45
9. A dispensing system (1) for dispensing beverage, the system comprising a beverage container (2) comprising a spear (3) arranged in an opening of the beverage container (2), adapted to function as a valve, the spear (3) having an internal spring (25) having a spring force enabling the opening to the beverage container to be kept closed, a gas supply (4), a dispensing tap (6), and a dispense head (5) according to any of claims 1 to 8. 50
10. A dispensing system (1) according to claim 9, where-

in the spring force of the positioning means (20) is smaller than the spring force of the internal spring (25).

Patentansprüche

1. Abgabekopf (5), der ausgelegt ist, um an einen Getränkebehälter (2) gekoppelt zu werden, oberhalb eines Stechrohrs (spear 3), das in dem Getränkebehälter (2) angeordnet ist, in einem Abgabesystem (1), wobei der Abgabekopf (5) umfasst:

ein Gehäuse (13), eine Handhabe (9), einen Kolben (14), der axial versetzbar innerhalb des Gehäuses (13) angeordnet ist, wobei der Kolben (14) mit der Handhabe (9) verbunden ist, so dass bei Aktivierung der Handhabe (9) der Kolben (14) axial zu dem Stechrohr (3) versetzt wird, wobei dadurch ein oberer Teil des Stechrohrs nach unten gezwungen wird, was es dazu bringt, den Getränkebehälter (2) zu öffnen, einen Gaseinlass (10), der in dem Gehäuse (13) angeordnet ist, der ausgelegt ist, um in einer Fluidverbindung mit einem Raum (16) zu stehen, der sich entlang des Kolbens (14) erstreckt, wobei der Raum (16) wenigstens an einem oberen Ende mit einer ersten Dichtung (18) und an einem unteren Ende mit einer zweiten Dichtung (19) abgedichtet ist,

dadurch gekennzeichnet, dass der Abgabekopf (5) weiter umfasst:

einen Vorsprung (22) entweder an dem Gehäuse (13) oder innerhalb des Kolbens (14), ein Positioniermittel (20), das in Verbindung mit dem Kolben (14) angeordnet ist, was es der ersten Dichtung (18) und der zweiten Dichtung (19) ermöglicht, in Abdichtpositionen angeordnet zu werden, so dass diese radial gegen den Vorsprung (22) abdichten, wobei dadurch bei einer unbeabsichtigten Aktivierung der Handhabe (9), wenn der Abgabekopf (5) vom Getränkebehälter (2) getrennt ist, kein CO₂ in die Umgebung entweichen wird.

2. Abgabekopf (5) gemäß Anspruch 1, bei dem das Positioniermittel (20) als ein nachgiebiges Element ausgebildet ist, wie zum Beispiel eine Feder, oder aus einem elastischen Material hergestellt ist.
3. Abgabekopf (5) gemäß Anspruch 2, bei dem das Positioniermittel (20) eine Federkraft aufweist.
4. Abgabekopf (5) gemäß Anspruch 1, bei dem das Positioniermittel (20) oberhalb der ersten Dichtung (18) angeordnet ist.

5. Abgabekopf (5) gemäß Anspruch 1, bei dem der Raum (16) als ein Ringraum ausgebildet ist, der sich entlang des Kolbens (14) erstreckt.
6. Abgabekopf (5) gemäß Anspruch 1, bei dem der Raum (16) zwischen einer Außenseite des Kolbens (14) und dem Gehäuse (13) angeordnet ist oder innerhalb des Kolbens (14) angeordnet ist.
7. Abgabekopf (5) gemäß Anspruch 1, bei dem die Dichtungen (18, 19) als O-Ringe ausgebildet sind.
8. Abgabekopf (5) gemäß Anspruch 1, bei dem der Kolben (14) eine axiale Bohrung aufweist, die ausgelegt ist, um ein Getränk durch den Abgabekopf während der Abgabe zu leiten.
9. Abgabesystem (1) zur Abgabe von Getränken, wobei das System einen Getränkebehälter (2) mit einem Stechrohr (3) umfasst, das in einer Öffnung des Getränkebehälters (2) angeordnet ist, das ausgelegt ist, um als Ventil zu fungieren, wobei das Stechrohr (3) aufweist eine innere Feder (25) mit einer Federkraft, die es der Öffnung des Getränkebehälters ermöglicht, geschlossen gehalten zu werden, eine Gaszufuhr (4), ein Abgabehahn (6), und einen Abgabekopf (5) gemäß einem der Ansprüche 1 bis 8.
10. Abgabesystem (1) gemäß Anspruch 9, bei dem die Federkraft des Positioniermittels (20) geringer als die Federkraft der inneren Feder (25) ausgebildet ist.

Revendications

1. Tête de distribution (5) adaptée pour être couplée à un récipient de boisson (2) au-dessus d'une aiguille (3) agencée dans le récipient de boisson (2) dans un système de distribution (1), la tête de distribution (5) comprenant :
 - un boîtier (13), une poignée (9),
 - un piston (14) agencé de manière axialement déplaçable à l'intérieur dudit boîtier (13), le piston (14) étant raccordé à ladite poignée (9) de sorte que, suite à l'activation de la poignée (9), le piston (14) est déplacé axialement vers l'aiguille (3), moyennant quoi une partie supérieure de l'aiguille est forcée vers le bas, l'amenant à ouvrir le récipient de boisson (2), une entrée de gaz (10) agencée dans le boîtier (13), qui est adaptée pour être en communication de fluide avec un espace (16) s'étendant le long du piston (14), l'espace (16) étant scellé au moins au niveau d'une extrémité supérieure avec un premier joint d'étanchéité (18) et au niveau d'une extrémité inférieure avec un second joint d'étanchéité (19), **caractérisée en ce que** ladite

tête de distribution (5) comprend en outre :

- une saillie (22) sur le boîtier (13) ou à l'intérieur du piston (14),
 - des moyens de positionnement (20) agencés en raccordement avec le piston (14), permettant au premier joint d'étanchéité (18) et au second joint d'étanchéité (19) d'être placés dans des positions d'étanchéité de sorte qu'ils réalisent l'étanchéité contre ladite saillie (22), moyennant quoi aucun CO₂ ne fuit dans les environs pendant l'activation involontaire de la poignée (9) lorsque la tête de distribution (5) est déconnectée du récipient de boisson (2).
2. Tête de distribution (5) selon la revendication 1, dans laquelle les moyens de positionnement (20) sont un élément résilient, tel qu'un ressort, ou sont réalisés avec un matériau élastique.
 3. Tête de distribution (5) selon la revendication 2, dans laquelle les moyens de positionnement (20) ont une force de rappel.
 4. Tête de distribution (5) selon la revendication 1, dans laquelle les moyens de positionnement (20) sont agencés au-dessus du premier joint d'étanchéité (18).
 5. Tête de distribution (5) selon la revendication 1, dans laquelle l'espace (16) est un espace annulaire s'étendant le long du piston (14).
 6. Tête de distribution (5) selon la revendication 1, dans laquelle l'espace (16) est agencé entre un extérieur du piston (14) et le boîtier (13) ou est agencé à l'intérieur du piston (14).
 7. Tête de distribution (5) selon la revendication 1, dans laquelle les joints d'étanchéité (18, 19) sont des joints toriques.
 8. Tête de distribution (5) selon la revendication 1, dans laquelle le piston (14) a un alésage axial adapté pour une boisson destinée à sortir par la tête de distribution pendant la distribution.
 9. Système de distribution (1) pour distribuer une boisson, le système comprenant un récipient de boisson (2) comprenant une aiguille (3) agencée dans une ouverture du récipient de boisson (2), adaptée pour fonctionner comme une valve, l'aiguille (3) ayant un ressort interne (25) ayant une force de rappel permettant à l'ouverture du récipient de boisson d'être maintenue fermée, une alimentation en gaz (4), un robinet de distribution (6) et une tête de distribution (5) selon l'une quelconque des revendications 1 à 8.

10. Système de distribution (1) selon la revendication 9, dans lequel la force de rappel des moyens de positionnement (20) est inférieure à la force de rappel du ressort interne (25).

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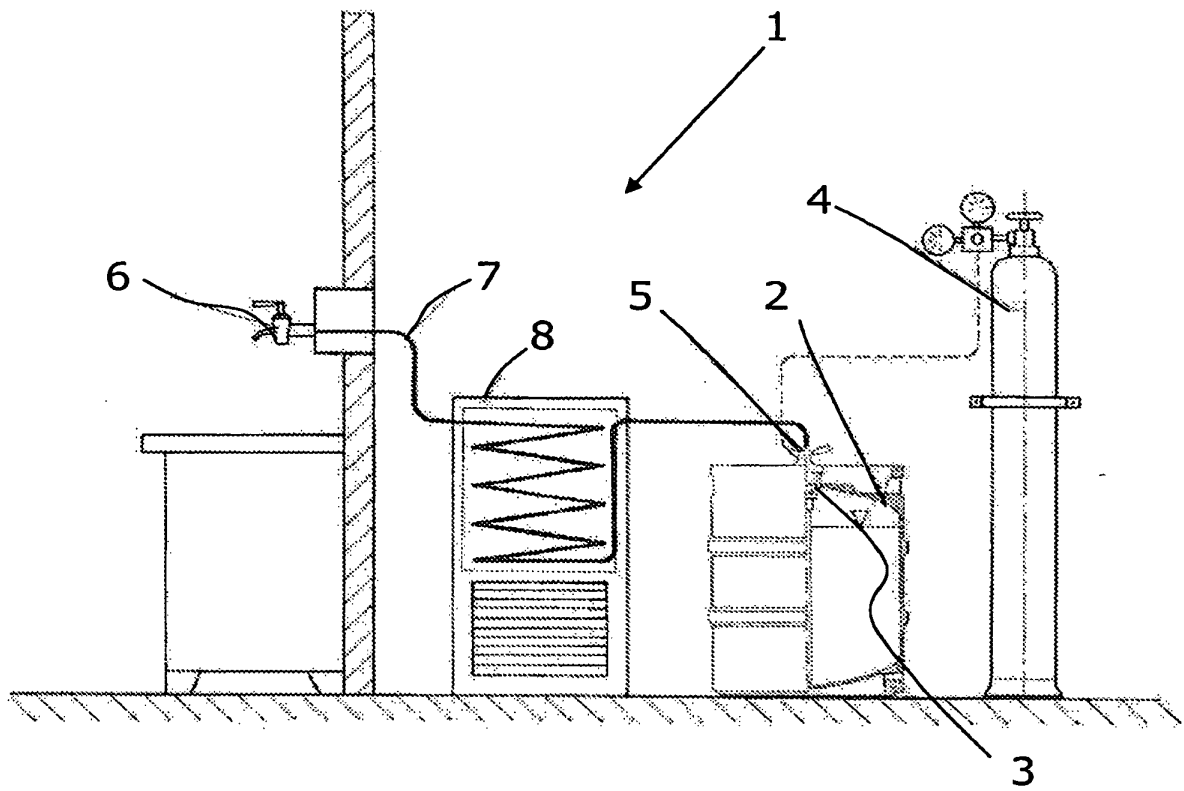


Fig. 1

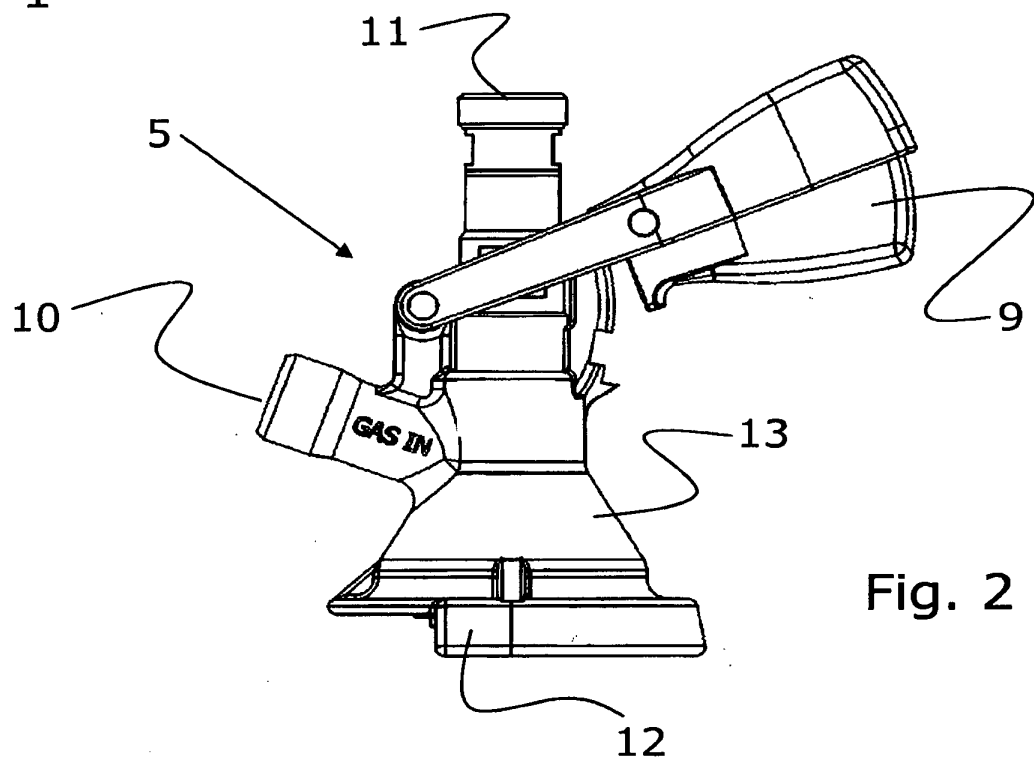
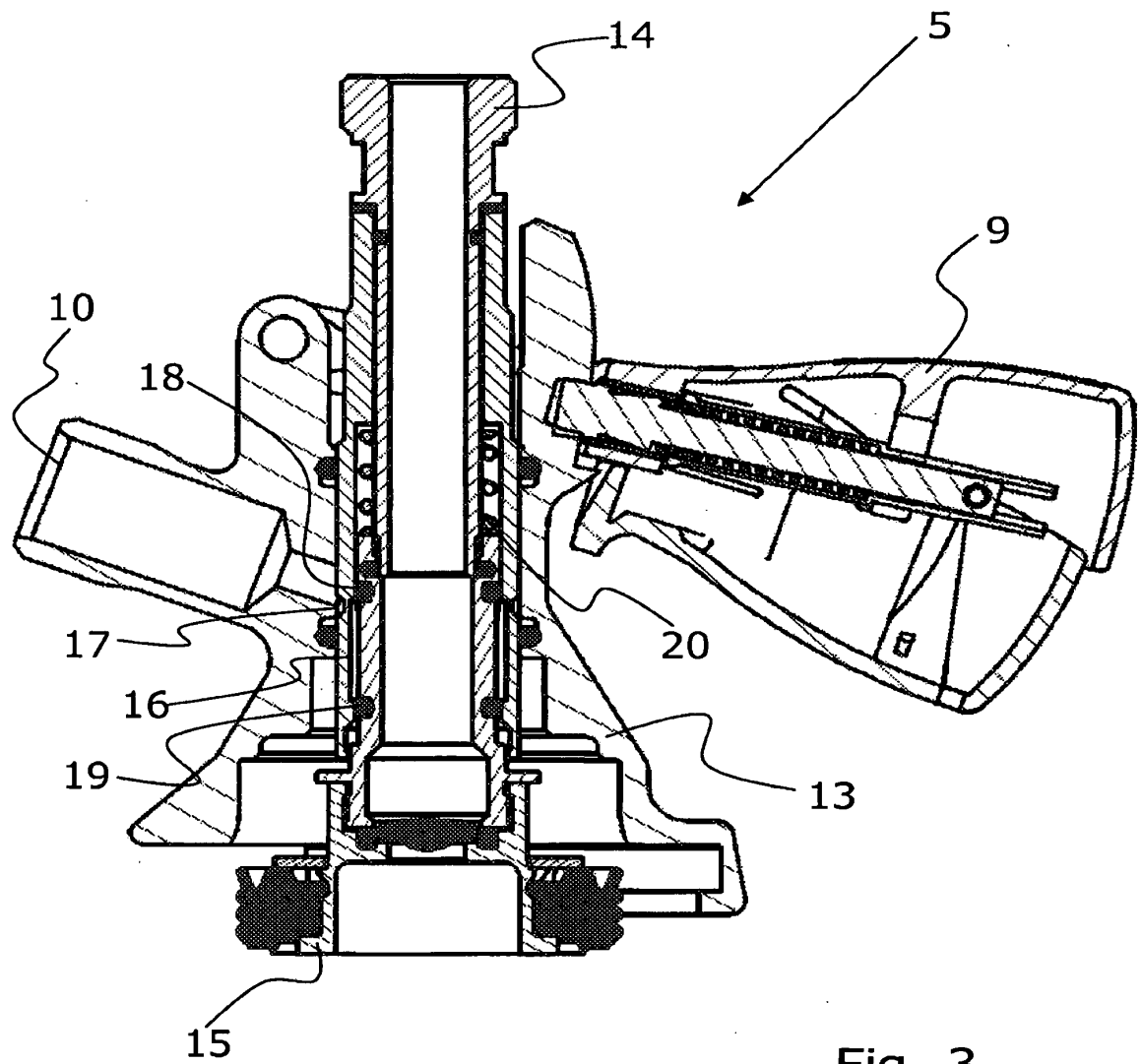


Fig. 2



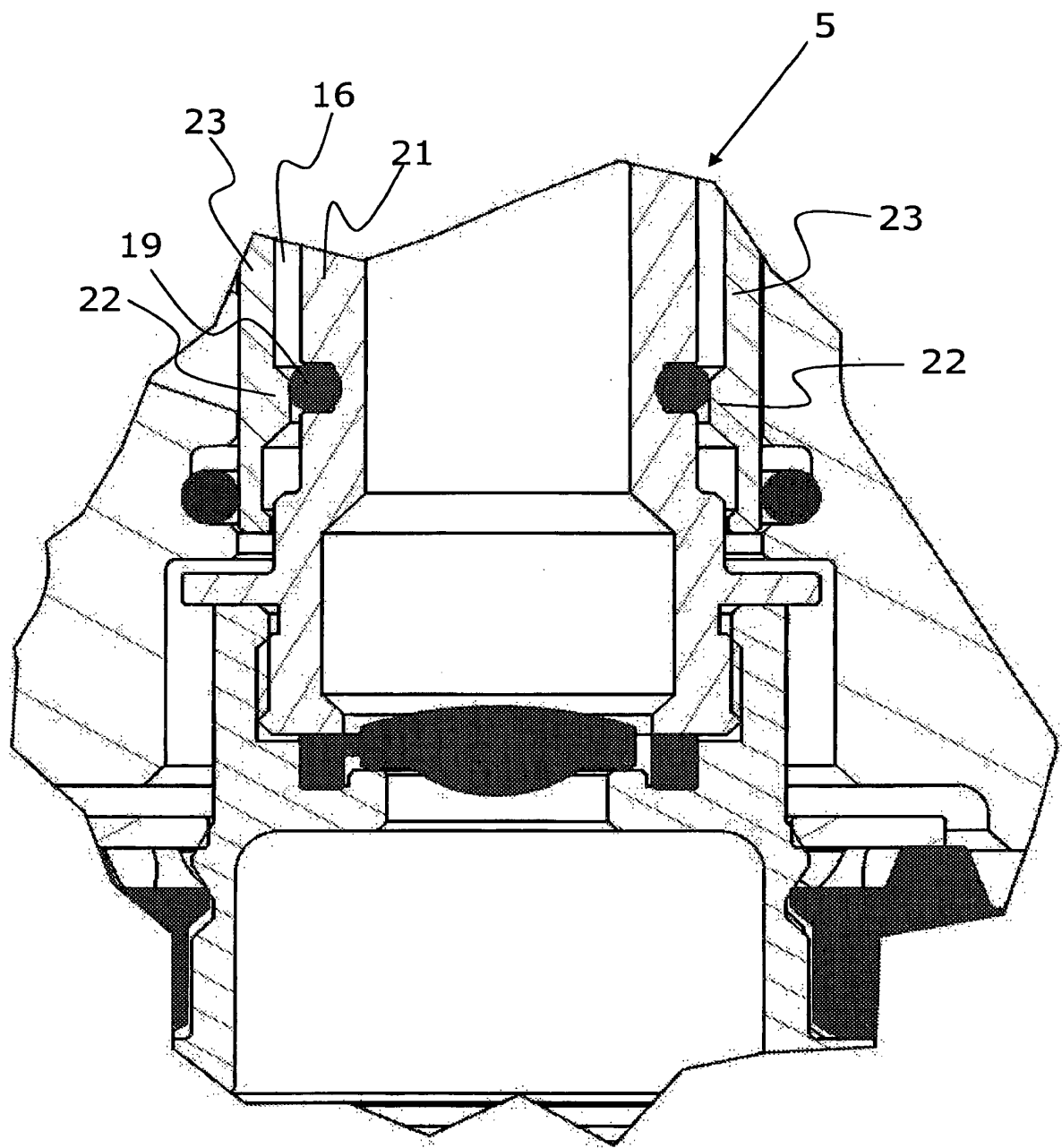


Fig. 4

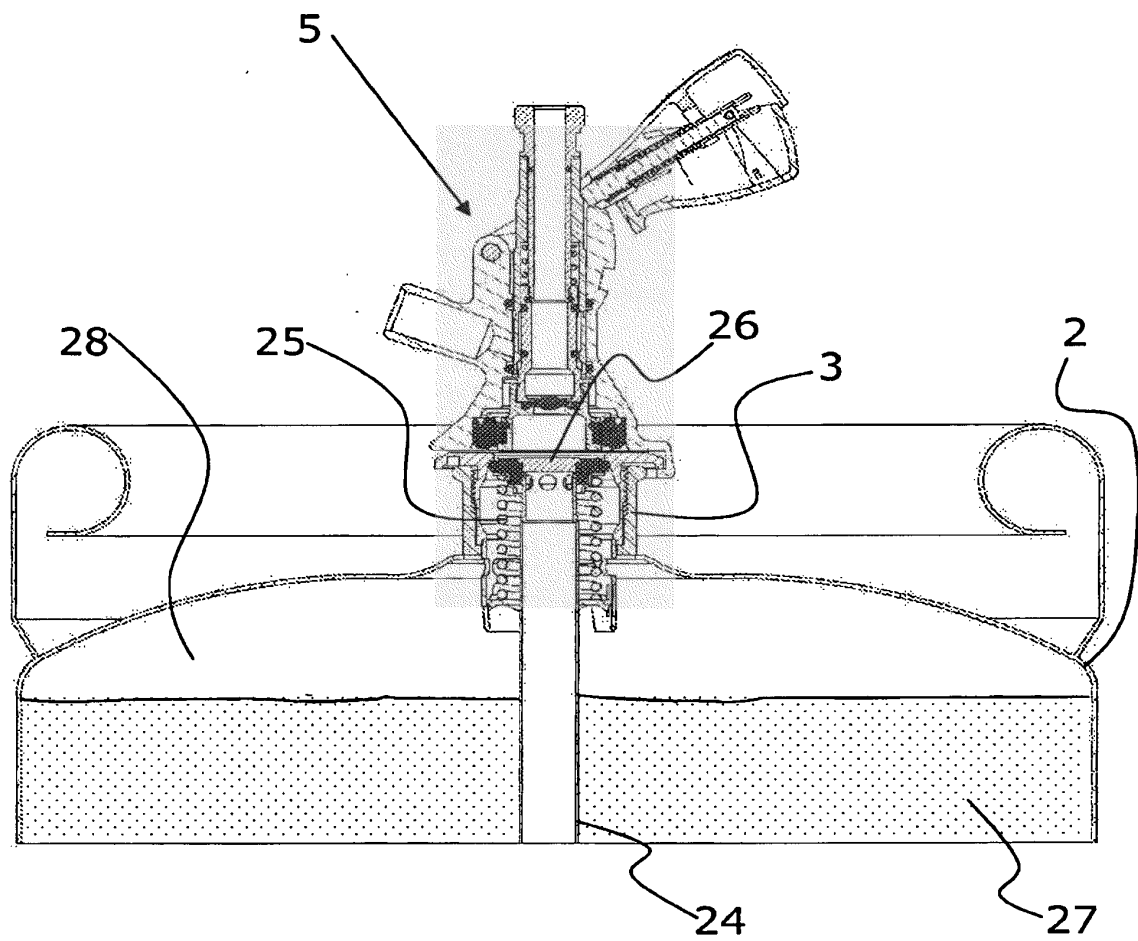
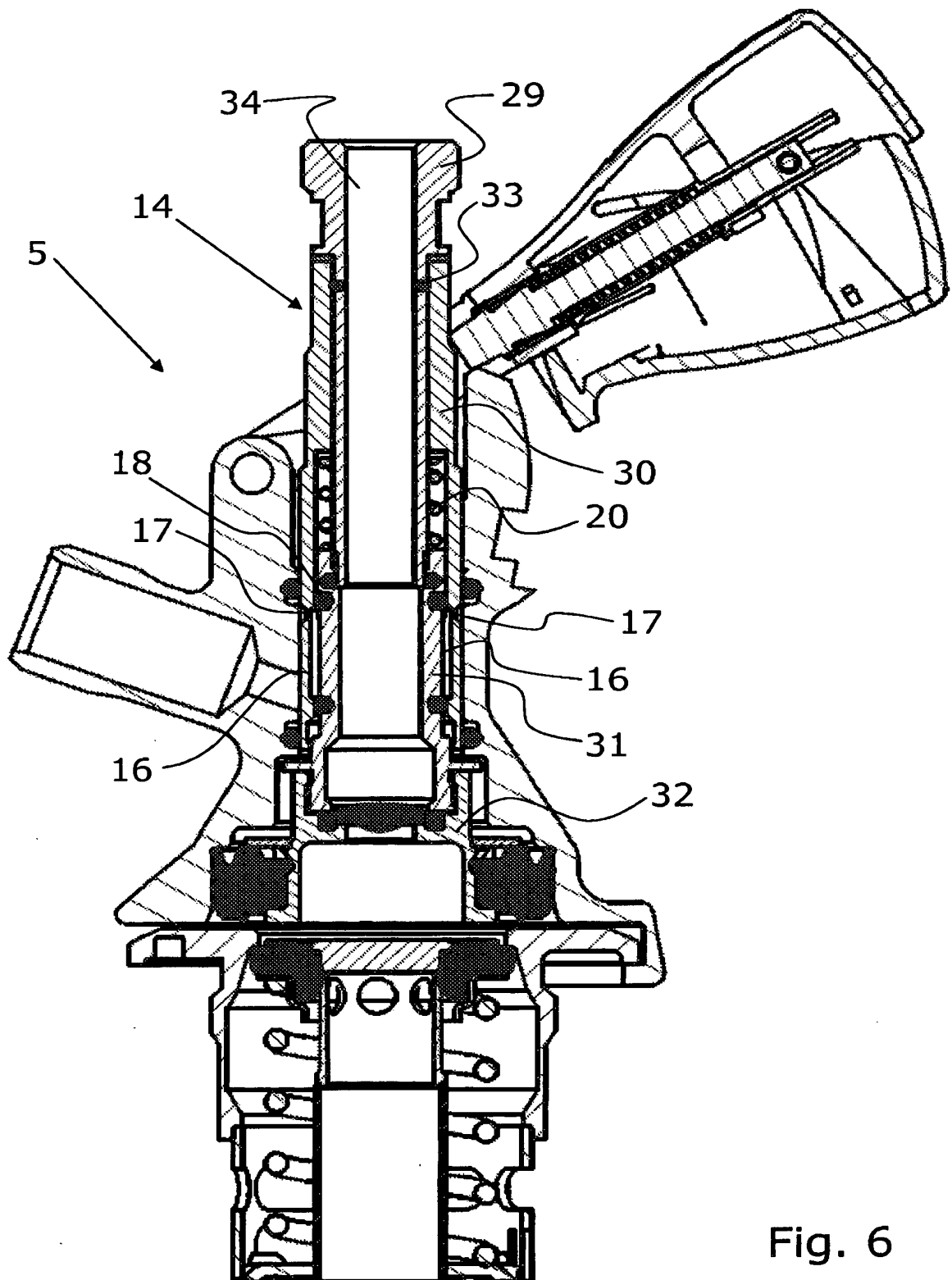


Fig. 5



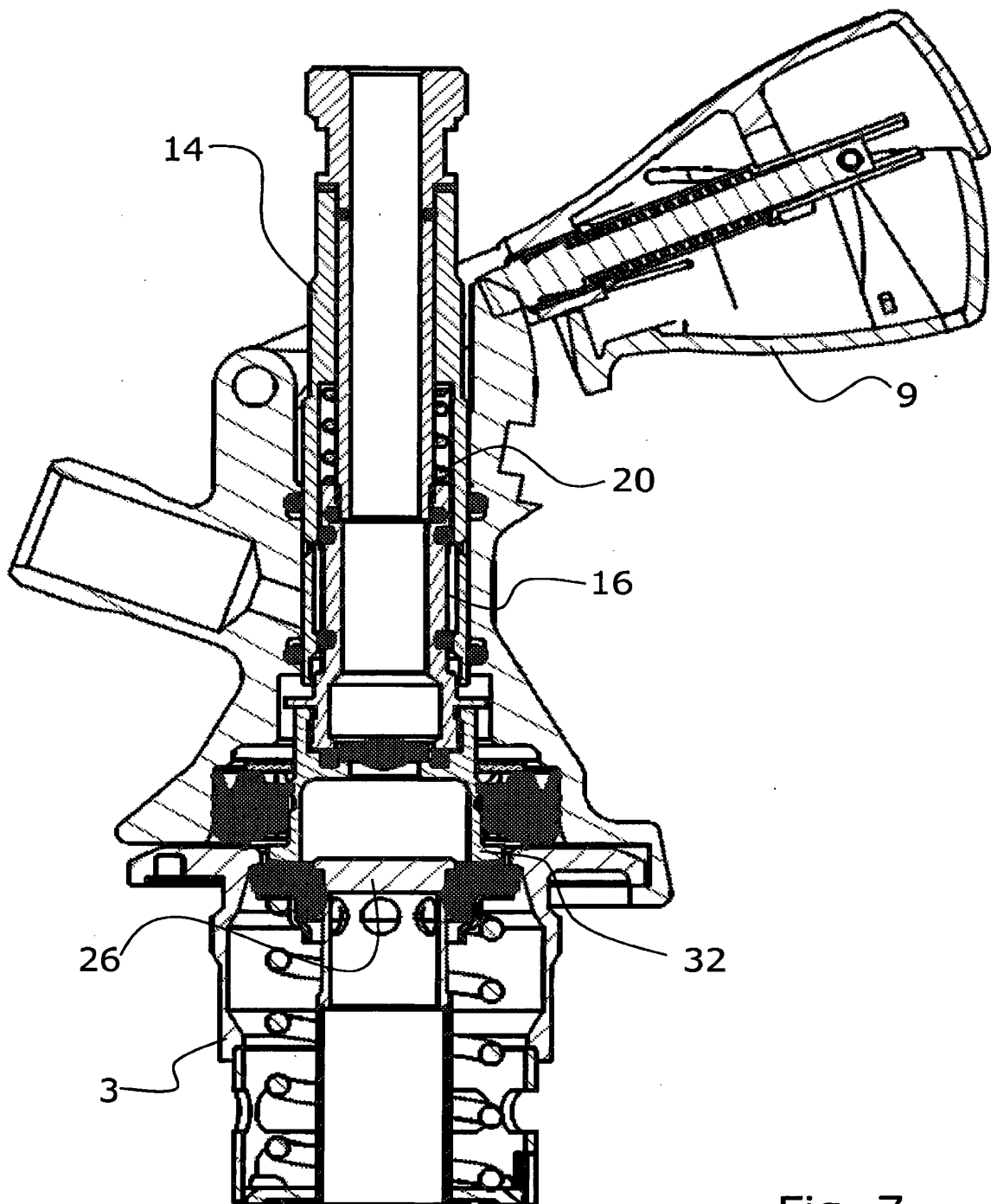


Fig. 7

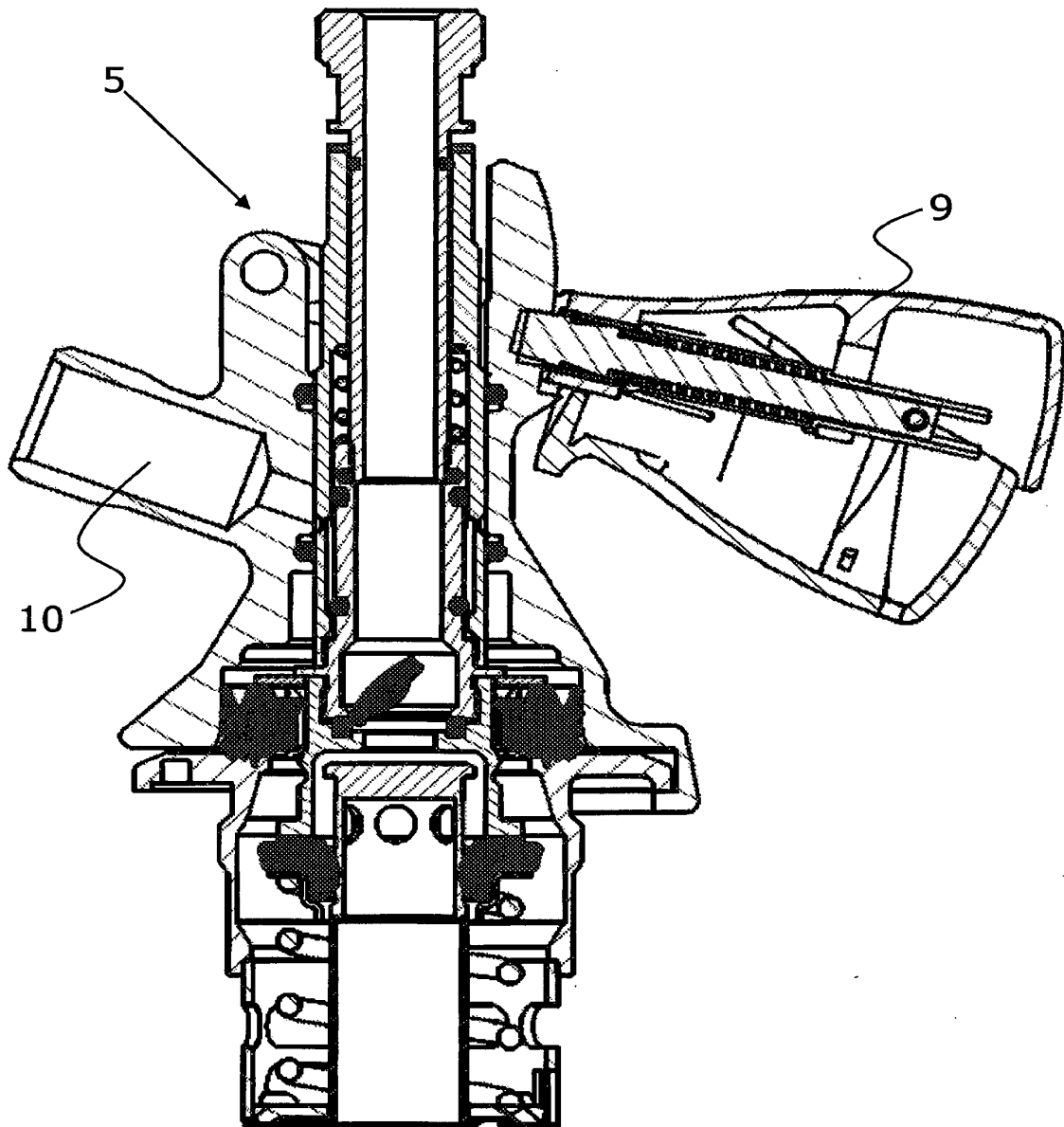


Fig. 8

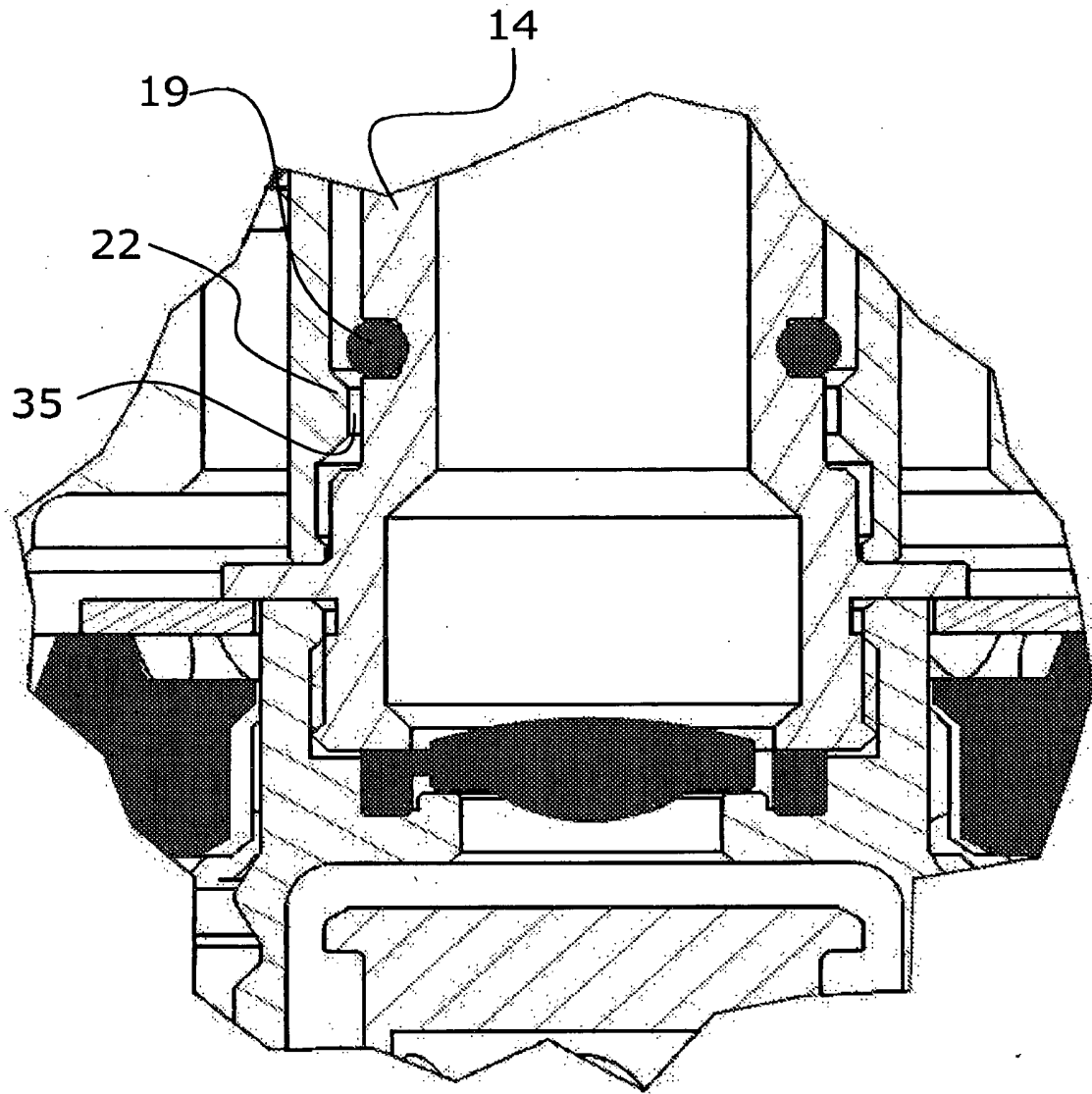
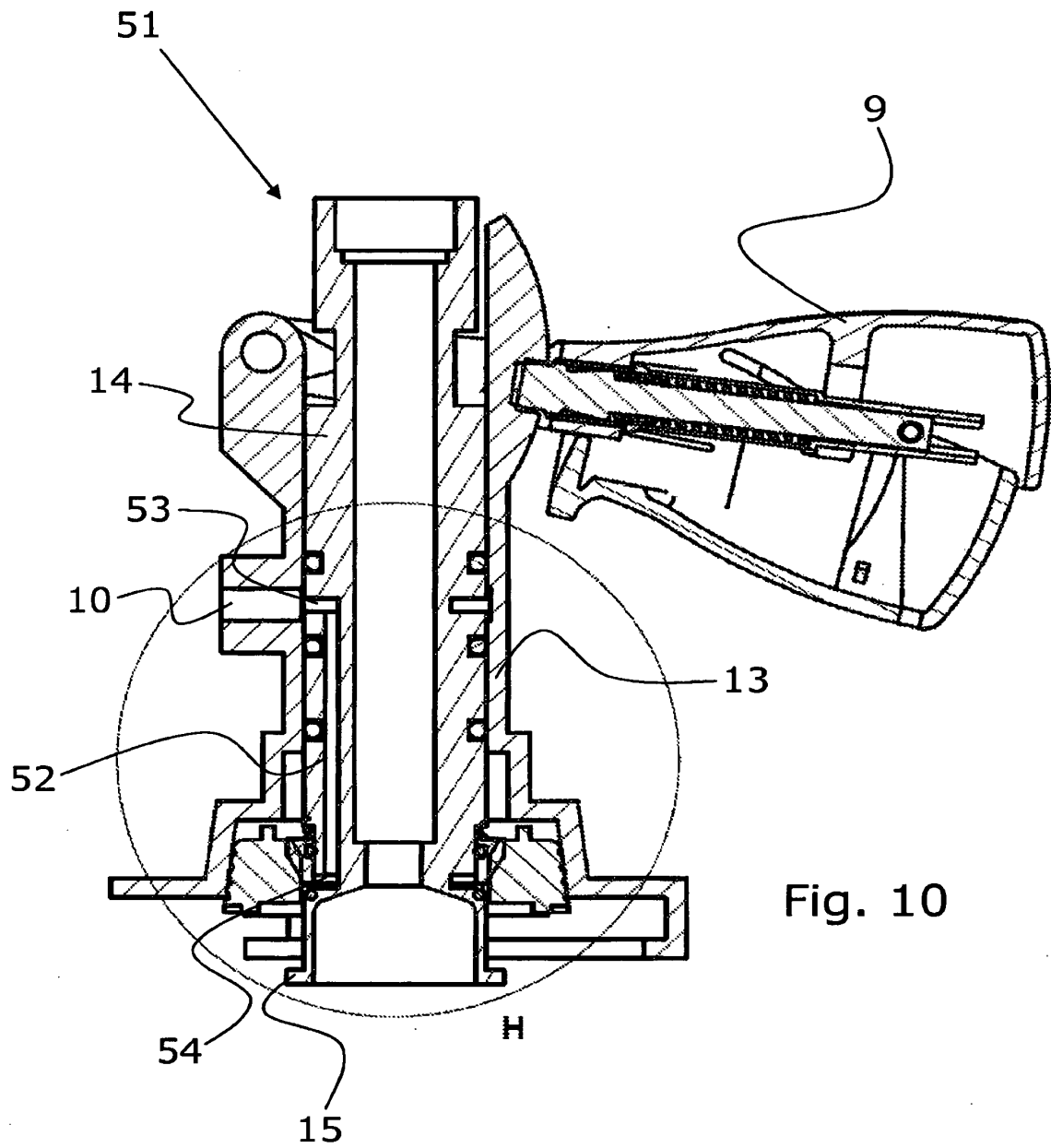


Fig. 9



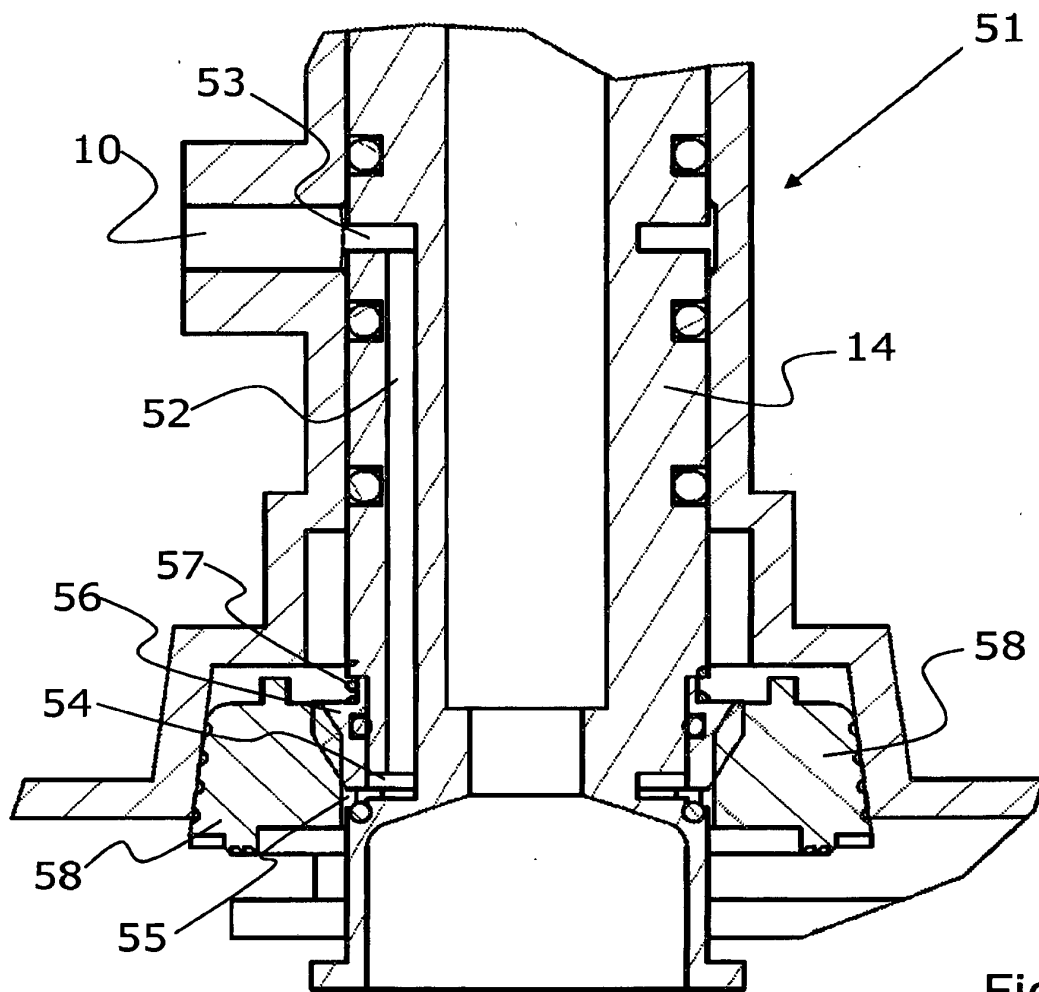


Fig. 11

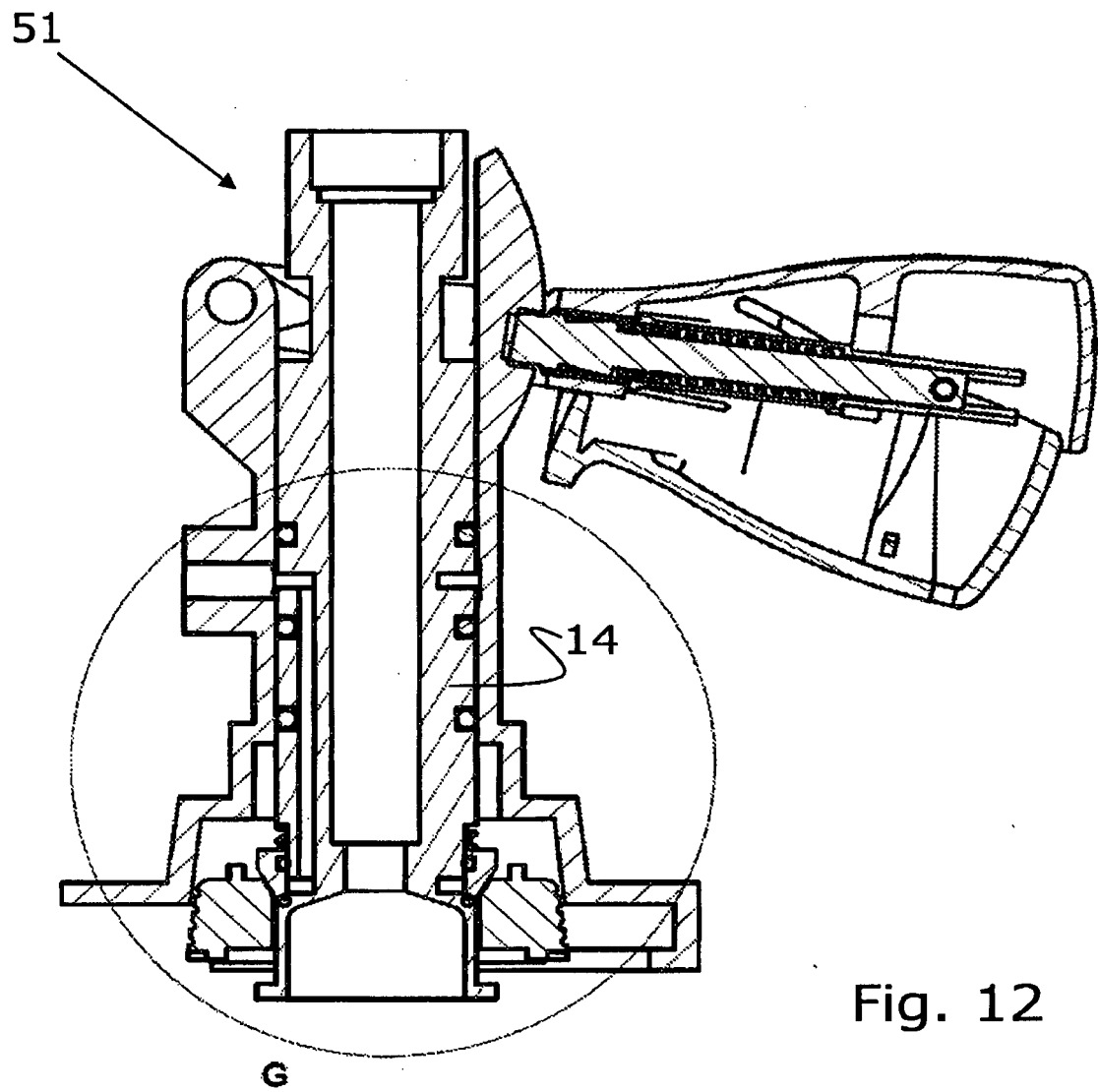


Fig. 12

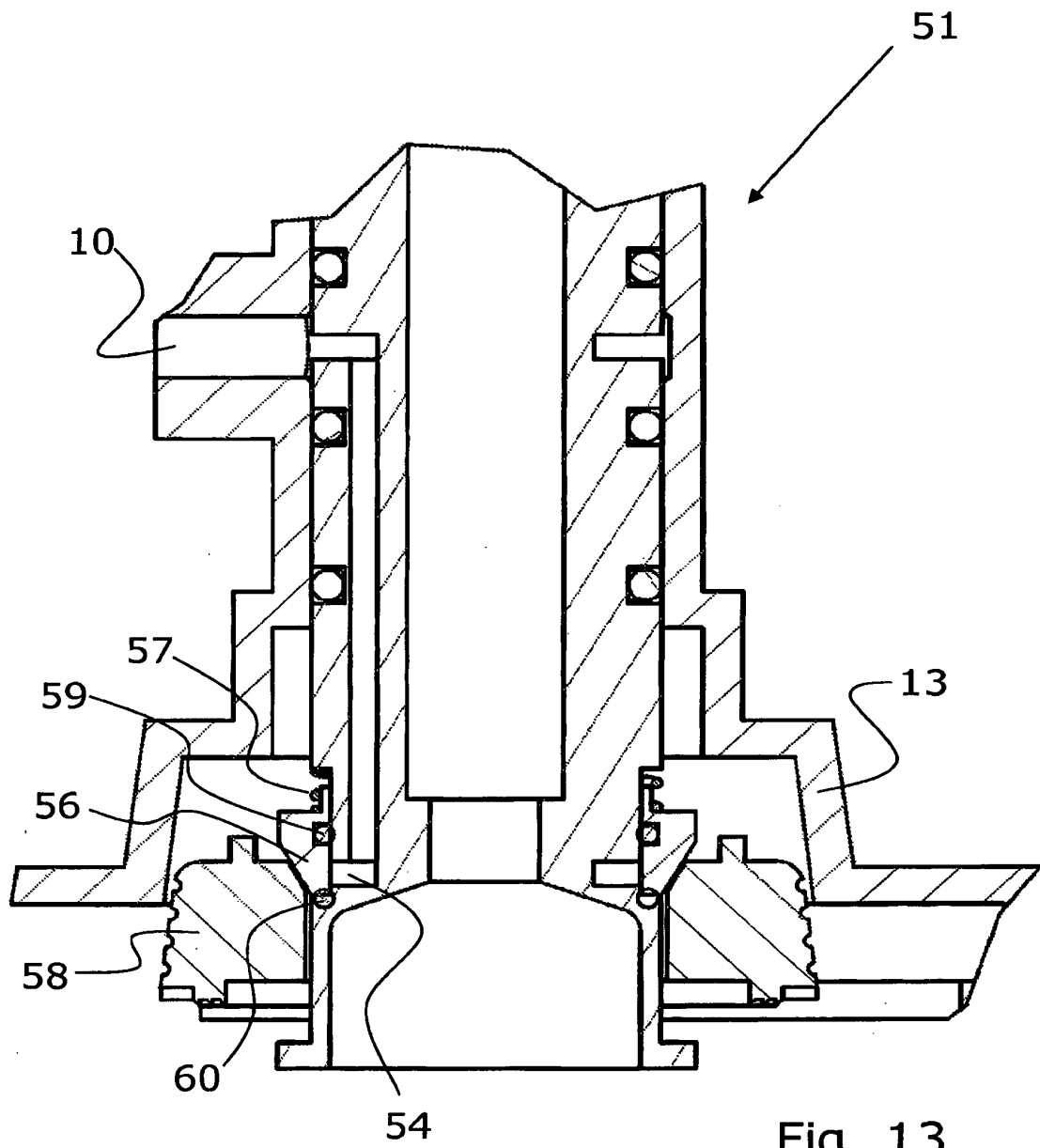


Fig. 13

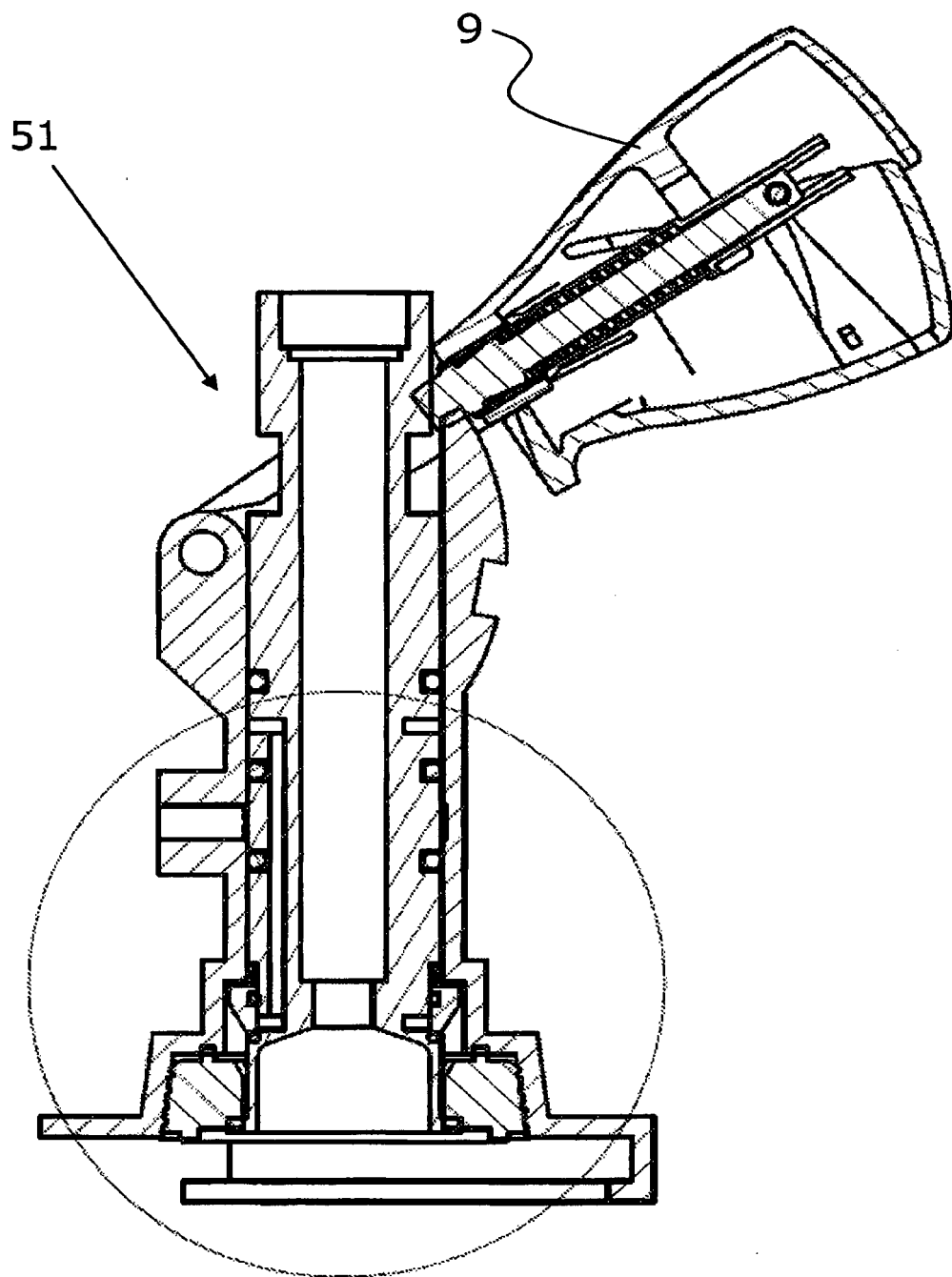


Fig. 14

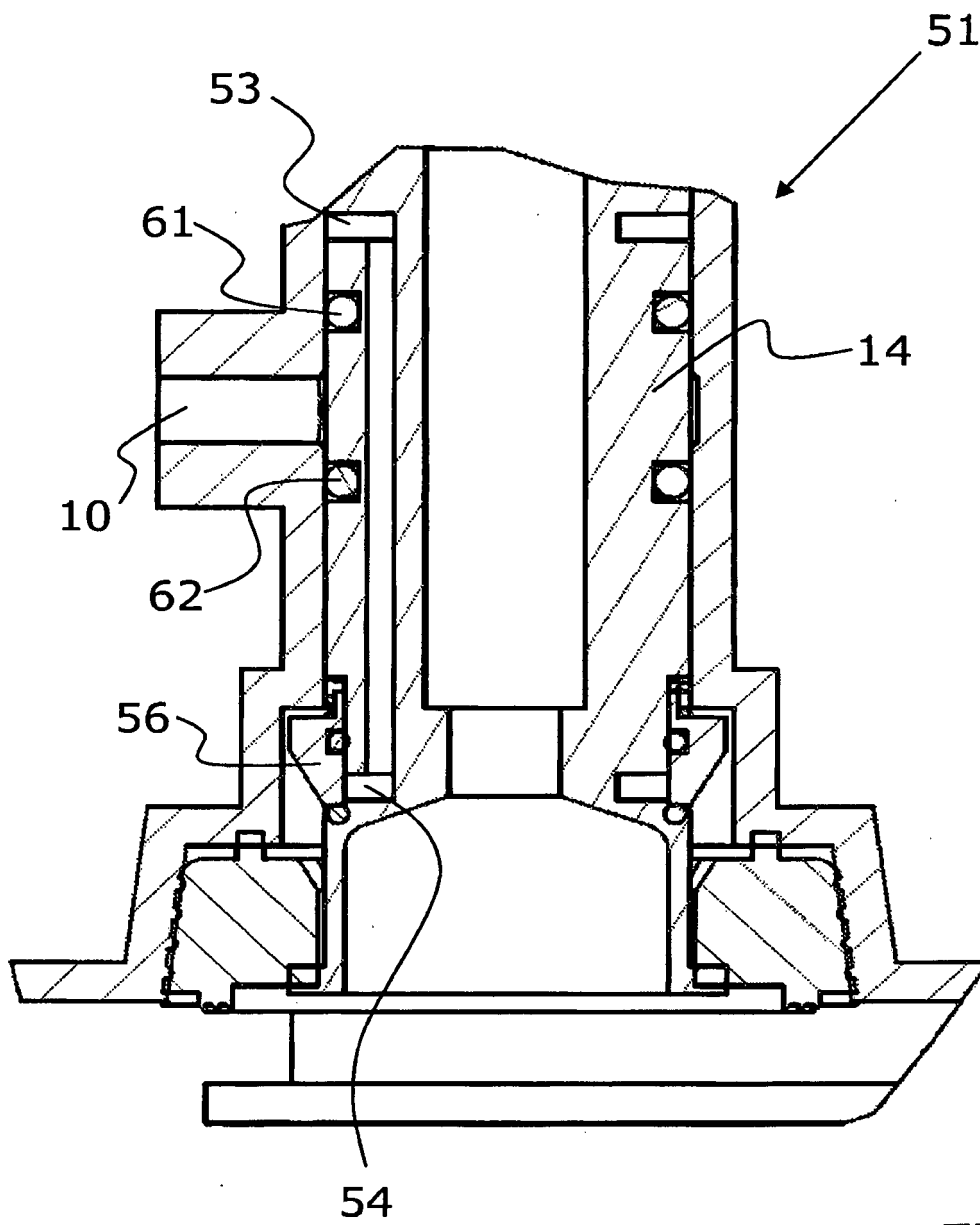
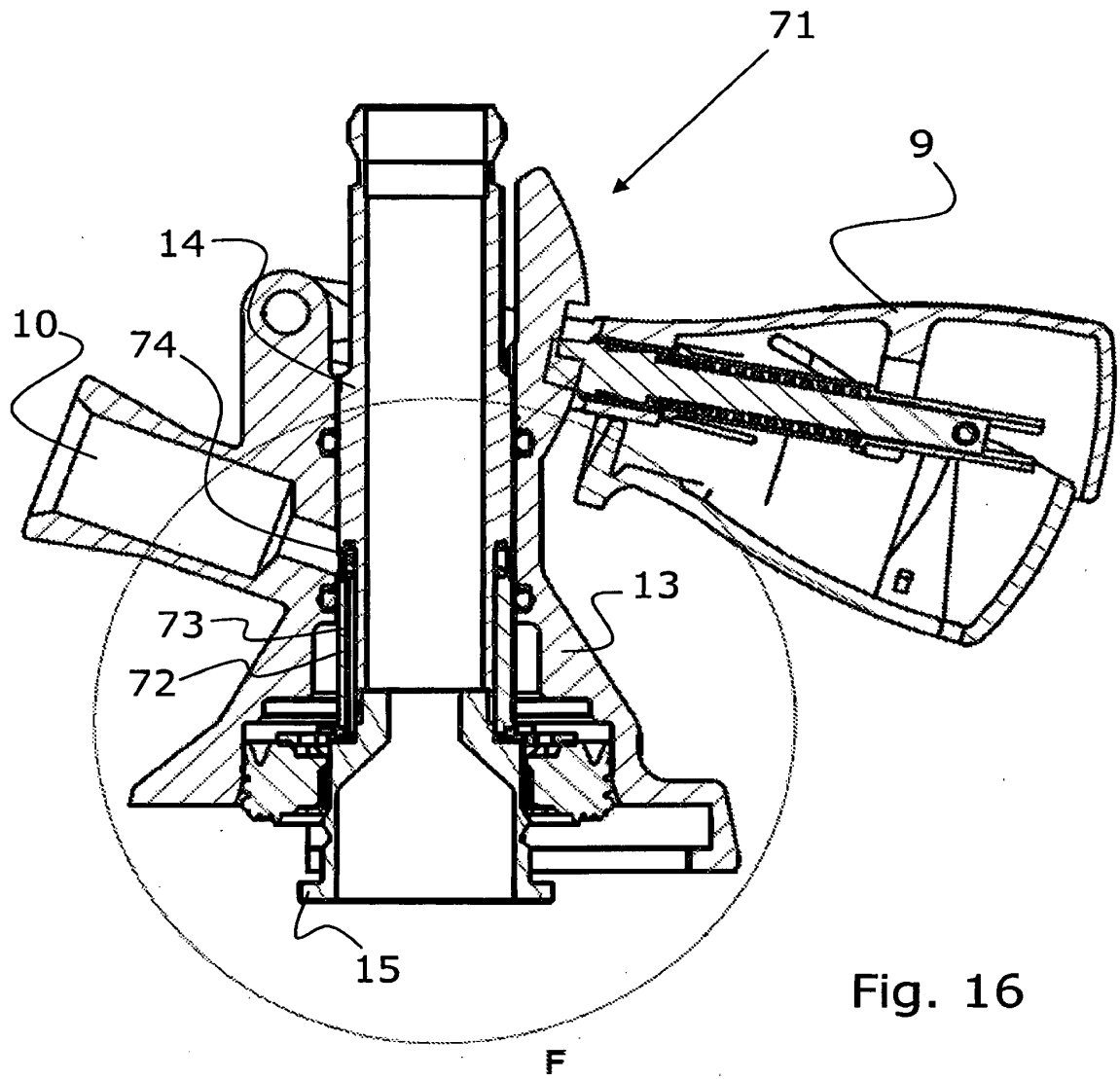


Fig. 15



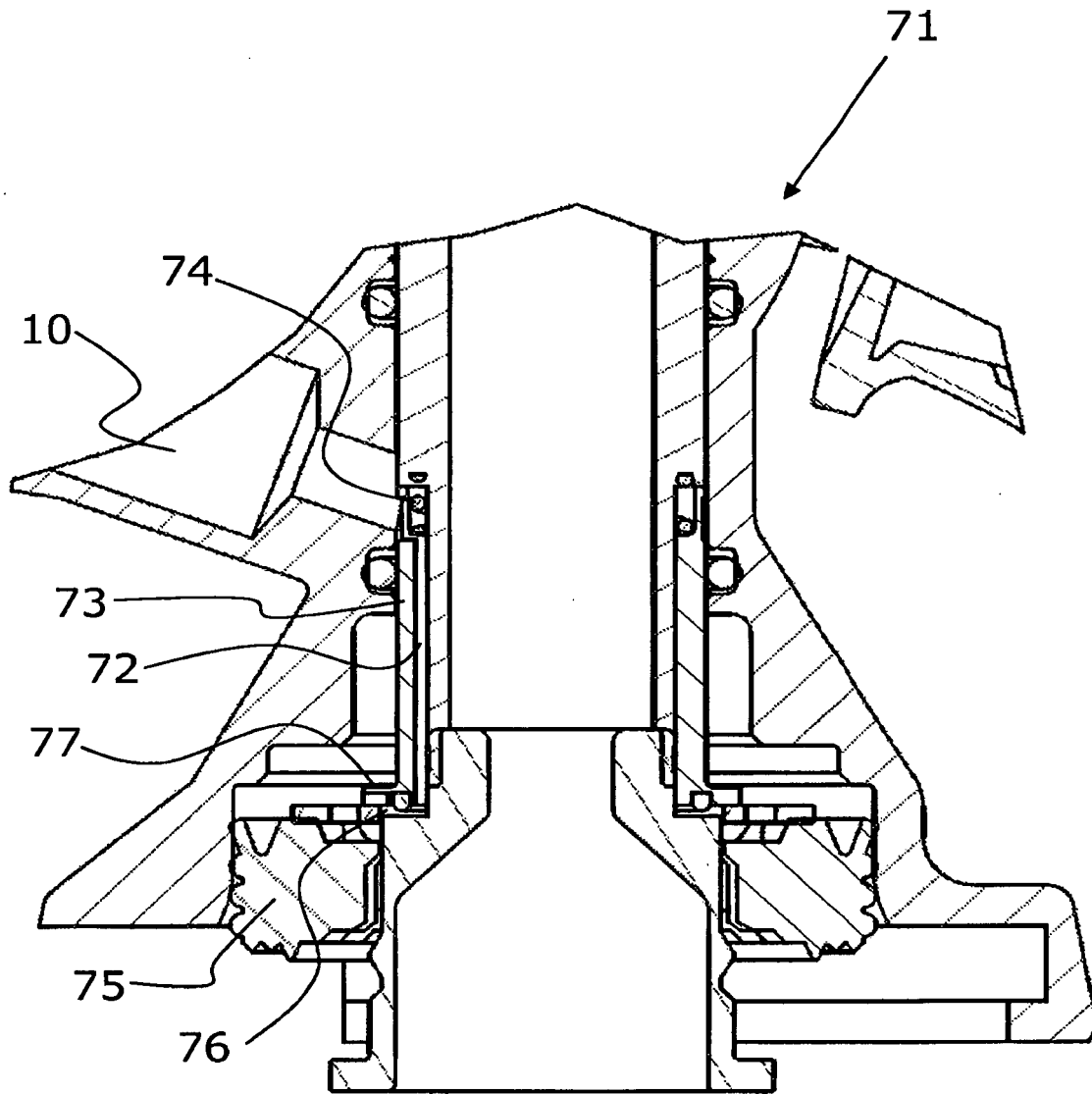


Fig. 17

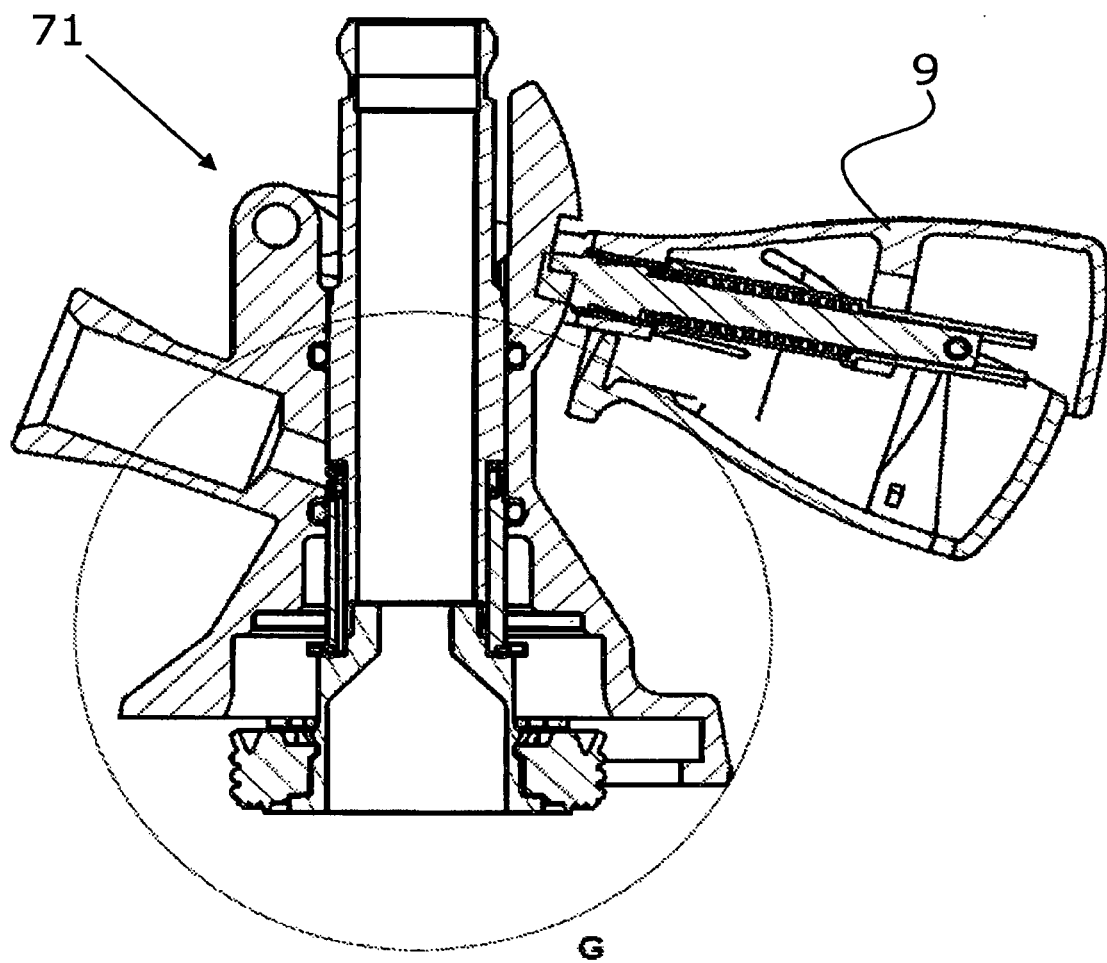
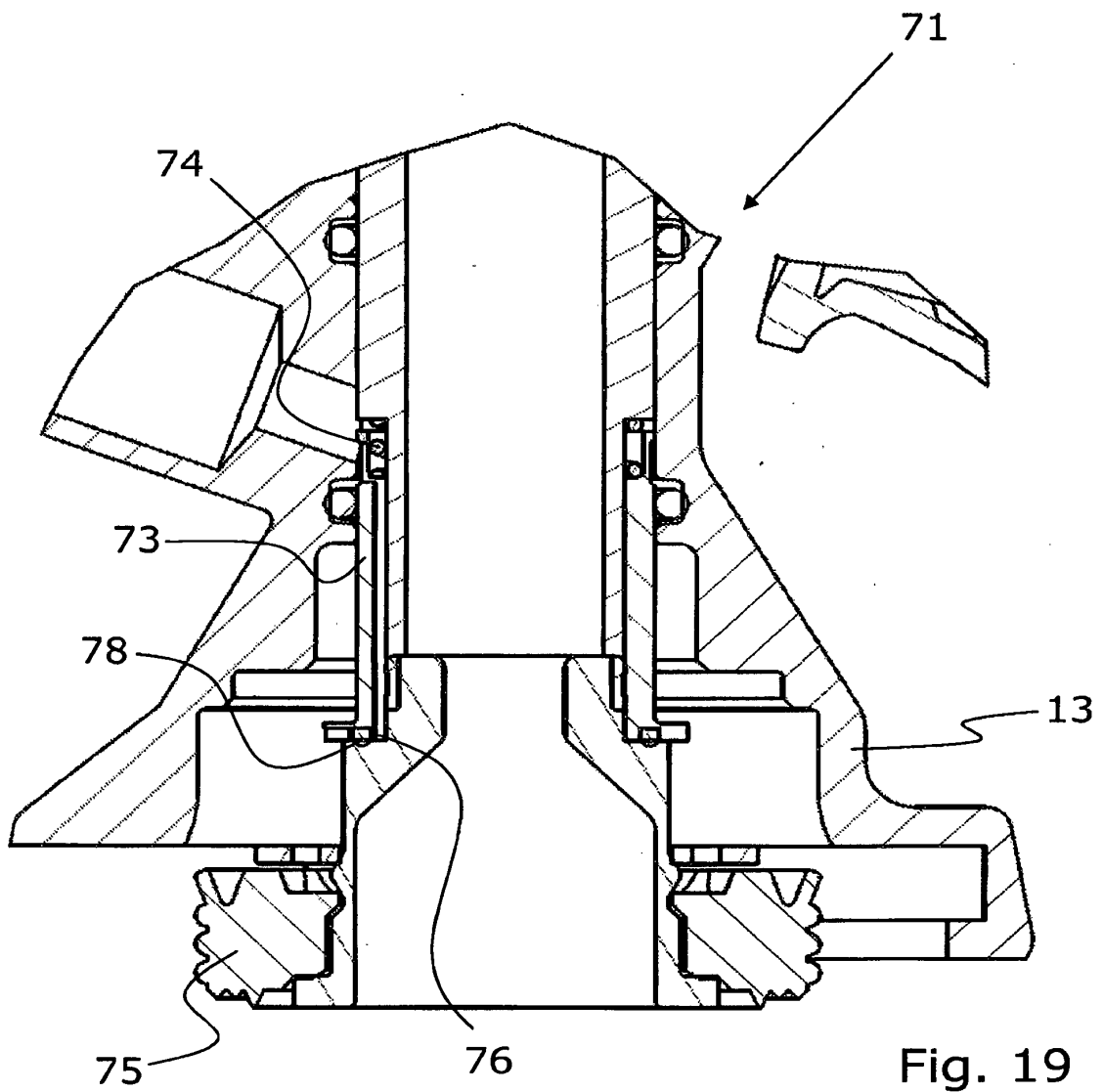


Fig. 18



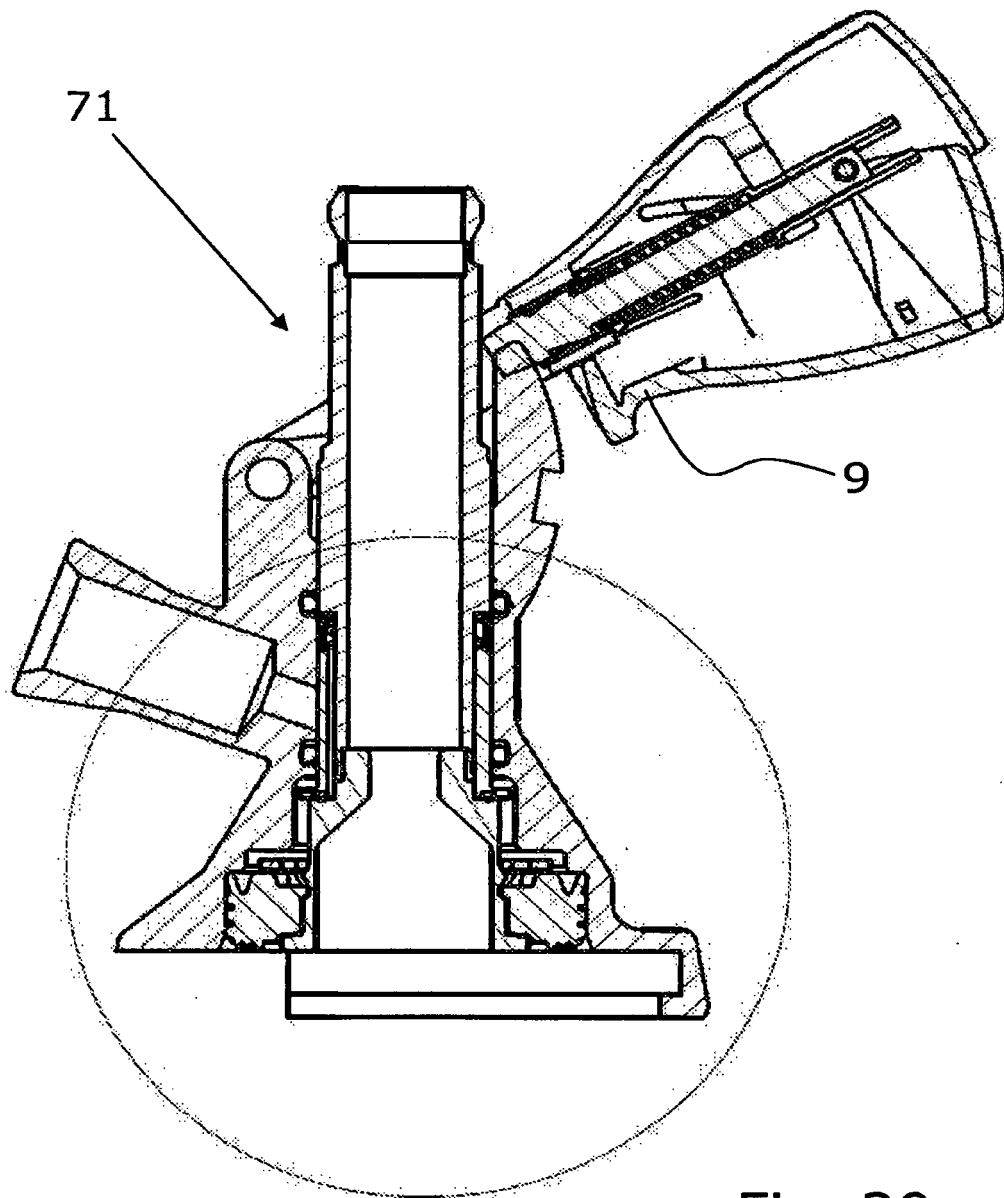


Fig. 20

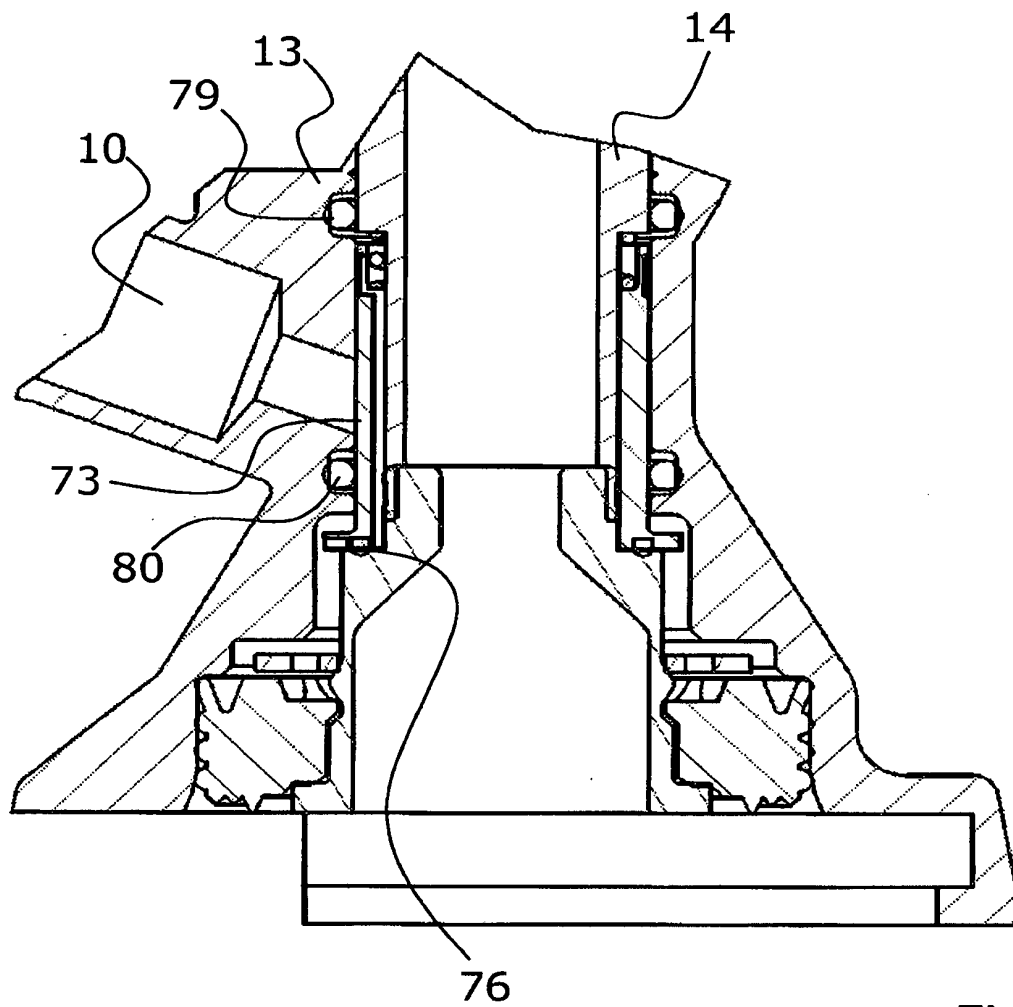


Fig. 21

REFERENCES CITED IN THE DESCRIPTION

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