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(74) Fuldmægtig i Danmark: **Holme Patent A/S, Valbygårdsvej 33, 2500 Valby, Danmark**

(54) Benævnelse: **Patron til blandingsbatteri med enkelthåndtagsgreb ud i et stykke**

(56) Fremdragne publikationer:
EP-A1- 0 590 427
EP-A1- 2 722 569
EP-A2- 0 551 059
EP-A2- 1 028 279
US-A- 3 782 417

DESCRIPTION

BACKGROUND OF INVENTION

[0001] The present invention relates to a single lever monobloc mixer tap cartridge according to the preamble of claim 1.

[0002] As is known, mixer cartridges, with ceramic discs or otherwise, have been used in the taps and fittings sector for a long time for single lever mixer taps.

[0003] These mixer cartridges are designed to mix hot and cold water, gradually passing from a lower temperature to higher temperature and vice versa, whether fully open or in partially open positions.

[0004] Traditional cartridges have the outlet for the mixed water located on the bottom or on the sides, with a dynamic sealing system provided by ceramic discs and one or more static seals.

[0005] However, if the traditional cartridges are small in size, there are problems with too low or insufficient flowrates.

[0006] To obtain better performance, cartridges have been conceived with sides water outlets instead of bottom, but this idea necessitates water traversing the entire internal mechanism.

[0007] The fact that the mechanism is always wet makes the system subject to having the internal lubricant flushed out and vulnerable lime scale deposits, rust and other substances normally present in the water, making operation stiffer with time until the tap almost becomes stuck.

[0008] Furthermore, to prevent the water inside the cartridge leaking out from the top part of the tap, a gasket is provided that seals against a spherical part of the control rod: it is obvious that such gasket is subject to wear as it constitutes a dynamic seal with respect to the continually moving rod.

[0009] Examples of single lever monobloc mixer tap cartridge are disclosed in document EP2722569, EP0551059, EP1028279, EP0590427, and US3782417.

[0010] The document EP2722569 is considered as representing the closest prior art; the features mentioned in the preamble of claim 1 are disclosed in said document.

SUMMARY OF INVENTION

[0011] The aim of the present invention is to provide a new mixer cartridge that overcomes the aforementioned drawbacks of the prior art.

[0012] Within the scope of the above mentioned aim, a main object of the invention is to provide a mixer cartridge without the circulation of water outside the ceramic parts and inside the cartridge, thereby avoiding having the mechanism perpetually immersed in water.

[0013] Another object of the invention is to provide a mixer cartridge that does not have a dynamic seal on the control rod.

[0014] A further object of the invention is to provide a mixer cartridge that is cheaper than mixer cartridges with internal water circulation or with three ceramic discs.

[0015] Another object of the invention is to provide a mixer cartridge having the same delivery characteristics and with respect to actual traditional cartridges, optimal pressure resistance, smoother operation and longer life, even with normal ceramic discs, and therefore without the use of special and more expensive materials.

[0016] A further object of the invention is to provide a structure that can be manufactured using materials commonly available on the market and which is also competitive from an economic standpoint.

[0017] According to the present invention, the above mentioned aim and objects, as well as other objects which will become more apparent hereinafter, are achieved by a single lever monobloc mixer tap cartridge, as described in the claims.

BRIEF DESCRIPTION OF DRAWINGS

[0018] Further characteristics and advantages of the present invention will become more apparent from the following disclosure of a preferred, but not exclusive embodiment of the invention, being shown by way of an indicative but not limitative example in the accompanying drawings, where:

Figure 1 is a perspective view of a mixer cartridge according to the present invention, in the external water circulation mode;

Figure 2 is a bottom view of the cartridge in the previous figure;

Figure 3 is a perspective view of a mixer cartridge according to the present invention, in the direct bottom outflow mode;

Figure 4 is a bottom view of the cartridge in the previous figure;

Figure 5 is a section view of a mixer cartridge according to the present invention, in the

external water circulation mode;

Figure 6 is a section view of a mixer cartridge according to the present invention, in the direct bottom outflow mode; and

Figure 7 shows the fixed disc.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0019] According to the invention, and with reference to the numeric symbols in the above-mentioned figures, the single lever monobloc mixer tap cartridge, indicated as a whole by reference numeral 1, comprises a fixed disc 2 provided with an outlet port 19 and two openings, respectively for the hot and cold water coming from two inlet ports, indicated by reference numerals 3 and 4, formed in a base 5 in which the fixed disc 2 is mounted.

[0020] A sliding disc 6 controlled by a control rod 7 slides on the fixed disc 2 and has a mixing opening 8 designed to make the inlet ports 3 and 4 in communication with an outlet port 9 formed in the base 5 and aligned with an outlet hole 19 in the fixed disc, from which the mixed water comes out.

[0021] The sliding of the sliding disc 6 on the fixed disc 2 causes the partial opening or complete closure of one or both of the openings of the fixed disc 2, regulating the amount of hot and cold water that passes from the inlet ports 3 and 4 to the outlet port 9 of the mixed water.

[0022] According to the present invention, the fixed disc 2 and sliding disc 6 are inserted in a completely closed holder body 10, which only allows the mixed water to exit from the bottom of the cartridge, both in the water circulation mode (Figures 1, 2 and 5) and the direct mode (Figures 3, 4 and 6).

[0023] The holder body 10 is mounted on the base 5 with the interposition of a gasket 15.

[0024] The holder body 10 is completely closed and the dynamic seal is provided exclusively on the discs 2 and 6.

[0025] The discs 2 and 6 are advantageously made in the form of ceramic discs.

[0026] The control rod 7 is hinged to a support block 11, inserted in the holder body 10, and has a control tip 12 engaged in the seat of a movable disc carrier 13, which is movable in the holder body 10.

[0027] A gasket 14 is placed between the sliding disc 6 and the movable disc carrier 13.

[0028] Since the sliding disc 6 is fixed in the movable disc carrier 13, the gasket 14 performs a simple static seal function, therefore it is not subject to wear.

[0029] From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

[0030] A new mixer cartridge structure has in fact been produced that, thanks to comprising a completely closed holder body without lateral openings typical of traditional mixer cartridges, only allows water to leave from the bottom, in the direct and water circulation modes, and the dynamic sealing is provided exclusively on the ceramic discs.

[0031] Unlike traditional cartridges that, having the side mixed water outlet need a system of dynamic seals in addition to the ceramic ones, comprising at least one gasket housed on the diameter of the control rod, subject to wear and consequent water leakage from the cartridge, the present cartridge does not need any dynamic seal on the rod, but a simple seal between the sliding disc and the disc carrier, acting as a static seal, and therefore not subject to wear.

[0032] Furthermore, in the present cartridge, the ceramic parts and all the mechanism are not always immersed in water and therefore there are considerably less subject to the effects of lime scale deposits, rust and other substances normally present in the water.

[0033] The structure of the mixer cartridge according to the present invention offers several significant advantages with respect to traditionally constructed cartridges.

[0034] This mixer cartridge allows the use of only two ceramic discs for the seal, thereby offering a less expensive product with respect to competitors using three ceramic discs to overcome the above-described problems.

[0035] Despite the small dimensions and theoretically less favourable water outlet, this cartridge ensures a delivery similar to traditional cartridges, optimal resistance to high pressures, smoothness of operation and long life, even using normal ceramic discs, without necessarily using special and more expensive materials.

[0036] This cartridge also offers full interchangeability with products currently on the market since it can be produced in several versions.

[0037] In practising the invention, the used materials, as well as the contingent size may be any depending on requirements.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP2722569A **[0009] [0010]**
- EP0551059A **[0009]**
- EP1028279A **[0009]**
- EP0590427A **[0009]**
- US3782417A **[0009]**

1. Blandingspatron til batteri med enkelthåndtagsgreb ud i et stykke omfattende: en fast skive (2) forsynet med en udløbsport (19) og to yderligere porte til henholdsvis varmt og koldt vand, der kommer fra to indløbsporte (3, 4); og en glideskive (6), der glider på den faste skive (2), er styret af en styrestang (7) og har en blandingsåbning (8), der er designet til at sætte nævnte indløbsåbninger (3, 4) i forbindelse med en udløbsport (9), fra hvilken det blandede vand kommer ud; glidningen af nævnte glideskive (6) på nævnte faste skive (2) forårsager den delvise eller fuldstændige åbning eller lukningen af den ene eller begge nævnte åbninger i nævnte faste skive (2), hvilket regulerer mængden af varmt og koldt vand, der passerer fra nævnte indløbsporte (3, 4) til nævnte udløbsport (9) for blandet vand; nævnte faste skive (2) og nævnte glideskive (6) er sat ind i et helt lukket holdelegeme (10), der kun tillader det blandede vand at løbe ud fra nævnte udløbsport (9), hvori den dynamiske tætning udelukkende er tilvejebragt på nævnte fast skive (2) og nævnte glideskive (6); nævnte patron er **kendetegnet ved at** nævnte to indløbsporte (3, 4) og nævnte udløbsport (9) er dannede i en bund (5), i hvilken den faste skive (2) er monteret; nævnte holdelegeme (10) er monteret på nævnte bund (5) med mellemplacering af en pakning (15).

2. Blandingspatron ifølge krav 1, **kendetegnet ved at** nævnte faste skive (2) og glideskive (6) er keramiske skiver.

3. Blandingspatron ifølge krav 1, **kendetegnet ved at** nævnte styrestang (7) er hængslet til en støtteblok (11), der er indsat i nævnte holdelegeme (10) og har en styrespids (12) i indgreb med et sæde udformet i den bevægelige skiveholder (13); nævnte bevægelige skiveholder (13) er bevægelig i nævnte holdelegeme (10).

4. Blandingspatron ifølge krav 3, **kendetegnet ved at** den omfatter en pakning (14), der er anbragt mellem nævnte glideskive (6) og nævnte bevægelige skiveholder (13).

DRAWINGS

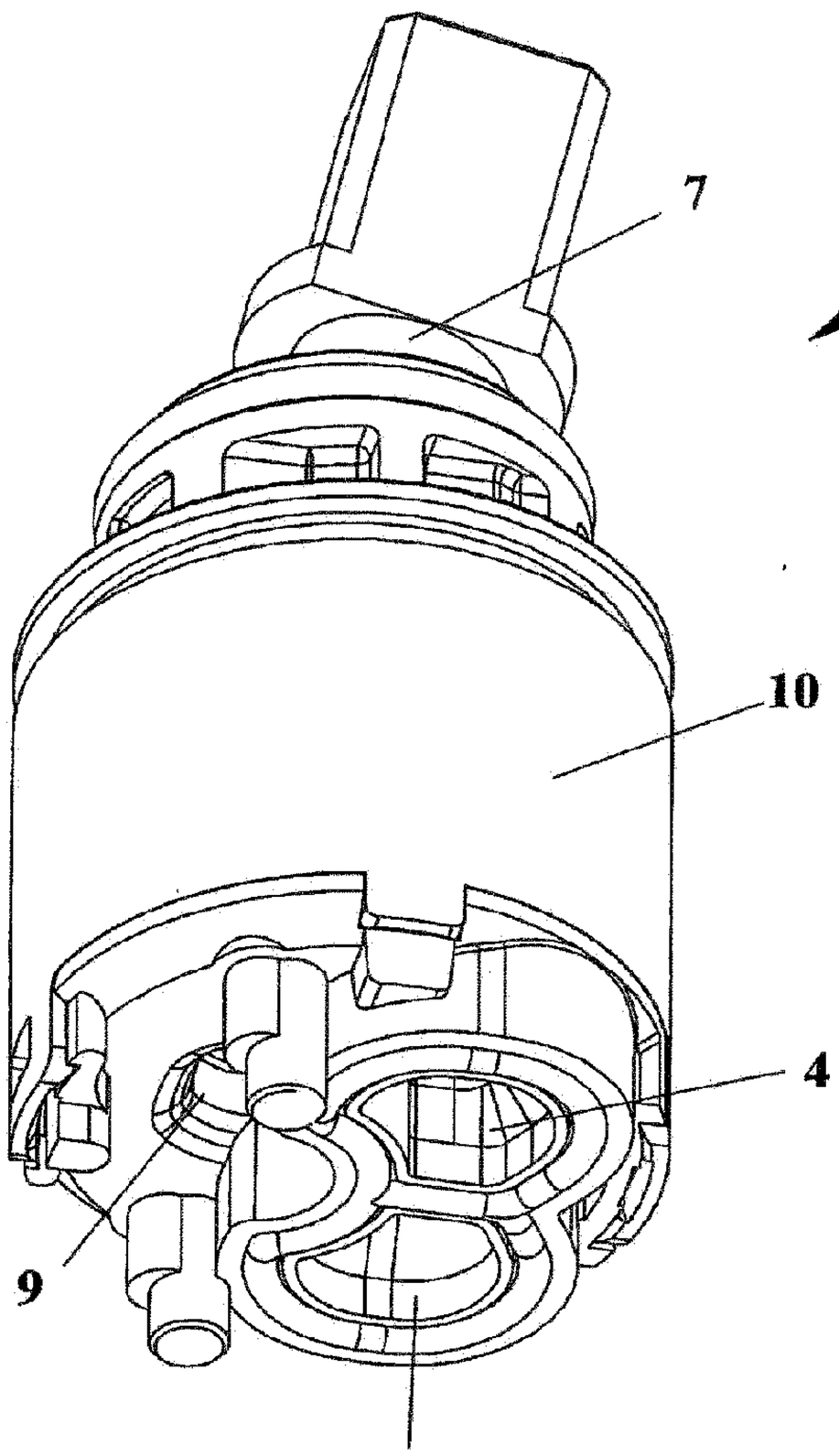

FIG. 1

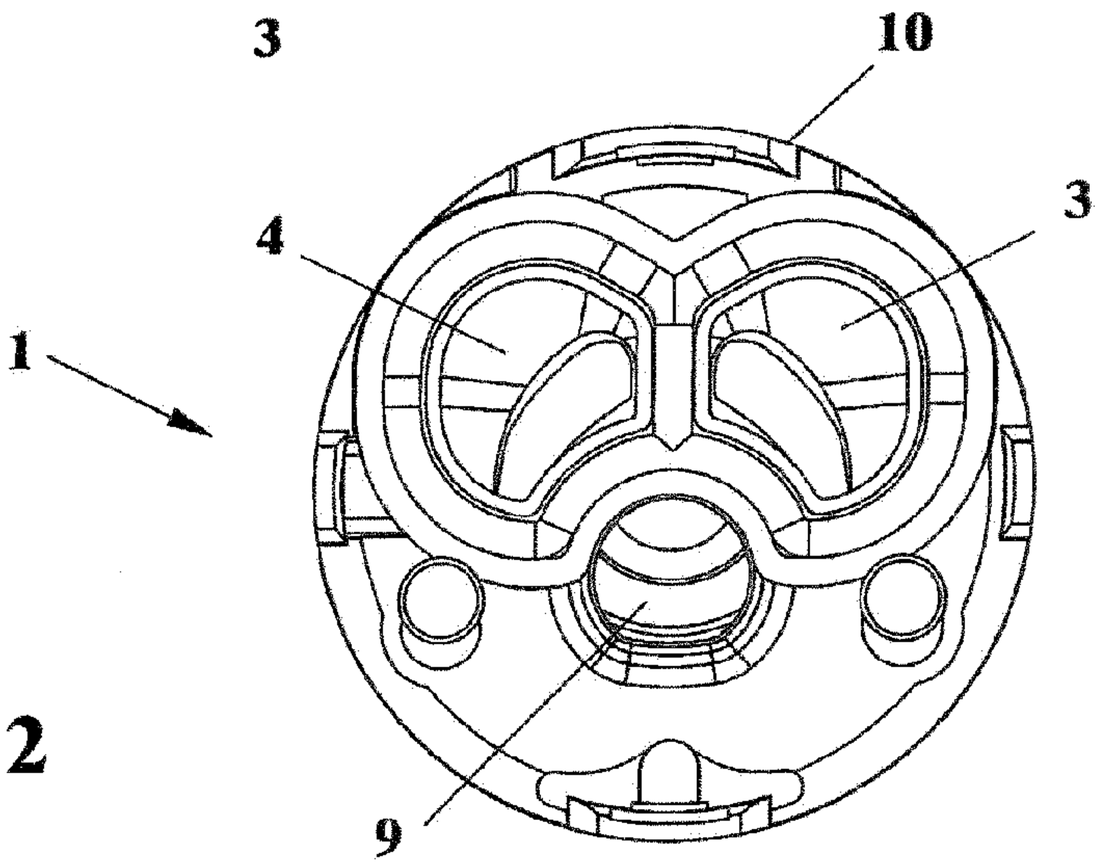

FIG. 2

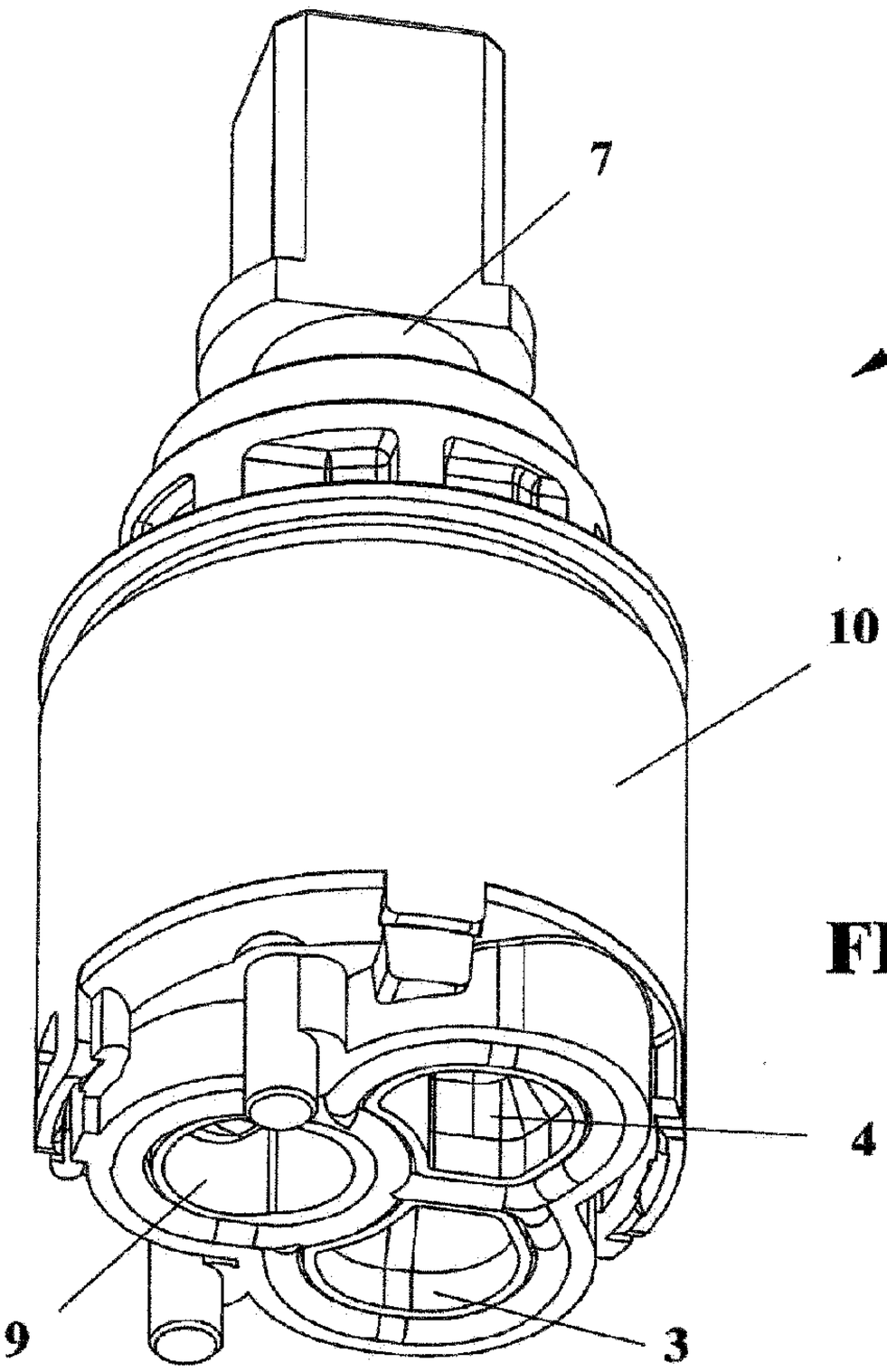

FIG. 3

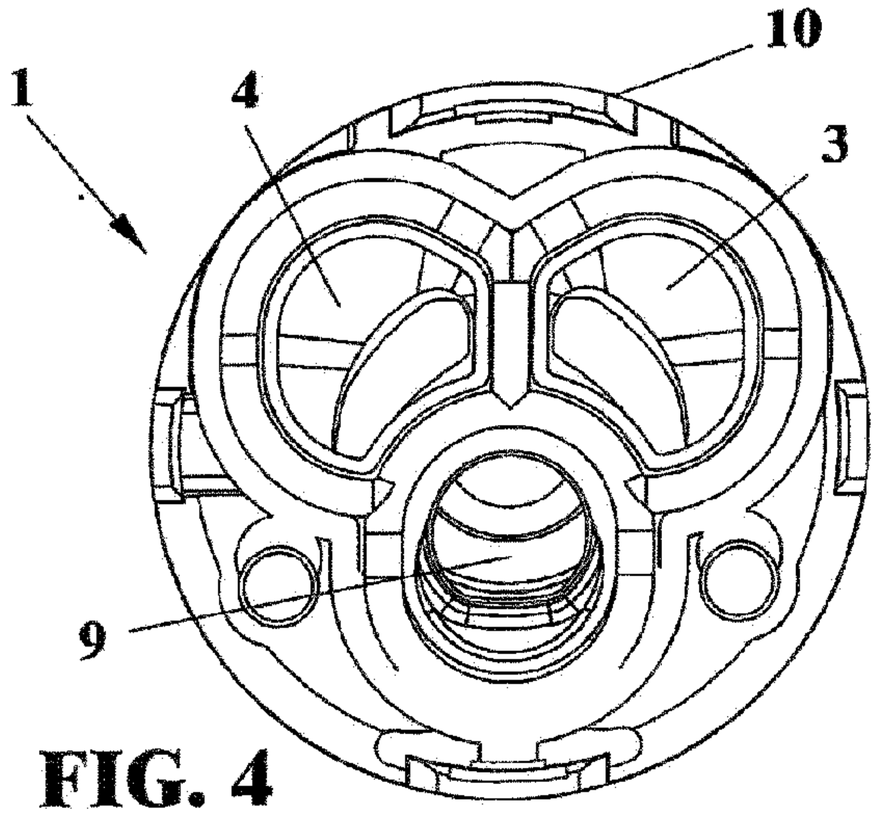

FIG. 4

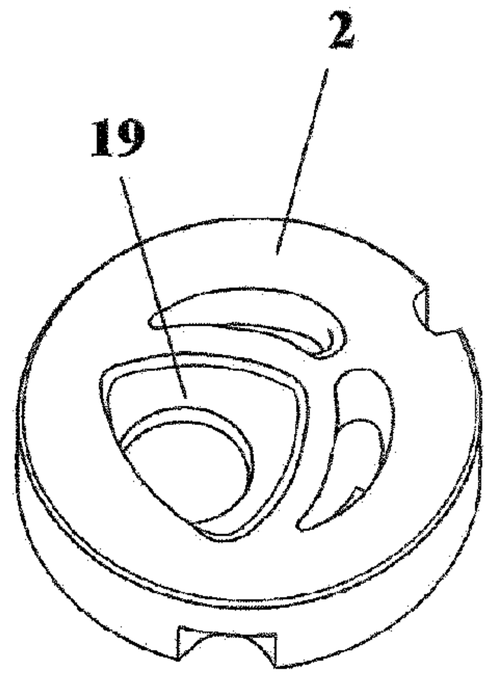

FIG. 7

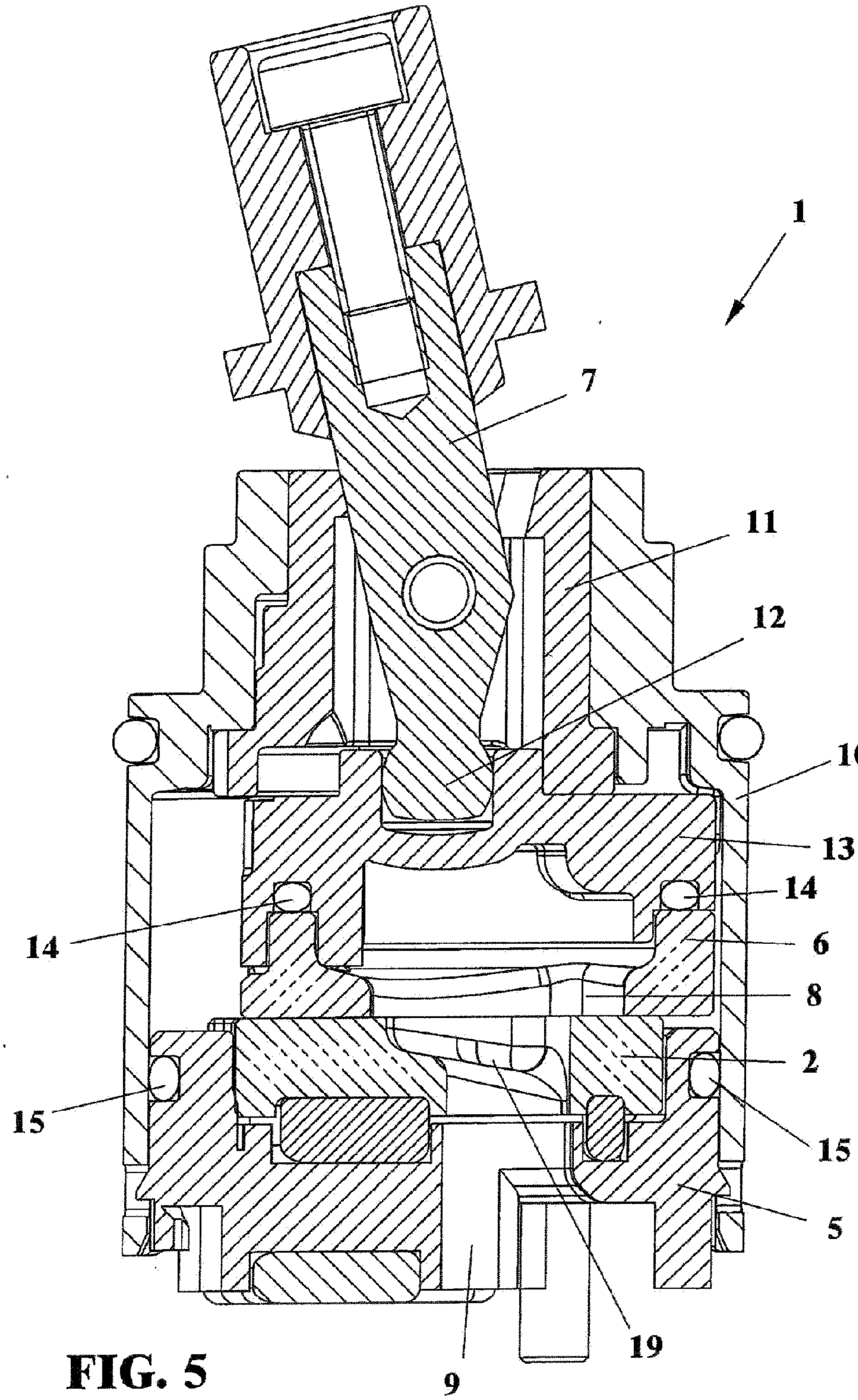

FIG. 5

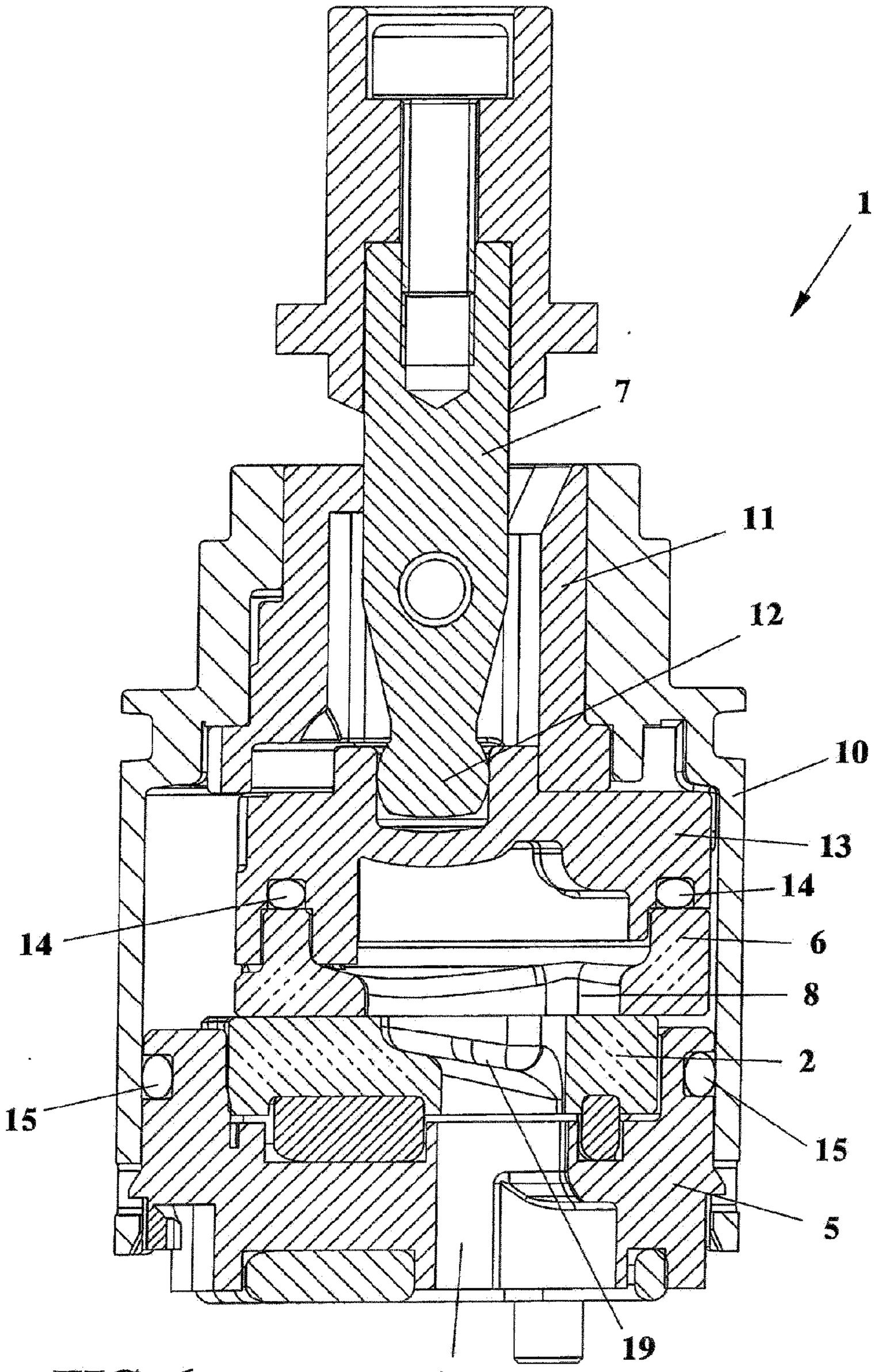

FIG. 6