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(54) Multi-course interception and distribution device for mixed water, particularly for shower-units.

(57) The invention regards a multi-course interception and distribution device for mixed water, particularly for shower-units, and consists of a single device possessing the function both of an interception and distribution valve. This is achieved with a device wherein the interception and distribution controls are arranged in a coaxial position, the incoming conduit for the mixed water being in a central position and the various outlet conduits arranged in a ring around the incoming conduit.

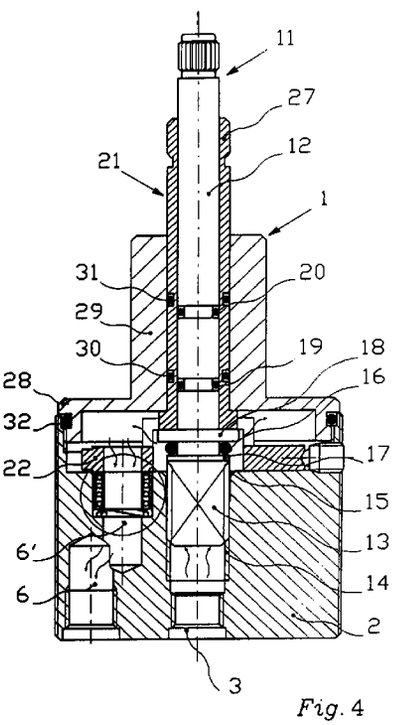

Fig. 4

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Description

Modern shower-units are known wherein the emission of hot water takes place both through the shower-head placed overhead, as well as through shower-heads placed at the sides and other parts of the shower-unit itself.

Generally speaking, there are three or four point of emission. So as to achieve this, every shower-unit is equipped with two devices: an interception valve for the liquid coming from the mixer and a multi-course distributor.

The aim of this invention is to combine the function of the interception of the mixed water with that of distribution through the various outlet points in a single device.

The invention consists in the fact that it has conceived a single device possessing both the functions of an interception and distribution valve and this is achieved with a device wherein the interception and distribution controls are arranged in a coaxial position, the incoming conduit for the mixed water being in a central position and the various outgoing conduits arranged in a ring around the incoming conduit.

The invention will be better understood with an example of its realization, which is given purely as an explanation and in no way limits the scope of the invention itself, by the three tables of drawings attached which represent:

fig. 1 - the device viewed externally;
fig. 2 - a view from D of fig. 1;
fig. 3 - a horizontal cross-section according to A-A of fig. 1;
fig. 4 - a cross-section according to B-B of fig. 3 with the water conduit open;
fig. 5 - a cross-section according to C-C of fig. 3 with the water conduit closed;
fig. 6 - an enlarged particular of the sealing element of the various outlet conduits;
fig. 7 and 8 - the distribution device in prospective and viewed in two different positions;
fig. 9 - a particular of the open-close valve and relative control rod.

With reference to said figures, 1 is the device according to the invention. It is constituted of a body 2 in which the various incoming and distribution conduits for the water are contained and, more precisely:

the incoming conduit 3 for the mixed water;
five outlet conduits 4, 4' - 5, 5' - 6, 6' - 7, 7' - 8, 8' arranged on two concentric circumferences.

In the upper part of the conduits 4', 5', 6', 7', 8', a gasket 9 is positioned (see also fig. 6) which encloses a spring 10 which tends to push the gasket upwards.

In the upper part of the hole 3 a water input valve 11 is inserted constituted of a rod which has a flat element 13 at its lower end (also see fig. 9) threaded at the edges and which joins together with a thread 14 on the internal surface of the incoming conduit 3. Immediately above the threaded laminate element 13 the valve is formed in such way as to be the seat 16' elastic ring seal (O ring) taking on the form of two circular discs 17 and 18 on the shaft 11, of which disc 17 is able to enter the conduit 3 whilst 18 is of a greater diameter and has the function of pressing the elastic ring 16 above the seat 15 of the incoming conduit of the valve, thus ensuring a seal during the closure of the valve.

Along the shaft 12 another two circular slots 19' and 20' are cut out which are designed to receive another two elastic ring seals 19 and 20.

The distribution device 21, see figures 7 and 8, is constituted of a circular disc 22 carrying on the peripherical surface, in a position corresponding to the position which the outlet conduits 4', 5', 6', 7', 8' have on the body 1, an oval hole 23, and more internally, in a concentric position with respect to its external surface, a circular compartment 24 with a diameter which is slightly greater than the diameter of disc 18 of the valve shaft, so that said part of the valve 11 can move upwards within it. Above the plate 22 a second circular disc 22 is positioned carrying the compartments 26, 26', 26" and 26"' which allow for communication between the interior of compartment 24 with the upper part of circular disc 22. Above this element, again in a concentric position, a perforated shaft 27 is positioned, whose internal hole is such that it allows the rod 12 of valve 11 to pass through it.

Plate 22 described above, during the assembly phase, is placed on the upper level of the body 2 and rotates around it. This rotation allows the oval hole 23 to be superimposed from time to time on one of the outlet conduits 4', 5', 6', 7' and 8' which in their turn communicate with the corresponding conduits 4, 5, 6, 7 and 8, which are then each connected to known means to one of the exit shower-heads of the shower unit.

The device is completed by a closure cope 28 which has the function of keeping the circular disc 22 in position in contact with the upper surfaces of the body 2 of the device.

This cope 28 is equipped at the top with a cylindrical appendage 29 which is perforated throughout and acts as a container and guide for the hollow shaft 27, a hollow shaft which is also equipped with two grooves 30' and 31' in which two elastic ring seals 30 and 31 are placed.

The elastic ring seal 32 completes the hydraulic seal of the chamber which is formed between the upper part of the body 2 and the lower part of the cope 28.

Assembly is very simple and this is another positive characteristic of the discovery, in that it is possible to intervene on the moving and sealing parts, that is, those that require maintenance, without touching the body 2 of the device.

Once the various ring seals 16, 19, 20, 30 and 31

are assembled in their respective positions, as well as the various gaskets 9 each equipped with the corresponding spring 10, in the housing positioned at the top of the outlet conduits 4', 5', 6', 7' and 8', the lower part 13 of the valve 11 is screwed into the conduit 3; the distributor 21 is Superimposed on the same and the cope 28 is applied to which the elastic ring gasket 32 was previously mounted.

The system functions as follows:

when the valve is closed as in fig. 5, no incoming liquid passes through the conduit 3;
when the valve is open, as in fig. 4, the liquid enters from conduit 3, passes into the lower compartment 24 of the distributor 21 and through the conduits 26, 26',26" and 26"' it passes to the upper surface of plate 22. Through the hole 23 which, at that moment corresponds with one of the five outlet conduits, for example, numbers 6' and 6, as in fig. 4, it passes into the outlet conduit 6' and 6 thereby arriving at the corresponding outlet shower-head in the shower unit, through a connecting conduit which joins said outlet conduit 6 with the corresponding shower-head in the shower unit.

The hydraulic seal between the lower part of the plate 22 and the corresponding outlet conduit 6' is obtained by means of the corresponding elastic gasket 9 mounted on the outlet conduit 6' and which, thorough the action of the spring 10 is kept fast against the lower part of the hole 23.

The corresponding elastic gaskets 9 mounted on the other conduits in pressing against the underside of the flat surface 32 of the device 21 prevent the water from entering the other conduits.

Suitable knobs are mounted on the heads of the rod 11 and the hollow shaft 27 - not shown in the figure - so as to operate the device.

The example has been given solely as an illustration and does not limit the invention in any way, in that many variations to the idea that forms the basis of the patent as disclosed in claim 1 may be realized.

Claims

1. A multi-course interception and distribution device for mixed water, particularly for shower-units, characterized by the fact that a single device possesses the function both of an interception and distribution valve thereby obtaining a device wherein the interception and distribution controls are arranged in a coaxial position, the incoming conduit 3 for the mixed water being in a central position and the various outlet conduits 4, 4' - 5, 5' - 6, 6' - 7, 7' - 8, 8' arranged in a ring around the incoming conduit.

2. Device according to claim 1 characterized by the fact that the outlet water conduits 4, 4' - 5, 5' - 6, 6' - 7, 7' - 8, 8' are arranged on two concentric circumferences.

3. Device according to claim 1 characterized by the fact that the shutter of the water input valve 11 is constituted of a rod 12 which has a flat element 13 at its lower end threaded at the edges and which joins together with the thread 14 on the internal surface of the incoming conduit 3, and which above the threaded laminate element 13 there is the seat 16 of an elastic ring seal (O ring) housed in a compartment 16' between two flat discs 17 and 18, of which disc 17 is of a diameter that allows it to enter the conduit 3, whilst 18 is of a greater diameter than conduit 3.

4. Device according to claim 1 characterized by the fact that the distribution device 21 is constituted of a circular disc 22 carrying on the peripherical surface, in a position corresponding to the position which on the body 1 have with respect to the centre the outlet conduits 4', 5', 6', 7', 8', an oval hole 23, and more internally, in a concentric position with respect to its external surface, a circular compartment 28 with a diameter which is slightly greater than the diameter of disc 18 placed on the valve shaft, so that said part of the valve 11 can move upwards within it; which above the plate 22 a second flat disc 25 is positioned carrying the compartments 26, 26', 26" and 26"' which allow for communication between the interior of compartment 24 with the upper part of disc 22 and above this element, in a concentric position, a perforated shaft 27 is connected, whose internal hole is such that it allows the rod 12 of valve 11 to pass through it; that plate 22, during the assembly phase, is placed on the upper level of the body 2 and rotates around it in such a way that the oval hole 23 may superimpose from time to time one of the various outlet conduits 4', 5', 6', 7' and 8' which in their turn communicate with the corresponding conduits 4, 5, 6, 7 and 8.

5. Device according to claim 1 characterized by the fact that the hydraulic seal between the lower part of the plate 22 and the corresponding outlet conduit is obtained by means of a gasket 9, housed in the upper part of the conduits 4', 5', 6', 7', 8', which contains a spring 10 which keeps the gasket fast against the lower part of the disc 22.

6. Device according to claim 1 characterized by the fact that it comprises a closure cope 28 which has the function of keeping the plate 22 in position in contact with the upper surfaces of the body 2 of the device.

7. Device according to claims 1 and 6 characterized by the fact that cope 28 is equipped at the top with a cylindrical appendage 29 which acts as a container and guide for the hollow shaft 27.

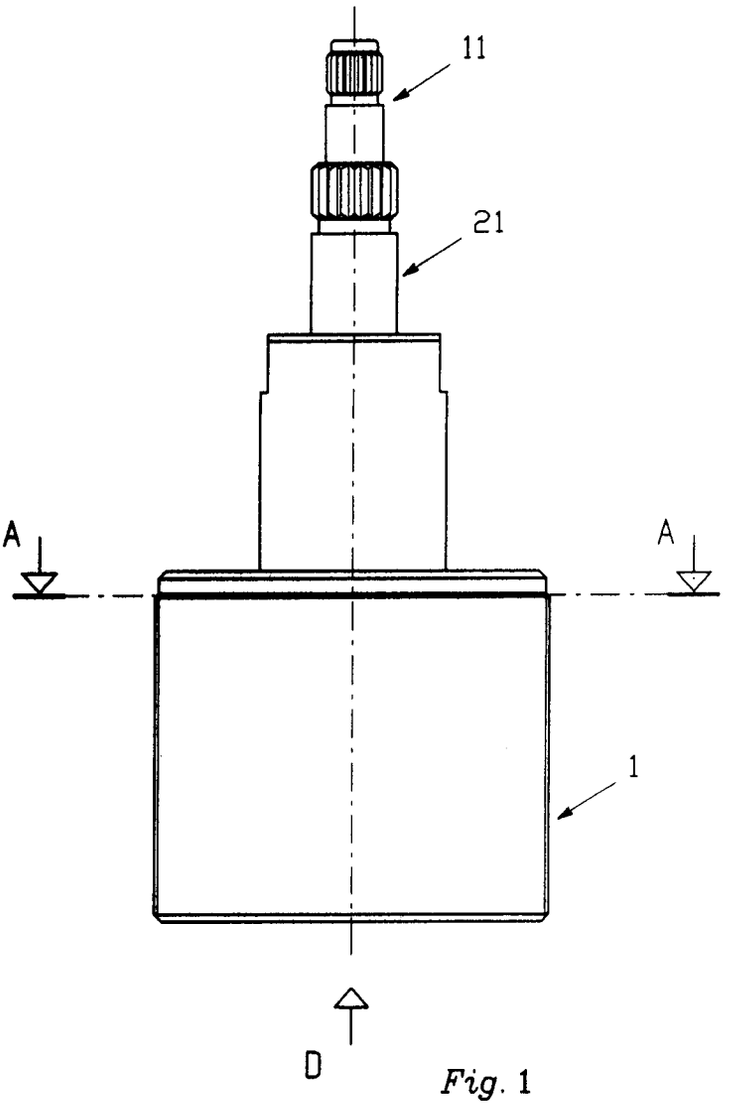

Fig. 1

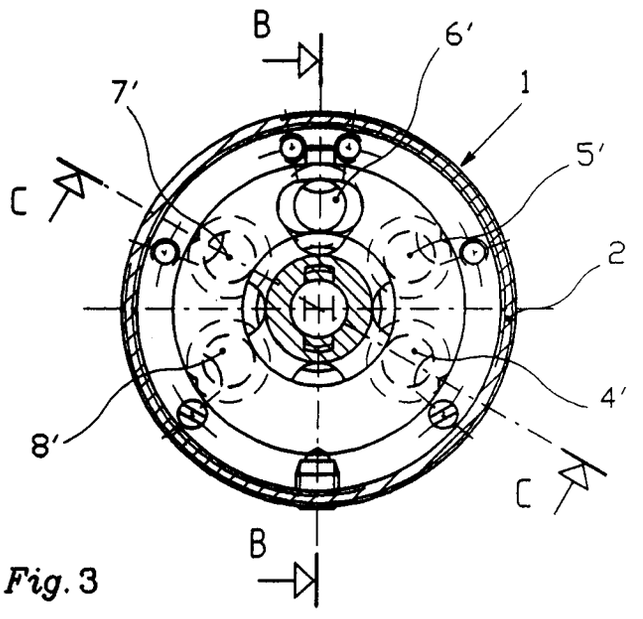

Fig. 3

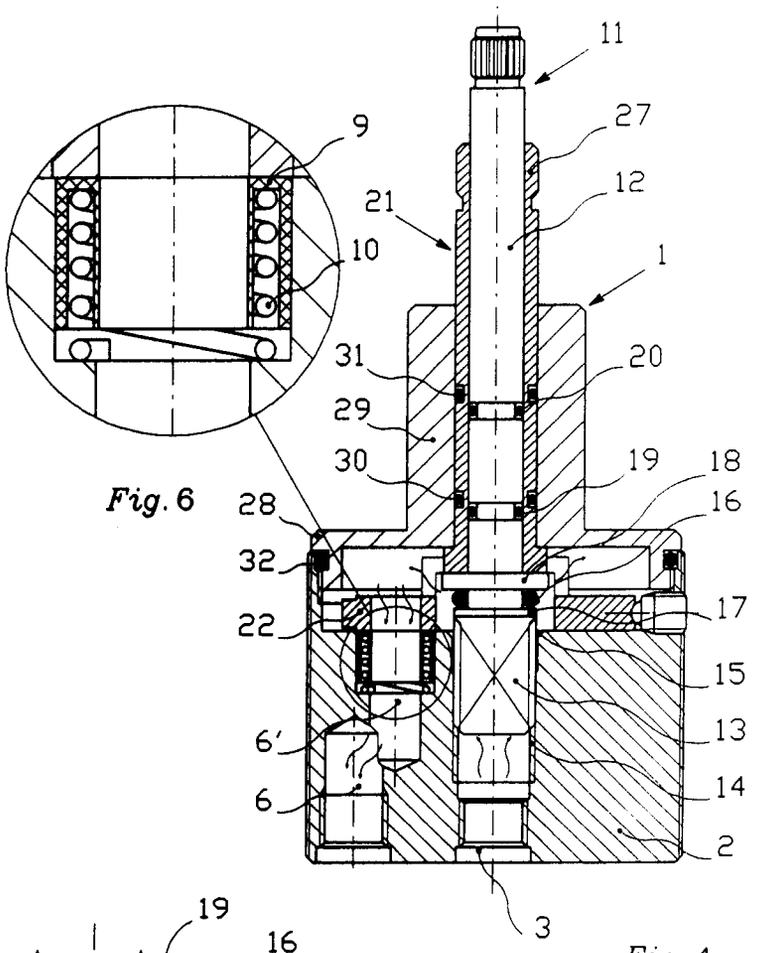

Fig. 6

Fig. 4

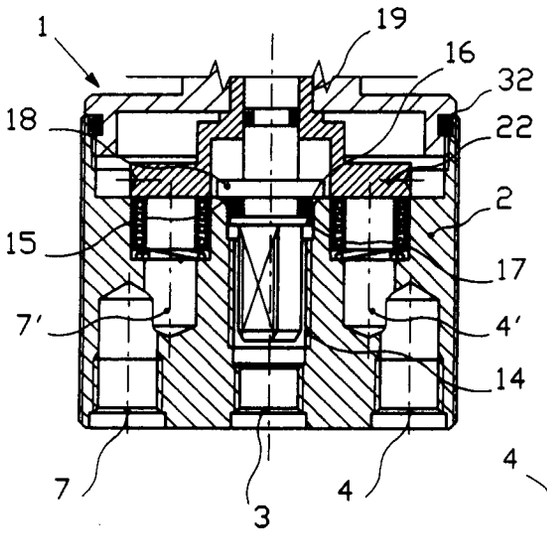

Fig. 5

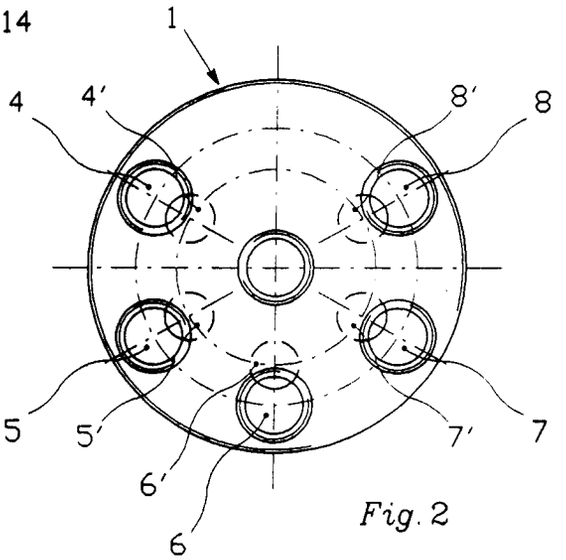

Fig. 2

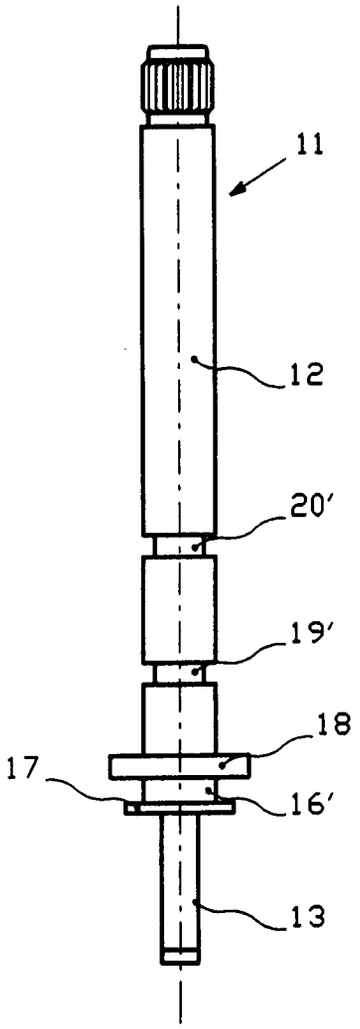

Fig. 9

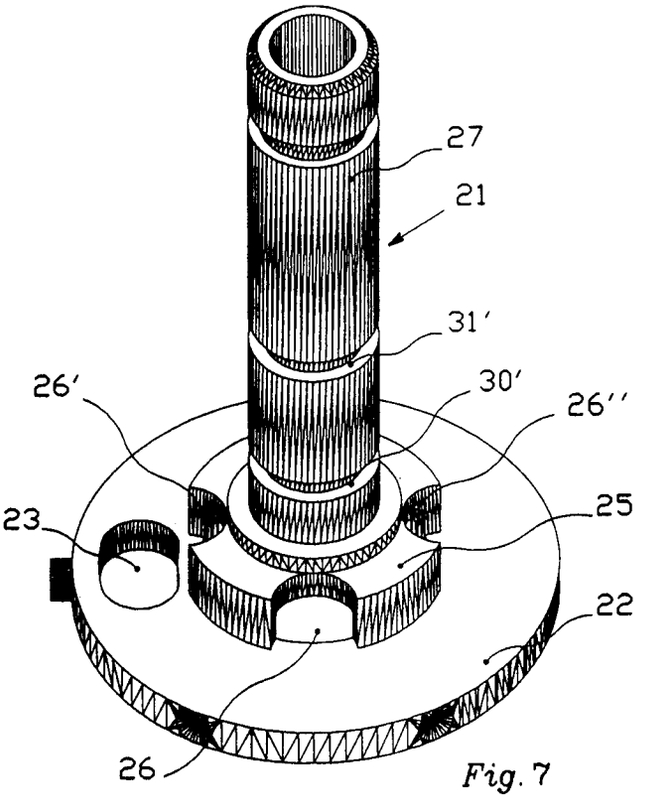

Fig. 7

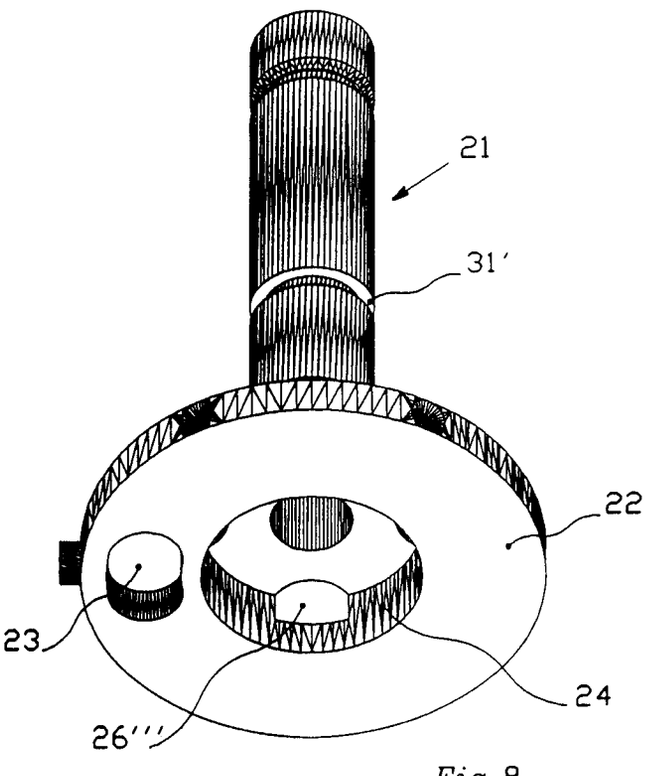

Fig. 8