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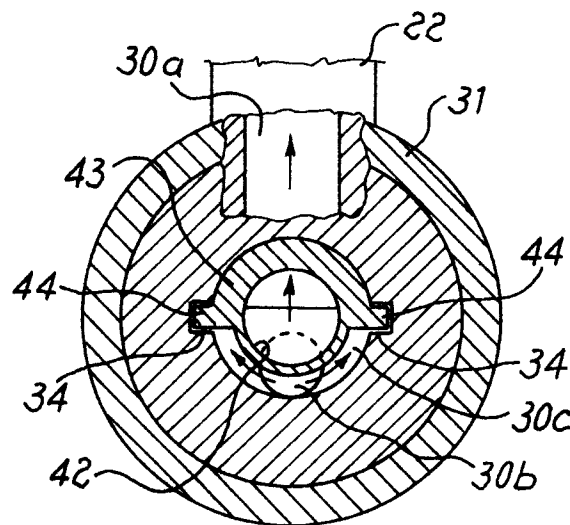
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(54) **Connector for fluid shut-off valves with rotatable internal deviating member for maintaining the direction of the delivery flow.**

(57) Connector for deviating fluids, in particular for shutoff valves (10) supplying radiating elements (20), comprising a body (30) which has, formed in it, at least one supply aperture (14), at least one delivery aperture (30a) and at least one aperture (30b) for return of the

fluid, the connector having, coaxially arranged inside it, a deviating member (40) capable of being rotated through 180° so as to cause channelling of the delivery flow of the fluid towards the associated aperture (30a), whatever the direction in which said flow is supplied from the valve (10).

Fig. 2



Description

The present invention relates to a connector for valves intercepting fluids such as hot water and the like, which has, coaxially arranged inside it, a deviating member designed to be rotated through 180° so as to cause channelling of the delivery flow of the fluid towards the associated aperture whatever the direction in which said flow is supplied from the shut-off valve.

It is known in the technical sector relating to the distribution of hot water for the purposes of heating, of the need to cause recirculation of the water inside radiating elements through which the water must enter, hot, at the top and flow out, cold, from the bottom after releasing its heat.

Numerous valves for controlling the flow of the water are also known, said valves being arranged between the supply pipes set inside the flooring or the wall and said radiating elements.

These known valves include those designed for so-called single-pipe systems or systems in which the radiating elements are arranged in series and the return of one forms the delivery for the next one.

In these types of valves, the delivery of the hot water and the return of the cold water take place inside the said valve body in which separate supply and return ducts are provided.

These valves, although functional, have a serious drawback, however, consisting in the fact that, during preliminary laying of the pipes, it is essentially not possible to ensure with certainty the same orientation of the delivery pipe and, at the moment when the valve is connected, it may happen that the pipe which emerges from the wall, intended for delivery, is instead the return pipe; in this case, connection of the single-pipe valve causes a flow of hot water which instead of rising upwards enters directly into the radiating element from the bottom, causing only partial heating of the radiator itself with a consequent large amount of energy which is wasted in order to obtain the temperature required in that specific environment.

Similarly, the same phenomenon may also occur in so-called dual-pipe systems in which the radiators are arranged in parallel along two pipes, one of which is the delivery pipe and the other the return pipe. In this case the energy required would be even greater since the still hot water flowing out from a radiator flows out directly into the return pipe which does not supply a downstream radiator.

The technical problem which is posed, therefore, is that of providing a connector for valves intercepting fluids, such as hot water and the like, which allows the correct flow of hot water to be maintained, with delivery towards the top part of the radiator and return from the bottom part of the latter, even if the delivery and return pipes should be inverted at the time of laying.

Within the scope of this problem a further requirement is that said connector should have a simple and

low-cost design and should be applicable to all valves of the known type without the need for complicated adaptive measures and should not require substantial modifications at the time of reversal of the flow.

5 These technical problems are resolved according to the present invention by a connector for deviating fluids, in particular for shut-off valves supplying radiating elements, comprising a body which has, formed in it, at least one supply aperture, at least one delivery aperture and at least one aperture for return of the fluid, said connector having, coaxially arranged inside it, a deviating member capable of being rotated through 180° so as to cause channelling of the delivery flow of the fluid towards the associated aperture, whatever the direction in which said flow is supplied from the valve.

10 Further details can be obtained from the following description of a non-limiting example of embodiment provided with reference to the accompanying drawings, in which:

20 Figure 1 shows a partially sectioned view through the connector according to the invention, mounted between a valve and a radiating element;

25 Figure 2 shows a section along the plane indicated by II-II in Fig. 1;

30 Figure 3 shows a perspective view of the deviating member of the connector according to the invention;

35 Figure 4 shows a partially sectioned view of the connector according to Fig. 1 in the case where delivery and return are inverted;

40 Figure 5 shows a section along the plane indicated by IV-IV in Fig. 4.

As illustrated in Fig. 1 relating to a system of the single-pipe type, a valve 10 for intercepting a heating fluid comprises a body 11 having, formed in it, two apertures 12 and 13 with an axis substantially perpendicular to the longitudinal axis of the valve, into which the pipes 12a and 13a can be inserted, said pipes, in the case of Fig. 1, forming respectively the delivery and the return as indicated by the arrows.

Said pipes 12a and 13a are fixed to the valve body using means known per se and only schematically shown as a ring 12b, 13b.

50 In a direction substantially coaxial with the valve body there is formed a third opening 14 supplying the fluid to a radiating body 20 to which the valve is connected via a connector 30 screwed with known means onto the delivery pipe 22, the return duct 23 from the radiator 20 and the valve body 11.

55 A sliding piece 15 is also coaxially arranged inside the valve body 11, said sliding piece being able to perform a translatory movement by means of a usual hand-

wheel 16, causing opening/closing of the valve itself which is in the figures is always shown open.

The sliding piece 15 has an internal duct 15a which connects the valve 10 to the connector 30.

In addition to the aperture 14 for introduction of the fluid coming from the valve 10, said connector 30, which is substantially T-shaped, has a first hole 30a which is centred on an axis substantially perpendicular to the longitudinal axis of the valve body 11 and is designed to connect the connector 30 to the pipe 22 for delivery of the fluid to the radiating panel 20, as well as a second hole 30b, being centred on an axis which is substantially parallel, but not coinciding, with said longitudinal axis of the valve body and formed on a segment 30c for reducing the aperture 30d for return of the fluid from the duct 23 of the radiator 20.

The connector 30 has, inserted inside it, a deviating member 40 (Fig. 3) formed by a flat body 41 onto which a tubular section 42 is engaged, being cut in the longitudinal direction so as to form an opening 42a; the deviating member 40 is delimited at the front by a semi-circular collar 43 and at the opposite diametral ends of the collar has two teeth 44 which extend outwards and are designed to co-operate with corresponding seats 34 in the connector 30 so as to prevent rotation of the deviating member 40 once it has been inserted into the connector itself.

The connector operates in the following manner:

- if the hot fluid is to be delivered from the pipe 12a (Figs. 1 and 2), then the deviating member 40 is arranged with the semi-circular collar 43 upwards; in this way the fluid, passing through the duct 15a of the sliding piece 15, enters directly into the opening 42 of the deviating member 40 and from here, through the opening 42a, is deviated upwards into the hole 30a and into the delivery pipe 22. At the end of the path inside the radiator 20, the cold fluid emerges from the duct 23 and, via the hole 30b, is channelled towards the return pipe 13a.
- If the delivery pipe were to be instead the pipe 13a, then the deviating member 40 is arranged with the collar 42a downwards; in this way the fluid, which no longer passes inside the sliding piece 15, but flows in annular fashion around it, finds the upper part of the duct 14 free and is channelled again towards the hole 30a and the pipe 22 of the radiator 30.

Once it has completed its path, the fluid flows out from the duct 23 and, via the hole 30b and the opening 42a of the deviating member 40, is channelled inside the duct 15a of the sliding piece 15 so as to return through the pipe 12a.

Should it be necessary to rotate the deviating member after installation of the assembly composed of valve, connector and deviating member, it is possible to unscrew the locking ring 31 of the valve, moving the con-

necter and the valve away from each other by a sufficient amount to allow the teeth 44 to come out of the seats 34 and the deviating member to then be rotated.

It is therefore obvious how with the connector according to the invention it is possible to maintain, by means of a simple operation reversing the orientation of the deviating member, the overall efficiency of the radiator, even if the delivery and return pipes should have been inverted at the time of installation.

Claims

1. Connector for deviating fluids, in particular for shut-off valves (10) supplying radiating elements (20), comprising a body (30) which has, formed in it, at least one supply aperture (14), at least one delivery aperture (30a) and at least one aperture (30b) for return of the fluid, characterized in that it has, coaxially arranged inside it, a deviating member (40) designed to be rotated through 180° so as to cause channelling of the delivery flow of the fluid towards the associated aperture (30a), whatever the direction in which said flow is supplied from the valve (10).
2. Connector according to Claim 1, characterized in that said return aperture (30b) is formed on a segment (30c) for partially reducing a return duct (30d).
3. Connector according to Claim 1, characterized in that said segment (30c) is coaxial with the longitudinal axis of the connector.
4. Connector according to Claim 1, characterized in that said return aperture (30b) is centred on an axis parallel, but not coinciding, with the longitudinal axis of the connector.
5. Connector according to Claim 1, characterized in that said deviating member (40) consists of a flat body (41) which has, engaged on it, a tubular section (42) cut in the longitudinal direction so as to form an opening (42a) and delimited at the front by a semi-circular collar (43).
6. Connector according to Claim 1, characterized in that two teeth (44) extending radially outwards are provided at the opposite diametral ends of the collar (43).
7. Connector according to Claim 1, characterized in that it has seats (34) designed to receive said teeth (44) of the deviating member so as to prevent rotation of the latter when it is inserted inside the connector.

