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(54) **Control units for central heating systems**

(57) A control unit for a central heating system comprises two bodies (1 and 5). One body (1) is located in a main distributing section of the system and comprises a shunt valve (4) for shunting hot water produced by a boiler. The other body (5) is intended to be located in a group distributing section of the system. The second body (5) may be provided with a circulating pump (8). The two bodies (1 and 5) are connected to each other via a mechanical heat blocking device (9) made of a material having a thermal conductivity lower than 1.00 kcal/m h°C, this connection also establishing communication between channels enclosed in the two bodies.

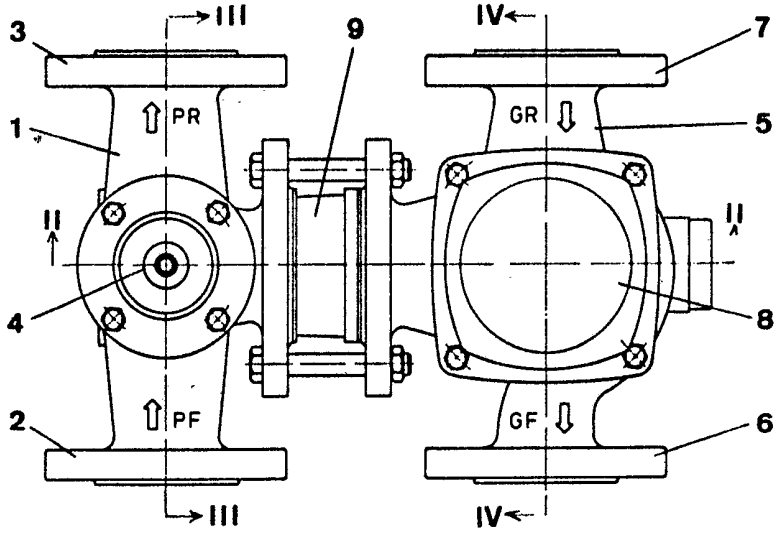

Fig. 1

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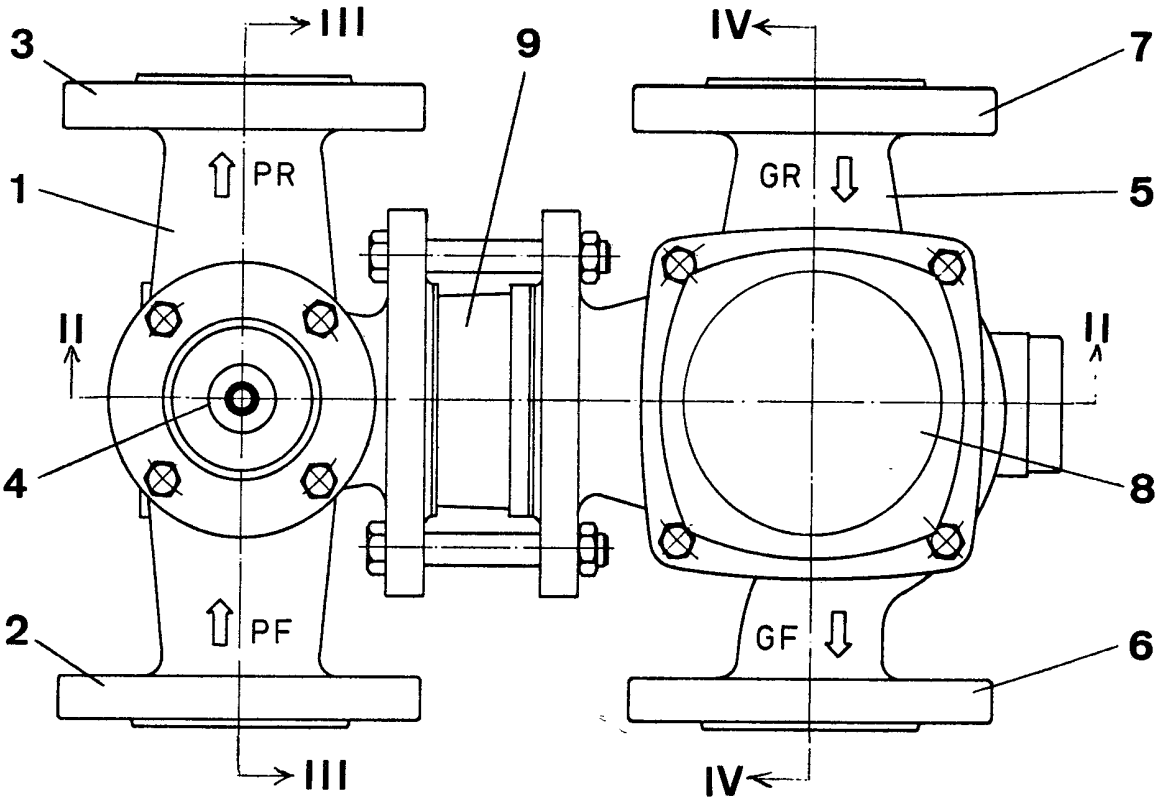

Fig. 1

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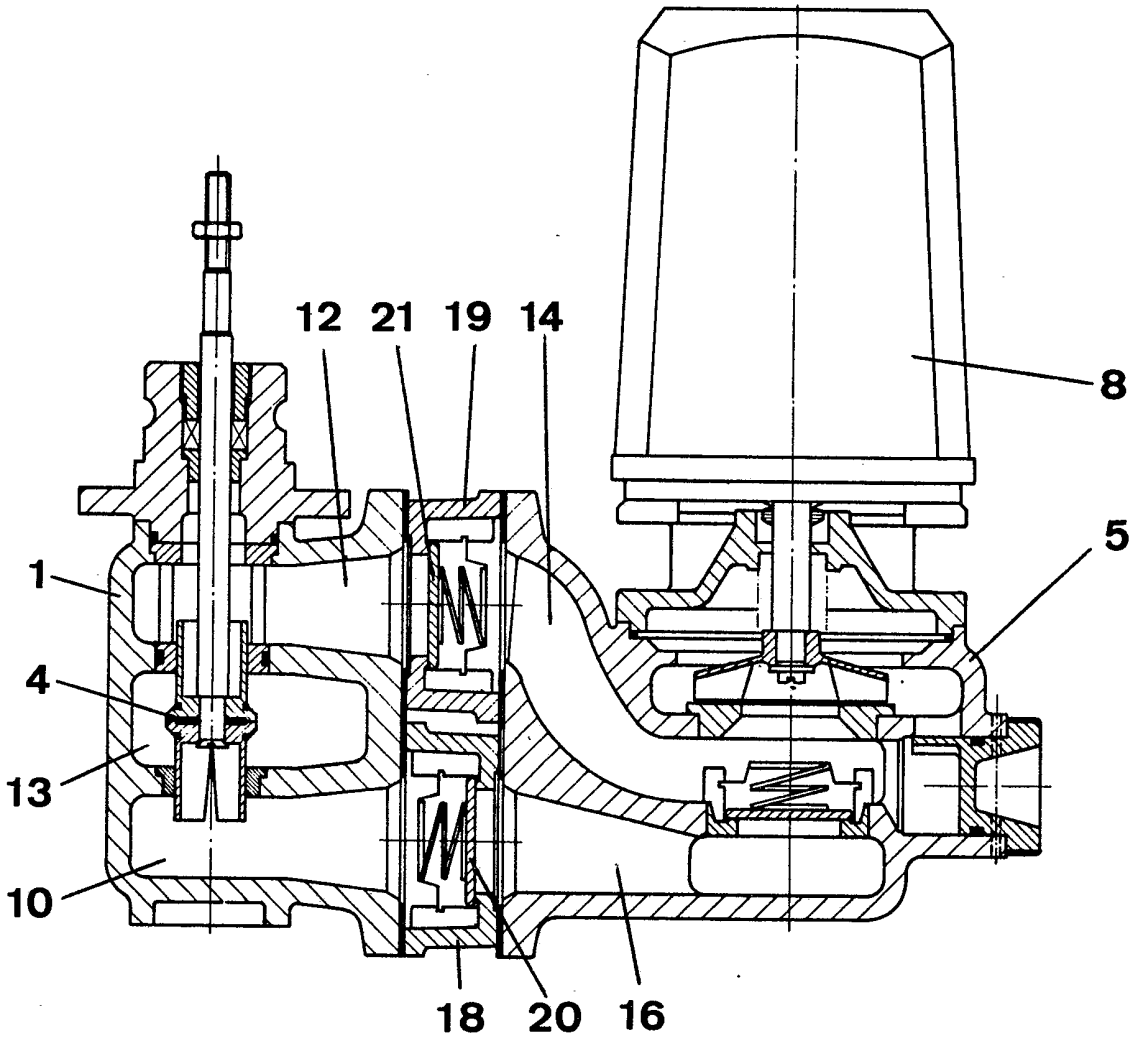

Fig.2

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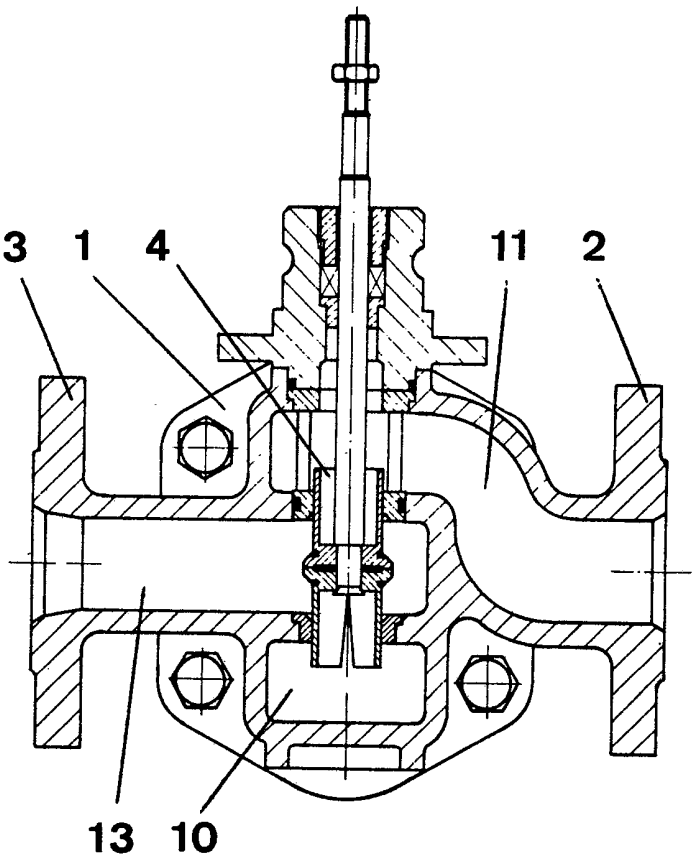

Fig. 3

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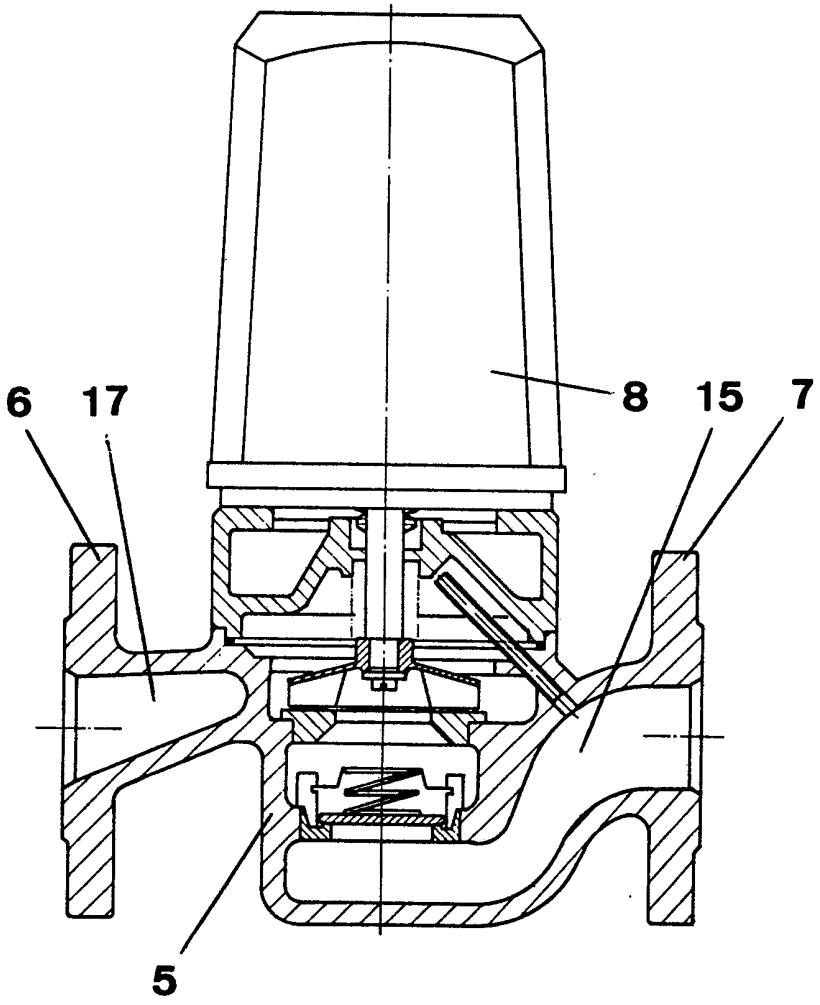

Fig. 4

SPECIFICATION

Control units for central heating systems

The present invention relates to control units for central heating systems.

According to the invention there is provided a control unit for a central heating system, the unit comprising two bodies, one body including a shunt valve for shunting hot water of a main distributing section of the heating system and the other body being intended for a group distributing section of the heating system, wherein each body is provided with openings for connection to flow and return pipes of the respective associated section, each body is provided with enclosed channels, the two bodies are connected to each other via a mechanical heat blocking device made of a material having a thermal conductivity lower than 1.00 kcal/m h°C, and said channels of the first body are connected to said channels of the second body through the connection of the two bodies.

An embodiment of the invention described hereinbelow comprises a simple and handy control unit which is cheap and can be installed directly in a pipe system of the central heating system near the object to be controlled. The unit prevents unintentional heat leakage from the body containing the shunt valve for shunting the hot water of the main distributing section to the body for the group distributing section.

A control unit embodying the invention will now be described by way of illustrative and non-limiting example, with reference to the accompanying drawings, in which:

Figure 1 is a front view of the control unit;

Figure 2 is a sectional view taken in the direction of the arrows II—II in Figure 1;

Figure 3 is a sectional view taken in the direction of the arrows III—III in Figure 1; and

Figure 4 is a sectional view taken in the direction of the arrows IV—IV in Figure 1.

In the drawings, reference numeral 1 designates a body which is preferably made by a moulding process. The body 1 is provided with flanges having openings 2 and 3, the opening 3 being intended for connection to a flow pipe of a main distributing section of a central heating system and the opening 4 being intended for connection to a return pipe of the main distributing section, which is also referred to as the boiler section. In the body 1 is inserted a shunt valve 4, which can be of a two-way or a three-way type, for shunting hot water produced by a boiler of the central heating system.

Reference numeral 5 designates a second body, which is also preferably made by a moulding process and is provided with flanges having openings 6 and 7. The opening 6 is intended for connection to a flow pipe of a group distributing section of the central heating system and the opening 7 is intended for connection to a return pipe of the same section. In this exemplary embodiment of the invention a circulating pump 8 for the group distributing section is inserted in the body 5.

The two bodies 1 and 5 are connected to each other via a mechanical heat blocking device 9 made of a material having a low thermal conductivity which is lower than $\lambda = 1.00$ kcal/m h°C and preferably lower than $\lambda = 0.30$ kcal/m h°C.

During manufacture, the bodies 1 and 5 are provided with enclosed channels, which can be seen in Figures 2 to 4. Thus, the body 1 has two channels 10 and 11 for the inlet and two channels 12 and 13 for the outlet, whereas the body 5 has two suction channels 14 and 15 and two pressure channels 16 and 17.

The return water of the group section is sucked by the pump 8 of the body 5 to flow through the opening 7 and the channels 15 and 16 of the body 5 to be supplied to the channel 10 of the body 1, from which channel it is delivered, via the valve 4, into the channel 13 of the body 1. There, the return water is mixed with the hot water, which flows through the opening 2, channel 11 and valve 4 into the channel 13. The mixed water is discharged through the opening 3 of the body 1. Part of the hot water, passing in through the opening 2, also flows via the channels 11 and 12 to the channel 14, from which the hot water is discharged by the pump 8 through the channel 17 and the opening 6.

Part of the return water of the group distributing section flows directly via the opening 7, the channel 15, the pump 8 and the channel 17 to the opening 6. If the valve 4 is completely closed, all hot water flows directly from the opening 2 via the channels 11 and 13 to the opening 3 and all return water of the group distributing section flows from the opening 7 via the channel 15, the pump 8 and the channel 17 to the opening 6. In other cases the mixture of hot water and return water is entirely dependent on the adjustment of the valve 4.

Figure 2 shows how the mechanical heat blocking device 9 can be made. Between the two channels 12 and 14 of the respective bodies 1 and 5 and also between the two channels 10 and 16 of the bodies 1 and 5 is inserted a respective non-return valve also serving as the mechanical heat blocking device. For this purpose, housings 18, 19 and valve discs 20, 21 of such non-return valves are made of a material having the low heat conductivity mentioned above, for instance a plastics or composite material. The material should be non-metallic and non-crystalline, since metallic and crystalline materials are of too high a heat conductivity.

The mechanical heat blocking device 9 makes it possible to prevent unwanted heat from being transferred from the body 1 of the main distributing section to the body 5 of the group distributing section.

To improve the blocking of the heat transfer between the two bodies 1 and 5, the bodies themselves can be made of a material having the same low heat conductivity as recited above for the heat blocking device 9.

CLAIMS

1. A control unit for a central heating system, the unit comprising two bodies, one body including a shunt valve for shunting hot water of a main distributing section of the heating system and the other body being intended for a group distributing section of the heating system, wherein each body is provided with openings for connection to flow and return pipes of the respective associated section, each body is provided with enclosed channels, the two bodies are connected to each other via a mechanical heat blocking device made of a material having a thermal conductivity lower than 1.00 kcal/m h°C, and said channels of the first body are connected to said channels of the second body through the connection of the two bodies.

2. A control unit according to claim 1, wherein the heat blocking device is made of a material having a thermal conductivity lower than 0.30 kcal/m h°C.

3. A control unit according to claim 1 or claim 2, wherein the two bodies are made of a material having a thermal conductivity lower than 1.00 kcal/m h°C.

4. A control unit according to claim 3, wherein the two bodies are made of a material having a thermal conductivity lower than 0.30 kcal/m h°C.

5. A control unit according to any one of claims 1 to 4, wherein the channels communicating with each other through the connection of the two bodies have this communication established via nonreturn valves forming the mechanical heat blocking device.

6. A control unit according to any one of the preceding claims, wherein said other body is provided with a circulation pump.

7. A control unit for a central heating system, the control unit being substantially as herein described with reference to the accompanying drawings.

8. A central heating system incorporating a control unit according to any one of the preceding claims.

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