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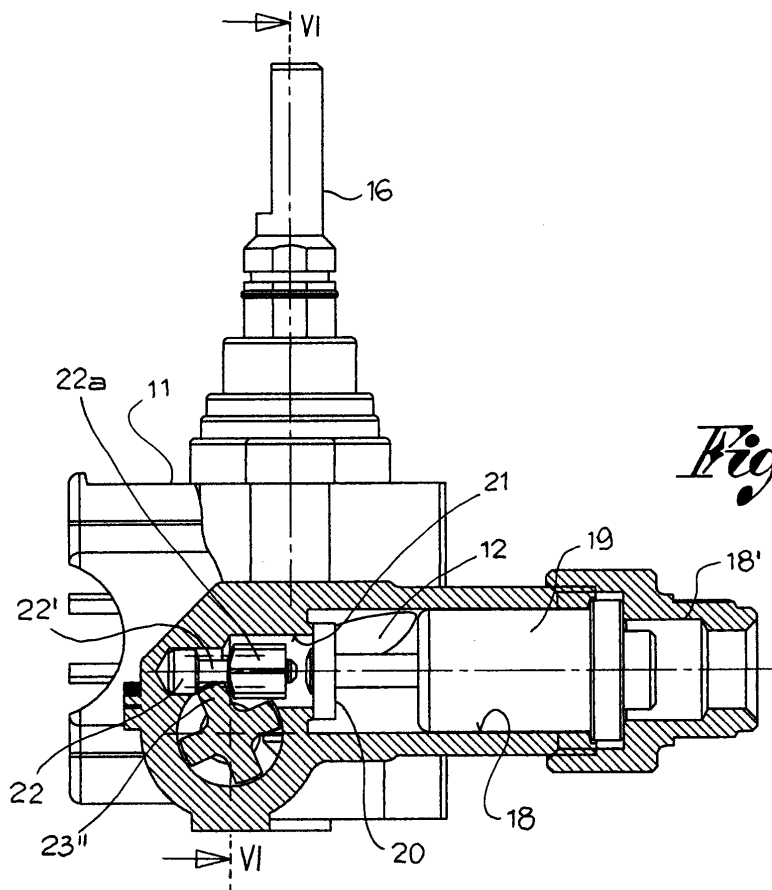
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(54) **Globe valve for gas**

(57) The invention concerns a globe valve for gas consisting of the transmission elements (22, 23) located inside the body of a safety tap in order to move the valve

shutter into an open position in response to the opening of the tap shutter caused by the command stem and leaving it closed whenever the burner flame is out.



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Description

[0001] This invention concerns taps for gas burners, particularly those taps of the globe valve variety.

[0002] The gas taps usually include a command stem which can move axially to open and close the tap and rotate to open and vary the gas output.

[0003] Apart from the command stem, the globe valves also include a safety valve which can intervene and block automatically the supply of gas to the burner, should the flame go out while the tap is open. The safety valve is of the magnetic type and consists of a shutter that can move from an open to a closed position in the passage carrying the gas to the burner when the tap is open. Said safety valve, in reality, also includes an electromagnet in line with the shutter and energised by the thermocurrent of a thermocouple, according to the flame of the burner.

[0004] When the tap is opened to light the burner, the tap stem pushes the safety shutter into an open position. Then the stem retracts and, to keep the flame alight, the electromagnet is energised and holds the safety shutter open. When the electromagnet is deactivated following the accidental extinction of the flame, said shutter is released and moves into the position which closes the passage of the gas to the burner, assisted by a compressed spring.

[0005] To reduce the height of a tap designed for use on cooking surfaces, the safety valve is placed at 90° to the axis of the tap stem itself, which means using mechanical transmission between the stem and the safety shutter of the valve to control the interaction between the two elements at the moment of opening the tap.

[0006] According to the existing technique, such mechanical means of transmission include levers and thrusters which are rather complicated and awkward to mount on the tap body. This body, therefore, becomes a complex structure which is difficult to work with machine tools at the moment of its assembly.

[0007] Meanwhile, it is the purpose of the present invention to propose a globe valve for gas which includes, as transmission means between the command stem and the shutter of the safety valve, elements that are particularly simple and linear in structure, execution and positioning and which also simplify the structure and the working which needs to be done on the tap body, making it easier to get to the seats in which said elements are mounted.

[0008] Such a purpose and the advantages that derive from it are obtained with a globe valve for gas as described in claim 1.

[0009] Greater detail of the invention will become clearer from the description that follows, made with reference to the enclosed drawings, in which:

Fig. 1 shows an exploded view of the tap components;

Fig. 2 shows a perspective of the assembled tap;

Fig. 3 shows a view from above of the tap in Fig. 2; Fig. 4 shows a cross-section according to the arrows IV-IV in Fig. 3;

Fig. 5 shows a cross-section according to the arrows V-V in Fig. 3; and

Fig. 6 shows a cross-section according to the arrows VI-VI in Fig. 4.

[0010] As known already, the gas tap consists of a body 11 with conduits 12 for the gas flowing from an entrance 13 via an exit 14 towards the burner, a tap shutter 15 to open and close said conduits in a zone mid-way between the entrance and the exit, and a stem 16 movable axially and in rotation in order to open and close the shutter and regulate the gas flow towards the burner.

[0011] The tap also includes a safety valve 17 placed in an appropriate seat 18, closed by a cap 18', situated on an axis at right angles to the command stem 16.

[0012] The safety valve essentially consists of a fixed electromagnet 19 and a safety shutter 20, the latter capable of moving towards and away from a hole or seat for the valve 21, placed along the gas conduit inside the tap body.

[0013] The electromagnet 19 can be connected to a thermocouple - not shown - which is located next to the burner; the safety shutter 20 is held in the open position of the valve seat 21 of the electromagnet when the latter is energised, and moves and remains in the closed position of the valve seat, aided by a spring - not shown - when the electromagnet is not activated.

[0014] In any case, when the tap is opened by the stem in order to light the burner flame, the safety shutter 20 must be opened by moving it towards the electromagnet.

[0015] To ensure such a movement, two substantially linear transmission elements are mounted in the tap body 11: a first element 22 in line with the safety shutter 20 and passing, at least partially, through the valve seat - Fig. 4; a second element 23, placed perpendicularly to the first element and extending from this towards the axis of the command stem 16, perpendicular to this, too, but placed to the side of it Fig. 6.

[0016] The first element is guided and capable of axial transfer towards and away from the safety valve 20. The second element 23 is supported on end pins 24 and capable of rotating around its own axis, without transfer. Both transmission elements 22, 23 have grooves or longitudinal passages 22a, 23a, respectively, for carrying the gas from the entrance to the exit leading to the burner.

[0017] The second element 23, in its first part adjacent to the axis of the command stem, has at least one radial tooth 23' which fits into a complementary hollow or groove 25', foreseen around pull rod 25 connected to the command stem 16, of which it represents a prolongation and passing axially into the tap shutter 15 - Fig. 5. Furthermore, said second element 23, in the second part which is adjacent to the first element 22, has at least

one other radial tooth 23" which fits into a complementary hollow or groove 22' made in said first element 22 - Fig. 4. In this way, the axial movement of the command stem 16 corresponds, via the pull rod 25, to a rotation of the second transmission element 23 and, via this, to an axial transfer of the first transmission element 22.

[0018] In practice, when the tap is closed and, therefore, the gas burner is off, the command stem 16 is retracted, the electromagnet 19 is deactivated due to the lack of a heat source and the safety shutter 20 is in the closed position of the hole or seat of the valve 21.

[0019] Starting from this condition, a subsequent forward axial movement by the stem causes, via the pull rod 25, a rotation of the second transmission element 23 which causes in turn an axial movement of the first element 22 towards the safety shutter 20 and thereby moving this in the direction away from the respective valve seat 21. Now the shutter can be rotated so as to allow the gas to flow to the burner and the flame to be lit; in the presence of the heat from the flame, the thermocouple excites the electromagnet and the latter holds the safety valve in the open position, even when the safety stem retracts after the push forwards and is rotated in order to regulate the gas outflow. This is the situation while the burner is alight. If for some reason the burner goes out while the tap is still open, the electromagnet is deactivated and the safety shutter 20 closes over the hole or seat of the valve, automatically interrupting the gas supply.

Claims

1. Globe valve for gas consisting of a body with conduits for the gas flowing from an entrance via an exit towards the burner, a tap shutter for opening and shutting said conduit for the gas in a zone mid-way between the entrance and the exit, a command stem that moves axially and rotates in order to command the opening and closing of said shutter and to regulate the gas flow towards the burner, and a safety valve (18) at right angles to the axis of said command stem and designed to intervene automatically and stop the gas supply to the burner if the flame should go out while the tap is open, where said safety valve consists of a fixed electromagnet (19) which is energised by a thermocouple in the presence of the burner flame and a safety shutter (20) associated with a hole or seat of the valve (21) regulating the entrance and exit of the gas from the burner, and where said security shutter is in a closed position over said hole or seat of the valve when the burner flame is out and is in a position that opens said hole or seat of the valve, held by the electromagnet, in the presence of the burner flame, characterised by linear transmission elements (22, 23) located inside the tap body between said tap shutter (15) and said valve shutter in order to move

said valve shutter into the open position in response to the opening of the tap shutter by use of the command stem.

2. Globe valve for gas according to claim 1, characterised by a first transmission element (22), placed in line with the safety shutter (20) and which moves axially towards and away from the latter, by a second transmission element (23) in a plane perpendicular to said first transmission element (22) and to the axis of the command stem, but to one side of the latter, and capable of rotating around its own axis, and by a pull rod (25) which is associated to and movable at least axially with said command stem, passing through the tap shutter and extending as far as the second rotating transmission element, said second transmission element having at least one tooth (23') that fits with a corresponding hollow or groove (25') located around said pull rod and at least one other tooth (23'') that couples with a groove or hollow (22'') around the first transmission element, in such a way that the forward axial movement of the command stem corresponds to a rotation of the second transmission element (23) and a traverse of the first transmission in order to move the safety shutter from the closed to the open position towards the electromagnet when the tap is open and back to the closed position when the command stem is retracted.

3. Globe valve for gas according to claim 2, in which said transmission elements (22, 23) are grooved lengthwise to allow the passage of the gas.

4. Globe valve for gas according to claim 2, in which the first transmission element (22) is guided axially and said second element is supported rotationally on the tap body.

