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(54) Gas distribution box to stove burners

(57) The gas distribution box to the top burners of a stove comprises a sealed gas distribution conduit (5, 6) in the form of a channel formed between a base (3) and a cover (2) superposed plates, inside which the means (8,9,18,18',20) for controlling the individual flow to each burner are enclosed, forming an element (1) which is compact and indivisible and from which only the operating shafts (9) and a common gas inlet and individual outlets connectors (30, 31) emerge. The means for regulating the flow to each burner are a valve (8) with an operating shaft (9), and a bypass screw (20). The valves (8) comprises two superposed flat discs (8a,8b), one fixed and the other rotary, fitted between the base (3) and the cover (2). A pusher (10) cooperates with the operating shaft (9).

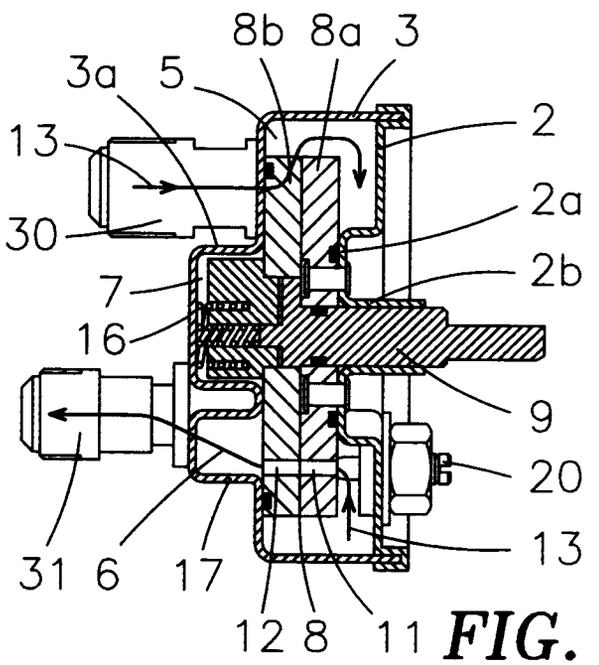

FIG. 3

EP 0 844 440 A2

Description

The present invention relates to the gas fuel distributor and the control elements to distribute gas to the top burners of a domestic stove from a common supply by means of various individual control knobs and outlets.

PRIOR ART

GB-2102557 describes a gas distribution conduit to various stove burners with a channel shaped cross-section and made with two flat plates superposed and sealed together, with the taps for each burner screwed on externally. Said taps are complete articles operating separately themselves with their own gas inlet and outlet and individual clamps for fixing to the distribution conduit.

DISCLOSURE OF THE INVENTION

The object of the invention is a gas distribution box to the top burners of a domestic stove that is provided with a common gas inlet and several individual outlets, and the individual elements for control of the gas are valves forming an inseparable part of said distribution box, each of their gas chambers being formed by the walls of said box, which is constructed with two pressed plates, the base plate and the cover plate.

With respect to the known solution from the cited prior art document which incorporates complete individual taps connected to a common distributor conduit, the gas distribution box which is the object of the invention has the advantage of reduced cost because the valves do not have a body of their own, but the base and the cover of the box form a common body for all valves, and the walls themselves of the cover and the base of the box form the plurality of sealed gas outlet chambers one for each burners. It also has the advantage of providing a single construction to the set of valves and distribution conduit without the need for a subsequent coupling between them. An added advantage is that the distribution box is an only type of universal-use, valid for any domestic cooking apparatus with top burners.

The gas distribution box is constructed as a compact and indivisible block by means of said two pressed plates which are superposed and joined, the rear one the base and the front one the cover, forming a sealed gas conduit between them and, at the same time, the housing enclosure for the control valves. From the distribution box, only emerge the free ends of the rotary shafts operating the valves and both types of gas connectors, the common inlet and the individual outlets. Both parts of the box the base and the cover are drawn-in recesses for the adjusted fit of the valves between them which, in turn, form the surrounding body of the valve, shaping the sealed gas intake and outlet chambers of the valves which are isolated from each other, likewise forming the stops for the rotation of the valve shaft and its tubular guide support.

To reduce the thickness of the distribution box and for achieving, by using seal rings, a sealed fit for the control valves between the base and cover of the distribution box, the type of valve used is, for preference, an obturador disc type which rotary disc slips on a fixed seat disc secured to the box cover so that the relative rotation of each disc permits the flow of gas from the intake chamber common to all the valves, to the individual outlet chamber to the burner, through the passage slots in the obturator and seat discs.

The operating shaft drives the rotatable obturator disc in cooperation with a cylindrical pusher coaxially coupled to the shaft. The minimum flow through each valve is regulated using a bypass screw which is connected externally to the distribution box. For different burners, the same distribution box is always used, just with the interchange of the bypass screw.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of the gas distribution box which is the object of the invention.

FIG. 2 is a partial view of the back of the distribution box in figure 1.

FIG. 3 is a transverse cross-section of the distribution box along III-III in figure 1.

FIG. 4 is a partial lengthwise cross-section of the distribution box along IV-IV in figure 1.

FIG. 5 is a view of the operating shaft for the valve and its locking pusher.

PREFERRED EMBODIMENT OF THE INVENTION

With reference to figures 1 - 5, the box 1 for distribution of gas to the burners of a domestic stove is constructed with a front cover 2 and a rear base 3 of pressed plate, both welded along their edges to form between them the common gas intake chamber 5 and the individual exit chambers 6 of each burner, as well as the individual housing bodies wherein the disc valves 8 for control are fitted, each provided with its operating shaft 9.

The cover 2 has per valve the circular recess 2a drawn-in into the interior of the box 1 to form the tubular housing 2b of each shaft 9, and providing the support wall on which the seat disc 8 of the valve is secured making a sealed contact, and the base 3 of the box has the drawn-in housing 3a of uneven outline divided into two parts, as shown in figure 2, one is the partial drawn-in sector 16 in the form of a 160° circular sector, forming the housing 7 for the pusher 10 and the stops 18 and 18' for the rotation in both directions of control shaft 9, while the other section 17 of an arch shape encloses the chamber 6 for the individual output of gas, situated over the arched slot 11 of the seat disc 8 where the gas flow arrives in the direction of arrow 13 of figure 3, from the inlet connector 30, then leaving individually through the

output connectors 31. The obturator disc 8b of the valve closes the gas output chamber 6 by means of a seal ring 14 against the base 3, while the seat disc 8a closes the intake chamber 5 using a seal ring 15 against the pressed section 2a of the cover. The enclosure formed between both pressed cover plate 2 and base plate 3 for housing the valves 8, is also the gas distribution conduit 5,6 of the box 1.

The shaft 9 of the gas regulation knob turns through a maximum 160° angle from an initial gas flow closed setting, to take the four gas flow positions -off, medium, maximum and minimum- shown in figure 1 by settings a), b), c) and d) of the rotary disc 8b. In the two intermediate positions b) and c) of the blocking disc 8b, its passage slot 12 is partially or totally superposed on the passage slot 11 of the seat disc 8a while, in minimum setting d) in figure 1, the moving slot 12 is superposed on the bypass orifice 19 which is coaxial with the minimum flow adjustment screw 20.

As shown in figure 5, the operating shaft has an axial coupling protrusion 22 on its inside end and a radial locking and drive tail 24, while the cylindrical pusher 10 has a coupling through orifice 21 into which the protrusion 22 on shaft 9 is inserted, and it has a radial fin 23 with a stepped surface matching the radial tail 24 cooperating to drive the disc 8b in its rotation. The central spring 25 housed in the pusher hole 21 returns the shaft 9 to its rest position when the user stops pushing against the knob, and the coupling spring 26 holds the pusher 10 pressed against the obturator disc 8b.

The seat disc 8a and obturator disc 8b are made in this preferred embodiment of ceramic material to increase resistance to wear of the surfaces in contact. The seat disc 8a is fixed to the pressed section 2a of the cover by rivets 27 and has a stopped up notch 28, as shown in figure 4, where the tail 24 on the operating shaft fits partly, while the obturator disc 8b has a through notch 29 into which both the tail 24 on the shaft and the fin 23 on the pusher fit partly. As a consequence of the location of the adjustment screw 20 on the front, in the cover, for easy user access, in this preferred embodiment of the gas distribution box, the rotary disc 8b is placed behind the fixed seat disc 8a, i.e. away from the end of the shaft 9, which is why the rotary disc 8b is provided with the pusher 10.

Claims

1. Gas distribution box to the top burners of a domestic stove, having a sealed gas flow conduit (5,6), individual control means (8,9,18,18',20) for the flow (13) of gas to each burner, a common inlet connector 30) and gas chamber (5) and a individual gas outlet chamber (6) and connector (31) to each burner, the control means (8,9,18,18',20) including for each burner a rotary valve (8) with an operating shaft (9) and two stops (18,18') for limiting the rotation angle of the shaft (9), and a bypass screw (20) for a minimum flow, characterized in that the distribution box (1) encloses the gas valves (8) in the interior of the flow conduit (5,6), forming one compact and indivisible controlled gas distribution element for all the burners.

2. The gas distribution box recited in claim 1, wherein the box (1) forming the sealed flow gas conduit (5,6) and the enclosure (2,3) housing the valves (8) is constructed with two pressed plates (2, 3) which are a rear base (3) which houses the valves (8), forms the outlet gas chambers (6) and the stops (18,18') for the shaft rotation, and a front cover (2) which guides the valve shafts (8) and supports frontally the bypass adjustment screw (20), both pressed plates (2,3) forming a common body of all valves (8).

3. The gas distribution box recited in claim 1, wherein the control valves (8) comprise a seat disc (8a) fixed to the cover plate (2) and a superposed rotary disc (8b), both discs (8a,8b) incorporating gas passage slots (11,12), being the rotary disc (8a) drived by the operating shaft (9) in cooperation with a coaxial pusher (10).

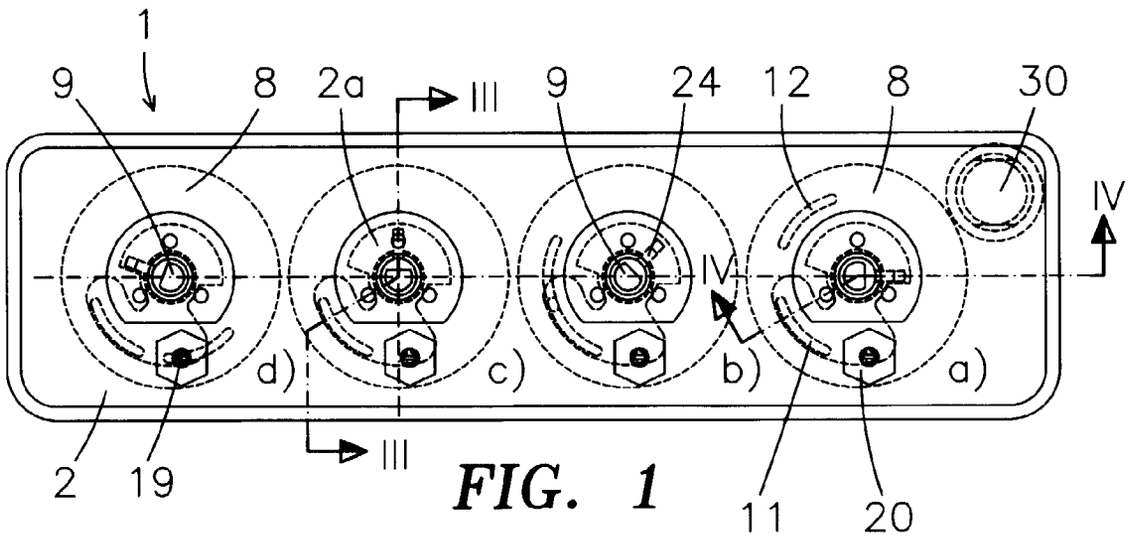

FIG. 1

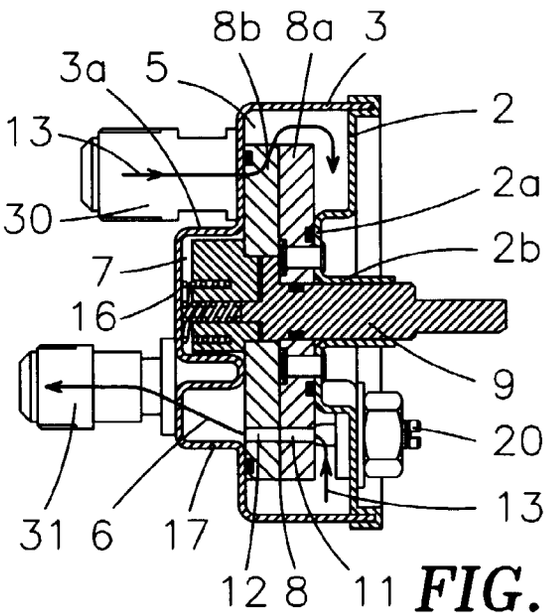

FIG. 3

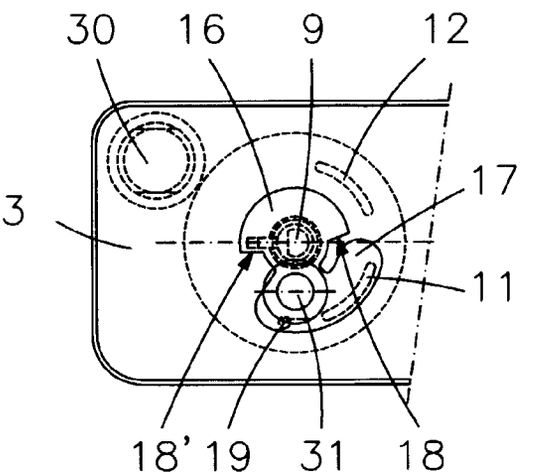

FIG. 2

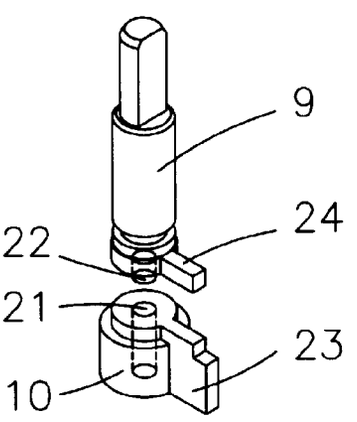

FIG. 5

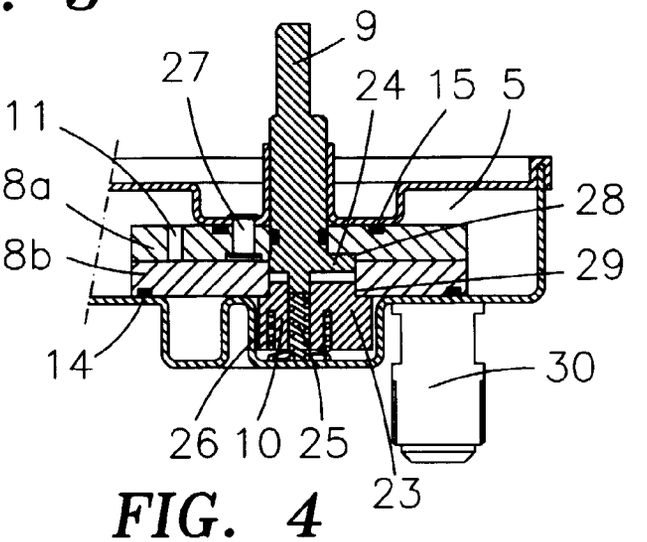

FIG. 4