EUROPEAN PATENT SPECIFICATION

Date of publication and mention of the grant of the patent: 28.08.2002 Bulletin 2002/35

Application number: 97500021.7

Date of filing: 24.01.1997

Gas distribution box to stove burners
Gassteuerungskasten für den Brenner eines Küchenherd
Boîte de distribution du gaz pour les brûleurs d'une plaque de cuisson

Designated Contracting States: DE FR GB IT

Priority: 23.09.1996 ES 9602011

Date of publication of application: 27.05.1998 Bulletin 1998/22

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References cited:
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GB-A- 2 102 557
GB-A- 2 258 909
US-A- 1 775 980

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Description

[0001] 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

[0002] GB-A-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.

[0003] The GB-A-2 258 909 describes a gaseous fuel flow control arrangement, whereby the gas taps are formed integrally with the gas rail.

DISCLOSURE OF THE INVENTION

[0004] 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 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.

[0005] 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 burners, 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.

[0006] 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.

[0007] 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.

[0008] 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

[0009] FIG. 1 is a front view of the gas distribution box which is the object of the invention.

[0010] FIG. 2 is a partial view of the back of the distribution box in figure 1.

[0011] FIG. 3 is a transverse cross-section of the distribution box along III-III in figure 1.

[0012] FIG. 4 is a partial lengthwise cross-section of the distribution box along IV-IV in figure 1.

[0013] FIG. 5 is a view of the operating shaft for the valve and its locking pusher.

PREFERRED EMBODIMENT OF THE INVENTION

[0014] 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.

[0015] 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 tail 24 on the operating shaft (9) in cooperation with a coaxial pusher (10).

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 connec-

tor (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) driven by the operating shaft (9) in cooperation with a coaxial pusher (10).

Patentansprüche

1. Gassteuerungskasten für den Brenner in der Arbeitsplatte eines Küchenherdes, umfassend eine dichte Leitung (5, 6) für den Gasstrom, Vorrichtungen (8, 9, 18, 18', 20) für die individuelle Regelung des Gasstroms eines jeden Brenners, einen Anschluss (30) für den gemeinsamen Gaseintritt und eine Gaskammer (6), sowie einen Anschluss (31) für den Gasausstrom zu jedem einzelnen Brenner, wobei die Vorrichtungen (8, 9, 18, 18', 20) für jeden Brenner ein drehbares, mit einer Antriebsachse (9) ausgestattetes Ventil (8), eine Bypass-Einstellschraube (20) und zwei Anschläge (18, 18') für die Drehung der Achse (9) und eine Bypass-Schraube (20) für einen Mindesten enthalten, dadurch gekennzeichnet, dass die Gasventile (8) bei diesem Gassteuerungskasten (1) in einer dichten Gasstromleitung (5, 6) eingeschlossen sind, womit eine kompakte, unteilbare Einheit für die gesteuerte Versorgung aller Brenner entsteht.

2. Gassteuerungskasten nach Anspruch 1, wobei der die dichte Gasleitung (5, 6) bildende Kasten aus zwei eingelassenen Platten (2, 3) hergestellt wird,
von denen die eine eine hintere, die Ventile (8) aufnehmende Bodenplatte (3) darstellt, welche die einzelnen Gasaustrittskammern (6) und die Anschläge (18, 18’) für die Umdrehung der Achse (9) bildet, und die andere als frontale Abdeckung (2) dient, welche die Achsen (8) der Ventile führt, wobei beide Platten (2, 3) einen gemeinsamen Ventilkörper bilden.

3. Gassteuerungskasten nach Anspruch 1, wobei welchem die Regelventile (8) eine feste Scheibe (8a) und eine drehbare Scheibe (8b) umfassen, die mit übereinanderliegenden Nuten für den Gasdurchgang aufweisen, wobei die drehbare Scheibe (8b) von der Antriebsachse (9) mitgenommen wird, und zwar unter Mitwirkung des koaxialen Mitnehmers (10).

Revendications

1. Boîte de distribution du gaz pour les brûleurs d'une plaque de cuisson, dotée d'une conduite étanche (5,6) du débit de gaz combustible, de moyens (8,9,18,18’,20) de régulation individuelle du débit de gaz de chaque brûleur, d'un connecteur (30) d'entrée du gaz commun et d'une chambre à gaz (6) et d'un connecteur (31) de sortie du gaz et d'un connecteur individuels pour chaque brûleur, les moyens de régulation (8,9,18,18’,20) comprenant pour chaque brûleur une valve (8) avec pourvue d'un axe (9) de commande, et deux butées (18,18’) de la rotation de l'axe (9) et d'une vis bypass (20) pour un débit minimum, caractérisée en ce que la boîte de distribution (1) du gaz renferme les valves à gaz (8) dans l'intérieur de la conduite (5,6) du débit de gaz étanche, formant un élément de distribution contrôlée du gaz compact et indivisible pour tous les brûleurs.

2. La boîte de distribution du gaz récitée dans la revendication 1, dans laquelle la boîte (1) qui forme la conduite (5,6) étanche du débit de gaz, est fabriquée à partir de deux plaques (2,3) embouties, lesquelles sont une base (3) arrière laquelle loge les valves (8), et forme les chambres individuelles (6) de sortie du gaz et les butées (18,18’) pour la rotation de l’axe, et l’autre une couverture (2) frontale guidant les axes (8) des valves, ces deux plaques (2,3) formant un corps commun de valves.

3. La boîte de distribution du gaz citée dans la revendication 1, dans laquelle les valves (8) de réglage comprennent un disque (8a) fixe et un disque (8b) tournant pourvus de rainures (11,12) de passage du gaz superposées, et dans laquelle le disque tournant (8b) est entraîné par l’axe de commande (9) avec la collaboration d'un poussoir (10) coaxial.