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(54) **Lever device to control the taps of hobs and gas cookers**

Steuerhebel für Hähne an Kochmulden und an Gaskochern

Levier de commande pour les robinets d'une plaque de cuisson ou d'une cuisinière à gaz

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Description

The present invention concerns a lever device to control the taps of hobs and gas cookers.

It is known that to control the gas supply taps in these cooking apparatus two movements are required, and namely a first one by pushing in the axial direction on the control rod to unlock the tap from the safety and "off" position wherein it is usually kept by the push of an internal spring, and a rotation of the rod itself to get the gas supply and the adjustment of the flow thereof from a maximum value to a prearranged minimum value. The axial shifting of the rod against the action of said spring also controls the ignition of the burner and, in the taps provided with a safety valve, the opening of the gas closing valve.

It is also known that to carry out the above-mentioned two movements a knob is usually provided on the control rod, with a grip shaped so as to be suitable not only for the rotation but also to exert a certain pressure on it. More recently, as resulting for example from EP-A-378460, a push button has been adopted for the axial shifting only, separate from the rotation knob. In both cases, however, the knob and the push button are on the axis of the control rod of the taps, which are usually positioned near the burners, in particular in the case of hobs, with consequent dangerous approaching of the user's hands, during the operation, to heat sources or even, during the ignition, to flames whose range can not be previously evaluated.

It is therefore an object of the present invention to take the taps control away from the burners and so from the heat sources, as well as to make the operating of the taps easier and safer.

This object has been achieved through an extended control lever having an outer operating end and an inner reacting end, directed towards the flames, a slot being provided between the two ends for the passage of the tap control rod having, for a certain length from the free end thereof, a reduced section defined by two planes parallel to the axis, suitable to engage with a minimum clearance the side edges of said slot for the rotation, as well as a transverse seat, corresponding to the rod section widening in the direction perpendicular to its axis where said planes parallel to the axis end, the inner end of said lever being constrained in its motion in the direction parallel to the axis of the rod by a cover surface thereof, but free to slide along said surface.

Accordingly, the greater the length of the lever, particularly the distance between the free operating end and the rod engagement area, or resistance application point, the smaller will be the force to be exerted on the free end to cause the same lowering of the rod, the whole working as a second degree lever with mobile fulcrum on the inner end.

According to a preferred embodiment of the present invention, said outer end of the lever is knob-shaped to make the grip easier during the operation and the inner

end preferably has a rounded shape to reduce the friction against the sliding surface during the rotation.

These and other objects, advantages and characteristics of the device according to the present invention will become apparent from the following description, reported as non-limiting example, referring to the annexed drawings wherein:

Fig.1 shows a side view, partly in section, of a device according to the present invention with the lever in rest position;

Fig.2 shows a partial side view of the device of fig. 1 with the lever lowered during the operation;

Fig.3 shows a cross sectional view along the line III-III of fig.1;

Fig.4 shows a cross sectional view along the line IV-IV of fig.1, limited to the rod only and to the part of lever in contact therewith; and

Fig.5 is a similar view taken along the section line V-V of fig.2 with the rod lowered.

Referring to the figures, a lever device 1 according to the invention is shown near the flames area 2 of a hob to control a gas supply tap 10. It should be noted that the hob is just an example application of the above-mentioned device, but the domestic cooking apparatus could as well be for example a gas or mixed type cooker.

According to the invention the flames area 2, with its related grill 4, is separated from the lever control device 1 by means of a wall 5 of protection from the flame and, by each tap, a horizontal appendix 5a extends, preferably of circular shape as best shown in the plan view of fig.3.

The control rod 3 of each tap 10 has a vertical rotation axis preferably concentric with the circular surface of said protecting area 5a. The terms "horizontal" and "vertical" are obviously referred to the shown embodiment of a hob 2 with vertical taps, whereas if the device according to the invention would be applied to a cooker having the tap axes directed horizontally onwards from the control frontplate, the coverings 5a would extend in a vertical plane parallel to the frontplate itself, each protection 5a being fixed thereto, at a certain distance, through a connecting appendix 5 parallel to the tap rotation axis, that is to the control rod 3.

According to the present invention the rod 3, axially mobile with respect to the body of the tap 10, has a substantially cylindrical shape which has an upper, or however outer, shaped area with a section reduction achieved by means of two planes 6, 6a parallel to each other and symmetric with respect to the longitudinal axis of the rod itself, coinciding with the rotation axis thereof and of the tap 10. A control lever 1, of an extended shape, has an outer end 8 and an inner end 9 and is applied on the rod 3 through insertion thereof in a slot 11 formed in an intermediate area of the lever between the two ends 8 and 9. The shape of the slot, as best shown in fig.3, coincides with the reduced section part

of the rod 3, by the planes 6, 6a, obviously providing a little clearance which allows the lowering of the lever from the position shown in fig.1 to that of fig.2. The lever 1 may be properly shaped, for example having various bend-shaped areas, so as to result with its end 8 orthogonal, when pushed, to the axis of the rod 3 (fig.2).

Where the two longitudinal planes 6, 6a end, the connection with the remaining cylindrical part of the rod 3 takes place by two transverse seats 7, 7a, respectively, whereon the lever 1 abuts to transfer its motion to the rod 3. The latter, as it is known, is pushed upwards by a spring positioned inside the tap 10 so that there is always the contact between the seats 7, 7a and the lower surface of the lever 1 also during the rotation. It should also be noted that the lever 1 can not slip out from the rod 3 due to the small distance between the upper end of the rod 3 and the surface 5a, besides that the inner end 9 of the lever is blocked against the upper covering surface 5a by the pressure exerted by said spring through the seats 7, 7a. The outer end 8 is preferably knob-shaped for a better grip during the operation of the lever 1, while the inner end 9 has an advantageous rounded shape, as shown in the drawings, to reduce the friction with the lower surface of the covering 5a both during the lowering of the lever, when the end 9 is pushed against said surface, and during the rotation operation.

As clearly resulting from what stated above, the working of the device is the following. Starting from the safety "off" position indicated by 0 in fig.3, the user, by pushing on the outer end 8 of the lever whose fulcrum is at the opposite end 9, causes the lowering of the rod 3 by acting with its central area by the sides of the slot 11 on the opposing seats 7, 7a and thus passing from the position of the figs. 1 and 4 to that shown in the figs. 2 and 5. Thus having unlocked the tap 10 and, wherever a safety valve is provided, having opened the valve which blocks the gas supply, besides having possibly prepared the ignition of the burner, all these functions being controlled by the axial shifting of the rod 3, the user can carry out the rotation operation to adjust the gas flow at the desired value, possibly intermediate between the maximum and minimum positions shown in fig.3. It should be noted that throughout the whole possible arc of rotation of the rod 3 the end 9 remains within the protection 5a against whose lower surface it finds the reaction needed to overcome the resistance of the rod 3 against the lowering, whereas the end 8 always remains accessible outside said protection, rotating along the periphery thereof. The advantage of a greater ease of operation compared to a knob coaxial with the control rod is apparent, especially in the pushing step to open the safety valve and to light the burners. The advantage will be more sensible the greater is the length of the lever 1, in particular the distance between the ends 8 and 9 compared to the distance between the inner end 9 and the rod 3 to be operated, since in this case the lowering of the latter to overcome the pushing force

of the spring inside the tap 10 will be achieved by exerting a small force on the end 8 of the lever 1. Moreover, a greater length of the lever 1 involves the further advantage of keeping the user's hands still farther away from the heat sources.

Claims

1. A lever device to control the taps (10) applied to hobs or gas cookers and having a rod control (3) each, usually blocked by a spring in an "off" position and which may be unlocked from said position through an axial shifting to allow the adjusted gas supply according to its rotation, characterized in that it includes, near a flames area (2), an extended lever (1) with an operating outer end (8) and a reacting inner end (9), directed towards said area (2), a slot (11) being provided for the minimum clearance passage of said control rod (3) having, for a certain length of its free end, a reduced section defined by two planes (6, 6a) parallel to its axis, suitable to engage the side edges of said slot (11) for the rotation, as well as transverse seats (7, 7a) where the section of the rod (3) widens out in the direction orthogonal to its axis, at the end of said planes (6, 6a), the inner end (9) of the lever (1) being constrained in its motion in the direction parallel to said axis of the rod (3) by a covering surface (5a) thereof, along which, however, it is free to slide.
2. A device according to claim 1, characterized in that the clearance between the edges of said slot (11) of the lever (1) and the contour of the reduced section area of the rod (3), combined with the adoption of a small distance between the free end of the rod itself and the covering surface (5a) does not allow the disengagement of said lever (1) from the rod (3), at the same time assuring the stop against the seats (7, 7a).
3. A device according to claim 2, characterized in that said covering surface (5a) has a mainly circular contour, at least along the path of said outer end (8) of the lever during its rotation, the center of said rotation, on the axis of said rod (3), being coincident with the center of said circular contour of the surface (5a).
4. A device according to claim 3, characterized in that said covering surface (5a), by each tap (10) is formed as an appendix integral with a wall (5) of separation from said flames area (2) and extending for a certain length parallel to said control rods (3), the surfaces (5, 5a) together forming an L.
5. A device according to any of the preceding claims, characterized in that said lever (1) is shaped, in the

plane common thereto and to the rod (3), with one or more bends to impart the desired orientation to said outer end (8).

6. A device according to any of the preceding claims, characterized in that said outer end (8) of the lever (1) is knob-shaped for a better grip.
7. A device according to one or more of the preceding claims, characterized in that said inner end (9) of the lever (1) has a rounded shape to reduce the friction against said surface (5a).

Patentansprüche

1. Hebelvorrichtung zum Steuern der an Kochmulden oder Gaskochern angebrachten Hähne (10), die jeweils einen Steuerstab (3) aufweisen, der normalerweise durch eine Feder in einer "Aus-Stellung" verriegelt und aus dieser Stellung durch eine axiale Verstellung entriegelt werden kann, um die entsprechend seiner Drehung eingestellte Gaszufuhr zu ermöglichen,
dadurch gekennzeichnet, daß
sie nahe eines Flammenbereichs (2)

einen ein äußeres Betätigungsende (8) und ein inneres reagierendes Ende (9) aufweisenden verlängerten Hebel (1), der in Richtung des genannten Bereichs (2) ausgerichtet ist, einen Schlitz (11), der für den minimalen Spieldurchgang des Steuerstabes (3) sorgt, welcher für eine bestimmte Länge seines freien Endes einen reduzierten Querschnitt aufweist, der parallel zu seiner Achse durch zwei ebene Flächen (6, 6a) definiert ist, welche passend ausgebildet sind, die Seitenränder des Schlitzes (11) zur Drehung anzugreifen, sowie querverlaufende Sitzflächen (7, 7a) enthält, an denen sich der Querschnitt des Stabes (3) in orthogonaler Richtung zu dessen Achse am Ende der ebenen Flächen (6, 6a) nach außen verbreitert, wobei das innere Ende (9) des Hebels (1) in seiner Bewegung in Richtung parallel zu der Achse des Stabes (3) durch eine zugehörige Abdeckfläche (5a) eingezwängt ist, entlang derer er jedoch ungehindert ist, zu gleiten.

2. Vorrichtung nach Anspruch 1,
dadurch gekennzeichnet, daß
das Spiel zwischen den Rändern des Schlitzes (11) des Hebels (1) und der Kontur des reduzierten Querschnittsbereichs des Stabes (3) kombiniert mit der Annahme eines geringen Abstandes zwischen dem freien Ende des Stabes selbst und der Abdeckfläche (5a) das Entkoppeln des Hebels (1) von dem Stab (3) verhindert und gleichzeitig den Anschlag

gegen die Sitzflächen (7, 7a) sichert.

3. Vorrichtung nach Anspruch 2,
dadurch gekennzeichnet, daß
die Abdeckfläche (5a) zumindest entlang des Weges des Außenendes (8) des Hebels während seiner Drehung eine im wesentlichen kreisförmige Kontur aufweist, wobei der Mittelpunkt der Drehung um die Achse des Stabes (3) mit dem Mittelpunkt der kreisförmigen Kontur der Fläche (5a) fluchtet.
4. Vorrichtung nach Anspruch 3,
dadurch gekennzeichnet, daß
die Abdeckfläche (5a) an jedem Hahn (10) als Ansatzstück ausgebildet ist, das einstückig mit einer Trennwand (5) gegenüber dem Flammenbereich (2) versehen ist und sich über eine bestimmte Länge parallel zu den Steuerstäben (3) erstreckt, wobei die Flächen (5, 5a) zusammen ein "L" bilden.
5. Vorrichtung nach einem der vorangehenden Ansprüche,
dadurch gekennzeichnet, daß
der Hebel (1) in der gemeinsamen Ebene mit dem Stab (3) mit einer oder mehreren Krümmungen ausgestaltet ist, um ihm die gewünschte Ausrichtung zum Außenende (8) hin zu verleihen.
6. Vorrichtung nach einem der vorangehenden Ansprüche,
dadurch gekennzeichnet, daß
das Außenende (8) des Hebels (1) für einen besseren Griff knopfförmig gestaltet ist.
7. Vorrichtung nach einem der vorangehenden Ansprüche,
dadurch gekennzeichnet, daß
das innere Ende (9) des Hebels (1) eine abgerundete Form aufweist, um die Reibung an der genannten Fläche (5a) zu verringern.

Revendications

1. Dispositif à levier pour la commande des robinets d'une plaque de cuisson ou d'une cuisinière à gaz comportant chacun une tige de commande (3) usuellement bloquée par un ressort dans une position fermée et qui peut être débloquée depuis cette position par un déplacement axial pour permettre une alimentation en gaz réglée suivant son pivotement, caractérisé en ce qu'il comporte, au voisinage d'une zone de flammes (2) un levier allongé (1) avec une extrémité de commande (8) et une extrémité intérieure de réaction (9), dirigé vers ladite zone (2), une fente (11) étant prévue pour le passage avec un jeu minimal de ladite tige de commande (3)

ayant, sur une certaine longueur de son extrémité libre, une section réduite définie par deux plans (6-6a) parallèles à son axe, propres à engager les bords latéraux de ladite fente (11) pour assurer sa rotation, ainsi que des sièges transversaux (7-7a) 5 où la section de la tige (3) s'élargit dans la direction perpendiculaire à son axe, à l'extrémité des plans (6-6a), l'extrémité intérieure (9) du levier (1) étant empêchée de se déplacer dans la direction parallèle à l'axe de la tige (3) par une surface du recouvrement (5a) de celle-ci, le long de laquelle elle peut 10 cependant coulisser librement.

2. Dispositif à levier selon la revendication 1, caractérisé en ce que le jeu entre les bords de la fente (11) du levier (1) et le contour de la zone de section réduite de la tige (3), combiné avec l'adoption d'un faible écart entre l'extrémité libre de la tige elle-même et la surface de recouvrement (5a), ne permet pas au levier (1) de se dégager de la tige (3), en assurant en même temps une butée contre les sièges (7-7a). 15 20
3. Dispositif selon la revendication 2, caractérisé en ce que la surface de recouvrement (5a) a un contour essentiellement circulaire au moins sur le trajet de l'extrémité extérieure (8) du levier (9) durant son pivotement, le centre de rotation, sur l'axe de la tige (3), coïncidant avec le centre de ce contour circulaire de la surface (5a). 25 30
4. Dispositif selon la revendication 3, caractérisé en ce que la surface de recouvrement (5a), à chaque robinet (10), est formée par un appendice solidaire d'une paroi de séparation (5) des zones de flammes (2) s'étendant sur une certaine longueur parallèlement aux tiges de commande (3), les surfaces (5-5a) formant ensemble un L. 35
5. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce que le levier (1) présente, dans le plan qui lui est commun avec la tige (3), une ou plusieurs parties courbes pour donner l'orientation désirée à l'extrémité extérieure (8). 40 45
6. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce que l'extrémité extérieure (8) du levier (1) est en forme de bouton pour assurer une meilleure prise. 50
7. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce que l'extrémité intérieure (9) du levier (1) présente une forme arrondie de façon à réduire le frottement contre la surface (5a). 55

