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(54) **Device for controlling a tap equipped with safety valve belonging to a multipurpose gas cooking surface**

Steuereinrichtung für Sicherheitsventil an Mehrzweckkochmulden

Dispositif de commande pour vanne de sécurité d'une plaque de cuisson à fonctions multiples

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(56) References cited:
EP-A- 0 412 041 **FR-A- 2 435 003**
GB-A- 827 650

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Description

Filed of invention

[0001] The invention consists of a device which enables control of the tap of a burner, equipped with a safety valve, belonging to a built-in multi-purpose gas cooking surface.

[0002] The shaft of the knob which controls the tap that regulates gas flow to one of the burners of the cooking surface is connected to the shaft of the tap by a variable-length rod comprising adjustable means which enable the minimum length of the rod to be set, the rod thus being able to transmit to the shaft of the tap the axial force required to disable a safety valve built into the burner.

Prior art

[0003] Multi-purpose built-in cooking surfaces and ovens are known and available on the market, which, when installed in association with one another, make up an assembly in which also the controls of the burners of the cooking surface are located on the front of the oven.

[0004] This arrangement is advantageous for the user in that it makes it possible to increase the space available for arranging the burners and grills, but involves the problem of connecting mechanically each knob located on the front of the oven with the tap that regulates gas flow to the corresponding burner. The said tap is located in the bottom part of the cooking surface at a distance from the corresponding knob which is different for each tap and depends upon a number of factors, such as, for example, the position of the cooking surface with respect to the kitchen working surface, the thickness of the kitchen working surface, the height at which the oven is installed, etc.

[0005] The above technical problem has been solved by means of a variable-length rod (comprising two or more parts which are free to slide with respect to one another) at the ends of which are applied particular universal joints, one of which is fixed to the tap shaft, and the other to the knob shaft.

[0006] Normally one end of the variable-length rod is fixed to the tap shaft before the cooking surface is inserted into the cabinet, whilst the other end of the variable-length rod (preferably, but not necessarily, completely extended) to enable easier access to the rear part of the oven front) is fixed to the knob shaft before the oven front is inserted into the cabinet.

[0007] When the front of the oven is inserted into the cabinet, the mutual sliding of the parts that make up each variable-length rod automatically adjusts the length of the rod to the distance existing between the shaft of the knob and the shaft of the tap to which it is fixed. Each variable-length rod is designed to transmit to the tap shaft a rotation exerted by the user on the knob to regulate the intensity of the flame, but is not able

to transmit to the tap shaft an axial force.

[0008] EP A 412 041 discloses a control mechanism for connecting a control button to a cook comprising a double articulation and an axis comprising two elements able to reciprocally slide. Said axis can transmit rotation, but not a longitudinal movement.

[0009] GB 827,650 discloses a control device wherein two shafts, for transmitting rotation from a knob to a control mechanism of an oven, are free to slide reciprocally. The device does not allow any other movement than rotation.

[0010] Recent market trends and the orientation of future safety standards regarding the use and manufacture of gas appliances for household use tend to require that each burner be equipped with a safety valve (based, for example, upon the principle of the thermo-electric couple) which cuts off gas supply in the event of the burner flame accidentally going out.

[0011] In the taps with safety valves currently available on the market, as soon as the burner is lit, the safety valve is temporarily disabled when an adequate pressure is exerted on the shaft of the tap.

[0012] As has been said previously, in multipurpose cooking surfaces, the shaft of a knob is connected to the shaft of the tap by means of a variable-length rod which is not able to transmit to the tap shaft the pressure exerted by the user on the knob. It is not therefore possible to equip a multipurpose cooking surface with burners each comprising a safety valve.

[0013] This represents an element of risk for the user and may constitute a limitation to the sale of multipurpose cooking surfaces that are equipped with burners not provided with safety valves.

[0014] The control device which is the subject of the present invention makes it possible to overcome the serious problems referred to above in that it is able to transmit to the shaft of the tap not only a rotation exerted by the user on the knob to regulate the intensity of the flame, but also a pressure exerted by the user on the knob.

Summary of the invention

[0015] The subject of the present invention is a device for controlling a tap equipped with a safety valve belonging to a multipurpose gas cooking surface, the said tap comprising a variable-length rod consisting of a first rod telescopically inserted into a second rod in which it is free to slide. The free ends of the first rod and of the second rod carry fastening means (comprising a universal joint) for coupling them mechanically to the shaft of the control knob and to the tap shaft, respectively. The device further comprises a friction slide inserted on the first rod, said friction slide further comprising means designed to fix it in a reversible way to the first rod and a leaf spring inserted between one inner wall of the slide and the adjacent outer wall of the first rod.

List of figures

[0016] The invention will now be better described with reference to a non-limiting example of embodiment illustrated in the attached figures, where:

- Figure 1 is a schematic representation of an assembly comprising a multipurpose oven and a multipurpose cooking surface, built into the same cabinet, in which one knob located on the front of the oven is connected by means of a control device according to the invention to the tap of one of the burners of the cooking surface;
- Figure 2 presents an enlarged partial schematic view of the assembly of Figure 1, so as to provide a clearer illustration of the knob connected to the burner tap by means of the control device according to the invention;
- Figure 3 is an exploded view of a control device according to the invention. In the attached figures, the corresponding items are identified by the same numerical references.

Detailed description

[0017] Figure 1 is a schematic representation of an assembly comprising a multipurpose oven 5 and a multipurpose cooking surface 1, built into the same cabinet, in which the knob 4 located on the front of the oven 5 is connected to the tap 2 of one of the burners of the cooking surface 1 by the control device 3 (which will be better described in the exploded view of Figure 3), which comprises a variable-length rod consisting of one first rod 31 telescopically inserted into one second rod 32, inside which it is free to slide. The free ends of the two rods (31, 32) are mechanically coupled to the shaft of the knob 4 and to the shaft of the tap 2, respectively.

[0018] On the first rod 31 are inserted blocking means 33 (consisting, in the preferred embodiment described herein, of a friction slide, which will be better described with reference to Figure 3) which can be adjusted to set the minimum length of the variable-length rod.

[0019] Figure 2 is an enlarged partial schematic view of the assembly of Figure 1 and has the purpose of better illustrating the knob 4 connected to the tap 2 of the burner of the control device 3 consisting of the first rod 31 telescopically inserted into the second rod 32 (in which it is free to slide) and of the friction slide, inserted on the first rod 31, which constitutes the blocking means 33. The free ends of the two rods (31, 32) are mechanically coupled to the shaft of the knob 4 and to the shaft of the tap 2, respectively.

[0020] Figure 3 is an exploded view of a control device 3 made according to the invention. In Figure 3 it is possible to see the first rod 31, the second rod 32, the friction slide that constitutes the blocking means 33, and the fixing means 34 (comprising a universal joint and not described herein in that they are in themselves known) lo-

cated at the free ends of the two rods (31, 32) and designed to couple them mechanically to the shaft of the knob 4 and to the shaft of the tap 2, respectively.

[0021] Without departing from the scope of the invention, it is possible to replace the fastening means 34 illustrated in Figure 3 with other, functionally equivalent, fastening means, which are not described herein in that they are in themselves known and in any case are extraneous to the present invention.

[0022] In the example of embodiment illustrated in Figure 3, the friction means of the slide consist of a leaf spring 35 inserted between one inside wall of the slide and the adjacent outer wall of the first rod 31. Without departing from the scope of the invention, it is possible to replace the leaf spring 35 with another, functionally equivalent, elastic element, not described herein in that it is in itself known.

[0023] In the exploded view of Figure 3, the leaf spring 35 may be seen both by itself and inserted into the friction slide.

[0024] The friction slide moreover comprises fixing means 36 (consisting, in the example of embodiment illustrated herein, of a screw inserted into a threaded hole made in one wall of the friction slide) that are designed to fix the slide in a reversible way to the first rod 31.

[0025] There now follows a brief description of the installation of a multipurpose cooking surface by means of control devices 3 made according to the invention.

[0026] Before the cooking surface 1 is set into the cabinet, one end of each variable-length rod is fixed (by means of the fixing means 34) to the shaft of the tap 2 of one of the burners of the cooking surface 1; each variable-length rod is extended, and the other end of the rod is fixed (using the fixing means 34) to the shaft of the, corresponding knob 4 located on the front of the oven 5 before the oven 5 is inserted into the cabinet. Finally, the oven 5 is set into the cabinet but not fastened in its housing.

[0027] Each variable-length rod automatically adapts its length to the distance between the shaft of the knob 4 and the shaft of the tap 2 to which each one is fixed. In particular, the mutual displacement of the second rod 32 with respect to the first rod 31 causes the slide to run along the first rod 31. Since the slide is a friction slide, it remains in the position that it reaches when the oven 5 is completely inserted into the cabinet, even when the oven 5 is taken out again.

[0028] Once the slide has been blocked using the blocking means 36, the oven 5 is inserted into the cabinet and fastened in its housing. The second rod 32 comes to bear upon the slide which is fixed to the first rod 31, thus limiting the minimum length of the variable-length rod to the effective distance between the shaft of the knob 4 and the shaft of the tap 2. In this way, the rod is able to transmit to the shaft of the tap 2 also the axial force exerted by the user on the knob 4 to disable the safety valve when he lights the burner.

[0029] Without departing from the scope of the invention, it is possible for a technician to make to the control device of a tap equipped with a safety valve, which forms the subject of the present description, all the modifications and improvements that may be suggested by normal experience and by the natural evolution of techniques.

Claims

1. Control device of a tap (2) equipped with a safety valve belonging to a multipurpose gas cooking surface (1), the said tap (2) comprising a variable-length rod consisting of a first rod (31) telescopically inserted into a second rod (32) in which it is free to slide, where the free ends of the first rod (31) and of the second rod (32) can be mechanically coupled to the shaft of the control knob (4) and to shaft of the tap (2), respectively, via fixing means comprising a universal joint, **characterised in that** it comprises a friction slide inserted on the first rod (31), said friction slide further comprising means (36) designed to fix it in a reversible way to the first rod (31) and a leaf spring (35) inserted between one inner wall of the slide and the adjacent outer wall of the first rod (31).
2. Control device according to Claim 1, **characterised in that** the reversible fixing means (36) consist of a screw inserted into a threaded hole made in one wall of the friction slide.

Patentansprüche

1. Steuereinrichtung für einen mit einem Sicherheitsventil ausgestatteten Hahn (2), welcher zu einer mit Gas betriebenen Mehrzweckkochmulde (1) gehört, wobei der genannte Hahn (2) einen längenveränderlichen Stab umfasst, welcher einen ersten Stab (31) enthält, der in einen zweiten Stab (32) gesteckt ist, in welchem er frei gleiten kann, wobei die freien Enden des ersten Stabes (31) und des zweiten Stabes (32) mechanisch an die Welle des Bedienknopfes (4) bzw. an die Welle des Hahnes (2) über Befestigungsmittel, welche eine Universalverbindung umfassen, gekoppelt werden können, **dadurch gekennzeichnet, dass** sie ein auf den ersten Stab (31) aufgesetztes Gleitelement umfasst, wobei das genannte Gleitelement außerdem Mittel (36) umfasst, die so ausgelegt sind, dass sie es auf umkehrbare Weise am ersten Stab (31) befestigen, sowie eine Blattfeder (35), die zwischen eine Innenwand des Schiebers und die angrenzende Außenwand des ersten Stabes (31) eingesetzt ist.
2. Steuereinrichtung gemäß Anspruch 1, **dadurch ge-**

kennzeichnet, dass die umkehrbaren Befestigungsmittel (36) aus einer Schraube bestehen, welche in ein mit Gewinde versehenes Loch geschraubt ist, welches in einer Wand des reibschlüssigen Gleitelements angelegt ist.

Revendications

1. Dispositif de commande d'un robinet (2) équipé d'une vanne de sécurité faisant partie d'une surface de cuisson multi-fonction à gaz (1), ledit robinet (2) comprenant une tige à longueur variable constituée d'une première tige (31) insérée télescopiquement dans une seconde tige (32) qui peut coulisser librement, où les extrémités libres de la première tige (31) et de la seconde tige (32) peuvent être couplées mécaniquement à l'arbre du bouton de commande (4) et à l'arbre du robinet (2), respectivement, par des moyens de fixation comprenant un joint universel, **caractérisé en ce qu'il** comprend un coulisseau à friction inséré sur la première tige (31), ledit coulisseau à friction comprenant en outre un moyen (36) conçu pour le fixer d'une manière réversible à la première tige (31) et un ressort à lames (35) inséré entre une paroi interne du coulisseau et la paroi externe adjacente de la première tige (31).
2. Dispositif de commande selon la revendication 1, **caractérisé en ce que** le moyen de fixation réversible (36) est constitué d'une vis insérée dans un trou taraudé ménagé dans une paroi du coulisseau à friction.

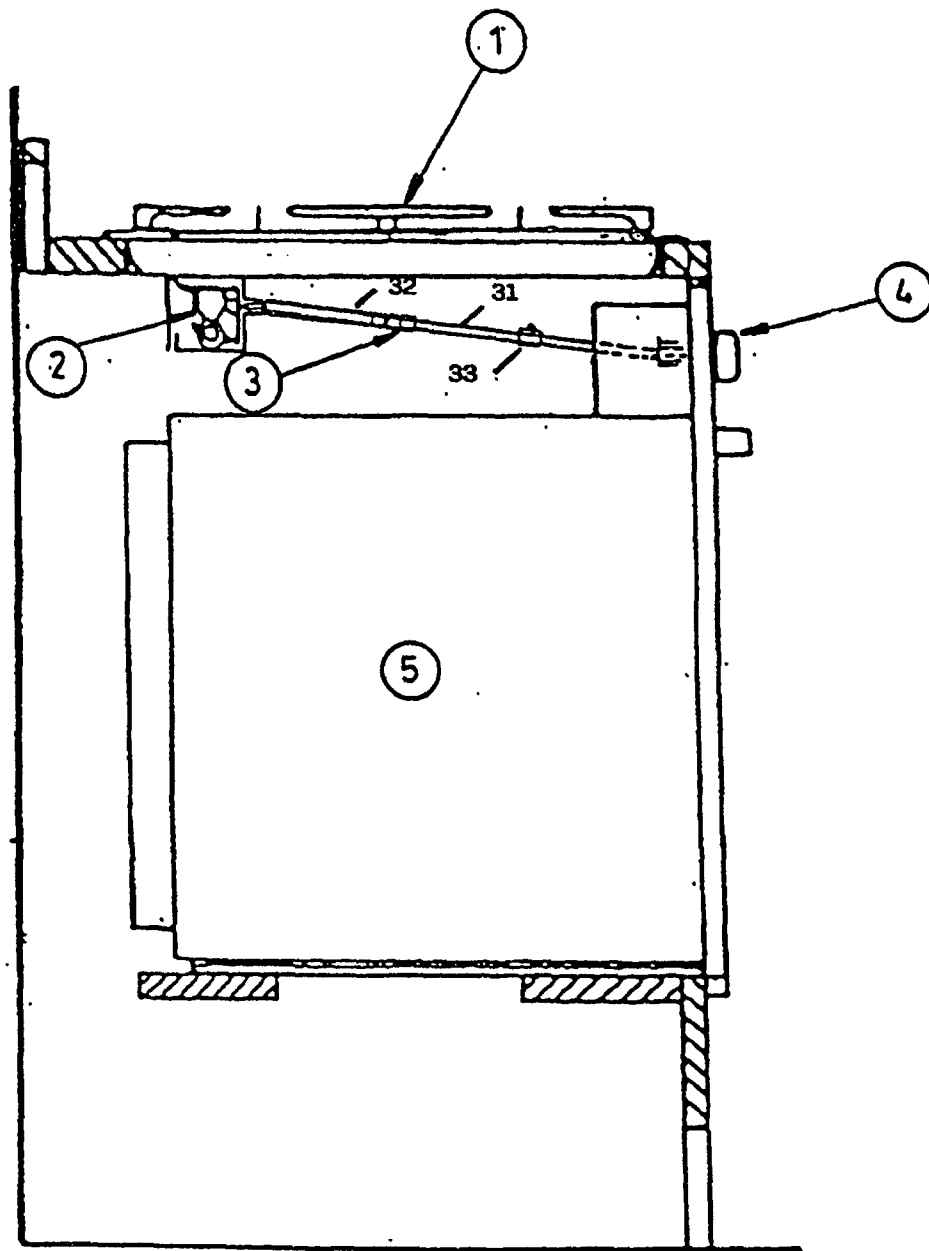


FIG. 1

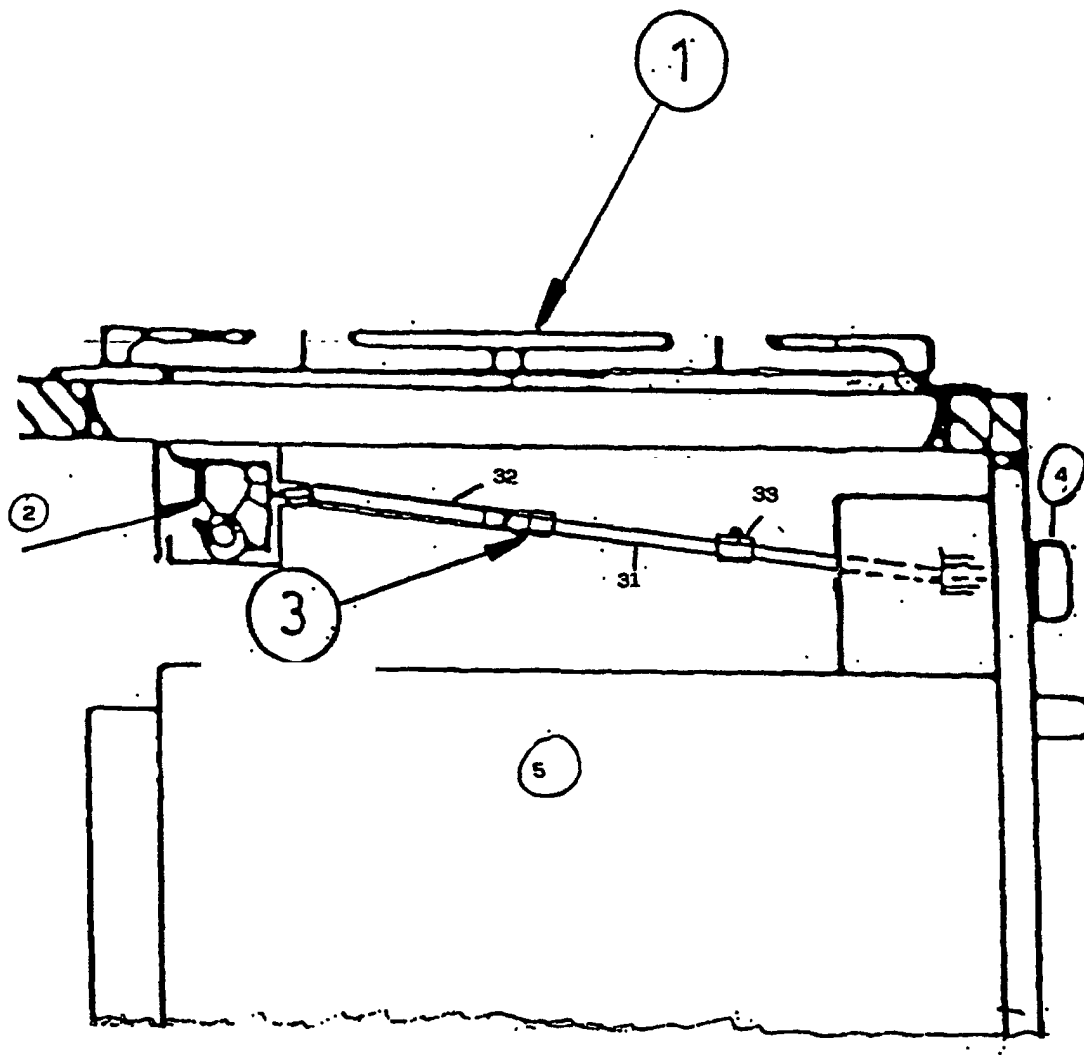


FIG. 2

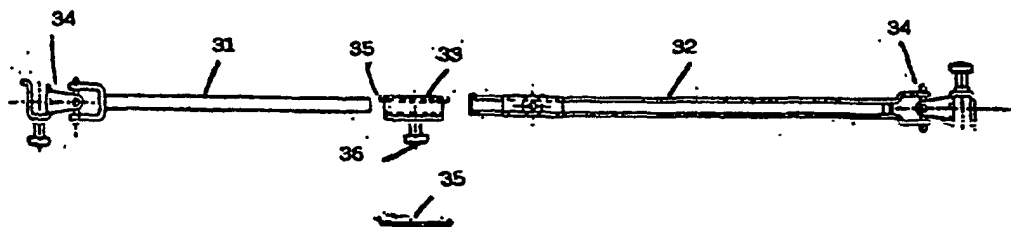


FIG. 3