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(54) Household gas cooking equipment with a simplified spark ignition device

(57) A household gas cooking equipment, equipped with a spark ignition activated via the closing of microswitches (7) mounted on the gas cut-off cocks (2, 2.b). It is possible to remove one microswitch for every two adjacent cocks by mounting on a first cock (2b), with no microswitch, a component capable of crushing the microswitch mounted on a second adjacent cock (2).

The advantage of this invention is that it is possible to reduce the number of microswitches necessary and simplify the electrical circuit of the ignition, by effecting minimal modifications to the cocks.

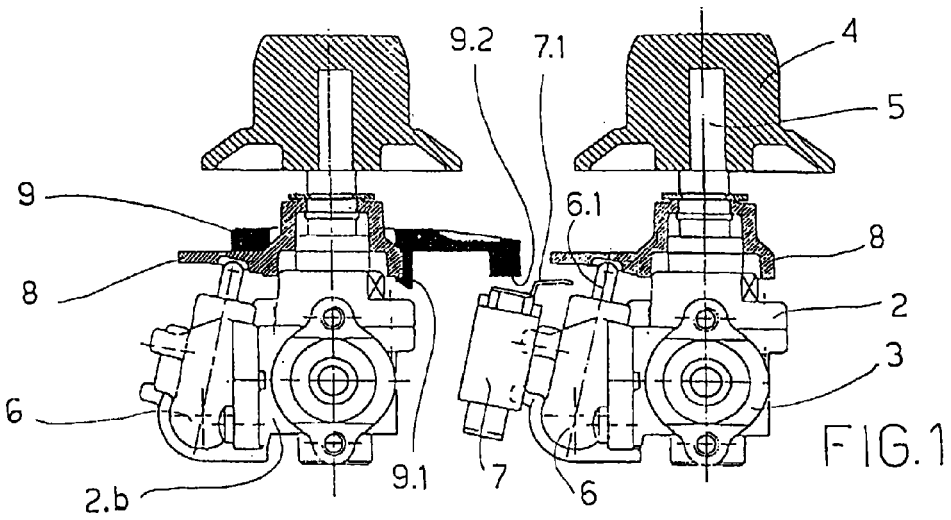

FIG.1

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Description

[0001] The invention relates to a device capable of reducing the number of microswitches usually used for the spark ignition of the gas burners of household cooking equipment.

[0002] It is usual, in household cooking equipment fitted with gas burners, for the ignition of the burners to be effected by means of a spark created by a special igniter plug located near each of the burners: for wiring simplicity, a single electric circuit connects all the igniter plugs in parallel so that, when the circuit is closed, all the igniter plugs produce sparks, regardless of which burner needs to be ignited.

[0003] To close this circuit there may be a special ignition button which comes into contact with the microswitches in series with the ignition plugs: this is located on the panel of the cooking equipment, independently of the knobs for the cocks, and the ignition is achieved by this being pushed down while the burner cock is opened at the same time.

[0004] For the user's convenience and to limit the risk that, through carelessness, unconsumed gas is allowed to leak out, it is common to use cocks equipped with a microswitch. The microswitches are connected in parallel in the single electrical circuit which supplies all the igniter plugs. When the knob of the cock for the burner needed to be ignited is pressed, the relative solenoid valve to the burner opens while the microswitch, necessarily closes and, as in the case of a single button separate from the cocks, produces a spark from all the igniter plugs.

[0005] Since the gas cut-off cock is a due and compulsory safety component, usually incorporated in the cock, while the spark ignition is an optional function, the microswitch is a separate element which can be mounted on the cock adapted to receive it.

[0006] With the presence of a microswitch on each of the cocks the ignition manoeuvre is more convenient and safer, as the user simply has to press the knob down to ignite the burner, but it has the drawback of an additional cost since a microswitch must be provided for each gas cock.

[0007] The present invention, in the case of household cooking equipment fitted with at least two gas burners supplied by means of corresponding cocks mounted next to each other and fitted with a spark ignition activated by means of microswitches attached to the said cocks, aims to allow the removal of one microswitch from each pair of adjacent cocks.

[0008] A further aim of the present invention is to achieve this objective by simply applying an additional mechanical element to the standard cocks manufactured according to the commonly-known technique.

[0009] These aims are achieved through a device according to the present invention in which the ignition spark is produced, for at least one cock because the said cock is equipped with a striking element which comes into contact with the microswitch mounted either on a second cock or close to this latter or positioned between the two and, however, in such a way that the said microswitch can be activated by both the first and the second cock, each one independently of the other.

[0010] The characteristics of the device according to the present invention will better emerge from the detailed description of some preferred but not exclusive embodiments that follows, with reference to the accompanying drawings, provided in the form of a non-limiting example which shows the gas cock with a vertical knob shaft, of a type designed to be mounted on a cooking hob or, in any case, on a horizontal surface.

[0011] Figure 1 shows a frontal view, according to an embodiment of the present invention, of two adjacent cocks, both manufactured according to the commonly-known technique with the only difference that, on the first cock there is a spark ignition microswitch manufactured, mounted and activated according to the commonly-known technique, while the second cock does not have a microswitch but an additional mechanical element which can activate the microswitch of the first cock.

[0012] Figure 2 shows a further frontal view, substantially the same elements of the previous figure with only one variation relating to the additional mechanical element according to the present invention.

[0013] Figure 3 shows a top view of the same elements of figure 1 as well as the so-called 'ramp', i.e. the tubing which supplies the gas cocks: the ramp is omitted in the previous figures for the sake of clarity.

[0014] In the three figures the most important elements are highlighted with identification numbers, to be exact: n° 1 denotes the gas ramp; n°2 denotes the body of a standard gas cock designed according to the commonly-known technique; n°2.b denotes a standard gas cock which can even be identical to the cock 2 except that it is fitted with an additional element according to the invention; n°3 denotes the cylindrical flange by means of which either gas cock 2 or 2 .b can be coupled to the ramp 1; n°4 denotes any of the knobs for gas cocks 2 or 2.b; n° 5 denotes the shaft of a knob 4; n°6 denotes the body of a solenoid valve; n° 6.1 denotes the feeler pin of the solenoid valve 6 whose pressure enables the opening of the solenoid valve 6 itself n°7 denotes a microswitch mounted on a cock 2; n° 7.1 denotes the feeler pin of the microswitch 7; n°8 denotes the striking element according to the commonly-known technique mounted onto the shaft 5 of a cock 2 which can be pressed at the same time as the feeler pins 6.1 and 7.1 of, respectively, the solenoid valve 6 and the microswitch 7; n° 9 denotes an additional striking element according to the invention mounted on the cock 2.b; n° 9.1 denotes the teeth for hooking the additional striking element 9 to the striking element 8; n° 9.a denotes a second possible embodiment of the additional striking element according to the invention, mounted on the cock 2.b; n°9.2 denotes one end of the

said additional striking elements 9 or 9.a.

[0015] The functioning modes and the advantages of the invention have already been highlighted by the description of the figures.

[0016] According to the current technique, to cause the ignition of the burners by means of a spark, it is preferred not to use a separate button but to attach a microswitch 7 to each of the cocks 2, naturally only if the spark ignition, an optional extra, is envisaged. This is why the microswitch 7 is non incorporated in the cock 2 but simply mounted on this latter. If the knob 4 is pressed, the shaft 5 moves downwards and the striking element 8, mounted on to the shaft 5, crushes both the feeler pin 6.1 of the solenoid valve, opening it, and also the feeler pin 7.1 of the microswitch 7, if present.

[0017] According to a first embodiment of the invention, and with reference to the figures 1 and 3, since a cock 2 has already been envisaged, equipped with a microswitch 7, it is possible to attach a cock 2.b. adjacent to the additional striking element 9. As the cock 2.b. opens, initiated by means of the pressure of the corresponding knob 4, the corresponding solenoid valve 6 is opened while the additional striking element 9 presses, by means of the end 9.2, the feeler pin 7.1 of the adjacent cock 2 without, however, interfering with the similar operation which can be activated by the striking element 8 of the said cock 2 nor activating the solenoid valve 6 of the same cock 2.

[0018] The said striking element 9 makes it possible not to mount a microswitch 7 on either of the cocks 2.b adjacent to a cock 2.

[0019] The striking element 9 can be manufactured using any commonly-known material and technology and so it is not necessary to describe them. A preferred embodiment envisages moulded plastic, of a suitable mechanical and thermal resistance, fitted with hooking teeth 9.1 with which the striking element 8 can be locked in place. Obviously the said striking element 9 has a seating for coupling with the striking element 8 formed in such a way as to ensure the correct positioning of the first element with the second element, as the non-symmetrical positions of the teeth 9.1 show in the example in Fig. 3.

[0020] According to a further embodiment of the invention, in figure 2 a striking element 9.a is envisaged comprising the striking element 8 with the end 9.2 added. In this case, preferably, the material used will be the same as the material currently used to manufacture the striking elements 8. It could be advantageous, for production simplicity, to fit all the cocks 2 and 2.b., whether they are fitted with the microswitch 7 or not, with the same striking element 9 whose end 9.2, at the most, will not be used.

[0021] The present invention has been described applied to gas cocks designed to be installed in cooking equipment fitted with a horizontal panel, but it is clear that, with elements and mechanical means equivalent to those described, this could also be applied to many other household gas cooking equipment in which optional ignition microswitches are mounted on the cocks and they are accessible, for activation, from the outside of the body of the said cocks.

[0022] If the said microswitch 7, mounted on a cock 2, cannot be accessed easily, because of its shape or position, by the striking elements 9 or 9.a mounted on a cock 2 .b, then the said microswitch 7 can be positioned between the two cocks 2.b, each one fitted with a striking element 9 or 9.a with the ends 9.2. in the appropriate positions, which can be identical if necessary.

[0023] An advantage of the invention just described is clear: by means of the application of an additional striking element 9 or by means of a striking element 9.a produced by modifying slightly a standard striking element 8, it is possible, for each pair of adjacent cocks, to remove one ignition microswitch and the relative wiring without it being necessary to modify any other component of the cooking equipment in any way.

Claims

1. Household cooking equipment fitted with at least two gas burners supplied by means of corresponding cocks (2, 2b) mounted next to each other and equipped with a spark ignition activated by means of the closing of one or more microswitches (7) attached to the said cocks (2, 2b) characterised by the fact that at least one cock (2, 2.b) is fitted with a striking element (9, 9.a) which comes into contact, by means of an end (9.2), with the feeler pin (7.1) of a microswitch (7) mounted on a second cock (2) adjacent to the first cock (2.b), said microswitch (7) being activated independently of both the first and the second cock (2, 2.b).

2. Household cooking equipment fitted with at least two gas burners supplied by means of corresponding cocks (2, 2b) mounted next to each other and equipped with a spark ignition activated by means of the closing of one or more microswitches (7) attached to the said cocks (2, 2b) characterised by the fact that both cocks (2.b) are fitted with a striking element (9,9.a) which comes into contact, by means of one end (9.2), with the feeler pin (7.1) of a microswitch (7) positioned between the said cocks (2.b), said microswitches being activated independently of both the first and second cock (2.b).

3. Household cooking equipment according to claims 1 or 2 characterised by the fact that the striking element (9) is an additional element which can be applied to a cock (2.b) which does not have a microswitch (7).

4. Household cooking equipment according to claim 3 characterised by the fact that the striking element

(9) can be attached to a striking element (8) of a cock (2 .b) which does not have a microswitch (7) using commonly-known means such as hooking teeth (9.1) or other commonly-known means capable of guaranteeing the correct positioning.

5. Household cooking equipment according to claim 4 characterised by the fact that the striking element (9) can be manufactured using any suitable material such as moulded plastic with sufficient thermal and mechanical resistance.

6. Household cooking equipment according to claims 1 or 2 characterised by the fact that the striking element (9.a) is created from a striking element (8) according to the commonly-known technique with an end (9.2) added to it.

7. Household cooking equipment according to claim 6 characterised by the fact that all the cocks (2.b) are fitted with striking elements (9.a) whether the end (9.2) is necessary or not.

8. Gas cocks for household cooking equipment having one or more of the characteristics listed in the individual claims above.

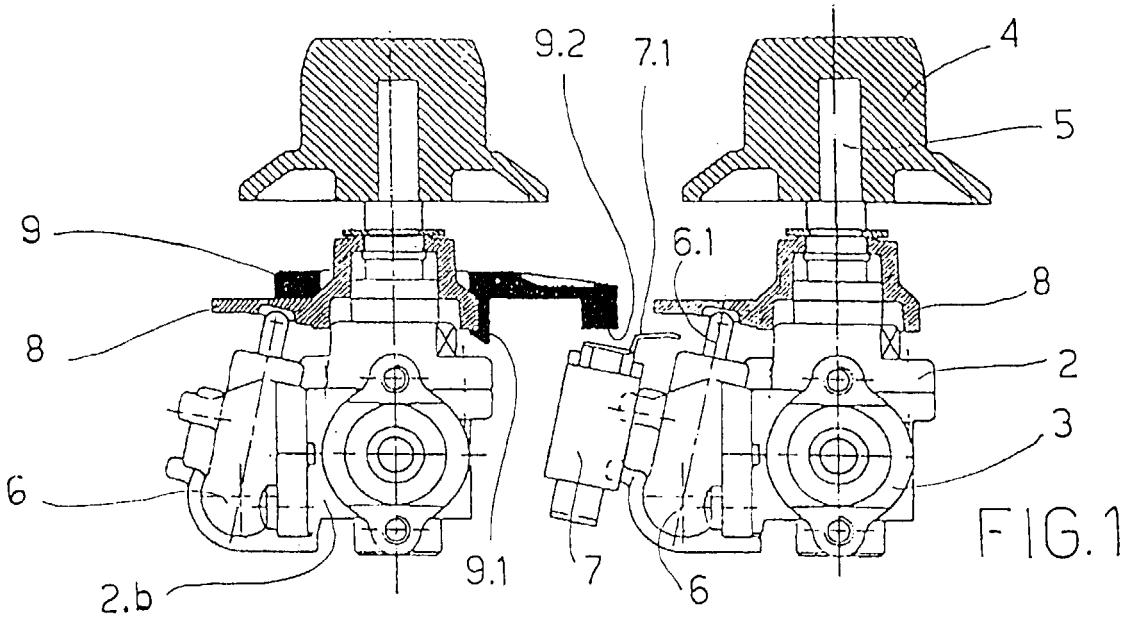

FIG.1

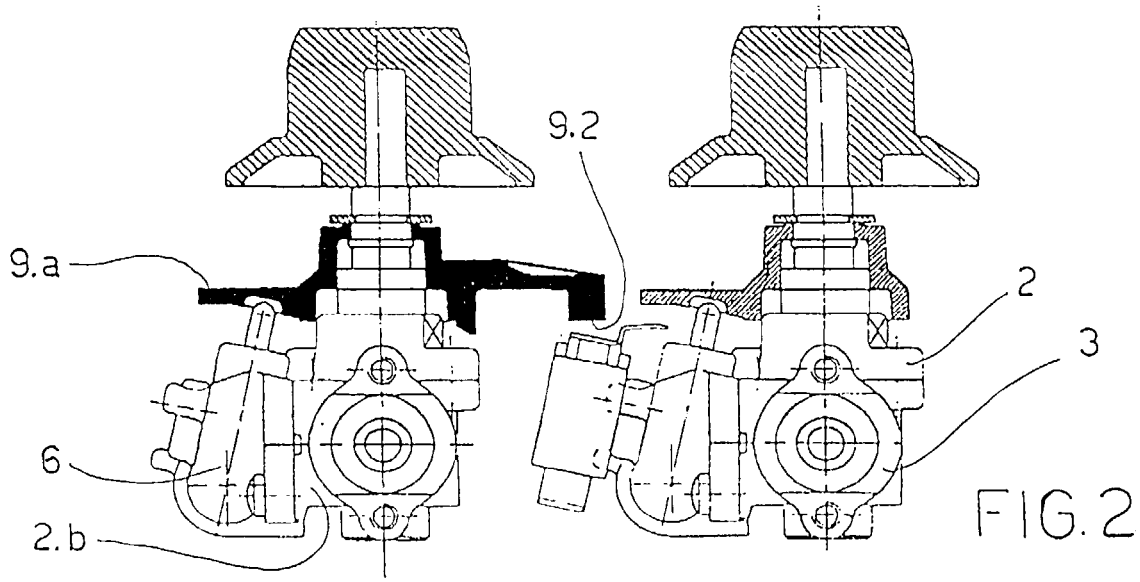

FIG.2

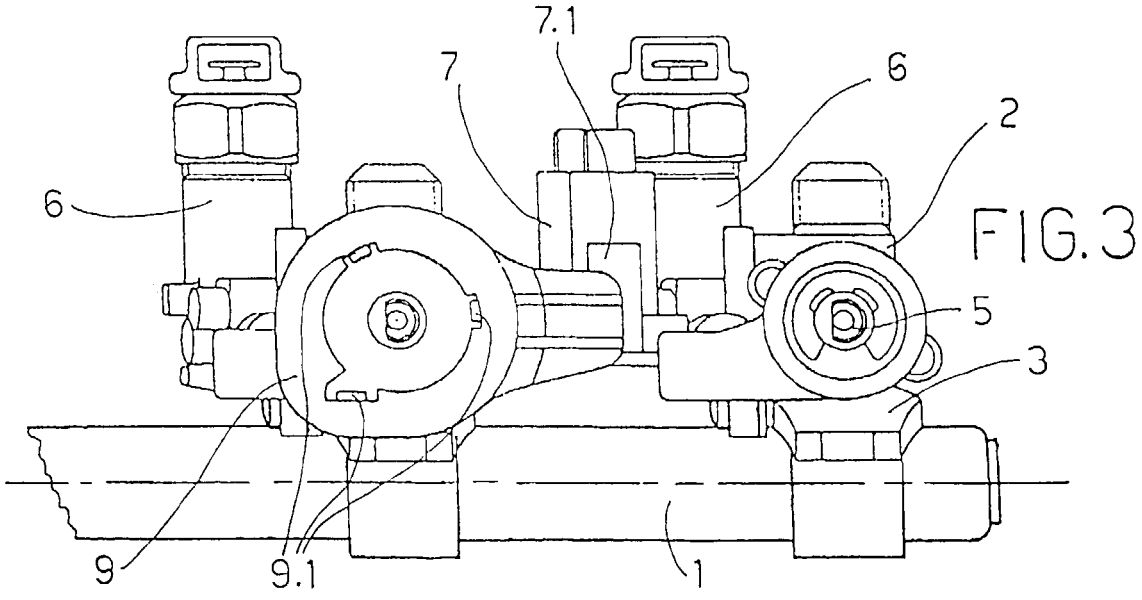

FIG.3