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(11) Publication number:

0 686 811 A2

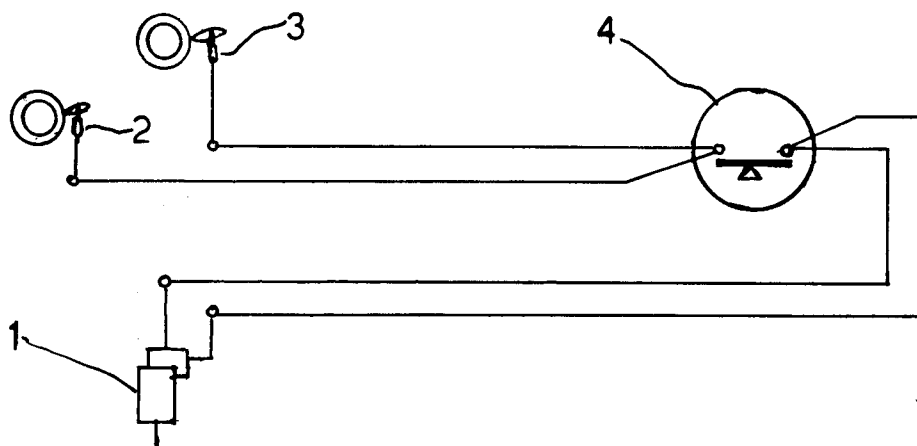
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EUROPEAN PATENT APPLICATION(21) Application number: **95107188.5**(51) Int. Cl.⁶: **F23N 5/20, F23N 5/24**(22) Date of filing: **11.05.95**(30) Priority: **12.05.94 IT TO940384**(43) Date of publication of application:
13.12.95 Bulletin 95/50(84) Designated Contracting States:
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I-60044 Fabriano (AN) (IT)(54) **System for programming a domestic gas cooking appliance**

(57) A programming system is described for switching off a domestic gas cooking appliance, that provides a plurality of cooking functions (oven, grill, hob), comprising all the elements known for its functioning, comprising the safety means.

The main characteristic of the programming sys-

tem consists in that means are provided that allow for time programming the switching off of the burners by interrupting the current that feeds the safety means of the thermostat or the tap of the burner and means that allow for selecting a cooking operation that is desired to be programmed.

FIG. 1**EP 0 686 811 A2**

The present invention refers to a programming system for switching off a domestic gas cooking appliance, that provides a plurality of cooking functions (oven, grill, hob), comprising all the elements known for its functioning, comprising the safety means.

As is known, domestic cooking appliances, are equipped by law with a safety system for the oven and for the grill, which consists in the interruption of the gas supply in cases of flame loss.

The same safety measure can also be used for the burners of cooking hobs, upon the discretion of the producers being as that the law does not compel such practice.

Moreover for ovens, safety systems are also provided which provide a coaxial tap with a mechanical timer which is loaded and, after an established amount of time automatically returns to the position of gas flow closure.

This requires, if it is desired to time program for instance the switching off of the oven or the grill, that the tap has to be directly supplied by the main gas tube, while the thermostat has to be arranged, with a specific coupling, downstream from the tap leading to considerable technical problems.

The aim of the present invention is that of indicating a programming system for switching off a domestic gas cooking appliance, that overcomes the drawbacks of the known systems with means being both simple and readily available on the market.

In view of realising such aim the present invention has as its subject a programming system for switching off a domestic gas cooking appliance, that provides a plurality of cooking functions (oven, grill, hob), comprising all the elements known for its functioning, comprising the safety means, characterised in that means are provided that allow for time programming the switching off of the burners by interrupting the current that feeds the safety means of the thermostat or the tap of the burner and means that allow for selecting a cooking function that is desired to be programmed.

The characteristics and advantages of the programming system according to the invention will result in being clear from the following description, executed in reference with the annexed drawings, supplied as a purely explanatory and non limiting example, wherein:

- figure 1 represents a schematic diagram of an embodiment of the programming system for switching off the burner of the oven or of the grill;
- figure 2 represents a schematic diagram of an embodiment of the programming system for switching off the burner of the cooking hob or of the oven.

In figure 1, that represents a schematic diagram of an embodiment of the programming system for switching off the burner of the oven or of the grill, reference number 1 indicates a two-way thermostat with safety means (for each way) for controlling the temperature, both of the oven function and of the grill function.

The two-way thermostat 1 is connected to the gas tap; such tap, is made so as that, when the passage of the gas towards the oven is opened, automatically the passage of the gas towards the grill remains closed, and the same thing also takes place in the opposite sense when it is desired to use the grill.

Reference number 2 indicates a thermocouple that detects the presence of a flame of the oven burner, number 3 indicates a thermocouple that detects the presence of a flame of the grill, with number 4 an electric timer is indicated with single-pole interruption. Therefore to the single pole, both the ways relative to the thermocouple 2 and the thermocouple 3 can be connected without interference, being as that when the thermocouple 2 is active, the thermocouple 3 is disabled. This is possible, as previously mentioned, because the gas tap is made in a manner to be capable of supplying only one or the other of the two burners.

The safety function inserted in the thermostat, as known, is obtained by a magnet supplied by a current produced by the flame detection thermocouple, when it is heated by the flame of the burner. Upon turning off the flame, the supply current to the magnet ends, which becoming deenergized, closes the gas flow. The thermocouples 2 and 3 are connected to the thermostat through the electric timer 4.

The timer 4 operates as an electric switch that can interrupt or electrically connect the thermocouples 2 and 3 to the respective safety means of the thermostat 1.

In this way the switching off of one of the two burners can be programmed, according to which of the two burners is being used at that time, interrupting after an establish time, by way of the electric timer 4, the supply current to the magnet of the safety means of the thermostat 1 which, becoming deenergized, closes the gas flow.

The timer is provided with various operational positions and more precisely:

- a first, for the exclusion of the oven and grill, in which the electric connection between the thermocouples and the safety means of the thermostat is interrupted (and in this case the additional safety means functions);
- a second, for the manual functioning of the oven or grill, in which the electric connection is provided between the thermocouples and the safety means of the thermostat, but not

the adjustment of the switching on time;

- a third, for the programming of the oven or grill, in which the electric connection is provided between the thermocouples and the safety means of the thermostat, and it is possible to adjust the timer for programming the time for the switching off of the oven or grill, with the interruption of the current between the thermocouples and the safety means of the thermostat.

In figure 2 that represents a schematic diagram of an embodiment of the programming system for switching off a burner of a cooking hob or a burner of an oven, number 5 indicates a one-way thermostat with safety means for the burner of the oven, with number 6 a tap with safety means is indicated for a burner of the cooking hob, with numbers 7 and 8 flame detection thermocouples are indicated respectively of the oven and of the burner of the cooking hob, with number 9 an electric timer is indicated with a two-pole interruption, i.e. the thermocouples 7 and 8 are connected to two different poles.

The timer 9 is provided with three operational positions being identical to those described for the timer 4, i.e.:

- a first, for the exclusion of the oven and of the burner of the cooking hob, in which the electric connection between the thermocouples and the safety means of the thermostat and of the tap is interrupted (and in this case the additional safety means functions);
- a second, for the manual functioning of the oven or the burner of the cooking hob, in which the electric connection is provided between the thermocouples and the safety means of the thermostat and of the tap, but not the adjustment of the switching on time;
- a third, for the programming of the oven or the burner of the cooking hob, in which the electric connection is provided between the thermocouples and the safety means of the thermostat and of the tap, and it is possible to adjust the timer for programming the time for the switching off of the oven or the burner of the cooking hob, with the interruption of the current between the thermocouples and the safety means of the thermostat or of the tap.

Number 10 indicates a switch which is used for establishing the operation of the function which is desired to be used and the way in which it is to be used. With 10a the arrangement is indicated of the switch 10 for the manual operation of both burners, thus the timer 9 is excluded; 10b indicates the arrangement for the programmed operation of the burner of the cooking hob and manual of the oven; 10c indicates the arrangement for the programmed

functioning of the oven and manual of the cooking hob.

The operation is identical to that previously described for the programming of the oven or of the grill, i.e. the interruption is programmed of the current to the magnet of the safety means of the thermostat or tap, and as a consequence the closure of the gas flow, by way of the electric timer 9.

The operation of the programming system for switching off a domestic gas cooking appliance according to the invention, results in being clear from the given description and annexed drawings.

As is understood from the given description, the programming system for switching off a gas cooking appliance according to the invention, has the following advantages:

- the possibility of programming the operational time of an oven or a grill;
- eliminating the coaxial tap with timer, facilitating the assembly of the thermostat of the oven and using the thermostat as a safety means for the closure of the gas flow;
- the use of components readily available on the market for the programming;
- the possibility of using such system also for programming the operational time of a burner of a cooking hob.

It is clear that, while remaining with the principle of the invention, numerous variants are possible to the constructive characteristics of the programming system for switching off a gas cooking appliance described as an example, without for this departing from the range of novelty inherent in the innovative idea, as it is clear that in the practical realisation of the invention the shapes and sizes of the components may be different and the same components may be substituted with technically equivalent elements.

Claims

1. Programming system for switching off a domestic gas cooking appliance, that provides a plurality of cooking functions (oven, grill, hob), comprising all the elements known for its functioning, comprising the safety means, characterised in that means (4;9) are provided that allow for time programming the switching off of the burners by interrupting the current that feeds the safety means of the thermostat or the tap of the burner and means (10) that allow for selecting a cooking operation that is desired to be programmed.
2. Programming system, according to claim 1, characterised in that said means (4) that allow to program by interrupting the current to the safety means of the thermostat comprise a

timer with single-pole interruption.

3. Programming system, according to claim 1, characterised in that said means (9) that allow to program by interrupting the current to the safety means of the thermostat or to the tap of the burner comprise a timer with two-pole interruption. 5
4. Programming system, according to claim 1, characterised in that said means (10) that allow to select the cooking operation which is desired to be programmed comprises a switch. 10
5. Programming system, according to claims 2 or 3, characterised in that said interruption means (4;9) allow for excluding the operation of the cooking functions (additional safety). 15
6. Programming system, according to claims 2 or 3, characterised in that said interruption means (4;9) enable the operation of the cooking functions in a manual way. 20
7. Programming system, according to claims 2 or 3, characterised in that said interruption means (4;9) enable the operation of the cooking functions in a programmed way. 25
8. Programming system, according to one or more of the previous claims, characterised in that the current that acts upon the safety means supplies a magnet contained in the safety means. 30
9. Programming system, according to claim 4, characterised in that said selecting means (10) allow for the operation of the cooking functions in a manual way. 35
10. Programming system, according to claim 4, characterised in that said selecting means (10) allow for the operation of the cooking functions in a programmed way. 40

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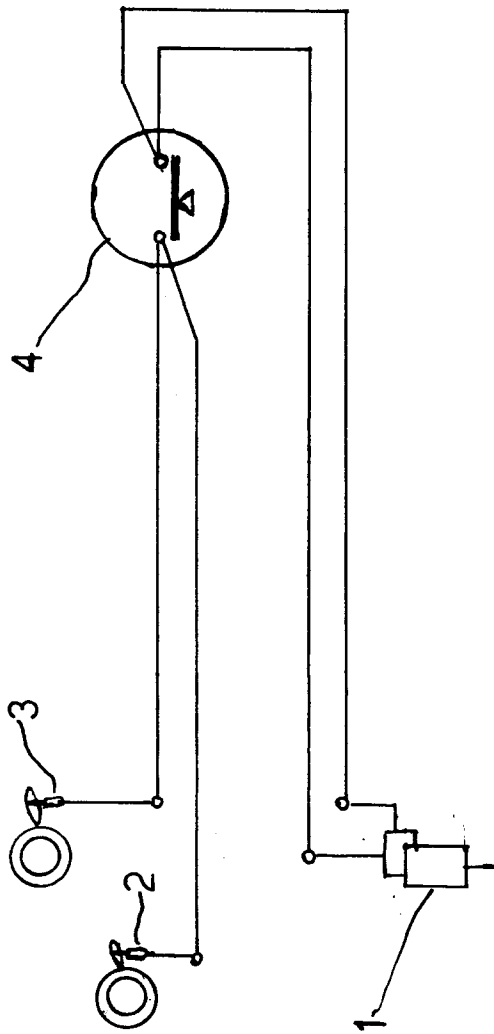
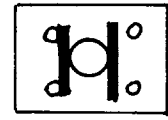
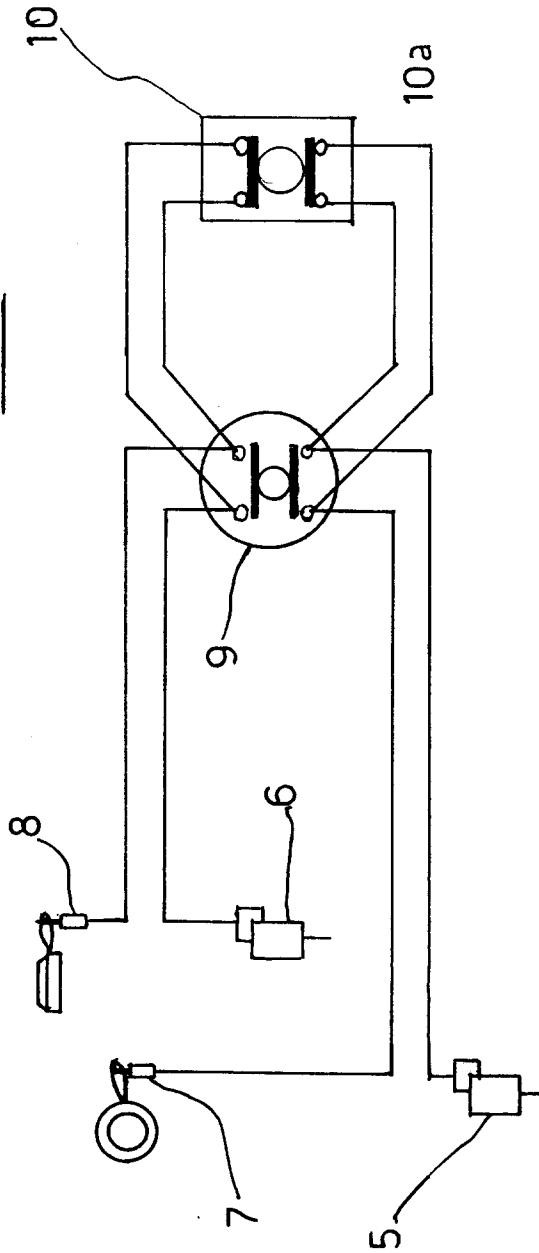


FIG. 2



10c



10b