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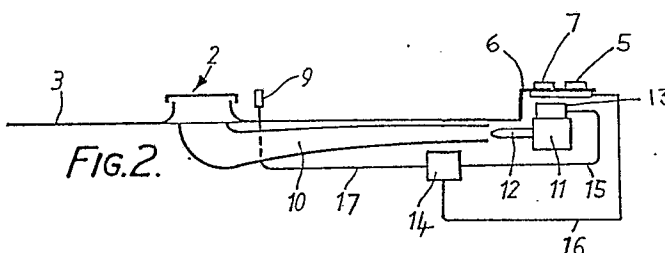
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54 **Gas cooking appliances.**

57 A cooking appliance, especially in the form of a gas hob, comprises at least one electrical gas flow control valve (13) operable for controlling gas flow to a burner (2) of the appliance, and an ignition arrangement (9) for igniting the burner (2). It is arranged that when the control valve (13) is turned ON it is set to a position which is between its minimum and maximum flow positions, at which position the ignition arrangement (9) operates in order to ignite the burner (2), thereby reducing the time between effecting operation of the control valve (13) and ignition taking place.



Description

GAS COOKING APPLIANCES

This invention relates to gas cooking appliances and more particularly to gas cooking appliances which incorporate electrically operated gas flow control valves.

There is a move at the present time to provide gas cooking appliances with electrical gas flow control valves whereby they may be operated "electronically" using, for example, push-button or touch-button controls. The electrical gas flow control valves may take a variety of forms, one of which is disclosed in U.K. patent application No. 8801039 which relates to a rotary type, gas flow control valve having a stepper motor driving the rotary control. The electrical gas flow control valve, of necessity, needs to be able to control the gas flow from an OFF position to a maximum flow position. It is also usual to provide an ignition arrangement whereby the burner of the gas cooking appliance may be ignited.

With gas cooking hobs especially, it has been found that if the gas valve, when it is turned ON, is set to a minimum flow position, an undesirable time interval elapses between the "electronic" control valve being operated, and the gas burner igniting. This is due to the fact that the gas flow rate is set to a low level, and to the fact that the gas needs to flow from the valve to the gas jet and from the gas jet through the fuel passage to the actual burner.

It is an object of the present invention to provide a gas cooking appliance in which this undesirable time interval is reduced.

In accordance with the present invention there is provided a gas cooking appliance comprising at least one electrical gas flow control valve operable for controlling gas flow to a burner of said appliance, and ignition means for igniting said burner, means being provided when said control valve is turned ON for causing it to be set to a position which is between its minimum and maximum flow positions, at which position said ignition means operates in order to ignite said burner.

In carrying out the present invention, the control valve, when it is turned ON, may be set to a position which is between 25% and 75% of its maximum flow position, but which is preferably set to a position which is at or near to its mid-gas flow position. In this way, the time interval between the control valve being operated and the burner igniting is substantially reduced.

In order to further reduce the time interval, it is arranged that the control valve, when it is turned ON, is set momentarily to a first position which is at or near to its maximum gas flow position and is reset to a second position which is at or near to its mid-gas flow position, at which said second position said ignition means operates to ignite said burner. In this way, the time interval is further reduced, but because it is undesirable for the burner to be ignited with the gas flow rate at or near to its maximum, it is arranged that the gas flow is reduced to a mid-position before ignition occurs.

The present invention is applicable to gas cooking

appliances generally, but is especially applicable to gas cooking hobs whether they be integral units for fitting in a kitchen unit or part of a free standing gas cooker.

An exemplary embodiment of the invention will now be described reference being made to the accompanying drawing, in which:

Fig. 1 is a diagrammatic perspective view of a gas cooking appliance in accordance with the present invention in the form of a gas cooking hob; and

Fig. 2 is a diagrammatic side view of part of the gas cooking hob of Fig. 1.

The gas cooking hob shown in perspective view in Fig. 1 comprises a hollow structure 1 which accommodates four gas burners 2 which are located above a spillage tray 3 on which rests a pan support structure 4.

Each of the gas burners is provided with a respective pair of UP/DOWN touch controls 5 mounted on a control panel 6 of the hob, each pair of UP/DOWN controls 5 having alongside a linear multi-segment display 7 for affording an indication of the level that the associated gas burner 2 is set at. Each of the gas burners 2 is also provided with a respective ignition electrode 9 for causing the gas burners to be ignited when gas is supplied to them.

The hob shown in Fig. 1 also includes a lid 8, shown in its fully opened position, which is hinged about a horizontal axis at the rear of the structure 1, and which is movable to a fully closed position in which it fully covers the gas burners 2 and control panel 6.

In Fig. 2 of the drawings there is shown in side view part of the gas cooking hob of Fig. 1. Fig. 2 depicts a gas burner 2 located above the spillage tray 3, the gas burner 2 having a gas supply passageway 10 which is located beneath the spillage tray 3 and which supplies gaseous fuel to the burner 2 from a gas rail 11 and associated injector 12.

The gas rail 11 is disposed beneath the control panel 6 of the hob on which is disposed one of a pair of UP/DOWN touch controls 5 and an associated linear display 7.

Gas flow from the gas rail 11 to the injector 12 is controlled by means of an electrically controlled gas valve 13 mounted on the gas rail 11, the gas valve 13 being connected to an electronic control circuit 14 by means of a connecting cable 15. The electronic control circuit 14 is also connected to the UP/DOWN touch controls 5 and associated linear displays 7 by means of a cable 16 and to the ignition electrodes 9 via a cable 17.

The electrically controlled gas valve may take any convenient form, such as the stepper motor driven rotary valve disclosed in the aforementioned U.K. patent application No. 8801039, or a solenoid type control valve as disclosed in U.K. patent application No. 8526973 (Publication No. 2182418A), or a proportional linear valve of the type disclosed in U.K.

patent application No. 8506830 (Publication No. 2173573A).

In normal use of the gas cooking hob described with reference to Figs. 1 and 2, if one of the gas burners 2 is turned on by means of its associated UP touch control 5, the gas flow from the injector 12 through the gas passageway 10 and into the burner 20 builds up at a very slow rate and an undesirable time interval can elapse before gas ignition takes place.

This is overcome in the appliance described by arranging that when a gas burner is turned ON by means of its associated touch control 5, it is immediately set to a position which is at or near to its mid-gas flow position. In this way, the undesirable time delay between the touch control 5 being operated and the gas burner 2 igniting is reduced to a minimum. It will be appreciated that the position that the gas valve is set to when it is initially turned ON is not critical but it cannot be set at too high a rate because when ignition then takes place too large an explosion can occur at the gas burner. In practice it has been found that a position between 25% and 75% of maximum flow rate is preferred.

The precise form that the electronic control circuit 14 takes will depend on the type of electrical gas valve being used and will be readily apparent to one skilled in the art.

Claims

1. A gas cooking appliance comprising at least one electrical gas flow control valve operable for controlling gas flow to a burner of said appliance, and ignition means for igniting said burner, means being provided when said control valve is turned ON for causing it to be set to a position which is between its minimum and maximum flow positions, at which position said ignition means operates in order to ignite said burner.

2. An appliance as claimed in claim 1, in which the control valve, when it is turned ON, is set to a position which is between 25% and 75% of its maximum flow position.

3. An appliance as claimed in claim 2 in which the control valve, when it is turned ON, is set to a position which is at or near to its mid-gas flow position.

4. An appliance as claimed in claim 1, in which the control valve, when it is turned ON, is set momentarily to a first position which is at or near to its maximum gas flow position and is reset to a second position which is at or near to its mid-gas flow position, at which said second position said ignition means operates to ignite said burner.

5. An appliance as claimed in any preceding claim, in the form of a gas hob.

6. An appliance as claimed in any preceding claim, in the form of a gas cooker.

