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(54) Improvements relating to cooking appliances.

(57) The drop-down lid of a gas appliance, e.g. a cooker hob, operates a microswitch 2 in the circuit supplying power to a solenoid valve 1 controlling the gas supply. A latching circuit 4 acting through a relay 3 opens the valve 1 on closure of the manually operable switch 6 thereby ensuring that gas does not escape immediately the lid is raised if it has inadvertently been closed down on a lighted burner. The switch 6 may be coupled to an ignition switch, preferably with a time delay. A further delay may be incorporated in the latching circuit to ensure that the gas cannot be turned on by a momentary inadvertent closure of the switch 6.

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IMPROVEMENTS RELATING TO COOKING APPLIANCES

The invention relates to cooking appliances including for example gas cookers in which the hob is provided with a drop-down lid to cover the gas burners, independent hotplates with lids and grill compartments with doors.

In such appliances there is a risk that the lid or door may be inadvertently closed on an ignited burner, thereby damaging the lid or door, or extinguishing the burner, and allowing a dangerous escape of unburnt gas.

In order to avoid this danger the lid or door may be coupled to a shut-off valve so that the supply of gas is automatically shut off whenever it is closed. This, however, introduces a further risk that if the lid of a cooker hob, for example, is closed on a lighted burner gas will escape as soon as the lid is raised, and if the hob is provided only with means for manual ignition the gas will not be ignited, and the escaping gas may be a source of danger.

An object of the present invention is to provide a means of avoiding the above dangers which is inexpensive to manufacture and reliable in operation.

According to the invention there is provided a gas appliance having a lid or door whose closure is arranged to shut off the supply of gas to the burners, a solenoid valve controlling the supply of gas to the burners, an electric switch coupled to the lid so as to supply electric power to the solenoid valve only while the lid is open, and a user-operable latching circuit which on operation maintains the solenoid valve open until power is interrupted.

Preferably the appliance includes means for indicating when the electric power is on and the solenoid valve is closed. Such means may be a neon lamp.

In a preferred embodiment a delay is provided whereby the latching circuit must be operated for a minimum time before the solenoid valve is latched open.

The invention may further include a gas ignition device whereby operation of the latching circuit also operates the ignition device. Operation of the ignition switch may be delayed to ensure that gas has reached the burners by the time that the ignition device fires.

The appliance may be a hob with a drop down lid or a grill compartment with a door.

A preferred embodiment of the invention will now be described by way of example only and with reference to the accompanying drawings which represents a circuit diagram.

The circuit shown in the accompanying diagram is arranged to operate a solenoid valve 1 controlling the gas supply to the burners of a gas cooker with a drop-down lid. A microswitch 2 supplies power to the solenoid of the valve 1 through one set of contacts of a change-over relay 3, the operating coil of which is connected in a latching circuit 4.

In the unenergised position of the relay 3 the contacts complete the circuit through an indicator lamp, preferably a neon bulb 5, whereas when the relay 3 is energised, current is diverted to flow through the operating coil of the solenoid valve 1.

When the drop-down lid of the hob is closed the microswitch 2 is in the open position and no power reaches the remainder of the circuit. If the lid is now raised, the switch 2 closes and power is applied through the normally-closed contact of the relay 3 to the indicator lamp 5. To supply gas to the hotplates a normally-open switch 6, which may be of the push-button type, is briefly closed, completing the circuit through a rectifier and latching circuit 4, and supplying power to the operating coil of the relay 3. This switches the changeover contacts of the relay, extinguishing the indicator lamp and opening the solenoid valve 1, allowing gas to reach the burners. Preferably the switch 6 is also coupled to the cooker igniter circuits (not shown in the drawing) so that if a gas tap has inadvertently been left in the on position, gas escaping at this tap will immediately be ignited. A short delay is preferably arranged between the closure of the switch 6 and the igniter switch so as to ensure there is sufficient time for the gas to reach the burners before the igniter operates.

Once the switch 6 has been operated the latching circuit 4 holds the relay 3 in its operated position and keeps the solenoid valve open until such time as the circuit is again interrupted at the switch 2 by closing the drop-down lid.

A short delay may be incorporated in the latching circuit 4 so that it only latches when the switch 6 has been kept closed for a predetermined brief interval, thus avoiding the circuit being triggered by a momentary accidental operation of the switch.

If desired an alternative lamp or other warning device may be incorporated in addition to or in place of, the lamp 5 indicating that the latch is closed and the solenoid valve open, so that gas is reaching the burners.

The invention, as described above, is equally applicable to independent hot-plates with lids, and grill compartments with doors, where a shut-off valve is activated by closure of the door.

Claims

1. A gas appliance having a lid or door whose closure is arranged to shut off the supply of gas to the burners, a solenoid valve controlling the supply of gas to the burners, an electric switch coupled to the lid so as to supply electric power to the solenoid valve only while the lid is open, and a user-operable latching circuit which on operation maintains the solenoid valve open until power is interrupted.

2. A gas appliance according to claim 1 including means for indicating when the electric power is on and the solenoid valve is closed.

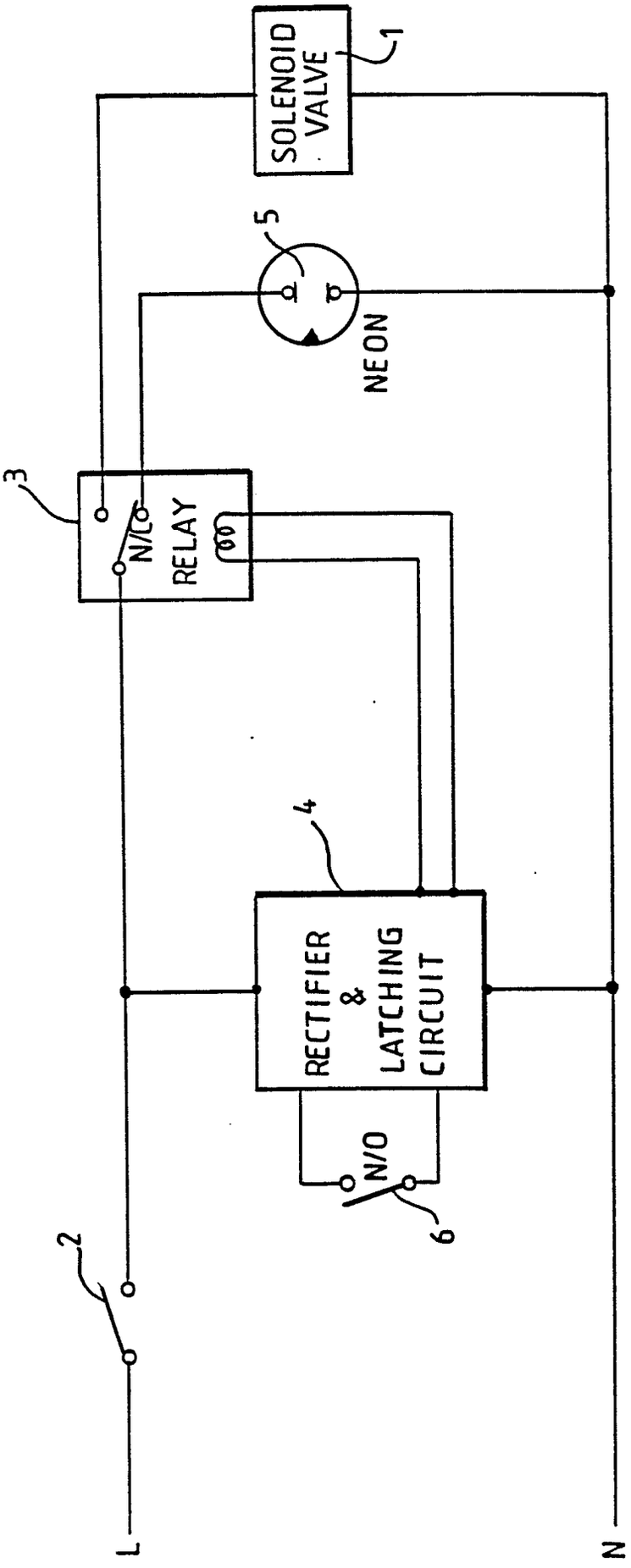
3. A gas appliance according to claim 1 or claim 2 in which a delay is provided whereby the latching circuit must be operated for a minimum time before the solenoid valve is latched open.

4. A gas appliance according to any preceding claim in which the operation of the latching circuit also operates an ignition switch.

5. A gas appliance according to claim 4 in which the operation of the ignition switch is delayed to ensure that gas has reached the burners by the time the ignition switch operates.

6. A gas appliance according to any preceding claim comprising a hob with a drop-down lid.

7. A gas appliance according to any of claims 1 to 5 comprising a grill compartment with a door.


SOLENOID VALVE
1
5
NEON
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N/C
RELAY
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RECTIFIER & LATCHING CIRCUIT
N/O
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