May 4, 1937. S. H. HOBSON 2,079,504

GAS RANGE

Filed May 8, 1934 3 Sheets-Sheet 1

Fig. 1

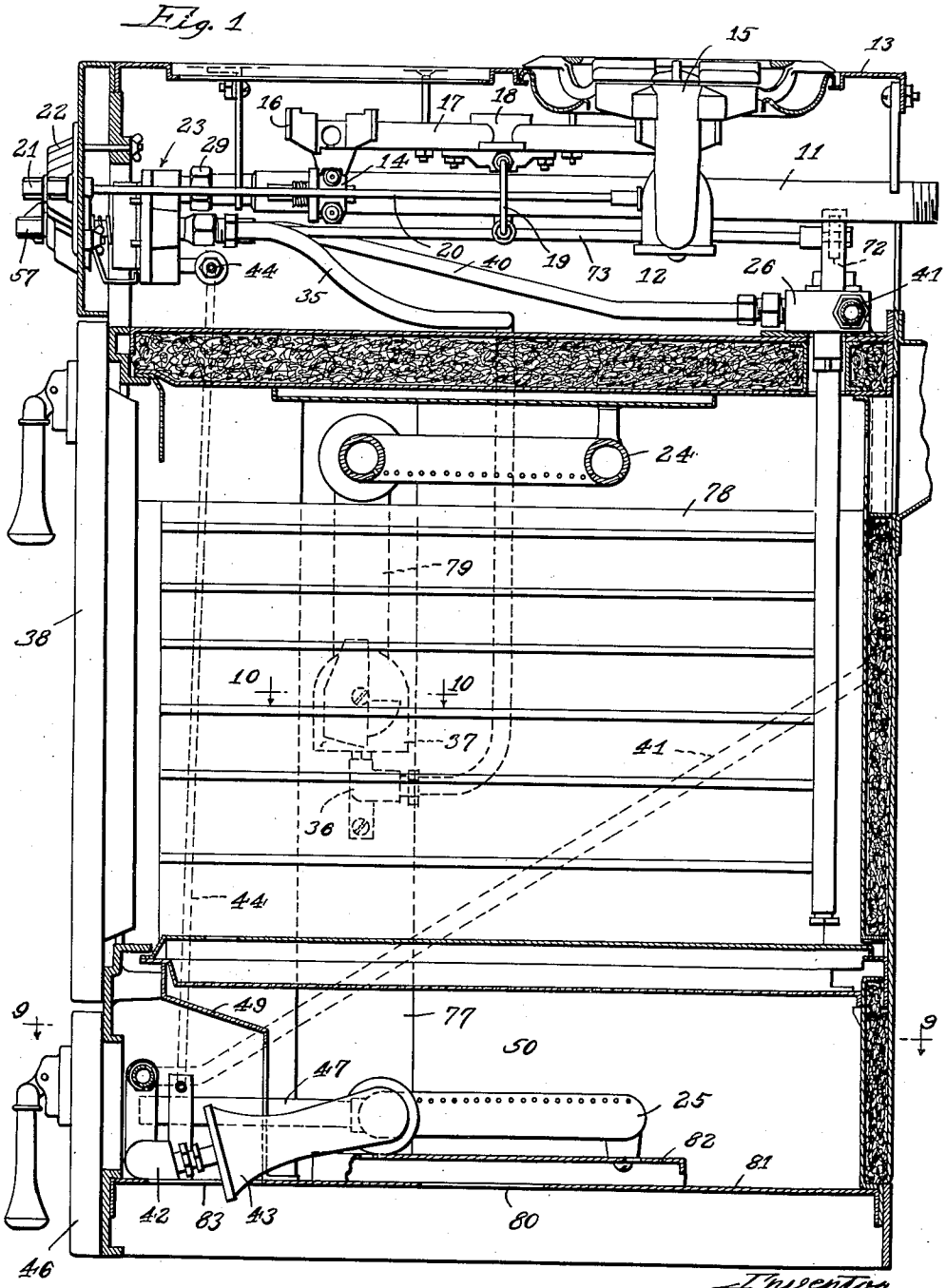

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Fig. 2

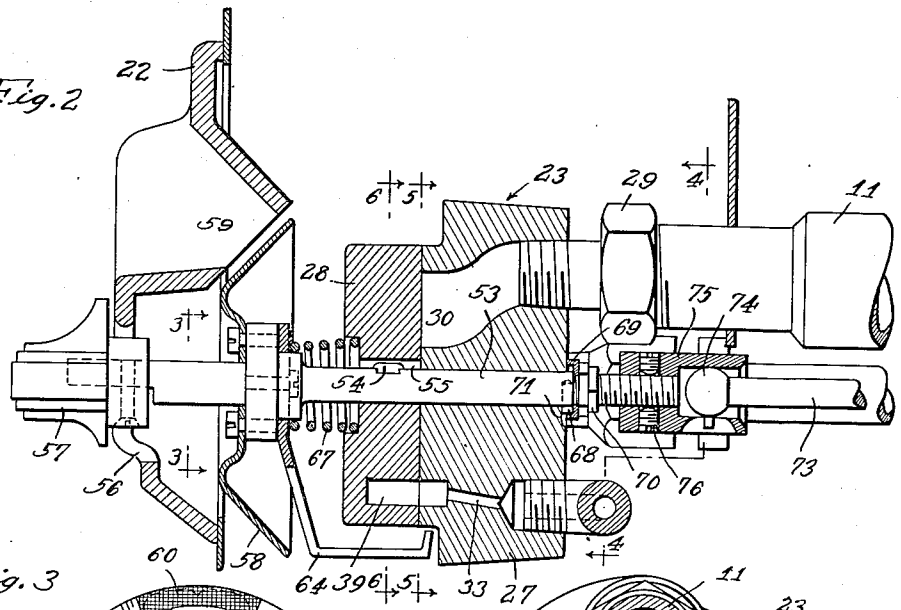

Fig. 3

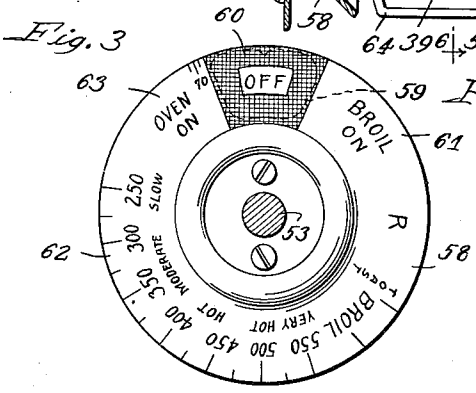

Fig. 4

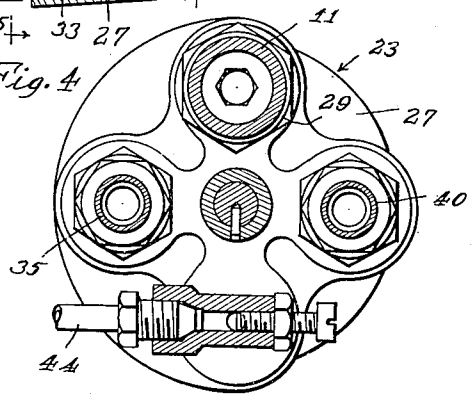

Fig. 5

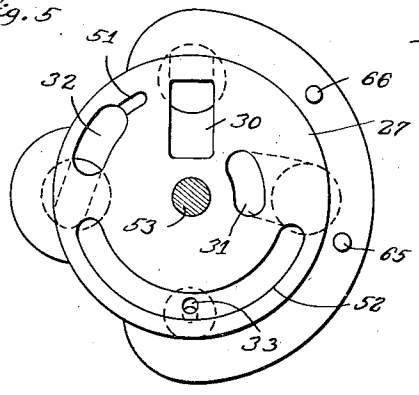

Fig. 6

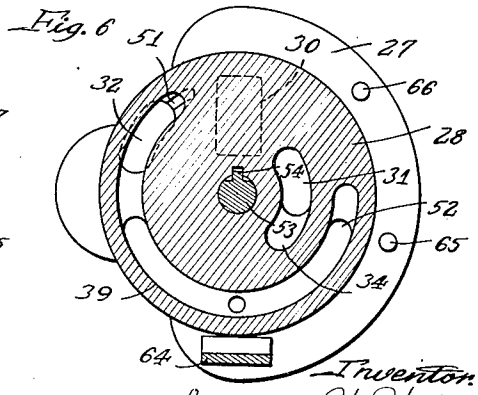

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Fig. 7

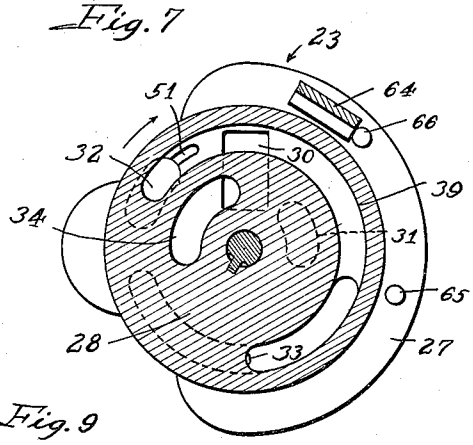


Fig. 8

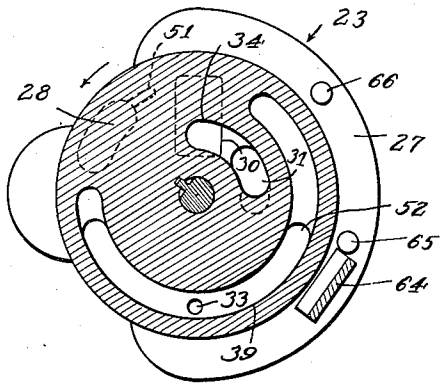


Fig. 9

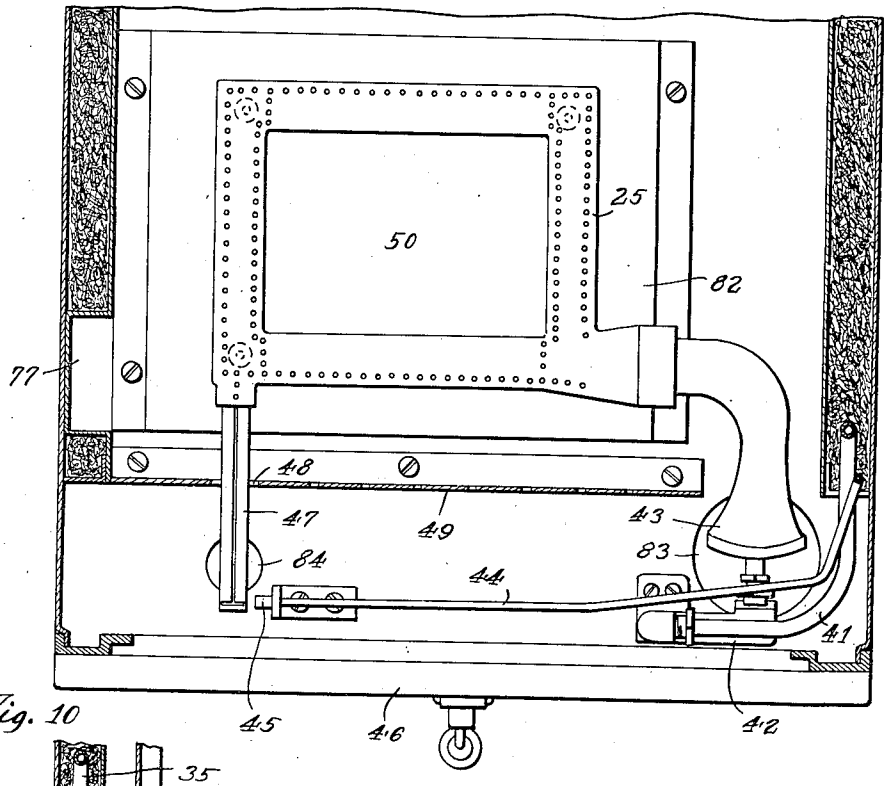
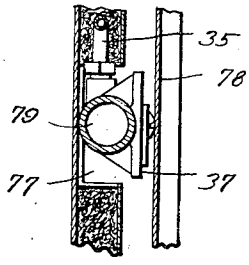


Fig. 10



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UNITED STATES PATENT OFFICE

2,079,504

GAS RANGE

Stanley H. Hobson, Rockford, Ill., assignor, by mesne assignments, to Reconstruction Finance Corporation, Chicago, Ill., a corporation of United States

Application May 8, 1934, Serial No. 724,552

3 Claims. (Cl. 236—15)

This invention relates to gas ranges and has particular reference to a single control for two burners in one oven, the one burner being arranged to be manually throttled for broiling and the other being manually controlled but thermostatically regulated for baking, roasting, etc.

Combination oven controls, that is to say, those in which a single dial control in one operation accomplishes the double function of opening the gas cock and setting the oven regulator or thermostat, have been subject to the objection that they do not provide properly for regulation of the oven burner for broiling; one could not throttle down to a lower flame when the dial was set to 550° F. or thereabouts for broiling, and if the dial were turned back to give a lower flame, that would naturally mean a corresponding low temperature setting of the oven regulator, with the result that the oven burner would be extinguished. It is, therefore, the principal object of my invention to provide a gas cock in connection with a single dial control having its ports and channels so arranged that it may be turned in a clockwise direction from "off" position to supply gas to the lower burner under thermostatic control of the oven regulator, for baking, etc., no gas being delivered under such circumstances to the upper burner, the said dial being arranged to be turned in a counterclockwise direction from "off" position to deliver gas to the upper burner alone under direct manual control, for broiling, independently of thermostatic control of the oven regulator, so that the broiler burner may be throttled down if it is desired to finish broiling with a low flame.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section through the oven section of a gas range embodying my invention;

Fig. 2 is a longitudinal section through the valve and related dial and control panel;

Figs. 3 and 4 are cross-sections on the correspondingly numbered lines of Fig. 2, looking in opposite directions, Fig. 3 showing the dial and Fig. 4 showing the valve stator in rear elevation;

Fig. 5 is a face view of the valve stator, the view being taken on the line 5—5 of Fig. 2;

Fig. 6 is a section through the valve rotor on the line 6—6 of Fig. 2, with the stator appearing in the background, the rotor being in "off" position;

Figs. 7 and 8 are sections similar to Fig. 6, Fig. 7 showing the rotor turned clockwise to an extreme position to deliver gas to the lower burner under thermostatic control of the oven regulator for highest oven temperature, and Fig. 8 showing the rotor turned counterclockwise to an extreme position to deliver gas to the upper burner for high flame broiling, and

Figs. 9 and 10 are horizontal sections on the correspondingly numbered lines of Figure 1.

The same reference numerals are applied to corresponding parts throughout the views.

The stove shown in Figure 1 has a center manifold 11 extending from front to rear of the burner box 12 under the cooking top 13 in accordance with the disclosure in my co-pending application Serial No. 721,101, filed April 18, 1934. As described in that application, disc valves 14 project laterally from the opposite sides of the manifold 11 for direct communication of the jets thereof with the mixers of the cooking top burners 15, which are supported on claws 16 on a combination lighter and burner support 17. The latter has a central pilot light housing 18 in which a pilot burner supplied with gas from the manifold 11 through the connection 19 provides for automatic lighting of the burners by flashback. The valves 14 are manipulated by rods 20 flexibly connected with the stems of the valves at one end and at the other end with the operating handles 21 on a control panel 22 provided on the front wall of the burner box.

In the previous application, I disclose an oven valve controlling only a single oven burner and its pilot burner, and having a rod connection with the oven regulator for a combination or single dial control. In the present case, however, the oven valve, indicated generally by the numeral 23, has connection with two burners 24 and 25, as well as an oven regulator 26. The valve 23 is of the rotary disc type and comprises a stator 27 and rotor 28. The stator is connected as at 29 to the front end of the manifold 11 to support the valve and supply gas thereto through the inlet port 30. Two main outlet ports are provided in the stator, as indicated at 31 and 32, and a secondary or auxiliary outlet port 33. See Fig. 5. The rotor 28 has an arcuate channel 34 provided therein which in the "off" position, shown in Fig. 6, registers with the port 31 but not the port 30. However, when the rotor is turned in a counterclockwise direction, the channel 34 comes into communication with port 30, as shown in Fig. 8, and in that way delivers gas to the burner 24 through a pipe 35. The pipe 35 is preferably formed by tubing bendable to the form shown in

Figure 1 to facilitate assembling and make it easier to provide connection with the jet fitting 36 discharging into the mixer 37 of the burner 24. This burner is provided solely for broiling and is arranged to be lighted through the oven door 38. The valve 23 will be adjusted by the operator, as desired, in the course of the broiling, it being obvious that the size of the flame can be cut down from the full flame condition, illustrated in Fig. 8, by merely turning the rotor 28 clockwise and thereby cut down the communication between the channel 34 and the inlet port 30.

Another and much longer arcuate channel 39 is provided in the rotor 28. This channel in the "off" position of the rotor, shown in Fig. 6, communicates with ports 32 and 33 but not port 30. Furthermore, when the rotor is in the position for broiling, shown in Fig. 8, this channel is still out of communication with the inlet port 30 so that there can be no gas flow through this channel. However, when the rotor is turned in a clockwise direction from the "off" position, communication is established through channel 39 between the inlet port 30 and the two ports 32 and 33, as shown in Fig. 7. The port 31 for the broiler burner 34 is isolated from the inlet port 30 under these conditions. Gas flows from the port 32 to the oven regulator 26 through a pipe 40, and from the regulator to the burner 25 through pipe 41. The pipes 40 and 41, like the pipe 35, is formed from tubing bendable to the shapes indicated, to facilitate assembling. The end of the pipe 41 is connected with a jet fitting 42 discharging into the mixer 43 of the burner 25. Gas delivered to the port 33 is conducted through a tube 44 to a pilot burner 45 arranged to be lighted through a small door 46 below the oven door 38. The pilot burner 45 in turn lights the burner 25 by means of a forward extension 47 off the burner 25, extending through a hole 48 in a perforated shield or baffle 49 provided in the front end of the lower burner compartment 50.

Reverting to Figs. 5, 6 and 7, it will be observed that the stator 27 has a narrow arcuate channel 51 provided therein and extending in a clockwise direction from the port 32. Another arcuate channel 52 is provided in the stator, of the same width as and registering with the channel 39 in the rotor. This channel 52 extends through almost 90° in both directions from the port 33. As a result, it has communication at all times with the channel 39 in the rotor 28, because that channel extends throughout nearly 270°. Since the channel 39 does not register with port 30 when the rotor is turned in a counterclockwise direction from the "off" position (see Fig. 8), there will, of course, be no delivery of gas to the pilot burner 45 while the upper burner 24 is being used for broiling. However, when the rotor 28 is turned in a clockwise direction from the "off" position (see Fig. 7), the channels 39 and 52 cooperate to deliver gas from the port 30 to the port 33 and thence to the pilot burner 45 throughout this range of adjustment of the rotor.

The rotor 28 of the valve 23 is turned by means of a stem 53 which extends through registering axial holes in the stator 27 and rotor 28. A key projection 54 is formed on the stem and fits in a keyway 55 in the rotor so as to turn the rotor in the turning of the stem. The stem extends forwardly from the valve through an opening 56 in the control panel 22 and has a handle 57 fastened thereon. A dial 58 is fastened to the stem behind a window opening 59 in the control panel 22 and serves to indicate the setting of the valve 23 and oven regulator 26. In Fig. 3, the outline of the window 59 is indicated in dotted lines, showing the segment 60 of the dial marked "Off" to designate the "off" position of the valve 23. In this same figure, the broiling indication "broiling on" appears at 61, and this indication becomes visible in the window 59 when the stem 53 is turned in a counterclockwise direction from the "off" position. An oven temperature scale 62 is provided on the dial behind the marking "Oven on", appearing at 63, and when the stem 53 is turned in a clockwise direction from the "off" position, one will, of course, first see the "oven on" reading and thereafter, upon further clockwise turning of the stem, the oven temperature readings will appear at the window 59. The turning of the rotor 28 is limited by the engagement of an arm 64, projecting radially from the stem 53 behind the dial 58, with either one of two pins 65 or 66 projecting forwardly from the stator 27 of the valve. In the "off" position, the arm 64 is disposed, as shown in Fig. 6. Counterclockwise turning of the stem from this position is limited by the arm coming in contact with the pin 65, as shown in Fig. 8, and clockwise turning from the position stated is limited by the arm coming into engagement with pin 66, as shown in Fig. 7. A coiled compression spring 67 surrounds the stem 53 behind the dial 58 and arm 64 and exerts pressure on the rotor 28 to keep the flat face thereof in sealing engagement with the flat seat provided on the stator. A pin 68 is set loosely radially in a hole in the stem 53 immediately behind the stator 27 of the valve and is held in place by the rim of a ring 69 and nuts 70 threaded on the stem behind the ring. Some of the pin projects forwardly from the plane of the ring 69 and is arranged to enter a small depression 71 provided therefor in the back of the stator 27. The spring 67, in addition to pressing the rotor against the stator, urges the stem 53 forwardly so that the pin 68 is pressed against the back of the stator, to place a slight frictional drag on the turning of the stem and also releasably lock the stem in the "off" position of the rotor, the pin 68 being arranged to ride into the depression 71 under the action of the spring 67 when the rotor is turned to the "off" position.

The stem 53 of the valve 23 is interconnected with the oven regulator 26 so as to turn the rotary temperature adjustment cam 72 of the regulator simultaneously in the turning of the rotor 28 of the valve. A rod 73 has a universal joint connection at its forward end, as at 74, with the rear end of the stem 53, the connection including a sleeve 75 threaded on the end of the stem and fastened thereto in adjusted position by set screws 76. A similar connection is provided between the rear end of the rod 73 and the cam 72.

In operation, let us assume that the housewife desires to do baking or roasting at a certain oven temperature; in that event, she turns the handle 57 in a clockwise direction and observes the dial 58 through the window 59, noting first the appearance of the reading 63, "Oven on". At this point she is aware that gas is being delivered to the lower burner 25 and its pilot burner 45, and she will accordingly open the door 46 and light the pilot 45, which in turn will light the burner 25 through its extension 47. The handle 57 is then turned further to a selected oven temperature in the scale 62. The turning of the dial results in the turning of the cam 72 of the oven

regulator 26 along with the rotor 28 of the valve 23 through the rod connection 73, so that in one operation one has opened the valve to deliver the gas and has set the regulator to regulate the flow of gas to the burner. The regulator thereafter automatically maintains the temperature selected.

Assuming, on the other hand, that the housewife desires to do broiling, she merely turns the handle 57 in a counterclockwise direction and opens the door 38 to light the burner 24, to which the gas is delivered from the valve 23, under these conditions. In turning the handle, the dial 58 is turned and the operator will observe the reading 61, "Broiling on", appearing in the window 59. The broiling can be done with a full or moderate sized flame so long as desired and then the burner can be throttled down by turning the handle 57 back a trifle toward "off" position, to finish broiling with a low flame. The low flame can be maintained without any difficulty, owing to the fact that the regulator is independent of thermostatic action; the burner is throttled directly by the valve 23. With other installations where the oven regulator and valve were operated jointly, that is, with a single dial control, there was the objection that the thermostatic action interfered with the operator's manual regulation of the flame, especially when attempting to finish broiling with a low flame, as pointed out above.

In conclusion, attention is called to Figs. 1, 9 and 10, in which a vertical channel 77 is shown in the side wall of the oven section behind the lining 78 to accommodate the downwardly projecting portion 79 of the upper burner 24 on which the mixer 37, previously referred to, is provided at the lower end. In this way, when the burner 24 is being used for broiling, primary air is supplied to the mixer 37 through the channel 77 from the compartment 50 in the bottom of the oven section. The compartment 50 is in turn supplied with air through an opening 80 provided in the bottom wall 81 of the compartment under a shield 82 disposed beneath and supporting the burner 25. The fact that the burner 25 is not in use while the burner 24 is in operation assures good supply of air to the burner 24 from compartment 50. The burner 25, on the other hand, has its mixer 42 supplied with air directly through an opening 83 in the bottom wall 81, into which the mixer projects to the extent indicated in Fig. 1. Another opening 84 is provided in the bottom 81 in the vicinity of the pilot burner 45 and burner extension 47 to support combustion.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The following claims have been drawn with a view to covering all legitimate modifications and adaptations.

I claim:

1. In a combination oven control, a single manually rotatable stem, a rotary gas valve comprising a stator, and a rotor turning with said stem, the stator and rotor having gas conducting channels provided therein to control the flow of gas from an inlet port to either of two main outlet ports and a secondary outlet port provided in the stator, the inlet port having communication with a gas supply and the main outlets with oven burners, and the secondary outlet with a pilot burner for an oven burner, and a thermostatic oven valve having a rotatable control member turned by connection with said stem, said rotary valve having its stator and rotor channels so constructed and arranged whereby in turning the rotor in one direction from "off" position to supply gas to the one main outlet and its related secondary outlet, while the thermostatic valve is set for a selected oven temperature, and in turning the rotor in the other direction from "off" position to deliver gas only to the other main outlet at a rate determined only by the adjustment of the rotor.

2. A structure as set forth in claim 1 including a dial mounted to turn with said stem relative to a pointer, the dial having oven temperature graduations reading in one direction from the "off" position and having broiler indications reading in the other direction from the "off" position.

3. A structure as set forth in claim 1 including a dial mounted to turn with said stem relative to a pointer, the dial having oven temperature graduations reading in one direction from the "off" position and having broiler indications reading in the other direction from the "off" position, and means for automatically releasably locking the stem in the "off" position.

STANLEY H. HOBSON.