April 4, 1967 J. R. WILLSON 3,312,397

DOUBLE BURNER OVEN CONTROL SYSTEM

Filed July 22, 1964 3 Sheets-Sheet 1

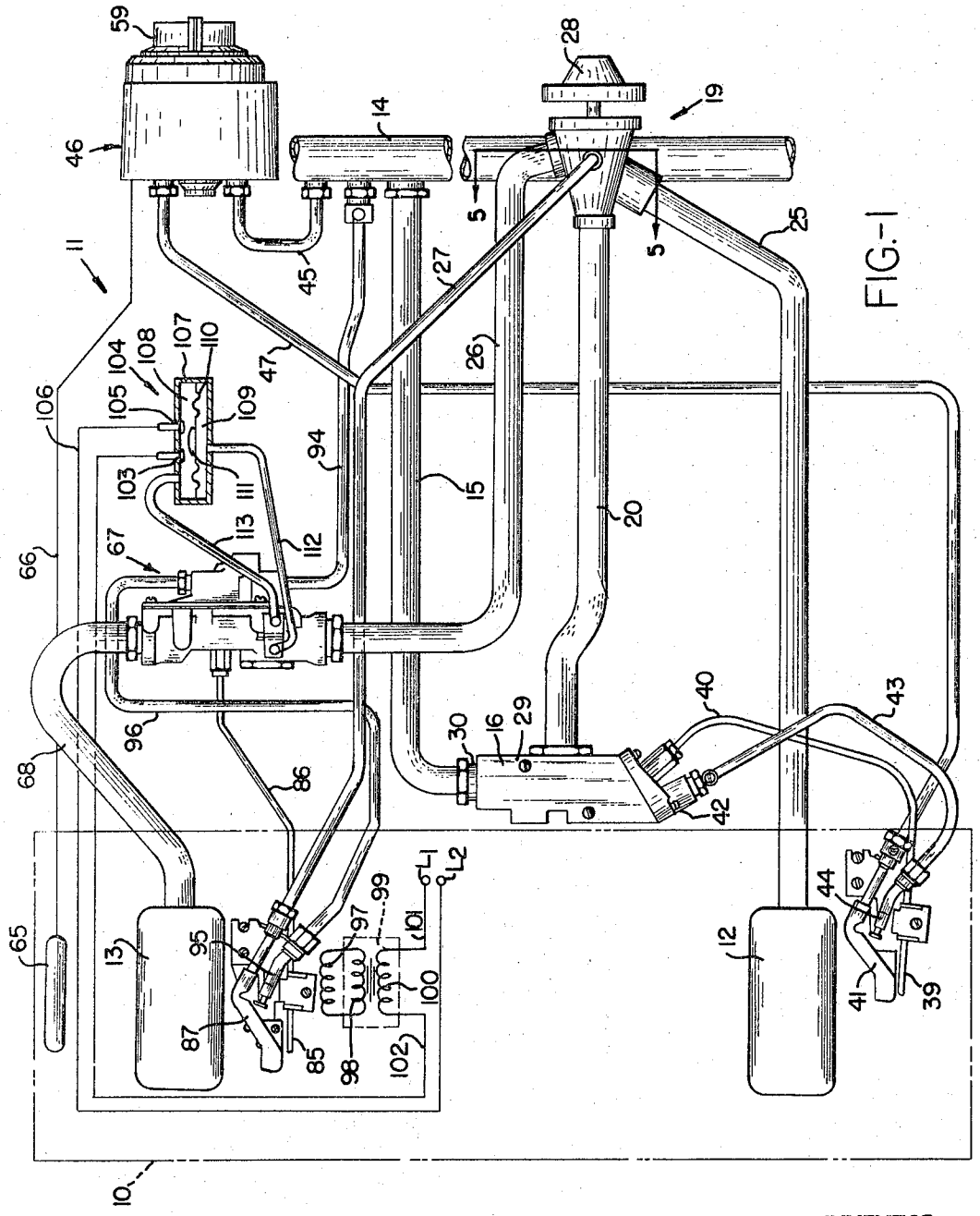


FIG-1

INVENTOR.
JAMES R. WILLSON
BY
Cardon & Cardon
HIS ATTORNEYS

April 4, 1967 J. R. WILLSON 3,312,397

DOUBLE BURNER OVEN CONTROL SYSTEM

Filed July 22, 1964 3 Sheets-Sheet 2

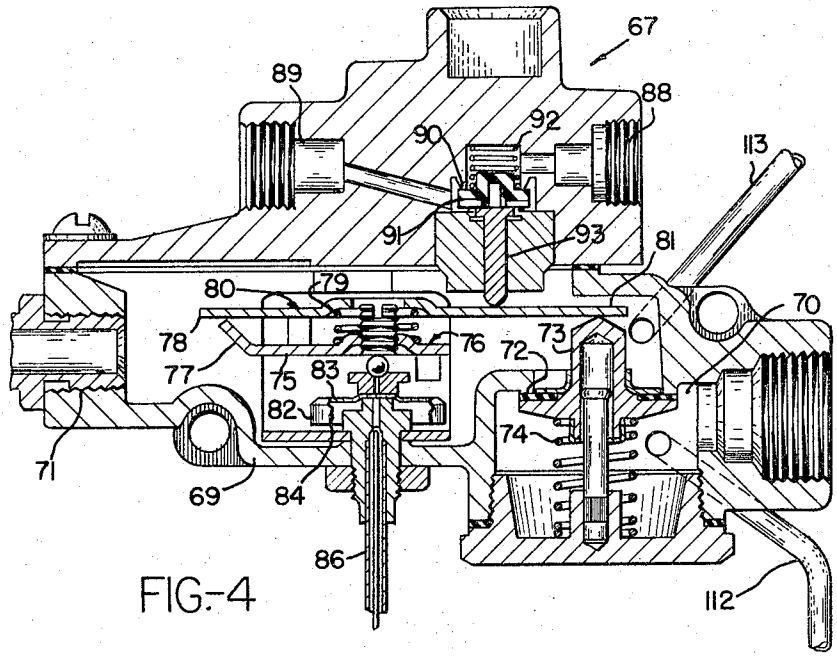


FIG.-4

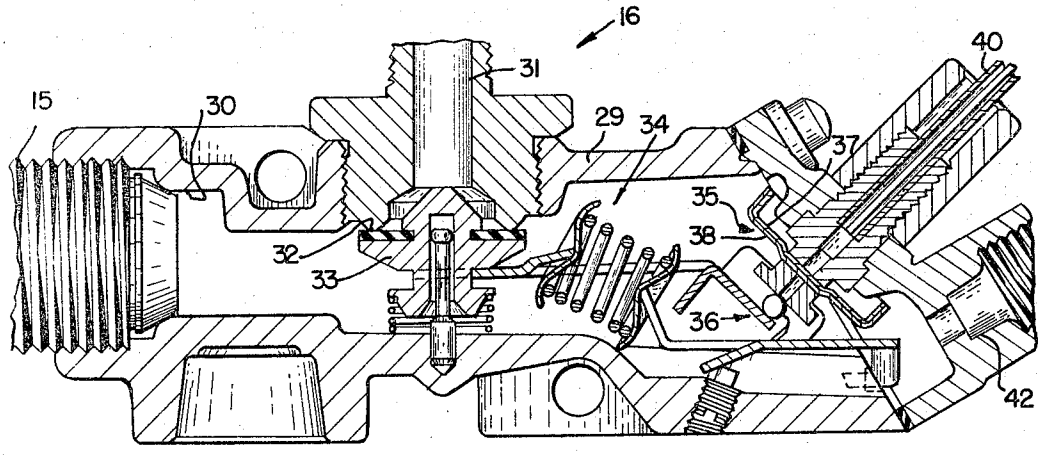


FIG.-2

INVENTOR.
JAMES R. WILLSON
BY
Cauda & Cauda
HIS ATTORNEYS

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DOUBLE BURNER OVEN CONTROL SYSTEM

Filed July 22, 1964 3 Sheets-Sheet 3

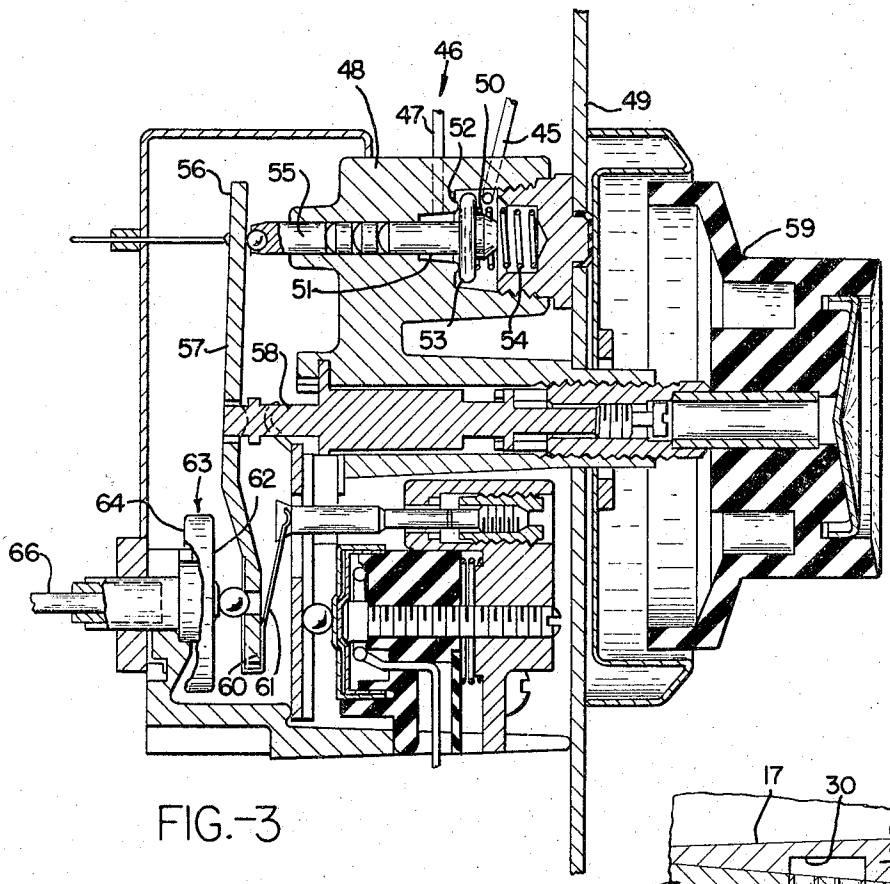


FIG.-3

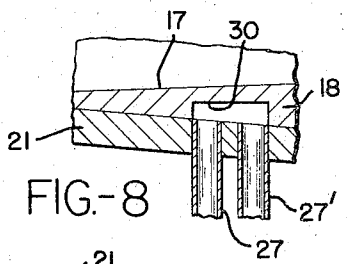


FIG.-8

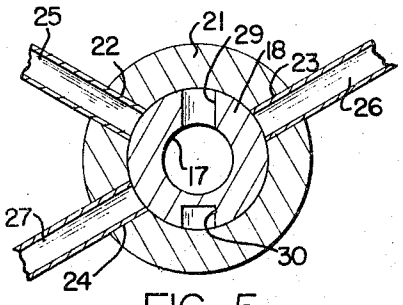


FIG.-5

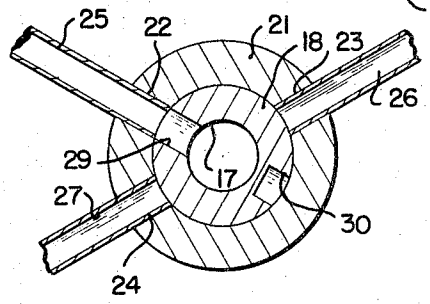


FIG.-6

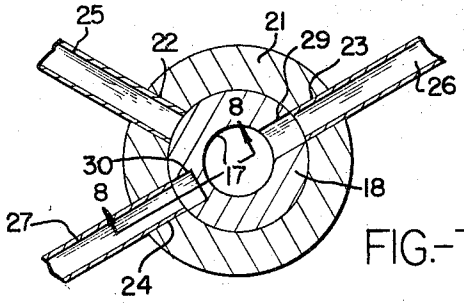


FIG.-7

INVENTOR.

JAMES R. WILLSON

BY

Cauda & Cauda

HIS ATTORNEYS

United States Patent Office

3,312,397

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3,312,397

DOUBLE BURNER OVEN CONTROL SYSTEM

James R. Willson, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va., a corporation of Delaware

Filed July 22, 1964, Ser. No. 384,451
12 Claims. (Cl. 236—15)

This invention relates to an improved fuel control system for a double burner oven or the like.

It is well known that it is desirous to provide a gas-fired oven or the like which has an upper and lower burner means provided therein whereby the upper burner can be utilized for broiling purposes and the like and the lower burner can be utilized for baking purposes and the like.

However, some means must be provided for effectively permitting the user of the oven to select the operation of the desired burner.

According to the teachings of this invention, improved means are provided for operating the burner means of a double burner oven or the like.

Therefore, it is an object of this invention to provide an improved fuel control system for a double burner oven or the like.

Other objects, uses and advantages of this invention are apparent from a reading of this description which proceeds with reference to the accompanying drawing forming a part thereof and wherein:

FIGURE 1 is a schematic view illustrating the improved fuel control system of this invention.

FIGURE 2 is an enlarged fragmentary cross-sectional view of one of the parts of the system illustrated in FIGURE 1.

FIGURE 3 is a view similar to FIGURE 2 and illustrates another part of the system illustrated in FIGURE 1.

FIGURE 4 is a view similar to FIGURE 2 and illustrates still another part of the system illustrated in FIGURE 1.

FIGURE 5 is an enlarged, fragmentary, cross-sectional view taken substantially on line 5—5 of FIGURE 1.

FIGURE 6 is a view similar to FIGURE 4 and illustrates the selector valve in another operating position thereof.

FIGURE 7 is a view similar to FIGURE 4 and illustrates the selector valve in still another operating position thereof.

FIGURE 8 is a fragmentary, cross-sectional view taken on line 8—8 of FIGURE 7.

While the various features of this invention are hereinafter described and illustrated as being particularly adaptable to provide a control system for a double burner oven or the like, it is to be understood that the various features of this invention can be utilized singly or in any combination thereof to provide control means for other devices or the like.

Therefore, this invention is not to be limited to only the embodiments illustrated in the drawings, because the drawings are merely utilized to illustrate one of the wide variety of uses of this invention.

Referring now to FIGURE 1, a conventional oven is generally indicated by the reference numeral **10** and the control system of this invention for controlling the operation of the oven **10** is generally indicated by the reference numeral **11**.

A bake burner means **12** is disposed in the lower portion of the oven **10** in any suitable manner and a broil burner means **13** is disposed in the upper portion of the oven **10** in any suitable manner.

A source of fuel, such as gas or the like, is provided by a manifold **14**. The source of fuel **14** is interconnected by a conduit **15** to the inlet side of an automatic valve means **16**, the outlet side of the automatic valve means **16** being interconnected to a central port **17** of a gas cock **18** of a selector valve **19** by a conduit means **20**.

As illustrated in FIGURES 5–7, the gas cock **18** is disposed for rotational movement in a housing **21** which has three ports **22**, **23** and **24** therein respectively interconected to conduits **25**, **26** and **27** for a purpose hereinafter described, the housing **21** being suitably interconnected to the control panel or the like of the oven **10**.

The gas cock **18** is movable relative to the housing **21** upon manual manipulation of the knob **28** thereof.

The gas cock **18** has a transverse bore **29** interconnecting the external peripheral surface thereof with the central port **17**.

In this manner, when the gas cock **18** is disposed in the OFF position illustrated in FIGURE 5 no fuel can flow from the central port **17** thereof out through the conduit means **25**, **26** and **27**.

However, when the gas cock is disposed in the bake position illustrated in FIGURE 6, it can be seen that fuel from the central port **17** of the gas cock **18** is only adapted to flow from the central port **17** thereof out through the conduit means **25** to the bake burner **12** in a manner hereinafter described.

Similarly, when the control knob **28** is disposed in the broil position, it can be seen in FIGURE 7 that fuel is only adapted to flow from the central port **17** of the gas cock **18** to the conduit **26** to operate the broil burner **13** in a manner hereinafter described.

In addition, the gas cock **18** has a slot **30** which directly interconnects the gas supply manifold **14** with the conduit **27** only when the control knob **28** is in the broil position as illustrated in FIGURE 7, the slot **30** being directly interconnected to the manifold **14** by a suitable conduit **27'** when the gas cock **18** is disposed in its broil position as illustrated in FIGURES 7 and 8.

Thus, it can be seen that the selector valve **28** is adapted to select either a bake or broiling operation of the oven **10** and has an OFF position whereby neither the bake burner **12** nor the broil burner **13** can be operated.

The automatic valve **16** illustrated in FIGURE 1 is shown in detail in FIGURE 2 and includes a housing means **29** having an inlet **30** interconnected to the conduit means **15** leading from the manifold **14** and an outlet **31** interconnected to the conduit means **20** leading to the selector valve **19**, the inlet **30** and outlet **31** of the automatic valve means being interconnected together by a valve seat **32** normally closed by a movable valve member **33** held in the closed position by the force of the snap spring **34**.

The opening and closing of the valve member **33** is in response to expansion and contraction of an expansible element **35** carried by the housing **19** and acting against a lever arrangement **36**, the expansible element **35** having a fixed wall **37** and a movable wall **38**.

The interior of the expansible element **35** is interconnected to a temperature sensing bulb **39**, FIGURE 1, by a conduit means **40**.

The temperature sensing bulb **39** is adapted to sense a flame at a controller pilot burner **41** for the bake burner **12** whereby when a flame exists at the controller

pilot burner 41, the automatic valve 16 has the valve member 33 thereof moved to an open position by expansion of the expansible element 35 to interconnect the source of fuel 14 with the selector valve 19. However, when the temperature sensing bulb 39 senses that no flame exists at the controler pilot burner 41, the expansible element 35 contracts and causes the snap spring means 34 to close the valve 33 whereby fuel from the source 14 is no longer adapted to be interconnected to the selector valve 19 whether the selector valve 19 is disposed in the bake or broil position thereof.

The inlet 30 of the automatic valve 16 is at all times interconnected to an outlet 42 which, in turn, is interconnected to a conduit 43, FIGURE 1, leading to a standby pilot burner 44 which is adapted to ignite fuel issuing from the controller pilot burner 41 in a manner hereinafter described.

Thus, it can be seen that even though the automatic valve 16 is in a closed position thereof, a flame will always exist at the standby pilot 44 once the same has been initially lit because there is a direct communication between the manifold 14 and the standby pilot 44.

While the particular details of the automatic valve 16 do not per se form a part of this invention, it is deemed necessary to only state that the automatic valve 16 interconnects the source of fuel 14 with the selector valve 19 only when the temperature sensing bulb 39 senses that a flame exists at the controller pilot burner 41 and that the automatic valve 16 at all times directs fuel to the standby pilot 44.

However, for a more complete disclosure of the various operating parts of the automatic valve 16, see the co-pending patent application, Ser. No. 202,789, filed June 15, 1962, now Patent No. 3,233,830.

Fuel from the source of fuel 14 is adapted to pass through a conduit 45 and through a thermostatic valve 46 to a conduit means 37 leading to the controller pilot 41.

Therefore, it can be seen that the fuel supplied to the controller pilot burner 41 of the bake burner means 12 is thermostatically controlled by the valve means 46.

In particular, reference is made to FIGURE 3 wherein the thermostatic valve 46 comprises a housing 48 adapted to be supported to the control panel 49 or the like of the oven 10 and having an inlet chamber 50 and an outlet chamber 51 separated from each other by a valve seat 52, the inlet chamber 50 being interconnected to the conduit 45 leading from the source of fuel 14 and the outlet chamber 51 being interconnected to the conduit 47 leading to the controller pilot 41.

The valve seat 52 of the thermostatic valve 46 is adapted to be opened and closed by a movable valve member 53 normally urged to the closed position by a compression spring 54. However, the valve member 53 has a stem 55 extending therefrom and engaged by one end 56 of a lever 57 fulcrumed on an axially movable shaft 58, the axial position of the shaft 58 being determined by rotation of a control knob 59.

The control knob 59 is adapted to be disposed in an OFF position, in a desired temperature range position or in a broil position for a purpose hereinafter described.

The other end 60 of the lever 57 is normally urged to the left by a leaf spring 61 into engagement with a movable wall 62 of an expansible and collapsible element 63 having a fixed wall 64 fixed to the housing 48, the interior of the expansible element 63 being interconnected to a temperature sensing bulb 65 disposed in the oven 10 by a conduit means 66.

Thus, when the control knob 59 is disposed in the OFF position thereof, the fulcrum shaft 58, is disposed in a position so that regardless of the temperature of the oven 10, the valve member 53 is disposed in the closed position and no fuel can flow to the controller pilot burner 41.

However, when the control knob 59 is disposed in the desired temperature range thereof, or in the broil position thereof, the valve member 53 is permitted to move to the open position thereof by the positioning of the fulcrum shaft 58 whereby fuel from the manifold 14 is adapted to flow to the controller pilot 41 and be ignited by the standby pilot 44 thereof.

Should the temperature of the oven 10 exceed the temperature setting position of the control knob 59 of the thermostatic valve 46, the expansible element 53 has expanded in such a manner that the same causes the lever 57 to pivot to a position to permit the valve member 53 to move to the closed position whereby the flow of fuel to the controller pilot burner 41 is terminated until the valve member 53 is again open upon subsequent contraction of the expansible element 63 because of a decrease in temperature in the oven 10 below the selected temperature.

While the particular details of the thermostatic valve 46 do not form a part of this invention in regard to the per se structure thereof, it is deemed necessary to only state that the thermostatic valve 46 controls the flow of fuel from the source 14 to the controller pilot 41 in response to the temperature setting of the control knob 59.

However, for a further disclosure of the details and operation of the thermostatic valve 46, attention is directed to the co-pending patent application, Ser. No. 416,184, filed Nov. 23, 1964.

The conduit 25 leading from the selector valve 19 is interconnected to the inlet side of an automatic safety valve 67 which has the outlet side thereof interconnected to the broil burner 13 by a conduit means 68.

The safety valve 67 as illustrated in FIGURE 4 comprises a housing means 69 having an inlet chamber 70 interconnected to the conduit 26 and an outlet chamber 71 interconnected to the conduit 68, the inlet and outlet chambers 70 and 71 being interconnected together by a valve seat 72.

The valve seat 72 is adapted to be opened and closed by a movable valve member 73 normally urged to the closed position by a compression spring 74.

A first lever 75 is disposed in the housing 69 of the automatic valve 67 and is fulcrumed at point 76 in such a manner that the end 77 thereof is adapted to engage an end 78 of a lever 79 fulcrumed at point 80. The other end 81 of the lever 79 is adapted to engage the valve member 73 and move the same to an opened position when the lever 79 has the end 81 thereof moving in a counterclockwise direction about its pivot point 80.

An expansible and collapsible element 82 is disposed in the housing 69 and has a movable wall 83 engageable with the end 77 of the lever 75 while a fixed wall 84 of the element 62 is fixed relative to the housing 69.

The interior of the expansible element 82 is interconnected to a temperature sensing bulb 85 by a conduit means 86 for a purpose hereinafter described.

The temperature sensing bulb 85 is adapted to sense a flame at a controller pilot 87 disposed adjacent the broil burner 13, the controller pilot 87 being adapted to receive fuel from the conduit means 27 previously described.

Thus, as long as a flame exists at the controller pilot 87 in a manner hereinafter described, the expansible element 82 expands to such an extent that the valve member 73 is moved from the closed position illustrated in the drawings to an open position to permit fuel to flow from the selector valve 19 to the broil burner 13. However, when a flame ceases to exist at the controller pilot 87, the expensible element 82 of the automatic valve 67 contacts to such an extent that the valve member 73 is moved to the closed position to prevent the flow of fuel to the broil burner 13.

The housing means 69 of the automatic valve 67 also has an auxiliary inlet chamber 88 interconnected to an auxiliary outlet chamber 89 by a valve seat 90, the valve seat 90 being opened and closed by a valve mem-

ber **91** normally urged to the open position by a compression spring **92**.

However, the valve member **91** has a stem **93** engageable with the end **81** of the lever **79** so that when the lever **79** is in a position to maintain the valve member **73** in the closed position, the valve member **91** is also disposed in the closed position thereof. However, when the lever **79** moves to open the valve member **73**, the same permits the valve member **91** to simultaneously open under the influence of the force of the compression spring **92** for a purpose hereinafter described, the valve member **91** when in the open position sealing the opening through which the valve stem **93** projects.

The auxiliary inlet chamber **88** of the automatic valve **67** is interconnected to the manifold **14** by a conduit means **94**.

The auxiliary outlet chamber **89** of the valve means **67** is interconnected to a standby pilot burner **95** by a conduit means **96**.

Thus, it can be seen that when the automatic valve **67** opens to interconnect the source of fuel with the broil burner means **13**, fuel is also adapted to be passed from the manifold **14** to the standby pilot burner **95** for a purpose hereinafter described.

For further details of the structure and operation of the valve means **67**, see the co-pending patent application, Ser. No. 763,892, filed Sept. 29, 1958, now Patent No. 3,213,922.

An ignition coil **97** is disposed adjacent the standby pilot burned **95** and controller pilot burner **87** and is interconnected to the secondary winding **98** of a transformer **99**. The primary winding **100** of the transformer **99** has one side thereof interconnected to a power lead L_1 by a lead **101** and the other side thereof interconnected to a lead **102** interconnected to a fixed contact **103** of a pressure responsive switch **104**.

A power line L_2 is interconnected to another fixed contact **105** of the pressure responsive switch **104** by a lead **106**.

Thus, when the contacts **103** and **105** of the pressure responsive switch **104** are interconnected together, current is adapted to flow through the transformer **99** and cause the ignition coil **97** to operate.

The pressure responsive switch **104** includes a housing **107** divided into two chambers **108** and **109** by a flexible diaphragm **110** carrying a bridging contact **111**. The inlet chamber **70** of the safety valve **67** is interconnected to the chamber **109** of the pressure responsive switch **104** by a conduit **112**. The outlet chamber **71** of the safety valve **67** is interconnected to the chamber **108** of the pressure responsive switch **104** by a conduit means **113**.

Thus, when fuel is first directed to the closed automatic valve **67** by the selector valve **19** in the manner previously described, pressure builds up in the inlet chamber **70** thereof and, likewise, builds up in the chamber **109** of the pressure responsive switch **104** to cause the flexible diaphragm **108** to move upwardly in FIGURE 1 and bridge the contacts **103** and **105** thereof with the contact **111** so that the ignition coil **97** is energized.

Since the flow of fuel to the automatic valve means **67** under the influence of the selector valve **19** is when the selector valve **19** is in the broil position as illustrated in FIGURE 7, fuel is also being passed by the selector valve **19** through the conduit **27** to the controller pilot **87** whereby the fuel issuing from the controller pilot **87** is ignited by the energized ignition coil **97**.

When a flame appears at the controller pilot **87** in the above manner, the temperature bulb **85** senses the presence of the flame and causes the valve member **73** of the safety valve **67** to move to an open position whereby fuel can flow through the valve **67** to the broil burner **13** and be ignited by the controller pilot **87**.

When the valve member **73** is moved to its open position, it can be seen that the pressures in the inlet chamber **70** and outlet chamber **71** thereof become equal whereby

the flexible diaphragm **110** of the pressure switch **104** will return to its normal position as illustrated in FIGURE 1 and terminate the operation of the ignition coil **97**.

Since the opening of the valve member **73** of the safety valve **67** also causes opening of the auxiliary valve member **91** thereof, it can be seen that fuel is adapted to flow from the manifold **14** to the standby pilot **95** to also be ignited by the ignition coil **97** and/or the flame at the control pilot **87** so that a flame will always appear at the standby pilot **95** as long as the automatic valve **67** is in an open position.

Therefore, it can be seen that the control system **11** of this invention is relatively simple and effective while still being adapted to control the operation of the oven **10** in a manner now to be described.

When it is desired to utilize the oven **10** in a manner that the bake burner **12** is to operate for baking purposes or the like, the housewife or the like turns the selector valve **19** to the bake position and the thermostatic valve **46** to an ON position thereof to select the desired temperature setting for the oven **10**.

When the thermostatic valve **46** is disposed in an ON position thereof, fuel is adapted to flow through the opened valve seat **52** thereof and issue from the controller pilot **41** to be ignited by the flame at the continuously burning standby pilot **44**.

When a flame appears at the controller pilot **41**, the temperature bulb **39** senses the presence of the same and opens the valve member **33** of the automatic valve **16** so that fuel can flow from the manifold **14** through the safety valve **16** and selector valve **19** to the bake burer **12**, the fuel issuing from the bake burner **12** being ignited by the controller pilot **41** and/or the standby pilot **44** as desired.

Thus, as long as the temperature of the oven **10** is below the selected temperature, the bake burner **12** continues to operate.

However, should the temperature of the oven **10** exceed the selected temperature setting of the control knob **59** of the thermostatic valve **46**, the valve member **53** thereof closes under the influence of the expanding element **63** thereof to terminate the flow of fuel to the controller pilot **41**.

When the flame ceases to exist at the controller pilot **41**, the automatic valve **16** has the seat **32** thereof closed by the valve member **33** so that fuel can no longer flow to the bake burner **12**.

However, when the temperature of the oven **10** falls below the selected temperature, the valve member **53** of the temperature responsive valve **46** again opens to permit fuel to issue from the controller pilot **41** and be ignited by the standby pilot **44**. Thus, it can be seen that when a flame again appears at the controller pilot **41**, the automatic valve **16** is again opened so that fuel can issue from the bake burner **12**.

Thus, the safety valve **16** is cycled between its opened and closed positions by the temperature of the oven **10** controlling the operation of the thermostatic valve **46** whereby the temperature of the oven **10** can be maintained at the selected temperature as set by the selector knob **59** of the thermostatic valve **46**.

Should it be desired to operate the oven **10** with the broil burner **13** thereof, the housewife or the like turns the selector valve **19** to its broil position and turns the thermostatic valve **46** to either its broil position or a desired temperature setting thereof.

Since the oven is below the selected temperature of the thermostatic valve **46**, the valve seat **52** thereof is opened and fuel is adapted to flow to the controller pilot **41** to be ignited by the standby pilot **44** whereby the automatic valve **16** subsequently opens to direct fuel from the manifold **14** to the automatic valve **16** and, thus, to the selector valve **19**. Since the selector valve **19** is disposed in its broil position, no fuel is directed to the bake burner **12** but is instead directed to the conduits **26** and **27**.

However, since the automatic valve 67 is disposed in its closed position, the pressure of the fuel builds up in the chamber 109 of the safety switch 104 to cause the contact 111 to bridge the contacts 103 and 105 thereof so that the ignition coil 97 is energized.

The energized ignition coil 97 ignites the fuel issuing from the controller pilot 87 whereby the temperature bulb 85 senses the presence of the flame at the controller pilot 87 and causes the automatic valve 67 to have the valve members 73 and 91 thereof moved to the opened position.

With the valve member 73 now disposed in the open position, fuel is adapted to issue to the broil burner 13 and be ignited by the controller pilot 87. At this time, the pressure switch 104 returns to its normal position as illustrated in FIGURE 1 to terminate the energization at the ignition coil 97.

Simultaneously with the opening of the valve member 73 of the safety valve 67, the valve member 91 is moved to the open position so that fuel now issues from the standby pilot burner 95 and the same is ignited by the controller pilot 87.

Thus, the broil burner 13 continues to operate as long as the temperature sensing bulb 65 of the thermostatic valve 46 senses a temperature below the temperature setting of the control knob 59.

However, if the temperature of the oven 10 should exceed the selected temperature setting thereof, the thermostatic valve 46 closes to terminate the flow of fuel to the controller pilot 41 so that the automatic valve 16 closes and no fuel will issue to the broiler burner 13.

Thus, when the temperature of the oven 10 falls below the selected temperature thereof, the thermostatic valve 46 again opens so that fuel can flow from the controller pilot 41 and be ignited by the standby pilot 44. Thus, the automatic valve 16 can again open and the broiler burner 13 can be again ignited in the manner previously described.

Should the housewife or the like suddenly turn the selector valve 19 away from the broil position thereof and then quickly back to the broil position thereof before the automatic valve 67 has had time to close the valve member 73 thereof whereby the controller pilot 87 would have the flame thereof terminated and the ignition coil 97 would not be operating, it can be seen that the standby pilot 95 would continue to have a flame issuing therefrom because the auxiliary valve 91 also would not be in a closed position whereby the fuel issuing from the broil burner 13 would be ignited by the standby pilot 95 as well as the fuel issuing from the controller pilot 87.

In addition, the gas cock 18 could be so constructed and arranged that the same provides a bleed from the broil line 26 to the pilot line 27 when the gas cock 18 is in its OFF position, and even maybe when in its bake position, whereby the possibility of trapping gas in the line 26 that would tend to keep the pressure switch 104 and the igniter 97 in their ON conditions would be prevented by such a bleed arrangement.

Therefore, it can be seen that this invention provides an improved control system for controlling the operation of a double burner oven or the like.

While the form of the invention now preferred has been disclosed as required by the statutes, other forms may be used, all coming within the scope of the claims which follow.

What is claimed is:

1. In combination, a bake burner, pilot means, a broil burner, a source of fuel, a selector valve, first means interconnecting said source of fuel with said selector valve, an automatic valve disposed in said first means and being responsive to a flame at said pilot means to interconnect said source of fuel to said selector valve, said pilot means being adapted to cause cyclic operation of said bake burner to maintain a baking temperature effect and to cause cyclic operation of said broil burner to maintain a broil temperature effect, second means interconnecting said selector valve with said bake burner, and third means interconnecting said selector valve with said broil burner whereby said selector valve can selectively direct fuel to either said bake burner or said broil burner only when said automatic valve senses a flame at said pilot means.

2. In combination, a bake burner, controller pilot means for said bake burner, a broil burner, a source of fuel, a selector valve, first means interconnecting said source of fuel with said selector valve, an automatic valve disposed in said first means and being responsive to a flame at said controller pilot means to interconnect said source of fuel to said selector valve, said controller pilot means being adapted to cause cyclic operation of said bake burner to maintain a baking temperature effect and to cause cyclic operation of said broil burner to maintain a broil temperature effect, second means interconnecting said selector valve with said bake burner, third means interconnecting said selector valve with said broil burner, and fourth means interconnecting said source of fuel with said controller pilot means whereby said selector valve can selectively direct fuel to either said bake burner or said broil burner only when said automatic valve senses a flame at said controller pilot means.

3. A combination as set forth in claim 2 wherein a standby pilot means is provided to ignite fuel issuing from said controller pilot means, and wherein means interconnect said source of fuel with said standby pilot means at all times.

4. A combination as set forth in claim 3 wherein said last-named means includes a continuously open passage through the body of said automatic valve.

5. In combination, a bake burner, controller pilot means for said bake burner, a broil burner, a source of fuel, a selector valve, first means interconnecting said source of fuel with said selector valve, an automatic valve disposed in said first means and being responsive to a flame at said controller pilot means to interconnect said source of fuel to said selector valve, second means interconnecting said selector valve with said bake burner, third means interconnecting said selector valve with said broil burner, fourth means interconnecting said source of fuel with said controller pilot means whereby said selector valve can selectively direct fuel to either said bake burner or said broil burner only when said automatic valve senses a flame at said controller pilot means, and a temperature responsive valve disposed in said fourth means to interconnect said source of fuel to said controller pilot means in response to a temperature setting of said temperature responsive valve.

6. A combination as set forth in claim 5 wherein said temperature responsive valve has a temperature setting range and a broil position.

7. A combination as set forth in claim 6 wherein said temperature responsive valve can be set in said temperature range even though said selector valve is interconnecting said source of fuel to said broil burner.

8. In combination, a bake burner, bake pilot means for said bake burner, a broil burner, broil pilot burner means, a source of fuel, a selector valve, first means interconnecting said source of fuel with said selector valve, a first automatic valve disposed in said first means and being responsive to a flame at said bake pilot means to interconnect said source of fuel to said selector valve, second means interconnecting said selector valve with said bake burner, third means interconnecting said selector valve with said broil burner whereby said selector valve can selectively direct fuel to either said bake burner or said broil burner only when said first automatic valve senses a flame at said pilot means, and a second automatic valve disposed in said third means and being responsive to a flame at said broil pilot means to interconnect said selector valve with said broil burner.

9. A combination as set forth in claim 8 wherein an electrical ignition system is provided for said broil pilot means, and wherein said second automatic valve actuates

said ignition system before the same interconnects said selector valve with said broil burner.

10. A combination as set forth in claim **8** wherein a standby pilot burner is provided for said broil burner, and wherein said second automatic valve interconnects said standby pilot burner with said source of fuel when said second automatic valve interconnects said selector valve with said broil burner.

11. A combination as set forth in claim **8** wherein fourth means interconnects said source of fuel with said broil pilot burner means.

12. A combination as set forth in claim **11** wherein said selector valve controls said fourth means.

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ALDEN D. STEWART, *Primary Examiner.*