Aug. 9, 1949. F. A. GAUGER 2,478,386

AUTOMATIC IGNITION AND SAFETY CONTROL MEANS FOR GAS BURNERS

Filed Sept. 7, 1945

3 Sheets-Sheet 1

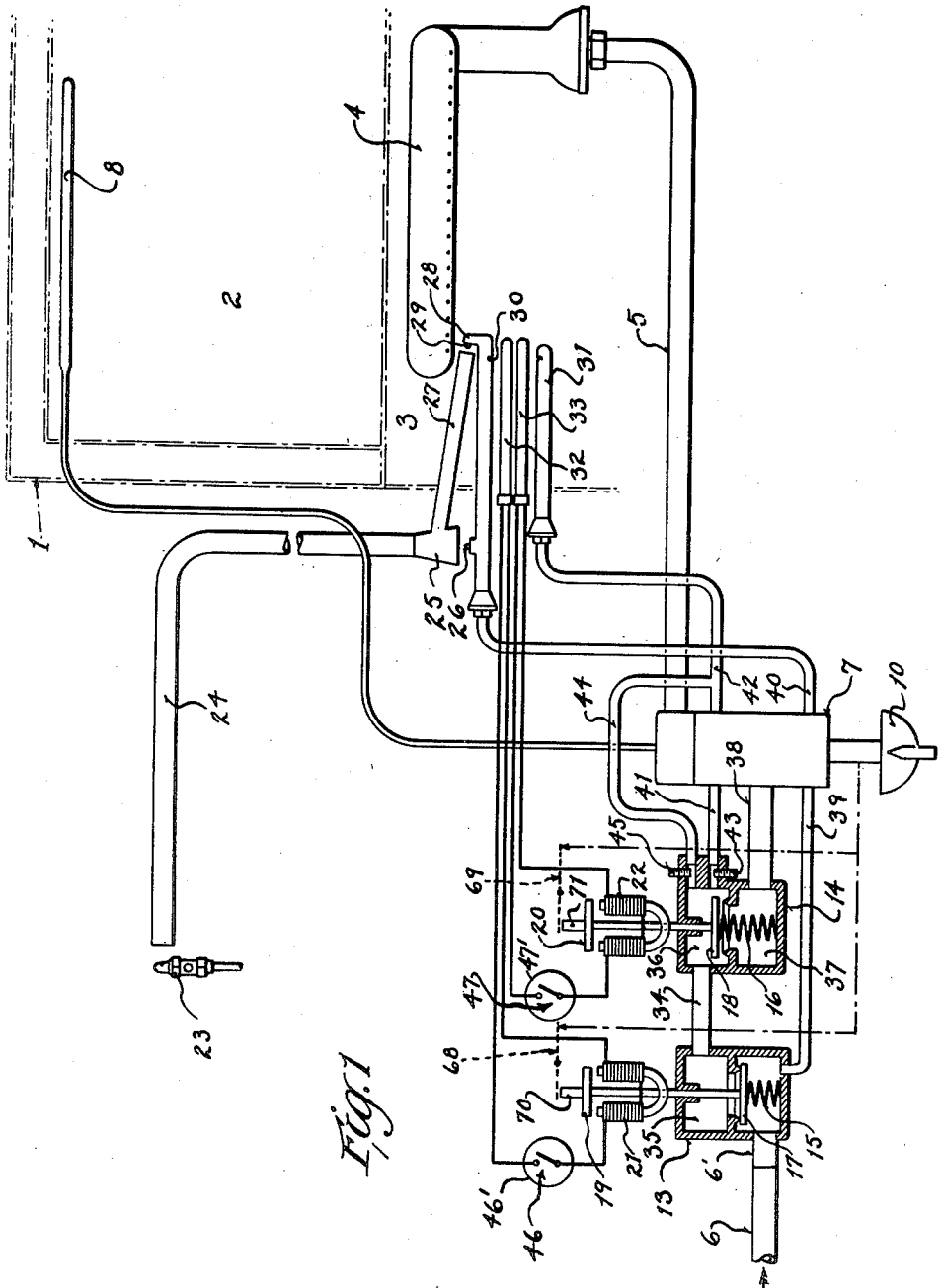


Fig. 1

INVENTOR.
FRANK A. GAUGER

BY

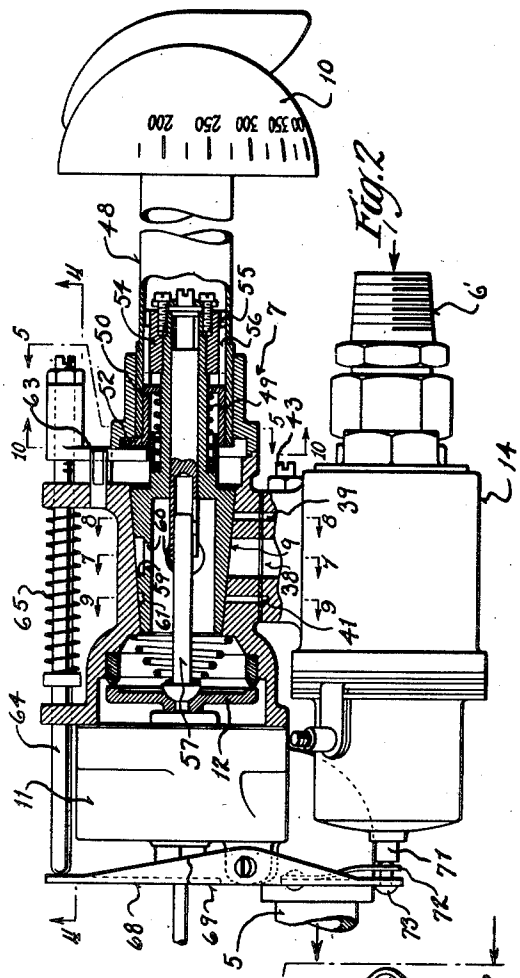
Arthur R. Woolford

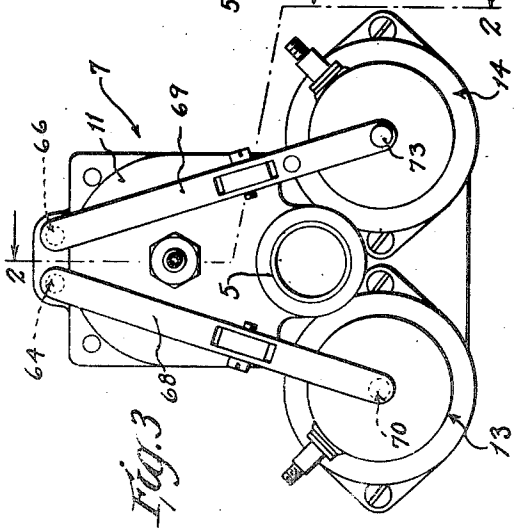
ATTORNEY.

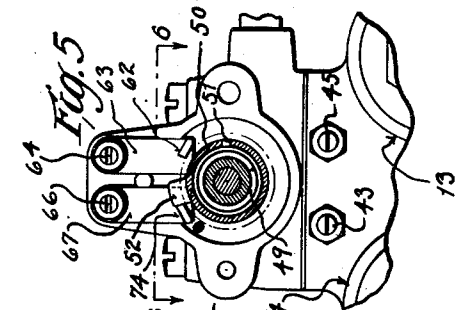
Aug. 9, 1949. F. A. GAUGER 2,478,386

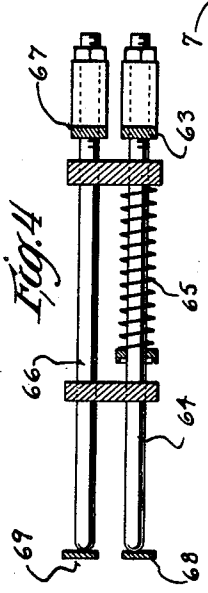
AUTOMATIC IGNITION AND SAFETY CONTROL MEANS FOR GAS BURNERS

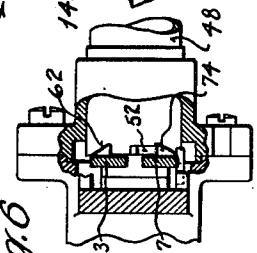
Filed Sept. 7, 1945 3 Sheets-Sheet 2

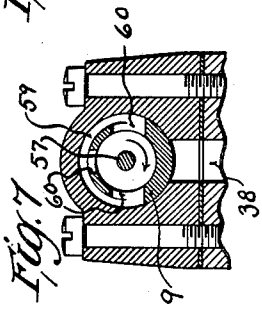


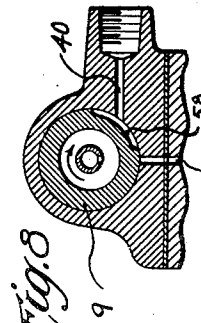


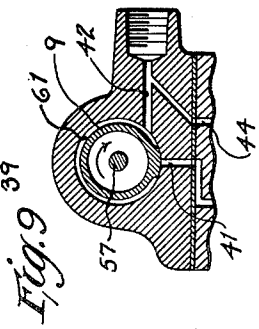












INVENTOR.
FRANK A. GAUGER

BY

Arthur R. Woolfolk

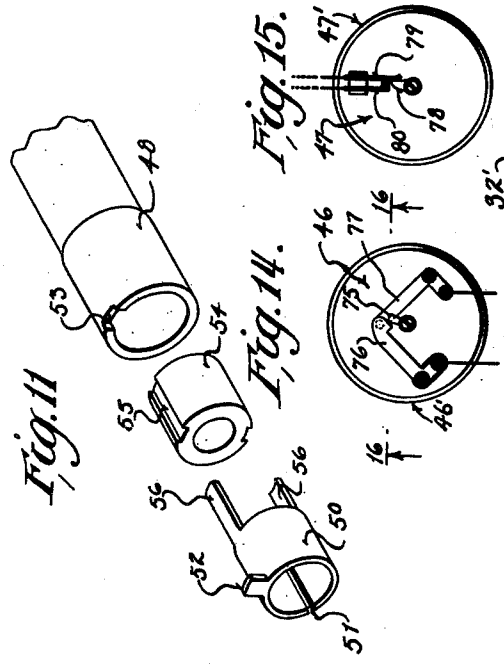
ATTORNEY.

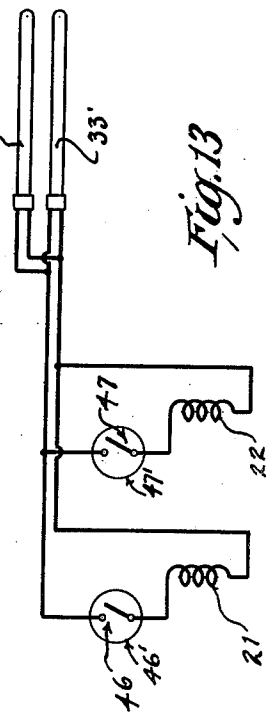
Aug. 9, 1949. F. A. GAUGER 2,478,386

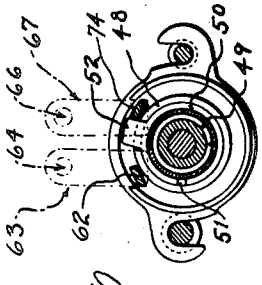
AUTOMATIC IGNITION AND SAFETY CONTROL MEANS FOR GAS BURNERS

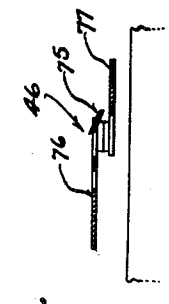
Filed Sept. 7, 1945

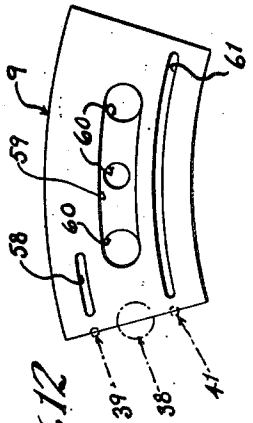
3 Sheets-Sheet 3











INVENTOR.
FRANK A. GAUGER
BY
Arthur R. Dooley
ATTORNEY.

Patented Aug. 9, 1949

2,478,386

UNITED STATES PATENT OFFICE

2,478,386

AUTOMATIC IGNITION AND SAFETY CONTROL MEANS FOR GAS BURNERS

Frank A. Gauger, Milwaukee, Wis.

Application September 7, 1945, Serial No. 614,970

4 Claims. (Cl. 158—117.1)

1

This invention relates to automatic lighting and control means for gas burners, particularly for oven burners.

This invention is an improvement over that disclosed in my copending application for Letters Patent, Serial No. 521,201, filed February 5, 1944, for Automatic lighting and control means for gas burners. In my copending application I disclosed means for lighting an oven burner located below and laterally of a constantly burning pilot light, as in the type of gas stove known as the table top type. In the copending application I disclosed electromagnetic valves controlled by thermocouple means associated with a main gas cock and oven regulator and with clock control of the electromagnetic valves, and in which the electromagnetic valve or valves had to be initially individually manually set.

Objects of this invention are to provide a valve assembly associated with thermocouple means and electromagnetic valve means so that control of all of these means is obtained from the handle of a combined main gas cock and oven regulator, the handle being arranged to be moved to a first position to charge a flash tube or flame conducting tube with a combustible mixture and light pilot means adjacent the oven burner and adjacent thermocouple means and, only after the oven pilot light means is lighted and the thermocouple means have begun to properly function, being arranged to be moved to another or second position to set the regulator to the desired temperature and to set the electromagnetic valve means in initial position and to open up the main gas cock for the oven burner.

In greater detail, further objects are to provide a valve assembly of the type hereinabove set forth in which the handle of the main gas cock is arrested by a stop and has at first limited rotary motion insufficient to open the passage to the oven burner, and which is arranged to have axial sliding motion for setting the electromagnetic valve means in initial position, the electromagnetic valve means being so arranged as to hold the stop out of the way of the handle means and allow the handle means to be turned to the desired position to set the regulator and open the main gas cock.

A further specific object is to provide a flash tube pilot burner and a second pilot burner and to provide for the transfer of the flame from the flash tube pilot burner to the second pilot burner and to thereafter cut off the gas supply to the flash tube pilot burner.

A further specific object is to provide a maintaining pilot adjacent the oven burner which is arranged to continue to burn after the main gas cock is closed until the thermocouple means becomes ineffective to hold the electromagnetic valve means in initial position, to thereby guard against failure of lighting the oven burner if the main gas cock was closed and immediately opened before the thermocouple means had cooled sufficiently to release the electromagnetic valve means.

2

Further objects are to provide a system of control for oven burners or other gas burners in which clock control means is provided for both turning on and cutting off the supply of gas to the burner and in which the clock control means controls current from thermocouple means.

Further objects are to materially simplify the control of burners, to lessen the number of operations that the operator has to perform to light the burner or set the apparatus, and to provide a construction which is mechanically simple and easy to install and is safe in operation.

Embodiments of the invention are shown in the accompanying drawings, in which:

Figure 1 is a diagrammatic view of the apparatus.

Figure 2 is a sectional view on the line 2—2 of Figure 3 showing the main valve assembly.

Figure 3 is a rear view of the structure shown in Figure 2.

Figure 4 is a sectional view on the line 4—4 of Figure 2.

Figure 5 is a sectional view on the line 5—5 of Figure 2.

Figure 6 is a sectional view on the line 6—6 of Figure 5.

Figures 7, 8, and 9 are sectional views on the lines 7—7, 8—8, and 9—9 respectively of Figure 2.

Figure 10 is a sectional view on the line 10—10 of Figure 2.

Figure 11 is an expanded view of the shank portion of the handle and parts associated therewith.

Figure 12 is a developed view of the valve of the main gas cock.

Figure 13 is a diagrammatic view of a further way in which the thermocouples may be connected.

Figure 14 is a view showing one of the clock controlled switches.

Figure 15 is a view showing the other clock controlled switch.

Figure 16 is an enlarged sectional view on the line 16—16 of Figure 14.

Referring to the drawings, particularly Figure 1, it will be seen that an oven has been indicated by the reference character 1, the oven chamber by the reference character 2, and the burner chamber by the reference character 3. The burner is indicated at 4 and is located in the chamber 3. It is supplied with gas by means of a pipe 5 which, through the agency of valves hereinafter described, is arranged to be connected to the gas manifold 6. The main gas cock is indicated by the reference character 7 and is shown in partial section in Figure 2.

This main gas cock is in reality a main gas valve and an over regulator which controls the burner by a throttle and which is controlled by means of a thermostatic bulb 8 located in the oven chamber 2. The combined main gas cock oven regulator 7 is of the type in which a main manually operable valve 9, see Figure 2, is controlled by means of a handle or manipulating member 10 which, in turn, controls the setting of the thermostatic automatic mechanism, such means being housed in the casing 11 of the valve assembly and being arranged to control the automatic valve 12, see Figure 2. The automatic valve 12 is thermostatically controlled and is connected in series with the manually operable valve 9. Since a combined over regulator and main gas cock is well known, a detailed description thereof will not be given. For instance, it could be of the general type disclosed in the patent to Weber et al., No. 2,303,011 of November 24, 1942, for a Valve. Two additional valves indicated by the reference characters 13 and 14, see Figure 1, are placed in series between the supply manifold 6 and the manually operable main gas cock 7. The valve 13, as will be seen from the diagrammatic showing of Figure 1, is urged by means of the spring 15 towards closed position and is the normally closed valve. The valve 14 is urged towards open position by means of the spring 16 and is the normally open valve. The valves 13 and 14 are provided with disks or valve members 17 and 18, respectively, cooperating with the valve seats as indicated. The valve members 17 and 18 are respectively connected to electromagnet armatures 19 and 20 which are arranged adjacent the poles of electromagnets 21 and 22, respectively. The construction is such that when the valves 17 and 18 are respectively manually moved to open and closed position the armatures 19 and 20 are within the zone of influence of the electromagnets 21 and 22 and are arranged to be held thereby when such electromagnets are energized in a manner hereinafter to appear. The valves 13 and 14 are of a well known type and are described in detail in the above noted copending application.

Referring again to Figure 1 it will be seen that a constantly burning pilot light 23 is provided. This pilot light may be of the hooded ventilated type used to light the top burners and is located at a point above and laterally of the oven 1, as for example, in the table top type of stove. A flame conducting tube-like member 24 of any suitable type is employed and has its upper end adjacent the constantly burning pilot light 23 and has its lower end 25 adjacent a charging burner or means 26. The flame conducting or flash-back tube 24 is provided with a lateral lower extension 27 which is adjacent a flash tube pilot burner 28. The flash tube pilot burner is provided with a burner tip 29 and with a laterally positioned flame outlet 30 for a purpose hereinafter to appear, and is located within the burner chamber or broiler chamber 3. A burner pilot light 31 is located in lighting relation to the flash tube pilot light 28 and in lighting relation to the oven burner 4. The flame conducting or flash tube 24 may be a composite tube or may be of any suitable type. For example, it may be of the type shown in my copending application, Serial No. 521,201 filed February 5, 1944 for Automatic lighting and control means for gas burners.

Thermocouple means indicated by the reference characters 32 and 33, see Figure 1, are positioned in heating relation to both the flash tube pilot light 28 and the oven burner pilot light 31. As shown in Figure 1, two thermocouples may be employed. The thermocouple 32 is arranged to energize the electromagnet 21 and the thermocouple 33 is arranged to energize the electromagnet 22. As shown in Figure 1, separate circuits may be employed for the two thermocouples. However, shown in Figure 13, the thermocouples 32' and 33' may be connected in parallel and a single conducting line may lead to the two electromagnets 21 and 22, such electromagnets being connected in parallel. It is obvious also that if desirable a single thermocouple could be employed though in actual practice it has been found more satisfactory to employ two thermocouples. Neither thermocouple is arranged to be heated by the oven burner 4 but both thermocouples are arranged to be heated, as stated, by either or both the flash tube pilot light and charging means 28 or the oven pilot light 31.

It is to be understood in reference to Figure 1 that such figure is a diagrammatic view and the various passages, to and from the several valves, are indicated as pipes, whereas in reality they are for the most part passages or ducts formed in the unitary valve assembly, the main gas cock 7 and the valves 13 and 14 being formed as a unitary valve assembly as shown in Figures 2, 3, and 5 of the drawings. With this in mind, reference is to be had to Figure 1 from which it will be seen that the gas supply or manifold 6 is connected to the valve 13 by means of a nipple 6', see also Figure 2. A passageway 34 extends from the chamber 35 of the valve 13 to the chamber 36 of the valve 14. From the chamber 37 of the valve 14 a passageway 38 extends to the main gas cock 7. From this point the gas passes as will hereinafter appear through an automatic valve, controlled by an oven regulator including the thermostatic bulb 8, to the passageway 5 to the burner 4. The charging and flash tube pilot light 26, 28 and 30 is supplied through the main valve by means of a passageway 39 to the main valve and the passageway 40 from the main valve to such charging means and flash tube pilot light. The passageway 39, it will be seen, is constantly in communication with the main gas supply 6 and by-passes both the valves 13 and 14. The main valve or gas cock 7 is so arranged that it will first admit gas to the charging means and flash tube pilot light 26, 28 and will be arrested in its opening motion at this point. This constitutes the first position. Also the main valve or gas cock 7 controls the flow of gas through a passageway 41 to a passageway 42 leading to the burner pilot light 31 in a manner hereinafter to appear, a suitable minimum flame adjusting screw 43 being provided. In addition to this, there is a by-pass passageway 44 which by-passes the main gas cock 7 and is also provided with a minimum flame adjusting screw 45.

To complete the description of the diagrammatic view in Figure 1 it is to be noted that clock

controlled switches 46 and 47 are respectively positioned in the electric circuits of the electromagnetic means 21 and 22. Further as indicated by dotted lines and as will hereinafter appear, the manually operable handle or member 10 of the main gas cock 7 is arranged to move the valves and the corresponding electromagnet armatures 19 and 20 to holding position when the manually operable member 10 is moved axially. This, however, will appear in greater detail hereinafter.

Figures 2, 3, and 5 show the unitary valve assembly which includes the main gas cock 7 and the valves 13 and 14 formed as a unitary assembly. Referring particularly to Figure 2 it will be seen that the main gas cock includes the conical valve 9 which is adapted to be operated by means of the manually operable handle or member 10 which member also carries a series of graduations so that the temperature setting will be indicated. It is to be noted that the handle or manually operable member is provided with a rigid tubular shank 48. This shank is adapted to be moved, together with the manually operable handle or member 10, axially with reference to the main valve 9. It is held outwardly by means of a spring 49 which bears at its outer end against the flange of the tubular member 50 which has a frictional fit with the member 48. The member 50 is shown most clearly in the exploded view of Figure 11. It will be seen that this member is provided with a slot 51 and in view of the fact that it is resilient it is apparent that it will expand within the tubular member or shank 48 and will thus be frictionally engaged therewith. It is also provided with an upwardly projecting tongue or lip 52 which fits within a notch 53, see Figure 11, formed in the tubular shank 48. A collar 54, see Figures 11 and 2, also fits within the tubular shank 48 and is provided with key slots 55 arranged to freely slidably receive keys 56 formed integrally with the member 50. The collar 54 is rigidly attached to the shank of the tubular valve 9 and, through suitable adjustable means common in the art, is attached to the adjusting stem 57, see Figure 2, of the thermostatic means or oven regulator which controls the setting of the automatic valve 12 in the usual manner.

The valve 9 of the main gas cock is shown developed in Figure 12 and it will be seen that the valve 9 is provided with a recess or duct 58 adapted to communicate with the passage 39 when the valve is turned to its first position hereinbefore described. When this occurs, the passage or duct 58 places the passage 39 in communication with the passage 40, see Figures 12 and 8. Also when the valve 9 is turned to its first position the large recessed portion 59 thereof is placed in communication with the passage 38, see Figures 12 and 7 and inasmuch as the valve 9 is provided with a plurality of radial holes 60 it is apparent that the hollow interior of the valve 9 is placed in communication with the passageway or opening 38. The valve 9 is also provided with a relatively long recess or duct 61 which is shown in Figures 12 and 9. This duct is adapted to place the passageway 41 in communication with the passageway 42 when the valve is turned either to first or second position hereinafter described.

When the valve 9 is in closed position as shown in Figures 12, 7, 8, and 9 all of the passageways 38, 39, and 41 are closed.

When the valve is moved to first position it is arrested by means of a stop 62, see Figure 5.

This stop is carried by means of an arm 63 rigid with a push rod 64. The stop 62 and the arm 63 are shown very clearly in Figures 5 and 6. The push rod 64 is provided with a relatively light spring 65 which urges it to the left in Figures 2 and 4. The spring 65 is lighter than the spring 15 of the valve 13, see Figure 1. A second push rod 66 parallels the push rod 64, see Figure 4, and is also provided with a downwardly extending arm 67 adjacent the arm 63, see Figures 4 and 5. The arms 63 and 67 are engaged by the end of the member 50 carried within the shank 48 of the manually operable member 10. It will be seen, therefore, that when the handle or manually operable member 10 is pushed inwardly that it displaces both of the push rods 64 and 66 and forces them to the left as viewed in Figures 2 and 4. The ends of the push rods 64 and 66 are adapted to engage the upper ends of pivoted levers 68 and 69, see Figures 2, 3, and 4. The levers 68 and 69 are adapted to move the plungers 70 and 71 of the electromagnetic members 21 and 22 against the action of their respective springs 15 and 16 to thus open the valve 13 and close the valve 14. In order to allow a certain amount of yield when the valve member 18 of the valve 14 strikes its seat, a light spring 72, see Figure 2, is carried by the lever 69. The motion of the spring 72 may be limited by means of a headed pin 73 slidably carried by the lever 69, see Figure 2.

The tongue 52, see Figures 2, 5, 10 and 11, normally rests against a stop 74, see Figures 5, 6, and 10, carried by the arm 67. This is the position of the valve 9 or main gas cock valve when in closed position. The opening direction of rotation of the valve is indicated by the curved arrows in Figures 7, 8, and 9.

From the description thus far given it is apparent that when the handle or manually operable member 10 is turned to the first position, that is to say, when the tongue 52, see Figures 2, 5, and 10, is moved from the stop 74 into engagement with the stop 62 that such motion of the main gas cock valve 9 places the ducts 58, 59, and 61 in communication with the openings or passageways 39, 38, and 41, respectively, see Figures 7, 8, 9, and 12. Gas will now pass through the passageway 40 and to the charging means and flash tube pilot light 26, 28 which will charge the flame conducting means 24, 25 and light the flash tube pilot light 29, 30 and also light the charging means 26 from the remote constantly burning pilot light 23. The combined flash tube pilot light and charging means will serve to heat the thermocouples 32 and 33. At this time no further motion of the main gas cock 9 is permitted as the tongue 52 bears against the stop 62 which precludes further motion. However, after the thermocouples are heated, which occurs in a very brief interval of time, the operator pushes the manually operable handle or member 10 axially inwardly which pushes the push rods 64 and 66, see Figures 3 and 4, inwardly thus opening the valve 13 and closing the valve 14 and moving such valves into holding position so that their electromagnetic means 21 and 22 will hold the valves in such position. Gas is now supplied the burner pilot light 31 which is lighted from the flash tube pilot light 28, 30. The operator now allows the manually operable handle or member 10 to slide outwardly under the influence of the spring 49, see Figure 2, and it will be seen that the tongue 52 now clears the stop 62 and the handle or manually operable member 10 can now be rotated to the desired temperature setting.

Thereafter the clock controlled switch means 46 and 47 control the further action of the valves 13 and 14 in a manner hereinafter described. However, when the main gas cock valve 9 is moved from its first position to its second position the duct 58 passes beyond the point where it will establish communication between the passages 39 and 40, see Figure 8, and consequently cuts off the supply of gas to the combined charging means and flash tube pilot light 26, 28. However, it is to be noted that when the valve 9 of the main gas cock has moved to its second position that the passageway 41 is in communication with the passageway 42 and consequently gas is now supplied to the burner pilot light 31 as the valve 13 is now in open position. In addition to this, the by-pass passage 44, see Figures 1 and 9, also supplies gas to the burner pilot light 31, though this is a much smaller supply of gas than that furnished through the passageways 41 and 42, the adjustment being obtained by the adjustment of the screws 43 and 45, see Figure 1. At the time for which the clock controlled switch 47 is set the valve 14 opens and gas now flows past the main gas cock valve 9 and past the thermostatic controlled automatic valve 12, see Figure 2, to the oven burner as the valve 13 remains held in open position by its electromagnetic means.

After a suitable interval of time for which the clock controlled switch 46 is set the valve 13 closes and this cuts off the supply of gas to the main burner and to the burner pilot light 31 and thus there is no further flow of gas through the automatic mechanism and past the manually operable main gas cock.

Assume, however, that the operator changes his mind after having once moved the main gas cock to its second position and does not wait for the clock controlled switches to operate but, instead, suddenly moves the main gas cock to its closed position and thereafter again changes his mind and moves the main gas cock to full open position or second position. If all of the gas supply passed through the main gas cock, the burner pilot light 31 would be extinguished and there would be danger of explosion as the automatic valve 13 would still be held in open position as its thermocouple had not yet had time to cool. However, to guard against this, the by-pass passage 44, see Figures 1 and 9, is provided and serves to furnish a minimum supply of gas to the burner pilot light 31. This minimum supply of gas, therefore, keeps the burner pilot light burning and consequently will immediately light the burner even under these unusual conditions and avoid any danger of an explosion. The adjustment of the valve or screw 45, see Figure 1, is such that a very small flame is maintained at the burner pilot light 31 insufficient to heat the thermocouples and yet sufficient to ignite the burner 4. Under normal operation of the burner pilot light 31 it acts to heat the thermocouples.

A further reason for having the by-passed supply of gas through the passage 44 furnished the pilot light 31 at such a value as not to heat the thermocouples 32 and 33 sufficiently to maintain the electromagnetic means 21 and 22 energized, is to insure the final release of these electromagnetic means even though they have been previously set and the operator has again immediately turned the manually operable handle 10 to closed position. It is apparent that after a suitable interval of time the electromagnetic means 21 and 22 will release their armatures and will thus cause

the valves 13 and 14 to respectively close and open.

It is within the province of this invention to omit the valve 14 and its associated mechanism in which case the automatic control would be solely from the valve 13 with the exception of the temperature control of the valve 12 and the oven burner would be immediately lighted when the main gas cock was turned to its second position after having dwelt a predetermined length of time in its first position as previously described to allow heating of the thermocouple. Under these conditions there would be merely the clock switch 46 which would control the action of the cut-off valve 13.

Also it is within the province of this invention to provide some other means than the handle of the main operating member 10 for the main gas cock for simultaneously setting both of the valves 13 and 14 and their electromagnetic members. For example, a push button could be employed for simultaneously setting both valves 13 and 14 and their electromagnetic members. The construction described and shown is, however, the preferred construction whereby by means of a single manually operable handle or member 10 an adjustment for temperature control and a setting of the valves 13 and 14 and their electromagnetic means is secured.

The clock control switches 46 and 47 are shown in Figures 14 and 15 as driven by clocks 46' and 47'. The clock switch 46 is provided with a manipulating arm 75 which is rotated by the clock 46' and is arranged to ride over the outer spring contact arm 76 and to depress such arm and the inner spring contact arm 77 without breaking the circuit during setting. When it is rotated by the clock mechanism in the reverse direction, that is clockwise, as viewed in Figure 14, it will ride under the arm 76 and will break the circuit for a short period, the circuit being again completed after the arm 75 has passed. This is set forth in greater detail in my above noted copending application.

The clock switch 47 is so arranged that its operating arm 78, see Figure 15 driven by the clock 47', when the clock arrives at its zero position will move the spring contact arm 79 out of engagement with the spring contact arm 80 and thus open the circuit for the electromagnet 22.

It will be seen that a novel form of control means for gas burners has been provided by this invention whereby a single manually operable handle or member is employed to operate not only the main gas cock and set the oven regulator but is also employed to move the automatic valves and their electromagnetic means into holding position.

Also it will be seen that there is coaction between the stop which is electromagnetically controlled itself and the main manually operable means to thus limit the operation of the main gas cock to its first position until after the thermocouples have become heated as hereinabove described and are thus active to energize the corresponding electromagnetic means.

It is to be understood, that although the construction shown and described is the preferred construction, nevertheless it is within the province of this invention to dispense with the flash-back tube and associated parts and to light the oven burner pilot light with a match.

The expressions "clock controlled switch means" or "clock controlled switch" or like expressions are intended to cover any type of time

controlled switches. It is also to be understood that although simple types of switches have been shown and described, mercury or other types of switches could be used.

Although this invention has been described in considerable detail, it is to be understood that such description is intended as illustrative rather than limiting, as the invention may be variously embodied and is to be interpreted as claimed.

I claim:

1. In a system of gas control having in combination a gas burner, a fuel supply therefor, a shut-off valve, manual means for operating said shut-off valve to open and close said supply, a pair of thermocouple controlled valves in said supply, both of said thermocouple controlled valves arranged to be set in operating position by said manual means, thermocouple means connected in circuit with said thermocouple controlled valves, said thermocouple controlled valves when set being held respectively in open and closed position by said thermocouple means, a condition responsive switch in circuit with each of said thermocouple controlled valves, means for opening one of said switches to thereby cause one of said thermocouple controlled valves to open said fuel supply to said burner, and means for opening the other of said switches to thereby cause the other of said thermocouple controlled valves to close said fuel supply to said burner when said shut-off valve is in open position.

2. In a system of gas control having in combination a gas burner, a fuel supply therefor, a shut-off valve, manual means for operating said shut-off valve to open and close said supply, a thermostatically controlled throttle valve in said supply between said shut-off valve and said burner arranged to be set in operating position by said manual means, a pair of thermocouple controlled valves in said supply, both of said thermocouple controlled valves arranged to be set in operating position by said manual means, thermocouple means connected in circuit with said thermocouple controlled valves, said thermocouple controlled valves when set being held respectively in open and closed position by said thermocouple means, a switch in circuit with each of said thermocouple controlled valves, means for opening one of said switches to thereby cause one of said thermocouple controlled valves to open said fuel supply to said burner, and means for opening the other of said switches to thereby cause the other of said thermocouple controlled valves to close said fuel supply to said burner when said shut-off valve is in open position.

3. In a device of the class described, a main gas cock for controlling a burner and a burner pilot light, said main gas cock being arranged to be moved to a first position for opening a port for the burner pilot light and being movable thereafter to a second position for opening a port for said burner, thermocouple means arranged to be heated by said burner pilot light, electromagnetic means in circuit with said thermocouple means, stop means normally preventing said main gas cock from being moved from first position to second position, and means for moving said stop means into inoperative position and simultaneously into a position to be held by said electromagnetic means when said thermocouple is energizing said electromagnetic means.

4. In a system of gas control having in combination a gas burner, a fuel supply therefor, a main manually operable valve controlling the flow of fuel to said burner, manual means for moving said main valve to open and closed positions, two separate thermocouple controlled valves connected in series with said main valve and burner and each having a holding position with one valve closed and the other valve open, thermocouple means for energizing said thermocouple controlled valves, means for moving said thermocouple controlled valves to holding position, and means for independently releasing either of said thermocouple controlled valves from holding position.

FRANK A. GAUGER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
816,133	Speakman	Mar. 27, 1906
1,534,955	Horak	Apr. 21, 1925
1,560,528	Baum	Nov. 10, 1925
2,055,384	Meacham	Sept. 22, 1936
2,201,398	Grayson	May 21, 1940
2,318,136	Alfery	May 4, 1943
2,318,823	Wantz	May 11, 1943
2,383,676	Paille	Aug. 28, 1945
2,384,696	Ray	Sept. 11, 1945