July 23, 1940. R. ALLENBAUGH 2,208,956

FUEL BURNER AND CONTROL THEREFOR

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FIG. 1.

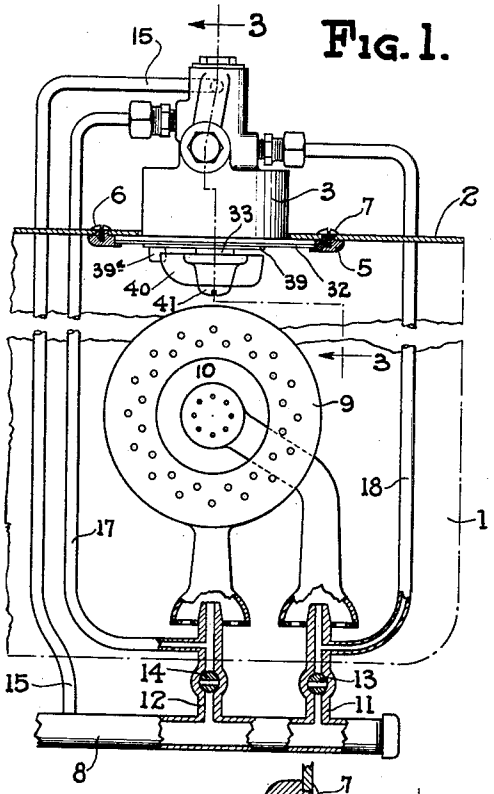


FIG. 2.

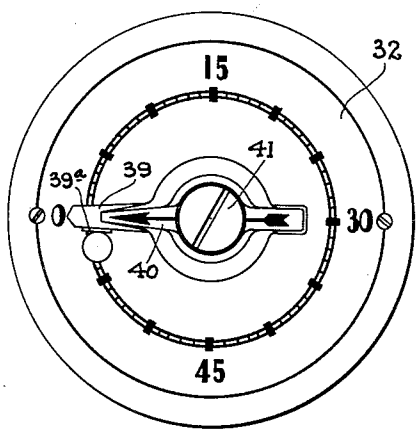
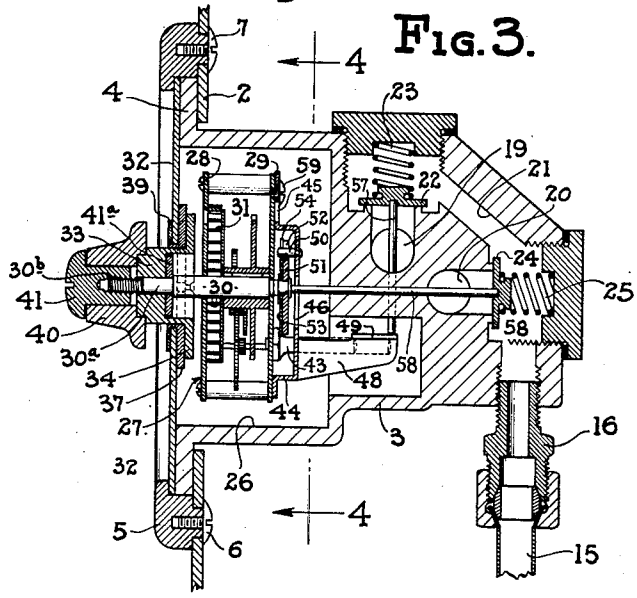


FIG. 3.



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FIG. 4.

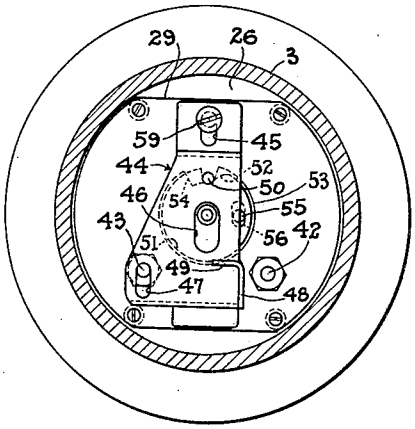


FIG. 5.

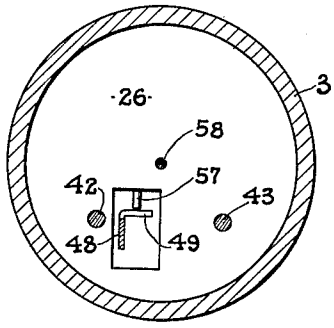


FIG. 6.

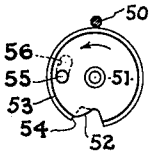


FIG. 7.

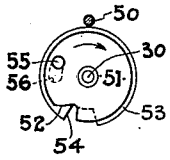


FIG. 8.

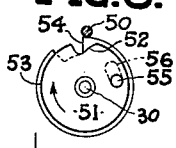


FIG. 9.

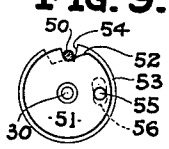
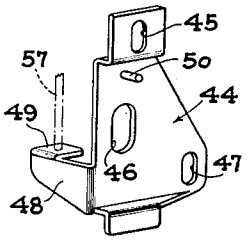


FIG. 10.



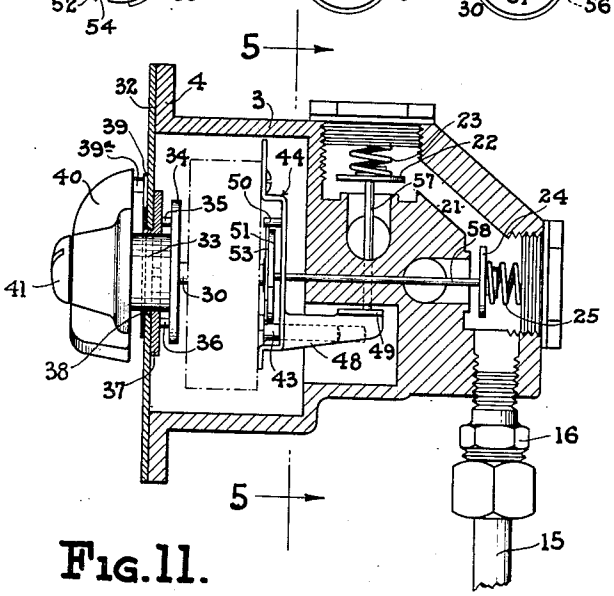


FIG. 11.

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FUEL BURNER AND CONTROL THEREFOR

Ralph Allenbaugh, Mansfield, Ohio, assignor to The Tappan Stove Company, Mansfield, Ohio, a corporation of Ohio

Application July 27, 1938, Serial No. 221,552

3 Claims. (Cl. 161—7)

This invention relates to a range having a pair of burners operable selectively or simultaneously for predetermined periods and time controlled means for controlling the time interval which said burners will remain in operation.

One of the objects of the invention is to provide a range having a pair of burners and manually controlled fuel supply means together with time controlled mechanism for discontinuing the operation of said burners after predetermined variable time intervals.

A further object of the invention is to provide a range having a main burner and a simmer burner preferably disposed in concentric relation for top cooking, such burners having manually controlled connections for energizing the same simultaneously or selectively and additional time controlled mechanism for selectively or simultaneously discontinuing the operation of said burners after a predetermined variable time interval, such time controlled mechanism being operable independently of the manually controlled connections.

Another object of the invention is to provide a stove having a pair of burners of different heating capacity and manually controlled fuel supply connections for operating either of said burners independently or both simultaneously and separate time controlled mechanism for discontinuing the operation of said burners after predetermined periods of time, such time controlled mechanism including means for discontinuing the operation of the main burner after a predetermined time interval and for then discontinuing the operation of the simmer burner after a second predetermined time interval.

A further object of the invention is to provide a time controlled mechanism for controlling the operation of a pair of gas burners independent of the manually controlled fuel supply connections, such mechanism including a time motor which is energized by the setting of the time mechanism and which will permit the fuel supply valves to be closed one in advance of the other after predetermined time intervals.

A still further object of the invention is to provide a range which includes a pair of top burners of different capacity and time controlled mechanism for controlling the operation of such burners which includes a casing mounted on a convenient part of the range so as to be readily accessible and a time motor mounted in said casing for sliding movement therein and having a shaft which receives thereover a pair of hands for setting the time mechanism and means operable by the sliding movement of the shaft for opening one of the fuel supply valves and means operable by the movement of the time motor within the casing for opening the other fuel supply valve.

Further and more limited objects of the invention will appear as the description proceeds and by reference to the accompanying drawings in which Fig. 1 is a diagrammatic plan view partly in section showing a main burner and a simmer burner for a gas range and a time controlled mechanism for controlling the operation of the burners; Fig. 2 is a front view of the dial for the control unit; Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1; Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 3; Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 11; Figs. 6, 7, 8 and 9 are detail views showing progressive positions of the simmer valve control disks; Fig 10 is a perspective view of one of the parts which serves to open the valve for the simmer burner; and Fig. 11 is a view similar to Fig. 3 showing both the simmer valve and main valve open.

Referring now to the drawings, the reference character 1 designates the top portion of a gas range and which has projecting upwardly therefrom a back plate 2. Secured to the back plate 2 is a casing 3 which preferably has a flange portion 4 disposed in front of the back plate and secured thereto by an annular member 5 which is secured to the back plate 2 by screws 6 and 7. Disposed at the front of the range is the usual gas manifold 8 which is connected with a suitable source of gas supply. Disposed on top of the range are a pair of gas burners 9 and 10 which are preferably concentrically arranged, as shown in Fig. 1. Hereinafter, burner 9 will be referred to as the "main" or "full flow" burner, and burner 10 as the "simmer" burner. Leading from the manifold 8 are a pair of pipe connections 11 and 12 which connect with the simmer burner and main burner respectively. Hand valves 13 and 14 within the pipes 11 and 12 serve to manually control the supply of fuel to the burners 9 and 10. Also leading from the manifold 8 is a connection or gas conduit 15 which connects with a nipple 16 leading into the casing 3. Leading from the casing 3 are a pair of outlet connections or gas conduits 17 and 18 which connect respectively with the connections 12 and 11.

The reference character 19 designates an outlet bore which leads from the casing into the connection 18 and the reference character 20

designates an outlet bore which leads into the connection 17. The casing is also provided with a bore 21 which serves to provide a passage for fuel from the fuel inlet connection 16 to the bores 19 and 20. The reference character 22 designates the clock controlled simmer valve which is urged to closed position by a spring 23 and which serves to normally maintain the simmer valve in the closed position as shown in Fig. 3. The bore 20 is closed by the clock controlled main valve 24 which is urged to closed position by a spring 25. From the foregoing, it will be apparent that the valves 22 and 25 control the delivery of fuel from the casing to the simmer burner and the main burner respectively.

The casing 3 has therein an enlarged chamber 26 in which is movably mounted a time motor 27 which consists essentially of a pair of plates 28 and 29 which are held in spaced relation and through which extends a shaft 30. The reference character 31 designates a clock motor or spring which serves to turn the shaft 30 in one direction. The clock or time motor is of course provided with suitable gears and escapement mechanism which are conventional.

Fitting over the flange 4 of the casing 3 is a circular disk 32 the face of which bears suitable indicia and serves as a dial. The dial has a central opening therein and the outer end of the shaft 30 projects therethrough. The outer end of the shaft 30 has a flattened portion 30^a and an adjacent threaded portion 30^b. Fitting over the flattened portion 30^a is a member 33 which has a central bore to receive the flattened portion 30^a therethrough. The member 33 is circular in shape and has a circular flange portion 34. Carried by the flange portion 34 and projecting outwardly therefrom are a pair of pins 35 and 36 the purpose of which will hereinafter appear. Fitting loosely within the central opening in the dial 32 is a member 37 which has a pair of circular openings therein to receive the pins 35 and 36 respectively. The member 37 has a collar portion 38 which projects loosely through the opening in the dial and secured thereover is a dial hand 39 which has an upstanding projection 39^a thereon by means of which the hand may be turned. Non-rotatably secured to the end of the shaft 30 is a second dial hand 40 which is held in place by means of a screw 41 which engages the threaded portion 30^b of the shaft. The reference character 41^a designates a washer which fits over the flattened portion 30^a of the shaft. It will therefore be seen that the dial hand 40 is rigidly and non-rotatably secured to the shaft and that the dial hand 39 and the member 37 are loosely mounted and freely rotatable within the opening in the dial 32.

Carried by the plate 29 and projecting inwardly therefrom are a pair of pins 42 and 43 which project into suitable bores provided in the body portion of the casing 3. Also carried by the plate 29 is a member 44 which is shaped as shown most clearly in Fig. 10. The member 44 is provided with elongated slots 45, 46 and 47 and has a rearwardly projecting portion 48 the free end of which is bent over as indicated by the reference character 49. The member 44 also has secured thereto and projecting forwardly therefrom a pin 50 the purpose of which will hereinafter appear. Carried by the inner end of the shaft 30 and non-rotatably secured thereto is a disk 51 which is provided with a cam slot 52. Loosely surrounding the shaft 30 and disposed immediately adjacent the front of disk 51 and connected therewith is a disk 53 which has a radial notch 54 therein. The disk 51 has thereon a pin 55 which projects into a somewhat elongated opening 56 provided in the disk 53. Slidably mounted in a bore provided in the body of the casing 3, is a pin 57 one end of which bears against the simmer valve 22 and the opposite end of which rests on the portion 49 of the member 44. Also slidably mounted in a suitable bore provided in the casing is a pin 58 one end of which projects through the slotted opening 46 in the member 44 and bears against the innermost end of the shaft 30 and the opposite end of which engages the main valve 24. Extending through the slotted opening 45 of the member 44 is a screw 59. The pin 42 extends through the slotted opening 47 of the member 44 so that the member 44 is loosely and slidably mounted on the plate 29.

When it is desired to operate the main and simmer burners for predetermined periods of time, the operator grasps the dial hand 40 and turns it in a clock-wise direction as seen in Fig. 1 at the same time pushing inwardly thereon. When the dial hand 40 is pushed inwardly, the pins 35 and 36 are moved out of the openings in the disk 37. This sliding movement of the shaft 30 pushes the pin 58 toward the right, (as viewed in Figs. 3 and 11) and opens the main valve 24. As the hand 40 is turned, the member 33 and the flange 34 are turned with it and the pins 35 and 36 are moved to a position spaced from the openings in the member 37 as shown in Fig. 11. As the hand 40 is turned, the spring 31 (of the time motor 27) is wound up so as to start the clockworks. The manual turning movement of the hand 40 also turns the disk 51 in a counter-clockwise direction, as viewed in Fig. 6 so that the pin 50 rides out of the slot 52 onto the periphery of the disk 53. This position is illustrated in Fig. 6.

When the disk 51 is rotated by the clock motor 27 in a reverse or clockwise direction, as indicated by the arrow in Fig. 7, a relative movement takes place between the disks 51 and 53 until the pin 55 engages the opposite end of slot 56 as clearly shown in Fig. 7, after which the disks will be rotated in unison. In Fig. 8 the parts are shown in the position which they will occupy just prior to the closing of the simmer valve and in Fig. 9 the parts are shown in the position which they will occupy when the simmer valve has been closed.

When the dial hand 40 is turned manually in a clockwise direction and the pin 50 is moved out of the slot 52 to the position shown in Fig. 6, the member 44 will be lifted to the position shown in Fig. 11 which will cause the projection 49 to push upwardly on the pin 57 to open the valve 22. It will thus be seen that a manual turning and sliding movement of the hand 40 in a clockwise direction opens both the main valve and the simmer valve against the tension of their springs 25 and 23, respectively. Should it be desired to operate both burners for a predetermined period of time and then to cut off the main burner and to permit the simmer burner to continue to operate for another predetermined time interval and then to close, the hand 40 is turned beyond the hand 39.

Both the valves 22 and 24 will now be opened and fuel will be supplied to both burners. As the clock motor turns the shaft 30 in the reverse direction the member 33 will be driven backward until the pins 42 and 43 are in a position to re-enter the

openings in the member **37** from which they were removed. At this time the spring **25** causes the pins to enter the openings and to close the valve **24**. The main burner will now be shut off. The simmer valve **23** will remain open, however, and the clock will continue to turn the shaft **30** in the reverse direction until the parts reach the position shown in Fig. 8 immediately following which the pin **50** will quickly drop into the slot **54** with a snap action due to the pressure of the spring **23**. The slot **54** of disk **53** is a steep slot whereas the slot **52** of disk **51** is a slow curve. In the position shown in Fig. 9, both the valve **24** controlling the flow to the main burner and the valve **22** controlling the flow to the simmer burner will be closed. Upon resetting either of the dial hands **39** or **40**, the first counter clockwise movement of the disk **51** (as indicated by the arrow in Fig. 6) will cause the pin **55** carried by the disk **51** to be moved from the position in the slot as shown in Fig. 9 back to the position within the slot as shown in Fig. 6 and when the clock motor starts to reverse the direction of movement of the cam **51**, the disk **53** will be held by the pin **50** until the said pin **55** is again moved to the opposite end of the slot as previously described in order to bring about the snap action or quick closing of the simmer valve when the pin **50** drops off the periphery of the disk **53** into the slot **54**, the construction being such that the pin **50** drops quickly into the notch **54** instead of moving slowly down the curved notch **52**. The clock motor will be stopped by reason of the fact that the pin **50** is engaged in the slot **52** in the disk **51** so that there can be no further rotary motion imparted to the shaft **30** by the clock spring. As the shaft **30** is rotated in the reverse direction by the clock motor the hand **40** will engage the projections **39a** of the hand **39** and move it back to the zero position on the dial which is the position illustrated in Fig. 2. It will thus be seen that the hands **39** and **40** may be set so that both burners will operate simultaneously for a predetermined period of time after which the main burner will close and the simmer burner will continue to operate for a further predetermined time interval depending upon the setting of the dial. Should it be desired to have both burners cut off at the same time, the two hands will be set in the same position on the dial in which event both valves will be permitted to close simultaneously.

While I have disclosed a burner unit made up of a pair of separate burners, one being a main burner and the other being a simmer burner, it will, of course, be understood that the burner unit may consist of a single burner having two fuel supply connections one for full flame and the other for a simmer flame.

It will now be clear that I have provided a control unit for burners which will accomplish the objects of the invention as hereinbefore stated. It is of course to be understood that my control unit may be used to control the operation of electrical heating elements, as well as gas burners. It is therefore to be understood that the embodiment of the invention herein disclosed is to be considered as merely illustrative and not in a limiting sense as various changes may be made in the details of construction and arrangement of parts without departing from the spirit of my invention. The invention is therefore limited only in accordance with the scope of the appended claims.

Having thus described my invention, what I claim is:

1. A gas range having a pair of burners disposed for top cooking, fuel supply connections for said burners, time controlled mechanism for discontinuing the operation of said burners after predetermined time intervals, said mechanism including a dial, a shaft extending through said dial and rotatable manually in one direction, a pair of valves for controlling the supply of fuel to said burners respectively, springs normally urging said valves toward closed position, a pair of hands movable over said dial, connections between said hands, said shaft and said valves for opening said valves, and a time motor for driving said shaft in the reverse direction to permit said valves to be closed under the influence of said springs, said shaft being movable axially of said dial to open one of said valves and being rotatable to open the other valve.

2. A range having a pair of burners, time controlled mechanism for controlling the operation of said burners comprising a casing, a time motor having a shaft slidably and rotatably mounted in said casing, a dial surrounding said shaft, a pair of hands surrounding said shaft and movable over said dial, means operable by sliding said shaft within said casing for rendering one of said burners operative, and means operable by rotating said shaft for rendering the other burner operative, said time motor being operable to discontinue the operation of said burners after predetermined variable time intervals.

3. A range having a main burner and a simmer burner, clock controlled mechanism for controlling the supply of fuel to said burners respectively including a casing, a time motor movably mounted in said casing and having a shaft projecting beyond said casing, a pair of hands surrounding said shaft, a dial over which said hands travel, a pair of fuel supply conduits for delivering fuel to said burners respectively, each conduit having a valve therein for controlling the delivery of fuel therethrough, means operable by moving said time motor and shaft within said casing for opening one of said valves and means operable by rotary movement of said shaft for opening the other valve, said clock mechanism serving to hold said valve or valves open for predetermined variable time intervals.

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