Jan. 19, 1943. A. G. SHERMAN 2,308,570

COOK STOVE

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FIG. 1

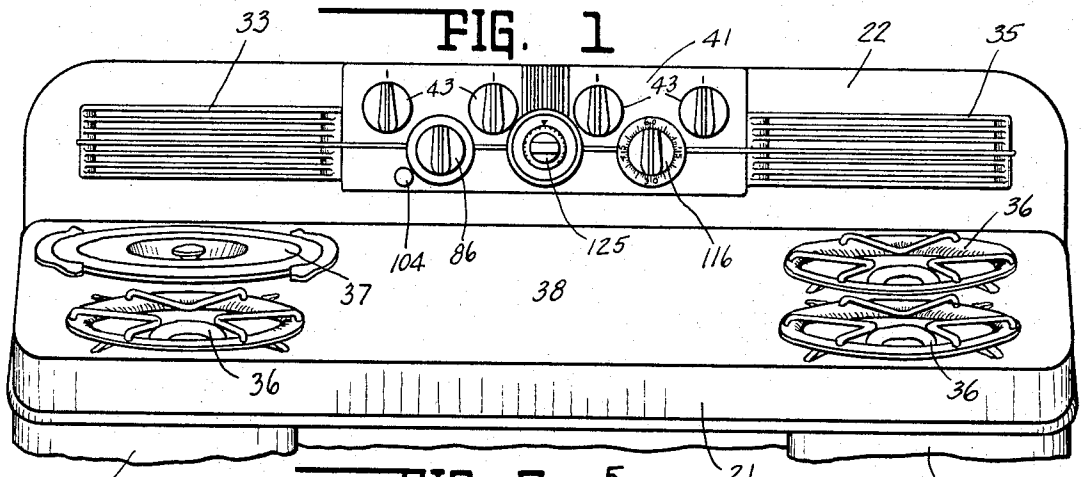

FIG. 2

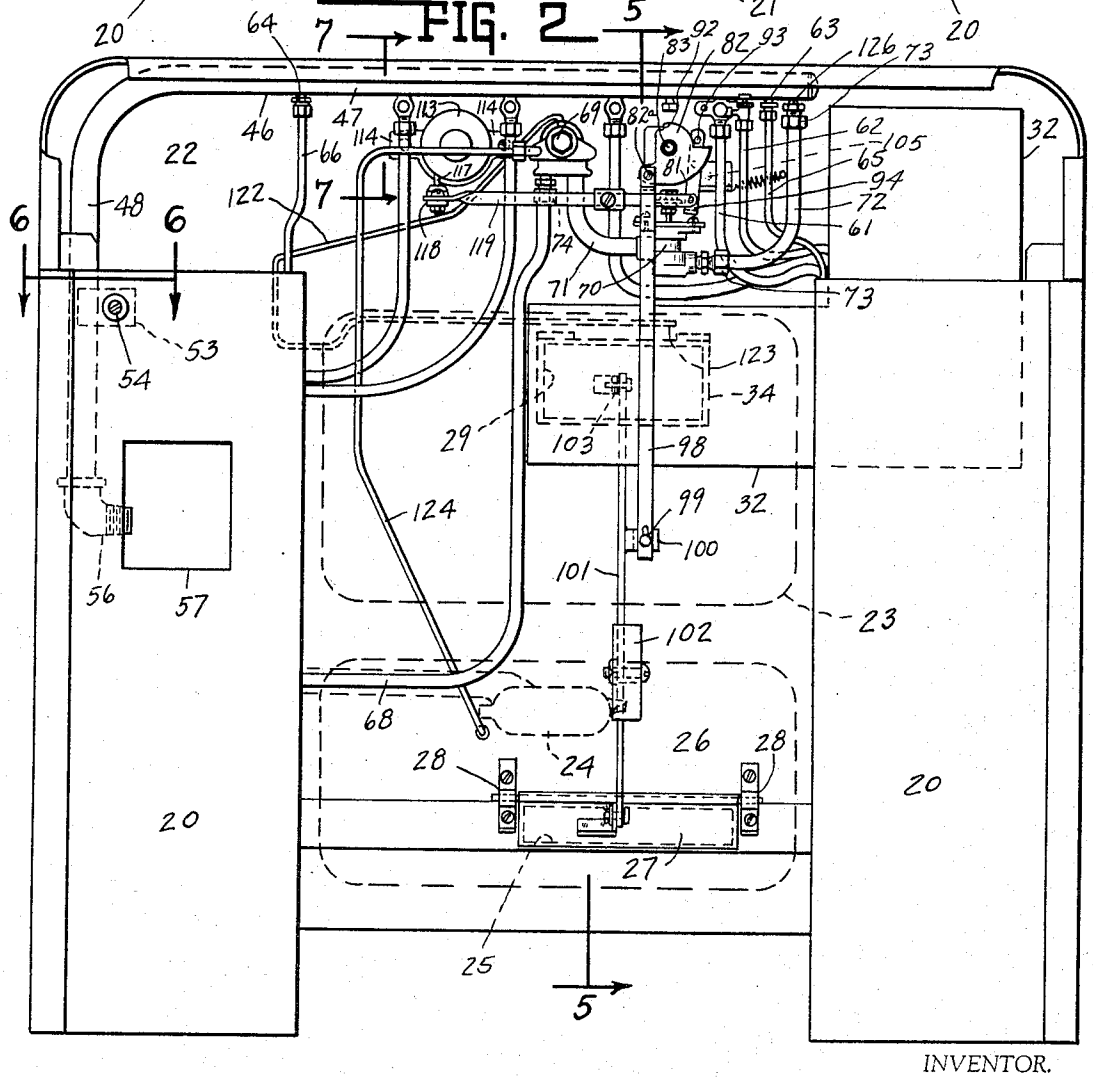

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FIG. 3

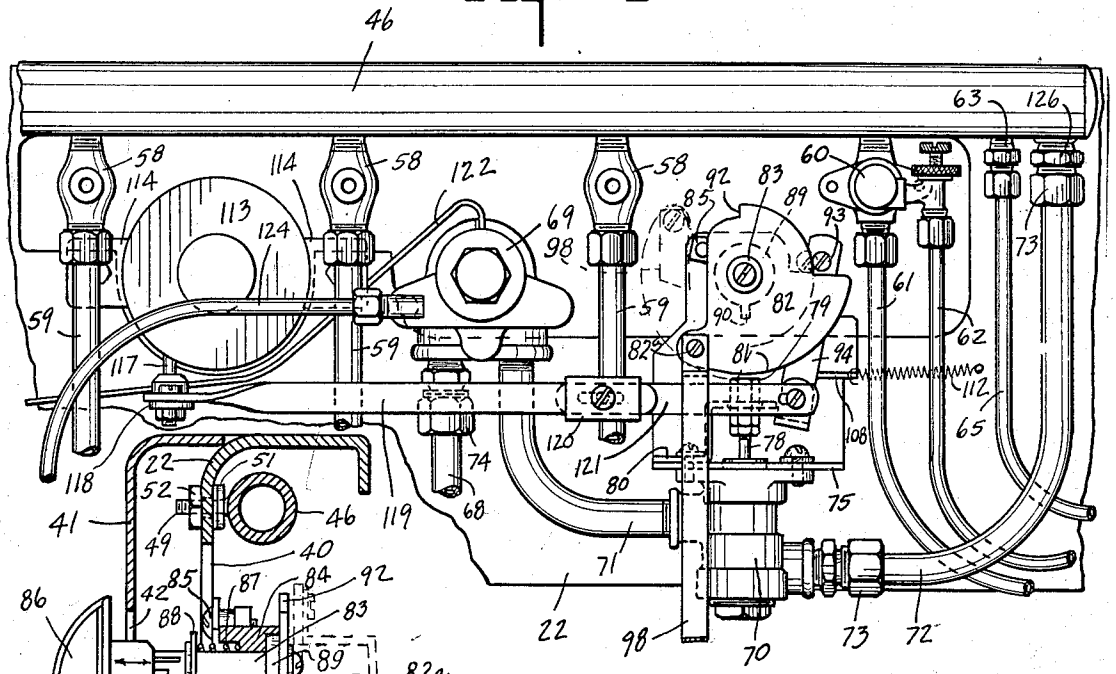

FIG. 7

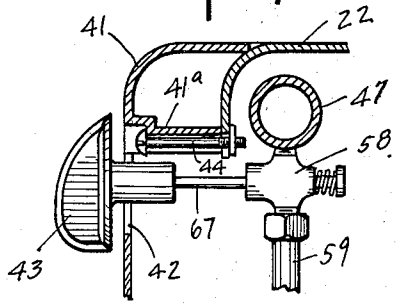

FIG. 6

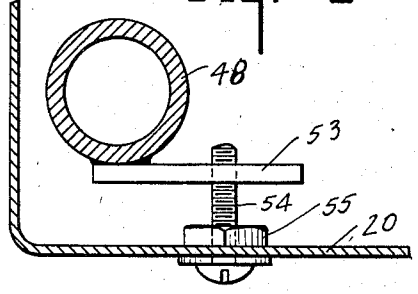

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FIG. 8

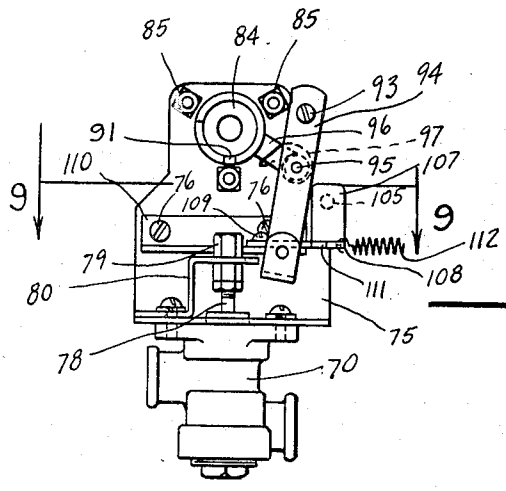


FIG. 9

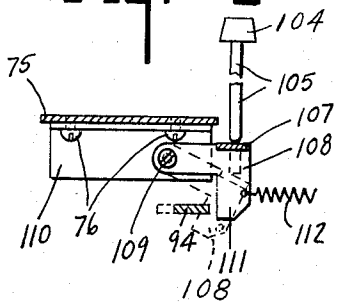


FIG. 10

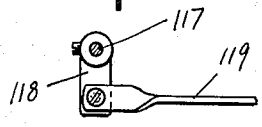
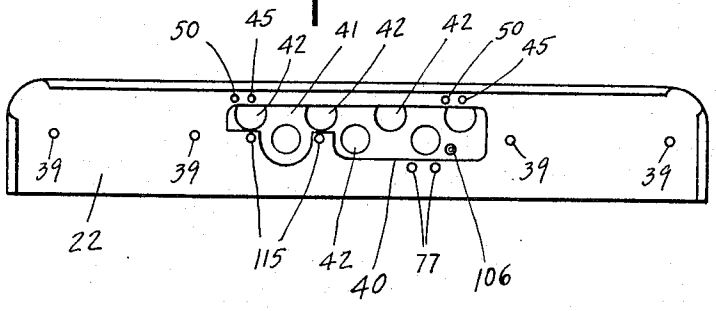


FIG. 4



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Patented Jan. 19, 1943

2,308,570

UNITED STATES PATENT OFFICE

2,308,570

COOK STOVE

Alvin G. Sherman, Grosse Pointe, Mich., assignor to Globe American Corporation, Kokomo, Ind., a corporation

Application April 4, 1940, Serial No. 327,804

10 Claims. (Cl. 126—39)

This invention relates to a cook stove. More particularly the invention relates to a novel arrangement of operating parts for the burners and oven controls of a gas cook stove. In stoves of this type it has heretofore been the general practice to place the burner and oven control elements on the front of the stove immediately beneath the cooking top. In this position the control elements are easily reached but it is difficult when working in the ordinary position close to the stove to read the various indices on the control knobs. This is particularly so in the case of oven controls which must be set to definite temperature and time graduations marked on the control dials. Burner valve handles on the front of the stove are also easily reached by young children. The danger of a child tampering with such control knobs is readily apparent.

In the present invention, all control elements for the entire stove are placed on the backrail of the stove in position to be reached without extending the arm over a cooking burner. In this position all indices may be easily read without backing away from the stove and the burner knobs are out of reach of young children.

One object of the invention is to provide an arrangement of elements by which the burners may be controlled by elements mounted on the backrail.

Another object of the invention is to arrange the parts in a series of assemblies and subassemblies such as to facilitate large scale manufacture and reduce the time and space required in assembling a stove.

Another object of the invention is to arrange the parts so that the angular position of all of the control knobs for the top burners of the stove may be simultaneously adjusted with respect to the backrail. This object is obtained by a novel arrangement for mounting the burner valves on a gas manifold and by mounting the manifold in a novel manner on the backrail.

Another object of the invention is to group the control elements for the oven in a unitary sub-assembly which may be attached as a unit to the backrail.

Another object of the invention is generally to simplify the arrangement of control elements for a combined thermal and time control of an oven.

Other objects and features of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a perspective view of the top of a stove constructed in accordance with the invention showing the position of the top burners and control elements mounted on the backrail. Fig. 2 is a rear view of the stove. Fig. 3 is a similar view on an enlarged scale of a part of the apparatus shown in Fig. 2. Fig. 4 is a rear view of the backrail itself with the control elements removed therefrom. Fig. 5 is a sectional view taken on the line 5—5 of Fig. 2, the dotted lines indicating the open position of the closures and the corresponding positions of the directly associated parts. Fig. 6 is a sectional view taken on the line 6—6 of Fig. 2. Fig. 7 is a sectional view taken on the line 7—7 of Fig. 2. Fig. 8 is a rear view of one of the oven control elements with parts removed. Fig. 9 is a plan view with parts in section taken on the line 9—9 of Fig. 8. Fig. 10 is a plan view with a part in section of a portion of the time control mechanism for the oven.

Referring to the drawings in which there is illustrated a preferred form of the invention and referring more particularly to Figs. 1 and 2, there is shown a pair of side pontoons 20 supporting a cooking top 21, in turn supporting a backrail 22. The backrail is preferably formed integrally with the cooking top but may be a separate piece attached thereto if desired. An oven, the general position of which is indicated by a broken line 23 in Fig. 2, is mounted beneath the cooking top 21 and between the side pontoons 20. The oven is heated by a burner 24 placed beneath the same.

Air for combustion purposes may enter the oven burner space through an opening 25 (Figs. 2 and 5) in the back plate 26 of the stove. The opening 25 may be closed by a closure member 27 hinged to the back plate by hinges 28. A vent opening 29 is also provided in the back plate 26 and connects with the interior of the oven through a passage 30 formed in the insulated wall 31 of the oven. The vent opening 29 leads to a flue 32, see Fig. 2, which conducts the gaseous products of combustion to louvres 33, see Fig. 1, in the backrail of the stove. The vent 29, see Fig. 5, is closed by a closure member 34. A false louvre 35, see Fig. 1, is mounted on the opposite side of the backrail to provide a balanced appearance. At each side of the cooking top 21 there are provided top burners 36. A receptacle 37 for deep well cooking is provided on one side and is heated by a similar burner not shown. Between the burners on opposite sides of the stove there is provided a working space 38.

Referring now to Fig. 4, there is shown a rear

view of the backrail and cover plate prior to assembly of control parts thereon. Holes 39 are provided to receive bolts for the attachment of the louvres 33 and 35. A central opening 40 is provided opposite which the several control elements are to be mounted. The opening 40 is closed by a cover plate 41, the shape of which is best seen in Fig. 5 and the extent of which is indicated in Fig. 1. The cover plate 41 is spaced forwardly from the backrail 22 and is provided with individual openings 42 for the several control elements. The cover plate 41 is also provided with a pair of legs 41*a* (Fig. 7) engaging the surface of the backrail 22 and receiving bolts 44 engaging holes 45 in the backrail for securing the cover plate thereto.

A gas manifold 46 consisting of a horizontal run 47 and a substantially vertical run 48 is mounted on the backrail by means shown particularly in Fig. 5. Studs 49 are welded to the manifold 46 at suitable intervals and project through holes 50 in the backrail, see Fig. 4. Washers 51 serve to space the manifold from the backrail and nuts 52 threadedly engaging the studs 49 hold the manifold in place. Preferably two such fastenings are provided and are positioned as indicated by the holes 50 in Fig. 4. The holes are made slightly larger than the diameter of the studs 49 so that a limited rocking movement of the manifold is permitted about a horizontal axis parallel to the manifold until the nuts 52 have been tightened. The vertical run 48 of manifold 46 has secured thereto by welding or otherwise, an arm 53, see Figs. 2 and 6, threadedly engaged with an adjusting screw 54 which is secured to the wall of the pontoon 20 by a locknut 55. By loosening the locknut 55 and turning the screw 54 the spacing of the manifold from the wall of the pontoon may be varied. This movement rocks the horizontal run of the manifold and permits it to be placed in a desired angular relationship with respect to the backrail. When properly adjusted the nuts 52 and the locknut 55 may be tightened to retain the manifold in place. The lower end of the manifold 46 terminates in an elbow 56, see Fig. 2, which may be connected through a suitable opening 57 with a gas supply main, not shown.

On the underside of the horizontal run 47 of the manifold 46 there are mounted three burner valves 58, see Figs. 2 and 3, connected by detachable union fittings to pipes 59 leading to the burners 36. A valve 60 is similarly attached to the manifold and has detachably secured thereto a pipe 61 and a pipe 62 leading respectively to the burner and pilot of the deep well 37. Fittings 63 and 64, see Fig. 2, are secured to the manifold 46 and have detachably connected thereto pipes 65 and 66 leading respectively to the pilots of the burners 36 on opposite sides of the cooking top. Each of the valves 58 and 60 is provided with a valve stem 67 (Fig. 7) projecting through the appropriate opening 42 in the cover plate 41 and carrying a control knob 43. The control knobs 43, as best seen in Fig. 1, are of the proper size and shape to hide the openings 42 and to hide the heads of the bolts 44 which secure the cover plate 41 to the backrail 22. It will be apparent that the angular position of the knobs 43 with respect to the cover plate 41 is determined by the angular position of the manifold 46 and this in turn is determined by the adjustment of the screw 54 which retains the downward run 48 of the manifold. Thus the control knobs 43 may be properly positioned without the necessity of accurate machine work at any point in the manufacture.

The oven burner 24, see Fig. 2, is supplied with gas by a pipe 68 leading from a thermally controlled valve 69 which is in turn connected to a shutoff valve 70 by a pipe connection 71. The valve 70 is connected to the manifold 46 by a pipe connection 72. The pipe 72 is connected at each end by a detachable union 73 and the pipe 68 is similarly connected to valve 69 by a similar union 74. The pipe 71 however is permanently secured both to the valve 69 and the valve 70. The valve 70 is mounted on a bracket 75 which is in turn secured by a pair of screws 76 (Figs. 8 and 9) to the backrail 22. The screws 76 enter the backrail through holes 77 (Fig. 4).

The shutoff valve 70, see Fig. 8, is provided with a valve stem 78 having a contact member 79 adjustably secured to its upper end and guided in a bracket 80 secured to the bracket 75. The contact member 79, see Figs. 2 and 3, is engageable by the face 81 of a cam 82 which is mounted on a cam stem 83 journaled in a bearing 84, see Fig. 5, secured to the bracket 75 by bolts 85. The cam stem 83 projects forwardly through one of the openings 42 in the cover plate 41 and carries a control knob 86. A compression spring 87 seated in a recess in the bearing 84 abuts against a washer 88 secured to the stem 83 and normally urges the stem and the control knob 86 to the left in Fig. 5. The cam 82 is provided with a hub 89 having a tongue 90 adapted to seat in a recess 91 in bearing 84, see Fig. 8. So long as the tongue 90 is seated in the recess 91, the cam cannot be turned but when the knob 86 is pressed to the right against spring 87, see Fig. 5, the tongue 90 is freed from the recess 91 and the cam 82 then may be turned for the face 81 to engage with the contact member 79 and press the same downwardly as the knob and cam are turned clockwise, see Figs. 2 and 3. In the normal position of the parts, with the tongue 90 engaged with the recess 91, the cam is out of contact with the member 79 which is held in its upward position by a suitable spring, not shown, within the structure of the valve 70. In this normal position of the parts, the valve 70 is closed. When the knob 86 has been pressed inwardly and the cam has been rotated clockwise in Figs. 2 and 3, the cam surface 81 presses the contact member 79 and valve stem 78 downwardly, as previously described, and opens the valve 70.

The cam 82, see Figs. 2, 3 and 5, is provided with a latching face 92 adapted to engage a pin 93, see Figs. 2, 3 and 8, mounted on a latch lever 94 which is pivotally mounted at 95 (Fig. 8) on an arm 96 formed on the bearing 84. A torsion spring 97 maintains the pin 93 in contact with the face of the cam 82. When the cam 82 has been turned to fully open the valve 70 the pin 93 engages the latching face 92 and retains the cam and valve in the full open position. A vertically disposed bar 98, see Figs. 2, 3 and 5, is pivotally connected at its upper end to the cam 82 at 82*a* and at its lower end has a pin and slot connection 99, see Figs. 2 and 5 only, with an arm 100 secured to a vertical bar 101. The bar 101 carries a biasing weight 102, see Fig. 2 only, and is pivotally secured at its lower end to the closure member 27, see Figs. 2 and 5, and its upper end is pivotally secured to an arm 103 fastened to the closure member 34, previously described. By means of these connections the

movement of the cam 82 to open the valve 70 also raises the bars 98 and 101 and opens the air inlet opening 25 and oven vent 30. There is sufficient play between the pivot 82a and strap 98 and its connection 99 to members 100—101 so that axial movement of member 82 has no effect on the two closures 34 and 27. However, when member 82 is rotated, the strap 98 elevates and moves upwardly members 100 and 101 as well as the weight 102 (see Fig. 2). In this elevational movement, since closures 34 and 27 are pivoted, members 100 and 101 must move to the dotted line position shown in Fig. 5. In so moving it will be observed that of necessity when all play in the connections is exhausted the lower portion of the strap 98 yields to the dotted line position. When member 82 is repositioned the several parts assume the position shown in Fig. 5 by full lines. Note that due to the required angling of member 98 the actual elevational movement of pivot 82a is less than the actual vertical movement of member 100. Movement of the latch lever 94 about its pivotal mounting 95 to free the pin 93 from the latching face 92 permits the biasing weight 102 to move the parts to close the air inlet and vent and return the cam 82 and knob 86 to normal position, thus also closing the valve 70.

A push button 104 (Fig. 1) is mounted on a pin 105 (Figs. 8 and 9) which is slidably guided in an embossment 106 (Fig. 4) in the cover plate 41. The pin 105 is adapted to engage an upturned portion 107 of a lever 108 which is pivotally mounted on a pivot screw 109 secured to an angle member 110 which is in turn secured to the bracket 75 and in turn to backrail 22 by the previously mentioned screws 76. The lever 108 has a rearwardly projecting portion 111 adapted to engage the latch lever 94 and is normally held out of engagement with said lever by a tension spring 112. By this means pressure on the button 104 moves the lever 108 about its pivotal mounting, brings said lever into contact with the latch lever 94 and then rocks, see dotted lines Fig. 9, said latch lever upon its pivot 95 to free the pin 93 from the latching face 92 because in such movement pin 93 will move to the right in Fig. 2, thus clearing shoulder or face 92 of the cam lever 82. Note the lower end of lever 94, see Figs. 2, 3 and 8, moves to the left to affect such release.

A clock 113, see Fig. 3, is provided with arms 114 which are secured to the backrail 22 by suitable bolts engaging openings 115 (Fig. 4) in said backrail. The clock is provided with the usual control stem extending through one of the openings 42 in the cover plate 41 and carrying an index knob 116, see Fig. 1. The clock 113 is of a well known type commonly used for oven control and need not be described in detail. It is provided with the usual timing train adapted to rotate the knob 116 in a counterclockwise direction and the usual alarm train operated by a separate spring and adapted to turn a stem 117, see Fig. 3, extending downwardly from the clock at the rear of the back plate 22. In the operation of the clock mechanism, the knob 116 is manually turned in a clockwise direction a predetermined distance and is then set to a graduation, see Fig. 1, indicating a definite period of time. The initial movement of the knob winds the springs for the timing train and alarm train and sets the parts in readiness for operation. Thereafter the operation of the timing train returns the knob 116 to its initial position during a period of time corresponding to the graduation at which the knob has been set. At the end of that time the alarm train is tripped and the stem 117 is moved rapidly in a clockwise direction (Fig. 10). The stem 117 has secured thereto an arm 118 pivotally connected to a link 119, see Figs. 2, 3 and 10, secured by an extensible connection 120 to a link 121 which is in turn pivotally connected to the lower end of the lever 94, see Figs. 2 and 3 only. By this means the operation of the alarm train of the clock trips the latch lever 94 in the same manner as the manual operation of the button 104, that is, moves lever 94 clockwise on pivot 95.

The valve 69 is connected by a tube 122 with a thermostat bulb 123 (Fig. 2) within the oven 23 and to the pilot of the oven burner by a gas pipe 124, see also Fig. 3. Said valve is provided with a control knob 125, see Fig. 1, mounted on a portion thereof projecting through one of the openings 42 in the cover plate 41. The valve 69 is of a well known form adapted to respond to the temperature of the oven as indicated by the thermostat bulb 123 and to control the flow of gas to the oven burner to prevent a rise in temperature above a predetermined degree as indicated by the setting of the control knob 125. The valve 69 is supported from the valve 70 by the pipe connection 71, shown clearly in Fig. 3, and is not connected in any other manner to the backrail 22 or to the cover plate 41. The valve 69 thus receives its primary support from the bracket 75 and may be assembled with the valve 70, the cam 82, the trip mechanism of the cam and the bracket 75 as a unitary assembly.

In the construction of the stove, the manifold 46—47—48 and the valves 58 and 60 together with the fittings 63 and 64 and a fitting 126, see upper right corner Fig. 3, to which the pipe 72 is secured, may be assembled as a unitary structure or sub-assembly. The valve 70, pipe 71, valve 69 and mechanism associated with the cam 82 may be attached to the bracket 75 as a second unitary sub-assembly. The final assembly of the stove then consists only of the attachment of the clock 113 and the two sub-assemblies just described to the backrail 22, the addition of the several detachable pipe connections, the attachment of the bars 98 and 101 and the attachment of the several control knobs at the front of the cover plate 41. In this assembly operation the angular position of the manifold 46 may be adjusted as required and described and by the screw 54 to insure proper positioning of the stems supporting the several control knobs and of the fitting 126.

The division of labor in the construction of the sub-assemblies and the final assembly promotes efficient operation in the final assembly and reduces the time and space requirements for the operation since much of the work may be done at assembly benches rather than on an assembly floor. The particular manner of mounting the manifold assembly also contributes greatly to the speed of operation of the final assembly. The simplicity of construction of the control mechanism for the shutoff valve 70 in which the valve and vents are operated by the movement of a single control member (cam 82) is also an important factor in reducing the required assembly time.

The invention has been described in one of its preferred forms, the details of which may be varied without departing from the scope thereof as defined by the appended claims.

The invention claimed is:

1. In a gas cook stove having a cooking top, burners, and a backrail projecting upwardly adjacent the rear edge of the cooking top, the combination of a gas manifold having a horizontal run extending along the rear face of said backrail and a substantially vertical run extending downwardly from said horizontal run, burner valves carried by the horizontal run of said manifold, control members for said burner valves accessible from the front of said backrail and connected to said valves through said backrail, means for securing said horizontal run to said backrail, said means permitting limited pivotal movement about an axis parallel to said horizontal run, means for securing said vertical run to a rear portion of the stove, said means being horizontally adjustable to adjust the angular position of said manifold, valves and valve control members with respect to said backrail, and pipe connections between said valves and said burners.

2. In a gas cook stove having a cooking top, burners, and a backrail projecting upwardly adjacent the rear edge of the cooking top, the combination of a gas manifold having a horizontal run adjacent the upper portion of the rear face of said backrail and a substantially vertical run extending downwardly from one end of said horizontal run, burner valves carried on the underside of said horizontal run, control members for said burner valves accessible from the front of said backrail and connected to said valves through said backrail, means for securing said horizontal run to said backrail, said means permitting limited pivotal movement about an axis parallel to said horizontal run, means for securing said vertical run to a rear portion of the stove, said means being horizontally adjustable to adjust the angular position of said manifold, valves and valve control members with respect to said backrail, and pipe connections between said valves and said burners.

3. In a gas cook stove having a cooking top, burners, and a backrail projecting upwardly adjacent the rear edge of the cooking top, the combination of a gas manifold having a horizontal run adjacent the upper portion of the rear face of said backrail and a substantially vertical run extending downwardly from one end of said horizontal run, burner valves carried on the underside of said horizontal run, said backrail having an opening through which said valves are accessible from the front, a detachable cover plate covering said opening, control members for said burner valves accessible from the front of said cover plate and connected to said valves through openings in said cover plate, said control members covering said openings, means for securing said horizontal run to said backrail, said means permitting limited pivotal movement about an axis parallel to said horizontal run, means for securing said vertical run to a rear portion of the stove, said means being horizontally adjustable to adjust the angular position of said manifold, valves and valve control members with respect to said backrail, and the position of said control members with respect to the openings in said cover plate, and pipe connections between said valves and said burners.

4. In a gas cook stove, the sub-combination including an oven, a shutoff valve having a valve stem biased to shutoff position, a cam having a face engageable with said valve stem to move the same to open position and having a latching face, a cam stem on which said cam is mounted, biasing means urging said cam toward valve closing position, a latch member engaging said latching face and normally holding said cam in position to open said valve, vents for incoming and outgoing air for said oven, closures for said vents, linkages connecting said cam and said closures to hold the same in open position, means on the forward end of said cam stem accessible from the front of the stove for rotating the same to open said valve and vents, and means for tripping said latch member to close the same.

5. In a gas cook stove, the sub-combination including an oven, a shutoff valve having a valve stem biased to shutoff position, a cam having a face engageable with said valve stem to move the same to open position and having a latching face, a cam stem on which said cam is mounted, biasing means urging said cam toward valve closing position, a latch member engaging said latching face and normally holding said cam in position to open said valve, vents for incoming and outgoing air for said oven, closures for said vents, linkages connecting said cam and said closures to hold the same in open position, means on the forward end of said cam stem accessible from the front of the stove for rotating the same to open said valve and vents, a clock mechanism mounted on the rear of said stove and having a control member accessible from the front thereof, and a connection between said clock mechanism and said latch member for tripping the same to close said valve and vents.

6. In a gas cook stove, the sub-combination of an oven, a shutoff valve having a valve stem biased to shutoff position, a cam having a face engageable with said valve stem to move the same to open position and having a latching face, a cam stem on which said cam is mounted, biasing means urging said cam toward valve closing position, a latch member engaging said latching face and normally holding said cam in position to open said valve, vents for incoming and outgoing air for said oven, closures for said vents, linkages connecting said cam and said closures to hold the same in open position, a bracket, said valve, cam stem and latch member being supported on said bracket as a unitary assembly attachable as a unit to said stove with said cam stem accessible from the front of said stove, means on the forward end of said cam stem for rotating the same to open said valve and vents, and means for tripping said latch member to close the same.

7. In a gas cook stove, the sub-combination including an oven, a shutoff valve having a valve stem biased to shutoff position, a cam having a face engageable with said valve stem to move the same to open position and having a latching face, a cam stem on which said cam is mounted, biasing means urging said cam toward valve closing position, a latch member engaging said latching face and normally holding said cam in position to open said valve, vents for incoming and outgoing air for said oven, closures for said vents, linkages connecting said cam and said closures to hold the same in open position, a thermostatic valve operated in response to oven temperature and having a temperature setting member, a bracket, said valves, cam stem and latch member being supported on said bracket as a unitary assembly attachable as a unit to said stove with the forward end of said cam stem and the temperature setting member accessible from the front thereof, means on the forward end of said cam stem for rotating the same to open said valve and vents,

means for tripping said latch member to close the same, a gas connection between said valves, inlet and outlet gas connections, and fittings on said valves for detachably connecting said inlet connection to one of said valves and said outlet connection to the other to pass gas through said valves in series.

8. In a gas cook stove having a cooking top, burners, and a backrail projecting upwardly adjacent the rear edge of the cooking top, the combination of a gas manifold having a horizontal run extending along the rear face of said backrail and a substantially vertical run extending downwardly from said horizontal run, burner valves carried by the horizontal run of said manifold, control members for said burner valves accessible from the front of said backrail and connected to said valves through loosely fitting openings in said backrail, studs secured to the horizontal run of said manifold and extending through loosely fitting openings in said backrail, lock nuts carried by said studs and adapted to engage the front and rear surfaces of said backrail to secure said manifold thereto, means for securing said vertical run to a rear portion of the stove, said means being horizontally adjustable to adjust the angular position of said manifold, valves and valve control members with respect to said backrail before said lock nuts are tightened, whereby said lock nuts when tightened maintain said manifold in adjusted position, and pipe connections between said valves and said burners.

9. In a gas cook stove a front element having apertures therein, the combination of a unitary sub-assembly including a base adapted for connection to the stove in juxtaposition to the element and rearwardly thereof for concealment thereby, a shut-off valve carried by the base, control mechanism for opening said valve and latching same in open position, a thermostatic valve carried by the base, a control member therefor, and means connecting in series the base carried valves for passing gas therethrough, said control member and control mechanism having portions registering with the apertures for accessibility of said portions from the front element and independent thereof when the base is connected to the stove.

10. A stove as defined by claim 9, characterized by the addition of a clock mechanism for closing the shut-off valve and mounted upon the rear of said front element and having a manual control element extending through an aperture thereof, and means detachably connecting said clock mechanism to the shut-off valve control mechanism for clock mechanism operation of the shut-off valve.

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