July 9, 1935. P. I. HOLLMAN 2,007,446

CLOSED TOP STOVE

Filed April 20, 1931 2 Sheets-Sheet 1

Fig. 2.

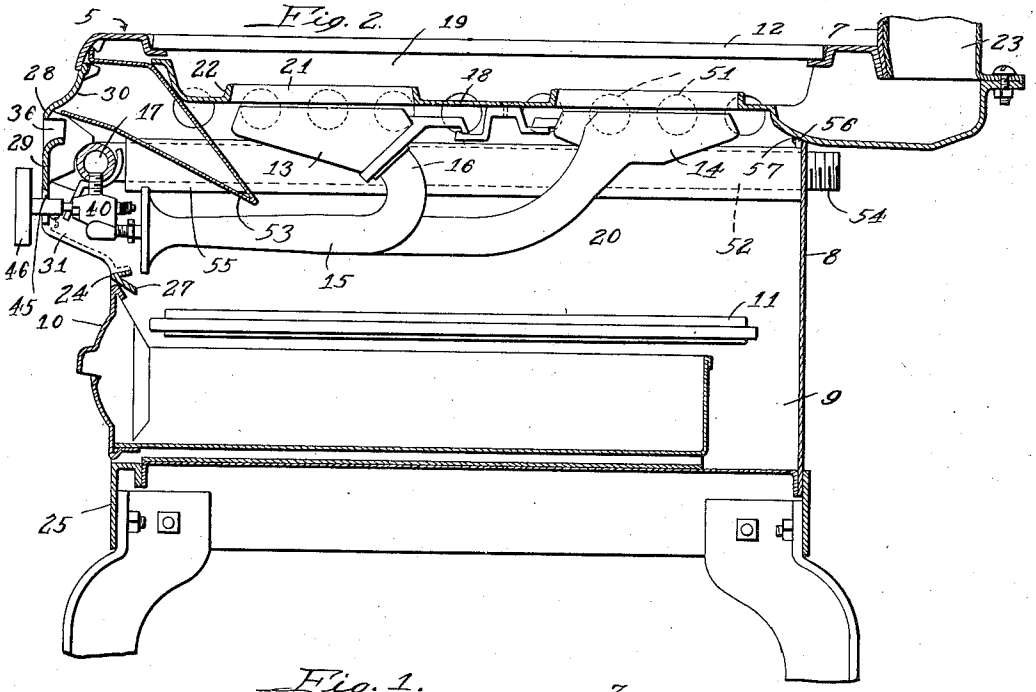
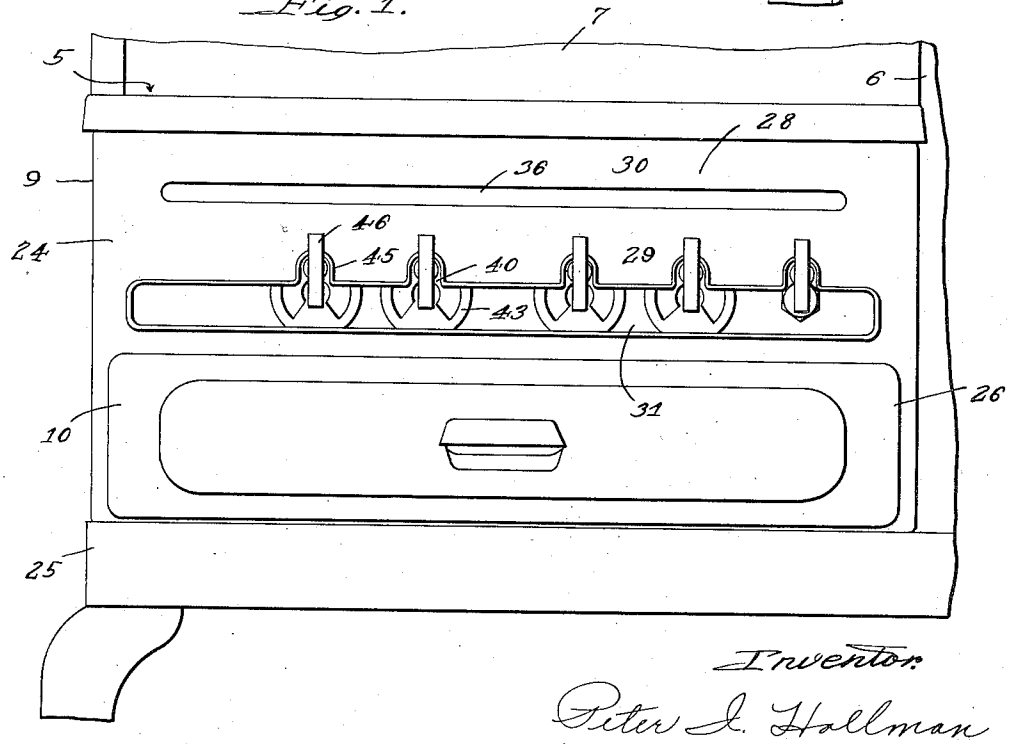


Fig. 1.



Inventor:
Peter I. Hollman
By Wilson, Dowell
McCanna & Rehm Attys.

July 9, 1935. P. I. HOLLMAN 2,007,446

CLOSED TOP STOVE

Filed April 20, 1931 2 Sheets-Sheet 2

Fig. 3.

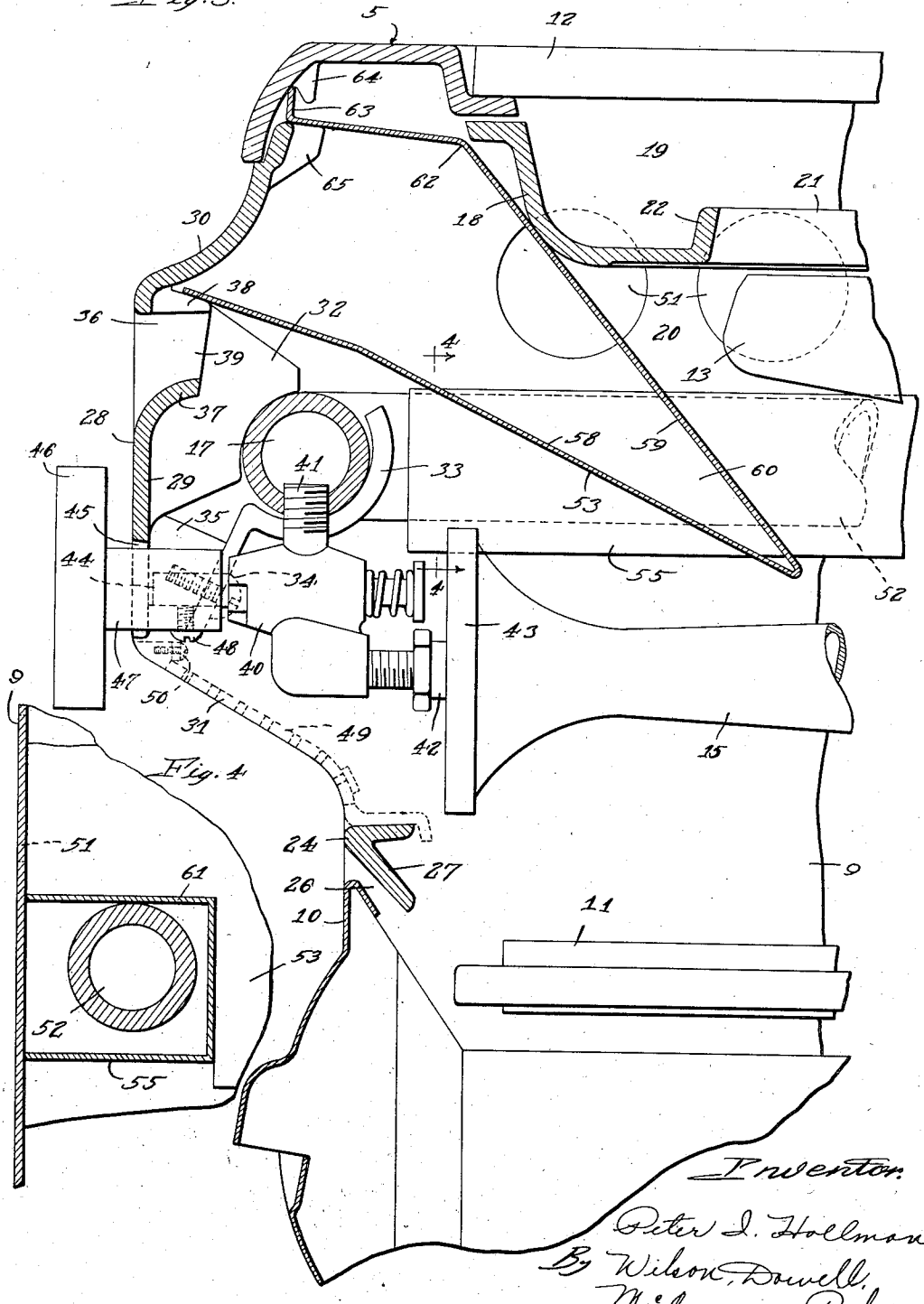


Fig. 4.

Inventor:
Peter I. Hollman
By Wilson, Dowell, McCanna & Ribner
Attys.

Patented July 9, 1935 2,007,446

UNITED STATES PATENT OFFICE

2,007,446

CLOSED TOP STOVE

Peter I. Hollman, Rockford, Ill., assignor to Geo. D. Roper Corporation, Rockford, Ill., a corporation of Illinois

Application April 20, 1931, Serial No. 531,281

11 Claims. (Cl. 126—39)

This invention relates to gas ranges and more particularly closed top stoves, and has special reference to concealment of the manifold on stoves of that type.

The principal object of my invention is to provide a stove of the kind mentioned with a housing for the concealment of the manifold and cocks, so constructed with air inlet and outlet openings below and above the cocks and manifold to insure good circulation of air through the housing to keep these parts from getting too hot, whereby to prevent drying out of lubricant in the cocks and insure easy operation thereof at all times.

Another object consists in the provision of a baffle within the housing to promote air circulation therethrough, the said baffle being further so constructed as to deflect heat of the burners away from the cocks and manifold and more or less completely insulate the combustion chamber from the aforesaid housing.

Still another object is to provide a heat deflector for the cross pipe that delivers gas to the manifold, to minimize the heating of said pipe, said deflector being suitably formed of sheet metal and arranged to be placed over the side of the cross pipe against the burner box end wall to enclose the same isolated from the combustion chamber.

Other objects of the invention will appear in the course of the following detailed description, in which reference is made to the accompanying drawings, wherein—

Figure 1 is a front view of the cooking top portion of a gas range embodying my invention;

Fig. 2 is a longitudinal vertical section of Figure 1;

Fig. 3 is an enlargement of the front portion of Fig. 2, and

Fig. 4 is a sectional detail on the line 4—4 of Fig. 3.

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

The invention is herein illustrated and described as embodied in a closed top stove. Stoves of that type present a much more difficult problem in the concealment of the manifold than open top stoves because the concealment of the manifold means confinement in the heat of the burners. The heat is transmitted from the manifold to the cocks by conduction and causes the drying out of the lubricant therein so that the cocks either stick or turn with great difficulty. While the invention is particularly adapted for use with closed top stoves because of the efficient way it affords of cooling the manifold and cocks, though concealed, it should be understood that the invention is applicable to open top stoves as well.

The closed top stove illustrated is generally similar to that disclosed in the copending application of Stanley H. Hobson, Serial No. 193,276, filed May 21, 1927, which has matured into Pat. No. 1,878,143, Sept. 20, 1932. The cooking top, indicated generally by the reference numeral 5, has the usual oven section 6 at one side thereof and a back splasher wall 7 behind the same. 8 indicates the burner box back, and 9 the burner box end wall. A drawer 10, commonly referred to as a utility drawer, is slidably mounted in the burner box under a suitable drip pan 11. The cooking top, as stated before, is of the closed type and has top plates 12 set in the openings therein so as to present a smooth flat top surface on which to place the cooking utensils, and these top plates in turn have openings closed by removable lids, the number of openings depending upon the number of burners employed. One of the front cooking top burners is indicated at 13, and one of the rear burners at 14, it being customary to provide two in a front set and two in a rear set, as is well known. The manifolds for the rear burners 14 may be of any ordinary conventional form, but the manifolds 15 for the front burners 13 are elongated to the desired length and given a reverse bend, as indicated at 16, to communicate with the burners 13 from the rear, thus allowing the desired length of travel of the gas and air for good mixture despite the close proximity of the burners 13 with the gas supply manifold 17 due to the location of the latter beneath and within the cooking top for concealment. The gas supply manifold in the Hobson application above referred to was not concealed, but disposed out in front of the cooking top, and that accounts for the fact that in that case it was possible to use front burners of ordinary standard form. A bottom plate 18 is mounted under the cooking top 5 between the top plate 12 and the burners, and thus provides a confined combustion chamber 19 above the same and a secondary air chamber 20 below the same above the drip pan 11. The bottom plate serves as a support for the burners in the manner shown. The bottom plate, in accordance with the Hobson application, has secondary air openings 21 conforming to the arrangement of the flame ports of the burners and defined by upstanding flanges 22. The combustion chamber 19 communicates at the rear of the cooking top with a flue outlet 23 for conducting the products of combustion from the stove. So much for a general understanding of the construction of

the closed top stove in which I have embodied my invention. This construction, with the exception of the specially formed manifolds 15 for the front burners 13, is covered in the Hobson application mentioned above.

The front 24 of the burner box is preferably cast in one piece reaching from the cooking top 5 down to the base band 25, and is suitably supported at its lower end on the base band and provides a support at its upper end for the cooking top. The said burner box front 24 is provided with an opening 26 in the lower portion thereof for the reception of the drawer 10 beneath a cross-bar 27 which is cast as an integral part of the front. The upper portion of the burner box front is cast to provide a horizontal outwardly projecting housing 28. The housing 28 is formed by a substantially vertical front wall 29 and a downwardly inclined forwardly projecting top wall 30. The bottom of the housing is open as appears at 31 all the way from the lower edge of the front wall 28 to the top of the crossbar 27. Now, lugs 32 are suitably cast integral with the inside of the front wall 29 formed at their inner ends for reception of the manifold 17, and clips 33, fastened as by means of screws 34 to other lugs 35 cast integral with the inside of the front wall 29 below the lugs 32, serve to clamp the manifold 17 in place. The manifold when so clamped is disposed substantially centrally in the housing 28 at the level of approximately the middle of the front wall 29, above the opening 31 and below another opening 36 which reaches horizontally across the upper portion of the front wall 29 substantially the full length of the housing. The bottom of the opening 36 is defined by an inwardly projecting curved flange 37, the purpose of which is mainly to give a pleasing appearance, but which serves to better conceal the manifold 17 from view through the opening 36. The top of the opening does not require a similar provision, but shoulders 38 are provided above the opening for a purpose which will soon appear, as a result of the extension upwardly of the flange 37 at the opposite ends of the opening 36, as appears at 39. Specially designed cocks 40 have upwardly projecting threaded shanks 41 threading into holes provided in the bottom of the manifold 17 so as to depend from the manifold and provide for a proper elevation of the rearwardly projecting discharge nipples 42 with respect to the shutters 43 of the burner manifolds. The cocks 40 have forwardly projecting stems 44 terminating just behind the front wall 29 of the housing 28 but approximately centrally disposed with respect to openings 45 provided in the lower portion of said wall, preferably as notches in the lower edge thereof. Handles 46 have their shanks 47 detachably secured to the stems 44 of the cocks 40 as by means of set screws 48, the said shanks being entered freely through the openings 45 for operation of the cocks by means of the handles from outside the housing 28. Removal of the handles 46 from the stems 44 permits turning of the cocks for threading or unthreading the same on the manifold, and, of course, the cocks are easily accessible through the opening 31. A removable grid may if desired be provided for the opening 31.

In operation, it will be seen that when the cock 40 for any burner is opened by turning the handle 46 thereof, primary air is drawn in through the opening 31 in the burner box front 24 for delivery with the gas through the shutter 43 to the burner, and other air to support combustion, referred to usually as secondary air, is also drawn in through the opening 31 into the secondary air chamber 20 as a result of the draft created in the operation of the burner. A plurality of holes 51 are provided in the end wall 9 adjacent the bottom plate 18 to admit as much more secondary air as may be required for good combustion. The cocks 40 are practically in the direct path of travel of the air entering through the opening 31, and this naturally keeps the same fairly cool, but the crosspipe 52, that supplies gas to the manifold 17, is found to cause heating of the manifold 17 by conduction to such an extent that if no provision were made for cooling of the manifold, the cocks would be subjected to undesirable heating by conduction from the manifold. It is for that reason that I have provided the upper opening 36 preferably just above and fairly close to the manifold 17. A certain amount of air entering the housing 28 through the lower opening 31 is thereby allowed to flow upwardly past the cocks 40 and around the manifold 17 and out through the upper opening 36, whereby to cool the entire assembly to such an extent that the cocks are not heated enough to have the lubricant therein dried out. There is, therefore, no occasion for the cocks to stick or turn with difficulty. A baffle 53, the details of which are hereinafter described, serves to increase the circulation of air upwardly around the manifold 17 and out through the opening 36 to keep the manifold as cool as possible.

The crosspipe 52 is disposed inside the end wall 9 of the burner box and has the rear end thereof threaded, as appears at 54 in Fig. 2, for connection with the gas main, and its front end is preferably cut on a miter like the end of the manifold 17 and welded thereto. Owing to its proximity with the burners, the pipe 52 would be heated to an objectionable degree if it were not for the provision of the deflector 55 made of sheet metal bent to substantially channel form in cross-section, as appears in Fig. 4, and fitting over the pipe 52 from the side and placed in abutment with the inside of the wall 9 for complete enclosure of the pipe. The deflector 55 is fastened in place in any suitable manner at the rear end thereof as by means of a lug 56 projecting upwardly therefrom and fastened to the back wall 8 as by means of a bolt 57. The deflector 55 is held in place at its front end by means of the baffle 53, as will now appear. The baffle 53 is formed from a single piece of sheet metal reaching the full length of the housing 28 and bent to a substantially V-shaped cross-section to provide a front wall 58 and a rear wall 59 defining an air pocket 60 therebetween for insulation of the housing 28 from the combustion chamber. The one end of the baffle 53 is notched out at the crotch portion of the V, as appears at 61 in Fig. 4, so as to fit over the deflector 55 and hold the same in abutment with the end wall 9. The deflector 55 has the top wall thereof resting on top of the crosspipe 52 for support of the deflector, and it will be evident that since the baffle 53 fits over the deflector 55 as just described, the crosspipe 52 also provides some support for the baffle. The baffle is disposed with the front wall 58 inclined upwardly reaching from a point considerably to the rear and below the manifold 17 to a point above and in front of the manifold, the wall 58 finding support at its front end on the shoulder 38 previously mentioned. The rear wall 59 of the baffle extends upwardly on a shaper incline and just clears the front end of the bottom plate 18, and

is then bent as at 62 to reach forwardly for anchorage between the upper edge of the front 24 and the cooking top 5, as at 63. The front end of the wall 59 is bent upwardly at 63 for engagement behind lugs 64 provided on the inside of the cooking top, and it will also appear how lugs 65 formed on the inside of the front 24 are arranged to support the front end of the wall 59 from beneath. In operation, the deflector 55 minimizes the heating of the crosspipe 52 so that there is much less heating of the manifold 17 by conduction. Although the manifold 17 is in fairly close proximity with the front burners 13, there is little chance for direct heating of the manifold in the operation of the burners, because of the way in which the baffle 53 insulates the housing 28 from the combustion chamber. The rear wall 58 of the baffle 53 deflects the heat of the burners, and the intervening air pocket 60 minimizes the transfer of heat from the wall 59 to the wall 58 by radiation. Such heat as the wall 58 derives from the wall 59 by conduction is pretty well dissipated by the air that comes in contact therewith which enters the opening 34 and circulates through the housing 28 and out through the opening 36, so that there is little danger of the manifold and cocks being heated by radiation from that part. The inclination of the front wall 58 of the baffle 53 upwardly toward the opening 36 over the manifold 17 increases the circulation of air upwardly through the housing 28 around the manifold 17 and out through the opening 36. There is a quite perceptible chimney or stack effect as a result of air heated by contact with the cocks 40 and manifold 17 tending to rise in the housing 28 and escape through the opening 36, and it is this action plus the deflection of the baffle 53 that accounts for the good circulation of air through the housing 28.

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

I claim:

1. A gas stove comprising a cooking top, a burner therefor, and a front wall for a manifold housing below the cooking top having a handle opening therein, and an air inlet opening below and an outlet opening above the handle opening, a manifold beneath the cooking top and disposed between the air inlet and outlet openings, a crosspipe reaching rearwardly from one end of the manifold for supplying gas to the latter, the crosspipe extending in proximity with the burner, a heat deflector enclosing said crosspipe to minimize transfer of heat from the burner to the pipe, a baffle substantially parallel with the manifold and disposed between it and the burner to prevent heat transfer from the burner to the manifold, a cock communicating with the manifold and arranged to discharge gas to the burner, and a handle disposed outside the housing having an operating connection through the handle opening with the cock for opening and closing the same.

2. A gas stove as set forth in claim 1 wherein the baffle is so conformed and related to the air inlet and outlet openings whereby to direct incoming air toward the outlet opening for circulation about the manifold, said baffle serving to isolate the burners from the manifold to such an extent as to cut down the flow of secondary air thereto from the air inlet opening, the stove being provided with auxiliary air inlet openings behind the baffle for delivery of additional secondary air to the burners.

3. A gas stove as set forth in claim 1 wherein the heat deflector for the crosspipe rests on the top of said pipe, and wherein the baffle has the one end thereof formed to fit over said deflector whereby the baffle holds the heat deflector in place on the crosspipe and the crosspipe is used to support the baffle.

4. A gas stove as set forth in claim 1 wherein the baffle is formed from sheet metal bent to approximately V-shaped cross-section whereby to provide diverging forwardly reaching front and rear walls having an air insulating chamber therebetween, the rear wall being inclined in a predetermined relation to the burner for deflection of heat therefrom, and the front wall being conformed and inclined with relation to the manifold and air inlet and outlet openings to direct incoming air toward the outlet opening for circulation about the manifold.

5. A gas stove as set forth in claim 1 wherein the baffle is formed from sheet metal bent to approximately V-shaped cross-section whereby to provide diverging forwardly reaching front and rear walls having an air insulating chamber therebetween, the rear wall being inclined in a predetermined relation to the burner for deflection of heat therefrom, and the front wall being conformed and inclined with relation to the manifold and air inlet and outlet openings to direct incoming air toward the outlet opening for circulation about the manifold, and wherein the heat deflector rests on top of the crosspipe, and the adjacent end of the baffle is formed to fit over said deflector whereby to hold the deflector in place on the crosspipe and at the same time support the baffle on said pipe.

6. A gas stove comprising a cooking top, a front wall for a manifold housing immediately below the cooking top, the cooking top having a downwardly projecting front flange resting on a shoulder on the upper edge of the front wall, the front wall having a handle opening, the upper portion of said housing having an air outlet opening therein, and the lower portion of said housing having an air inlet opening, a burner for the cooking top, a gas supply manifold in said housing in a predetermined relation to the air outlet opening, a cock for delivering gas from the manifold to the burner having an operating stem reaching toward the handle opening, a handle outside the housing having an operating connection through said opening with said stem, and a baffle disposed substantially parallel with the manifold between the latter and the burner to shield the manifold from the heat of the burner, said baffle being formed substantially V-shaped in cross-section so as to provide forwardly diverging front and rear walls with an insulating chamber therebetween, the front wall reaching over the manifold and above the air outlet opening, and formed to direct incoming air toward said outlet opening for circulation about the manifold, and the rear wall being inclined upwardly adjacent the burner for deflecting heat therefrom, the front end of said wall being entered in the joint between the cooking top and front wall for support of the baffle.

7. A gas stove including in combination, a combustion chamber, heating burners arranged therein, and a closure plate constituting the front wall of said chamber, said plate being formed with ports in its lower part through which ports

air for combustion is entrained, and said plate being formed also with ports in its upper part through which excess air is vented.

8. In a gas stove having a cooking top burner compartment, burners therein, a front wall for said compartment and a gas supply manifold and cocks communicating therewith for delivery of gas to the burners, said manifold and cocks being disposed in said compartment behind the front wall, said wall being formed with lower and upper openings for inlet and outlet of air respectively, whereby to supply air for combustion to the burners and surplus air for circulation past the manifold and cocks for cooling the same.

9. In a gas stove having a cooking top burner compartment, burners therein, a front wall for said compartment and a gas supply manifold and cocks communicating therewith for delivery of gas to the burners, said manifold and cocks being disposed in said compartment behind the front wall, said wall being formed with lower and upper openings for inlet and outlet of air respectively, whereby to supply air for combustion to the burners and surplus air for circulation past the manifold and cocks for cooling the same, the stove including baffle means disposed in the burner compartment between the burners and the manifold and cocks to shield the latter from the heat of the burners, said baffle means being so disposed whereby excess air taken in is directed toward the upper outlet.

10. In a gas stove having a cooking top burner compartment, burners therein, a front wall for said compartment and a gas supply manifold and cocks communicating therewith for delivery of gas to the burners, said manifold and cocks being disposed in said compartment behind the front wall, said wall being formed with lower and upper openings for inlet and outlet of air respectively, whereby to supply air for combustion to the burners and surplus air for circulation past the manifold and cocks for cooling the same, the stove including a baffle of V-shaped cross-section with the crotch portion of the V lowermost, arranged between the burners and the manifold and cocks so that the inner wall deflects heat of the burners away from the manifold and cocks, and the outer wall deflects excess air toward the upper outlet, the inner and outer walls being spaced so as to minimize heat transfer from the former to the latter.

11. In a gas stove comprising a cooking top, a gas supply manifold therebeneath, gas cocks communicating therewith for delivery of gas to burners disposed beneath the cooking top, and a baffle of V-shaped cross-section disposed with the crotch of the V lowermost between the burners and the manifold so that the inner wall deflects heat of the burners away from the manifold, and the outer wall is disposed adjacent the manifold and spaced from the inner wall for minimum heat transfer from the inner wall to the outer wall.

PETER I. HOLLMAN.